



UNIVERSITY OF CAPE COAST

# RESEARCHREPORT

2017-2019





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Vice-Chancellor

**Prof. Joseph Ghartey Ampiah**

# FOREWORD

This is the second time that the University of Cape Coast is publishing a research report that celebrates the rich and diverse work of some of our leading scholars, researchers and young emerging scientists. The previous edition of the UCC Research Report (2012-2016) received critical acclaim and provides impetus for the current edition. This UCC Research Report (2017-2019) provides evidence of the contribution that UCC's research is making to our individual and collective futures, and of the multiple ways in which our committed researchers are succeeding in addressing the trio objectives of academic excellence, research excellence and societal relevance. Aligned with the global agenda for

sustainable development, as expressed in the UN Agenda 2030, and the goals of Ghana's Centennial National Development Plan (Agenda 2057), the University of Cape Coast's short-term corporate strategic plan (2018-2022), is based on a commitment to pursue research that matters, research that addresses complex societal challenges and, in particular, challenges that are faced by the developing regions of the world. This edition of the UCC Research Report gives expression to some of the tenets espoused in the foregoing plans. The research that we present in this Research Report illustrates the successes we have had in working towards these goals. Our research strategy is informed by the global trend, in addressing the complex

challenges of real world problems, of multidisciplinary and trans-disciplinary approaches, and our research has become increasingly team-driven.

This Report casts the spotlight on the multidisciplinary, solutions-driven research that has been undertaken by researchers working in teams. The achievements and initiatives documented in this Report also highlight the growing importance of networks and multi-stakeholder partnerships in driving research impact. By building on areas of research strength, and actively developing networks and partnerships in areas of societal relevance in order to leverage maximum impact, the University of Cape Coast has vigorously pursued



its commitment to using science and innovation for development, and for the well-being of people, society and the environment.

The Directorate of Research, Innovation and Consultancy (DRIC) has been at the forefront of implementing the UCC Research Agenda (2018-2022), which drives this Research Report. DRIC has also fostered new local, national and international partnerships with the view to consolidating cross-disciplinary and multi-sectoral initiatives between academia and industry. The profiles included in this Research Report illustrate both the distinctness and the confluence between different knowledge fields. What ties this all together, and is a recurrent theme throughout the Research Report, is the role of research in examining the world in which we live - from the arts, humanities and the sciences, to new technologies and tools used in the process of research. This Report explicitly identifies universities, business, donor agencies, governments and NGOs as full-fledged partners in our collective quest to undertake research that is socially relevant.

It is pertinent to ask, what role universities, especially in sub-Saharan Africa, play in realising an integrated, moral and collaborative research agenda. Two challenges stand out: firstly, the dissemination of high-quality research should be improved. This means that more resources should be invested in creating 'meta-platforms' that collect, synthesise and disseminate research in accessible

formats to decision-makers in the public and private sectors. The research on evidence-informed policymaking is unambiguous on the importance of concerted and well-resourced initiatives in this regard. Secondly, researchers need to experiment to a greater extent with multidisciplinary research. This flows from the realisation that the global community has moved beyond an overly simplistic understanding of 'societal challenges' and the requisite responses to its underlying causes. In this context, we require both high-quality discipline-specific and innovative multidisciplinary research to face 21st century challenges headlong. This is one of the key messages in the UCC Research Report (2017-2019).

Academia and industry research do not exist in separate vacuums. Rather, they are each part of a complementary, holistic research ecosystem that achieves results for the economy, for society, and for individuals through robust symbiotic relationships and knowledge interactions. The nature and scope of the research highlighted in the UCC Research Report (2017-2019) are quintessential examples of this holistic approach. Policymakers, research funders, research organizations, and other key stakeholders must recognize that all parts of the ecosystem serve a function, and that emphasizing one type of research performing entity or one type of research (such as applied over basic) at the expense of another has the potential to create a destructive imbalance in the system.

The concept of research and development (R&D) ecosystem, with disciplinary interactions and trans-disciplinarity as an emerging theme, is important to understand in terms of both societal and economic development. Particularly from the latter perspective, technologies, useful commercial products, and innovations in commercial practices and other human endeavours rarely, if ever, form solely out of the work of one company or individual innovator (even though that may seem to be the case). Rather, as shown in this Research Report, they are the result of the integration of previous fundamental and applied research and knowledge advancements. Therefore, attention must be paid to the entire system (the research ecosystem) that supports and enables innovation, knowledge expansion, and knowledge exchange. This is what we sought to achieve in the second edition of the UCC Research Report.

A cursory glance at this Research Report indicates that UCC researchers and scholars are contributing immensely to research in four functional impact areas—knowledge expansion and innovation, human capital development, economic development, and societal wellbeing and quality of life.

On behalf of the University Council, I commend all our dedicated researchers and administrators whose scholarly endeavours continue to spotlight UCC on the global research map.

Director, DRIC

**Prof. Frederick Ato Armah**



## Message from the Director

Directorate of Research, Innovation and Consultancy (DRIC)

Universities, through their extensive research capabilities and activities, have a critical role in providing the necessary knowledge, evidence-based solutions and innovations. This suggests that universities occupy a unique position within society. Lately, universities are increasingly re-thinking their role in the twenty-first century and looking to be equally more responsive to societal needs and to become agents of change towards solving global challenges. The establishment of the Directorate of Research, Innovation and Consultancy (DRIC) in 2013 gave expression to the commitment of the University of Cape Coast (UCC) to transform society through our research outputs. The establishment of DRIC has brought in its wake tremendous changes in the

research landscape of UCC. Almost all indicators of research excellence and impact have improved to varying degrees during the past six years. This is evidenced by increased number of national and international research contracts and consultancy, improved researcher productivity, improved ranking of UCC among Universities in Ghana, Africa and beyond, and the number of patents. My immediate predecessor, Prof Samuel Kobina Annim, contributed immensely towards the realisation of these goals. I intend to consolidate the gains we have made so far, and broaden the frontiers of our research, innovation and consultancy endeavours. Ultimately, it is anticipated that these improvements will position UCC as a citadel of research excellence on the continent.

The UCC Research Agenda (2018-2022) has a thematic focus on “Education and Environment for Sustainable Development”. The Research Agenda together with the consultancy, intellectual property and research policies implemented by the university management have ensured that UCC is becoming increasingly competitive and visible in the global network of research intensive universities.

The nature of academic research is evolving. Academic disciplines form the foundation of the research ecosystem in terms of thematically bounded fields-of study. While this disciplinary model has served society well, the complexity of science, and an expanding recognition of the complexity of grand challenges and the frontiers of science

are producing an increasing emphasis towards trans-disciplinary, team-science oriented research. The increasing complexity of the frontiers of research particularly favours major research universities, as they have the diversity of disciplines, skills, perspectives, and facilities to undertake trans-disciplinary inquiry. Spanning the full spectrum of basic and applied inquiry, the five colleges of UCC demonstrate a substantial diversity of quantifiable areas of specialized research focus. Multiple fields in the Social Sciences, Arts and Humanities, Physical Sciences (especially Physics and Chemistry), Life Sciences (Fundamental, Biomedical, and Agricultural), Formal Sciences (Mathematics and Statistics), and Education represent particularly notable and sizeable areas of comparative strength in UCC research output. This diversity of research competencies holds promise for advancement on the African continent not only along individual disciplinary lines, but also for advancing modern trans-disciplinary approaches to complex challenges and opportunities.

A bird's eye view of our scholarly activities indicates that the University of Cape Coast (UCC) has on-going partnerships with institutions across the globe in four broad areas; capacity building, research, innovation and consultancy services.

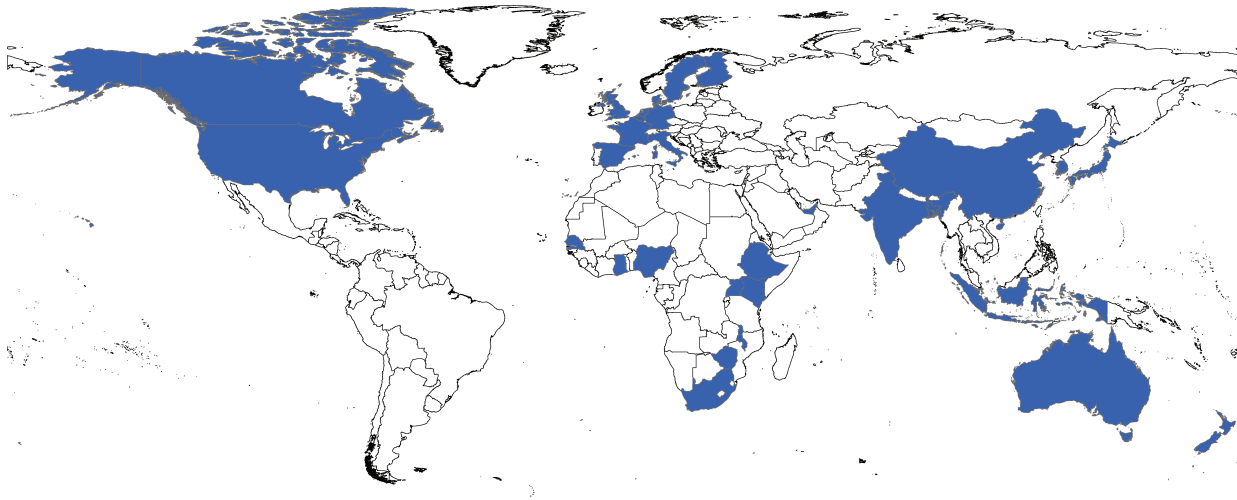
The general picture is that there are significant heterogeneities both in the geographical distribution of partners and the amount of money involved in the collaboration. Generally, UCC's global partnership is mainly North-South collaboration. South-South research partnerships are virtually non-existent in UCC's constellation of collaborations. In fact, there was no funded research partnership with a single institution in South America. This stark reality is exacerbated by the fact that UCC has relatively very few partners in Africa; that is only nine (9) countries out of the possible fifty-six (56) countries. Particularly unfortunate is the fact that UCC had no funded research collaboration with partners in Ghana's three (3) neighbouring countries (Togo, Cote d'Ivoire and Burkina Faso).

The College of Humanities and Legal Studies (CHLS) and the College of Agricultural and Natural Sciences (CANS) recorded the highest number of global partnerships but neither of them had partners in South America and Oceania. The College of Humanities and Legal Studies had the highest number of partnership countries whereas CANS had the highest number of research projects and also accrued more funds than the other four colleges. Even though the College of Health and Allied Sciences (CoHAS) had more research projects than CHLS, the latter accrued

more funds from research projects. This indicates that the number of research projects and the quantum of research funds are both important indicators of the research portfolio of the colleges. Majority of the research projects (77%) originated from research grants and the least (9%) was consultancy services. The College of Agricultural and Natural Sciences recorded the highest number of research grants, capacity building projects and consultancy services. Fifty-six percent of research projects are still on-going. In summary, it is imperative for UCC to establish research collaborations with partners in South America and Africa, and consolidate and expand the frontiers of the existing partnerships in North America and Europe.

The second edition of the UCC Research Report is important and timely. And certainly, it is appropriate here to thank those whose efforts have made it possible: the Vice Chancellor, the Chairperson and members of the DRIC Management Committee; UCC faculty members who contributed information and participated in the research projects herein reported; DRIC staff; and all our partners in academia and industry, who based on their substantial expertise provided helpful and comprehensive information. We express our profoundest gratitude to all.



# The Research Report at a Glance



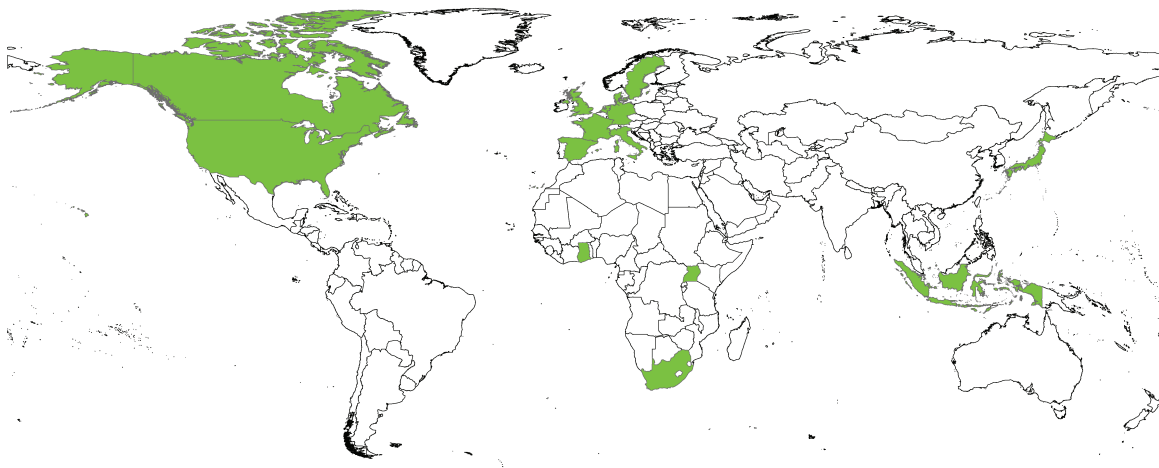
### Number of Partnership Countries

- Africa - 9
- Europe - 10
- North America - 2
- Asia - 6
- Oceania - 2

### Legend

-  UCC Global Partners
-  No Partners



*Distribution of UCC Research Partner Institutions across the Globe*



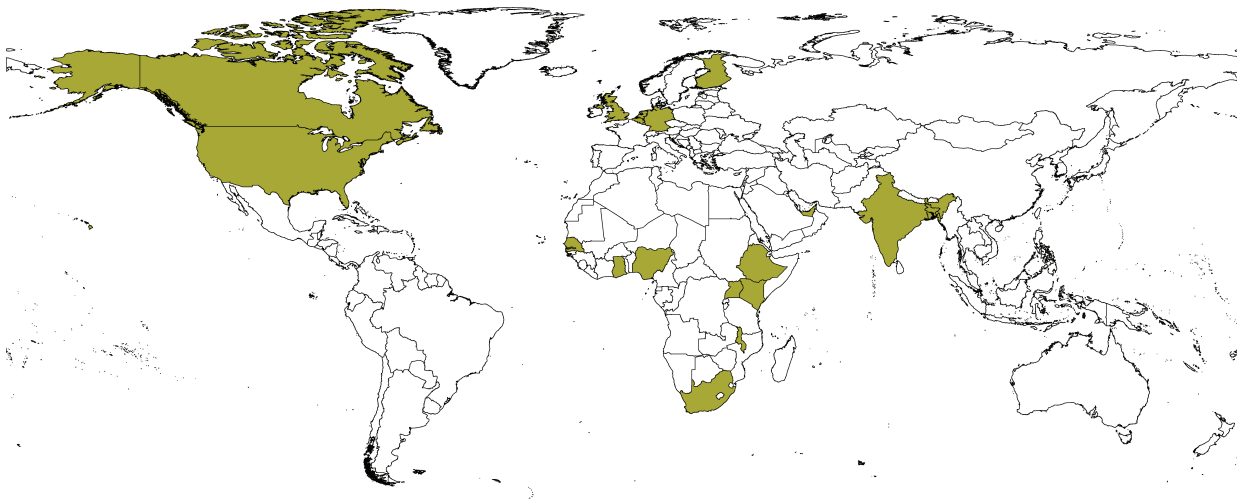
### Number of Partnership Countries

- Africa - 3
- Europe - 8
- North America - 2
- Asia - 2

### Legend

-  CANS Global Partners
-  No Partners



*Distribution of Research Partner Institutions of the College of Agriculture and Natural Sciences across the Globe*



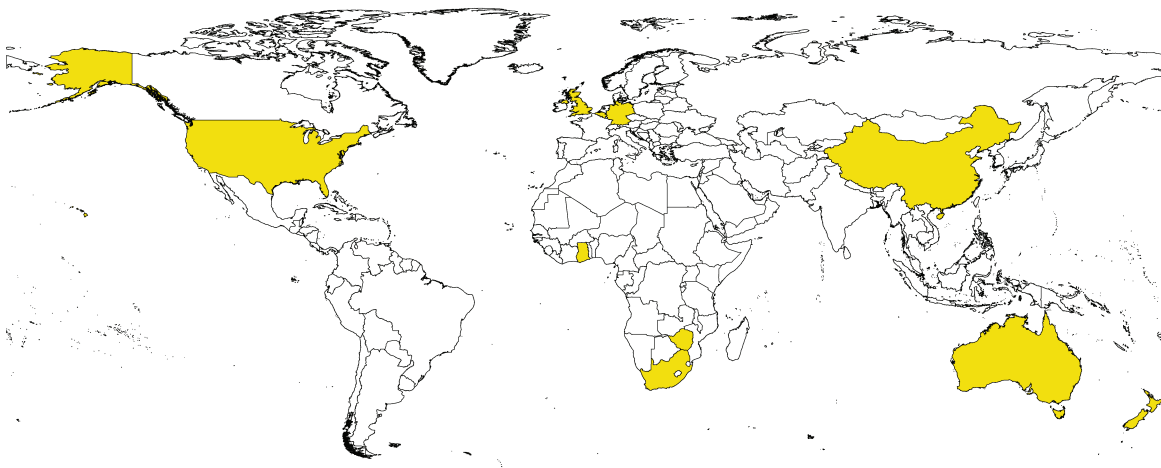
**Number of Partnership Countries**

- Africa - 8
- Europe - 5
- North America - 2
- Asia - 3

**Legend**

-  CHLS Global Partners
-  No Partners



*Distribution of Research Partner Institutions of the College of Humanities and Legal Studies across the Globe*



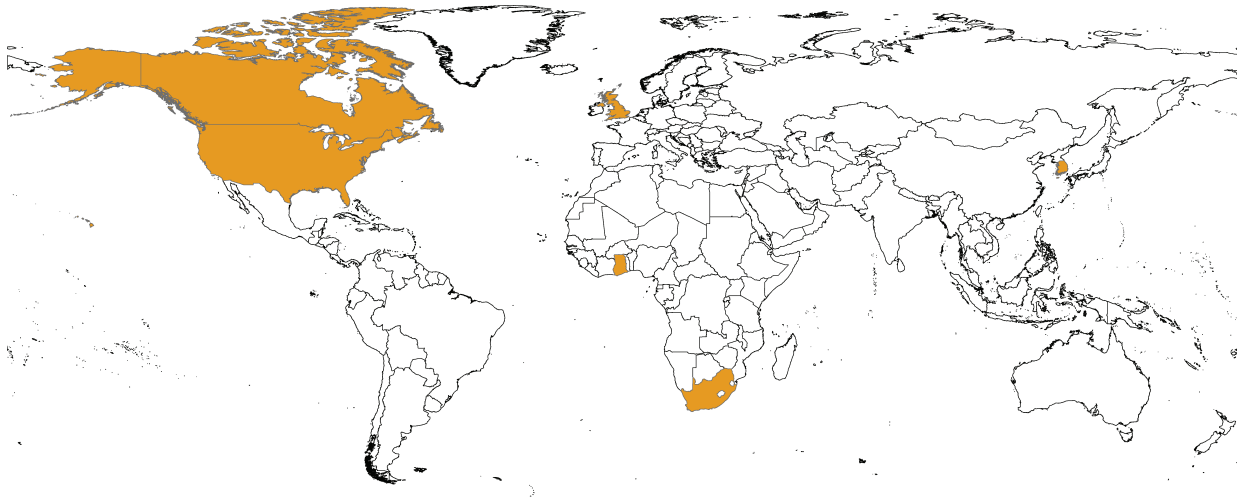
**Number of Partnership Countries**

- Africa - 3
- Europe - 3
- North America - 1
- Asia - 1
- Oceania - 2

**Legend**

-  COHAS Global Partners
-  No Partners

*Distribution of Research Partner Institutions of the College of Health and Allied Sciences across the Globe*



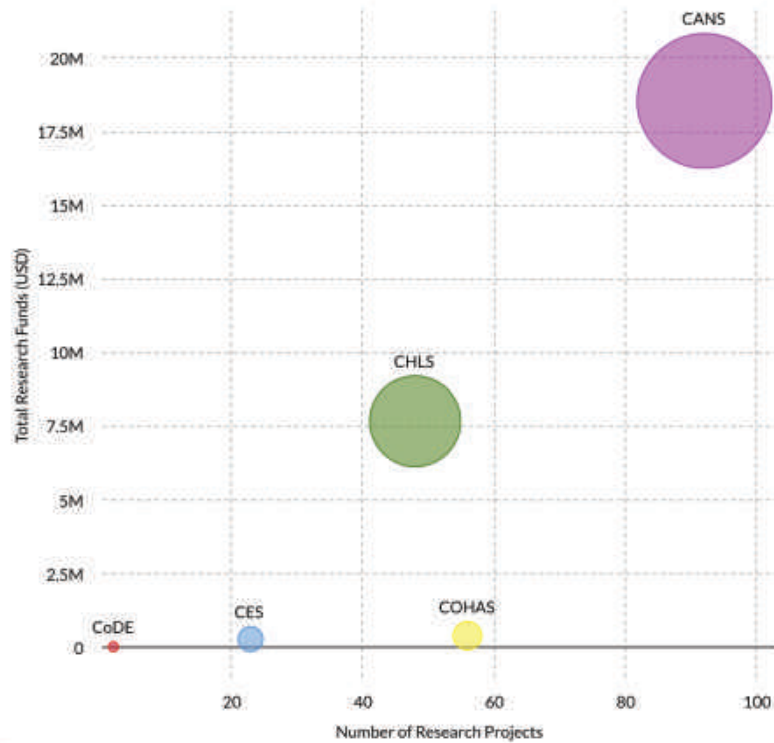
**Number of Partnership Countries**

- Africa - 2
- Europe - 1
- North America - 2
- Asia - 1

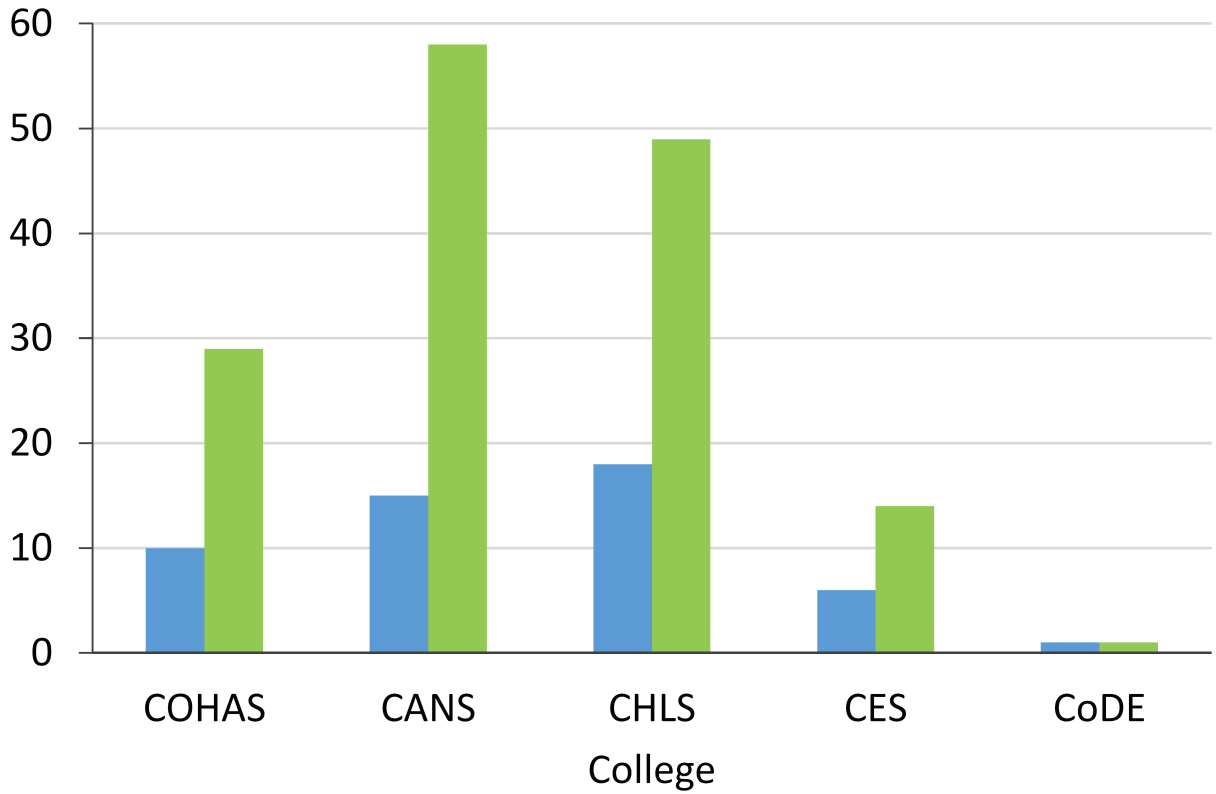
**Legend**

- CES Global Partners
- No Partners

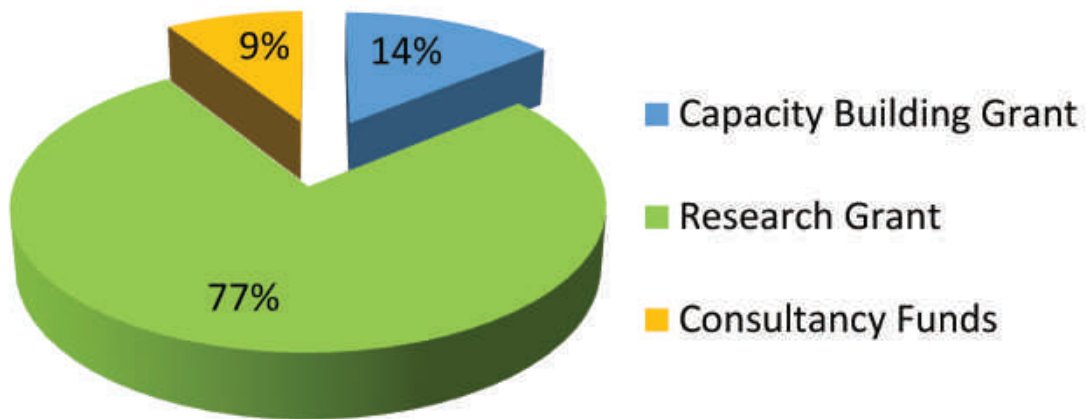
*Distribution of Research Partner Institutions of the College of Education Studies across the Globe*



*Distribution of Total Research Fund and number of projects across the Colleges*

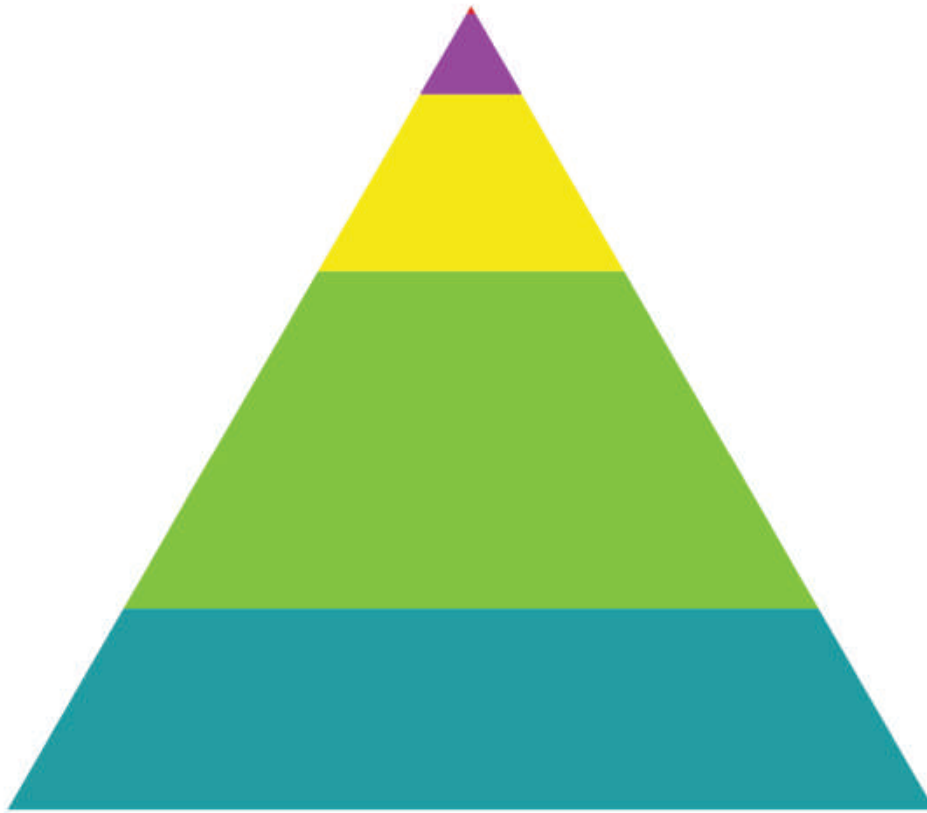


■ No. of Partnership Countries ■ No. of Partnering Institutions



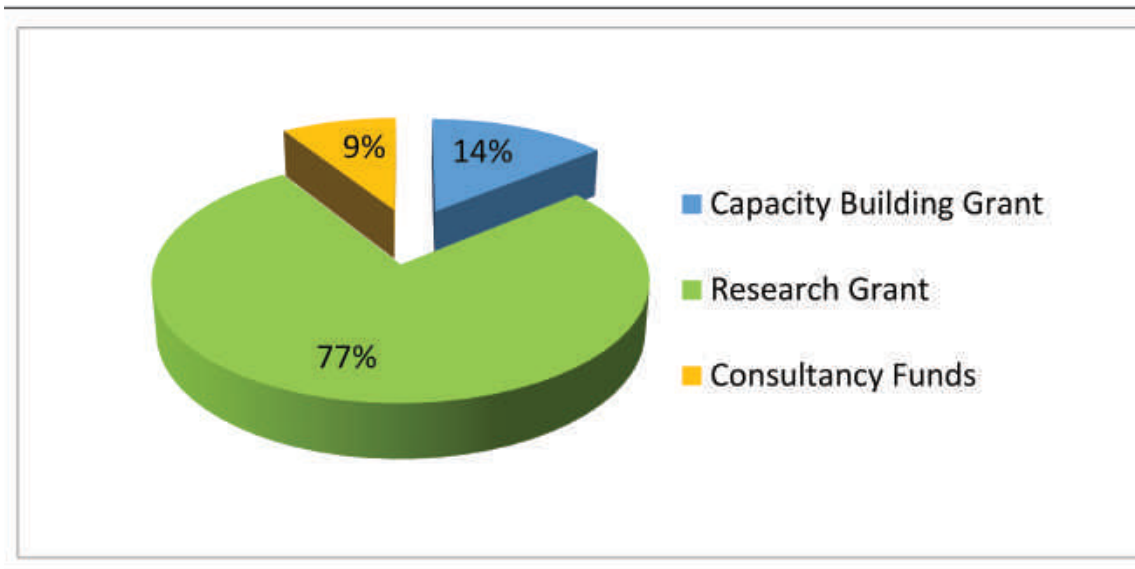
Proportion of Research Grant Type



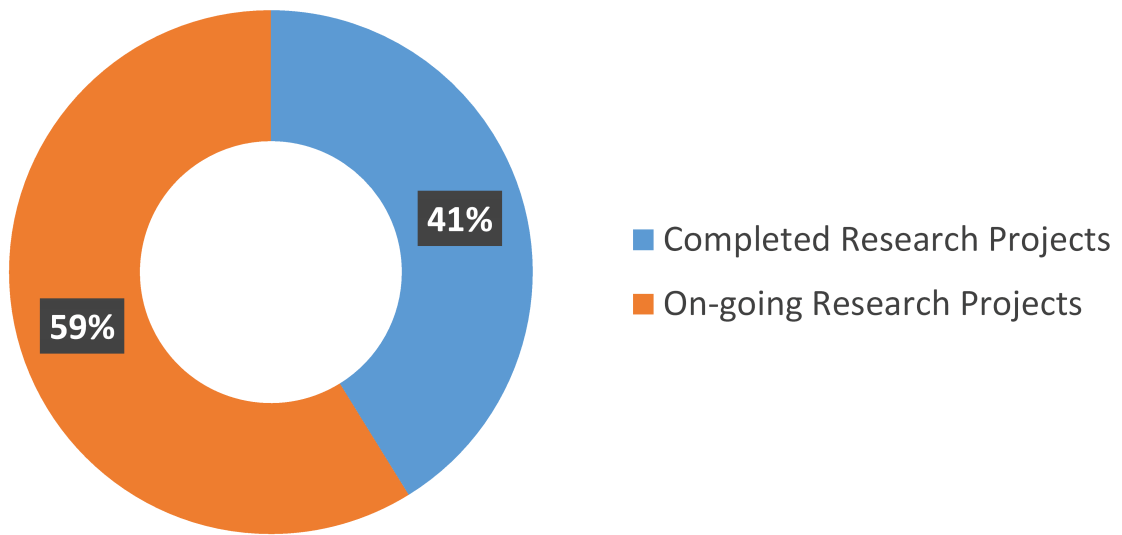


■ COHAS (25%) ■ CANS (42%) ■ CHLS (22%) ■ CES (10%) ■ CoDE (1%)

*Proportion of Research Projects across Colleges*



■ Capacity Building Grant  
■ Research Grant  
■ Consultancy Funds



University Management and Research Awardees and Grantees at the fourth RAG ceremony



## Brief History, Vision and Mission of UCC

*The University of Cape Coast is one of the rare sea front universities in the world.*

The University of Cape Coast was established in October, 1962 as a result of a recommendation of an international commission appointed by the Ghana Government in December, 1960 to advise on the future of University education in the country and the possibility of establishing a third university at Cape Coast. The College was formally inaugurated on 15th December, 1962.

On 1st October, 1971, the College attained the status of a full and independent University, with the authority to confer its own degrees, diplomas and certificates by an Act of Parliament - The University of Cape Coast Act, 1971 [Act 390] and subsequently the University of Cape Coast Law, 1992 [PNDC Law 278]. The University was established out of a dire need for highly qualified and skilled labour in education to provide leadership and enlightenment. Its original mandate was therefore to train graduate professional teachers for Ghana's second cycle institutions and the Ministry of Education, in order to meet the labour needs of the country's accelerated education programme at the time. Today, with the expansion of some of its faculties and the diversification of programmes, the

University has the capacity to meet the labour needs of other ministries and industries in the country, besides that of the Ministry of Education.

The University started with two departments, namely Arts and Science. These departments developed into faculties in 1963. In order to achieve the set objectives, in 1964, the University created two more Faculties, namely Education and Economics & Social Studies [now Faculty of Social Sciences]. The fifth faculty [School of Agriculture] was established in 1975. The Faculty of Science was split into the Schools of Physical and Biological Sciences during the 2002/2003 academic year while the Department of Business Studies was also elevated to the School of Business with effect from the 2003/2004 academic year.

The National Accreditation Board (NAB), at its 63rd Meeting held on October 4, 2007 approved a three-year Interim Accreditation for the running of the Basic Sciences component of the Bachelor of Medicine and Bachelor of Surgery (MB CHB) programme at the School of Medical Sciences of the University of Cape Coast. In view of this,





the School of Medical Sciences became fully operational when on Thursday, 17th January, 2008 the first batch of students was matriculated.

In order to make graduate studies more relevant and responsive to research related to the economy, the Board of Graduate Studies was changed to the School of Graduate Studies and Research (SGSR) with renewed and enhanced mandate with modules that will focus on action and demand-driven research.

The University has expanded the scope of its sandwich programmes to include M.Ed. [Admin], M.Ed. [Management], M.A. [Human Resources Management], M.A. [Human Resources Development], and M.A. [Democratic Governance, Law and Development, Environmental Management Policy and M.A. [Governance and Sustainable Development], as well as M.A. and M.Ed. [Guidance and Counselling]. The following programmes: B.Com. B.M.S. and B.Sc. [Marketing] have been designed for H.N.D. holders. The University also runs sandwich programmes at diploma, graduate and postgraduate levels in Organisation Development [O.D.].

Similarly, in the 2005/2006 academic year, the University introduced other new programmes namely, B.Ed. (Management), B.Sc. (Psychology), B.Sc. (Medical Laboratory Technology) and B.Sc. (Nursing). Additionally, an M.Ed. (Information & Communication Technology) was also introduced in the same year under the Centre for Continuing Education. The new programmes are to cater for the academic and professional needs of individuals, institutions and organisations whose activities relate to these programmes. With the introduction of these new programmes, the University has phased out its B.Ed. (Foundations) and B.Ed. (Population and Family Life) programmes. The 2007/2008 academic year also saw the introduction of new programmes at the graduate level in the Institute of Development Studies, namely M.A. (Development Studies), M.Phil. (Development Studies), M.A. (Development Management) and M.Phil. in Peace and Development Studies. The Department of Physics also introduced a sandwich programme in B.Sc. Engineering Physics for H.N.D. holders.

Since 1996, the University has restructured its degree programmes by de-coupling the study of professional education courses from the main degree course. This was done to allow flexibility and choice in its course offerings, and thus cater for specific needs of students, while still focusing on its traditional mission of producing highly qualified and skilled labour in education. In this regard, approximately 50% of students are admitted into the Faculty of Education (now College of Education Studies) to pursue Bachelor of Education programmes, qualifying as professional teachers, and the rest admitted into non-education programmes in the other faculties.

In response to the changing needs of society and those of the entire Ghanaian education enterprise, the University of Cape Coast has, over the last several years, progressively added to its traditional functions, the training of educational planners, administrators, agriculturalists, actuarial scientists, optometrists, information technologists, biochemists, environmentalists, laboratory technologists and experts in commerce, management, tourism, population and family life education, water and sanitation, molecular biology, biotechnology, computer science and livestock system managers.

The University is organised into 15 Faculties/Schools, and runs many programmes in order to meet the changing needs of society. The University has also been running its programmes on regular, sandwich and distance basis. With effect from 1st August, 2014, the University has been operating under 5 colleges which are the College of Humanities and Legal Studies; College of Agricultural and Natural Sciences; College of Health and Applied Sciences; College of Education Studies; and College of Distance Education headed by Provosts. From an initial student enrolment of 155 in 1963, the University of Cape Coast now has a total student population of over 35,922. The breakdown is as follows: 14,815 Regular Undergraduate Students, 2,146 Sandwich Students and 18,018 Distant Learning Students.

As part of its desire to vigorously promote distance education, the College of Distance Education (CoDE), formerly Centre for Continuing Education (CCE), has acquired sites in seven out of ten regions for the construction of permanent study centres. The centres will eventually serve as UCC campuses in the regions to run some campus-based programmes. Additionally, there is a six billion Ghana cedi IGF funded building complex completed for the College of Distance Education (CoDE).

### **Motto**

*The motto of UCC is “Veritas Nobis Lumen” which means “Truth, Our Guide”*

### **Vision Statement**

*“To have a University that is strongly positioned, with world-wide acclaim”*

This statement of where the University sees itself in the future sets the tone for every strategic decision or choice that it has made. It sets the ambition of the organization and serves as the lodestar that every faculty, school, department, functional division and individual must aspire to. In combination with its mission statement, University of Cape Coast has articulated a view of a realistic, credible, attractive future for itself; a target that inspires all stakeholders to maximum effort in bridging the gap between their current reality and their desired future.

### **Mission Statement**

*“The University of Cape Coast is the University of Choice”*

It is an equal opportunity university uniquely placed to provide quality education through the provision of comprehensive, liberal and professional programmes that challenge learners to be creative, innovative, and morally responsible citizens. Through distance learning, it also extends expertise and facilities to train professionals for the education enterprise and business by employing modern technologies. The University constantly seeks alternative ways to respond to changing needs. The institution continues to expand its existing highly qualified academic and administrative staff, offering a conducive environment that motivates them to position the University to respond effectively to the developmental needs of a changing world”.







# College of Agriculture and Natural Sciences

*The College of Agriculture and Natural Sciences (CANS) is one of the five Colleges that were instituted at the University of Cape Coast (UCC) on Friday, 1st August, 2014. CANS comprises three Schools which are the School of Agriculture (SoA), the School of Biological Sciences (SoBs) and the School of Physical Sciences (SoPs). The College sees the need to forge ahead strategically to support its three Schools to achieve their objectives and to further help the University achieve its vision and mission.*





**Prof. Moses Jojo Eghan**  
Provost, CANS

*The College recognizes that many of today's research questions cut across traditional subject boundaries. Examples include energy, environment and biodiversity conservation. Thus, the College's all-embracing philosophy is that, strong core disciplines need to be combined with mechanisms to promote interdisciplinary research through thematic research clusters. The College therefore builds upon its current disciplinary strengths to encourage intellectual cross-fertilization that leads to interdisciplinary research. The highest priority proposed in the next five years is to sustain and enhance faculty excellence with special emphasis on promoting and recognizing excellence and leadership in research, scholarship and creativity. These would lead to the enrolment, education, internship and graduation of the most deserving, promising and diverse student body possible.*

### **Vision**

To be a college that is exquisitely adept in training, research and extension in Basic and Applied Sciences.

### **Mission**

The College of Agriculture and Natural Sciences has positioned itself to enable the Schools of Agriculture, Biological and Physical Sciences to:

- Prepare undergraduate and post-graduate students to be innovative scientists and educators.
- Collaborate and link up with other relevant stakeholders to achieve the stated vision of the College.
- Train and upgrade farmers and other stakeholders with research-based knowledge to increase their agricultural productivity.
- Attract, retain and develop outstanding diverse academic and support staff for achieving the College's vision.
- Harmonise physical, human and material resources to achieve the College's vision.

### **Our Characteristics**

We will be distinguished by our commitment to excellence, diversity, equal opportunity and professionalism.

### **Our Core Values**

1. *Collaboration among the three (3) Schools under the College*  
Efficient use of human capital, exchange and respect of ideas, structured use of facilities
2. *Academic Excellence and Professionalism*  
Achieved by innovation and excellence in education, research and extension.
  - Strong and vibrant Physical, Biological and Agriculture post-graduate education
  - Effective dissemination of research findings
  - Congenial teaching and learning environment
  - Opportunity for staff development
  - Reward system for innovation and excellence
  - Gender equality
3. *Effective Administrative Structure*  
The subsets of administration in the three (3) Schools of the College are well-coordinated by the Office of the Provost in a transparent manner.
4. *Linkages with communities, industries and international organisations and similar institutions.*

Grant Type	Title of Project	Principal Investigator(s) / Stakeholders	Department(s)	Source of Funding	Total Amount	Status of Project
<b>SCHOOL OF AGRICULTURE</b>						
Capacity building project	Enhancing vegetable productivity through effective transplanting and irrigation techniques	Dr. Francis Kumi, Ms. Fatimah Abubakari Von, Mr. Emmanuel W. Inkoom	Department of Agricultural Engineering, UCC, Ghana Department of Agricultural Economics and Extension, UCC, Ghana	Horticulture Innovation Laboratory- University of California-Davis, USA	US\$4,000	Completed
Individual Research Project	Design, construction and performance evaluation of chimney solar dryer for chilli	Dr. Francis Kumi	Department of Agricultural Engineering, UCC, Ghana	Directorate of Research, Innovation and Consultancy	GH¢7,000	On-going
Group-Led Research Grant	Beta-Carotene Fortified Gari: Processing Variables: Effect on Nutritional and Sensory Quality	Prof. Ernest E. Abano; Dr. Enoch T. Quayson; Dr. Martin Bosompem; Mrs. Margaret Quarm	Department of Agricultural Engineering; Department of Biochemistry, Department of Agricultural Economics and Extension, UCC, Ghana Department of Agriculture, KEEA	Directorate of Research, Innovation and Consultancy (DRIC)	GH¢9,000	Completed
Inter-Departmental Research Grant	Application of AflaSafe GH02 and combined biomass-solar dryer to control aflatoxin contamination in maize in Ghana	Prof Ernest E. Abano; Dr M. Osei-Adu; Dr. Enoch T. Quayson, Dr. Martin Bosompem, Ms. Josephine E. Fosuwaa	Department of Agricultural Engineering, UCC, Ghana; Department of Crop Science, UCC, Ghana; Department of Biochemistry, UCC, Ghana; Department of Agricultural Economics and Extension, UCC, Ghana; Department of Agriculture, Kwadaso Municipal Assembly	Directorate of Research, Innovation and Consultancy (DRIC)	GH¢30,000	On-going
Individual Research Project	Development and Examination of Sweet Potato Flour Fortified with Indigenous Underutilized Seasonal Vegetables	Dr. Ernest Teye	Department of Agricultural Engineering, UCC, Ghana	Directorate of Research, Innovation and Consultancy (DRIC)	GH¢7,000	On-going since 2017

Grant Type	Title of Project	Principal Investigator(s) / Stakeholders	Department(s)	Source of Funding	Total Amount	Status of Project
<b>SCHOOL OF AGRICULTURE</b>						
Research Project	Fingerprinting rice developing system to manage food fraud	Prof. Chris Elliott, Dr. Ernest Teye	Department of Agricultural Engineering	Agilent Foundation and MARS Technologies	US\$75,000	On-going
Research Project	Rapid multiplication of Smooth Cayenne Pineapple planting material and postharvest handling of seedlings	Dr. Ernest Teye; Prof. E. Asare-Bediako, Dr. Grace Vander Pujie, Dr. Kingsley Taah; Dr. Kwadwo K. Amoah; Mr. Mark Tutu Sarpong	Department of Agricultural Engineering, UCC, Ghana; Department of Crop Science, UCC, Ghana Mark-M company	SDF-Ghana	GH¢146,000	On-going
Individual Research Project	Developing rapid nondestructive detection technique for authentication of palm oil and identifying Sudan dye adulteration	Dr. Ernest Teye	Department of Agricultural Engineering, UCC, Ghana	Self-funding / Institute for Global Food Safety, UK	Donation of Micro-Spectrometer US\$5,000	On-going
Consultancy	Installation of Irrigation System on 17-acres Land at Teberebie for Vegetable Project	Dr. Robert S. Amoah Dr. Francis Kumi Dr. Ransford Opoku-Darko	Department of Agricultural Engineering, UCC, Ghana	AngloGold Iduapriem Ashanti, Ltd.	GH¢100,564	Completed
Research Project	Greenhouse Vegetable Production Project	Dr. Robert S. Amoah; Dr. Francis Kumi; Dr. R. Opoku-Darko Prof. L.K. Sam-Amoah; Prof. Ernest E. Abano; Dr. Ernest Teye	Department of Agricultural Engineering, UCC, Ghana	KESS NSONA Foundation, US	GH¢65,600	On-going
Inter-Departmental Research Grant	Utilization of water hyacinth (Eichhornia crassipes) plant as feed for rabbits and its effects on carcass and meat quality.	Dr. Moses Teye and Prof. Victor Y. A. Barku	Department of Animal Science and Department of Chemistry, UCC, Ghana	Directorate of Research, Innovation and Consultancy (DRIC)	GH¢8,995	On-going
Individual Research Grant	Carcass characteristics and Fatty acid Profile of Rabbits fed diets containing Palm kernel oil residue	Dr. Moses Teye and Dr. Julius Hagan	Department of Animal Science, UCC, Ghana	Directorate of Research, Innovation and Consultancy	GH¢6,809	On-going

Grant Type	Title of Project	Principal Investigator(s) / Stakeholders	Department(s)	Source of Funding	Total Amount	Status of Project
<b>SCHOOL OF AGRICULTURE</b>						
Capacity building Project	Training of Butchers and Livestock vendors in major slaughterhouses and abattoirs in Ghana, on humane livestock handling.	Dr. Moses Teye Prof. Frederick N. A. Odoi	Meat Processing Unit and Department of Animal Science, UCC, Ghana	Eyes on Animals (UK), West African Centre for the Protection of Animal Welfare (Ghana).	GH¢15,000	Completed
Inter-Departmental Research Project	Development of new rabbit lines for increased meat production in Ghana	Dr. Julius K. Hagan Dr. Moses Teye	Department of Animal Science, UCC, Ghana	Directorate of Research, Innovation and Consultancy (DRIC)	GH¢9,000	On-going
Capacity building project	Establishment of piggeries and building the capacity of pig farmers	Prof. A. Annan-Prah, Dr. Julius K. Hagan Mr. Ebenezer Gyamera	Department of Animal Science, UCC, Ghana	Anglogold Ashanti Induapriem Community Trust Fund	GH¢40,000	On-going
Consultancy	Curriculum review of certificate and diploma programmes of the Animal Health and Production College, Pong-Tamale	Prof. A. Annan-Prah, Dr. Julius K. Hagan, Prof. Elvis Asare-Bediako Mr. Lawrence Acheampong	Department of Animal Science, Department of Crop Science, Department of Agricultural Economics and Extension, UCC, Ghana	TEDMAG	US\$55,000	On-going
Consultancy	Consultancy on the certification of local hatcheries for the production of quality day-old chicks (DOCs)	Dr. Julius K. Hagan, Dr. Martin Bosompem, Prof. S.O. Apori, Prof. Festus Annor-Frempong Dr. William Ghartey	Department of Animal Science, Department of Agricultural Economics and Extension, UCC, Ghana	Ghana Poultry Project (GPP)	US\$42,000	Completed
Consultancy	Agricultural Sector Decentralization in Ghana	Prof. Henry De-Graft Acquah, Dr. Martin Bosompem, Dr. Samuel K. N. Dadzie Mr. Lawrence Acheampong	Department of Agricultural Economics and Extension, UCC, Ghana	GIZ	US\$45,000	Completed
Consultancy	Mid-Term Performance Evaluation of the AMPLIFIES Project METSS/ AMPLIFIES joint evaluation.	Dr. Albert O. Mensah, Mr. Emmanuel O. Baah Dr. Adeline Ofori Baah	Department of Agricultural Economics and Extension, UCC, Ghana	USDA/METSS/ AMPLIFIES Project	US\$20,000	Completed

Grant Type	Title of Project	Principal Investigator(s) / Stakeholders	Department(s)	Source of Funding	Total Amount	Status of Project
<b>SCHOOL OF AGRICULTURE</b>						
Consultancy	Development of a new business oriented curriculum for the Agricultural Colleges	Prof. A. Annan-Prah, Prof. E. Asare Bediako, Dr. Kingsley Taah, Dr. Julius K. Hagan, Dr. Martin Bosompem, Dr. Albert O. Mensah, Dr. Kofi Attiah, Dr. R.S Amoah, Dr. Francis Kumi, Dr. K. Acker	Department of Agricultural Economics and Extension, Department of Animal Science, Department of Crop Science, Department of Soil Science, UCC, Ghana	LMS- NUFFIC	US\$20,000	On-going since 2017
Consultancy	Development of new B.Ed Curriculum for Colleges of Education	Dr. Albert Obeng Mensah; Prof. Elvis Asare-Bediako,	School of Agriculture UCC, Ghana	TEE-TEL, Ministry of Education, Ghana.	US\$20,000	Completed
Consultancy	Development of new curriculum for basic schools in Ghana.	Dr. Albert O. Mensah	Department of Agricultural Economics and Extension, UCC, Ghana	National Council for Curriculum and Assessment (NACCA)	US\$20,000	Completed
Consultancy	Training of Civil Society Organisations and private sector actors on social accountability tools	Dr. Albert O. Mensah, BENDA Services Group	Department of Agricultural Economics and Extension, UCC, Ghana	SEND GHANA	US\$20,000	Completed
Consultancy	Assessment of the quality and relevance of the current competencies of graduates of the Agricultural Colleges with regard to the current skills requirements of the graduates of and the skills gaps in the agricultural sector	Dr. Albert O. Mensah	Department of Agricultural Economics and Extension, UCC, Ghana	EP-NUFFIC	US\$20,000	Completed
Capacity building project	Introduction of drip irrigation technology and seedling transplanting skills for tomato farmers in the Gomoa West district of the Central Region	Dr. Francis Kumi, Ms. Fatimah A. Von, Mr. Emmanuel W. Inkoom	Department of Agricultural Engineering, Department of Agricultural Economics and Extension, UCC, Ghana	Trellis-USAID	US\$10,000	Completed (2018)

Grant Type	Title of Project	Principal Investigator(s) / Stakeholders	Department(s)	Source of Funding	Total Amount	Status of Project
<b>SCHOOL OF AGRICULTURE</b>						
Inter-Departmental Research Project	Exploiting the Interactive effect of biochar and compost as a climate smart option for improved soil quality and cabbage yield	Dr. Kwame A. Frimpong; Dr. Martin Bosompem; Prof. Justice K. Sarfo; Dr. Mrs. Grace van der Puije; Dr. Edward A. Ampofo	Department of Animal Science; Department of Biochemistry, Department of Crop Science, Department of Soil Science,	LMS- NUFFIC Directorate of Research, Innovation and Consultancy (DRIC)	US\$20,000 GH¢30,000	Completed
Capacity building project	Establishment of piggeries and building the capacity of pig farmers	Prof. A. Annan-Prah, Dr. Julius K. Hagan, Dr. Moses Teye, Mr. Ebenezer Gyamera Dr. Martin Bosompem	Department of Animal Science; Department of Agricultural Economics and Extension, University of Cape Coast, Ghana	Anglogold Ashanti Induapriem Community Trust Fund	GH¢20,000	On-going
Inter-Departmental Research Project	Nutritional Impact of Food Crops Diversification in Climate Smart Agriculture: Empirical Study of Farm Households In Central Region	Dr. Isaac Dasmani, Dr. Samuel K. N. Dadzie Dr. Enoch T. Quayson	Department of Economics Studies, Department of Agricultural Economics and Extension Department of Biochemistry, UCC, Ghana	Directorate of Research, Innovation and Consultancy (DRIC)	GH¢15,000	On-going
Inter-Departmental Research Project	Spatial Assessment of Sustainable Feedstock Supply to the Komenda Sugar Factory in the Central Region of Ghana	Dr. David O. Yawson; Dr. Michael O. Adu; Dr. Samuel K. N. Dadzie; Mr. Kingsley N. Osei	Department of Environmental Science, Department of Crop Science, Department of Agricultural Economics and Extension, Department of Geography and Regional Planning, UCC, Ghana	Directorate of Research, Innovation and Consultancy (DRIC)	GH¢30,000	Completed
Capacity Building/ Research	STARTUP-DAEE Agribusiness Incubation Hub	Dr. William Ghartey, Dr. Alexander T. K. Nuer, Mr. Lawrence Acheampong	Department of Agricultural Economics and Extension	RUFORUM/ MASTERCARD Foundation	US\$50,000	Completed

Grant Type	Title of Project	Principal Investigator(s) / Stakeholders	Department(s)	Source of Funding	Total Amount	Status of Project
<b>SCHOOL OF AGRICULTURE</b>						
Capacity Building	UAS Acquisition (Drone) for the use of research and business development/ Consultancy Services	Prof. Festus Annor-Frempong, Dr. Alexander T.K. Nuer, Dr. Martin Bosompem; Dr. Selorm Akaba, Mr. Lawrence Acheampong, Mr. Zikiru Shaibu	Department of Agricultural Economics and Extension, UCC, Ghana	CTA Netherlands	EUR5,974	Completed
Capacity Building	Hosting of training of UAS Capacity Building Enterprise Management and Pilots Trainings	Prof. Festus Annor-Frempong, Dr. Alexander T.K. Nuer, Dr. Martin Bosompem; Dr. Selorm Akaba, Mr. Zikiru Shaibu	Department of Agricultural Economics and Extension, UCC, Ghana	CTA Netherlands/ PARROT France	US\$5,000	Completed
Research Project	Project Africa	Dr. F.M. Tetteh; Dr. Kofi Atiah; Prof. E. Asare-Bediako; Dr. Christian A. Phares	Soil Research Institute- CSIR, Kwadaso, Kumasi; Department of Soil Science; Department of Crop Science, University of Cape Coast	The European Union, CSIR, NARO-Uganda and NRF, South Africa	€149,900	On-going
Research Project	Effect of nitrogen forms and rates on yield, performance and diseases of young and mature cocoa trees in western and central regions	Dr. Kofi Atiah; Dr. Christian A. Phares; Dr. Michael Osei Adu; Dr. Paul Agu Asare; Dr. Frank K. Ackah; Dr. Ernest Teye; Prof. E. Asare-Bediako	Department of Soil Science, Department of Crop Science, Department of Agricultural Engineering, University of Cape Coast	YARA Ghana Ltd.	US\$16,000	On-going
Consultancy	Technical report on reconnaissance soil survey of the proposed oil palm site of SOCFINAF plantations ltd, Ghana	Prof. B.A. Osei Prof. Agyei-Frimpong Prof. E. Akwasi Ampofo Prof. Daniel T. Okae-Anti Dr. Kofi Atiah Dr. Christian Adler Phares	Department of Soil Science, University of Cape Coast	SOCFINAF Plantations Ltd., Daboase Central region	GH¢15,000	Completed
Research Project	Green economy, inclusive growth and employment (WEBSOC),	Prof. Kwame Agyei Frimpong; Prof. Daniel. T. A. Okae-Anti; Dr. Kingsley Taah	Department of Soil Science, Department of Crop Science, University of Cape Coast	DANIDA	576,370 DKK	Completed



Grant Type	Title of Project	Principal Investigator(s) / Stakeholders	Department(s)	Source of Funding	Total Amount	Status of Project
<b>SCHOOL OF AGRICULTURE</b>						
Collaborative Research	Carbon and nutrient dynamics in biochar co-composts and their effects on C balances, soil properties and crop yields in Ghana	Prof. Kwame Agyei Frimpong; Prof. Dr. Bernd Marschner	Department of Soil Science, University of Cape Coast Ruhr-Universität Bochum, Bochum, Germany	German Research Council (Deutsche Forschungsgemeinschaft)	€100,000	On-going
Collaborative Research	Development of sustainable commercial pineapple value chain system for increased yield and income, and improved livelihood of smallholder farmers in Central Region of Ghana	Prof. Festus Annor-Frempong ; Prof. Kwame Agyei Frimpong; Dr. Kofi Atiah	Department of Agricultural Economics and Extension; Department of Soil Science, University of Cape Coast	RUFORUM CARP+	US\$350,000	On-going
Collaborative Research	Opportunities for improved pasture and controlled grazing systems to address nomadic pastoralist and arable farmer conflicts in West Africa	Prof. Kwame Agyei Frimpong; Prof. S. O. Apori Dr. Martin Blackwell	Department of Soil Science; Department of Animal Science, University of Cape Coast; Rothamsted Research, United Kingdom	GCRF Networking Funds	GB£24,900	On-going
Research Project	Piloting edible urban landscapes	Dr. David O. Yawson Dr. Michael O. Adu Prof. Frederick A. Armah Dr. Paul A. Asare	Department of Environmental Science Department of Crop Science	Swedish International Development Cooperation Agency – SIDA	US\$40,000	Completed

Grant Type	Title of Project	Principal Investigator(s) / Stakeholders	Department(s)	Source of Funding	Total Amount	Status of Project
<b>SCHOOL OF AGRICULTURE</b>						
Research Project	The search for yield predictors for mature field-grown plants from juvenile pot-grown cassava ( <i>Manihot esculenta</i> Crantz)	Dr. Michael O. Adu, Dr. Paul A. Asare, David Dr. O. Yawson, Dr. Mishael N. Amoah, Dr. Ahmed A. Razak, Dr. Amoah K. Kusi, Dr. J. W. Tachie-Menson, Dr. Emmanuel Afutu, Dr. Dick A. Andoh, Dr. Frank. K. Ackah, Dr. Grace C. Vanderpuije, Dr. Kingsley J. Taah, Prof. Elvis. Asare-Bediako, Dr. Godwin Amenorpe	Crop Science Environmental Science Nuclear Agricultural Research, Biotechnology and Nuclear Agriculture Research Institute, Ghana Atomic Energy Commission, Legon, Accra	Self-funded	GH¢30,000	Completed
Research Project	Cassava improvement project	Dr. Godwin Amenorpe; Dr. Paul A. Asare; Dr. Grace van der Puije; Dr. Kingsley J. Taah; Prof. Elvis Asare-Bediako; Dr. J. P. Tetteh; Dr. Michael O. Adu; Dr. Emmanuel Afutu; Dr. J. Tachie-Menson; Dr. Frank K. Ackah; Dr. Kwadwo K. Amoah; Dr. Kenneth Danso; Dr. L. M. Aboagye; Dr. Elisabeth Parkes; Dr. Bright. B. Peprah; Dr. Samuel Amiteye; Dr. Erasmus Tetteh; Dr. Diana Akumanue; Dr. Hayford Klarke; Dr. Emmanuel Quarthey; Dr. Joseph Nunoo; Dr. Matilda Owusu Ansah; Dr. Wonder Nunekpeku	Crop Science, UCC Nuclear Agricultural Research, Biotechnology and Nuclear Agriculture Research Institute, Ghana Atomic Energy Commission, Legon, Accra; CSIR-Crops Research Institute, Fumesua Station	Department of Crop Science, University of Cape Coast; Directorate of Research Innovation and Consultancy (DRIC-UCC), Nuclear Agricultural Research, Biotechnology and Nuclear Agriculture Research Institute, Ghana Atomic Energy Commission,	GH¢250,000	Completed
Research Project	Screening for the root system and rhizosheath traits of cowpea to boost protein production within phosphorus-limited subsistence farming systems	Dr. Michael O. Adu Dr. Paul A. Asare Dr. Emmanuel Afutu	Crop Science	UCC Directorate of Research, Innovation and Consultancy (DRIC) and Ghana National Petroleum Corporation -GNPC Scholarship	GH¢34,000	On-going
Research Project	Plasticity in root system architecture and root growth through hardpan bulk densities during soil moisture stress in sorghum ( <i>Sorghum bicolor</i> )	Dr. Michael O. Adu Dr. Paul A. Asare Dr. Kofi Atiah Dr. Emmanuel Afutu Dr. Kwadwo K. Amoah	Crop Science Soil Science	Self-funded	GH¢12,000	On-going

Grant Type	Title of Project	Principal Investigator(s) / Stakeholders	Department(s)	Source of Funding	Total Amount	Status of Project
<b>SCHOOL OF AGRICULTURE</b>						
Research Project	Response of root architecture, root hair development and rhizosheath formation to low external phosphorus availability in sorghum ( <i>Sorghum bicolor</i> )	Dr. Michael O. Adu Dr. Paul A. Asare Dr. Kofi Atiah Dr. Emmanuel Afutu Dr. Kwadwo K. Amoah	Crop Science Soil Science	Self-funded	GH¢25,000	On-going
Research Project	Influence of maize ( <i>Zea mays</i> L) - cowpea ( <i>Vigna unguiculata</i> L) intercropping system on growth, yield and root system architecture	Dr. Michael O. Adu Dr. Paul A. Asare Dr. Emmanuel Afutu Dr. Kwadwo K. Amoah	Crop Science Soil Science	Self-funded	GH¢10,000	On-going
Post- Doctoral Fellowship	Cowpea Breeding and Seed Systems in Ghana (CB2SG)	Dr. Emmanuel Afutu Dr. Michael O. Adu Dr. Paul A. Asare Dr. Godwin Amenorpe Dr. Martin Bosompim Dr. Samuel K. Ndzabah Dadzie	Crop Science, Agric. Economics, and Extension and Ghana Atomic Energy	Carnegie Corporation of New York through the Regional Universities Forum for Capacity Building in Agriculture (RUFORUM)	US\$60,000	On-going
Capacity building project	Capacity building of farmers of Lubok Farms in best agronomic practices in vegetable production under field and protected environmental conditions	Dr. K.J. Taah Dr. Grace van der Puije Dr. Kofi Atiah	Departments of Crop Science and Soil Science	Skills Development Fund (SDF)	GH¢35,500	On-going

Grant Type	Title of Project	Principal Investigator(s) / Stakeholders	Department(s)	Source of Funding	Total Amount	Status of Project
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**SCHOOL OF AGRICULTURE**

Capacity building project	Capacity building of Agona Young Farmers' League Cooperative Society in best agronomic practices in vegetable production under field and protected environmental conditions	Dr. K.J. Taah Dr. Grace van der Puije Dr. Kofi Atiah	Departments of Crop Science and Soil Science	Skills Development Fund (SDF)	GH¢41,530	On-going
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**SCHOOL OF BIOLOGICAL SCIENCES**

Capacity building project	Africa Centre of Excellence in Coastal Resilience (ACECoR)	Prof. Denis W. Aheto Dr. Precious Mattah Dr. Noble Asare Sika Abrokwah Joshua Adotey Ivy Gyimah	Centre for Coastal Management, University of Cape Coast	World Bank	US\$ 6.4 million	On-going
Research Grant	Research-based management of Gulf of Guinea	Prof. Torkel G. Nielsen  Prof. Denis W. Aheto Dr. George Darpaah Dr. E. Acheampong Dr. Noble Asare Sika Abrokwah	Technical University of Denmark  Centre for Coastal Management, University of Cape Coast	DANIDA	5 million DKK	On-going
Research Grant	Beach dynamics through video monitoring to improve coastal management strategies in West Africa	Dr. Donatus B. Angnuureng	Centre for Coastal Management, University of Cape Coast	National Geographic Society (NGS)	US\$ 50,000	On-going
Research Grant	Morphodynamic assessment of embayed and open beaches for coastal management using video system	Dr. Donatus B. Angnuureng	Centre for Coastal Management, University of Cape Coast	The World Academy of Science (TWAS)	US\$ 8,900	On-going
Research Grant	Beach resilience and development along the Ghanaian coast through remote sensing	Dr. Donatus B. Angnuureng	Centre for Coastal Management, University of Cape Coast	French Embassy-Ghana	US\$ 4000	Completed

Grant Type	Title of Project	Principal Investigator(s) / Stakeholders	Department(s)	Source of Funding	Total Amount	Status of Project
<b>SCHOOL OF BIOLOGICAL SCIENCES</b>						
Research and Capacity building project	USAID/UCC Fisheries and Coastal Management Capacity Building Support	Prof. Denis W. Aheto Dr. Noble K. Asare	Department of Fisheries and Aquatic Sciences	United States Agency for International Development (USAID)	US\$ 5.5 million	On-going
Research Project	Development of Bacteriophage cocktails as disease biocontrol agents for improved aquaculture productivity, food and nutrition safety in Ghana and Uganda (SafeFish Project)	Dr. Jesca Nakavuma (Makerere University), Evans Agbemaflle (CSIR-Ghana), Dr. Isaac Okyere (DFAS UCC)	Department of Fisheries and Aquatic Sciences, University of Cape Coast	European Commission through African Union	US\$ 988,709	On-going
Research Grant	Reproduction potential of the lampeye killifish <i>A. spilanchen</i> in captivity and its implications for mosquito biocontrol	Dr. Isaac Okyere	Department of Fisheries and Aquatic Sciences, University of Cape Coast	DRIC UCC	GH¢ 7,910	On-going
Individual Research Project	Effects of storage conditions on physicochemical and enzymatic properties of tiger nuts and on their fermented yoghurt-like systems	Dr. Ing Nazir Kizzie-Hayford	Department of Biochemistry, SBS, UCC, Ghana	DRIC, UCC	GH¢8,000	On-going
Individual Research Project	Influence of thermal processing on the nutrient content and shelf-life of soursop juice	Dr. Jerry Ampofo-Asiama	Department of Biochemistry, SBS, UCC, Ghana	International foundation for science	US\$11,500	Completed (2017)
Individual Research Project	Functional analyses of liver conditional R-spondin 3 (Rspo3) knockout in mouse	Dr. Samuel Abassah-Oppong	Department of Biochemistry, SBS, UCC, Ghana	DRIC, UCC, and TWAS	GH¢8,000 US\$12,500	On-going

Grant Type	Title of Project	Principal Investigator(s) / Stakeholders	Department(s)	Source of Funding	Total Amount	Status of Project
<b>SCHOOL OF BIOLOGICAL SCIENCES</b>						
Individual Research Project	Biogenic amines in some fermented Ghanaian foods	Dr. Alexander Weremfo	Department of Biochemistry	Self-funding	GH¢7,000	On-going
Collaborative Research Project	Control of Bedbugs in The University of Cape Coast Halls of Residence	Dr. Rofela Combey (UCC, Ghana) Dr. Andreas A Kudom (UCC, Ghana) Dr. Benjamin Anderson (UCC, Ghana)	Department of Conservation Biology & Entomology  Laser and Fibre Optics Centre (LAFOC), Department of Physics,	UCC, Ghana	US\$12,356	On-going
Collaborative Research Project	Physico-chemical properties and screening for <i>Clostridium botulinum</i> in honey produced in Ghana	Dr. Rofela Combey (UCC, Ghana) Dr. Levi Yafetto	Department of Conservation Biology & Entomology  Department of Molecular Biology and Biotechnology	DRIC, UCC, Ghana	GH¢9,000	On-going
Individual Research	Effect of commercially formulated glyphosate on beneficial insects	Dr. John Abraham UCC, Ghana	Department of Conservation Biology and Entomology	Self-funding	GH¢5,000	On-going

Grant Type	Title of Project	Principal Investigator(s) / Stakeholders	Department(s)	Source of Funding	Total Amount	Status of Project
<b>SCHOOL OF BIOLOGICAL SCIENCES</b>						
Individual Research Grant	Towards biological control of fall armyworm: An investigation of the constitutive and Spodoptera frugiperda-induced volatiles of maize varieties in Ghana	Dr. John Abraham UCC, Ghana Prof. Dr. Sergio Angeli Free University of Bozen-Bolzano (Unibz), Italy	Department of Conservation Biology and Entomology, SBS, UCC, Ghana Faculty of Science and Technology, Unibz, Italy	DRIC, UCC Cost of GC run (-GHC 13,000) covered by Free University of Bozen-Bolzano, Italy	GH¢20,000	On-going
Policy and practice Research Grant	Domestic herbicides (pesticide) use: implications for Health, Environment and Biodiversity	Dr. Andreas A. Kudom Prof. Benjamin A Mensah, Dr. Michael Adu, Dr. Paul A. Asare, Dr. Martin Bosompem,	Department of Conservation Biology and Entomology, SBS, UCC, Ghana Department of Crop Science, SA, UCC, Ghana Department of Crop Science, SA, UCC, Ghana Department of Agricultural Economics and Extension, SA, UCC, Ghana	DRIC, UCC	GH¢50,000	On-going
Collaborative Research Project	Assessment of water quality in mosquito breeding habitats in Central Region, Ghana	Prof B. A. Mensah, Dr. Andreas A. Kudom	Department of Conservation Biology and Entomology, SBS, UCC	Self-funding	GH¢40,000	On-going
Individual Research support grant	Entomological assessment of Zika vector and its potential outbreak in Cape Coast	Dr. Andreas A. Kudom	Department of Conservation Biology and Entomology, SBS, UCC, Ghana	DRIC, UCC	GH¢7,000	Completed
Group-led Research support grant	Investigating larval prey selectivity of the lampeye killifish as a step in assessing its potential for malaria biocontrol in Ghana	Dr. Isaac Okyere Dr. Andreas A. Kudom	Department of Fisheries and aquatic Science; SBS, UCC, Ghana Department of Conservation Biology and Entomology, SBS, UCC, Ghana	DRIC, UCC	GH¢8,000	Completed



Grant Type	Title of Project	Principal Investigator(s) / Stakeholders	Department(s)	Source of Funding	Total Amount	Status of Project
<b>SCHOOL OF BIOLOGICAL SCIENCES</b>						
Collaborative Research Project	Investigating into striga-resistant cowpea for farmers use	Prof. Aaron T. Asare Prof. E. Asare-Bediako Prof. Michael. P. Timko	Department of Molecular Biology and Biotechnology, SBS, UCC, Ghana  Department of Crop Science, SA, UCC, Ghana  University of Virginia, UVA of USA	International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA),  Food and Agriculture Organization (FAO)	US\$ 169,518  US\$29,274	On-going
Individual Research Project	Rapid clonal multiplication of planting material using micropropagation techniques	Prof. Aaron T. Asare	Department of Molecular Biology and Biotechnology, SBS, UCC, Ghana	Self-funding	Gh¢8,000	Completed
Individual Research Project	Production of biodiesel from castor oil using heterogeneous base catalyzed transesterification	Dr. Augustine M Takase	Department of Environmental Science	Self-funding	Gh¢ 22,000	2018 and ongoing
Research Grant	Independent Environmental Monitoring of Ghana Health Facilities Construction	Prof Frederick Ato Armah Dr. David Oscar Yawson Dr. Michael Osei Adu	Environmental Science Crop Science	USAID/CADMUS Group, USA	US\$58,000	Completed (2017)
Research Grant	Analysis of Forest-Farm Interface Policy and Institutional Contexts in Northern Ghana	Prof Frederick Ato Armah Dr. David O. Yawson Dr. Michael Osei Adu	Environmental Science Crop Science	Center for International Forestry Research (CIFOR), Bogor, Indonesia	Gh¢21,750	Completed (2018)
Consultancy	Mid-Term Performance Evaluation of the USAID/ West African Biodiversity and Climate Change (WA-BICC) Programme	Prof. Frederick Ato Armah Richard Volk, USA Abdoulaye Diame, Senegal	Department of Environmental Science	USAID/ West African Biodiversity and Climate Change (WA-BICC) Programme	US\$ 25,000	On-going

Grant Type	Title of Project	Principal Investigator(s) / Stakeholders	Department(s)	Source of Funding	Total Amount	Status of Project
<b>SCHOOL OF BIOLOGICAL SCIENCES</b>						
SSHRC Partnership Grant	Appraising Risk, Past and Present: Interrogating Historical Data to Enhance Understanding of Environmental Crises in the Indian Ocean World	Prof Frederick Ato Armah, UCC, Ghana Prof Isaac Luginah, UWO, Canada Prof. Gwyn Campbell, McGill University, Canada Prof. Angela Schottenhammer, University of Salzburg, Austria Prof. James Francis Warren, Murdoch University, Australia Prof. Jon Unruh, McGill University, Canada Prof. Julia Verne, Universität Bonn, Germany Prof. Margaret Kalacska, McGill University, Canada Prof. Vinita Damodaran, University of Sussex, UK	Environmental Science	Social Science and Humanities Research Council (SSHRC), Canada	CAD 2.5 million	On-going
<b>SCHOOL OF PHYSICAL SCIENCES</b>						
Group Led Research Grant	Formulation and Efficacy Assessment of a Polyherbal Wound Healing Formula From <i>Heliotropium indicum</i> and <i>Adiatum capillus veneris</i> .	Prof. Victor Y.A. Barku, Dr. Alex Boye, Dr. Omane Acheampong	Department of Chemistry, UCC, Ghana Department of Medical Laboratory Department of Biomedical Science	Directorate of Research, Innovation and Consultancy (DRIC), UCC	GH¢9,000	September 2019-August 2020
Individual Research	Computational and structural database studies using the Cambridge structural database (CSD)	Dr. Samuel Tetteh	Department of Chemistry, UCC	Cambridge Crystallographic Data Centre (CCDC)	Access to the CSD	On-going
Research Grant	The Chemical Potential of Oyster Shells	Dr. Samuel Tetteh	Department of Chemistry, UCC	Partly funded by DRIC-UCC	GH¢5,000	On-going

Grant Type	Title of Project	Principal Investigator(s) / Stakeholders	Department(s)	Source of Funding	Total Amount	Status of Project
<b>SCHOOL OF PHYSICAL SCIENCES</b>						
Departmental Research Project	Clay materials for environmental remediation	Dr. Samuel Tetteh	Department of Chemistry, UCC	Self-funded	GH¢5,000	On-going
Research Grant	Development of Gas Chromatography-Mass Spectrometry (GC-MS) method for detection of Pyrrolizidine Alkaloids (PAs) in Herbal Medicines on the Ghanaian market	Dr Isaac Asiamah Dr Jerry-Asiedu-Larbi Prof Ruphino Zugle (UCC) Mr Francis Enoch Mensah (Trainee)	Department of Chemistry, School of Physical Sciences, CANS, UCC Department of Pharmacology and Toxicology, Centre for Plant Medicine Research, Mampong	DRIC, UCC	GH¢7,000	On-going
Research Grant	Synthesis of N-alkyl aziridines as probes for PET imaging Glucocerebrosidase	Dr Christopher Phenix Prof David Palmer Dr Isaac Asiamah Ms Akay Akohwarien	Department of Chemistry, College of Arts and Sciences, Univ of Saskatchewan, Canada Department of Chemistry, School of Physical Sciences, CANS, UCC	Glyconet, Canada	CAD 250,000	On-going
Research Grant	Chemical and Enzymatic Synthesis of Novel Medical Imaging Probes	Prof David Palmer Prof Edward S. Krol Dr Christopher Phenix Dr Isaac Asiamah	Department of Chemistry, College of Arts and Sciences, Univ of Saskatchewan, Canada College of pharmacy and Nutrition, Univ of Saskatchewan, Canada Department of Chemistry, School of Physical Sciences, CANS, UCC	Sylvia Fedoruk Canadian Centre for Nuclear Innovation	CAD 200,000	On-going
Research Grant	AMMA-2050 under Future Climate for Africa (FCFA) Project funded by DfID: "Characteristics and Changes in Rainfall Regime over Southern West Africa"	Mr. David C. Adukpo Mr. Francis Nkrumah (UCC, Ghana) Dr. Nana A. Brown Klutse (UG, Ghana)	Department of Physics, UCC, Cape Coast  and Department of Physics, UG, Legon	NERC DfID Grants 2015 – 2019 [Project Number NEC05274 Sub-Contract Ref: 4639]	GB£43,850	Completed (2019)
Research Grant	Dynamics of Within-Host Virus Infection Models.	Ekeoma R. Ijioma (MIMS, Meiji University, Tokyo, Japan) Stephen E. Moore (University of Cape Coast, Ghana)	Meiji Institute for Advanced Study of Mathematical Sciences  Department of Mathematics	Self-funded	GB£12,000	On-going

Grant Type	Title of Project	Principal Investigator(s) / Stakeholders	Department(s)	Source of Funding	Total Amount	Status of Project
<b>SCHOOL OF PHYSICAL SCIENCES</b>						
Research Grant	Travelling Waves and Combustion Methods.	Ekeoma R. Ijioma (MIMS, Meiji University, Tokyo, Japan) Stephen E. Moore (University of Cape Coast, Ghana)	Meiji Institute for Advanced Study of Mathematical Sciences Department of Mathematics	Self-funded	GB£ 14,000	On-going
Research Grant	Design and Implement Solar Based Microcontroller Drip Irrigation	Dr Benjamin Anderson Dr Kwadwo Dompoh	Department of Physics	DRIC	GH¢9,000	Completed (2018)
Research Grant	Authenticating Honey from the Central Region of Ghana Using Optical Spectroscopy Techniques	Dr Benjamin Anderson Dr Samuel S. Sackey Mr Andrew Huzortey Prof Peter Kwabong	Department of Physics Department of Conservation Biology and Entomology	DRIC	GH¢30,000	On-going
Collaborative Research	Comparative Evaluation of Asymmetric Price Transmission Linear Models Using rMDL, eMDL, nMDL, gMDL, AIC and BIC Across Varying Sample Sizes	Mrs. I. K. Vorsah Amponsah Prof H. D. Acquah Dr. N. Howard	Department of Statistics Department of Agricultural Economics and Extension	Self-funded	US\$300	Completed (2019)
Collaborative Research	Effect of practical work and motivation on students' desire to study STEM subjects	Mrs. I.K.Vorsah Amponsah, Mrs. D. Addo-Mensah Dr. M. Anokye	Department of Statistics Department of Nursing Department of Mathematics	Self-funded	US\$2,200	Completed (2019)
Individual Research Project	Women Educators Empowering Change at Home for a Peaceful Society	Mrs. I. K. Vorsah Amponsah	Department of Statistics	Self-funded	US\$1,500	Completed (2019)

Collaborative Research	Achieving Peace through Democratic Citizenship Education	Mrs. J. E. Attah-Quartey, Mrs. I. K. Vorsah Amponsah	School of Law, UCC Department of Statistics	Self-funded	US\$12,000	Completed (2019)
Collaborative Research	The Differential and Delay Differential Approach in the Analysis of Stable State Equilibrium Prices using Characteristic Equation Techniques	Dr. M. Anokye Dr. H. Amankwah Prof. E. K. Essel Mrs. I. K. Vorsah Amponsah	Dept. of Mathematics Department of Statistics	Self-funded	US\$800	Completed (2018)
Research Grant	A Monte Carlo Comparison of Minimum Description Length Model Selection Criteria for Asymmetric Price Transmission Model	Mrs. Irene K. Vorsah Amponsah	Department of Statistics	Training & Development, UCC	US\$20,000	Completed (2018)

## Description of Funded Research and Projects

### *Enhancing vegetable productivity through effective transplanting and irrigation techniques*

The project sought to train at least 60 farmers at Gomoa Dawurampong on effective ways of nursing seedling using substrates and plastic trays, transplanting and setting up drip irrigation system on the farm. Prior to the project there had been no farmer groups in the community. However, the project team was able to mobilise tomato farmers to form a group where they were taken through group dynamics and how to maintain it. At the end of the project, our survey showed that farmers are nursing seedlings using plastic cell trays and cocopeat and are doing so according to the steps and requirements specified in the training manual. They also expressed interest in raising funds to buy drip irrigation kits for their farms.



*Demonstration field at Gomoa Dawurampong  
(Credit: Dr. F. Kumi)*

### *Design, construction and performance evaluation of chimney solar dryer for chilli*

Dr. Francis Kumi will design and construct an effective and affordable solar dryer that could be adopted by farmers in the country. The performance evaluation of the chimney dryer would be done under local conditions in Cape Coast.

### *Beta-Carotene Fortified Gari: Processing Variables: Effect on Nutritional and Sensory Quality*

Different proportions of orange fleshed sweet potatoes (OFSP) was used to substitute cassava mash and fermented spontaneously to produce composite gari - a gritty-crispy ready-to-eat food product. Both the amount of OFSP and the fermentation duration caused significant increases in the  $\beta$ -carotene content of the composite gari. OFSP addition reduced the luminance while roasting made the composite gari yellower when compared with the cake used. Addition of OFSP negatively affected the swelling capacity of the gari although not significant. The taste, texture, flavour and the overall preferences for the composite gari decreased due to the addition of the OFSP but fermentation duration (FD) improved them. The sample with 10% OFSP and FD of 1.81 days was found to produce the optimal gari. One-portion of the optimal gari would contribute to 34.75, 23.2, 23.2, 27, 17 and 16% of vitamin A requirements amongst children, adolescent, adult males, adult females, pregnant women and lactating mothers respectively. The study demonstrated that partial substitution of cassava with OFSP for gari production would have the potential to fight the high prevalence rate of vitamin A deficiency amongst less developed regions of Africa.

### *Application of AflaSafe GH02 and combined biomass-solar dryer to control aflatoxin contamination in maize in Ghana*

The main objective of the study is to reduce aflatoxin contamination in seed and food maize through the application of aflasafe GH02 and combined biomass-solar dryer. The project will adopt an action research involving crop scientists, agricultural engineers, smallholder farmers and maize processors (including SEEDPAG) to produce an aflatoxin safe seed and food/feed maize.

Aflatoxin contamination in maize and their intermediate products has been of great concern in Ghana and Africa in general due to their food security, health, and trade linkage concerns associated with it. In the diet of Ghanaians and animal feed maize forms the commonest

cereal grain staple and as a result aflatoxin exposure through maize in Ghana has a devastating and rippling health consequences for both humankind and animals. Studies have shown that Aflatoxin contamination is a one-way street in that once aflatoxins move in; they cannot be removed completely from the crop or its intermediate products. A study by the International Food Policy Research Institute (IFPRI) reported that soils in Ghana are prone to the *Aspergillus* species, which remain the primary source of the aflatoxin inoculum. Hence, aflatoxin has been very difficult to prevent in most of the crops grown in Ghana since it is airborne (Florkowski & Kolavalli, 2013). Good agronomic practices, rapid and proper drying, sorting, and grain processing technologies limit aflatoxin contamination to some extent.

But most of these technologies are not always sufficient to ensure that foods are aflatoxin-safe. Due to that, the International Institute of Tropical Agriculture (IITA) in collaboration with the United State Department of Agriculture–Agricultural Research Service (USDA-ARS) and Kwame Nkrumah University of Science and technology (KNUST) have developed an AflaSafe GH02 to be applied on soils during crop production to deal with aflatoxin contamination in commodities. The aflasafe GH02 was launched on the 29th of June 2018 and is expected to be used by farmers in Ghana to deal with aflatoxin contamination. With the right application, developers envisaged that it can prevent crop infection and contamination, and reduce aflatoxins by between 80 and 100% in maize, groundnuts, and sorghum.

### *Development and Examination of Sweet Potato Flour Fortified with Indigenous Underutilized Seasonal Vegetables*

This research, seeks to formulate and fortify Sweet potato powder with Avocado pear and Turkey berry into nutrient dense vegetable flour. This will be a novel low-cost nutrient rich food. It will further solve the problem of food security challenges that affect children and rural poor folks in Africa. It will also address under-nutrition and under-utilization of Sweet potato, Avocado, and Turkey berry. Furthermore, increased utilization, in turn, will lead to increased production and value addition of these vegetables.

### *Fingerprinting rice: developing a system to manage food fraud*

The research seeks to develop a very reliable, nondestructive prediction model using a hand-held NIR spectrometer coupled with chemometrics for rapid evaluation of rice quality and authenticity. Also, the final objective is to import the model into smart phones for on-site applications.



### *Rapid multiplication of Smooth Cayenne Pineapple planting material and postharvest handling of seedlings*

Commercial Pineapple production is gaining momentum in Ghana as demand for this wonderful fruit for processing in the local and international industries is also increasing steadily. That notwithstanding, there is a major problem concerning the production of pineapple in Ghana—the difficulty of obtaining healthy planting materials in large quantities. Pineapple is a prolific crop that produces different kinds of planting materials, for example, crown, slips, suckers, ratoons. However, these types of planting materials do not meet the high demand of quality planting materials needed in large scale production of pineapple. To sustain the industry the main aim of this work was to use the split crown technique to produce and supply quality planting materials for large scale commercial farmers. The split crown technique is advantageous, in that, it is a sure way of achieving the rapid multiplication of healthy plantlets at a relatively affordable rate and would be easy to replicate by farmers.



### **Developing rapid nondestructive detection technique for authentication of palm oil and identifying Sudan dye adulteration**

Authentic palm oil is made from the mesocarp of the fruit of *Elaeis guinensis*. It is West Africa's most important oil producing crop and since 2003 it has been bedevilled with problems of Sudan dye adulteration and it is difficult to monitor and detect this kind of fraud in the sector. This research therefore looks at the feasibility of using portable novel technique as screening tool for detecting authenticity and adulteration of palm oil with the banned Sudan dyes (I, II, III, IV).

### **Installation of Irrigation System on 17-acres Land at Teberebie for Vegetable Project**

In 2018, the Department of Agricultural Engineering won a contract from AngloGold (Iduapriem) Ashanti Ltd. to install an irrigation system on a 17-acre land for vegetable production at Teberebie in the Western Region of Ghana. The project formed part of Anglogold's alternative livelihood intervention programmes for communities within its enclave. The irrigation project valued at approximately GHS100,567 involved the construction of a 591.5m<sup>3</sup> (13m x13m x 3.5m) water storage pond, a diversion canal from a nearby stream and the installation of a 17 HP water pump water supply mains and spray tube laterals for water distribution to the field.

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**Irrigation pond and pump station**

The consulting team carried out field surveys, system design, procurement of equipment and construction of the diversion canal, pond and a spillway. The team supervised the installation of spray tube lines carried out by the equipment supplier, Famous Irrigation Enterprise Ltd. The team also trained the user farmer group on the management of the irrigation scheme.



**Vegetable farmers busily working on the field**





### Greenhouse Vegetable Production Project

In January 2018, the Department of Agricultural Engineering received a donation of USD15,000 from KESS NSONA FOUNDATION for constructing a greenhouse facility for irrigated vegetable production at AG Carson Technology Village. KESS NSONA FOUNDATION is a US-based multinational charitable organisation founded by Prof. Delores Aldridge Essuon (a Professor Emerita at Emory University, Atlanta, Georgia, USA) and her late husband, Ing. Kwame Essuon. The project is in honour of Ing. Kwame Essuon who was a Ghanaian and an outstanding engineer in the United States. The objective of the greenhouse project is to promote climate-smart research in irrigated horticulture. It comprises a 13.5 m<sup>3</sup> greenhouse, two solar-powered fans and a drip irrigation system. The first experiment involving cultivation of sweet pepper has been successfully carried out. Alongside, an experiment on Sub-surface micro-irrigation using clay tube lines (SMITL) is being carried out in collaboration with Wismar University, Germany. To generate income to sustain the greenhouse facility, part of the funds has also been used to cultivate chilli pepper, sweet potato and other vegetables around the greenhouse.



*Installed greenhouse at AG Carson Technology Village, UCC*



*Sweet pepper production experiment*



*Sweet potato project around the greenhouse*

### Development of new rabbit lines for increase meat production in Ghana

The Department of Animal Science, University of Cape Coast (UCC) started a rabbitry with a foundation stock of 10 rabbits, with the ultimate aim of developing a standard rabbit breed for increased meat production. This initiative received some support from the University through funding from the Directorate of Research, Innovation and Consultancy (DRIC) to the tune of Nine Thousand Ghana cedis (GH¢ 9,000).

To reduce age at market weight of Ghanaian rabbits (1.5-2.0kg) from 16 weeks to 12 weeks, increase the market weight to 2.0-2.5kg and increase litter size at birth from 5 to 7 over a five-year period and improve on the quality of the meat. The project was expected to be carried out in three phases: germplasm collection, performance study and selective breeding for improved reproductive, growth and carcass yield performances.

With the germplasm collection, as many rabbit lines in the country as possible have been collected. The collected lines comprise: Chinchilla, California white, New Zealand white and Blue Vienna. The study on the growth, reproductive and carcass yield performances of the various collected germplasms in Ghana is on-going. Having identified the suitable lines in terms of 4-month body weight, litter size at birth and weaning and dressed weight; the next stage is to improve on these traits through selection and crossing.



Department of Animal Science, UCC (2017)

### **Carcass characteristics and fatty acid profile of Ghanaian rabbits fed diets containing Palm Kernel Oil Residue (PKOR)**

The Department of Animal Science, University of Cape Coast (UCC) developed affordable feed for rabbits to improve growth and productivity, especially during the dry season. This feed included palm kernel oil residue (PKOR); a waste product which has potential of causing environmental hazards, but has also been proven to have adequate nutrient levels for livestock production. The Department competed for and won research grant of about Seven Thousand Ghana Cedis (GH¢ 7,000) from the Directorate of Research, Innovation and Consultancy of the University of Cape Coast to evaluate the effects of the feed on carcass characteristics and fatty acid profile of the meat of rabbits fed the new feed, before it is adopted for use by the Department, or is recommended to farmers or otherwise, for commercial purposes.

The study specifically sought to:

- i. Determine the effect of the experimental diets on growth rate and live weight of the rabbits at 4 months old.
- ii. Assess the carcass weights, organ characteristics, dressing percentage and weights of primal cuts of the animals at four months old.
- iii. Determine the proximate composition, sensory characteristics and water holding capacities of the meat of animals fed the newly-developed feed.
- iv. To assess the fatty acid profiles of the carcasses

From the findings, Rabbits fed with PKOR-based diets (the new feed) had higher live weights at slaughter and higher dressing percentages than those fed with conventional diets. Moreover, the use of PKOR in the feed of rabbits resulted in significantly higher polyunsaturated fatty acids (PUFA), but lower  $n - 6/n - 3$  fatty acid ratios, degree of saturation (S/P) and Atherogenic Index (AI) as compared with those fed with conventional diets. Sensory panelists

rated meat of the PKOR-fed animals as more tender, juicier and with higher overall liking.



Bled-out rabbits



Singed and eviscerated carcasses



Grilled meat for sensory evaluation



Meat evaluation by UCC students



### *Training of butchers and livestock vendors in Ghana, on humane livestock handling*

Livestock and meat handling standards in Ghana, have over the years been below recommended standards. Consequently, meat from Ghana is banned in some Western countries. The Department of Animal Science invited the Eyes on Animals (EoA) from the Netherlands, personnel from a Dutch slaughterhouse, and officials from the West African Centre for the Protection of Animal Welfare, to help train butchers and livestock vendors in Ghana, on improved livestock handling and slaughter methods to improve meat quality and acceptability.

The training was conducted at the University of Cape Coast Slaughterhouse, Cape Coast regional slaughterhouse, Kumasi Abattoir and the Tamale slaughterhouse. In addition to the training, the Eyes on Animals (EoA) donated humane slaughter equipment worth GH¢ 20,000.00 to the management of the slaughterhouses.



*Resource persons*



*Group photograph after a training session*

### *Utilization of water hyacinth (Eichhornia crassipes) plant as feed for rabbits and its effects on carcass and meat quality*

The Departments of Animal Science and Chemistry designed a project to assess the potential of an invasive plant species (Water hyacinth) as feed for rabbits, in an attempt to minimize dry season livestock feeding problems, and also help control the harmful effects of the water hyacinth plants on livelihood of fisherfolks.

Water hyacinth has been reported to be rapidly invading water bodies such as lakes and lagoons to the extent of covering a significant portion of the Volta lake, in the Volta region of Ghana and Brimsu headworks in Cape Coast (TV3 NEWS, 2018). This has obstructed fishing activities, creating breeding grounds for mosquitoes, blocking water tunnels and competing with useful aquatic species for oxygen. The current control measure for this plant is the use of chemicals, which result in water pollution and destruction of some useful aquatic species as well.

Meanwhile, the water hyacinth is reported to have high levels of crude protein (18%) but low in dry matter and fiber, and has been observed to have good digestibility in some livestock species (El-Serafi et al., 1981; Jana et al., 2015). Water hyacinth meal has similar characteristics as wheat bran in terms of density and nutrient content, thus could be used to substitute for wheat bran in rabbit rations.

The study is currently at the initial stages, but if successful, it is anticipated that;

1. the use of water hyacinth as feed for rabbits would be a natural, non-destructive way of overcoming the destructive activities of the plant, thus serve as a control measure.
2. the use of water hyacinth meal as feed for animals might reduce fat build-up in the meat of such animals, mainly due to the low energy and fibre contents of the plants. This would be good news to health-conscious meat consumers, who are currently shunning patronage of fatty meat for improved health.
3. the use of water hyacinth meal in place of wheat bran would help reduce cost of feeding rabbits, and make their products affordable to consumers.
4. the Fisheries sector (which is losing fishing grounds) and the Ministry of Water Resources (which is currently struggling to keep our water bodies alive), would heave a sigh of relief, as natural non-destructive

control measure for water hyacinth could be unearthed; the removal of the plants to feed livestock will create some space for fishermen to successfully go about their activities.

5. the current competition between man and animals over feed resources in Ghana will be reduced; promoting high quality meat on what is currently a nuisance in the world.
6. Water hyacinth could provide an easily accessible feed resource for livestock production while at the same time its regular harvesting will contribute to reducing its harmful effects to the environment.
7. Continuous harvesting of this plant for use in rabbit rations will significantly lead to the destruction of breeding ground for mosquitoes with its consequent reduction in malaria cases.

### **Building the capacity of pig farmers**

The Department was also involved in the establishment of piggeries and building of capacity of beneficiary pig farmers from the Anglogold Ashanti Induapriem Community on best practices in pig farming and making pig farming as a business. The Department helped in the establishment of piggeries for about 20 beneficiary farmers. The training was aimed at building the capacity of the farmers in the areas of feeding, breeding, housing, health management, marketing, and meat processing and value addition. At the end of the training programme, the farmers' capacity has been enhanced and their livelihood improved.



**Pigs raised at the School farm**

### **Certification of hatcheries for the production of quality Day Old Chicks (DOCs)**

The Ghana Poultry Project (GPP) with support from the United States Department of Agriculture (USDA) and other stakeholders is addressing the challenges in the local hatchery businesses in Ghana. Hatchery operations in Ghana have been identified to form a very crucial component of the poultry industry. Local hatcheries however produce well below their installed capacities on account of low demand for locally produced DOCs. The advantages of the local hatcheries are that the farmers can easily access DOCs and in case of problems with DOCs, they can be immediately replaced. Their main weaknesses are the poor quality of DOCs produced which either have high mortalities from week 1-10 of age or poor performance of the birds at later stage in life.

The following were the major findings or observations from the study.

1. Results obtained showed a monthly demand of 3.8 million DOCs from about 400 poultry farmers from the Greater Accra, Ashanti and Brong-Ahafo regions of Ghana.
2. Out of this, 1.25 million were coming from 15 local hatcheries against the backdrop of 1.93 million DOCs coming from imports from 8 major importers.
3. Results showed that 21.3% of the poultry farmers obtained their DOCs from local hatcheries, with 36.8% obtaining their DOCs from foreign sources while 41.9% of the farmers purchased DOCs from either local or foreign sources.
4. The perceived quality of DOCs, vaccination history of DOCs and the availability of information on production performance of DOCs were the major factors that influenced poultry farmers' preference for imported DOCs.

### **Curriculum review of certificate and diploma programmes of the Animal Health and Production College, Pong-Tamale**

Regular review of curriculum in any academic institution is very essential for the growth and development of the institution. The National Accreditation Board, as part of its requirements for re-accreditation, expects every institution under its jurisdiction to review its curricula once every six years. It is against this background that the School of Agriculture of the University of Cape Coast was contracted by Technical Education Development for Modernised Agriculture in Ghana (TEDMAG) to

review the curriculum of the College of Animal Health and Production, Pong, Tamale. It was realized that the curriculum since it was introduced in 2008 has never been reviewed, hence its review this time round being timely and appropriate. The review did not only consider the courses in the curriculum but also the quality of tutors, the facilities and also the contents of the courses to be taught. The review identified certain weaknesses in the current curriculum and recommends the need to merge certain courses, introduce new courses, phase out certain old courses and also to rearrange some courses to meet current demand. The team also recommends the need to set up a supervisory unit at the College with experts from TEDMAG, the Ministry and the School of Agriculture to oversee the implementation of these recommendations. It is hoped that the recommendations, if followed, will help train students to be able to meet the current demands on the job market.

After having done a thorough review of the current curriculum, the following recommendations were made:

There is the need to;

- merge certain courses to reduce workload of students and also make room for other new and relevant courses
- phase out certain courses in the current curriculum
- modify or reshuffle certain courses to make room for new topics
- introduce new courses to meet the current challenges and job demands
- retrain the tutors of the College to prepare them for the revised curriculum
- recruit new tutors for the newly introduced courses
- improve logistics (laboratories and add new equipment) for efficient teaching and learning
- resuscitate facilities left unused over a period of time (e.g. hatchery)
- take advantage of institutions also located within the premises of the College (e.g. Central Veterinary Laboratory, Animal Breeding Farm of Ministry of Food and Agriculture)
- set up a supervisory desk made up of experts from the School of Agriculture, TEDMAG and the Ministry of Food and Agriculture to monitor, oversee and supervise the execution of the mandate of the College and also to ensure that recommendations made are adhered to or followed.



*Group photograph of tutors and the consultants*

### *Piloting edible urban landscapes*

Edible urban landscapes (managed landscapes that integrate food production and landscaping in harmonious co-existence with other urban structures) constitute a triple-win multi-functional land-use system that is beneficial to owners of idle lands owners, edible landscapists, and the general community. If planned well, edible urban landscapes can immensely support multiple goals, including food and human security, beautiful landscapes, jobs, environmental protection, climate adaptation, green spaces for active living and learning. In Ghana, unplanned physical development has combined with pressure on land for housing to produce several vacant, idle spaces that are often unmanaged, used for nefarious activities, and detracting from the beauty of the urban area. This project investigated the prospects and challenges of edible urban landscapes in Ghana.

The edible landscapes project sought to test an idea of greening, actively managing and using idle urban spaces to produce vegetables and green landscapes, using the greenhouse and open fields. The project sought to demonstrate to policy and decision-makers, as well as the general public, that idle spaces in the urban landscape could be put to productive uses, at least until landowners are ready to develop their lands. The project proposed to test an idea that mobilizes regulations, policies, and practices to enable productive use and active management of idle urban spaces to serve multifunctional purposes in the urban landscape.

Two sites which were idle, vacant, and bushy in the residential area were acquired for the project. Greenhouses were installed on each site equipped with irrigation facilities. Eight young people (four females) were



recruited to work in the two greenhouses on the two sites. The area around the greenhouses was landscaped with grasses and border plants and maintained by the greenhouse workers to beautify the area and protect the soil. Tomatoes were produced in the greenhouses. In addition, a female farmer was recruited to engage in an outdoor urban garden. The project demonstrated the potential usefulness of edible landscapes as land management instruments for creating productive urban green areas to support multiple ecosystem services or development goals. Realizing this potential requires multi-stakeholder mobilization of policies, laws, and institutional arrangements that (i) ease access to idle spaces in a manner that protects both landowners and edible landscapists (e.g. through local land administration, taxation, physical planning, and incentives), (ii) promote reliable market for produce to support payment of or generate income for the edible landscapists.



*Greenhouse installed on a landscaped site for tomato production*



*Greenhouse installed on a landscaped site for tomato production*

### *The search for yield predictors for mature field-grown plants from juvenile pot-grown cassava (*Manihot esculenta* Crantz)*

Cassava (*Manihot esculenta* Crantz) is a major staple crop providing calories for several millions of people daily in many parts of the world. Due to declining arable land size, soil fertility, and climate change, breeders have to select crop genotypes with roots system architecture (RSA) that has potential for improving soil resource acquisition and use efficiency but the RSA of cassava had seldom been quantified. The ability to select superior genotypes at juvenile stages will not only circumvent the constraints of phenotyping root systems of field-grown mature plants but will also reduce the cost and time for cassava breeding to bridge the large yield gap.

The aim of this study was to phenotype RSA traits of juvenile and mature cassava plants to identify genotypic differences and the relationships between juvenile traits and harvest index of mature plants and to assess whether important juvenile root traits could predict final yield of field-grown plants.



*Juvenile pot-grown cassava*

The study showed that simple, rapid, inexpensive root phenotyping approaches are able to identify genotypic variations in juvenile cassava using root system traits. There was seminal evidence for the existence of useful relationships between traits of juvenile and mature cassava plants that can be explored to predict yield and yield components. Phenotyping cassava RSA at the juvenile stage provides a time-saving and less laborious option for a multi-trait selection in cassava breeding.



*Juvenile pot-grown cassava ready for root system architecture analysis (top) and field establishment of cassava genotypes at the Teaching and Research Farm of the University of Cape Coast for root systems and yield components analysis (Bottom)*

### **Cassava improvement project**

Cassava (*Manihot esculenta Crantz*) is a starchy root crop and a primary staple for over 800 million people worldwide. It contributes 22% to Agricultural GDP in Ghana. There is currently a huge yield gap in the productivity of cassava in Ghana. The national average yield is 13.8 t ha<sup>-1</sup> as against a yield potential of 48.7 t ha<sup>-1</sup>. Cassava mosaic disease (CMD), caused by cassava mosaic begomoviruses, is the main biotic constraint in cassava production causing yield losses estimated at 15 to 24% equivalent to 12 to 23 million tonnes of total cassava production. CMD is, therefore, a potential threat to cassava productivity in Ghana. Meanwhile, malnutrition from vitamin A deficiency is a serious public health problem in Ghana and many parts of sub-Saharan Africa (SSA). Any staple rich in vitamin A will thus be very critical for the fight against hidden hunger in Ghana and SSA. However, the majority of the cassava varieties available to farmers in Ghana are not only susceptible to CMD but are also poor in vitamin A.

The yellow flesh colour found in some cassava genotypes is associated with micronutrients such as  $\alpha$ -carotene with about 80% of the carotenoid content in yellow flesh cassava root being beta-carotene. Beta-carotene is a precursor for vitamin A production (Pro-Vitamin A). The leaves of cassava serve as a cheap source of protein and yellow flesh varieties contain 100 times the level of pro-vitamin A in leaves as in roots. The consumption of carotene-rich foods is the most effective intervention for vitamin A deficiency. Since cassava is a major staple

food crop, the use of yellow-fleshed cassava varieties containing even moderate amounts of carotene can help in combating vitamin A deficiency.

Breeding for resistance has been considered a feasible strategy for the control of CMD. White and yellow flesh varieties resistant to the CMD, adapted to local conditions and producing a high yield of tuberous roots which are mealy, will help in curbing problems of low yield and micronutrient malnutrition. This would increase farmer income and provide good health to consumers. It is upon this basis that over the last ten years, mutation cassava breeders at GAEC collaborated with the Crop Science Department of the School of Agriculture, UCC to develop high total carotenoid (TC), CMD resistant and high yielding cassava varieties.

To breed and release highly yielding cassava varieties, resistant to Cassava mosaic disease and enhanced carotenoid content. The varieties have been inspected and five have been recommended for release by the National Variety Release Committee. Two of the recommended varieties have high starch contents, are resistant to CMD and high yielding. The remaining three are higher in carotenoids than released yellow flesh varieties. The yield of the recommended varieties ranges from 38 - 43 tons ha<sup>-1</sup>. The materials have medium to high in dry matter ranging from 21 - 26 %; total carotenoid of approximately 7 - 10  $\mu\text{g g}^{-1}$  and a CMD score of 1 indicating resistant.



*Established fields for the Cassava improvement program at the Teaching and Research Farm of the School of Agriculture, University Cape Coast*



### **Screening for the root system and rhizosheath traits of cowpea to boost protein production within phosphorus-limited subsistence farming systems**

Phosphorus (P) is a non-renewable resource, crucial to agricultural productivity. Declining rock P reserves and concerns for food security necessitate an improvement in agronomic P efficiencies, based on a sound knowledge of the range of plant adaptations to limited P conditions. Plants have evolved many mechanisms such as modifications to root growth and architecture to increase their P-fertilizer use efficiency. Understanding these traits could result in improved long-term sustainability of agriculture. This project focuses on changes to root system morphology that improve P acquisition, specifically through modifications to root system, root hairs, and in particular root hair length as it is through root hairs that the greatest proportion of P uptake occurs. Root hairs are also important for the formation of the rhizosheath (a sheath composed of agglutinated particles of sand on roots) and might confer the associated benefits of the rhizosheath, which include regulating P acquisition in poor soils. Selecting plants with increased rhizosheath and improved root hair growth is thus a key strategy for improving phosphorus-uptake efficiency in agriculture.

Cowpea, the second most important indigenous Ghanaian grain legume crop after groundnut, provides a livelihood to many smallholder farmers and serves as the protein source for the rural poor and vulnerable who cannot afford alternative protein sources. Its productivity is however hindered by many factors, of which soil infertility in terms of soil P limitation is paramount. While substantial genetic variation in rhizosheath development exists in cereals such as maize, whether this variation exists in grain legumes such as cowpea and improves plant P uptake and yield needs to be tested. Pronounced rhizosheath formation is hypothesized to enhance P acquisition and yield, therefore, this project proposes to provide a proof-of-concept for selected cowpea lines.

Our overarching objective is to investigate the importance of root system architecture and the presence of rhizosheath and length of root hairs for cowpea growth and yield under P-limited conditions through the lab- and field-based quantification of the differences in root system architecture and rhizosheath characteristics of a cowpea population.



*Screening of cowpea population for variation in the root system, root hair and rhizosheath traits. Top: Screening juvenile plants in a screen house; Bottom: screening of mature field-grown plants*

### **Plasticity in root system architecture and root growth through hardpan bulk densities during soil moisture stress in sorghum (*Sorghum bicolor*)**

Rain-fed lowland arable fields in many tropical and Mediterranean areas have hardpans and experience soil moisture stress. Root system development is plastic in response to environmental conditions such as soil bulk density (BD) or soil strength and soil moisture stress. There is evidence that high soil strength constraints plant growth, but because soil drying and high soil strength tend to occur together and are difficult to separate, it is not, as yet, certain how much yield is lost due to increased soil bulk density alone or in combination with water stress or soil drying. It is also not clear what extent of soil bulk density limits crop growth and yield and if there are genotypic variations in root growth among cultivars under combined stress of increased soil strength and drought. Sorghum is an important crop in many developing countries due to its drought and heat tolerance. It is, particularly, suited to the marginal rainfall areas of the semi-arid tropics, such as the savanna and Sahel zones of Africa, where drought is prone and there is the likelihood of the soil to develop hardpans. In this project, a screen house pot trial (Figure F) has been designed to investigate the effects of bulk density (and hence soil strength) and drought on root and



shoot growth of two sorghum cultivars.

The aim of this study is to test the hypothesis that for two different cultivars of sorghum, the yield is closely related to soil strength irrespective of difference in soil water status and there is genotypic variation in root and shoot growth among sorghum cultivars in response to different soil strengths and soil moisture levels.



*Sorghum plants growing in columns filled with soil at varying soil bulk densities and managed under varying soil moisture levels.*

### *The response of root architecture, root hair development, and rhizosheath formation to low external phosphorus availability in sorghum (Sorghum bicolor)*

Sorghum is crucial for food security and income for many households in Ghana but the productivity of sorghum is low, chiefly due to low phosphorus (P) availability in most heavily weathered tropical soils. Phosphorus fertilizers are not the option because P-fertilizers are expensive; its use is not sustainable and it has negative environmental impacts. There is the need to understand how sorghum adapts to P-deficient conditions and to identify efficient varieties that are able to grow well under P-deficient conditions. Root system architecture (RSA) traits and rhizosheath can provide insights into the ability of a crop to explore and acquire nutrients and water from the soil. Rhizosheaths are soil particles, tangled together on roots by the knitting growth of prolific epidermal hairs produced by the roots. Rhizosheaths have been shown to be related to many root traits including the lengths, density, and morphology of root hairs and microbial associations, which tend to increase exploration of the soil volume for soil-resource acquisition.

The overall objective of this study is to determine the effect of external phosphorus concentrations on rhizosheath and root system architecture of sorghum genotypes and to determine if the relationships between traits measured from immature plants grown in controlled environments could predict final yield and traits of field-grown mature plants



*Screening of sorghum cultivars for variation in the root system, root hair and rhizosheath traits in young and mature plants. A: pot-grown plants ready for root system analysis; B: polyethylene pot dismantled to reveal roots in the soil; C: root is taken out of soil to determine rhizosheaths; D: screening of mature field-grown plants.*

### *Influence of maize (Zea mays L) - cowpea (Vigna unguiculata L) intercropping system on growth, yield and root system architecture*

Intercropping involves the simultaneous cultivation of two or more crop species, or genotypes for a time on a given land. Intercropping is important in many subsistence or resource-limited agricultural systems because it leads to yield gains or greater yield stability with minimal inputs. There is evidence that facilitation, sharing of resource and niche complementarity enable intercropping farming systems to yield more than their corresponding monocultures. Intercropping is thus one of the routes to sustainable intensification of crop production. In drought conditions, intercropping has been shown to increase water availability or the efficient use of the available water, due primarily to the improved acquisition of water in the soil profile through complementary root distributions. Similarly, when nitrogen (N) is the limiting factor, legumes can increase agricultural productivity in intercropping systems. Also, roots of complementary plant species

can improve soil stability and soil structure and thereby improve resource acquisition. The intercropping of legumes with cereals, which is a common practice in Ghana, offers scope for developing energy-efficient and sustainable crop production. However, the productivity and efficiency per unit area of land of the typical cereal-legume intercropping systems in Ghana have not been fully evaluated. There is the need to evaluate the effect of intercropping on root systems and yield components of the main and minor component crops in cereal-legume intercropping systems in Ghana.

The objective of the study is to evaluate the crop responses, particularly, growth, root system architecture and yield responses, to intercropping maize and cowpea (Figure H) under different planting distances and hence different planting densities.



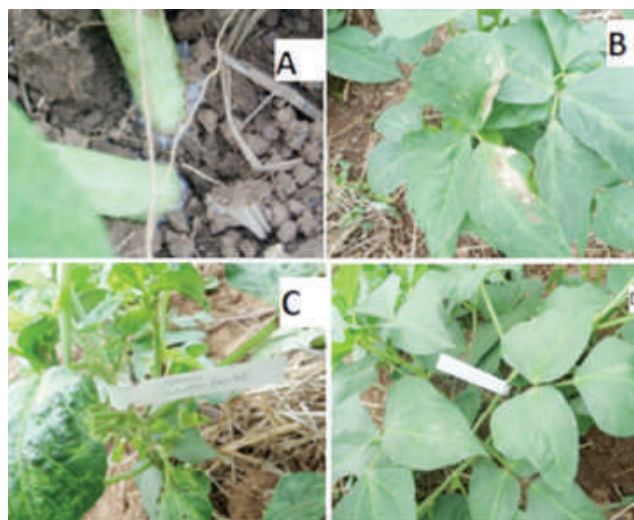
*Field establishment of the maize-cowpea intercropping system (showing sole crop treatment plots of the component crops) at the Teaching and Research Farm of the University of Cape Coast*

### **Cowpea Breeding and Seed Systems in Ghana (CB2SG)**

This Post-Doctoral Fellowship brings together knowledge and expertise from four different specializations in agriculture. These are plant breeding, seed science and technology, agricultural economics, and lastly, agricultural extension. These have been categorized as research thrusts or work packages (WPs). All these WPs build into each other in the sense that the tool adopted for this breeding programme (WP1), i.e. mutation breeding might have some effects on the quality of seeds, seedlings and crops to be generated from the radiated seeds as a result of any of the following three phenomena viz., insertion,

deletion or crossing over. This, therefore, leads to WP2 and the other work packages. In all, there are 2 PhD, 3 MPhil and 3 undergraduate students under the fellowship. Among others, the CB2SG is targeted at developing cowpea lines with resistance to the Fusarium rot and bacterial blight. The overall objective of the post-doc fellowship is to generate knowledge that would contribute to the development and release of highly preferred, high yielding and stress-resistant/tolerant cowpea varieties to achieve both nutritional and food security.

The breeding process is on-going and some promising lines for the various traits under consideration have been identified and tagged to enable seed harvesting from these selected plants to be advanced to the subsequent generations to achieve stability. The cowpea seed system in the region has been found to be that which combines all three types of seed systems, viz., formal, informal and quasi-formal.



*Some of the diseases being worked on. i.e. (a) Fusarium (stem) rot – white mycelia showing clearly at the base of the plant and (b) Bacterial blight; (c) some of the effects of mutation as observed in the field (Chlorosis) while (d) shows a plant with increased vigour identified and tagged.*

### **Africa Centre of Excellence in Coastal Resilience (ACECoR)**

The coastal zone of West Africa, just like any other coastal zone in the world is confronted with numerous problems. These problems have resulted from rapid population growth and urbanization, as well as the impact of climate change and poor land use practices in the coastal zone. Currently about 68% of sandy beaches of



West Africa are being eroded at an average rate of two (2) meters per annum with low lying areas perennially inundated. The University of Cape Coast's Centre for Coastal Management in Ghana was selected under the World Bank's Africa Centre of Excellence (ACE) IMPACT III Project to the status of Africa Centre of Excellence in Coastal Resilience (ACECoR) in 2018. A total of about US\$ 6.4 million was awarded to the University to support the implementation of the project.



The Africa Centre of Excellence in Coastal Resilience (ACECoR) seeks to promote coastal resilience within the West and Central African sub-regions. The objective of ACECoR is to support the development of technical and scientific capacity of young African professionals to develop integrated solutions to address coastal degradation in the countries of intervention through short - to long-term professional and academic training programmes. Focus will be on regional participation and the inclusion of female, albeit limited in previous interventions, all geared towards the advancement of sustainable use and management of marine and coastal assets in the partner countries to be involved, achieved through collaboration with academia, research institutions and industry, locally and will secure international partnerships. ACECoR aims to train 120 graduates at the postgraduate (PhD and Masters) levels in addition to 260 professionals (in short courses) across Africa in the areas of Disaster Risk Management and Migration, Fisheries Science, Integrated Coastal Zone Management, Physical Oceanography, Coastal and Marine Engineering, Forestry Engineering and Marine Meteorology. The Centre has already admitted its first batch of students.

### *Research-based management of the Gulf of Guinea (HOTSPOT) Project*

The University of Cape Coast (UCC) through the Centre for Coastal Management (CCM) is collaborating with the Technical University of Denmark (DTU) to embark on a joint project aimed at generating knowledge to support research-based management of marine and coastal resources; and the environment. The project dubbed "HOTSPOT" is aimed at strengthening research capacity in Ghana and Denmark through the integration of two research cultures that would provide ideal setting for scientific innovation using current scientific knowledge to address maritime sustainability challenges. Total funding received is Five (5) million Danish Krone (DKK)



*HOTSPOT project engages postgraduate students from UCC and DTU in both short term training and full time degree programmes*



*HOTSPOT project engages postgraduate students from UCC and DTU in both short term training and full time degree programmes*



**The HOTSPOT team go sampling water offshore the coast of Ghana for zooplankton**

The objective of the HOTSPOT Project is to contribute towards achieving the Sustainable Development Goal 14 with a focus on increasing scientific knowledge; identify the main sources of heavy metals, oil compounds and marine litter (including microplastics), to estimate the abundance of selected invasive species, and to evaluate the importance of maritime activities compared to land-based sources, as pollutant of the marine environment in the coast of Ghana; developing research capacity and transfer of knowledge about life below water. It is also a priority of the Danish and Ghana governments' development strategy in Developing and Transition countries. Through HOTSPOT, there would be opportunities for student exchanges, in the form of short courses, post-graduate training and research projects. It is a fact that the Gulf of Guinea is exposed to multiple stressors, such as discharges from ship traffic, chemicals and heavy metals from mining and oil exploration, and wastes from land. Previous research has shown how these factors individually influence the marine life.

However, not much is known about how marine organisms react when these factors act together as multiple stressors. HOTSPOT will investigate these problems by conducting small and large-scale laboratory experiments, combined with modelling. The first step is to determine the types, concentrations and sources of stressors and their main sources. Through HOTSPOT project, the partners and stakeholders are determined to help manage these stressors on marine and coastal resources and environment.

### **Beach dynamics through video monitoring to improve coastal management strategies in West Africa.**

The Centre for Coastal Management, University of Cape Coast (UCC) has started to investigate the evolution of the tropical "storm free" low lying coast between Benin and Ghana in West Africa using camera systems. These beaches include several types of rocky or sandy beaches and kinds of open or embayed beaches. The overall goal is to gather high frequency data and forecast the beach variability of open and embayed beach relations. This initiative received some support from National Geographic Society with funding in the tune of fifty thousand United State dollars (US\$50,000)

To provide and install a permanent video system on different beaches that will provide high frequency hydro-morphodynamic data, train students, quantify the shoreline evolution, erosion and beach width due to wave events, provide shoreline change forecast and determine coastal pollution and defecation sources along coastal community of Elmina.

The project is expected to be carried out in three years: first year, the installation of video camera systems at Elmina (KEEA) on the castle and Dzita (Keta), and start of unmanned aircraft system surveys. The morphological response of the Dzita micro-tidal beach, a coastal community in Ghana, to waves and erosion controls is studied using video systems and unmanned aerial photography. The preliminary results reveal significant sediment lost from the beach through cross-shore wave energy flux, predominant erosion occurs between August and September. This beach may continue to erode and maybe rapidly in the future because it has to be the source of sediment to nearby beaches and is also unprotected. Dzita beach is wider in December and narrow in September. This study has shown good accuracy (r=0.6) between the intertidal topographic data derived from a video camera system and unmanned aircraft systems. Beach slopes are found to vary between 0 and 0.5, with steep beaches in May to July and gentle beach in December. Other data shows the Dzita community water systems may have high concentration of salt

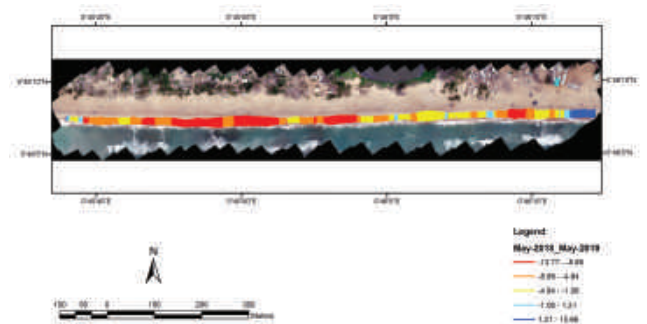


*Oblique-angle photogrammetry-derived point cloud Topographic measurements with dumpy level*

### *Morphodynamic assessment of embayed and open beaches for coastal management using video system*

The Centre for Coastal Management, University of Cape Coast (UCC) as part of its study on the evolution of the tropical “storm free” low lying coast between Benin and Ghana in West Africa using camera systems, also received funding support from The World Academy of Science (TWAS-UNESCO). The overall goal is to support the gathering high frequency data and forecasting of the beach variability in Ghana. This initiative received support to the tune of Eight thousand nine hundred United State dollars (US\$ 8,900) for the purchase of cameras, computers and other field equipment. The project duration is two years, which ends in December, 2019. In this context, the objective of this project is to understand the interactions between oceanic forcing and coastal dynamics of two contrasting beaches (Elmina and Dzita

beach) to improve our understanding of the current coastal variability and anticipate its future evolution. More specifically, the project seeks to: support the installation and development of permanent video techniques that will provide high frequency hydro-morphodynamic data covering each beach and the immediate ocean forcing (waves, tides, and so on); evaluate the evolution of two contrasting beaches over two time scales (short and seasonal) from timex video images and; evaluate the interaction between the nearshore bathymetry and beach evolution and outline the causes of beach erosion.



*Alongshore shoreline change rates derived from UAV data overlain on an orthophoto. Thick horizontal arrows indicate the drift direction from west to east along the beach.*

### *USAID/UCC Fisheries and Coastal Management Capacity Building Support Project*

The Fisheries and Coastal Management Capacity Building Support Project is a multi-year project (2014-2019) funded by the United States Agency for International Development (USAID), was developed in close consultation with academia at the University of Cape Coast and the Government of Ghana. Although the project is being implemented by the Department of Fisheries and Aquatic Sciences at UCC, the Centre for Coastal Management is a strategic implementing partner leading a number of activities on the Project.

The main aim of the USAID/UCC Fisheries and Coastal Management Capacity Building Support Project is to improve the sustainable management of Ghana's marine and coastal resources by strengthening the capacity a relevant workforce, academic and managerial. This programme includes training of post-graduates in programs in Fisheries Science, Oceanography and



Limnology, Aquaculture and Integrated Coastal Zone Management. Other priorities of the project are the establishment of a fisheries and coastal research laboratory within the university; establishing strong linkages with other local and foreign institutions including the University of Rhode Island to train students. In addition to these activities, CCM coordinates the Unmanned Aerial Vehicle (UAV) programme for mapping and assessment of coastal ecosystems, which forms a significant knowledge base for key recommendations on management options for coastal resources.



### Provision of supplementary livelihoods for coastal communities

This project also focuses on supplementary livelihood programmes funded by USAID/Sustainable Fisheries Management Project through the University of Cape Coast and the Department of Fisheries and Aquatic Sciences. This is aimed at promoting supplementary livelihood initiatives in selected fisher communities in the Western and Central regions of Ghana in order to diversify or strengthen income opportunities for fisher families without increasing pressure on natural resources. It involves training of fishers in apiculture (bee culture) and land snail rearing to reduce the pressure on marine and coastal fish stocks. The program is also developing marketing strategies for products and has increased individual and group knowledge about best practices in beekeeping, and land snail rearing. Through this project, fishers have been successfully trained to engage in the supplementary livelihoods.



*Aerial photo of Elmina Landing Site*

### Engaging policy makers to address fisheries and coastal issues

Environmental scientists and researchers have been increasingly encouraged to communicate their research findings to a variety of audiences, including policy-makers, civil society groups and the general public. It is important that researchers develop activities for public engagement, as well as influence policy and on a range of social and economic issues. To this end, the Centre focuses on engaging policy makers by sharing research results and improve dialogue on policy issues between government, donors, research community and civil society through biannual conferences. The Department in collaboration with the sustainable fisheries management program of USAID organised their last conference in August, 2019. The activity also comes with environmental communication and media focus. These conferences support the public to understand scientific findings to motivate new awareness and behaviour.



*Professional training session at the Centre for Coastal Management*

### *Engaging policy makers to address fisheries and coastal issues*

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*Stakeholders seated at the Conference on Fisheries and Coastal Environment organised by the Centre for Coastal Management in 2017*

### *Adjunctive immunotherapy for pulmonary tuberculosis: phase II clinical trials on modulation of directly observed treatment short course (DOTS) tuberculosis chemotherapy with COA-FS immune stimulant*

Tuberculosis (TB) remains a significant public health threat and a great burden on the health care systems of many developing countries especially in Africa. The present situation highlights, in part, the limitations of relying solely on antiTB antibiotics for disease treatment and presents a case for modification of existing treatment protocols. TB is caused by bacilli of the *Mycobacterium tuberculosis* complex but disease progression and associated immunopathologies are largely modulated by the host's immune system. Therefore, adjunctive immunotherapy or complementation of existing antiTB antibiotics with immunomodulators, is rapidly emerging as a more effective treatment strategy. It has been demonstrated that adjunctive immunotherapy can shorten the duration of antiTB chemotherapy from 6 months to 1 month with a drastic reduction in chances of disease reoccurrence. We present here a proposal to conduct Phase II interventional trial to evaluate the effect of a plant-based immune booster COA-FS, on existing anti TB chemotherapy in randomized double-blind, placebo-controlled clinical trial in pulmonary TB patients. Patient recruitment and clinical trial will be conducted according to Ghana Health Service protocols in conjunction with the National TB Control Program. The study is targeted at first diagnosed HIV-negative TB patients who are starting anti-TB chemotherapy. We hypothesize that adjunctive immunotherapy with COA-FS will reduce duration of treatment course and minimize chances of relapse. Clearance of bacilli will be monitored using sputum conversion and chest x-rays at 2 months intervals for 6 months. Flow cytometry will be used to analyse immune biomarkers that are used to monitor effectiveness of TB treatment. The findings of this study should contribute to the discussion on the need for modification of existing TB treatment protocols with immunomodulators. Funding is provided by Global Peace Mission, Cape Coast. The funders have no role in the design of experiment, data collection and analysis and preparation of final report.

### **Influence of Thermal Processing on the Nutrient Content and Shelf-Life of Soursop Juice**

Soursop is a nutritious fruit which is usually consumed fresh, with a limited shelf life and economic value. To enhance the usage of soursop fruit, techniques for preserving the edible portion of the fruit (the pulp) have to be developed. Extraction and processing of juice from the pulp through pasteurisation can be used to achieve this desired aim. Pasteurisation can, however, affect the quality of the extracted soursop juice. This study therefore aimed to extract soursop juice from the pulp and determine the effect of pasteurisation on the juice.

Soursop juice was, therefore, extracted from the pulp and the effect of pasteurisation on nutritional (by monitoring changes in ascorbic acid levels, total phenolic content and total antioxidant capacity) and physicochemical (by monitoring the changes in pH, total soluble solids, titratable acidity and colour) quality was assessed. The pH, total soluble solids and titratable acidity were not significantly affected; however, pasteurisation affected the total phenolic content and total antioxidant capacity while ascorbic acid levels decreased with increased duration and temperature of pasteurisation. A kinetic model was, also, developed to explain the changes in ascorbic levels duration pasteurisation.

When pasteurised the shelf life of soursop juice can be extended, however, changes in the quality of the juice can occur during storage. These changes are usually influenced by the temperature of storage. Therefore, the effect of storage temperature on the nutritional, physicochemical and microbiological (by enumerating the changes in aerobic mesophilic and psychrophilic bacteria, lactic acid bacteria, Enterobacteriaceae, and yeast and moulds) quality of soursop juice. Pasteurised (pasteurisation was carried out at 85 °C for 5 min) soursop juice was, therefore, kept under different storage temperatures (4, 10 and 25 °C) and the changes in the quality of the juice monitored. Storage was carried out for 12 weeks under both 4 and 10 °C, while at 25 °C the juice was stored for only 3.5 weeks (when spoilage was detected). Storing soursop juice under at 4 °C did not affect the quality of the juice. At 25 °C, however, decreases in pH, and total soluble solids with an increase in titratable acidity was observed. A faster rate of ascorbic acid degradation was observed at the higher storage temperatures. At the higher temperature of storage, the main group of microorganisms grew and were responsible for the spoilage of soursop juice were

lactic acid bacteria, and yeasts and moulds.

### **Physico-chemical properties and screening for *Clostridium botulinum* in honey produced in Ghana**

Food consumers all over the world desire good quality nutritious, healthy and safe foods. These foods range from cereals, meat products, confectionaries, fruits and vegetables, etc. It is therefore important that food producers and consumers ensure the safety of their foods from the farm to the fork. Honey, one of the most important food products with enormous nutritive benefits, in Ghana, has spiritual, medical, cultural, and socio-economic importance. Many households are moving from the consumption of traditionally refined sugars to honey. As such there has been a rapid increase, over the last decade, on the use of locally produced honey among the Ghanaian consumer. It is therefore important to assess the extent of microbiological contaminations of honey produced from different parts of the country and the physico-chemical parameters that promote the survival of microorganisms, especially *C. botulinum* in honey.

To this end, this study aims at answering the following research questions:

1. What are the basic physico-chemical parameters of honey in Ghana in hives and grocery shops according to The Codex Alimentarius Standard (CAC, 2001) and USDA colour standard designation?
2. Does honey with particular physico-chemical properties support microbial growth, especially *C. botulinum*?
3. What is the extent of microbial contaminations of honey on the Ghanaian market?
4. Does honey from Ghana contain *C. botulinum* spores?
5. What are the possible sources of *C. botulinum* contaminations of honey?
6. Is/are there regional trend(s) in the prevalence of *C. botulinum*?

Findings of the study will be used to enlighten both honey producers and consumers about the importance of handling honey under good hygienic conditions to prevent contaminations that could be detrimental. Bacterial and fungal contaminations of foods and the reported cases of global outbreaks of foodborne illnesses behooves us to create awareness of the possible food contaminations and their attendant dire consequences.

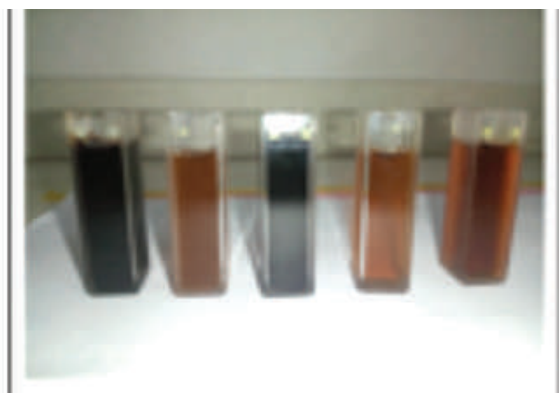


We are confident that this study will equip us with the relevant information from the data that will be generated to be able to adequately educate beekeepers, honey producers and consumers in order to meet international standards for Ghana's honey intended for the global market.

7. 3. Findings from the study will serve as a useful future reference on the state of honey in Ghana, and fill the knowledge gap with regards to the presence or absence of *C. botulinum*. This is relevant because the findings will provide baseline data for future authentication of honey from Ghana.

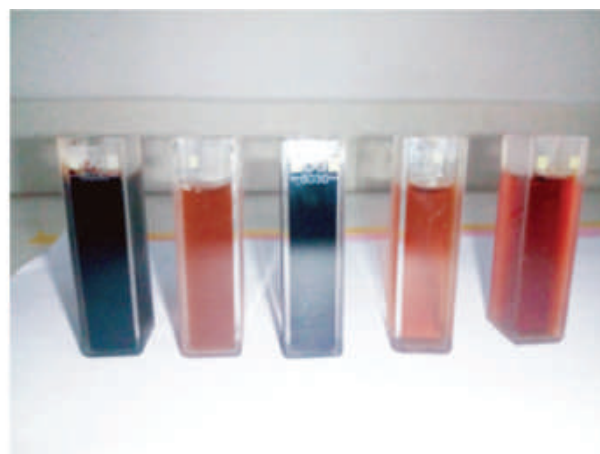


Testing samples in the Laboratory



### *Effect of commercially formulated glyphosate on beneficial insects*

Glyphosate-based herbicides are popular agrochemicals used with the intention of clearing weeds. Its use in Ghana has increased in recent times partly because of its cheap cost and ease to use relative to other means of clearing farmland of their weeds. The rate of use of glyphosate-based herbicides is frightening because of known detrimental effects on life, including causing deformities frogs and chicken, and birth defects in humans. In fact, it is even thought to be “probably carcinogenic to humans”. Therefore, this study investigated the effect of glyphosate-based herbicides on beneficial insects using *Apis mellifera* L. (Hymenoptera: Apidae, Apini) and *Hypotrigona ruspilii* (Magretti) (Hymenoptera: Apidae, Meliponini) as models. To do this, the recommended dose and 2x the recommended dose of Sunphosate 360 SL, a glyphosate-based herbicide was sprayed onto flower-bearing branches of *Senna siamea* (Lam.) Irwin et Barneby (Fabaceae) in a cage. Distilled was used as control. Adult worker bees of *A. mellifera* and *H. ruspilii* were released in the cages for 24 hours. This was repeated with herbicide-treated filter paper. More bees died after contact with plants freshly sprayed with the herbicide than on herbicide-treated filter paper. More bees also died after contact with 2x the concentration of the herbicide. This therefore suggests that, beneficial insects, e.g. *A. mellifera* and *H. ruspilii*, may be killed if they are sprayed upon or come into contact with plants that have been freshly sprayed with (more than) the recommended concentration of glyphosate-based herbicides.



### *Towards biological control of fall armyworm: An investigation of the constitutive and *Spodoptera frugiperda*-induced volatiles of maize varieties in Ghana.*

*Spodoptera frugiperda* (Smith) (Lepidoptera: Noctuidae), which is commonly called fall armyworm is a polyphagous insect which is a serious pest of many crops including maize. Its feeding on maize, a major staple crop in Africa, make it an even more serious pest in the African region. The damage it causes to maize could potentially lead to food insecurity. So far, control of this insect has relied on conventional insecticides which come with problems including insecticide residues on food crops and killing of beneficial insects. This on-going project seeks to investigate volatile compounds produced by different varieties of maize that are exploited by fall armyworms and/or beneficial insects for host orientation. Such volatile compounds could be useful in the control of this insect pest.





*Aspirating mosquitoes for insecticide susceptibility test*

### **COWPEA (*Vigna unguiculata* L. Walp) Project**

Cowpea [*Vigna unguiculata* (L.) Walp] is a potential food security crop that plays vital role in the food value chain as a cheap source of plant protein, vitamins and minerals for over 70 % of the population of Ghana. However, on-farm production and conservation of the crop is challenged by the infestation of the parasitic weed, *Striga gesnerioides* in the major production areas of the dry savannah regions of northern Ghana, resulting in 80 % -100 % yield losses. In addition, the effects of rust and viral diseases coupled with drought on yield losses of cowpea contributes to hunger and poverty among resource-poor families in rural and urban communities in Ghana. Despite consumer demand for cowpea, production is low and largely restricted to the three regions of Northern Ghana with average farm yield of about 0.4 t ha<sup>-1</sup>-0.6 t ha<sup>-1</sup> (SARI, 2014). The unreliability of cultural practices to control the parasitic weed, *S. gesnerioides*, rust and viruses as well as drought warranted the exploitation of resistant genes through breeding, which involved application of marker-assisted selection (MAS) protocols for genomic analysis coupled

with farmer participatory and consumer evaluation of inbred line of cowpea (Sources: IT97K-499-35 x SARC-LO2 and IT97K-499-35 x Apagbaala) to select improved candidate cowpea genotypes for cultivation to increase production of the crop. The selection was based on molecular, morphological, agronomic, physiological and nutritional as well as soil and sensory data. On the whole, eight (8) preferred cowpea genotypes: UCC-366, UCC-473, UCC-484, UCC-490, UCC-523, IT10K-819-4, ITO8K-193-14, UCC-Early and Apagbaala (check) were established on-field in the University of Cape Coast and a different set of 5 *Striga*-resistant cowpea genotypes: UCC-32, UCC-241, UCC-328, UCC-445, UCC-466 and UCC-Early (check) were established in Savannah Agriculture Research Institute, Bawku for inspection by the National Varietal Release and Registration Committee (NVRRC). In all, 7 of the proposed cowpea candidate varieties (UCC-32, UCC-241, UCC-328, UCC-366, UCC-473, UCC-Early and IT10K-819-4) with potential yield ranging from 2.0 t ha<sup>-1</sup> to 4.5 t ha<sup>-1</sup> have been recommended by the NVRRC in September, 2018 for approval and official release by the Minister of Food and Agriculture, Ghana, following completion of documentation process. Cultivation of the 7 improved cowpea varieties will significantly increase production of the crop with farmers profit on income ranged from 25% to 65%. This will create job for cowpea farmers, traders and processors in line with the President of Ghana, Nana Addo Dankwa Akufo-Addo's government "Planting for Foods and Jobs" initiative. Not only will resource-poor farmers, rural and urban poor communities have adequate cowpea foods to eat but also the sales of cowpea grains will generate income to reduce poverty. Besides, gene banks and breeders will have access to novel genetic resources to further improve the development of the crop.

Cowpea Genotype	Variety (Local name)	Meaning	Language
UCC-473	Yor-Kpitio	Yor-Kpitio	Dangbe
UCC-366	Aduapa	Aduapa	Twi
UCC-Early	UCC-Early	UCC-Early	English
IT10K-819-4	Aluba-Kpole	Aluba-Kpole	Nzema
UCC-32	Asare-Moya	Asare-Moya	Kusal
UCC-241	Saka-Buro	Saka-Buro	Sissala
UCC-328	Kum-Zoya	Kum-Zoya	Dagbani





*A view section of cowpea field in UCC*



*A view section of cowpea field in UCC*





*Cowpea field inspection at UCC by National Varietal Release and Registration Committee (NVRRC)*



*Cowpea field inspection at UCC by National Varietal Release and Registration Committee (NVRRC)*



*NVRRC, Research Team, MoFA, invited guests and farmers at cowpea field inspection in UCC*





*Unimproved cowpea on a field infested with *Striga gesnerioides* resulting in 100 % grain yield loss; evident at local farmer field in Bawku*



*Farmers' field day at Bawku, Upper East region of Ghana; selection of improved *Striga*-resistant cowpeas that completely control the parasitic weed*



*Inspection of *Striga*-resistant cowpea field by the National Varietal release and Registration Committee at Bawku*

Sponsored by:

International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA): USD 169,518.00

Food and Agriculture Organization (FAO): USD 29,274

Research Team

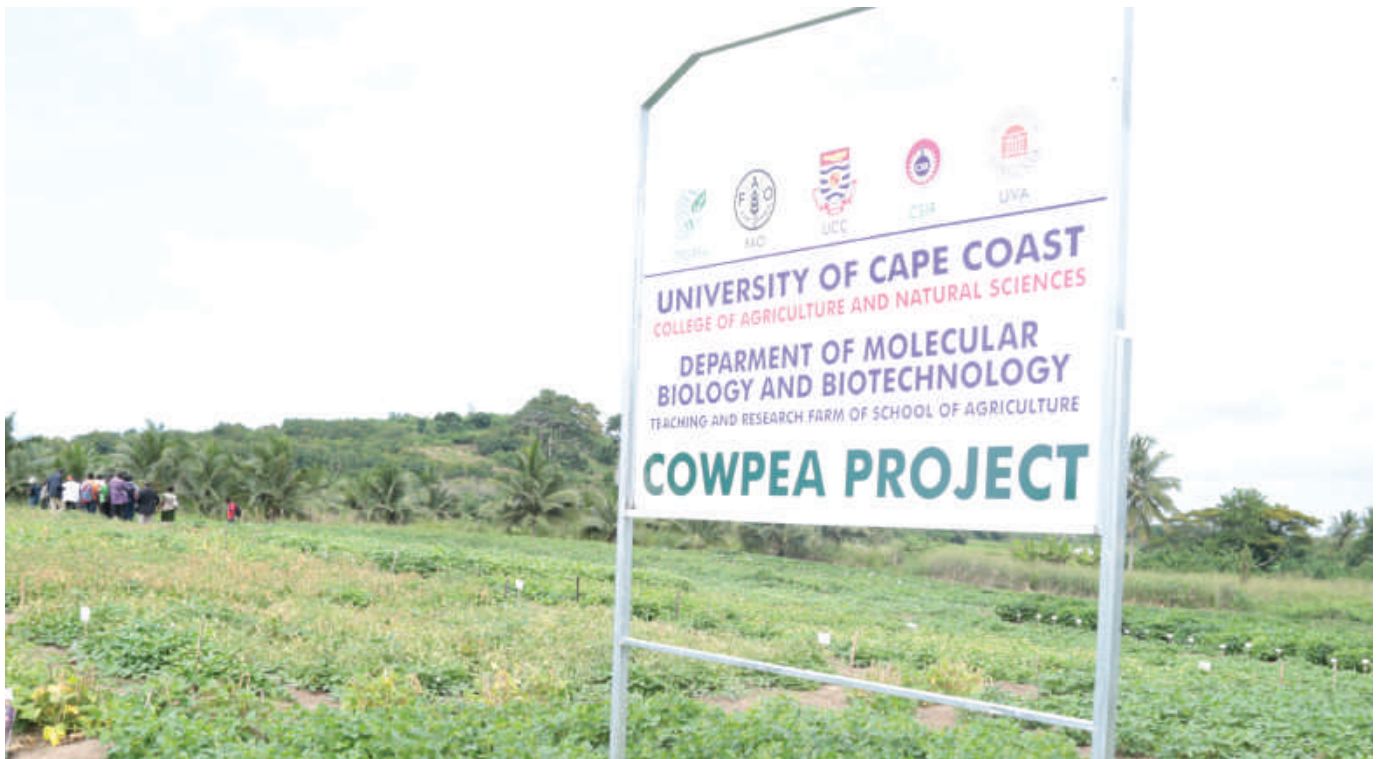
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- Mr. Mukthru Zakaria (SARI)
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- Mr. Abednago Opoku Mensah (PGRRI)
- Mr. Ogbamey Tetteh (MoFA)
- Madam Agnes Bonku (MoFA)
- Mr. Nelson Attah Ofori (MoFA)
- Administrative Staff
- Prof. Aaron T. Asare (Principal Investigator/Project Manager).
- Prof. Elvis Asare-Bediako (Field Officer 1- Southern Sector of Ghana).
- Dr. Francis Kusi (Field Officer 2- Northern Sector of Ghana).
- Dr. Daniel K.A. Asante (Monitoring and Evaluation Officer).
- Mr. Joshua Yeboah Asiamah (Administrator).
- Mrs Angela A. Frimpong (Logistics Officer).

**MPhil. Students' training and research contribution**

1. Mrs Rosemond E. Puobi: Screening for drought tolerance in recombinant inbred lines of cowpea [*Vigna unguiculata (L) walp.*].
2. Mr. Peter Haruna: Assessment of *Striga gesnerioides* (Willd) resistance and genetic diversity among forty-six cowpea (*Vigna unguiculata L. Walp*) genotypes.
3. Mr. Frank Essem: Genetic markers associated with *Striga gesnerioides* resistance and seed size in Cowpea (*Vigna unguiculata L. Walp*) inbred lines.
4. Miss Vera Anyanwaa Essandoh: Evaluation of genotypes of cowpea for enhanced agronomic and viral resistance traits in three agro-ecological zones of Ghana.
5. Mr. Carlos K. Tettey: Characterization and determination of virus resistance among cowpea genotypes grown in the coastal savannah agro-ecological zone of the Central Region of Ghana.
6. Mr. Theophilus Abonyi Mensah: Reaction of some cowpea (*Vigna unguiculata (L.) Walp*) genotypes to the cowpea rust pathogen, *Uromyces phaseoli* var. *vignae*.
7. Mr. James Kwesi Ampah: Assessment of Nutritional level, anti-nutritional properties and mineral density of cowpea inbred lines.
8. Mr. Martin Kwesi Beyamfui: Analysis of cowpea inbred lines for insecticide residues.

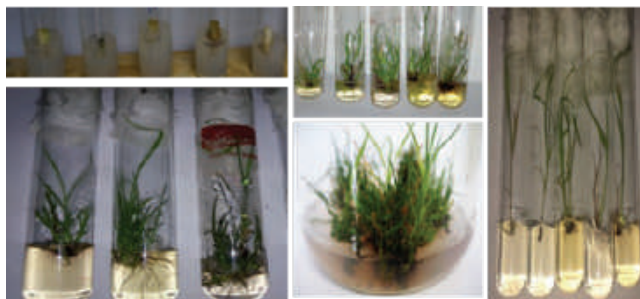




### **Production of planting material using tissue culture- micropropagation techniques for rapid clonal multiplication**

Currently, the multi-million Komenda sugar factory is faced with lack of sugar cane plant material to process sugar. Our Department has proposed that, the most reliable and sustainable approach towards commercial production of sugar cane for industrial processing of sugar is by exploring tissue culture techniques of Biotechnology as a rapid multiplication approach to generate adequate planting materials for farmers to cultivate. Hence, more sugarcane plantations can be established for industrial purposes. Micropropagation is currently the only realistic means of achieving rapid, large-scale production of disease-free and quality planting material for farmers to cultivate.

The Department of Molecular biology and Biotechnology, University of Cape Coast has a stock of five sugar cane cultivars (B4122, B3464, POG, Alata and Ketura), which have been tested to have the requisite sucrose, brix and polarity (14%-18%) necessary for industrial sugar production. Growth regulators and conditions can be optimized for rapid multiplication of the promising cultivars of sugar cane to generate planting materials for farmers to grow. Given the necessary financial and logistics support, UCC has the capability and protocol for sustainable rapid multiplication of sugarcane planting materials in the laboratory, acclimatization of plantlets and primary field nursery for farmers to access planting materials and establish medium to very large scale plantations. The availability of planting materials will ensure continuous expansion of sugarcane farms to meet the daily requirement of 1,250 t of sugarcane for processing by the Komenda sugar factory.



Stages of Micropropagation of sugarcane in UCC



Nursery fields: Botanical gardens, UCC



#### **Information Dissemination**

<https://crop-sci.ucc.edu.gh/news/ucc-develops-right-variety-sugarcane-production-sugar-0>

### **Independent Environmental Monitoring of Ghana Health Facilities Construction (Occupational Health and Safety)**

This project was a field-based environmental assessment of the Community-based Health Planning and Services (CHPS) facilities to be constructed in the Northern and Volta regions of Ghana. Occupational health and safety measures were assessed as part of the project. The project also assessed mitigation measures for the potential adverse effects that may occur and management plans for the implementation of sound environmental management practices. The objective was to ensure that adequate measures had been put in place by the project implementers to manage all potential social and environmental impacts likely to occur in the site and the community during the various stages of construction.

### *Analysis of Forest-Farm Interface Policy and Institutional Contexts*

As part of the West Africa Forest Farm Interface (WAFFI) Project, this policy analysis evaluated existing policies and institutions from the national level to district levels to understand how they shape local natural resource management, production and markets. These policies influence behaviour by establishing definitions, dictating practices, imposing restrictions or introducing incentives. This research reviewed how the suite of policies produce constraints and opportunities for smallholder livelihoods within parklands and other forest-farm landscapes and affect key adaptive features of these systems. Key tasks of this assignment were to review and analyze policies relevant to rural landscapes occupied by smallholders in Northern Ghana. Emphasis was placed on policies that define how land tenure systems function; policies that define how farmers can access and use forests and trees; policies that influence agricultural production (i.e. subsidize, development incentives, market support); policies that define water allocation and use; policies that address livestock and pastoralism issues; and policies that define natural resource management (including forest reserves, protected areas and wildlife conservation). The project also focused on assessing how those policies influence the land use and resource management decisions of smallholders. In particular, this project examined how policies regulate the use of forests and trees on agricultural lands and pasture; how these frameworks align to provide coherent policy guidance, overlap to produce confusion and contradiction, or leave gaps where local conditions are not addressed. The project was interested in how policies treat integrated production systems and multipurpose mosaic landscapes used by smallholders (i.e. discourage them, ignore them, or support them). Furthermore, the project identified key institutional actors as well as their responsibilities defined by the policies and evaluate differences in actual practice. Finally, the project sought to synthesize diverse sources of information to describe how policy frameworks address smallholder systems within forest-farm mosaic landscapes.





### **Mid-Term Performance Evaluation of the USAID/West African Biodiversity and Climate Change (WA-BICC) Programme**

USAID's West Africa Biodiversity and Climate Change Program (WA BICC) is a five-year, \$48.9 million regional program initiated in 2015 with the goal to "address both direct and indirect drivers of natural resource degradation to improve livelihoods and natural ecosystems across the region". WA BICC activities include three components: (1) combating wildlife trafficking, (2) improving coastal resilience, and (3) reducing deforestation, forest degradation, and biodiversity loss in mangrove and upland forests.

The primary focus of Component 2 is to improve coastal resilience for some 2.2 million people living in the Sierra Leone Coastal Landscape Complex (SLCLC), and to pilot adaptation actions that can inform coastal resilience efforts in six coastal countries in West Africa. In a 2014 study of 139 coastal nations funded by USAID, Sierra Leone was found to be the most vulnerable coastal nation. This finding was corroborated by a detailed 2017 Sierra Leone Coastal Vulnerability Assessment conducted under the auspices of WA BICC. The WA BICC implementation strategy to improve coastal resilience in the SLCLC is two-fold: (1) Build capacity at all levels to generate and use climate information in coastal planning, with support to National Adaptation Plan (NAP) processes; and (2) Pilot and scale-up site-based coastal adaptation strategies that are effective. A total of 26 coastal communities were targeted for site-based adaptation strategies that include three core activities - mangrove restoration and conservation, coastal protection through embankment construction, and livelihood development. These communities present a learning opportunity on improving coastal resilience in the face of seemingly daunting challenges. USAID/West Africa commissioned this formative, midterm performance evaluation to contribute to the understanding of effective development programming for coastal resilience and mangrove management and conservation. The evaluation is focused on Component 2 and the program's site-based activities at 26 communities in the SLCLC. These communities span the four major estuaries in the country: Scarcies River Estuary, Sierra Leone River Estuary, Yawri Bay Estuary, and Bonthe-Sherbro River Estuary. The evaluation is intended to provide indications of overall progress, validity of activity design, and the likelihood that program objectives can be achieved and sustained. It is also intended to identify key

lessons learned and recommendations that can inform adaptive management of the remaining WA BICC activities and future programming.



*Snapshots of WABICC Project Evaluation Team*



### ***Appraising Risk, Past and Present: Interrogating Historical Data to Enhance Understanding of Environmental Crises in the Indian Ocean World***

The Indian Ocean World (IOW), a distinct and significant global socio-ecological system, has always been profoundly affected by a complex interplay between human and environmental factors - notably the monsoons, El Niño Southern Oscillation (ENSO), cyclones and volcanism. As such, it offers a unique laboratory in which to explore how humans have coped with environmental crises over time. In this ground-breaking, multidisciplinary initiative, leading scholars and students of history, religion, philosophy, anthropology, geography, geospatial science, climatology, and data and environmental risk analysis experts, in collaboration with Partner Organizations, will investigate six of the greatest environmental crises in the IOW since the mid-6th century – crises characterized, variously, by significant climate change, volcanic eruptions, tsunamis, droughts/floods, epidemic disease, socio-economic instability, mass migration, and high mortality.

It will, for the first time (1) construct past-to-present patterns of human and environmental factors at work before, during, and following each selected crisis period; (2) ascertain current and traditional IOW perceptions of environmental risk and risk management; and (3) use the results of this historical research to enhance currently employed ERPG protocols. Given the accelerating pace of environmental change, this project is timely and highly significant. It will heighten the ability of the most vulnerable IOW communities to manage adverse environmental risks, enhance security in the world's most environmentally and politically unstable region, and have a major impact on historical research and student training. The consortium involves an international team of 8 Co-Applicants, 17 Partner Institutions, and 23 additional Collaborators spread across 17 countries in Africa, Asia, Australia, Europe, and North America.

### ***Formulation and Efficacy Assessment of a Polyherbal Wound Healing Formula from *Heliotropium indicum* and *Adiatum capillus veneris****

This study intends to improve greatly upon the existing information on wound healing medicinal plants that could be of great importance to students and many scientific researchers in the field. This will lead to invigorate the discussion on the discovery of many invaluable wound

healing medicinal plants and the assessment of their active components and thus help to improve access by the local population to safer, more effective, reproducible and affordable treatments.

In addition, antimicrobials and chemotherapeutic agents with new mechanisms of action are urgently needed because increasing resistance to antibiotics and chemotherapeutic drugs is a world-wide and serious problem. This research will surely pave the way for chemical synthesis and modification of new drugs with the needed potency to combat microbial pathogens and tumours. This will put the use of some traditional phytopharmaceuticals on a firm scientific footing, and permit the standardization and quality control of these preparations. Additionally, successful outcome of this study and its consequent approval, will present a very cheap and easily accessible wound healing ointment for treatment on the Ghanaian market.

### ***Computational and structural database studies using the Cambridge structural database (CSD)***

The Cambridge Structural Database is the world's repository of both small-molecule organic and metal-organic crystal structures. It contains over one million structures from X-ray and neutron diffraction analyses. Access to this all important database is key to understanding crystal geometry and morphology as well as structural chemistry. The Cambridge Crystallographic Data Centre (CCDC) has established the Frank H. Allen International Research and Education (FAIRE) programme to support structural chemistry research and education in developing countries through the use of the CSD. This fellowship grant is awarded to researchers and academics in developing countries whose teaching and research activities are aligned in the field of structural chemistry and crystallography. Access to the CSD has tremendously revolutionized the teaching of structural chemistry including Symmetry and Group Theory, VSEPR theory and Coordination Chemistry in the Department of Chemistry. Several articles have also been published in International peer review journals using the CSD.

### ***The Chemical Potential of Oyster Shells***

Oyster shells are rich sources of calcium carbonate (CaCO<sub>3</sub>) also known as limestone. At high temperatures, calcium carbonate breaks down to calcium oxide (CaO) or quicklime. Among its numerous industrial applications, CaO is used in gold mining activities to maintain an

optimum pH to prevent the formation of poisonous hydrogen cyanide. Currently, our research is focused on the synthesis of hydroxyapatite (an efficient adsorbent material) using CaO from oyster shells as a starting material. The synthesized material is then employed in the adsorption of phenols (environmental pollutants) from water. Thanks to the directorate of research, innovation and consultancy (DRIC-UCC) for providing transportation for the sample collection, these oyster shells were collected from Sogakope in the Volta Region of Ghana where they are disposed after the processing of oyster which is a delicacy in the area.

### **Clay materials for environmental remediation**

Clay minerals are distinguished from other materials by their characteristic layered structures composed of polymeric sheets of silica (SiO<sub>4</sub>) linked to sheets of (Al, Mg, Fe)(O, OH)<sub>6</sub> octahedra. These aluminosilicate materials have profound applications for the removal of environmental pollutants such as dyes, antibiotics, biocide compounds, aromatic organic compounds and heavy metals from water. This research seeks to take advantage of the rich clay deposits in various parts of Ghana. Preliminary extraction, purification and characterization by Powder X-ray Diffraction (PXRD), Fourier Transform Infrared (FTIR) Spectroscopy, and Scanning Electron Microscopy (SEM) have confirmed some of our samples to be predominantly muscovite clay. Analyses of the surface charge and the cation exchange capacity make this type of muscovite clay suitable for the removal of dyes and heavy metals from water. Our first manuscript has been published in the Journal of Chemistry. The research is still on-going to explore many more clay deposits for environmental remediation.

### **Development of Gas Chromatography-Mass Spectrometry (GC-MS) method for detection of Pyrrolizidine Alkaloids (PAs) in Herbal Medicines on the Ghanaian market**

Traditional medicines use has become mainstay in most developing countries including Ghana. Although various health benefits have been reported, they are not without toxicity. Pyrrolizidine alkaloids (PAs) are considered toxic contaminants of natural health products. PAs are known to be hepatotoxic, nephrotoxic, genotoxic and carcinogenic. Despite continued reliance on herbal medicines among many Ghanaians, no regulations and recommendations on PAs exist. Safety tests performed by Food and Drug

Authority (FDA) does not include screening for PAs because of lack of applicable method. Therefore, the objective of this project is to develop appropriate method for detection of PAs to allow screening of herbal medicine on the Ghanaian market for PAs. The outcome of this project is expected to help protect Ghanaian consumers of herbal products from PAs exposure and to help inform policy guidelines regarding PA-containing plants use in herbal medicines. Protection of Ghanaian consumers against PAs intoxication is expected to reduce high patient turn out at various health facilities and consequently contribute positively to financial sustainability of the National Health Insurance Scheme (NHIS).

### **Synthesis of N-alkyl aziridines as probes for PET imaging Glucocerebrosidase**

The diagnosis of Parkinson's disease (PD) typically occurs after the onset of clinical symptoms where an estimated 50 - 60% of the dopaminergic neurons in the substantia nigra (SN) are already dead. Techniques that can aid in early detection of PD are needed so that interventions can begin while symptoms are relatively mild and prior to neuronal death. In addition, a non-invasive test that can monitor changes in brain biochemistry during the onset of PD will help tailor therapy to an individual by monitoring disease progression, evaluating response to targeted therapies and distinguishing PD from other related illnesses. Positron emission tomography (PET) is a clinically established, non-invasive technique useful for

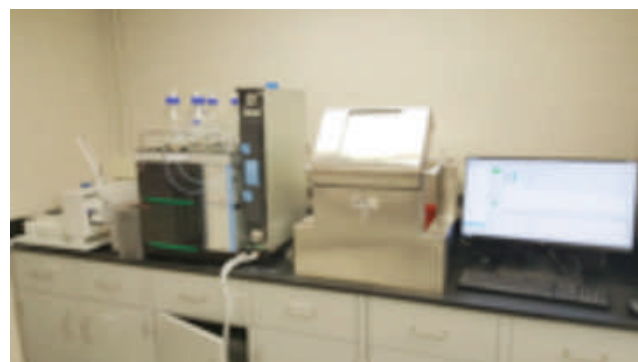


**Dr Asiamah and Prof Zugle demonstrating applications of GCMS-QP2020 instrument located at the chemistry department of the University.**

creating images that represent the activity of enzymes and receptors in the human brain. PET requires the injection of a radioactive probe that has high affinity for a specific target whose expression or activity is linked to a diseased state. We hypothesised that the development of a robust and flexible platform for conveniently synthesizing  $^{18}\text{F}$ -labeled probe candidates based on an N-alkylated conduritol aziridine scaffold will lead to a novel PET tracer for investigating the role of GBA1 in PD. Several precursors prepared by chemical synthesis are currently undergoing radiochemical labelling studies to allow evaluation of our PET tracers in animal models.

### *Chemical and Enzymatic Synthesis of Novel Medical Imaging Probes*

Positron Emission Tomography (PET) is a molecular imaging technique that has wide-ranging applications in clinical oncology, cardiology, and neurology as well as basic biomedical research. Despite the great success of PET imaging in certain clinical and research domains, the development of new radiotracers remains a formidable challenge. PET radioisotopes have short half-lives and must typically be incorporated into tracer molecules at a late stage of the overall synthesis process. This requirement combined with other constraints such as solvent compatibility, low reaction concentration, and the need for rapid process and purification steps limits the toolbox of applicable chemical reactions for PET radiotracer synthesis. [ $^{18}\text{F}$ ]-2-Deoxy-2-fluoro-D-glucose (FDG) remains the most prominent PET radiotracer to date. Although non-specific, FDG-PET has shown good results for detecting and staging various cancers. New imaging probes will likely enable us to trace healthy processes and unhealthy ones, such as tumors, more precisely. We designed and synthesized stable precursors to new imaging probes based on the natural products myo-inositol and chiro-inositol. The precursors were radiolabeled through nucleophilic  $^{18}\text{F}$  substitutions and the radiosynthesis have been successfully automated. microPET imaging of female DC1 mice with 1-deoxy-1- $^{18}\text{F}$ fluoro-chiro-inositol revealed significantly low uptake in the brain. However, biodistribution studies have demonstrated that this radiotracer might be useful in ovarian cancer diagnosis.



*Dr Asiamah employs techniques such as Radio-HPLC, Radio-TLC, LC-MS, NMR among others in radiosynthesis and chemical synthesis.*



*Dr Asiamah successfully automated radiosynthesis of novel PET probes at the SCS centre at the University of Saskatchewan, Canada*

### AMMA-2050 (African Monsoon Multidisciplinary Analysis 2050): Characteristics and Changes in Rainfall Regime over Southern West Africa

To improve understanding of how the West African monsoon will be affected by climate change in the coming decades - and help West African societies prepare and adapt.

**UCC seeks to:**

- better document the recent trends in daily mean and extreme rainfall regime in Southern West Africa (SWA), based on daily rainfall data gathered from 1950-2014.
- compare the characteristics of recent rainfall regime in three sub-regions in the same climatological area of the understudied SWA region (the Coastal, the Inland Region, and the Sudan Region).
- analyze separately the influence of each rainfall season in the sub-regions of SWA which portray bimodal characteristics.

**Key findings:**

- The western part of the region (Southern West Africa) tend to record a decrease in mean wet day intensities after the 90s.
- The Eastern part of the region observes an intensification in mean wet days due to lot of stations recording significant positive trends.
- Similar mirror trends in mean wet days are observed over the analyzed seasons, with increasing patterns on the east and decreasing trends on the west.
- The September-October-November (SON) season tend to contribute more to the intensification at the eastern part of the region
- A clear mirror behaviour is observed between the East and the West, with the west recording a downward trend in extremes
- Both seasons (major and minor) depict the contrasting pattern although very pronounce in the SON season

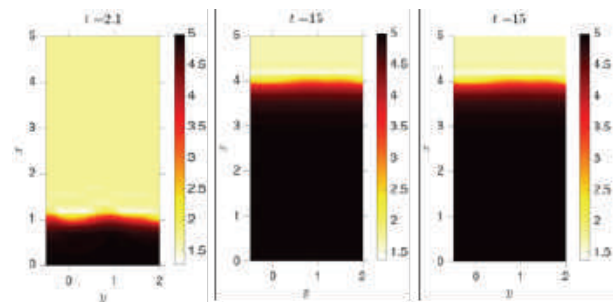


AMMA-2050 Annual Project meeting, Royal Baobab Hotel, Somone, Senegal, 10 - 14 June 2019

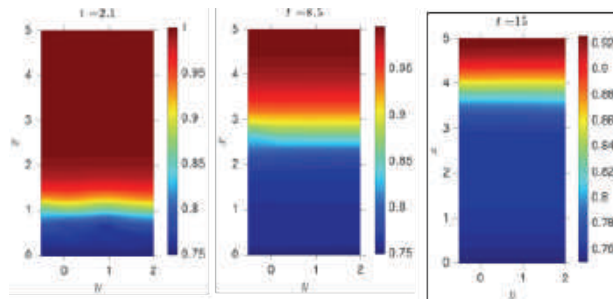
### Multiscale Methods for Filtration Combustion.

We solve a multiscale Galerkin approximation scheme for a system of coupled quasilinear parabolic equations. These equations arise from the upscaling of a pore-scale filtration combustion model under the assumptions of large Damkhoeler number and small Péclet number. The upscaled model consists of a heat diffusion equation and a mass diffusion equation in the bulk of a macroscopic domain. The associated diffusion tensors are bivariate functions of temperature and concentration and provide the necessary coupling conditions to elliptic-type cell problems. These cell problems are characterized by a reaction-diffusion phenomenon with nonlinear reactions of Arrhenius type at a gas-solid interface. We discuss the well-posedness of the quasilinear system and establish uniform estimates for the finite dimensional approximations. Based on these estimates, the convergence of the approximating sequence is proved.

The results of the numerical simulations demonstrate, in suitable temperature regimes, the potential of solutions of the upscaled model to mimic those from porous media combustion. Moreover, distinctions are made between the effects of the microscopic reaction-diffusion processes on the macroscopic system of equations and a purely diffusion system.



Evolution of spatial distribution temperature at different times.



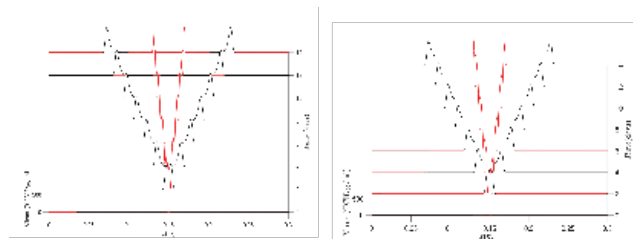
Effect of spatial distribution concentration at different times.



### Dynamics of within-host virus infection models

We aim to develop spatial-temporal models of virus infections with density-dependent diffusion by relying on the infectious kinetics. Here, we will consider the spread of Influenza virus within the Upper respiratory tract. The relevance of such a model is because viruses can spread in a self-organized manner within a host. Their potential to aggregate and form plaques within a living host provides evidence that their spread can be influenced by some components of the host environment. We consider the density-dependent part of our diffusion model in terms of Michaelis-Menten-type model. Such a model enables us to understand virus infection dynamics.

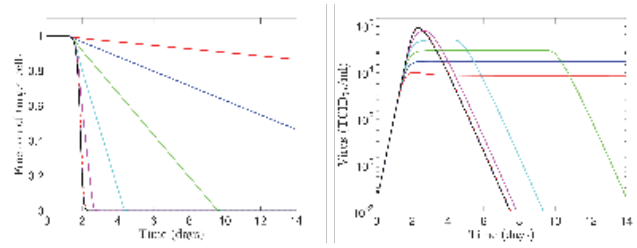
The researchers observe that the presence of cell regeneration and immune response affects the mobility or spread of virions. We also observe the varying mobility rate of the target cell and viron against the number of days in the absence, and presence.



Absence of cell regeneration and immune response. When there is no active diffusion (red) and when there is an active diffusion (black).

Presence of cell regeneration and immune response. When there is no active diffusion (red) and when there is an active diffusion (black).

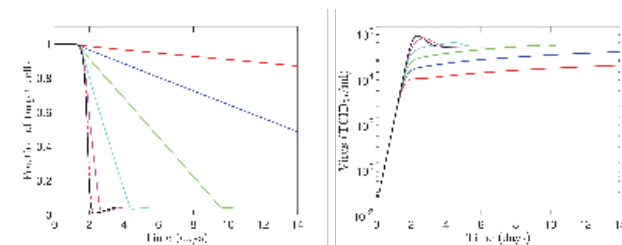
### Spatial temporal profiles for varying mobility with the absence (left) and presence (right) of cell regeneration and immune response.



The fraction of target cells to days without any cell regeneration and immune response. The mobility rate is varied from  $4.5 \times 10^{-6}$  to  $4.5 \times 10^{-1}$  from blue to magenta.

The viral growth in to days without any cell regeneration and immune response. The mobility rate is varied from  $4.5 \times 10^{-6}$  to  $4.5 \times 10^{-1}$  from blue to magenta.

### Effect of varying mobility rate in the absence of cell regeneration and immune response.



The fraction of target cells to days in the presence of cell regeneration and immune response. The mobility rate is varied from  $4.5 \times 10^{-6}$  to  $4.5 \times 10^{-1}$  from blue to magenta.

The viral growth to days in the presence of cell regeneration and immune response. The mobility rate is varied from  $4.5 \times 10^{-6}$  to  $4.5 \times 10^{-1}$  from blue to magenta.

### Effect of varying mobility rate in the presence of cell regeneration and immune response.

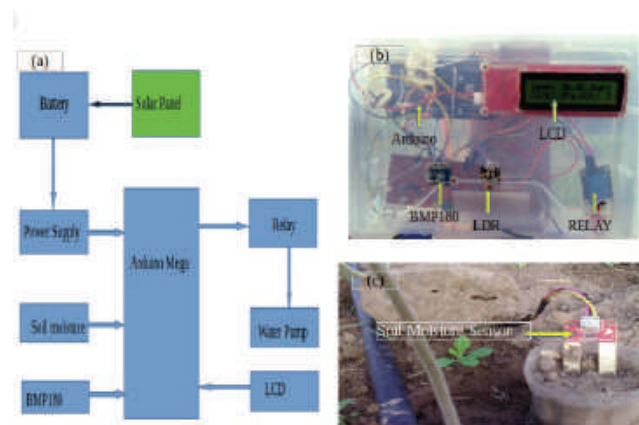
The study made the following observations;

- i. the initial deposition position of the virus affects the infection kinetics but has no consequence when the diffusion is very large.
- ii. an increase in diffusion rate increases the consumption of cell targets.
- iii. The existence of travelling waves from the waves profiles.

### Design and implementation of solar based microcontroller drip irrigation

To apply optical spectroscopy techniques to investigate and authenticate honey produced in the central Region of Ghana. The project introduced new technology in farming by firstly eliminating the manual way of regulating the drip irrigation system and secondly, regulating and supplying specific amount of water to plants as and when they needed it.

During the course of the project, some Engineering Physics students were given training as to how to handle drip irrigation system, and build embedded systems using simple and affordable electronic devices. Some Junior High School students were also exposed to the working principles of the solar energy system. The project was aimed at designing and implementing an automated drip irrigation system for farming using a simple and relatively affordable embedded system and powered by a solar energy system. This system was fully designed, constructed and tested by the team.



Developed embedded microcontroller system and soil moisture sensor buried in the soil.



The main drip irrigation control system. It is made up of the solar panel, the battery, the embedded microcontroller system and the submerged bucket, serving as water reservoir.



Students from Akatakyiwa Junior Secondary School visiting the project site to learn the workings of the solar energy system in farming.

### Comparative Evaluation of Asymmetric Price Transmission Linear Models Using rMDL, eMDL, nMDL, gMDL, AIC and BIC across Varying Sample Sizes

The Minimum Description Length (MDL), a less known criterion, is making great strides in model selection as compared to the widely known and used information criteria (AIC, BIC, etc.). This study developed the MDL criterion using R-functions to evaluate Asymmetric Price Transmission (APT) models (Complex, Standard and Houck's) for the first time ever. All six criteria's ability to recover the true DGP was assessed under the condition of varying sample size. A 1000 Monte Carlo simulation procedure revealed that the MDL criteria on the average points to the true DGP and are comparable (if not better) to both AIC and BIC under study condition. Generally, the performances of all model selection criteria (rMDL, nMDL, gMDL, eMDL, AIC and BIC) improved with increasing sample size in their ability to recover the true DGP for both standard and complex models.

### The Effect of Practical Work and Motivation on Students' desire to Study Stem Subjects

STEM is the foundation of all disciplines yet fewer students are interested in pursuing such subjects due to fear and 'difficulty' associated with them. Ghana Association of University Women (GAUW), the Ghana branch of Graduate Women International (GWI), believes that Motivation through various activities is key in solving such challenges. Motivation refers to 'an inner drive to action' that, in terms of observable consequences, might manifest itself in a pupil's decision to actively study STEM subjects. A comparison of claims regarding the motivational value of practical work, with pupils' actions both in and out of the laboratory to pursue science and

mathematics related courses as they climb the academic ladder provides a useful means of appraising the extent to which such claims are supported by the evidence. The purpose of this study was to ascertain if motivating Junior High School (JHS) students through talks and practical experiments on STEM subjects would remove the fear of STEM subjects.

### ***Study on the knowledge of women on the effect of alcohol consumption on the foetus in Elmina-Ghana***

The study seeks to find out women's knowledge on alcohol consumption and its effects on the foetus. Women in Elmina who have children or currently pregnant within ages of 15-45 years were interviewed. The snowball sampling identified 200 respondents who were mostly artisans/traders, co-habiting/single, and lived in a family/rented house with basic education. The study revealed that women (60%) confirmed they were told not to take in alcohol during pregnancy and were also educated on Fads. None-the-less, women in the Fertility Age drunk alcohol for fun or as a stimulant averagely for 4 to 6 years and they took 2 bottles/tot per day. Female children with signs of FASDs were most affected. Further tests revealed that there was a significant statistical difference between alcohol consumption and age group of women. Also, there was an association between the age group and knowledge on effect of alcohol on the foetus. Women knew of the dangers of FASDs yet they still drink alcohol during pregnancy.

### ***Women Educators Empowering Change at Home for a Peaceful Society***

The woman is the first point of education for her children and society at large since 'if you educate a woman you educate a nation'. The peace of mind and success the graduate woman enjoys in certain areas of her life is evident in her exposure to education.

Nonetheless, the remaining majority of non or partially literate women hinder or slow down the progress of the entire female species regarding certain cultural perceptions carried on from past generations. Among these is the quest to have a male child at all cost, otherwise the woman is ridiculed by fellow women or stands the chance of losing her husband. Also, the woman's inability to ensure that all her children enjoy equal right at home (no stereotype roles) in every area of their lives is one major threat to realising equal right for all and the course

of empowering women. A woman's lineage also goes extinct due to marriage.

A quantitative research design was adopted where women who had children across various regions in Ghana were interviewed using a structured questionnaire. A non-probability sampling (judgmental or purposive sampling) was employed to make sure the 200 women had children and they were chosen from all regions in Ghana. Frequency tables/charts and cross-tabulations were employed in presenting the findings of this research. Further analysis was performed to verify if indeed some perceptions were influenced (related) by ones' educational background, marital status and religion using Chi-Square test of Independence. The majority of women do not know how a male child is formed. They think marriage by ordinance requires a change of name.

Research was undertaken and a questionnaire administered to find out how women feel about certain of these cultural practices. This study revealed, for instance, that the majority of educated women believe female children are as important as the male children but they do still give different roles to them. Single women either want to maintain their names or add their husband's name but not to drop their family name when married.





# College of Humanities and Legal Studies

*The College of Humanities and Legal Studies is one of the five Colleges that were established on 1st August, 2014. It comprises three faculties and three schools namely, Faculty of Arts, Faculty of Social Sciences, Faculty of Law, School of Business, School for Development Studies and the School of Economics. The Faculty of Social Sciences hosts two specialized units that are engaged in research and training of human resource for sectors of the Ghanaian economy. The Centre for Gender Research and Documentation (CEGRAD) and the Institute for Oil and Gas are making strides in gender research, training and empowerment within the Central Region and in various communities across the country. The newly established Institute for Oil and Gas has commenced giant strides with the establishment and appointment of a GNPC/UCC Chair for Petroleum Commerce. Its objective is to train graduates and undertake research in the Oil and Gas sector of Ghana. After four years of the existence of the collegiate system in UCC, the Institute for Development Studies and Department of Economics were upgraded to Schools by the University Council on 1st August, 2018.*







**Prof. Francis E. Amuquandoh,**  
Provost, CHLS

The College was established under the leadership of Professor Stephen B. Kendie as the first Provost. Its management office started operation at the then Institute for Development Studies Building (IDS) in 2014 and later moved to the Amissah - Arthur Language Centre in 2016 under the leadership of the then Provost, Prof. Francisca Dora Edu-Buandoh. Currently, the College is housed in the Amissah-Arthur Language Centre behind the College of Education Building in the Northern Campus of the University of Cape Coast.

The College offers an active and reflective environment for both academic and professional programmes. Among the wide range of programmes in the Humanities and Social Sciences available to students, both national and foreign, include Anthropology, Sociology, Geography, Regional Planning, Tourism and Hospitality, Theatre and Film Studies, Music, History, Religion, English, Linguistics, Philosophy and Classics. These programmes have produced highly qualified, innovative and goal-oriented graduates for numerous sectors of the economy. The College boasts of managerial staff in the tourism and hospitality, economic planning and policy formulation positions of the public and civil service. Planners within rural and urban development, population and social statistics are some of the human resource trained from the College of Humanities and Legal Studies, UCC. The professional programmes offered in the College include Bachelor of Commerce, Law, Economics, Development Studies and Oil and Gas Management. These professional programmes have prepared our graduates to serve and perform efficiently in the law, banking and finance sectors of the economy. In addition, the College runs general University-wide courses such as Communicative

Skills, Critical Thinking and Practical Reasoning, Entrepreneurship, African Studies and Information Literacy Skills. It also hosts the Confucius Institute and partner Alliance Francaise for the teaching and learning of Chinese Language/Culture and French respectively. The College in collaboration with the College of Education Studies, train professionals in French and English languages to teach and work in educational institutions and other sectors.

The College also has strong post-graduate programmes in all the Departments, Faculties and Schools. The College is noted for its yearly organization of College Industry Week, Doctoral Summer School for Post-graduate students and young faculty as well as well-developed social laboratories. In addition, the College offers supervised internship which exposes students to real life situations. Our programmes are designed and delivered to enable our students to discover and fulfill their potentials as well as being responsible. Our Inter-Disciplinary approach to teaching, research, and community engagement, broad-based and liberal art curriculum helps in developing students' knowledge, analytical abilities, creativity and entrepreneurial skills. The quality of our programmes and dedication of our staff has made the College of Humanities and Legal Studies the leading College in our University and also one of the preferred Colleges of Humanities for many prospective local and foreigner students.

### **Vision:**

The vision of the College is to become a nationally and internationally recognized College in interdisciplinary teaching, research and community engagement.

### **Mission**

The mission of the College is to offer challenging curricula and produce research output that stimulates critical thinking and enables clients and staff to be responsive to national and international needs and aspirations.

### **Objectives**

The objectives of the College are to:

- facilitate the promotion of academic work and good governance across faculties/schools.
- promote interdisciplinary activities including research and outreach.
- promote networking and group research based on the University's Research Agenda; and
- pool resources to ensure maximum utilization for research teaching and outreach.

Grant Type	Title of Project	Principal Investigator(s) / Stakeholders	Department(s)	Source of Funding	Total Amount	Status of Project
<b>FACULTY OF ARTS</b>						
Publication Project / Edited Volume	Rethinking Childhoods in Africa	Prof. De-Valera N. Y. M. Botchway Dr. Awo Sarpong Prof. Charles Quist-Adade	Department of History, UCC Department of Basic Education, UCC Department of Sociology, Kwantlen University, Canada	self-funded	GH¢ 10,000	Completed
Interdisciplinary Postgraduate Training Network	Performing Sustainability: Cultures and Development in West Africa	Prof. Raimund Vogels Prof. Florian Carl Prof. Abba Isa Tijani	Center for World Music, University of Hildesheim, Germany Department of Music and Dance, UCC Centre for the Study and Promotion of Cultural Sustainability, University of Maiduguri, Nigeria	German Academic Exchange Service (DAAD)	EUR 1,912,000	Ongoing
Research Grant	Ghana Music Documentation Project: Mapping Cultural Diversity, Promoting Sustainable Musical Futures	Prof. Florian Carl Prof. Simon Mariwah Dr. Eric Debrah Otchere Dr. Alimatu-Saadia Yussiff Mr. Addai Okyere-Darko	Department of Music and Dance, UCC Department of Geography, UCC Department of Computer Science, UCC	Directorate of Research, Innovation and Consultancy (DRIC)	GH¢ 49,878	On-going
Research Grant	Mapping Africa's Musical Identities	Prof. Sylvia Bruinders Dr. Richard Deja Dr. Boudina Coetzee Dr. Eric Debrah Otchere Dr. Dominic Makwa Dr. Nii-Dortey Moses, Dr. Joshua Amuah, Dr. Adwoa Arhin Dr. Patrick Monte	Department of Music, University of Cape Town, SA Department of Music, Rhodes University, SA Department of Music and Dance, UCC Department of Music, Makerere University, Uganda Department of Music, University of Ghana Department of Music, Kabarak University, Kenya	Andrew W. Mellon Foundation	US\$ 500,000	On-going

Grant Type	Title of Project	Principal Investigator(s) / Stakeholders	Department(s)	Source of Funding	Total Amount	Status of Project
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### FACULTY OF ARTS

Research Project	Pacing within Sonic Spaces: A Psychology of Music and Work	Dr. Eric Debrah Otchere (UCC)	Department of Music and Dance, UCC Stellenbosch Institute for Advanced Studies (STIAS), Stellenbosch University	Iso Lomso Fellowship, STIAS, Stellenbosch University	US\$ 60,000	Ongoing
Winter/New Year School (conference)	Religion and Human Security in Africa	Prof. Kocku von Stukrad, University of Groningen Prof. Samuel Awuah-Nyamekye, UCC	Department of Religion and Human Values, UCC	University of Groningen	EUR 2,706.	Completed

### SCHOOL FOR DEVELOPMENT STUDIES

Consultancy Project	Assessment of MMDAs' Capacity for the Delivery and Management of WASH Services in Northern Region, Ghana	Dr. Emmanuel Yamoah Tenkorang Prof. Patrick Kwamla Agbesinyale Prof. Francis Enukwesi Dr. Kenneth Shelton Aikins Dr. Frederick Koomson Dr. Owusu Boampong Dr. Musah Dankwah	Department of Environment, Governance & Sustainable Development; Department of Integrated Development Studies; Department of Peace Studies; Department of Labour & Human Resource Studies; UCC, Ghana	UNICEF	GH¢ 217,120	Completed (2018)
Departmental Research	Preventing Electoral Violence in Selected Hotspots during the 2016 Elections: Strategies employed by the National Peace Council	Prof. Stephen Bugu Kendie Dr. Patrick Osei-Kufuor Dr. Shaibu Bukari	Department of Integrated Development Studies Department of Peace Studies Department of Labour & Human Resource Studies; UCC, Ghana	United Nations Development Program (UNDP)	GH¢ 102,813	Completed



Grant Type	Title of Project	Principal Investigator(s) / Stakeholders	Department(s)	Source of Funding	Total Amount	Status of Project
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## SCHOOL FOR DEVELOPMENT STUDIES

Consultancy Project	Promoting Social Accountability through Citizen Participation in Local Governance in Ghana.	Dr. Emmanuel Y. Tenkorang Dr. Patrick Osei-Kufuor Dr. Frederick Koomson Dr. Musah Dankwah	Department of Environment, Governance & Sustainable Development Department of Peace Studies Department of Integrated Development Studies Department of Labour & Human Resource Studies, UCC, Ghana	Ghana Center for Democratic Development (CDD-Ghana)	GH¢ 74,800	Completed
Collaborative Research Project	Collaborative Research Project	Prof. Samuel Kobina Annim Prof. Simon Mariwah Dr. Owusu Boampong Dr. Justice A. Mensah Dr. Samuel. A. Owusu Mrs. Millicent Abigail Aning-Agyei	Department of Applied Economics; Department of Geography and Regional Planning; Department of Integrated Development Studies; Directorate of Academic Planning & Quality Assurance; Directorate of Research Innovation and Consultancy, UCC, Ghana	DRIC, European Union Plan International Ghana	GH¢50,000	Completed
Collaborative Research Project	Constructing Research Frameworks on the Sustainable Development Goals in Africa's Policy Environment	Prof. Akua Opokua Britwum Prof. Francis Enu-Kwesi Dr. Angela Dziedom Akorsu Dr. Frederick Koomson Dr. Owusu Boampong	Department of Labour and Human Resource Studies; Department of Integrated Development Studies, UCC, Ghana	Self-funded	GH¢50,000	Completed
Individual Research Project	Exploring the Labour Conditions of Surrogate Mothers ("Invisible reproductive workers) in Accra, Ghana	Dr. Owusu Boampong Dr. Nana Yaw Osei Dr. Sabina Appiah-Boateng	Department of Integrated Development Studies	DRIC	GH¢8,000	On-going

Grant Type	Title of Project	Principal Investigator(s) / Stakeholders	Department(s)	Source of Funding	Total Amount	Status of Project
<b>SCHOOL FOR DEVELOPMENT STUDIES</b>						
Departmental Research	Exploratory research on the nature and forms of platform economy in Ghana	Dr. Angela D. Akorsu Prof. A. Opokua Britwum Dr. Shaibu Bukari Mr. Benjamin Y. Tache Dr. Musah Dankwah	Department of Labour & Human Resource Studies	School of Development Studies	GH¢10,000	On-going
Departmental Research	Working Conditions and Organisational Challenges Among Waste Workers in Accra Metropolitan Area: 2019	Prof. A. Opokua Britwum Dr. Angela D. Akorsu Dr. Owusu Boampong Mr. Benjamin Y. Tache	Department of Labour & Human Resource Studies Department of Integrated Development Studies	School of Development Studies	GH¢8,000	On-going
Research Grant	Gender equality and rural women's livelihood - 2017	Prof. A. Opokua Britwum Dr. Angela D. Akorsu	Department of Labour & Human Resource Studies	DRIC, UCC	GH¢9,000	Completed
Research Grant	Organising Non-Standard and Vulnerable Plantation Workers in Ghana - 2017	Prof. A. Opokua Britwum Dr. Angela D. Akorsu	Department of Labour & Human Resource Studies	International Center for Development and Decent Work (ICDD)	€500	Completed (2017)
Research Grant	Organising Domestic Workers in Ghana - 2017	Dr. Angela D. Akorsu Dr. Amanda Odoi	Department of Labour & Human Resource Studies Centre for Gender, Research, Advocacy & Documentation	International Center for Development and Decent Work (ICDD)	€600	Completed (2017)
Research Grant	Rural Urban Linkages: the Case of South Africa and Ghana	Dr. Ben Scully Dr. Edward Webster Prof. A. Opokua Britwum	University of Witwaterstand, South Africa Department of Labour & Human Resource Studies	Center for Development and Decent Work (ICDD)	€5000	On-going
Research Grant	Exploring the drivers of political vigilantism in Ghana -2019	Dr. Kaderi Noagah Bukari Dr. Shaibu Bukari Mr. Richard Ametefe	Department of Peace Studies Department of Labour & Human Resource Studies	DRIC, UCC	Gh¢8,000	On-going
Consultancy Project	Factors facilitating and/or preventing pregnant school girls and school-mothers' re-entry into school - 2017	Dr. Angela Akorsu Prof. A. Opokua Britwum Prof. Patrick Agbesinyale Dr. Kenneth Aikins	Department of Labour & Human Resource Studies Department of Integrated Development Studies Department of	UNICEF/ Ghana Education Service (GES)	GH¢10,000	Completed

Grant Type	Title of Project	Principal Investigator(s) / Stakeholders	Department(s)	Source of Funding	Total Amount	Status of Project
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#### SCHOOL FOR DEVELOPMENT STUDIES

Individual Research Project	Gender Analysis of the constraints and opportunities for economic and social upgrading in mango value chains in Ghana	Dr. Angela Akorsu	Department of Labour & Human Resource Studies	FAO/ICDD (Christoph Scherer)	€3,000	Completed
Individual Research Project	Gender Dimensions of Occupational Health Risks among Non-Standard Agricultural Workers in Ghana	Dr. Angela Dzedzom Akorsu (PI) Dr. E. Y. Tenkorang	Department of Labour and Human Resource Studies Department of Environment, Governance & Sustainable Development	Self-Funded	GH¢10,000	Completed

#### FACULTY OF SOCIAL SCIENCES

Collaborative Research Grant	Building an evidence base to support and enhance community health workers' (informal) use of mobile phones in Ghana, Malawi and Ethiopia	Prof Kate Hampshire, Prof Albert Abane, Prof. Simon Mariwah; Dr. Samuel Asiedu Owusu, Dr. Alister Munthali, Dr. Elsbeth Robson, Dr. Kassahun Alemu, Prof Ziv Shkedy, Dr. Michele Castelli, Dr. Adetayo Kasim	Department of Anthropology, Durham University, UK; Dept of Geography and Regional Planning, UCC; Direcotrate of Research, Innovation and Consultancy (DRIC), UCC; University of Malawi; University of Hull, UK; University of Gondar, Ethiopia; University of Hasselt, Belgium; University of Newcastle, UK; Durham University, UK	Medical research Council, UK	GB£200,000	On-going
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Grant Type	Title of Project	Principal Investigator(s) / Stakeholders	Department(s)	Source of Funding	Total Amount	Status of Project
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## FACULTY OF SOCIAL SCIENCES

International transdisciplinary research network	Narrating Blood: An international network for cross-cultural research and intervention into blood-related reproductive and adolescent health and care-economies in India, Bangladesh, Ghana and the UK	Prof Maya Unnithan, Prof Janet Boddy,  Prof Simon Mariwah,  Prof Kate Hampshire,  Prof. Uma Vennam,  Daniel Amoako-Sakyi,  Dr. Shobhita Rajagopal,  Prof Sabina Rashid	University of Sussex, UK;  Dept of Geography and Regional Planning, University of Cape Coast, Ghana;  Dept of Anthropology, Durham University, UK;  Young Lives India;  School of Medical Sciences, UCC;  Development Studies, Jaipur, India;  BRAC University, Dhaka)	University of Sussex	GB£37,500	On-going
Collaborative Research Grant	Factors influencing Community Health Workers' Effectiveness	Prof Kate Hampshire,  Prof Abert Abane Prof Simon Mariwah  Prof. Alister Munthali  Dr. Kassahun Alemu  Dr. Elsbeth Robson  Dr. Michele Castelli  Adetayo Kasim Dr. Nasima Akhter  Ms. Nuzhat Choudhury	Department of Anthropology, Durham University, UK;  Dept of Geography and Regional Planning, University of Cape Coast, Ghana  University of Malawi,  University of Gondar, Ethiopia  University of Hull, UK  Newcastle University, UK  Durham University, UK  ICDDR, Bangladesh	Save the Children, UK	GB£84,639	On-going`



Grant Type	Title of Project	Principal Investigator(s) / Stakeholders	Department(s)	Source of Funding	Total Amount	Status of Project
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**FACULTY OF SOCIAL SCIENCES**

Consultancy Project	Baseline study of Green Skills for Ghana Project	Prof. S.K Annim, Prof Simon Mariwah, Dr Owusu Boampong,	School of Economics, Department of Geography and Regional Planning, School for Development Studies	Plan International, Ghana	GH¢55,000	Completed (2017)
Research project	Evaluating the impacts of on-site sanitation systems on groundwater quality in low-income neighbourhoods of Cape Coast, Ghana	Prof Joseph Zume, Prof Simon Mariwah	Dept of Geography and Earth Science, Shippensburg University of Pennsylvania, USA Department of Geography and Regional Planning, UCC	Shippensburg University of Pennsylvania, USA	US\$8,000	On-going
International transdisciplinary research network	Building partnership for strengthening accountability in the Civil Service, Ghana	Dr. Emanuela Girei, Prof Prof. Ataur Belal, Prof Simon Mariwah, Mr Noble Kumawu, Ms. Gloria Sarku, Mr. Nana Agyekum Dwamena,	Sheffield University UK; Institute for Oil and Gas Studies, UCC; Organisation Development (OD) Institute, Accra Parliamentary Training Institute, Accra, Office of the Head of Civil Service	Research England QR GCRF	GB£7,000	On-going

Grant Type	Title of Project	Principal Investigator(s) / Stakeholders	Department(s)	Source of Funding	Total Amount	Status of Project
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#### FACULTY OF SOCIAL SCIENCES

International Collaborative Research	Development of Oil and Gas Industry Local content policies in Ghana: Lessons and learning from UAE.	Dr. Joshua Jebeuntie, Zaato. Dr. Shafic Suleman	College of Humanities and Social Sciences, HSS College of Humanities and Legal Studies - Institute for Oil and Gas	Research Incentive Fund - Zayed University Research	AED 144,700	On-going
Research Project	Climate Change Adaptation and Mitigation Engagements in Sub-Sahara Africa	Dr. Edward Kweku Nunoo Dr. Eric Twum	Institute for Oil and Gas (IOG) UCC Institute for Green Growth Solutions (IGGS), East Legon Accra	Konrad Andener Stiftung (KAS-Germany)	Gh¢25,000	Completed (2018)
Research Project	The role of Natural Resources in Ghana Beyond AID	Dr. Edward Kweku Nunoo Dr. Eric Twum	Institute for Oil and Gas, UCC Institute for Green Growth Solutions (IGGS), East Legon Accra	Konrad Andener Stiftung (KAS-Germany)	Gh¢30,000	Completed (2018)
Individual Research Project	Women entrepreneurial journeys through tourism in sub-Saharan Africa	Dr. Albert N. Kimbu, Dr. Anna de Jong, Dr. Manuel A. Ribeiro, Dr. Cristina Figuora Dr. Issahaku Adam, Dr. Ewoenam Afenyo-Agbe Dr. Ogechi Adeola (Pan Atlantic University, Nigeria)	School of Hospitality and Tourism Management, University of Surrey, Department of Hospitality and Tourism Management, UCC Lagos Business School-Pan Atlantic University	UKRI Global Challenges Fund	GB£68,000	On-going
Individual Research Project	Behaviour change towards the reduction of single-use plastics	Dr. Tony R. Walker Dr. Issahaku Adam	School for Resource and Environmental Studies - Dalhousie University) Department of Hospitality and Tourism Management-University of Cape Coast)	Association of Commonwealth Universities	GB£10,000	On-going
Departmental Research Project	Evaluation of interventions by the Ghana Heritage Conservation Trust (GHCT)	Prof. Kwaku Boakye, Dr. Edem Amenumey, Dr. Issahaku Adam, Dr. Stephen Hiamey, Dr. E. Afenyo-Agbe, Dr. Charles Adongo	Department of Hospitality and Tourism Management - University of Cape Coast	Ghana Heritage Conservation Trust	Gh¢30,000	Completed (2018)

Grant Type	Title of Project	Principal Investigator(s) / Stakeholders	Department(s)	Source of Funding	Total Amount	Status of Project
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**FACULTY OF SOCIAL SCIENCES**

Research Grant	Attitude and behaviour towards single-use plastics among residents in Cape Coast	Dr Issahaku Adam (University of Cape Coast)	Department of Hospitality and Tourism Management - University of Cape Coast	Directorate of Research, Innovation and Consultancy (DRIC), University of Cape Coast	Gh¢5,000	On-going
Research Grant	Hotel frontline employees' attitude and behaviour towards guests with disabilities	Dr Issahaku Adam (University of Cape Coast)	Department of Hospitality and Tourism Management - University of Cape Coast	Directorate of Research, Innovation and Consultancy (DRIC), University of Cape Coast	Gh¢5,000	Completed (2019)
Individual Research Project	Masculinity, use of herbal alcoholic bitters and compulsory heterosexuality in West Africa: Narratives from urban Ghana	Dr. Daniel Yaw Fiaveh, UCC	Department of Sociology and Anthropology	DRIC, UCC— Research Support Grant (RSG), 2018.	Gh¢5,000	Completed (2019)
Research Grant	Sex and herbal alcoholic aphrodisiacs in Ghana	Dr. Daniel Yaw Fiaveh, UCC	Department of Sociology and Anthropology	American Council of Learned Societies (ACLS), New York	US\$ 19,000	Completed (2019)
Group-led Research Project	Equal opportunities in higher education: Partnership for Institutional Change (EQUIP) - 5 year project from 2019 to 2024	Prof. Akua O. Brituwm, Dr. Angela D. Akorsu, Dr. Genevieve E. Adukpo, Prof. Guley Calgar, Dr. Jennifer Ailed Chan de Avila	Centre for Gender Research, Advocacy and Documentation (CEGRAD), UCC, Department of Political and Social Sciences, Freie University Berlin (FUB)	DAAD - DIES, Germany	EUR45,000	Inception Phase
Group -Led Research Project	Mixed (race) Ghanaians: Identity, belonging and transnational family networks - 2019/2020	Dr. Georgina Yaa Oduro (PI), Prof. Mansa Prah (UCC), Dr. Karine Geoffrion (Carleton University, Canada)	Centre for Gender Research, Advocacy and Documentation, (CEGRAD), UCC and Department of Anthropology, Carleton University, Canada	CODESRIA (Meaning-making Research Initiative - MRI)	US\$35,000 Dollars between the two Institutions	On-going

Grant Type	Title of Project	Principal Investigator(s) / Stakeholders	Department(s)	Source of Funding	Total Amount	Status of Project
<b>FACULTY OF SOCIAL SCIENCES</b>						
Research Grant	Integrating Refugee assistance programme into local development	Dr Samuel Agbloti, Prof. Augustine Tanle, Dr Issahaku Adam (University of Cape Coast)	Department of Population and Health/ Centre for Gender Research, Advocacy and Documentation - University of Cape Coast and Department of Hospitality and Tourism Management - University of Cape Coast	Directorate of Research, Innovation and Consultancy (DRIC), University of Cape Coast	Gh¢30,000	On-going
Individual Research Project	Life Course Perspective on Socioeconomic Inequalities in Life Style and Mortality in Youth and Adulthood: A Three-Generation Study	Dr. David T. Doku (PI) (UCC, Ghana)	Department of Population and Health	Juho Vainion Foundation	EUR24,000	On-going
Consultancy	Baseline Study for Empowering Adolescent Girls through Improved Access to Comprehensive Sexuality Education and Rights Based Quality Sexual and Reproductive Health Services in Ghana	Prof. Kofi Awusabo-Asare, Dr. David T. Doku, Dr. Fiifi A. Johnson, Dr. Kobina Esia-Donkoh, Dr. Joshua Amoo-Adjei	Department of Population and Health	UNFPA UNICEF	Gh¢256,678 Gh¢281,902	On-going



Grant Type	Title of Project	Principal Investigator(s) / Stakeholders	Department(s)	Source of Funding	Total Amount	Status of Project
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#### FACULTY OF SOCIAL SCIENCES

Research Grant	GCRF One Ocean Hub	Dr. Benjamin Kofi Nyarko, Prof Aggrey-Fynn, Dr. Bola Erinoshoh, Dr. Harrison Golo, Dr. Emmanuel Acheampong, Dr. Georgina Yaa Oduro, Mr. John Windie Ansah, Dr. Godfred Ameyaw Asiedu	Geography and Regional Planning, Faculty of Law, the Departments of Geography and Regional Planning, Fisheries and Aquatic Sciences, Sociology and Anthropology. The UCC team collaborates with researchers from the CSIR-Food Research Institute and the Center for Conflicts, Human Rights and Peace Studies, University of Education, Winneba.	GCRF-UKRI UK	£20million	On-going
Research Grant	SESASA Project	Dr. Benjamin Kofi Nyarko	Geography and Regional Planning	EU-AU LEAP AGRI	€150,000	On-going
Capacity Building	WASCAL Climate Change and Agric	Dr. Benjamin Kofi Nyarko	Geography and Regional Planning and School of Agriculture	BMBF, Germany	€85,000	On-going

#### FACULTY OF SOCIAL SCIENCES

Consultancy Services	Midterm Performance Evaluation of the Ghana Poultry Project (GPP)	Prof. Samuel K. Annim; Mrs. Millicent A. Aning-Agyei; Mr. Raymond E. Kofinti; Mr. Peter Y. Mwinlaaru; and Mr. Richard K. Nkrumah	School of Economics, UCC DRIC, UCC	United States Department for Agriculture (USDA) and Monitoring, Evaluation and Technical Support Service (METSS)	US\$84,000.00	Completed
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Grant Type	Title of Project	Principal Investigator(s) / Stakeholders	Department(s)	Source of Funding	Total Amount	Status of Project
<b>SCHOOL OF BUSINESS</b>						
Operating Grant	Switch Africa Green	Prof. Rosemond Boohene Prof. Daniel Agyapong Mr. Daniel Ofori	CESED Dept. of Marketing & SCM	The European Union	US\$360,000	Completed (2017)
Operating Grant	German African University Partnership Project	Prof. Rosemond Boohene Prof. Daniel Agyapong Dr. Mavis Mensah Mr. Phanuel Wunu	CESED Dept. of Marketing & SCM	DAAD		Completed (2018)
Operating Grant	Graduate Enterprise Development Initiative (GEDI)	Prof. Rosemond Boohene Prof. Daniel Agyapong Prof. Ernest Abano Dr. Martin Bosompim Mr. Phanuel Wunu	CESED Dept. of Marketing & SCM Dept. of Agric Econs & Extension	EXIM Bank Ghana	GH¢ 796,708	On-going
Research and Operating Grant	Building Expertise and Training for Growth in the Consumer Goods and Food Processing Industry in Ghana Project (BET Ghana)	Prof. Daniel Agyapong Dr. Mavis Benneh Mensah Prof. Ernest Abano Prof. Rosemond Boohene Dr. Keren Arthur Dr. Dominic Owusu Dr. George Owusu Essegbey Mr. Phanuel Wunu Mr. Mark Sena Akoto Dr. Edward Amarteifio Prof. Ernest Abano Dr. Martin Bosompem Dr. Gloria Agyapong Dr. Mohammed Z. Isshaq Dr. Alex Adom Dr. Anokye Adam Mr. Gideon Abbequaye Mr. Isaac Anim Prof. Edward Marfo Yiadom Prof. Francis Boachie-Mensah Dr. George Tackie Mr. Isaac Nketiah	Dept. of Marketing & SCM CESED Dept. of Agric Econs & Extension Dept. of Finance Dept. of Accounting Dept. of Management DRIC CSIR	DAAD	€630,000	On-going
Operating Grant	Electronic Waste Management in Ghana (E-MAGIN)	Prof. Rosemond Boohene Prof. Daniel Agyapong Mr. Daniel Ofori Mr. Phanuel Wunu Mr. Lambert Fabuleon Mr. Jurgen Meinel Mr. Mathew Adeyanju Ebenezer Kumi Morton Hemkhaus	CESED Dept. of Marketing & SCM Ghana National Cleaner Production City Waste Recycling Company Ltd Adephi, Germany	The European Union	€ 1,333,220	On-going

# Description of Funded Research and Projects

## ***Rethinking Childhoods in Africa***

The project stemmed from an interest to examine the meaning of African childhood. It intended to find out from scholars the different meanings, constructions and histories of African childhood. The project was initiated in 2017, cumulating in the publication of the edited volume *New Perspectives of African Childhood: Constructions, Histories and Understandings* (Vernon Press, 2019). It brought together original research that focused on the psychology, sociology and history of the condition of childhood in Africa. It intentionally moved away from the traditional examination of the child solely, to the exploration of childhood in Africa. It engaged with the different rationalisations and conceptions of childhood, a diversity of aspects and ramifications of childhoods, from purely African and Africa-centred perspectives.

The project, which was aimed at producing a book, invited enquiries into aspects of childhood, such as childhood belongings, and the cultures of childhood, against the backdrop that such themes had been amplified in countries in the Global North of Europe and North America in recent times; however, Africa, with its large youth population and children making up a significant percentage of its demography, had not really had much work done on such themes. Worse, the scholarly studies of the life of children in Africa tended to mostly look at children as victims of social injustice and exploitation and persons living on the peripheries of the world of adults. But the research team realised there were more regions, amazingly happy and hope-giving ones, worth interrogating. These included creative expression in childhood, perceptions of happiness in childhood, childhood versus adultism, childhood spirituality, hijacked childhoods and brave negotiations of safe havens for self-expression, and child(ren) constructed understandings of the African childhood. Thus, the project engineered writings that threw light on such neglected areas of research on childhood in Africa. The project brought together composite analyses and interpretations and stories and case studies about various aspects of childhood in Africa by scholars who focus on African society, culture, education and history.

It investigated childhood and the child(ren) actor(s) across different stages of personhood development, and times and spaces on the African continent.

## ***Performing Sustainability. Cultures and Development in West Africa***

The DAAD 'Graduate School' *Performing Sustainability: Cultures and Development in West Africa* is a five-year collaborative training network for postgraduate students from Nigeria, Ghana and Germany. The funding for the 'Graduate School' was approved in October 2016 and the major activities of the training network commenced in 2017. The main collaboration partners include Professor Raimund Vogels, Director of the Center for World Music and the University of Hildesheim, Germany, Prof. Abba Isa Tijani, Director of the Centre for the Study and Promotion of Cultural Sustainability at the University of Maiduguri, Nigeria, and Prof. Florian Carl of the Department of Music and Dance at the University of Cape Coast.

The project focuses on capacity building and postgraduate training, supporting innovative PhD research in the areas of performance studies and sustainable development. To that effect, six three-year PhD scholarships were awarded for candidates at the University of Cape Coast beginning in 2017. A second call for applications for scholarships was launched in 2019 and candidates are currently being selected. One particular aim of the 'Graduate School' is to develop applied solutions to the UN Sustainable Development Goals (SDGs), bringing together social science research, cultural studies and the performing arts. To that effect, all participants meet twice a year in two-week workshops at the University of Cape Coast and in Abuja, Nigeria, to learn together and develop research questions and projects. A specific focus is on peace and conflict resolution, which is a particular challenge for the Nigerian partners in Maiduguri, but the project will also include other fields of sustainable development, particularly with regard to building and promoting socially inclusive, just and peaceful societies and institutions.

### ***Ghana Music Documentation Project: Mapping Cultural Diversity, Promoting Sustainable Musical Futures***

Cultural globalisation and the growing importance of digital technology are realities that artists, cultural entrepreneurs, as well as researchers and policy makers today must face. Scholars of cultural globalisation have identified two opposing trends: One points towards an increased cultural homogenisation, mainly associated with Western culture, but also taking place at the inter-regional level, where larger cultural markets often dominate smaller ones; the opposite trend has been described as cultural heterogenization, fostered by the diffusion of images, sounds, ideas, and cultural products through mass media as well as through increased intercultural exchange and transnational mobility. Policy makers, practitioners and other stakeholders are therefore confronted with the question of how to respond to these contradictory global forces. This is the problem that the Ghana Music Documentation Project seeks to tackle.

The Ghana Music Documentation Project is a Digital Humanities research project that develops, therefore, interventions at the juncture of empirical research and cultural policy. The two major objectives of the project are, first, the development of an interactive online database of Ghana's creative landscape, mapping comprehensively music institutions, practitioners, and stakeholders and, second, the critical and empirically-based analysis of cultural policy formulation and implementation. The interactive database that the Ghana Music Documentation Project is developing will constitute a unique and sustainable tool to the benefit of researchers as well as policy makers, practitioners, communities, and the public at large. The website of the project is hosted at <https://gmdp.ucc.edu.gh>. The project commenced in 2018 and will be completed in 2020.

### ***Mapping Africa's Musical Identities: An MOOC Project Under the Auspices of the Pan-African Music Initiative***

It is a paradox of Humanities research that its investigations seldom influence the humans it studies. This is tellingly evident in the field of African music where the information-rich research-narratives of ethnomusicology and the living musical practices of the musical performer continue to lead separate lives despite a century of nominal interaction. Thus, while the recent decades of scholarship in this area have significantly increased our understanding of Africa's

music as a complex exchange among diverse groups of people and languages, it still remains to be seen how all these new insights can be integrated and made available to the audience to which it really matters the most - the modern African performer.

This kind of sharing becomes all the more critical in a contemporary Africa that is fast losing touch with its older musical traditions and in which many of those musical practices are no longer being transmitted. The Pan-African Initiative is a multi-faceted research, mapping, education and performance project that aims not only to pragmatically integrate musical arts performance with musical arts research in Africa, but also to stimulate the creation of an African community of scholars, performer-researchers and performers that will re-engage with Africa's older musical traditions in new ways. It is a quest for both innovation and preservation and more importantly, for innovation through preservation and for preservation through innovation. In the process the initiative intends to grapple seriously and in practical terms with key questions in African Music:

- What constitutes creative musical thinking in Africa?
- How can African performance practices best be nurtured on African soil?
- How can the separate pursuits of performing and researching in Africa find pragmatic common ground?

The Pan-African Initiative is planned as a supra-institutional project in which regional universities and informal as well as formal musical and cultural institutions throughout Africa can forge a collective way forward with regard to these vital questions and challenges. At the basis of this venture lies a crucial underlying proposal - the implementation of a practical performance and research network that will make sense of the diversity of African musical practices in a way that will help them to flourish in contemporary educational settings and at the heart of communities throughout the urban-rural spectrum.

At the core of the initiative there is a drive towards institutional interconnection and collaboration through the establishment of a cross-regional cooperation-network consisting of university and non-university partnerships. An initial foundational phase will cement links with African educational institutions in musically distinctive regions. The work of this pilot-phase will then form the basis for a drive towards more inclusive networking involving more wide-ranging and integrative institutional as well as non-institutional cooperation with long-term goals.



### ***Pacing Within Sonic Spaces: A Psychology of Music and Work***

Throughout history, the power of music to enhance productivity at work has been exploited. In less technologically-advanced societies, group singing (performed principally to serve as reference points for coordinated activity and to ease labor) has been variously studied (e.g. fishermen songs, hunting songs, pounding songs and farming songs). On the other end of the line, the ubiquity of headphones/earphones has engendered a personalized/individualized use of music as people pace themselves within sonic spaces to achieve the most in various activities (e.g. studying, jogging, meditating). Within these two extremes are many other examples where music is employed at work (e.g. in therapy, religion, sports, marketing). Studies on music and work have been largely non-interdisciplinary in nature: approached from ethnomusicological/anthropological, socio-historical or (recently) neuro-cognitive perspectives. Studies that connect the dots from the different perspectives are still wanting. Combining empirical data from my extensive fieldwork with a critical review of literature and theories from different fields, I intend to synergize the body of knowledge on music and work to produce a composite, comprehensive understanding of the phenomenon. Specifically, I intend to produce a monograph that highlights the intricate relationship between music and work by studying comprehensively, how people pace themselves within sonic spaces.

### ***Religion and Human Security in Africa***

When it comes to human security in Africa, religion plays an important and yet understudied role. This interdisciplinary Winter/New Year School scrutinized religion as a destabilizing as well as beneficial factor for humans to feel safe in their personal environments. Security, here, refers to the levels of personal relationships (partnerships, families, ethnic communities), of economic challenges (labour market, financial security), as well as of international developments (post-colonial power-relations, ecological changes, etc.). To unpack the complexity of these levels of security, and to reveal their interrelatedness, the Winter/New Year School addressed concrete questions, including, but not limited to:

- i.** How would a postcolonial Africa look like without any aids and without “teleology of development”?
- ii.** How can we understand religion in an economic market characterized by churches acting as big businesses, as well as by culturally adaptive systems that have fostered

phenomena of modern-day slavery?

**iii.** What is the role of religion in discourses of sexuality and physical security?

**iv.** How does religion respond to ecological challenges and insecurities caused by climate change?

The Winter/New Year School was research-driven and multidisciplinary, which offered a wide range of perspectives. Panellists included Prof. Kocku von Stukrad (University of Groningen, Netherlands), Prof. George K. T. Oduro, UCC, Prof. Samuel, Awuah-Nyamekye (UCC), Dr. Simon Kofi Appiah (UCC), Dr. Augustine M. Mensah (UCC), Dr. Eric Opoku Mensah (UCC), Dr. Joram Tarrusarira (University of Groningen), as well as Dr. Brenda Bartelink (University of Groningen).

### ***Building an evidence base to support and enhance community health workers’ (informal) use of mobile phones in Ghana, Malawi and Ethiopia***



***Project Team Members in a writing workshop in Ethiopia***

The study seeks to build a strong evidence base of current mobile phone use among Community Health Workers (CHWs) in order to enhance the effectiveness of ‘informal mhealth’ and address associated challenges. Our aim for implementing this study is to build a comprehensive understanding of current ‘informal mhealth’ practices in Ghana, Malawi and Ethiopia, as a basis to inform policy and practice. The specific objectives of the research are to ascertain current levels and patterns of work-related mobile phone use among CHWs across multiple sites in each country; evaluate the impact of current practices on CHWs wellbeing and patient experience/care; engage CHWs and patients in discussions of current practices/experiences and identify possible ways of supporting, enhancing and sharing good practice, and addressing

challenges as well as develop policy reviews related to CHWs programmes and mhealth initiatives in each country.

***Narrating Blood: An international network for cross-cultural research and intervention into blood-related reproductive and adolescent health and care- economies in India, Bangladesh, Ghana and the UK***

The *Narrating Blood network* is an international transdisciplinary research network at the University of Sussex exploring the impact of hidden blood-related conditions on social, economic and health welfare in Ghana, India and Bangladesh. *Narrating Blood* examines the ways in which blood is narrated within policy discourse, as well as perceived in terms of weakness or stigma in everyday family, school and livelihood contexts for poor, rural, urban and migrating populations. Our network will explore the following topic areas:

- Blood related stigma
- Blood borne infections (HIV and Aids, Malaria, Zika, Ebola)
- Anaemia (nutritional, including neonatal and infant; thalassaemia; sickle cell anaemia; malarial anaemia)
- Menstrual disorders
- Blood diagnostics and related technologies
- Blood transfusions
- Blood donations
- Blood, kinship, inheritance
- Blood and identity politics

Accordingly, the objectives of the network are as follows:

- Pool expertise around the less-visible, noncommunicable blood-related disorders, especially anaemia and menstrual health focusing on young women and men as well as adolescent girls and boys
- Develop effective health communication methodologies for close-to-community providers (i.e. midwives and informal health workers) that draw on anthropology, psychology, philosophy, education, social policy and social care perspectives and to critically engage with behavioural change interventions
- Share knowledge and advise on culturally sensitive policy related interventions in low- and middle-income countries



***Team members in a discussion with a nurse in Komenda Health Centre***



***Team members in a discussion with the Nutrition Officer at the Komenda-Edina-Eguafo-Abriem (KEEA) Municipal Health Directorate***

***Factors influencing Community Health Workers' Effectiveness***

Our motivation in this research is to go beyond existing studies of Community Health Workers' (CHWs) 'effectiveness' at population level, and instead to drill down in the details of what works, for whom, and how we can learn from and build on this. Our focus is not just on outcomes we seek to understand and unpick the processes through which certain practices and programmes translate (or not) into equitable improvements in healthcare. The focus on equity is crucial, as we know that population-wide health improvements do not necessarily filter down to everyone (indeed, as global health indicators have improved over the last 2 decades, health inequalities between and within countries have often widened). We need therefore to understand how gender, generation, ethnic identity and other axes of difference might intersect with poverty and economic vulnerability to shape both access to care and health outcomes. We are particularly concerned to understand the experiences of people facing multiple kinds of marginalisation (e.g. disability, minority ethnic, vulnerable youth) and of those managing complex health conditions.



**Project Team Members**

### **Baseline study of Green Skills for Ghana Project**

The “Green Skills for Ghana (GSG)” project, which was being implemented by Plan International with support from the European Union, was part of the effort to address unemployment among youth and adult women in Ghana through the promotion of green skills and establishment of green businesses/jobs. The baseline study mainly sought to assess the current situation, needs, perceptions and rights of adult women aged 36 and above and youth from age 15 to 35 years on issues related to gender barriers in accessing economic activities in a sustainable manner. The specific objectives of the assignment were to establish a baseline on the key indicators as stated in the terms of reference; and benchmarks for measuring the progress, monitoring and evaluation with regard to the outputs and results.



**Fieldworkers during data collection**

### **Evaluating the impacts of on-site sanitation systems on groundwater quality in low-income neighbourhoods of Cape Coast, Ghana**

Access to clean drinking water and improved sanitation facilities remains a major challenge to both rural and urban communities of Sub-Saharan Africa. Owing to the lack of central sewage systems in urban areas, septic tanks, locally referred to as “Soakaways”, are commonly used in residential and business areas. For the low-income, outer-city communities, pit latrines are often mixed with soakaways as well. Meanwhile, poor access to potable water in the communities forces a dependence on shallow groundwater, mostly sourced via hand-dug wells. The unintended result is that household wells end up in close proximity to soakaways, or pit latrines in a manner that could potentially contaminate groundwater and render the dependent populations vulnerable to water-borne diseases. Projected impacts of climate change may further complicate the groundwater-sanitation problem.



**Scenes from water sampling from wells in the selected communities**



This study evaluates the potential impacts of soakaways and poor sanitation facilities on groundwater quality in five urban communities of Cape Coast, Ghana.

We mapped soakaway locations, depth to water in wells, water temperature, conductivity, dissolved oxygen, salinity, and total dissolved solids (TDS) in 115 groundwater wells. The measured values were assessed against WHO set thresholds to determine the water quality of individual wells. Using GIS, the spatial variability of the parameters, as well as the effects of distance and angle of wells from soakaways on the measured parameters were explored. Overall, preliminary results of this investigation suggest that groundwater in all five communities is already being contaminated, possibly from the soakaways. Thus, in-situ measurement of physical parameters (such as high table elevation, very low dissolved oxygen concentration, high conductivities and high total dissolved solids) suggest potential issues of cross-contamination. We therefore contract the Water Research Institute (WRI) of the Council for Scientific and Industrial Research (CSIR), Ghana to conduct further chemical and biological on selected wells. The water samples have been collected and we are currently finalizing the analysis.

### ***Building partnership for strengthening accountability in the Civil Service, Ghana***

The project aimed at strengthening an emergent partnership for developing a shared wider project focused on strengthening accountability in the Civil Service in Ghana. In particular, the award provided resources for all partners involved to meet in the UK and in Ghana to plan the research project. Secondly, the award helped to widen the partnership so as to include other actors with an interest in accountability, good governance and anti-corruption, including relevant commissions and working groups from the Ghanaian public sectors, academic institutions and organisations from the civil society. This was expected to strengthen the partnership's inter-disciplinary focus and reach. The project therefore provided the basis for: a) agreeing tasks and responsibilities of each partner involved in the short and medium term for developing further applications based on the identified priorities; b) scheduling regular (virtual) meetings among the partners so as to update each other on the progress done and possibly to extend the network; c) creating a shared online platform to share resources useful for grant development and capture.

### ***Development of Oil and Gas Industry Local Content Policies in Ghana: Lessons and Learning from UAE***

How can Ghana, a nascent oil and gas producing country learn from the UAE, an established oil/gas exporting country as it strives to develop its Local Content (LC) laws and policies? The overarching objective of this study is to undertake comparative analysis of LC laws and policies between the two countries to determine how Ghana can learn from the UAE to develop effective LC culture. LC laws have the potential to provide local economic, social, cultural and environmental benefits to all. Governments all over the developed and developing world have invested a lot of resources into developing and implementing LC laws. The UAE has well-established LC policies, Ghana is new with critical regulatory, policy, human resource and legal challenges as it strives to develop the sector. Ghana has a lot to learn from the UAE in its quest to develop a well-functioning LC sector for the good of its citizens.

### ***Climate Change Adaptation and Mitigation Engagements in Sub-Saharan Africa***

The Ghana project main goal was to assess the level of public perception in climate change adaptation efforts. Specifically, it intended to evaluate level of awareness of the public on climate change adaptation efforts, assess the level of community engagement in adaptation processes needed to create support and acceptance for policy development and effective implementation and document outcome of the integration of practical, contextual and local knowledge with science-based approaches to adaptation policies in Ghana.

### ***Natural Resource Accounting – Key for Sustainable Natural Resource Management in Ghana***

The project aimed at establishing appropriate balance between exploitation of natural resources for development and economic growth. It laid emphasis on the need to extract the country's resources for the purposes of economic growth and to increase the quality of life citizens. However, such developmental activity must be done with great care to protect the surrounding environment. This is because it would be counterproductive to utilize the resources for huge economic growth at the expense of destroying the nature.





### ***Masculinity, use of herbal alcoholic bitters and compulsory heterosexuality in West Africa: Narratives from urban Ghana***

The intention of this study was to present narratives of how Ghanaian women and men construct sex in relation to alcohol and herbal alcoholic bitters. How do women perceive Ghanaian men in matters of sex, i.e., sexual 'performance'? What do men say about women's notion of men about sex? Do men think they need help to have sex? What sort/kind of help do they (men) need, if they do? These were some of the questions I explored as part of the larger project on "Sex and herbal alcoholic aphrodisiacs in Ghana".

The media comprise key sources of knowledge about aphrodisiacs (locally brewed gins, hard liquor, and traditional medicines). Two main reasons emerged why men who used aphrodisiacs did so: to proof and or showcase 'real' masculinity, perceived in terms of phallic competence (the ability to sustain erection, to prolong sex, and to enhance a female partner's sexual pleasure); and female engagement with masculinity i.e. women demanding conjugal or sexual rights based on men's

own perception of what it takes to be a 'real' man. Sexual performance was conceived and expressed in varied ways (e.g., using local slangs borsu, borsu kena, 'gb r', 'strongman') and depends on relationship dynamics and age. I argue that sexual 'non/performance' is a threat to masculinity and can dislocate it as women exert indirect pressure (such as ridicule) on their men to seek sexual virility induced by men's understanding of women's notion of real masculinity. While there is the need to intensify education about beliefs that reinforce pressure on men as sexual 'performers', it is equally important to demystifying beliefs around sex and highlight the health implication of aphrodisiacs using state regulatory agencies such as the standards board and the media as key agents.

I explored how aphrodisiacs influence the construction of dominant masculinity using in-depth interviews with 20 women and 16 men in a suburb of Accra, Ghana. The study was exploratory in character and was part of a larger project aimed at understanding sex and herbal alcoholic use as therapeutic types in Ghana. Specifically, I focused on women's and men's conceptions of aphrodisiacs especially in relation to herbal alcoholic bitters, how women negotiate male use of the former, and implications of aphrodisiacs for the conceptualization of dominant masculinity in Ghana. The media comprise key sources of knowledge about aphrodisiacs (locally brewed gins, hard liquor, and traditional medicines). Two main reasons emerged why men who used aphrodisiacs did so: to proof and or showcase 'real' masculinity, perceived in terms of phallic competence (the ability to sustain erection, to prolong sex, and to enhance a female partner's sexual pleasure); and female engagement with masculinity i.e. women demanding conjugal or sexual rights based on men's own perception of what it takes to be a 'real' man. Sexual performance was conceived and expressed in varied ways (e.g., using local slangs borsu, borsu kena, 'strongman') and depends on relationship dynamics and age. The findings show that sexual 'non/performance' is a threat to masculinity and can dislocate it as women exert indirect pressure (such as ridicule) on their men to seek sexual virility induced by men's understanding of women's notion of real masculinity. While there is the need to intensify education about beliefs that reinforce pressure on men as sexual 'performers', it is equally important to demystifying beliefs around sex and highlight the health implication of aphrodisiacs using state regulatory agencies such as the standards board and the media as key agents.

### ***Sex and herbal alcoholic aphrodisiacs in Ghana***

Using data from urban Ghana, the study investigates how cultural expectations of sex in intimate relationships influence the marketing and patronage of herbal bitters and gender.

Three main themes emerged from my conversations with the men, i.e., construction of manhood, marketing and access to herbal bitters, and men's insecurities/vulnerabilities in using herbal bitters. The central issue that permeates definition of manhood in this paper was located around the penis and sexual "performance". The interviewees noted that biology was central in determining what it means to have a penis in terms of size and that hereditary plays a role in this. The marketing of herbal bitters can be classified into two, i.e., licensed and unlicensed. Licensed bitters were marketed mainly via the electronic media (TV, radio) and billboards and had been approved by the FDA and had disclaimers for persons below 18 years. The licensed ones were both alcoholic bitters and nonalcoholic beverages produced by pharmaceuticals compared to the unlicensed that locally manufactured by individuals, drinking bars/spots/pubs dotted across Ghana. Younger (around 24-39 years) and middle aged adult men (roughly between 40-45 years) and those married reported media messages that focused on expectations of the declaration of masculinity. Just a few adverts targeted elderly men (around 50-60 years and above) and those that did were about the use of pills/capsules produced by pharmaceuticals. Two main issues emerged from the study regarding men's insecurities and vulnerabilities to herbal bitters, i.e., sexual vulnerabilities and sexual insecurities. The men's main vulnerabilities relate to biomedical risks while insecurities relate to social risks. The biomedical risks were associated with using herbal mixtures in particular were fatigue during sex (e.g., unable to achieve ejaculation) and 'uncontrolled'/prolonged erection.

There is the need to understand use of herbal bitters as a manifestation of hegemonic masculinity and gender power. Because some men conceptualize manhood around the penis and sexual "performance", they think they need help to "perform" and herbal bitters play a role. The advertisement and use of herbal bitters therefore reinforces hegemonic notions of sex and illuminates men's insecurities and vulnerabilities. Indeed, patriarchal culture as expressed through the performance of masculinity is not a problem just for women but also for men themselves. There is therefore the need to engage

conceptions around masculine ideals in heterosexual relationships via media engagement (e.g., promote constructive messages about maleness in West Africa), regulation/policy, research, and advocacy.

The proliferation of herbal alcoholic bitters as aphrodisiacs (substances that cause or arouse or increase sexual desire) across West Africa is a public safety issue. Yet, there is a dearth of knowledge on the subject and what it means to sexual practices. Using interviews, participant observations, and images from rural and urban areas in five regions in Ghana, I sought to understand the meanings women and men attach to sex and alcohol and herbal alcoholic bitters in Ghana. In this study, I provide narratives and observations with dealers and producers of local bitters/gins (licensed and unlicensed) and their clients and local perceptions about these industries and their produce. The issues discussed included perceptions about sex and knowledge of local aphrodisiacs (the types of aphrodisiacs used by men and women), perceptions and patronage of alcohol and herbal alcoholic bitters as sex enhancing medicines (the choice of herbal bitters [if ever used] and reasons, and experiences thereafter).

### ***Equal Opportunities in Higher Education: Partnership for Institutional Change - EQUIP***

This project seeks to replicate a process of promoting equal opportunities in higher education as practiced in Freie University Berlin into the University of Cape Coast. The key point of the project is to institute the concept of Gender Equality Officers into the University of Cape Coast as is the case in Freie University Berlin. These officers will serve as the focal point of all attempts to ensure gender equality in the University system. This is five-year project and start from 2019 – 2024. We have held two inception workshops both in the University of Cape Coast, Ghana (May 2019), and Freie University Berlin, Germany (October, 2019).

### ***Mixed (race) Ghanaians: Identity, belonging and transnational family networks – (From 2019/2020)***

Our study seeks to explore the dynamics and mechanisms that shape the lived embodied experience of mixed-race Ghanaians in Ghana and in Canada. This research aims at bridging the gap in research on mixed North-South families by looking at the (transnational) lived experiences of individuals who have one Ghanaian parent and one parent who identifies as Western. It proposes to get a

better understanding of the processes of racialization (what some have called “colourism”) The study is guided by the following key points: 1) Inclusion, exclusion and modes of belonging; 2) The embodiment of “mixedness” (with a transversal focus on gender); and 3) Transnational family networks.

We are now at the data collection stage of the research. The project is a qualitative one. It draws on narratives from individual in-depth interviews to examine the lived experiences of 30 Mixed persons or ‘half-caste’ persons in Ghana and Canada. Participants are purposively selected through snowball sampling method.

### ***Life Course Perspective on Socioeconomic Inequalities in Life Style and Mortality in Youth and Adulthood: A Three-Generation Study***

The overarching aim of this project is to study the life course perspective of how socioeconomic inequalities in unemployment, youth and adult mortality are produced. The study is utilising a longitudinal data which was constructed by individually linking data from the Adolescent Health and Lifestyle surveys (AHLS) with census and registry data from Statistics Finland concerning the survey participants as well as their parents and grandparents. The AHLS is as part of a national monitoring system on adolescent health and health behaviours conducted biennially since 1977 using nationally representative samples of 12-, 14-, 16-, and 18-year-old drawn from the Population Register Centre.

### ***ONE OCEAN Hub: Re-focusing multi-scalar, integrated ocean management for SDG synergies***

The One Ocean Hub research project led by the Strathclyde Centre for Environmental Law & Governance, University of Strathclyde, United Kingdom UKRI-GCRF funded project. The overall aim of the project is to transform global responses to the challenges currently facing the world’s oceans. The five-year project is being funded by the UK Research and Innovation’s Global Challenges Research Fund, and will involve more than 50 partners, including world-leading research centres, development organisations, community representatives, governments and multiple UN agencies. The UCC team comprises researchers from the Faculty of Law, the Departments of Geography and Regional Planning, Fisheries and Aquatic Sciences, Sociology and Anthropology. The UCC team collaborates with researchers from the CSIR-Food

Research Institute and the Center for Conflicts, Human Rights and Peace Studies, University of Education, Winneba.



The Hub will bring together the competing interests and agendas of the individuals, communities and organisations that rely on our oceans to realise a vision of an integrated and sustainable approach to conservation and sustainable use of ocean resources. A key priority will be to ensure that the BELIEFS, knowledge, experiences and rights of those most-reliant upon the oceans, and disproportionately affected by our failure to protect them, are recognised. The Hub will set out to uncover the less tangible values of the ocean, and the hidden ‘trade-offs’ in ocean decision-making. The goal is to ensure that decision-making at multiple levels (local to international) is based on evidence of risks and opportunities among competing ocean uses. The Hub specifically addresses the challenges and opportunities of South Africa, Namibia, Ghana, Fiji and the Solomon Islands, and will share knowledge at regional (South Pacific, Africa and Caribbean) and international levels.

### ***A Social-Ecological System Approach towards a Sustainable Agricultural Production in Sub-Saharan Africa (SESASA)***

SESASA’s aim is to develop an operational framework to implement sustainable land management strategies that supports local land managers and regional policy actors in harmonizing individual and societal objectives. Agricultural mismanagement has led to a huge loss in biodiversity and reinforced land degradation in the Sudanian savanna zone. The project addresses various



cropping systems (intercropping vs. crop-rotations) and cultivation practices in order to understand the impacts of changes on their agro-economic as well as environmental performance. SESASA will connect farmer responses to social, economic and climate changes at local scale with planning and policy instruments at national scale so that projected food and water shortages can be managed more efficiently. To implement these, an awareness of the competitive land resources between pastoralists and arable farmers has to be created for avoiding tensions and for a mutual understanding. In the SESASA project, an attempt will be made to explore the co-existence of both land manager types for a sustainable resource use in two different study sites in Ghana. Our approach is based on the theory of social-ecological systems and considers systemic properties such as emergence effects that arise from a non-predictable amplification of management impacts on the availability of natural resources such as food and water.

### ***Midterm Performance Evaluation of the Ghana Poultry Project (GPP)***

The Food for Progress (FFPr) Ghana Poultry Project (GPP) is a five-year (October 2015 - December 2020) initiative that is being funded by the United States Department for Agriculture (USDA) as part of its contribution to enhancing Ghana's poultry sector through increasing agricultural productivity in the poultry value chain and expanding trade in poultry products. Considering that the GPP had been running for three years out of the projected five-year duration, a midterm assessment of the GPP was conducted to ascertain how it had progressed towards the attainment of its intended objectives and expected outcomes, as well as to guide the implementation of activities in the remaining years of the Project by strengthening various components of the implementation structure.

### ***Switch Africa Green Project***

The Switch Africa Green (SAG) Project funded by European Union, under the auspices of United Nation Environment Program (UNEP), United Nations Development Program (UNDP) and United Nations Office for Project Services (UNOPS). The goal was to promote green business and sustainable development especially for the development of the businesses in the e-waste sector

The overall objective of this Switch African Green project therefore, is to facilitate a green economy for the e-waste value chain by creating income generating opportunities and reducing environmental degradation through

improved resource recovery and waste prevention and management in the Greater Accra region (Accra and Tema) and Ashanti Region (Kumasi). Specifically, the project seeks to:

- To promote sustainable patterns of consumption and production through a resource efficient e-waste management
- To provide comprehensive consulting and support for establishing eco-innovative micro and small and medium-sized enterprises through identification of green technologies and building capacity on eco-entrepreneurship
- To contribute to poverty alleviation by improving working and living conditions of workers and communities by reducing environmental and health impacts of the improper recycling of e-waste
- To foster dialogue with decision-makers on policy enabling a green economy in the e-waste management sector and support informed-decision making

The main activity carried out during this reporting period entails ascertaining the inventory of e-waste generated and required by potential users and recyclers. The inventory assessment covered enterprises and organizations located in Accra, Tema and Kumasi . The project led to the establishment of the Eco-Business and Policy Centre at the University of Cape Coast.



### ***BET Ghana project***

The goal of the "Building Expertise and Training for Growth in the Consumer Goods and Food Processing Industry in Ghana" (BET Ghana) project is to enhance the employability and employment opportunities of students and graduates specifically in the Ghanaian consumer goods and food processing industry.



Furthermore, it is to increase the competitiveness and growth of the Ghanaian consumer goods and food processing industry, and promote innovation and job creation, facilitated by the transfer of knowledge between University of Cape Coast and the private sector. The ultimate objective is to enhance the employability and employment opportunities of students.

The 3.5 years' project, funded by the DAAD (Germany) is a collaborative platform for research in Ghanaian consumer goods and food processing industry. It also fosters the creation of online modules on entrepreneurship, development of case studies, and participation in business games as well as organising joint international conferences (Attached is the project document).

The project consists of three pillars, namely (1) the set-up of a research task force on consumer goods and food processing industry, (2) digital and blended learning, and (3) start up training and development. These pillars are interconnected, with the generated knowledge through applied research feeding into the development of digital and blended learning formats, and in the coaching and counselling of entrepreneurs.

The objectives of the project are to:

- build expertise in the Ghanaian consumer goods and food processing (CG&FP) industry;
- build Capacity in online teaching;
- create networks with CG&FP industry;
- expose educators to practice oriented teaching;
- undertake training for businesses and student entrepreneurs; and
- train students to initiate Start-ups.

The activities of the project include the following:

- Baseline study/state of the arts in CG&FP industry;
- Visit fairs and Conferences;
- Developing case studies in the CG&FP sectors;
- Conducting applied research (faculty and students);
- Online tutorials in applied research process and methodology;
- Capacity building in international business game (ToT);
- ToT in Competency based Economies through Formation of Enterprise (CEFE);
- Conducting international business game;
- Training for businesses and student entrepreneurs;
- Key employability soft skill training etc.



**Case Study Training in Germany**

### **Graduate Enterprise Development Initiative (GEDI)**

The unemployment situation in Ghana has become even more critical in recent years due to two major factors. First of all, since 2008, there is a freeze on public sector employment. This is a policy strategy to make the public sector more efficient. Secondly, the private sector has consistently shrunk due to debilitating challenges to the business environment. This includes high interest rates, rising inflation, cost of credit and energy.

It is in the light of these that a strategy to promote self-employment and entrepreneurship be given the necessary attention and support. Through MSMEs, entrepreneurs have created the needed jobs, generated the needed for countries, thereby boosting the economy of the country (Abor, 2006). Furthermore, entrepreneurs and MSMEs have been found to contribute to innovations and poverty alleviation (Abdin & Begum, 2015). Therefore, a programme to promote entrepreneurship and self-employment must be supported by all stakeholders in national development.

It is in light of this that EXIM Bank Ghana (formerly EDAIF) has introduced the Graduate Enterprise Development Initiative (GEDI) to support graduates between the ages of 18 and 35 to set up and manage new enterprises in non-traditional export trade and agro-based processing to feed local industry as well as aiding light manufacturing industries. This programme which is closely aligned to the mandate and tenet of EXIM is premised on the fact that some of these graduates have the potential of becoming successful entrepreneurs if given the needed support.

The main objective of the programme is to promote the establishment of long term, sustainable and commercially viable enterprises focusing on processing, marketing and packaging of agricultural and industrial products for both the local as well as the export market. The support from the EXIM fund will be a mix of grant and technical assistance from implementation partner(s) (IP), a number of business development service organisations in Ghana and other stakeholders.

The project document highlights the specific objectives of the project, the scope of work and the selection criteria of the suitable candidates. Furthermore, it looks at the roles and responsibilities to the client, the implementation partner and support for beneficiaries. It also provides the project implementation schedule and the budget as well as the logical framework. Moreover, it documents the mode of communication and documentation, grievances and conflict resolution channels.

This document would, therefore, serve as a guide for the implementation of the Graduate Enterprise Development Initiative project.

### **EMAGIN Project**

The market for consumer electronics is expanding at an ever faster pace and generates increasing amounts of waste from electrical and electronic equipment (WEEE or e-waste) which need to be disposed of and recycled responsibly. In Ghana, most WEEE is managed under improper environmental health and safety conditions. In fact, open burning of cables and manual disassembly of lead-acid batteries still present widely applied practices and result in significant environmental pollution and damage to human health. In order to address this issue, the Government of Ghana passed the Hazardous and Electronic Waste Control and Management Act in July 2016. This represents a landmark achievement; however, achieving tangible outcomes depends on the dissemination of knowledge among a wide range of stakeholders. While previous projects have made important contributions to improving the situation in selected regions across Ghana (predominantly Accra), it was realised that activities need to be implemented in other regions to achieve an impact on a broader scale.

Against this background, the overall objective of the proposed Action is to improve management of WEEE in Ghana towards SCP through an integrated multi-

stakeholder approach, thus promoting sustainable growth, alleviating poverty, increasing human well-being and preventing environmental pollution. More specifically, the Action will contribute to implementation of the Ghanaian Hazardous and Electronic Waste Control and Management Act, Act 917 by improving and scaling up the management of WEEE across MSMEs in Ghana. Geographically, the proposed Action will target 8 key regions across Ghana, namely Greater Accra, Ashanti, Brong Ahafo, Western, Eastern, Central, Northern and Volta Regions.

Key stakeholders are found along both upstream and downstream processes. They include informal recycler associations, formal and informal MSMEs in the WEEE recycling, collection and dismantling business, importers and retailers of consumer electronics, consumers as well as government authorities. During a preliminary needs assessment and based on the experiences from past projects in Ghana, all of these groups stated that the proposed Action is of relevant implementing SCP practices across the e-waste value chain.



**Online Teaching Training for UCC Staff in Germany**



# College of Health and Allied Sciences





**Prof. Johnson Nyarko Boampong**

Provost, COHAS

The College of Health and Allied Sciences (CoHAS) primarily trains students for the health sector through the School of Medical Sciences (SMS), School of Nursing and Midwifery (SoNM), School of Allied Health Sciences (SAHS) and School of Pharmacy and Pharmaceutical Sciences (SoPPS). The College provides students unprecedented opportunities in health related disciplines by offering multiple undergraduate and postgraduate programmes which links the Vision and Mission of the University to the world. The Schools in the College though relatively new have embraced new models with unrestricted freedom in order to innovate and build our structures to link education to industry. This underscores our philosophy of linking education to industry, knowledge to experience and theory to practice. The diverse health professionals and scientists in the College collaborate to provide interdisciplinary and interprofessional models of education reflective of today's team of healthcare workforce.

The leadership of the College has developed a strategic plan (2018-2023). To give meaning to our strategic plan, we provide exceptional education that inculcates in our students academic excellence, passion for community safety and development, leadership and advocacy for equity and equality in the provision of healthcare. Our graduates are therefore imbued with curiosity, empathy, determination and perseverance to lead healthcare team to transform society.

The future of the College is bright, exciting and inspiring as we introduce among others, courses in Pharmaceutical

Formulations and Cosmetics, Communication Sciences and Disorders and Public Health. The Biomedical and Research Centre and our flagship Journal will be established to give meaning to our resolve to find new innovative ways of solving our local, regional and international problems through research and dissemination of research output. The College has a strong collaboration with health facilities and research centres across the country in the training of its students.

### **Vision**

A College well positioned in producing quality healthcare professionals and Scientists.

### **Mission**

Our mission is to:

- i. provide unique health education of the highest standards and value to students by blending internationally validated curricula.
- ii. produce high calibre health professionals/scientists.
- iii. train health practitioners and researchers who are motivated to maintain excellence in healthcare.
- iv. establish centres of excellence in research and service delivery.

### **Research Focus**

The College of Health and Allied Sciences is in the process of establishing a Centre for *Biomedical and Clinical Research* to be the fulcrum for research in the College. In its research efforts, CoHAS is presently being guided by the theme; *Health, Education and Environment: Addressing Issues and Challenges for Sustainable Development*. In line with the research theme, faculty members of the College focus on the following research areas;

1. Communicable and non-communicable disease dynamics and control.
2. Biochemical and molecular changes in disease processes.
3. Maternal, neonatal and child health and nutrition.
4. Diatherapy and Diagnostics.
5. Oncology and innovative surgical techniques.
6. Ocular health and vision science.
7. Mental health determinants and interventions in African communities.
8. Discovery and development of molecules and compounds for disease therapy.
9. Electronic records management and cloud computing security.
10. Environmental health determinants and interventions.



### Relationship of College Research Agenda with SDGs

The research theme of the College is geared towards the global objective of promoting health, as enshrined in the 17 SDGs of 2015. Particularly, Goal 3 “ensure healthy lives and promote wellbeing for all at all ages” and also contribute to the other goals directly and indirectly. It also supports Ghana’s long-term strategic goal of building an equitable, healthy and prosperous nation.

### Research Partnership

To successfully achieve its vision and research objectives, the College collaborates with health and research institutions as well as academic institutions and industry, locally and internationally. These institutions include:

### International

- i. Cincinnati University
- ii. Auburn University
- iii. University of Akron
- iv. Norwegian University of Science and Technology (NTNU)
- v. University of Saskatchewan
- vi. University of Colorado

### Local

- i. Danadams Pharmaceutical Industry
- ii. Kinapharma Ltd.
- iii. Ernest Chemist
- iv. Amponsah-Efah Pharmaceuticals Ltd.
- v. Entrance Pharmaceuticals and Research Centre
- vi. Yannan Agricultural University
- vii. Cape Coast Teaching Hospital
- viii. Noguchi Memorial Institute for Medical Research

Grant Type	Title of Project	Principal Investigator(s) / Stakeholders	Department(s)	Source of Funding	Total Amount	Status of Project
<b>SCHOOL OF NURSING AND MIDWIFERY</b>						
Collaborative Research Project	“Improving Psychosocial Care and Support Services for Adolescent Living with HIV at the Cape Coast Teaching Hospital”	Ms Anna Hayfron-Benjamin (UCC, Ghana); Dr. Dorcas Obiri-Yeboah (UCC, Ghana); Dr. Angela D. Arkosu (UCC, Ghana) Ms Ernestina Asiedua (University of Ghana); Dr. (Mrs) Yemah Bockarie (Cape Coast Teaching Hospital, Ghana); Dr. Stephen Ayisi-Addo (National AIDS/STI Control Program, Ghana Health Service -GHS); Mr. Ibrahim Baidoo (Cape Coast Teaching Hospital)	Dept. of Maternal and Child Health, School of Nursing and Midwifery, UCC; Dept. of Microbiology, School of Medical Sciences, UCC; School for Development Studies, UCC; Dept. of Maternal and Child Health, School of Nursing and Midwifery, University of Ghana; Department of Paediatrics, Cape Coast Teaching Hospital; National AIDS/STI Control Program, GHS; The Public Health Unit, Cape Coast Teaching Hospital	UCC Directorate of Research, Innovation and Consultancy (DRIC) Research Grant Award 2016-2017 Academic Year	GH¢8,925	Completed (2018)

Grant Type	Title of Project	Principal Investigator(s) / Stakeholders	Department(s)	Source of Funding	Total Amount	Status of Project
<b>SCHOOL OF NURSING AND MIDWIFERY</b>						
Conference Grant	4th National HIV and AIDS Research Conference (NHARCON, 2018)	Ms Anna Hayfron-Benjamin (University of Cape Coast - UCC, Ghana)	Dept. of Maternal and Child Health, School of Nursing and Midwifery, UCC	National AIDS/STI Control Program, Ghana Health Service	GH¢500	Completed (2018)
Collaborative Research Project	Times New Roman	Dr. Nancy Innocentia Ebu (Univ. of Cape Coast); Dr. Jerry Paul Ninnoni (Univ. of Cape Coast); Mrs. Christiana Okantey (Univ. of Cape Coast); Ms. Patience Doe (Univ. of Cape Coast); Dr. Evelyn Asamoah Ampofo, (Univ. of Cape Coast); Ms Anna Hayfron-Benjamin (Univ. of Cape Coast); Dr. Andrews Druye (Univ. of Cape Coast); Mr. Richard Sarfo Walters (Univ. of Cape Coast)	Dept of Adult Health, School of Nursing and Midwifery - SONM, UCC; Dept of Mental Health, SONM, UCC; Dept of Maternal and Child Health, SONM, UCC	Researchers	GH¢10,000	Completed (2018)
Collaborative Research Project	Nurturing Cultural Competence in Nurse Education Through A Values-Based Learning Approach	Kathleen Markey (University of Limerick, Ireland); Christiana Okantey (University of Cape Coast, Cape Coast, Ghana)	Department of Nursing and Midwifery, University of Limerick, Limerick, Ireland; Department of Adult Health, School of Nursing and Midwifery, University of Cape Coast, Cape Coast, Ghana	Erasmus and faculty Mobility funding of SoNM, University of Limerick, Ireland	GH¢10,000	Completed (2019)
Collaborative Research Project	"Understanding information culture for self-management health support for people living with diabetes in Ghana"	Dr Eric Boamah (Open Polytechnic New Zealand); Dr Andrews Adjei-Druye (University of Cape Coast); Dr Judith A. Anaman-Torgbor (University of Health and Allied Sciences)	School of Health and Social Sciences, The Open Polytechnic of New Zealand School of Nursing and Midwifery, UCC Ghana; School of Nursing and Midwifery, University of Health and Allied Sciences, Ho, Ghana	The Open Polytechnic, Wellington - New Zealand	US\$2,000	On-going

Grant Type	Title of Project	Principal Investigator(s) / Stakeholders	Department(s)	Source of Funding	Total Amount	Status of Project
<b>SCHOOL OF NURSING AND MIDWIFERY</b>						
Collaborative Research Project	Audit of End-of-Life nursing care in Ghana	Dr. Susanna Aba Abraham (University of Cape Coast, Cape Coast - Ghana); Dr. Andrew Agyei Druye (University of Cape Coast, Cape Coast - Ghana); Mrs Gifty Osei Berchie (University of Cape Coast, Cape Coast - Ghana); Ms. Anna Hayfron-Benjamin (University of Cape Coast, Cape Coast - Ghana); Mr. Kweku Agyei-Ayensu (Essikado District Hospital, Sekondi-Ghana)	Dept of Adult Health SONM, UCC Dept of Maternal & Child Health SONM, UCC Essikado District Hospital, Sekondi	Sponsored by Researchers	GH¢8,000	Completed (2019)
Collaborative Research Project	Nurses' and Medical Officers' Knowledge, Attitude, and Preparedness Toward Potential Bioterrorism Attacks	Confidence Atakora, Stella Addo, Janet Aboagye, Alice Blay, Kweku Amoah-Gyarteng, Awube Menlah, Isabella Garti, Dorcas F. Agyare, Kumi Junior Limmy Sarpong	Queensland University of Technology, Australia, Christian Services University College, Ghana, Valley View University, Ghana, Suntreso Government Hospital Seventh Day Adventist Hospital,	Sponsored by Researchers	GH¢8,000	Completed (2019)
Collaborative Research Project	The impact of health education intervention on knowledge of cervical cancer and perception of cervical cancer screening for women in the Komenda, Edina, Eguafo and Abirem district	Dr. Nancy Innocentia Ebu Enyan (UCC); Dr. Salome Amisah-Essel (UCC); Dr. Christiana Asiedu (UCC); Dr. Kingsley Asare Pereko (UCC); Dr. Selorm Akaba (UCC)	Dept of Adult Health Nursing Department of Health, Physical Education and Recreation Department of Adult Health Nursing Department of Community Medicine Department of Agricultural Economics and Extension	DRIC, UCC	GH¢8,970	Completed (2019)

Grant Type	Title of Project	Principal Investigator(s) / Stakeholders	Department(s)	Source of Funding	Total Amount	Status of Project
<b>SCHOOL OF NURSING AND MIDWIFERY</b>						
Collaborative Research Project	Student and Faculty Exchange Programme	University of Cape Coast, Cape Coast - Ghana Grand Valley State University (GVSU), USA	School of Nursing & Midwifery, UCC Department of Public Health Nursing, Grand Valley State University	GVSU	GH¢23,946	Completed (2019)
Collaborative Research Project	Student and Faculty Exchange Programme	University of Cape Coast, Ghana University of Limerick, Castletroy, Limerick, Ireland	School of Nursing and Midwifery, UCC School of Nursing and Midwifery, University of Limerick, Castletroy, Limerick, Ireland	University of Limerick faculty Mobility funding and Erasmus	GH¢10,000	On-going
Collaborative Research Project	Student and Faculty Exchange Programme	University of Cape Coast, Ghana Auburn University college, USA	School of Nursing and Midwifery, UCC School of Nursing and Midwifery, Auburn University College, USA	Auburn University College	GH¢10,000	Completed (2019)
Professional Training Workshop	Introduction to Autism Spectrum Disorders and Applied Behaviour Analysis	Department of Mental Health, School of Nursing and Midwifery, University of Cape Coast Whitney Hammel (Autism Compassion Africa)	The Department of Mental Health, School of Nursing and Midwifery, University of Cape Coast Autism Compassion Africa	Autism Compassion Africa	GH¢1,000	Completed (2019)
Research Training Workshop	A workshop on Plagiarism	School of Nursing and Midwifery, University of Cape Coast	School of Nursing and Midwifery, University of Cape Coast	School of Nursing and Midwifery, University of Cape Coast	GH¢10,000	Completed (2019)
Capacity building project	Research Supervision and Nursing Education	School of Nursing and Midwifery, University of Cape Coast University of Witswatersrand, South Africa	School of Nursing and Midwifery, University of Cape Coast University of Witswatersrand, South Africa	University of Witswatersrand, South Africa	GH¢10,000	Completed (2019)



Grant Type	Title of Project	Principal Investigator(s) / Stakeholders	Department(s)	Source of Funding	Total Amount	Status of Project
<b>SCHOOL OF NURSING AND MIDWIFERY</b>						
Collaborative Research Project	Nurses' and Medical Officers' Knowledge, Attitude, and Preparedness Toward Potential Bioterrorism Attacks	Confidence Atakora, Stella Addo, Janet Aboagye, Alice Blay, Kweku Amoah-Gyarteng, Awube Menlah, Isabella Garti, Dorcas F. Agyare, Kumi Junior Limmy Sarpong	Queensland University of Technology, Australia, Christian Services University College, Ghana, Valley View University, Ghana, Suntreso Government Hospital, Seventh Day Adventist Hospital,	Sponsored by Researchers	GH¢5,000	Completed (2019)
<b>SCHOOL OF ALLIED HEALTH SCIENCES</b>						
Collaborative Research between Departments	Mutations in the optineurin, myocilin and WD3R genes in patients with Primary Open Angle Glaucoma (POAG) in Cape Coast (Preliminary Study)	Dr. Samuel B. Boadi-Kusi, Dr. Samuel Kyei, Dr. Emmanuel Kwasi Dr. Abu, Enyam Morny, Dr. Stephen Ocansey, Dr. Richmond Afoakwah	Department of Optometry and Vision Science, Department of Forensic Science	Self-funded	US\$10,000	On-going
Collaborative Research	Disability Glare and Driving Safety among Commercial Drivers in the Cape Coast Metropolis of Ghana	Dr. Samuel B. Boadi-Kusi, Dr. Eric Austin, Dr. Sampson L. Abu	Department of Optometry and Vision Science, School of Allied Health Sciences, College of Health and Allied Sciences, UCC Department of Ophthalmology and Visual Sciences, School of Medicine, University of Alabama at Birmingham, Birmingham, AL, USA	Self-funded	US\$20,000	Completed (2019)
Collaborative Research	Assessment of disability support systems in Tertiary Institutions in Ghana	Dr. Samuel B. Boadi-Kusi, Dr. Carl A. Halladay, Dr. Rebecca E. Missah	Department of Optometry and Vision Science, University of Cape Coast	Self-funded	GH¢8,000	Completed (2019)
Departmental Research	Smartphone Usage among People Living with Severe Visual Impairment and Blindness in Central Region, Ghana.	Smartphone Usage among People Living with Severe Visual Impairment and Blindness in Central Region, Ghana.	Department of Optometry and Vision Science, University of Cape Coast	Self-funded	GH¢5,000	Completed (2019)

Grant Type	Title of Project	Principal Investigator(s) / Stakeholders	Department(s)	Source of Funding	Total Amount	Status of Project
<b>SCHOOL OF ALLIED HEALTH SCIENCES</b>						
Departmental Research Project	Assessing the Progress towards Achieving "VISION 2020: The Right to Sight" Initiative in Ghana	Dr. E. K. A. Morny, Dr. S. B. Boadi-Kusi, Dr. S. Ocansey, Dr. S. Kyei, Dr. K. Yeboah, Dr. M. A. Mmaduagwu,	Optometry and Vision Science, UCC	Departmental and Self-funded	GH¢10,000	Completed (2019)
Capacity Building Project	Grant support from Prudential Bank to Purchase Equipment to support Eye Clinic and Research at the Department of Optometry	Dr. Stephen Ocansey, Dr. Emmanuel K. Abu, Dr. Andrew Owusu-Ansah, Dr. Samuel Kyei, Dr. Samuel Bert Boadi-Kusi, Dr. Enyam K. A. Morny, Dr. Charles Darko-Takyi, Dr. Carl H. Abraham, Dr. Alex Azuka Ilechie	Optometry and Vision Science, UCC	Prudential Bank Ltd	GH¢210,000	On-going
Research Grant	Normative values for retinal nerve fibre layer thickness, optic nerve head parameters and its association with visual function in an African population	Dr. Stephen Ocansey, Dr. Emmanuel K. Abu, Dr. Andrew Owusu-Ansah, Dr. Shadrack Mensah, Dr. Stephen Ocansey, Dr. Emmanuel K. Abu, Dr. Samuel Kyei, Dr. Samuel Bert Boadi-Kusi, Dr. Obed Amoah-Smith, Dr. Enyam Komla Amewuho Morny, Dr. Charles Darko-Takyi, Dr. Carl Halladay Abraham, Dr. Benjamin Appiah Nyamekye, Dr. Alex Azuka Ilechie	Department of Optometry and Vision Science Glaucoma Research Group, 2nd Xiangya Hospital of Central South University, China Eye Unit, Nsawam Government Hospital, Nsawam, Ghana, Emmanuel Eye Medical Centre, Accra, Eye Unit, Directorate of University Health Services, University of Cape Coast Hospital, Ghana	DRIC, UCC and self-funded	GH¢15,000	Completed
Departmental Research Project	Lateral interference, effects of flankers and reference bar configuration on foveal depth discrimination thresholds. <i>Vision research</i>	Dr. S. Ocansey,  Dr. E. Osuobeni, Dr. J. Siderov	Optometry and Vision Science, UCC  Eye and Vision Research, ARU, Cambridge, UK	Department and Grants	GB£70,000	Completed

Grant Type	Title of Project	Principal Investigator(s) / Stakeholders	Department(s)	Source of Funding	Total Amount	Status of Project
<b>SCHOOL OF ALLIED HEALTH SCIENCES</b>						
Departmental Research Project	Profile, knowledge, and attitude of contact lens users regarding contact lens wear in Ghana	Ocansey, S., Ogbomo, G. O., Abu, E. K., Morny, E. K., & Adjei-Boye, O. (UCC, Ghana)	Optometry and Vision Science,	Departmental and Self-funded	GH¢10,000	Completed (2019)
Collaborative Research Project	Assessing Adherence to Glaucoma Medication	Dr. Samuel Kyei (UCC, Ghana) Prof. Lyne Racette (Alabama, USA)	Department of Optometry and Vision Science, UCC, Ghana Department of Ophthalmology and Visual Sciences, Alabama, USA	ARVO-Association for Research into Vision and Ophthalmology, USA	US\$10,000	On-going
Individual Research Project	Infection Prevention and Control in Eye Care	Dr. Samuel Kyei	Department of Optometry and Vision Science, UCC, Ghana	Self-funded	GH¢10,000	On-going
Research Grant	Epidemiology uncorrected refractive error in selected rural communities in Zimbabwe  Sociodemographic and clinical profile of patients living with glaucoma and seeking care in two referral facilities in Zimbabwe	Dr. Samuel Kyei (UCC, Ghana) Dr. Selassie Tagoh (BUSE, Zimbabwe) Dr. Samuel Kyei (UCC, Ghana) Dr. Selassie Tagoh (BUSE, Zimbabwe), Dr Bismark Owusi-Afriyie (Greenwood Eye Centre, Zimbabwe) Dr. Solomon Guramatunhu (Greenwood Eye Centre, Zimbabwe) Dr. Mahosko Akim (BUSE, Zimbabwe)	Department of Optometry and Vision Science, UCC, Ghana Department of Optometry, BUSE, Zimbabwe	Bindura University of Science Education, BUSE	US\$5,000	On-going
Individual Research Project	Normative data for functional non-strabismic binocular vision	Dr. Charles D. Takyi; Dr. Samuel B. Boadi-Kusi (UCC, Ghana); Dr. Vanessa R. Moodley (UKZN, South Africa)	Department of Optometry and Vision Science, UCC Discipline of Optometry, University of KwaZulu Natal, South Africa	Self and UKZN	GH¢60,000	On-going
Departmental Research Project	Association between refractive status and parameters of accommodation	Dr. Charles Darko-Takyi. Dr. Amissah Felix Okai	Department of Optometry and Vision Science	Self funded	GH¢10,000	Completed (2019)

Grant Type	Title of Project	Principal Investigator(s) / Stakeholders	Department(s)	Source of Funding	Total Amount	Status of Project
<b>SCHOOL OF ALLIED HEALTH SCIENCES</b>						
Departmental research project	Association between refractive status and vergence parameters	Dr. Charles Darko-Takyi (UCC, Ghana) Haruna Yakubu Zato (UCC,Ghana)	Department of Optometry and Vision Science	self-funded	GH¢10,000	Completed (2018)
Departmental research project	Relationship between asthenopia and clinical measures of dry eye disease	Dr. Charles Darko-Takyi; Dr. Francisca Hammond (UCC, Ghana) Dr. Osei Kwaku (University of Houston,USA)	Department of Optometry and Vision Science	self-funded	GH¢10,000	Completed (2019)
Departmental research project	Relationship between asthenopia and clinical measures of dry eye disease	Dr. Charles Darko-Takyi; Dr. Francisca Hammond (UCC, Ghana) Dr. Osei Kwaku (University of Houston,USA)	Department of Optometry and Vision Science	self-funded	GH¢10,000	Completed (2019)
Departmental research project	Heterotropia and amblyopia in an African population	Dr. Charles Darko-Takyi; Dr. Isaac Korankye	Department of Optometry and Vision Science	self-funded	GH¢10,000	Completed (2019)
Departmental research project	IPD and its association with vergence and asthenopic symptoms	Dr. Charles Darko-Takyi; Dr. Ahlijah Salaese Afi	Department of Optometry and Vision Science	self-funded	GH¢10,000	Completed (2019)
Departmental research project	The prevalence of Metabolic Syndromes among hypertension/ stroke patients in Central and Eastern regions	Ms. Precious Barnes, Dr. Hannah B. Taylor-Abdulai, Mr. Collins P. K. Botchey	Physician Assistant Studies	Department	GH¢15,000	On-going
Departmental Research Project	Contraceptive use among women in the Akyemansa District of the Eastern region of Ghana	Dr. Hannah B. Taylor-Abdulai, Mr. Collins Paa Kwesi Botchey	Physician Assistant Studies	Department	GH¢5,000	On-going
Departmental Research Project	Risk factors in determining Head and Neck cancers	Ms. Precious Barnes, Dr. Hannah B. Taylor-Abdulai, Mr. Collins Paa Kwesi Botchey	Physician Assistant Studies	Contribution from faculty	GH¢10,000	On-going



Grant Type	Title of Project	Principal Investigator(s) / Stakeholders	Department(s)	Source of Funding	Total Amount	Status of Project
<b>SCHOOL OF ALLIED HEALTH SCIENCES</b>						
Individual Research Project	Gender issues in Public Health	Dr. Hannah B. Taylor-Abdulai	Physician Assistant Studies and IAS, UG	Self-financing	GH¢5,000	On-going
Individual Research Project	In my father's house"! Entrepreneurial spirit among some African Pentecostal/ Charismatic churches	Dr. Hannah B. Taylor-Abdulai	Physician Assistant Studies and IAS, UG	Self-financing	GH¢5,000	On-going
Individual Research Project	I am a Witch for Jesus! Ritual, Symbolic Violence and Trauma in African Pentecostalism	Dr. Hannah B. Taylor-Abdulai	Physician Assistant Studies, IAS, UG and Princeton Theological Seminary, USA	Self-financing	GH¢5,000	On-going
Individual Research Project	African women stand point on abortion: A discourse on religion, culture and public health dimensions	Dr. Hannah B. Taylor-Abdulai	Physician Assistant Studies and CROSSCURRENT	CROSS CURRENT & AUBURN Seminary	US\$2,500	On-going
Individual Research Project	Does religion matter in reproductive health? A comparative analysis of Ghana and Nigeria	Dr. Hannah B. Taylor-Abdulai	Physician Assistant Studies, IAS, UG & Princeton Theological Seminary, USA	Society for the Scientific Study of Religions	US\$2,500	On-going
Individual Research Project	Determinants of Tuberculosis Treatment Adherence in The Greater Accra Region of Ghana	Dr. Hannah B. Taylor-Abdulai	SPH & IIDP	Institute of Infectious Diseases of the Poor (IIDP)	US\$5,000	Completed (2017)
Individual Research Project	Factors affecting early diagnosis and management of chronic kidney disease (CKD)	Dr. Yaw Asante Awuku /Dr. Hannah B. Taylor-Abdulai	Physician Assistant Studies and Cape Coast Teaching Hospital	Self-financing	GH¢10,000	On-going

Grant Type	Title of Project	Principal Investigator(s) / Stakeholders	Department(s)	Source of Funding	Total Amount	Status of Project
<b>SCHOOL OF ALLIED HEALTH SCIENCES</b>						
Individual Research Project	Adherence dynamics to the treatment of Acute Kidney Disease in the Central Region of Ghana: A cross-sectional study	Dr. Hannah B. Taylor-Abdulai/ Dr. Yaw Asante Awuku	Physician Assistant Studies and IAS, UG	Self-financing	GH¢10,000	On-going
Individual Research Project	Contribution of Aging, Obesity, and Microbiota on Tumor Immunotherapy Efficacy and Toxicity	Mrs. Regina Baiden-Amissah,	Physician Assistant Studies	Self-financing	GH¢10,000	Completed (2019)
Individual Research Project	Impact of ADAM17 expression as a potential prognostic biomarker and target for therapy in node-negative breast carcinoma	Mrs. Regina Baiden-Amissah,	Physician Assistant	Katholieke University, Leuven, Belgium	GH¢10,000	Completed (2019)
Individual Research Project	Expression of Ras and Rap5 Interactor 1 (RINI), Epidermal Growth Factor Receptor and NOTCH1 in Head and Neck cancer at some selected hospitals in Ghana	Ms. Precious Barnes	Physician Assistant Studies	University of Cape Coast	GH¢10,000	Completed (2019)
Departmental Research Project	A comparative study on hypertension and diabetes among adults who visit the Cape Coast Teaching and Cape Coast University Hospitals	Mr. Collins Paa Kwesi Botchey	Physician Assistant Studies	Self-financing	GH¢10,000	On-going

Grant Type	Title of Project	Principal Investigator(s) / Stakeholders	Department(s)	Source of Funding	Total Amount	Status of Project
<b>SCHOOL OF ALLIED HEALTH SCIENCES</b>						
Individual Research Project	Incidence of Postpartum haemorrhage at the Cape Coast Teaching Hospital and associated risk factors	Mr. Collins Paa Kwesi Botchey	Physician Assistant Studies	Self-financing	GH¢10,000	On-going
Individual Research Project	Assessing nurses ability to perform CPR at Cape Coast Teaching Hospital	Mr. Collins Paa Kwesi Botchey	Physician Assistant Studies	Self-financing	GH¢10,000	On-going
Departmental Research Project	Correlation between BMI and the prevalence of diabetic Meletus and hypertension	Ms. Precious Barnes,	Physician Assistant Studies	Self-financing	GH¢10,000	On-going
Individual Research Project	The prevalence of overweight/ obesity among adolescents in Saltpond municipality	Ms. Precious Barnes,	Physician Assistant Studies	Self-financing	GH¢10,000	On-going
Individual Research Project	Demographic and lifestyle predictors of pre-hypertension: A cross-sectional study among healthy adults in Kotokroba and Abura market	Ms. Precious Barnes,	Physician Assistant Studies	Self-financing	GH¢10,000	On-going
Research grant	Evaluating the antimalarial property of xylopic acid, cryptolepine and their combinations with artemisinin	Dr Elvis Ofori Ameyaw/ University of Georgia	Biomedical Sciences	U.S. Department of State	US\$50,000	On-going

Grant Type	Title of Project	Principal Investigator(s) / Stakeholders	Department(s)	Source of Funding	Total Amount	Status of Project
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#### SCHOOL OF ALLIED HEALTH SCIENCES

Research Project	Molecular detection and Genetic Profiling of Plasmodium Falciparum and its Impact on donor blood storage lessons	Dr. Desmond Omane Acheampong	Department of Biomedical Sciences	Wellcome Trust	US\$10,000	Completed (2018)
Research Project	Identification of the Vector Host of new Species of Leishmania in Ghana.	Dr. Godwin Kwakye-Nuako	Department of Biomedical Sciences	U.S. Department of State	US\$50,000	Completed (2019)
Capacity building project	Establishment of In- vitro infections system to new species of Leishmania identified in Ghana; to test a panel of anti-leishmania drugs	Dr. Godwin Kwakye-Nuako	Department of Biomedical Sciences	DAAD Fellowship	EUR6,000	Completed (2018)

#### SCHOOL OF MEDICAL SCIENCES

Interdisciplinary Research	Mother to child transmission of hepatitis B infection: Evaluating and implementing healthcare provider training to reduce the risk of transmission	Dr. Yvonne Nartey Dr. Awuku Yaw Asante Dr. Obiri-Yeboah Dorcas Dr. Amoako Duah Dr. Sally Bampoh Dr. Adwoa Agyei Dr. Mary Yeboah-Afihene Prof. Amelie Plymoth Prof. Weimin Ye Prof. Lewis Roberts	Department of Microbiology and Immunology, School of Medical Sciences (SMS), University of Cape Coast (UCC), Ghana  Department of Internal Medicine and Therapeutics, SMS, UCC, Ghana  St. Dominic Hospital, Akwatia, Ghana  Komfo-Anokye Teaching Hospital, Kumasi, Ghana  Korle Bu Teaching Hospital, Accra, Ghana  Greater Accra Regional Hospital, Accra, Ghana  Department of Medical Epidemiology and Biostatistics, at the Karolinska Institute Sweden  Mayo Clinic, Rochester, United States	GILEAD grant	US\$76,350	On-going
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Grant Type	Title of Project	Principal Investigator(s) / Stakeholders	Department(s)	Source of Funding	Total Amount	Status of Project
<b>SCHOOL OF MEDICAL SCIENCES</b>						
Interdepartmental Research	Post Hepatitis B vaccination sero-conversion among health care workers in the Cape Coast Metropolis of Ghana.	Dr. Dorcas Obiri-Yeboah Dr. Yaw Asante Awuku Mr. George Adjei Mr. Obed Cudjoe Ms. Benjamin Anna Hayfron, Mr. Evans Obboh Mr. Daniel Amoako-Sakyi	Department of Microbiology and Immunology, SMS, UCC, Ghana Department of Internal Medicine and Therapeutics, SMS, UCC, Ghana Department of Community Medicine, SMS, UCC, Ghana Department of Maternal and Child Health, SoNM, UCC, Ghana	Directorate of Research Innovation and Consultancy (DRIC), UCC	GH¢27,893	Completed (2019)
Interdisciplinary Postgraduate Research	Differentiated service delivery: a qualitative study of people living with HIV and accessing care in a tertiary facility in Ghana.	Dr. Vincent Adjetey Dr. Dorcas Obiri-Yeboah Dr. Dornoo Bernard.	Department of Obstetrics and Gynaecology, SMS, UCC, Ghana Department of Microbiology and Immunology, SMS, UCC, Ghana University of Professional Studies, Accra, Ghana	From Co-authors	GH¢8,000	Completed (2018)
Interdisciplinary Implementation Research	Renal dysfunction among adult HIV/AIDS patients on antiretroviral therapy at a tertiary facility in Ghana	Dr. Dorcas Obiri-Yeboah Dr. Yaw Asante Awuku Mr. Wonder Alofa Ms. Alice Charwudzi Mr. Ebenezer Aniakwa-Bonsu Mr. Evans Obboh Dr. Paul Nsiah	Department of Microbiology and Immunology, SMS, UCC, Ghana Department of Internal Medicine and Therapeutics, SMS, UCC, Ghana Department of Medical laboratory technology, School of Allied Health Sciences (SAHS), UCC, Ghana Department of Haematology, SMS, UCC, Ghana Department of Chemical Pathology, SMS, UCC, Ghana	National AIDS Control Program and from Co-authors	GH¢10,000	Completed (2017)
Interdisciplinary Implementation Research	Immunologic and virological response to ART among HIV infected individuals at a tertiary hospital in Ghana	Dr. Dorcas Obiri-Yeboah Dr. Faustina Pappoe Mr. Ibrahim Baidoo Dr. Samuel Essien-Baidoo Dr. Gordon Kwakye-Nuako Dr. Stephen Ayisi-Addo	Department of Microbiology and Immunology, SMS, UCC, Ghana Public Health Unit, Cape Coast Teaching Hospital, Ghana Department of Medical laboratory technology, SAHS, UCC, Ghana Department of Biomedical Sciences, SAHS, UCC, Ghana NACP, Accra, Ghana	National AIDS Control Program and from Co-authors	GH¢10,000	Completed (2017)

Capacity building project	Training of healthcare providers to deliver adolescent specific health needs related to HIV/AIDS	Dr. Stephen Ayisi Addo and National AIDS Control Program (NACP) team Dr. Obiri-Yeboah Dorcas Ms. Hayfron Benjamin Anna	NACP, Accra, Ghana  Department of Microbiology and Immunology, SMS, UCC, Ghana  Department of Maternal and Child Health, School of Nursing and Midwifery (SoNM), UCC, Ghana	West Africa Health Organization	€44,758	On-going
Capacity building project	Development of working protocols and job aids for a youth friendly Adolescents living with HIV (ALHIV) care center	Dr. Stephen Ayisi Addo and National AIDS Control Program (NACP) team  Dr. Obiri-Yeboah Dorcas  Ms. Hayfron Benjamin Anna	NACP, Accra, Ghana  Department of Microbiology and Immunology, SMS, UCC, Ghana  Department of Maternal and Child Health, School of Nursing and Midwifery (SoNM), UCC, Ghana	West Africa Health Organization	€10,466	On-going
Interdepartmental Research	Sero-prevalence and risk factors for hepatitis E virus infection among pregnant women in the Cape Coast Metropolis, Ghana	Dr. Obiri-Yeboah Dorcas Dr. Awuku Yaw Asante Dr. Adu Joseph Dr. Pappoe Faustina Mr. Obboh Evans Dr. Paul Nsiah Mr. Amoako-Sakyi, Daniel Prof. Simpure Jacques	Department of Microbiology and Immunology, SMS, UCC, Ghana  Department of Internal Medicine and Therapeutics, SMS, UCC, Ghana  Department of Obstetrics and Gynaecology, SMS, UCC, Ghana  Department of Chemical Pathology, SMS, UCC, Ghana  Laboratory for Molecular Biology and Genetics at the Pietro Annigoni Biomolecular Research Centre (CERBA), Ouagadougou, Burkina Faso	DRIC, UCC  CERBA, Burkina Faso	GH¢35,000	Completed (2017)



# Description of Funded Research and Projects

## *Improving Psychosocial Care and Support Services for Adolescents Living with HIV at the Cape Coast Teaching Hospital*

Designed as an interdisciplinary collaboration between Ghanaian healthcare professionals involved in the care of adolescents living with HIV (ALHIV), this three-phase interventional research project had three main goals/focus. Specifically, the project: (1) generated a baseline information on the psychosocial needs of ALHIV guided by the HEEADSSS psychosocial assessment approach/tool - a structured clinical instrument that touches on the major areas of adolescent psychosocial stress and provides a useful screening profile; (2) assessed the experiences and training needs of healthcare providers (HCPs) involved in the care of Ghanaian ALHIV; and (3) ended with a two day interventionist training of 28 adolescent-oriented and multi-disciplinary HCPs at the Cape Coast Teaching Hospital (CCTH) in Ghana. Aimed at empowering HCPs on best practices in terms of assessment, care and support approaches in the management of ALHIV, the training was based on the identified training needs of the HCPs and psychosocial care and support needs of ALHIV.

The project involved a collaboration between researchers from four different institutions in Ghana namely, the University of Cape Coast, University of Ghana, The Cape Coast Teaching Hospital, and the National AIDS/STI Control Programme, Ghana Health Service. The project was largely funded by the University of Cape Coast (UCC) Directorate of Research, Innovation, and Consultation, through its periodic grant award scheme. The authors contributed financially as well, to the remaining aspects of the project.

The findings of the research project are summarized in two joint publications yielded. The two publications are under the titles (1) Psychosocial assessment of Ghanaian adolescent living with HIV using the HEADSSS assessment approach: A mixed methods study; and (2) Experiences and Training Needs of Healthcare Providers Involved in the Care of Ghanaian Adolescents Living with HIV: An Interventional Study

## *4th National HIV and AIDS Research Conference (NHARCON, 2018)*

On behalf of the co-authors, Ms Anna Hayfron-Benjamin (SONM/UCC) was sponsored by the National AIDS/STI Control Programme, Ghana Health Service, to do a presentation on "Psychosocial assessment of Ghanaian Adolescent Living with HIV using the HEADSSS Assessment Approach: A mixed methods study" at the 4th National HIV and AIDS Research Conference (NHARCON, 2018). The National HIV & AIDS Research Conference (NHARCON) is organized by the Ghana AIDS Commission (GAC) every four years to serve as a platform to share ideas in support of the implementation of the current National HIV & AIDS Strategic Plan (NSP) 2016-2020. It also forms part of GAC's mandate to disseminate and share HIV and AIDS strategic information with the scientific community, academia, policy makers, programme managers, stakeholders and partners in the implementation of the National Response.

The abstract presented was a product of a previously group-led research project funded by the University of Cape Coast (UCC) Directorate of Research, Innovation, and Consultation, through its periodic grant award scheme. The abstract discussed psychosocial assessment findings of Ghanaian adolescents living with HIV, guided by the HEEADSSS psychosocial assessment tool - a structured clinical instrument that touches on the major areas of adolescent psychosocial stress and provides a useful screening profile. The findings highlighted a greater psychosocial burden among Ghanaian ALHIV, with an associated threat to their survival. This warrants a prioritized need to strengthen the psychosocial care of ALHIV in the care facilities and prompts acceleration in strengthening cohesiveness between national HIV agencies for robust ALHIV-specific psychosocial interventions, to enhance their quality of life.





*Miss Anna Hayfron-Benjamin, SONM/UCC (left) and one of the co-researchers on the ALHIV project, Ms Ernestina Asieduaa, SoNM - University of Ghana, taken at the National HIV/AIDS Research Conference - NHARCON 2018 (Photo credit: Ms Anna Hayfron-Benjamin)*

### ***Preceptor Evaluation of Graduate Nursing Students' Clinical Learning in Ghana***

The School of Nursing and Midwifery (SoNM), University of Cape Coast (UCC) is the first in Ghana to run a Master of Science in Advance Nursing Practice Programme. The Programme is designed to enhance skills of nurses in the clinical areas and practical knowledge of nurses in nursing educational institutions. This programme provides nurses with the refined analytical skills, enhanced abilities to articulate viewpoints and positions, the ability to link theory to practice, solve complex health problems, as well as generate and contribute to nursing knowledge. The rationale for this faculty level-based research project was to evaluate the output of the Programme, being the first of its kind in Ghana. Acquiescence with the success of all educational training programmes, evaluation from the perspectives of the products and other stakeholders is necessary, hence the need for this project. Preceptor evaluation is embedded in nursing education and constitutes a critical component of nursing students learning both in the classroom and clinical placement. This type of evaluation of nursing students may inform faculty of the additional learning needs students may require. To facilitate this kind of evaluation, a census survey was conducted with all the preceptors involved in the clinical training of the UCC/SO这里 MSc. in Advance Nursing Practice students, across the country. The study intended to describe preceptor's evaluation of graduate nursing students' ability to translate knowledge,

communicate and demonstrate professionalism during clinical placements in varied health facilities in Ghana. An adapted preceptor evaluation tool was used to gather relevant data. Data were analysed using the Statistical Package for Social Sciences version 22.0. and summarized using frequencies and percentages. The findings showed that the student's ability to translate knowledge was adequate (97.3%); they communicated effectively (90.4%) and demonstrated high degree of professionalism (93.2%) during clinical placement. Ultimately, our study revealed that preceptors were not only satisfied with working with our graduate students, but also are satisfied with their performance during clinical placement. The study concluded that the ability of the graduate nurse to demonstrate professionalism, effectively communicate and translate theoretical knowledge to practice was high which will eventually impact positively on patient care outcomes.

### ***Nurturing Cultural Competence In Nurse Education Through A Values-Based Learning Approach***

As part of the existing collaboration between the SoNM/UCC and its international partners, Mrs Christiana Okantey (Department of Adult Health - School of Nursing and Midwifery, University of Cape Coast) has teamed up with Dr. Kathleen Markey (School of Nursing and Midwifery, University of Limerick, Castletroy, Limerick, Ireland) - in a collaborative research on "Nurturing Cultural Competence in Nurse Education through a Values-based Learning Approach". This study was deemed necessary because of the increasing reports of cultural insensitivity globally in spite of the prevailing evidence that nurturing cultural competence development is essential in nurse education and practice. The purpose of this research project was to present the importance of providing opportunities for students to critically review approaches to care, while ensuring cultural competency is accepted as a more visible responsibility of the future registered nurse in delivering quality care. The authors highlighted the core values underpinning cultural competence development and the values of compassion, care, commitment, communication, courage, and competence. The paper yielded from the project discusses the importance of providing opportunities for students to critically review approaches to care. The authors outlined some practical approaches to examining core values underpinning nursing practice in the context of cultural competence development. The project began in February 2018 and ended January 2019.

### ***Mother to child transmission of hepatitis B infection: Evaluating and implementing healthcare provider training to reduce the risk of transmission***

Despite the presence of long-standing international guidelines on the management of hepatitis B positive pregnant women and their babies, there is evidence to suggest that in sub-Saharan African countries such as Ghana, there is inadequate knowledge and practice amongst healthcare providers on these guidelines and on prevention of mother to child transmission of hepatitis B. In regions of high endemicity such as Ghana, a significant proportion of chronic hepatitis B infections are acquired early in life through vertical (mother-to-child) transmission. The high burden of disease within the region, and its potential to cause illness and death from chronic liver diseases such as liver cirrhosis and hepatocellular carcinoma must be overcome. As such, strategies to improve health care delivery for pregnant women with chronic hepatitis B infection and their babies must be identified. These strategies must include improving knowledge and practices of healthcare providers in order to minimize the risk of transmission of hepatitis B from a mother to her unborn baby. The overall purpose of our proposed project is, in the long term, to reduce the risk of mother to child transmission of hepatitis B virus (HBV) in Ghana, through the training of health care providers.

### ***Training of healthcare providers to deliver adolescent specific health needs related to HIV/AIDS***

The surge of HIV/AIDS in young people in recent years make them a key population and therefore suggest the need for understanding their issues as well as implementation of appropriate strategies. Acknowledging that coping with a life-threatening illness during adolescence can be an overwhelming experience, the WHO therefore recommends the need for health care providers, planners, managers, and health leaders to pay particular attention to adolescent health.

In view of this, the training of healthcare providers to deliver adolescent specific health needs related to HIV infections is necessary. Therefore, national and regional team will facilitate the training for service providers in Ashanti and Volta region. These two regions were chosen because of their high HIV prevalence. The overall goal is to develop and improve the skills of health care providers to enable them provide comprehensive and adolescent appropriate services and also support behavior change.

### ***Development of working protocols and job aids for a youth friendly Adolescents living with HIV (ALHIV) care center***

Over the past decades, there have unacceptable high inequity in access to HIV care and treatment among adolescents compared to adults. Despite being the most vulnerable group dying from HIV-related causes, this group remains disadvantaged regarding access to treatment. Active case identification and timely linkage to prompt treatment remains a great challenge.

The adolescent group is at high risk for both acquisition and transmission of HIV infections as they are not effectively reached by current services. It is therefore, necessary to have a handy desk reference intended for health workers who provide primary care services to adolescents. These references provide precise, step-by-step guidance through the use of simple algorithms on how to deal with adolescents when they present with a problem or a concern about their health or development related to HIV/AIDS. This will help address the gaps in knowledge and clarify myths surrounding HIV/AIDS to these groups and make them aware of services available specifically for them as well as link them to other adolescent friendly services. Thus the objective of this project is to review available protocols, job aids and documents on HIV/AIDS related to adolescents and modify and develop adolescent friendly documents and job aids.

### ***Post Hepatitis B vaccination sero-conversion among health care workers in the Cape Coast Metropolis of Ghana***

HBV vaccine is known to offer protection against transmission of HBV infection. Health care workers are mandated to have this vaccination as part of their occupational health safety measures. Post vaccination response data for HCWs in our setting is not available. This study therefore aimed to evaluate the anti-HBs titre levels after Hepatitis B vaccination among HCWs from selected health facilities in the Cape Coast Metropolis, Ghana.

In all, 8.2% (n = 58) of the HCWs had anti-HBs titre levels <10IU/ml giving a sero-protection rate of 91.8%. HCWs who received 3 doses of HBV vaccine were more likely to be sero-protected as compared to those who received only one dose. We conclude that there is a high HBV vaccine efficacy among HCWs in the Cape Coast Metropolis of Ghana with higher prevalence of anti-HBs titre level associated with full vaccine dose adherence. Post vaccination antibody titre determination could be

an integral part of HBV vaccination protocol for HCWs in Ghana.

### ***Differentiated service delivery: a qualitative study of people living with HIV and accessing care in a tertiary facility in Ghana***

In 2014, the Joint United Nations Program on HIV/AIDS (UNAIDS) set out a treatment target with the objective to help end the AIDS epidemic by 2030. The concept of offering differentiated care services using community-based models is evidence-based and is suggested as a means to bring this target into reality. This study sought to explore the possible predictors and acceptability of Community-based health service provision among PLHIV accessing ART services at the Cape Coast Teaching Hospital (CCTH) in Ghana.

Participants expressed preference for facility-based service provision with the construct that, it ensures comprehensive health checks before provision of necessary medications. PLHIV in this study wished that the facility-based visits be more streamlined so “stable clients” could visit twice in a year to reduce the associated time and financial cost. The main barrier to community-based service delivery was concerns about stigmatization and abandonment in the community upon inadvertent disclosure of status.

Although existing evidence suggests that facility-based care was relatively more expensive and time consuming, PLHIV preferred facility-based individualized differentiated model to a community-based model. The fear of stigma and discrimination was very strong and is the main barrier to community-based model among PLHIV in this study and this needs to be explored further and managed.

### ***Renal dysfunction among adult HIV/AIDS patients on antiretroviral therapy at a tertiary facility in Ghana***

Kidney diseases have emerged as significant cause of morbidity and mortality in HIV subject on antiretroviral therapy (ART). In Ghana, routine follow up of HIV positive clients is by estimation of serum creatinine and urea levels. Glomerular Filtration Rate (GFR) is not routinely calculated and proteinuria is not routinely checked. This study sought to investigate the kidney profiles of adult HIV/AIDS patients being managed on ART at the Cape Coast Teaching Hospital (CCTH), Ghana.

Results: The mean age (years) of participants was 45.5 years ( 11.6) with 288 (65.4%) being on Tenofovir (TDF)

based ART regimen. The mean eGFR was found to decrease from 112.4 ml/min/1.73 m at baseline, to 103.4 ml/min/1.73 m after 6 months on ART and to a mean of 99.4 ml/min/1.73 m at recruitment into this study. Factors which were found to be associated with having eGFR < 60 included age, gender and CD4 count. TDF based ART regimen had no statistically significant effect on serum creatinine and urea levels. Estimated GFR decreased after 6 months among patients on ART despite normal serum creatinine and urea levels. This finding suggests that clients in care at HIV/ART clinics in Ghana may benefit from routine estimation of GFR and proteinuria.

### ***Immunologic and virological response to ART among HIV infected individuals at a tertiary hospital in Ghana***

The need to study the outcome of Antiretroviral Therapy (ART) among Human Immunodeficiency Virus (HIV) infected individuals in Ghana, a sub-Saharan African country crucial in the era of the “Treat All” policy. The aim of this study was to analyze selected determinants of immunological and virological response to ART among HIV infected individuals in a tertiary facility in Cape Coast, Ghana.

The mean CD4 count at baseline, 6 months on ART and currently at study recruitment were 215.1 cells/mm<sup>3</sup> ( 152.6), 386.6 cells/mm<sup>3</sup> ( 178.5), and 579.6 cells/mm<sup>3</sup> ( 203.0) respectively. After 6 months and 12 months on ART, the number who had achieved viral copies < 1000/ml were 149 (47.0%) and 368 (89.6%) respectively. We conclude that there was good response to ART among clients, high virological suppression and immunological recovery hence low rates of change to second line ART regimen in this cohort studied. With strict adherence to the national policy on HIV testing, management of positive clients and full implementation of the “Treat All” policy, Ghana could achieve, if nothing at all, the third “90, 90, 90” target by 2020.

### ***Sero-prevalence and risk factors for hepatitis E virus infection among pregnant women in the Cape Coast Metropolis, Ghana***

Hepatitis E virus is an emerging infection in Africa with poor maternal and foetal outcomes. There is scanty data on the sero-prevalence of HEV infection among pregnant women in Ghana. This study highlighted the prevalence and risk factors associated with HEV infection among pregnant women in Cape Coast Metropolis, Central Region

of Ghana. HEV sero-prevalence was 12.2% (n = 48) for IgG and 0.2% (n = 1) for IgM with overall of 12.3%. The odds of being HEV sero-positive for women aged 26-35 years was 3.1 (95% CI: 1.1-8.1), p = 0.02 and  $\geq 36$  years it was 10.7 (95% CI; 3.4-33.5), p = 0.0001. Living in urban settlement was associated with lowest odds of HEV infection {OR 0.4 (95% CI; 0.2-0.8), p = 0.01}. The sero-prevalence of HEV IgG increased progressively across trimesters with the highest among women in their third trimester (55.3%). None of the 49 HEV sero-positive women had elevated ALT level. Ten (N = 41) of the neonates born to sero-positive women developed jaundice in the neonatal period. The mean birth weight was 3.1kg (SD 0.4). We concluded that HEV sero-prevalence among pregnant women in the Cape Coast Metropolis is high enough to deserve more attention than it has received so far. It is therefore important to conduct further research on the potential impact on maternal and neonatal mortality and morbidity in Ghana.

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To facilitate this kind of evaluation, a census survey was conducted with all the preceptors involved in the clinical training of the UCC/SO这里 MSc. in Advance Nursing Practice students, across the country. The study intended to describe preceptor's evaluation of graduate nursing

students' ability to translate knowledge, communicate and demonstrate professionalism during clinical placements in varied health facilities in Ghana. An adapted preceptor evaluation tool was used to gather relevant data. Data were analysed using the Statistical Package for Social Sciences version 22.0. and summarized using frequencies and percentages. The findings showed that the student's ability to translate knowledge was adequate (97.3%); they communicated effectively (90.4%) and demonstrated high degree of professionalism (93.2%) during clinical placement. Ultimately, our study revealed that preceptors were not only satisfied with working with our graduate students, but also are satisfied with their performance during clinical placement. The study concluded that the ability of the graduate nurse to demonstrate professionalism, effectively communicate and translate theoretical knowledge to practice was high which will eventually impact positively on patient care outcomes.

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The authors outlined some practical approaches to examining core values underpinning nursing practice in the context of cultural competence development. The project began in February 2018 and ended January 2019.



*The co-researchers In Limerick, Ireland (Photo credit: Mrs. Christiana Okantey)*

### ***Understanding information culture for self-management health support for people living with diabetes in Ghana***

Dr. Andrew Agyei Druye (Head, Department of Adult Health - SoNM, UCC) has teamed up with Dr. Eric Boamah (School of Health and Social Sciences - The Open Polytechnic, Wellington, New Zealand) and Dr. Judith A. Anaman-Torgbor (School of Nursing and Midwifery, University of Health and Allied Sciences - Ghana) - in a collaborative research on 'Understanding information culture for self-management health support for people living with diabetes in Ghana'. The purpose of this research is to explore the various factors that influence the abilities of people living with Diabetes to access and use the information they need for their disease self-management. Information culture concerns the values, beliefs and behaviour patterns that influence people's

ability to identify, use and manage information to achieve desired results, including how they share information with others and preserve it for the future.

The research project which began in February 2019, has the approval of the RAILS 16 Conference Programme Committee and have been cleared of all Research Ethics issues by the Research Committee at the Open Polytechnic of New Zealand. It is expected to end by December, 2020. A funding of 2000 USD was provided by The Open Polytechnic.

The project is a two-phase study employing a methodological complementarity of sequential mixed-method design for data collection. The first phase involves an interpretive qualitative approach, using a case study research method. Ghanaian diabetic patients and health professionals who care for diabetic patients will be interviewed. The researchers will also use their observation of the environment of interviewees, take picture (with participants' permission) where necessary, and synthesize them to help with full and in-depth understanding of the information culture patterns of people living with diabetes in Ghana. Data will be analysed thematically, with main concepts grouped into themes and discussed at the core contextual factors influencing the information culture of people living with diabetes in Ghana.

In the second phase, a training intervention will be organized to teach diabetic patients and people living with other chronic conditions about how to identify, access, use and share health information from safe sources. Using a pre-post training design, the phase two involves completion of questionnaires by the participants before they enroll in the training programme, immediately after the training, and six weeks after the training.

### ***Audit of End-of-Life nursing care in Ghana***

Dr. Susanna Aba Abraham (SoNM, UCC) teamed up with colleague lecturers; Dr Andrew Agyei Druye, Mrs Gifty Osei Berchie, Ms Anna Hayfron-Benjamin, and a nurse clinician, Mr Kweku Agyei-Ayensu of the Essikado District Hospital, Sekondi to audit the nursing care rendered to clients who died in some selected Ghanaian hospitals. This is a baseline study of a four-phased project: "End-of-Life (EoL) Nursing Care: Conceptualizing a Culturally Sensitive Model For Ghanaian Hospitals" that seeks to ensure that all terminally ill patients and those who die in the hospital will experience the best of nursing care that will lead to a peaceful death.

This sub-study reviewed nursing documentation on clients who died while on admission and analysed it through the lens of the Biopsychosocial model. The findings indicated that nursing interventions for patients experiencing the end-of-life period while on admission focused more on routine care and relieving signs and symptoms with little attention given to the social and psychological needs of the patient and family. There was also no evidence of addressing the spiritual needs of the dying patient and family in spite of the presence of a chaplain in the facilities. This study highlights the need to include the teaching of the comprehensive nursing care for EoL for all levels of nurses in training and strengthen clinical nursing by developing a culturally sensitive EoL nursing care.

On behalf of the co-authors, Dr. Abraham (SoNM, UCC) presented the findings of the audit at the 30th International Research Congress in Calgary, Canada. The International Nursing Research Congress is organized by the of the Honor Society of Nursing, Sigma Theta Tau International (STTI) and published in the Virginia Henderson e-Repository, an international hub for nursing research.

### ***Midwives Experience of Maternal Death: Implications for Practice and Education***

Dr. Susanna Aba Abraham, together with a team of lecturers from the Departments of Maternal and Child Health and Adult Health (SoNM, UCC), Mrs. Gifty Osei Berchie, Ms. Anna Hayfron-Benjamin, Dr. Andrew Agyei Druye and Mrs. Christiana Okantey as well as, a nurse clinician, Mr Kweku Agyei-Ayensu of the Essikado District Hospital, Sekondi designed this study. This project was necessitated in the wake of the prevailing maternal mortality rates in spite of the Government of Ghana's effort to reduce it within

acceptable rates. A lot of effort has been directed towards minimising the rates of maternal mortality, however, in instances when they occur, there are no protocols for ensuring the psychological health of the midwife.

This study sought to explore the experiences of midwives who attended to women who died during the peripartum period. Using Colaizzi's Phenomenological process of analysis, the study revealed a maternal death was described as incompetence and failure of the midwives and the health facility. This affected service uptake and also had negative psychological effects on the attending midwives. These findings have resulted in the design of a larger project which is aimed at developing empirically-based guidelines for de-briefing and supporting midwives who experience maternal death whilst providing care to women in the peripartum period. This will be a source of reference for the teaching of the students who enroll in the BSc Midwifery programme at the SoNM, UCC, that has been scheduled to begin in the 2020 academic year.

The study has been accepted for oral presentation at the 45th Biennial Convention of the Sigma Theta Tau International (STTI) Honor Society of Nursing in Washington DC, USA in November 2019. Following the presentation, it will be published in the Virginia Henderson e-Repository, an international hub for nursing research.

### ***Nurses' and Medical Officers' Knowledge, Attitude, and Preparedness Toward Potential Bioterrorism Attacks***

Ms. Dorcas Frempong Agyare (Department of Adult Health - SoNM, UCC) partnered with nurses and medical officers in Queensland University of Technology, Australia, Christian Services University College, Ghana, Valley View University, Ghana, Suntreso Government Hospital and Seventh Day Adventist Hospital, Ghana to undertake this study. In the wake of the increasing ease of production and accessibility of biological weapons worldwide, health professionals in the emergency units are first line staff who must be knowledgeable and prepared to provide care during any attack. The study therefore sought to explore the knowledge, attitude, and preparedness of emergency units' medical officers and nurses toward managing any potential bioterrorism attack.

The findings of the study indicated that although the medical officers were more knowledgeable than the nurses on issues of bioterrorism, both cadre of health

professionals were not prepared to provide appropriate care if an attack occurred. These findings have implications for nursing education and practice. The need to review nursing curricula to include emerging health issues such as bioterrorism is clearly depicted.

### ***The impact of health education intervention on cervical cancer and screening for women was conducted in the Komenda, Edina, Eguafu and Abirem District of Ghana***

The study determined the effect of health education intervention on knowledge of cervical cancer and perception of cervical cancer screening. Church women in some selected communities in the district benefitted from comprehensive education on cervical cancer and screening. The education improved their knowledge about the disease and screening, as well as offered them the opportunity to evaluate their level of susceptibility to the disease. The training enabled the women to reveal their intentions to seek cervical cancer screening. It also increased their self-efficacy of participating in cervical cancer screening which could promote health and prevent cervical cancer in the district. There is the need to upscale the intervention and screen the women for cervical cancer lesions.

The project team comprised Dr. Nancy Innocentia Ebu Enyan (PI), Dr. Salome Amissah-Essel, Dr. Christiana Asiedu, Dr. Kingsley Asare Pereko, and Dr. Selorm Akaba.



***A P.I give health education on Cervical cancer in one of the sites used in the study (Photo credit: Dr. Nancy I. Ebu Enyan)***

### ***International Partnership with Department of Public Health Nursing, Grand Valley State University, USA***

The School of Nursing and Midwifery, UCC has over ten (10) years established a collaboration with the Department of Public Health Nursing, Grand Valley State University, USA. This partnership culminated in the signing of a memorandum of understanding between the two institutions that highlights the expectations, areas of partnerships and contributions of the two institutions towards enhancing nursing student and faculty learning. As part of the MOU, the SoNM, UCC hosts faculty and students from GVSU yearly on a study abroad programme. In 2019, the SoNM, welcomed the seventh batch of nursing students and faculty members on 12th March.

To facilitate the effective immersion of the students in the Ghanaian healthcare setting and also maximise the students learning opportunities in Transcultural and Global nursing, the two institutions adopted the co-design approach in structuring the study tour. The study tour involved a team of faculty and students from the SoNM, UCC accompanying the guests to some facilities that represents the primary, secondary and tertiary levels of health care in Ghana. This enlightened our international colleagues on the interface between the acute care setting and the community-based care. Student interactions were beneficial as there was opportunity for reflection on the diversity and similarities in the diseases trends, provision of care and the health care systems in both countries. The exchange programme was successful and also yielded discussions on areas of research collaborations between faculties of the two institutions.



***A section of teaching and administrative staff of the SoNM/UCC, in a group photograph with the faculty and students from the Grand Valley State University, following a farewell dinner party (Photo credit: Dr. Dorcas Obiri-Yeboah).***



### ***International Partnership with the University of Limerick (UL), Castletroy, Limerick, Ireland***

In 2015, the University of Cape Coast (UCC), Ghana entered into a research and educational partnership with University of Limerick (UL), Ireland. As part of the collaborative engagements, an Erasmus Plus funding was secured for faculty and student mobility to strengthen engagements between the two schools. Subsequently, faculty and student exchange programmes begun when two lecturers, Dr Evelyn Asamoah Ampofo and Mrs Christiana Okantey as well as two students visited UL in 2018 following a visit of four faculty members from UL to School of Nursing and Midwifery (SoNM), UCC.

In July 2019, two faculty members, Dr. Asamoah-Ampofo and Dr. Andrew Adjei Druye travelled to the, SoNM UL on a faculty mobility exchange programme following a 5-day visit by two faculty members from the Department of Nursing and Midwifery, UL that had resulted in the outlining of a research agenda for both schools. The focus of the visit was to carry out mapping of the curricula bring run in the two schools, discuss the activities of the two students from UCC on the exchange programme at UL, streamlining the strategies for enrolling in webinars and e-learning platforms as well as, follow-up on initial discussions on research collaboration in Transcultural nursing and compassionate care. Further to this, the team held discussions and agreed in principle to identify a viable research project in the central region of Ghana, to further strengthen the research collaboration. Two students have again been nominated to travelled to UL on a student exchange programme from January to May, 2020.



***The Provost, Prof Boampong (middle, front row) and the Dean, Dr. Dorcas Obiri-Yeboah (First on the left, front row) and some staff of the SoNM, in a group photograph with the team leads from the University of Limerick, Ireland. (Photo credit: Dr. Dorcas Obiri-Yeboah)***



***The Dean, Dr. Dorcas Obiri-Yeboah (far right) and Coordinator for Department of Maternal Health, Dr Evelyn Asamoah Ampofo (2nd from the left) welcoming faculty from University of Limerick, Ireland. (Photo credit: Dr Asamoah Ampofo)***

### ***International Partnership with Department of Nursing, Auburn University College, USA***

In March 2019, the School of Nursing and Midwifery (SoNM), UCC welcomed nursing faculty from the Auburn University College, USA and begun discussions to explore areas of possible collaboration in nursing students and faculty development. Although, the Auburn University College has been in direct talks with the Centre for International Education of UCC, this was the first interaction between the faculty members and the students of the two nursing institutions to deliberate on the areas of need and the strengths that will yield mutual benefits. After a three-day interaction, the proposed areas of collaboration included joint grant applications, and research as well as, faculty and student exchange programmes. Although, partnership has been established in principle, the school awaits the signing of the memorandum of understanding (MOU) by the Vice Chancellors of the two universities.

As part of the programme designed to engage the visitors, some nursing faculty and students participated in a health outreach programme to the Sekondi Community in the Western Region of Ghana with the students and faculty members of Auburn University College. Health screening, medication prescribing, referrals and health education were done in collaboration with the District Health Directorate, Sekondi and the Effia Nkwanta Regional Hospital.





*A snapshot of the Community Health Outreach Programme at Sekondi (photo credit: Dr Nancy Enyan)*

### ***Introduction to Autism Spectrum Disorders and Applied Behaviour Analysis, Held on 21st February, 2019 at the School of Medical Sciences Auditorium, University of Cape Coast***

This one-day seminar was organised and sponsored by the Department of Mental Health (SoNM, UCC) in collaboration with Autism Compassion Africa. The Organizing committee comprised of SONM faculty led by Dr. Nancy Enyan, the Coordinator. The facilitator for the workshop was Whitney Hammel (MSEd, BCBA) Co-Founder and Executive Director of Autism Compassion Africa. Autism Compassion is a corporate firm (NGO) with branches in Ghana, Nigeria and the UK and whose core mandate is to provide breakthroughs for autistic children in their communities using evidence-based applied behavioural assessment therapy.

The rationale for the seminar was to create the awareness of autism in the communities and also to orient healthcare providers on the existence of evidence-based applied behavioural assessment (ABA) therapy. In addition to the lecture, a video was shown to illustrate the process of ABA, after which discussions were held. The short but intense workshop had over 200 participants in attendance. The participants were made up of staff and students of School of Nursing and Midwifery, staff of healthcare facilities within Cape Coast and its environs, that is used by the Department of Mental Health as clinical settings. These

facilities included the Ankaful Psychiatric Hospital, Elmina Health Center, Ewin Polyclinic, Metropolitan Hospital, Autism Compassion Africa, and Padre Pio. The workshop lasted for about three hours.

### ***Workshop on Plagiarism, Held on 21st February, 2019 at the School of Medical Sciences Auditorium, University of Cape Coast***

As part of the School of Nursing and Midwifery's goal to develop nurses who are astute researchers, a day's workshop was organised to enlighten faculty and graduates on academic and research integrity. A resource person, Mr Isaac Nketsiah, the Turnitin Account Administrator for UCC, was invited from the Directorate of Research, Innovation and Consultancy (DRIC), UCC.

The participants were exposed to the various forms of plagiarism, and the strategies available to avoid plagiarism such as summarising and paraphrasing. The participants were also informed about the University of Cape Coast efforts to ensure researcher and academic integrity with the introduction of the TURNITIN application. The participants evaluated the workshop as very informative.



*A cross section of participants at the Workshop on Plagiarism (Photo credit: Dr. Obiri-Yeboah)*

### ***Seminar on Research Supervision and Nursing Education, Held on the 20th February, 2019 at the School of Medical Sciences Auditorium, University of Cape Coast***

The School of Nursing and Midwifery (SoNM), UCC in conjunction with the School of Public Health, University of Witswatersrand, South Africa organised a one-day seminar on research supervision and nursing education. The Organizing committee comprised of SONM faculty led by Dr. Andrew Adjei Druye, Coordinator, Department of Adult Health. The facilitators for the workshop were Whitney Drs. Chrismal Dela Chrismals, Sue Armstrong, Prudence Ditlopo, and Hilary Thurling as well as Prof. Laetitia Rispel.

Using the approach of participative engagement, the facilitators and participants explored their personal experiences while undertaking a graduate research. Using that information as a springboard, the participants collaboratively identified strategies to research supervision that will enhance the quality of nursing research churned from the SoNM, UCC. Further discussions and presentations were done on teaching the future generation of health professionals and clinical simulation in contemporary clinical nursing education. Participation was opened to all faculty, graduate students and nurses drawn from various health facilities in the Cape Coast Metropolis. The participants evaluated the workshop as very insightful.

### ***Focussing on near work: the impact of uncorrected hyperopic refractive errors***

Uncorrected hyperopia (long-sightedness) remains a significant refractive error in young children. This refractive error places additional burden on the accommodative system during near work and often manifests as asthenopia. Available evidence shows that children with moderate to high uncorrected hyperopia are at risk of abnormal visual development including strabismus (crossed eyes) and amblyopia (lazy eyes). There is also emerging evidence of association between uncorrected hyperopia and educational scores. A PhD study sponsored by Ulster University and the University of Cape Coast enabled Dr Michael Ntodie to investigate the accuracy and stability of the accommodative response of hyperopic children and emmetropic controls while engaged in two sustained near tasks (reading on a kindle and watching a stop-clay animation movie, 15 minutes for each task) using the eccentric, infrared photorefraction

technique ( PlusOptix PowerRefractor 3™, Nuremberg, Germany). Participants were tested while uncorrected (without glasses) and with glasses (correction). Results of the study revealed that the accommodative response during sustained near tasks does not differ significantly between uncorrected hyperopes and emmetropes (controls). However, instability of the accommodative and vergence responses increases with increasing hyperopia. The results also show that hyperopic spectacle correction is beneficial to optimise the accommodative response. Some results of the study were presented at the annual meeting of the Association for Research in Vision and Ophthalmology (ARVO) at Honolulu, Hawaii, 28th April - 2nd May 2018, also at the Child Vision Research meeting at Pisa, Italy in June 2019.



***A set-up of the study showing a participant engaging in the movie task while the PowerRefractor 3™ camera (shown by arrow) measures the accommodative response. The device measures the accommodative, vergence (eye position of the two eyes), and pupil sizes. These measures are recorded continuously, simultaneously and binocularly and are captured and monitored on a computer screen.***

### ***Assessing the progress towards achieving “vision 2020: the right to sight” initiative in Ghana***

This study analysed eye health delivery in Ghana and examined the country's progress towards achieving the targets of VISION 2020 since its commencement in the year 2000. The research team made up of Dr Enyam Morny, Dr Samuel Bert Boadi-Kusi, Dr Stephen Ocansey, Dr Samuel Kyei and two students used a mixed method approach to collect information on eye health delivery in facilities owned by the Ghana Health Service (GHS), quasi-governmental bodies (security agencies) and Christian Association of Ghana (CHAG). The information was benchmarked against World Health Organisation (WHO)

targets for achieving the goals of VISION 2020. The study showed that the prevalence of blindness and moderate to severe visual impairment had marginally decreased from 5% in 2000 to 4% in 2015, although the absolute number of affected people increased by 55%. Cataract remained the leading cause of avoidable or reversible blindness in Ghana, accounting for 40 - 60% of all cases, while refractive error was the leading cause of poor-sight (non-blinding), making up 40 - 50% of all cases. The number of eye care personnel (ophthalmologists, optometrists, ophthalmic nurses) saw five to seven-fold increases in the period. However, the distribution of human resources

was heavily skewed towards two out of the 10 regions in Ghana. Basic equipment for refraction was available in the majority of facilities, however, there was a general lack of specialised eye care equipment across the country. The study concluded that while bold strides had been made towards achieving the goals of VISION 2020, the Government of Ghana needed to revitalise the goals of VISION 2020 beyond the year 2020 and spearhead a concerted effort to ensure equitable distribution of human and infrastructural resources across the country.

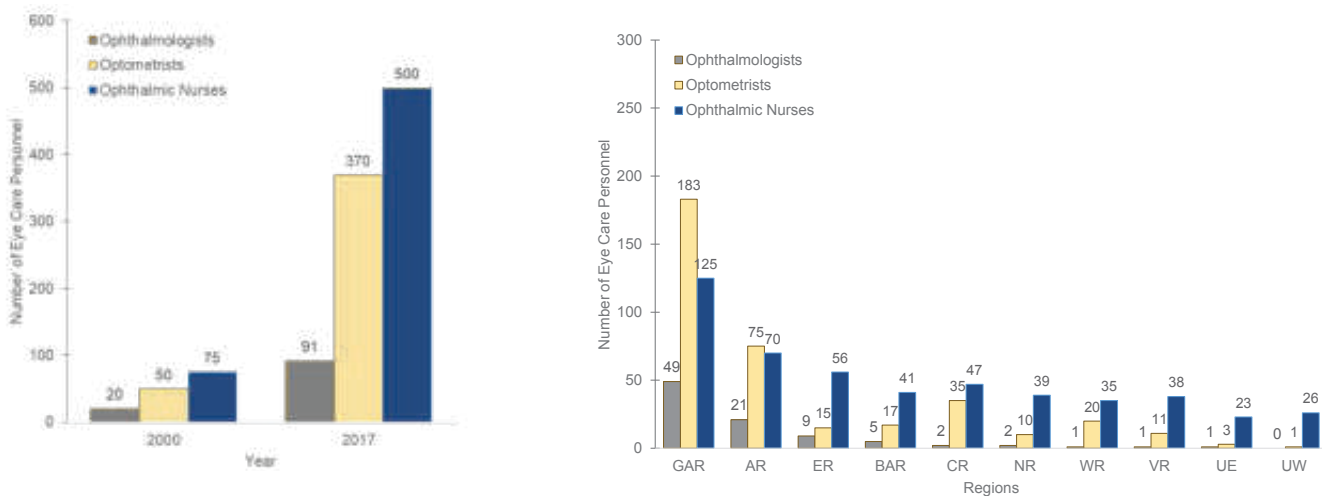


Figure 1. Comparison of the number of eye care personnel in Ghana between 2000 and 2017 (top). Regional distribution of eye care personnel in Ghana in 2017 (bottom). (GAR - Greater Accra Region, AR- Ashanti Region, ER -Eastern Region, BAR - Brong-Ahafo Region, CR - Central Region, NR - Northern Region, WR - Western Region, VR - Volta Region, UE - Upper East Region, UW - Upper West Region)

**Socio-demographic factors modify awareness, knowledge, and perceived risk of Glaucoma in rural and urban residents: A population based survey**

Despite glaucoma being a leading cause of permanent blindness globally and lead cause in Africa, information on the disease to influence early detection in developing countries is low. This study evaluated awareness, knowledge and the perception of risks of glaucoma among rural and urban dwellers in a high prevalent country, in order to provide information for health promotion planning.

Results indicate that only about a third of the general Ghanaian population know something about glaucoma, whereas about the same proportion had ever undergone an eye screening. More Urban residents are aware of glaucoma than rural residents, with the mass media being the major source of information. Less than a one-quarter of respondents presumed themselves to be at risk of developing glaucoma. Consistent with the awareness finding, majority respondents of aware of the condition had low knowledge about glaucoma whereas about only thirty percent had high knowledge. Relatively more rural than urban -dwellers had low knowledge of the disease, showing a significant difference between area of residence.

Location, education level, and occupation significantly modified awareness, knowledge and perceived risks of glaucoma.

Glaucoma awareness among the population was generally low. Relatively, more urban dwellers were aware of glaucoma as compared to their rural counterparts. Lack of knowledge in the general population may be an important cause for failure to detect glaucoma and may result in blindness from the disease. Health education may help in increasing awareness and knowledge of glaucoma

Knowledge, attitude and sociocultural perception of refractive error and spectacle wear in rural and urban Ghana. There are many psychosocial perceptions attributed to the wearing of spectacles, spectacles and refractive error among rural and urban communities in Ghana. It is however unclear what these factors are in Ghana. This study will determine the local socio-cultural factors that influences Ghanaians uptake of spectacles, spectacle wear and refractive error.

Findings from the study indicated that respondents from both urban and rural communities' knowledge on the various refractive errors were low. The study also found that most people have certain misconceptions about refractive error but this is more prevalent in the rural areas. The social stigma attached to the use of spectacles was a general hindrance to the compliance to spectacle wear among spectacle wearers. People between the ages of 21 to 30 were more likely to be knowledgeable about spectacles and spectacles usage.

Counseling and education about refractive errors and spectacles in various communities in Ghana by stakeholders would help in dispelling the myths and misconceptions about spectacle wear, even among the educated population.

### **Assessment of disability support systems for visually impaired students in tertiary educational institutions in Ghana**

Support systems have been found to be essential to the survival of students with visual impairment as more people enrol in these institutions. Support systems ranged from academic, assistive devices social support and universal design. The team of researchers made up of Dr. Samuel Bert Boadi-Kusi, Dr. Abraham Carl Halladay and Dr. Rebecca Missah, aimed at assessing the disability support systems for visually disabled students in selected

tertiary educational institutions in Ghana. A mixed method study design was employed which included a cross-sectional survey (quantitative), a focus group discussion (qualitative study) with the visually impaired students and an interview with the coordinators to confirm claims by students. A total of 126 students and 5 coordinators from six purposively selected institution in Ghana participated in this study. All four support systems were available in all institutions with variations among institutions. The most common available support system was found to be academic support [102(81%)] while universal design [38(30.2%)] was the least available support systems. Most assistive devices although available were less functioning and inadequate. Support systems although available in all institutions were found to be either inadequate or less accessible. Assistive devices were often not functional. This calls for the need of the Ghana disability council to liaise with heads of institutions to ensure the educational needs and other support systems essential for the thriving of students in the tertiary institution are met.

### **Smartphone usage among people living with severe visual impairment and blindness in Central Region, Ghana**

The study investigated the use of smartphone among People living with Severe Visual Impairment and Blindness (SVIB) in the Central Region of Ghana. The study was a cross-sectional study, conducted in the Central region of Ghana, among people living with SVIB. The research team was made up of Boadi-Kusi SB, Abraham CH, Agyekum PA, Morny EA, Abu EK and Ayerakwa PA. The participants were selected from tertiary institutions and eye care facilities in the Central region. A questionnaire was administered to all respondents. The items of the questionnaire were grouped into phone ownership and maintenance, benefits of smartphone use, Challenges of smartphone use, Smartphone functionality, and recommendations to improve phone functionality. A total of 166 subjects made up of 59.60% males and 40.4% of females living with SVIB participated in the study. The prevalence of smartphone usage among people living with SVIB was found to be 49.40% (82 people). The majority of respondents use their smartphones for Communication [ Calls (100%), Texting (91.0%) and Voice chatting (84.6%)], educational purposes (97.4%), Web browsing (88.5%), entertainment [ music (80.8%), news (76.9%) and movies (46.2%)] and financial transactions (71.8%). The highest (28%; 23 out of 82) functionality demand posed by the respondents was image and colour description feature. Most participants



were unaware that 95.1% of their functionality demands of a smartphone was already existent and compatible with current smartphones. A significant number (one in every two persons) of people living with SVIB in the central region uses smartphones. The functionalities they provide are comparable to most low vision devices. However, most users are unaware of its full capabilities and therefore they should be educated to enable them to access its full functionality.

### ***I am a Witch for Jesus! Ritual, Symbolic Violence and Trauma in African Pentecostalism***

The main objective of the project is to analyse the ritual dimensions of some Pentecostal/charismatic leaders' style of worship through healing and deliverance, focusing on the ritual acts and idioms with criminal dimensions and consequently the public health implication of some of their false healing on these members. Some neo-Pentecostal pastors engage in ritualistic activities which are associated with ritual abuse, verbal terror and symbolic violence on unsuspecting adherents/clientele. These pastors infringe on their clienteles/adherents human and individual rights, and pose dire health consequences. Their ritual acts and idioms have criminal dimensions and a proclivity for abuse; the attendant trauma faced by adherents/clienteles and their personal narratives (testimonies) indicate acts of abuse and respondents accused these pastors of misleading them in their treatment leading to more serious health conditions and sometimes death of their loved ones. The various laws of the countries studied should ensure the implementation and prosecute offending pastors since the various Christian associations have failed to regulate churches who use unorthodox ways of worship.

### ***Interrogating Ghana's reproductive health framework and abortion law using a reproductive justice lens***

The main objective of the projective to interrogate Ghana's reproductive health and right framework using a reproductive justice framework. The study found that key aspects of Ghana's reproductive health and rights framework adopted in Cairo in 1994 are similar to what is in the reproductive justice framework. However, the implementation of the reproductive health and rights framework is questionable as the country still records high mortality and morbidity among women of reproductive age. The study is still ongoing.

### ***Evaluating the antimalarial property of xylopic acid, cryptolepine and their combinations with artemisinin***

The study aimed at the developing new compounds from plants to combat malaria in Ghana. The grant was provided by U.S. department of state through the U.S. Embaasy in Ghana. The project was carried out at a partner University, University of Georgia, Athens with Prof. Belen Maria Cassera and her team.

The project aimed at developing alternate drugs for the treatment of malaria due to the menace of delayed clearance of *P. falciparum* by the artemisinin-based combination therapy as well as resistance to the partner drugs of the artemisinins. Due to the crucial role that plant-derived compounds have played in drug discovery and development for the treatment of several diseases, xylopic acid and cryptolepine hydrochloride were isolated from the fruits of *Xylopia aethiopica* and the roots of *Cryptolepis sanguinolenta* respectively. The research sought to determine whether co-administration of lower concentrations of the xylopic acid/artemisinin and cryptolepine/artemisinin hydrochloride in the presence of chloroquine resistant Dd2 *P. falciparum* will produce synergistic, additive or antagonistic antimalarial effect, and to determine the possible mechanism(s) of action of the combinations.

### ***Molecular detection and Genetic Profiling of Plasmodium Falciparum and its Impact on donor blood storage lessions***

This study involved healthy blood donors (n=771) and suspected malaria cases (n=1572). The prevalence of *P. falciparum* in blood donors detected by microscopy, rapid test, crude DNA LAMP (crDNA-LAMP), purified DNA LAMP (pDNA-LAMP) and sWGA was 7.4%, 11.8%, 16.9%, 17.5% and 18.0% respectively. The grant was provided by Wellcome Trust Sanger Institute.

This study investigated storage related changes in *P. falciparum* infected donor blood, evaluated loop-mediated isothermal amplification (LAMP) and selective whole genome amplicon sequencing (sWGA) assays in detecting asymptomatic *P. falciparum* infections and comparative molecular characterization of *P. falciparum* strains.

### ***Identification of the Vector Host of new Species of Leishmania in Ghana***

The study aimed at identifying the vector host of new species of leishmania in Ghana. The grant was provided by U.S. department of state through the U.S. Embassy in Ghana. The project was carried out with a partner University, University of Iowa, Carver College of Medicine, Department of Internal Medicine and Infectious Diseases, USA.

The project aimed at the incrimination of the vector responsible for transmitting cutaneous leishmaniasis (CL) causing Leishmania in the Volta region of Ghana, as well as the microbiota of the vector and their role in the gut of the vector in infection establishment.

### ***Establishment of In- vitro infections system to new species of Leishmania identified in Ghana; to test a panel of anti-leishmania***

The study aimed at the establishment of In- vitro infections system to new species of Leishmania identified in Ghana. The grant was provided by DAAD and the project was carried out at a partner University, Bernhard Nocht Institute of Tropical Medicine, Hamburg, Germany.

The collaborative visit to the BNITM, sought to establish an in vitro infection system for the new species and to use it to test a panel of anti-leishmanial drugs for their activity. Further, the presence of parasites with resistance potential against anti-leishmanial drugs were to be assessed within the isolates from Ghana to aid in the selection of a therapy.

### ***Mother to child transmission of hepatitis B infection: Evaluating and implementing healthcare provider training to reduce the risk of transmission***

Despite the presence of long-standing international guidelines on the management of hepatitis B positive pregnant women and their babies, there is evidence to suggest that in sub-Saharan African countries such as Ghana, there is inadequate knowledge and practice amongst healthcare providers on these guidelines and on prevention of mother to child transmission of hepatitis B. In regions of high endemicity such as Ghana, a significant proportion of chronic hepatitis B infections are acquired early in life through vertical (mother-to-child) transmission. The high burden of disease within the region, and its potential to cause illness and death from chronic liver diseases such as liver cirrhosis and hepatocellular carcinoma must be overcome. As such, strategies to

improve health care delivery for pregnant women with chronic hepatitis B infection and their babies must be identified. These strategies must include improving knowledge and practices of healthcare providers in order to minimize the risk of transmission of hepatitis B from a mother to her unborn baby. The overall purpose of our proposed project is, in the long term, to reduce the risk of mother to child transmission of hepatitis B virus (HBV) in Ghana, through the training of health care providers.

### ***Training of healthcare providers to deliver adolescent specific health needs related to HIV/AIDS***

The surge of HIV/AIDS in young people in recent years make them a key population and therefore suggest the need for understanding their issues as well as implementation of appropriate strategies. Acknowledging that coping with a life-threatening illness during adolescence can be an overwhelming experience, the WHO therefore recommends the need for health care providers, planners, managers, and health leaders to pay particular attention to adolescent health.

In view of this, the training of healthcare providers to deliver adolescent specific health needs related to HIV infections is necessary. Therefore, national and regional team will facilitate the training for service providers in Ashanti and Volta region. These two regions were chosen because of their high HIV prevalence. The overall goal is to develop and improve the skills of health care providers to enable them provide comprehensive and adolescent appropriate services and also support behavior change.

### ***Development of working protocols and job aids for a youth friendly Adolescents living with HIV (ALHIV) care center***

Over the past decades, there have unacceptable high inequity in access to HIV care and treatment among adolescents compared to adults. Despite being the most vulnerable group dying from HIV-related causes, this group remains disadvantaged regarding access to treatment. Active case identification and timely linkage to prompt treatment remains a great challenge.

The adolescent group is at high risk for both acquisition and transmission of HIV infections as they are not effectively reached by current services. It is therefore, necessary to have a handy desk reference intended for health workers who provide primary care services to adolescents.

These references provide precise, step-by-step guidance through the use of simple algorithms on how to deal with adolescents when they present with a problem or a concern about their health or development related to HIV/AIDS. This will help address the gaps in knowledge and clarify myths surrounding HIV/AIDS to these groups and make them aware of services available specifically for them as well as link them to other adolescent friendly services. Thus the objective of this project is to review available protocols, job aids and documents on HIV/AIDS related to adolescents and modify and develop adolescent friendly documents and job aids.

### ***Post Hepatitis B vaccination sero-conversion among health care workers in the Cape Coast Metropolis of Ghana***

HBV vaccine is known to offer protection against transmission of HBV infection. Health care workers are mandated to have this vaccination as part of their occupational health safety measures. Post vaccination response data for HCWs in our setting is not available. This study therefore aimed to evaluate the anti-HBs titre levels after Hepatitis B vaccination among HCWs from selected health facilities in the Cape Coast Metropolis, Ghana.

In all, 8.2% (n = 58) of the HCWs had anti-HBs titre levels <10IU/ml giving a sero-protection rate of 91.8%. HCWs who received 3 doses of HBV vaccine were more likely to be sero-protected as compared to those who received only one dose. We conclude that there is a high HBV vaccine efficacy among HCWs in the Cape Coast Metropolis of Ghana with higher prevalence of anti-HBs titre level associated with full vaccine dose adherence. Post vaccination antibody titre determination could be an integral part of HBV vaccination protocol for HCWs in Ghana.

### ***Differentiated service delivery: a qualitative study of people living with HIV and accessing care in a tertiary facility in Ghana.***

In 2014, the Joint United Nations Program on HIV/AIDS (UNAIDS) set out a treatment target with the objective to help end the AIDS epidemic by 2030. The concept of offering differentiated care services using community-based models is evidence-based and is suggested as a means to bring this target into reality. This study sought to explore the possible predictors and acceptability of Community-based health service provision among PLHIV accessing ART services at the Cape Coast Teaching Hospital (CCTH) in Ghana.

Participants expressed preference for facility-based service provision with the construct that, it ensures comprehensive health checks before provision of necessary medications. PLHIV in this study wished that the facility-based visits be more streamlined so “stable clients” could visit twice in a year to reduce the associated time and financial cost. The main barrier to community-based service delivery was concerns about stigmatization and abandonment in the community upon inadvertent disclosure of status.



***A team member during laboratory analysis at the School of Medical Sciences laboratory for the hepatitis E virus among pregnant women project in 2017***







# College of Education Studies





**Prof. Ernest Kofi Davis**

Provost, CES

The College of Education Studies (CES) is one of the five Colleges in the University of Cape Coast. It is the premier College in the University and comprises three Faculties and one School namely, Faculty of Science and Technology Education, School of Educational Development and Outreach, and Faculty of Educational Foundations. CES has the mandate of training high calibre personnel for Ghanaian educational institutions, research educational systems, and training of other professionals for all sectors of the economy. The College has the highest number of students and faculty in the University.

The vision of the College is to become the centre of excellence for training quality teaching personnel, educational leaders, and specialists as well as technical and professional staff for the Ministry of Education and other sectors of the Ghanaian economy. In doing so, the College is challenged to provide a critical exploration of learning from early years to adulthood and different contexts of learning, both formal and informal. In order for

the College to contribute to the realisation of the mission and the vision of the University of Cape Coast and the Sustainable Development Goals (SDGs) outlined by United Nations, especially SDG 4 and SDG 5, the College has developed a five year strategic plan to provide direction for the operations of the Faculties and School within it. The operations of the Faculties and School generally cover three broad areas, namely teaching, research and extension services. This report provides summary of the College's recent significant research activities and consultancy services.

Grant Type	Title of Project	Principal Investigator(s) / Stakeholders	Department(s)	Source of Funding	Total Amount	Status of Project
<b>INSTITUTE OF EDUCATION</b>						
Individual Consultancy	Exposure to Domestic Violence and Early Childhood Development: Evidence from Ghana.	Dr. Christopher Yaw Kwaah Dr. Emmanuel Ekow Asmah Dr. Ewuradwoa Ewusie Dr. Raymond Elikem Kofinti	Institute of Education  Department of Economics Studies	GIDRN/UNICEF	US\$5,000	On-going
Individual Research Project	Improving Quality Basic Education: The Importance of a Teacher-Student Classroom Interaction Measuring Tool.	Dr. Christopher Yaw Kwaah Prof. Douglas Darko Agyei	Institute of Education  Department of Mathematics and ICT Education	EQUAL/New York University	US\$20,000	On-going
Departmental Research	The State of Pre-Tertiary Teacher Education in Ghana.	Prof. Ernest Kofi Davis Prof. Christine Adu-Yeboah Dr. Eric Anane Dr. Christopher Y. Kwaah Dr. Samuel Y. Ampofo Dr. Beatrice A. Somuah	Institute of Education	Internally funded	US\$20,000	On-going
Interdepartmental	An Investigation into Curriculum Delivery in English Language, Mathematics and Science in Basic Schools in Ghana.	Prof. Ernest Kofi Davis Dr. Christopher Y. Kwaah Dr. Might Abreh Dr. Mark O. Amponsah Dr. Christopher Beccles Dr. Nathaniel Howard Mr. Kofi Nti Mr. Anthony Takyi	Institute of Education  Department of Education and Psychology  Department of Science Education	Internally funded	US\$6,000	On-going
Individual Consultancy	Higher education, inequality and the public good in four African countries: Ghana, Kenya, Nigeria, and South Africa project.	Prof. Christine Adu-Yeboah	Institute of Education	UK Economic and Social Research Council (ESRC) & Newton Fund, South Africa National Research Foundation (NRF)	GB£8,000	Completed
<b>FACULTY OF EDUCATIONAL FOUNDATIONS</b>						
Group-led research grant	Correlates of depression, purpose in life, loneliness, general health, and anxiety among patients in Ankaful Psychiatric Hospital	Rev. Fr. Dr. Anthony K. Nkyi, Dr. Jerry P. Ninnoni	Department of Guidance & Counselling  Department of Mental Health	DRIC, UCC	GH¢8,000	Completed
Collaborative Research Study	Evidence for Use of a Psychometric Inventory of New College Student Adjustment with Ghanaian Students	Rev. Fr. Dr. Anthony K. Nkyi, Pester, Danielle; Lenz, A. Stephen; Watson, Joshua C.; Dell'Aquila, Julia, Texas A&M Corpus Christi University	Department of Guidance & Counselling	Texas A&M Corpus Christi University	US\$5,000	Completed



Grant Type	Title of Project	Principal Investigator(s) / Stakeholders	Department(s)	Source of Funding	Total Amount	Status of Project
<b>FACULTY OF EDUCATIONAL FOUNDATIONS</b>						
Collaborative Research Study	Cross-Cultural Validation of Four Positive Psychology Assessments for Use with a Ghanaian Population	Rev. Fr. Dr. Anthony K. Nkyi, UCC, Ghana  Lenz, A. Stephen; Watson, Joshua C.; Luo, Ye; Norris, Caroline, Texas A&M Corpus Christi University	Department of Guidance & Counselling	Texas A&M Corpus Christi University	US\$5,000	Completed
Group-led research grant	Person-environment fit and turnover intentions of senior high school teachers in Ghana	Prof. Eric Nyarko-Sampson, UCC, Ghana Dr. Mark Owusu Amponsah, UCC, Ghana Dr. Lebbeaus Asamani, UCC, Ghana	Dept. of Guidance & Counselling Dept. of Education & Psychology Dept. of Education & Psychology	DRIC, UCC	GH¢29,000	Completed
<b>INSTITUTE FOR EDUCATIONAL PLANNING AND ADMINISTRATION</b>						
Capacity Building Project	Three-day capacity workshop	Ghana National Commission for United Nations Educational, Scientific and Cultural Organization (UNESCO) and the National Commission for Civic Education (NCCE).	Institute for Educational Planning and Administration (IEPA)	Asian Pacific Centre of Education for International Understanding (APCEIU)  IEPA	GH¢73,671	Completed (2018)
Capacity Building Project	Sensitisation workshop on Education 2030 Agenda	Ministry of Education  Ghana Education Service  University of Cape Coast Ghana National Commission for UNESCO	IEPA	IEPA	GH¢15,000	Completed
Capacity Building Project	Multi-stakeholder colloquium on the theme: The role of educational planning in enhancing Ghana's educational system: access, quality and relevance	Ministry of Education  Ghana Education Service  University of Cape Coast Ghana National Commission for UNESCO	IEPA	IEPA Ghana National Commission for UNESCO and IEPA	GH¢46,750	Completed
Individual Research Project	EQUAL Research Award: Quality in NFE and youth training programme. Developing tools for lasting learning outcomes	Dr. Kwaku Agbevanu	IEPA	Education Quality for All (EQUAL)	GH¢20,000	On-going



Individual Research Project	Tracer study; Utilization and Effectiveness of IEPA graduates  Profile of Education Planning Officers at MMD Education Offices in the Ashanti, Greater Accra, Western, Eastern and Central Regions of Ghana.	Prof. Y.A Ankomah, Dr. Hope P. Nudzor, Mr. Theophilus Danso	IEPA	University of Cape Coast  IEPA  IEPA	GH¢17,000	Completed (2018)
Policy and Practice Oriented Research	Placement and Utilization of IEPA Graduate Employees in Sectors of the Ghanaian Economy	Dr Hope Pius Nudzor	IEPA	DRIC, University of Cape Coast and IEPA	GH¢50,000	Completed (2018)
Collaborative Research Project	Unreliable exams undermine human capital investments Are WASSCE examinations comparable over time?	Dr. Might Abreh  Prof. Francis K. Amedehe	IEPA	CENTER FOR GLOBAL DEVELOPMENT	GH¢17,940	Completed
Research Grant	Transnational Education Partnerships for Higher Education Research	Prof. Rosemary S. Bosu Prof G.K.T Oduro Dr. Hope P. Nudzor	IEPA	British Council	GB£35,000	On-going
Consultancy Project	T-TEL project: Research and Capacity building for College of Education Leaders	Dr. (Bro) Michael Amaky Prof. Rosemary S. Bosu	IEPA	T-TEL	GH¢25,000	Completed
Individual Research Project	Documenting exemplary Educational Leadership Practices Ghanaian Higher education (The DEELP Project)	Dr. Michael Boakye-Yiadom	IEPA	DRIC UCC	GH¢5,000	On-going
Individual Research Project	Students' Satisfaction of the University of Cape Coast experience	Dr. Michael Boakye-Yiadom	IEPA	DRIC UCC	GH¢5,000	On-going

Grant Type	Title of Project	Principal Investigator(s) / Stakeholders	Department(s)	Source of Funding	Total Amount	Status of Project
<b>CENTRE FOR TEACHER PROFESSIONAL DEVELOPMENT</b>						
Consultancy	Pedagogy training for 80 Tutors from the Agricultural Colleges across the country through the TEDMAG project, a project jointly organized by Ministry of Food and Agriculture, (MoFA), Universities of Saskatchewan and Missouri and University of Missouri Assistance Program (UMAP)		CTPD	Ministry of Food and Agriculture, (MoFA), Universities of Saskatchewan and Missouri and University of Missouri Assistance Program (UMAP)	GH¢512,000	On-going
<b>FACULTY OF EDUCATIONAL FOUNDATIONS</b>						
Group-led research grant	Correlates of depression, purpose in life, loneliness, general health and anxiety among patients in Ankaful Psychiatric hospital	Rev. Fr. Dr. Anthony K. Nkyi, UCC, Ghana  Jerry P. Ninnoni, UCC, Ghana	Department of Guidance & Counselling  Department of Mental Health	DRIC, UCC	GH¢8,000	Completed
Collaborative Research Study	Evidence for Use of a Psychometric Inventory of New College Student Adjustment with Ghanaian Students: Implications for the Professional Globalization of Counselling	Rev. Fr. Dr. Anthony K. Nkyi, UCC, Ghana  Pester, Danielle; Lenz, A. Stephen; Watson, Joshua C.; Dell'Aquila, Julia, Texas A&M Corpus Christi University	Department of Guidance & Counselling	Texas A&M Corpus Christi University	US\$5,000	Completed
Collaborative Research Study	Cross-Cultural Validation of Four Positive Psychology Assessments for Use with a Ghanaian Population	Rev. Fr. Dr. Anthony K. Nkyi, UCC, Ghana  Lenz, A. Stephen; Watson, Joshua C.; Luo, Ye; Norris, Caroline, Texas A&M Corpus Christi University	Department of Guidance & Counselling	Texas A&M Corpus Christi University	US\$5,000	Completed
Group-led research grant	Person-environment fit and turnover intentions of senior high school teachers in Ghana	Prof. Eric Nyarko-Sampson, UCC, Ghana Dr. Mark Owusu Amponsah, UCC, Ghana Dr. Lebbeaus Asamani, UCC, Ghana	Department of Guidance & Counselling Department of Education & Psychology Department of Education & Psychology	DRIC, UCC	GH¢29,000	Completed

## Description of Funded Research and Projects

### ***Bachelor of Arts UCC Graduates Tracer Study from 2006 to 2016***

The objective of this study was to assess the B.Ed (Arts) programme among graduates from 2006-2016. The study looked at the level of satisfaction among the graduates; how the programme adequately prepared them for the teaching profession; the relevance of the courses offered; and appropriate recommendations for programme improvement. Key findings of the project include:

1. The study established that the graduates were satisfied with the B.Ed (Arts) programme, particularly the pedagogical training of the programme.
2. The study also found that the B.Ed (Arts) programme adequately prepare student-teachers teacher for the teaching profession.
3. The study further established that the courses offered under the B. Ed (Arts) programme were relevant to the teaching profession.
4. The study finally found out that Lecturers need to design their courses to reflect current trends in the teaching profession; assessment of student-teachers should focus more on current assessment techniques; and Faculty needs to revise their pedagogical strategies to focus more on students learning and not note taking approaches.

The Department of Arts Education is fulfilling its mandate of training competent and professional teachers to teach in the second cycle institutions in the country. The level of satisfaction of graduates about the department's programme and facilities was adjudged to be high. The courses run by the department were very relevant and met the career requirements and expectations of the graduates. Graduates were adequately prepared with the needed competencies and skills to succeed in the teaching profession.

### ***Teachers' concerns about the Senior High School curriculum: Implications for fidelity of implementation***

The study explored the various stages of concern teachers operated at in implementing selected senior high school subject curricula. The study established that teachers were largely unconcerned about the subject

curricula they implemented which implied that the teachers paid attention to innovations other than what had been stipulated in the various subject curricula. The study did not also establish statistical significant difference among the concerns of the various subject teachers at each of the stages of concern. The study concluded that teachers see the planned curriculum as irrelevant and therefore resorted to other unofficial curriculum. Teachers' unconcerned attitudes toward the various subject curricula could have a negative consequence on the faithful implementation of the various SHS subject curricula.

### ***T-TEL project: Research and Capacity building for College of Education Leaders***

The IEPA was awarded a consultancy contract by Transforming Teacher Education and Learning (T-TEL) on 1st October, 2015. The focus of IEPA's consultancy was primarily to serve as College Improvement Advisors, to write modules for training of College leaders, provide training for College leaders, and assist the Colleges to conduct self-assessment of their activities and management procedures, develop and implement College Improvement Plans, and develop policies among others through college visitations, mentoring, and coaching. The project was completed in 2018.

### ***Transnational Education Partnerships for Higher Education Research (2019)***

This was a British Council sponsored Research that started in January. The research investigated TNE partnerships and the environment of distance learning generally in higher education institutions/tertiary education institutions (HEIs/TEIs) in Ghana. The rationale for this research endeavour essentially is to provide insights into the state of higher education/tertiary education (HE/TE) in Ghana with the view to supporting both Government of Ghana and her international development partners in identifying the key areas where they could work to improve the quality of, and access to Ghanaian HEIs/TEIs, while at the same time providing her international development partners with value in the form of qualitative and/or economically beneficial partnerships.

### ***Tracer studies on IEPA past students and educational policies and quality education***

This tracer study of IEPA past students sought to examine how IEPA graduates were placed and utilised by their employers. The study revealed that most of IEPA graduates were engaged in education related establishments across all the levels of education in Ghana while some were employed in non-education related establishments. In addition, IEPA graduates' employees were utilised in leadership, management and administrative roles/tasks in their schedules that resonated with the specialised areas of IEPA's programmes and training.

### ***Profile of Education Planning Officers at MMD Education Offices in the Ashanti, Greater Accra, Western, Eastern and Central Regions of Ghana (2018)***

The research sought to fill the gap in literature by providing empirical data that would be suitable for making informed decisions about employing qualified educational planners or training already employed planners who will bring about quality and efficiency in education delivery in the Ghanaian education sector. From the findings of the study, it was concluded that educational planners at MMD offices, largely did not process the requisite academic and professional training. However, these officers were managing the offices using their personal experiences from staying on the job for some time or skills from other areas of study that had some bearing or relation to data collection and analysis. Furthermore, the planning officers were constrained in the performance of their duties by lack of logistics and resources (both human and materials), coupled with difficulties of getting data or information from school heads thereby making their work more difficult and challenging.

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and materials), coupled with difficulties of getting data or information from school heads thereby making their work more difficult and challenging.

### ***Exposure to Domestic Violence and Early Childhood Development: Evidence from Ghana***

The study used two nationally representative Ghanaian data sets; namely, the 2011 Multiple Indicator Cluster Survey and the 2014 Demographic and Health Survey. The Instrumental Variable (IV) estimation and the Ordinary Least Squares techniques were used to examine the effect of spousal violence on two indicators of early childhood development: Early Childhood Development Index was used for 2740 children aged 36 to 59 months, and household Child Learning Support Index for 1565 households having children aged 4 to 15 years respectively. The study found mothers who experienced Female Genital Mutilation as a notable maternal factor that incites spousal violence. The study also found parents who used information technology (computers or internet) as a flagship household factor to have reduced the incidence of spousal violence. The findings establish that spousal violence does not only lower the Early Childhood Development of children under-five years but also reduces the amount of Learning Support children aged 4 to 15 years receive from adult members of their household. The findings further indicate that spousal violence has a greater effect on the literacy-numeracy and learning development component of early childhood development compared to the physical and socio-emotional components. This study reinforces the need for high-quality evidence and data for strengthening child protection systems in Ghana. The study was sponsored by UNICEF through the Ghana Inclusive Development Research Network based in the University of Development Studies in Tamale.

### ***Improving Quality Basic Education: The Importance of a Teacher-Student Classroom Interaction Measuring Tool***

The government of Ghana has identified quality teacher-student interaction as a fulcrum (Ministry of Education, 2016) among other interventions to improve students' learning outcomes. However, the literature on teacher-student classroom interaction in Ghana has existing gaps that have hindered the translation of research evidence into practice in a resource-limited context. Very little is known about student-teacher classroom interaction that promotes learning; teacher supervisors and practitioners

as well as researchers. The study seeks to explore teachers' observed lessons, seeking to provide a better understanding of classroom teacher-student related issues, through the testing and validating of a measuring indicator for classroom participation in the Ghanaian context. This study therefore seeks; (a) to develop and validate a culturally contextual classroom interaction observation measuring tool that will inform policy and practice, (b) explore the validity, reliability, and effectiveness of the classroom observation tool in enhancing the measurement of the teacher-student interaction in the classroom in Ghana. Design-based research is adopted and serves a suitable approach to this study. Its capability to develop creative approaches for solving teaching problems and at the same time constructing a body of design guidelines that informs theory that could be used to guide efforts in future developments of a classroom interaction observation measuring tool was the reason for adopting this approach. The Study is funded by the Education Quality For All (EQUAL) network based in New York University in the USA.

### ***The State of Pre-Tertiary Teacher Education in Ghana***

The study investigates the current state of pre-tertiary teacher education in Ghana. It further seeks to investigate the state of pre-service and in-service teacher education in Ghana. The study is three parts namely: part one involves a desk study of the history of pre-tertiary teacher education; part two involves the current state of the pre-service teacher in Ghana. The last part looks at the current state of in-service training/education in Ghana. The participants comprise all Heads of Department, Lecturers/Tutors, and students from all institutions that train teachers for early childhood, primary and junior high school levels in Ghana both private and public. It also includes beginning teachers, experienced teachers (teachers who have taught for more than five years) and untrained teachers. This study is funded internally by the Institute of Education.

### ***An Investigation into Curriculum Delivery in English Language, Mathematics and Science in Basic Schools in Ghana***

This study was therefore developed to contribute to the understanding of why Ghanaian school children find EMS difficult by investigating the status of the planned and implemented curriculum, and also exploring the alignment/congruence of the planned, implemented and

attained curriculum in these subject areas. A survey of curriculum delivery by 124 Junior High School Form 2 English, Mathematics and Science teachers from 51 public and private schools, made up of a mix of below-average, average and above-average schools in terms of academic achievement of the students from three districts in the Central Region was carried out. One thousand and eighty-three JHS 2 students from the various contexts of schools were also selected to participate in the study. The data were collected through documentary review, questionnaire surveys for teachers, and interviews and achievement tests for the students. The quantitative data generated through the close-ended questionnaire items and tests were analysed using frequency counts, descriptive statistics, that is, mean and standard deviation and inferential statistics, that is, t-test and ANOVA. The qualitative data generated from the open-ended questionnaire items and interviews with students were analysed qualitatively and presented as a narrative with some illustrative examples. Frequency counts were also used in the analysis of the qualitative data, especially, when there was the need to indicate the frequency of observation of a given phenomenon.

### ***Higher education, inequality and the public good in four African countries: Ghana, Kenya, Nigeria, and South Africa' project***

The project emerges in the context of extensive debate concerning higher education and its value to society. Expanded higher education provision worldwide occurs in the context of highly stratified and unequal education systems. In the four African countries, which are the focus of this study, high levels of poverty and intersecting inequalities, strongly framed by their colonial histories, raise questions about how much the expansion of higher education exacerbates or reduces the problems of hierarchies, exclusion, and violence associated with historical and contemporary injustices. Views divide on how the growth of universities and the shape of higher education systems affect equalities and inequalities nationally and internationally. The intention of the project is to explore these concerns by considering how key constituencies - students, staff, governance bodies, employers, government and civil society - understand higher education and the public good within their country contexts and across the region and how insights from their perceptions can be utilized to help develop evaluative indicators concerning higher education and the public good; explore what views and debates exist about higher

education and the public good within key constituencies participating in and directly affected by higher education in the four African countries participating in the study. It is intended that this exploration will: enable the development of a nuanced understanding of higher education and the public good within the different country contexts, facilitating consideration of similarities and differences, and allowing for insight into how contextual factors shape how meanings are constituted and changed.

### ***Technical Education Development for Modernized Agriculture in Ghana (TEDMAG) PROJECT***



***Prof. Ernest K. Davis, Dean, School of Educational Development `Outreach presenting copy of the Memorandum of Understanding to Mr. Robert Patrick Ankobiah, Chief Director, MoFA. With them are; From left: Mrs. Evelyn Nyan, Faculty Officer, School of Educational Development & Outreach Prof. Cosmas Cobbold, Director, Centre for Teacher Professional Development From right: Mr. Lawoetey Tettey, Director, HRDMD, MoFA***



***Trainees being addressed by the Chief Director of MoFA, Mr. Robert Patrick Ankobiah, during a training session at UCC***

### ***Correlates of depression, purpose in life, loneliness, general health and anxiety among patients in Ankaful Psychiatric hospital***

The World Health Organization has reported that about 450 million people worldwide suffer from mental illness and one in four people meets the criteria of mental illness at some point in their life. Among the mental disorders, depression is a burden affecting 350 million people worldwide. The present study examined the correlates of depression, purpose in life (PIL), loneliness, general health and anxiety among patients in Ankaful Psychiatric Hospital in Ghana. The study adopted a descriptive and correlational design to determine the relationships between variables in the study. A total of 182 participants completed the survey instruments. The study was approved by the Institutional Review Board of the University of Cape Coast. Depression among patients was associated with PIL and loneliness. Female patients obtained higher but not significant scores in PIL, loneliness and depression than male patients. Depression was found to be the only predictor of general health. Clinical populations irrespective of the psychopathology are likely to be more dissatisfied with life compared with the general population due to other psychosocial problems. Bio psychosocial model is recommended to be used in the treatment of Psychiatric Patients Invariably, the use of medicines, suitably referred to as psychotropic medications in sustaining patients should be guided by collaborative effort with other mental health professionals to provide comprehensive assessment and treatment instead of relying on psychotropic medicines that have become the mainstay of therapy in Ghana. This model when employed will enable health professionals to improve the overall well-being and health of psychiatric patients. Loneliness, general health conditions, psychological issues will be minimized and patients' meaning in life will increase.

### ***Evidence for Use of a Psychometric Inventory of New College Student Adjustment with Ghanaian Students: Implications for the Professional Globalization of Counselling***

As the counselling profession continues its globalization onto Ghanaian college campuses, there is an increased need for psychometric assessments that support programming and interventions that promote degree matriculation and general student well-being. A sample of 696 young adult Ghanaian college students completed the Inventory of New College Student Adjustment

(INCA) and related measures to estimate evidence of internal structure and relationships with conceptually related constructs. Confirmatory factor analyses were completed and inspection of fit indices revealed strong evidence for internal structure, and bivariate correlations indicated statistically significant positive associations with related medium effect sizes between the INCA subscales (Supportive Network and Belief in Self) and related measures. Implications for use of the INCA to support the professional activities of Ghanaian counsellors working on college campuses are provided.

### ***Cross-Cultural Validation of Four Positive Psychology Assessments for Use with a Ghanaian Population***

This study reports the evaluation of four positive psychology assessments for use in clinical, education, and research settings with individuals in Ghana, Africa. The analyses attempted to identify validity evidence for internal structure and relationships with related variables for the Satisfaction with Life Scale (SLS; Diener et al. "Journal of Personality Assessment," "49," 71-75, 1985), General Mattering Scale (GMS; Marcus 1991), Short Grit Scale (GS; Duckworth and Quinn "Journal of Personality Assessment," "9," 166-174, 2009), and Brief Resilience Scale (BRS; Smith et al. "International Journal of Behavioral Medicine," "15," 194-200, 2008). The data yielded from 657 Ghanaian participants indicated factor structures ranging from a strong model fit (SLS and GMS) to an acceptable fit following modifications to factor structure (GS and BRS), while evidence based on relationships to related variables was convincing. Implications for use of these assessments and for future research are discussed.

### ***Person- environment fit and turnover intentions of senior high school teachers in Ghana***

The government of Ghana spends a considerable amount of the national budget on training and recruiting teachers every year, but reports indicate that about 10,000 teachers leave the classroom annually for various reasons. Retention of qualified teachers has therefore become a challenge in schools to ensure quality teaching and learning. Previous research and policy directions largely focused on extrinsic teacher motivation factors such as improved salaries and working conditions, but failed to look at career-related inner drives. The current study investigated the extent to which teachers' person-environment fit predicts their turnover intentions through their career commitment. The study employed the cross-

sectional survey design with a sample of 919, comprising 705 males and 214 females. This consisted of 243 teachers in the rural setting, 282 in the peri-urban and 394 in the urban setting. The Partial Least Square-Structural Equation Modelling was used for the analysis. The results indicated that career commitment had a strong negative relationship with turnover intentions. Also, the person-job fit and person-organisation fit dimensions of the person-environment fit measure significantly predicted career commitment and turnover intentions such that higher scores on these person-fit dimensions could lead to higher commitment, and reduced intention to leave the teaching service. The findings were discussed and practical implications and recommendations were made. Among others, the authors recommend that the selection process for recruiting teachers should consider using job screening psychological tests to hire individuals who fit the teaching profession and the academic environment.



# College of Distance Education

The College of Distance Education (formerly Centre for Continuing Education), was established in 1997 and upgraded to a college status on 1st August 2014. There are currently three academic departments including that of mathematics and science, business studies and education studies.





**Prof. Isaac K. Galyuon**

Provost, CODE

The objectives for establishing the College of Distance Education (CODE) were to provide opportunities for people to pursue higher education; train more professional teachers for all levels of Education in the Ghana Education Service; raise the professional competence of serving teachers and personnel of the Ghana Education Service, as well as accounting and management personnel in civil/public service, commerce and industry. More importantly, the CODE aimed at providing opportunities for applicants who, even though they qualify for admission, fail to enter the conventional University system due to constraints in physical facilities.

The Centre started with an initial student enrollment of 750 in 2001, using the print-based delivery mode with nine learning Centres in nine regions. Currently, CODE has more than 30,000 students. The CODE operates a dual-mode system. With this approach, the managers of the programmes ensure that there is no disparity in teaching

and assessment between the conventional system and the distance learning system. In view of this, modules used by the distance education students are written by the lecturers of the conventional programmes. These lecturers set quizzes, assignments, examinations, and also responsible for grading students' examination scripts. The CODE currently runs programmes in education and business leading to the award of a diploma, post-diploma and master's degree. Presently, there are 69 Learning Centres across the country, offering twenty-seven (27) programmes in Education, Business, Science, Tourism and Hospitality Management. As at 2014/2015 Academic Year, there were 36,313 students enrolled in all the 27 programmes run by the College.

Grant Type	Title of Project	Principal Investigator(s) / Stakeholders	Department(s)	Source of Funding	Total Amount	Status of Project
<b>COLLEGE OF DISTANCE EDUCATION</b>						
Inter-Departmental Research Project	Students' and Tutors' Perception of Tutoring Effectiveness in Distance Education at the University of Cape Coast: Implications for Educational Practice	Dr. Vera Arhin Dr. Samuel Yaw Ampofo Dr. Beatrice Asante Somuah Dr. Lydia Aframea Dankyi Dr. John Ekow Laryea Dr. Joyce Kwakyewaa Dankyi Mr. Moses Segbenya  Dr. Paul Adjei Mensah	Colle of Distance Education	DRIC	GH¢30,000	On-going
Group-Led Research Project	Teachers' and Pupils' Awareness and Use of Safety Net Structures for Abused Pupils' in Cape Coast Metropolis, Ghana	Dr Lydia Aframea Dankyi  Dr Vera Arhin  Dr. Joyce Kwakyewaa Dankyi  Dr. John Ekow Laryea	Colle of Distance Education	DRIC	GH¢8,000	On-going

## Description of Funded Research and Projects

### *Teachers' and Pupils' Awareness and Use of Safety Net Structures for Abused Pupils' in Cape Coast Metropolis, Ghana*

The purpose of the study is to find out teachers' and pupils' awareness and use of the safety net structures in Cape Coast Metropolis. It is hoped that the findings of the study would inform policy making, improve practice and research. The objectives of the study would be to:

Identify the causes of child abuse in the Cape Coast Metropolis.

Find out what pupils do when they are abused.

Explore the views of teachers and pupils awareness and use of safety net structures (institutions responsible for child protection) in the Cape Coast Metropolis.

Find out the extent to which cases of abuse are reported to the safety net structures available in the Cape Coast Metropolis.

Identify the challenges militating against teachers and

pupils in reporting cases of child abuse.

The findings would guide institutions such as Department of Social Welfare, Domestic Violence and Victim Support Units, Commission on Human Rights and Administrative Justice (CHRAJ), and Ministry of Gender, Children and Social Protection to see the need to establish a well-resourced sensitization unit at community levels to empower pupils and teachers to report abuse cases. It is also envisaged that training programmes on awareness creation will be considered. The findings would further broaden intellectual horizon of counsellors, teachers, pediatricians, psychologists and stakeholders of the Ministry of Education on the awareness level of teachers and pupils and the challenges militating against them in reporting cases of abuse. It will also sharpen the skills of counsellors and psychologists to train, empower, educate and counsel teachers and pupils on issues of abuse. In collaboration with Counsellors and Ministry of Education, two separate workshops on assertive trainings would be organised for pupils and teachers to empower them to report cases of abuse to the institutions concerned.





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# AWARDS AND ACHIEVEMENTS

## ***Chancellor of the University of Cape Coast elected to the United States (US) National Academy of Engineering (NAE)***

The Chancellor of the University of Cape Coast, Sir (Dr) Sam Esson Jonah has been elected to the United States (US) National Academy of Engineering (NAE) in recognition of his distinguished contribution to engineering. He was formally inducted in October 2019. A citation signed by Ruth A. David, NAE Secretary said: “For leadership and technical contributions in advancing the mineral industry in Africa, you have been elected a Foreign Member of the United States National Academy of Engineering”. The Induction ceremony for the “NAE Class of 2019” – formal inauguration of the new and foreign members, would be held at the Academy’s annual meeting in Washington, DC and that has been scheduled for Sunday, October 6. For this year, a total of 104 members – 86 of them, new, and 18 foreign members, have been elected. This brings the Academy’s current membership to 2,297. The number of foreign members stands at 272.

***Dr. (Sir) Sam Esson Jonah***

*Chancellor, University of Cape Coast*

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### *Dr Stephen Ocansey Awarded American Academy of Optometry Fellowship*

Dr. Stephen Ocansey has been awarded fellowship in the American Academy of Optometry (AAO). Dr. Ocansey who received the award at the Annual meeting of American Academy held from October 11-14, 2017 in Chicago, Illinois is the second Ghanaian to be awarded a Fellow of AAO. The Academy 2017 Chicago was the 96th annual meeting of the American Academy of Optometry. Highlights of the meeting included nearly 250 hours of continuing education (CE) courses, scientific presentations and an exhibit hall with more than 150 companies exhibition. More than 7,700 optometrists, vision care professionals, vision scientists and optometry students from around the world attended this prestigious meeting.

2019 - Winner, Best College-Level - Researcher Award\_ College of Health and Allied Sciences, 4th Call for Applications for Researcher Awards (BRAs), 2018-19 academic year.

2017 - Winner, Johnson and Johnson Vision Care Institute and American Academy of Optometry Researcher Travel Award to the Annual American Academy conference. Amount involved US\$800

Professionals who become Fellows of the Academy must complete a rigorous candidacy process. Candidates submit extensive written work and must also pass an oral examination. A panel of leading optometrists and vision scientists must approve both the written work and oral examination. Fewer than ten percent of practicing optometrists are Fellows of the Academy. Fellows of the AAO constantly strive for the highest professional standards. The American Academy of Optometry annual meetings are recognized as presenting the latest in research and information on patient and vision care. AAO enhances excellence in optometric practice by fostering research and disseminating knowledge in vision science through its journal, Optometry and Vision Science, and the continuing education presented at its annual meeting. Fellows of the Academy are committed to the premise that learning is a lifelong obligation of a professional, as is the commitment to expand the profession's knowledge base through ongoing fellowship and exchange.



### *Global Education Network Presents Award of Excellence to Prof. George Oduro*



The immediate past Pro Vice-Chancellor of UCC, Prof. George K. T. Oduro, has been presented the “Award of Excellence” by the Global Education Network (GEN) for his contributions to educational leadership in sub-Saharan Africa. GEN is a global society of educationists with a global reputation. It has over one hundred associate members drawn from the United States of America (USA), Asia, Europe, and Africa. Prof Oduro was among 13 academics from Africa who received the awards at the 8th International Multi-Disciplinary Conference of GEN at the University of Sierra Leone. The Conference was on the theme “Research, Innovation, Peace and Development in the sub-Saharan Africa”. Prof Oduro was also a lead presenter at the Conference.

### *Mr. Isaac Nketsiah Serves On The Ghana Data Quality Assurance Framework (DQAF) Multi-Stakeholder Drafting Team*

Mr. Isaac Nketsiah of the Directorate of Research, Innovation and Consultancy (DRIC) has been nominated to serve on a 10-member multi-stakeholder drafting team developing the Ghana Data Quality Assurance Framework (DQAF). Other members of the drafting team are from the National Development Planning Commission (NDPC), the Private Enterprise Federation (PEF), Ministry of Health (MoH), Institute of Statistical Social and Economic Research (ISSER), Ministry of Education (MoE), Ghana Center for Democratic Development (CDD-Ghana), Ghana Statistical Service (GSS) and CARE International, Ghana. The DQAF is a unified framework that will guide all stakeholders within the data ecosystem in the production of quality data to meet user needs. The availability and implementation of a DQAF will promote transparency of information and methods for statistics production, enhance the quality and interoperability of data, build trust, and facilitate the exchange of data between and among government institutions, civil society, private sector data producers, academic institutions and development partners. This will further enhance Ghana’s ability to adequately respond to the Sustainable Development Goals data needs.





### *Dr. Michael Boakye-Yiadom Wins 2018 Global Classrooms Initiative Award*



A Research Fellow at the Institute for Educational Planning and Administration (IEPA), Dr. Michael Boakye-Yiadom, has won a \$10,000 grant from the Office of International Affairs, University of Maryland, College Park, United States of America (USA). Dr. Boakye-Yiadom jointly won the award with Dr. Candace Moore of the University of Maryland (UMD). The two lecturers won the grant with their proposal titled “The Student Personnel Services and the College Student”. As recipients of the award the two scholars are now fellows of the Global Classrooms Initiative. They are expected to collaboratively implement the proposal in their classrooms at the University of Cape Coast, Ghana and University of Maryland, College Park, USA. According to the International Office of UMD, the evaluation committee recognised the potential of introducing students to digital technologies that would expose students to cross cultural, virtual and project based experiences in their proposal hence the award of the award. The Global Classrooms Initiative provides financial support to faculty to develop innovative, project-based courses that bring together UMD students and students from partner universities around the world using various digital technologies. These exciting new courses aim to provide students with international experiences that mirror the kind of work they will encounter throughout their lives in a cross cultural, project-based and virtual experience.

### *The Global Peer Review Awards Rates Prof. Frederick Ato Armah as Top Reviewer*



The Director of the Directorate of Research Innovation and Consultancy, Prof. Frederick Ato Armah, has been ranked in the top 1% of reviewers in the area of Environment & Ecology globally by Publons. This is the third consecutive year that Prof. Armah has received this recognition during the Global Peer Review Awards. In 2017, the same organization ranked him in the top 1% in the multidisciplinary category. Prof. Armah also received the gold badge on his reviewer profile in 2017 indicating that Editors considered his reviews to be exceptional based on timeliness (the review assignment was completed within the time limits established by the editor); clarity (the review was easily read and interpreted by the editor and authors); helpfulness (comments were constructive, relevant, and realistic); and thoroughness (the review gave adequate consideration to all aspects of the paper including methodology, figures, interpretation and presentation of results, ethics, relevance).

(<https://publons.com/researcher/443235/frederick-ato-armah/>).

# Directorate of Research, Innovation and Consultancy (DRIC)

## About Us

The Directorate of Research, Innovation and Consultancy (DRIC) was established in August 2013 following the promulgation of a research agenda for the University of Cape Coast for the period 2012 – 2017. The DRIC is a registered member of Ghana Association of Consultants (GAC. 0182).

## Mission

To oversee Consultancy Services engaged in by individuals and groups in the University; implement the University's research agenda; and create conducive environment to nurture creativity and innovation.

## Vision

"To have a Research, Innovation and Consultancy Directorate that is strongly positioned, with a world-wide acclaim"

## Our Mandate

The mandate of DRIC is to oversee Consultancy Services engaged in by individuals and groups in the University; oversee and support the conduct of research in the University and create a conducive environment to nurture creativity and innovation. In order to fully realise this mandate, DRIC performs the following functions:

1. Develop, review, sensitise and implement tenets of University Research, Innovation and Consultancy Policies.
2. Develop and coordinate university-wide research agenda.
3. Source funding for research and manage all designated research funds.
4. Develop and routinely advise the Academic Board on the (i) criteria for the research component for promotion; (ii) motivating research effort of faculty; and (iii) sponsoring research and conferences.
5. Organise and support Departments in the collection of longitudinal data and generate a repository of secondary data by liaising with relevant agencies that collect data.

6. Coordinate all seminars and workshops in the University based on the research agenda.
7. Coordinate and support the publication of journals and books in the University.
8. Liaise with the Directorate of Academic Planning and Quality Assurance (DAPQA) to advise the University management on procedures that promote research-based teaching, and report all activities annually to the Academic Board through the Vice Chancellor.
9. Undertake Consultancy (Research Training & Advisory Services) in the areas of Education, Agriculture, Tourism, Science, Socio-Economic Development, Industry, Business and the Environment.
10. Provide a wide range of expert and professional services for the local environment and the nation.
11. Act as a clearinghouse for all individual and group consultancies in the University.
12. Identify, promote and facilitate innovations and patenting

## Strengths

The following are the strengths of DRIC:

- Unique advantage of drawing on a wide range of expertise available in all Faculties, Departments, Units and Sections of the University;
- Possess a portfolio of research and consultancy experience;
- Mandated to image the research and innovation activities of the University;
- External recognition as the outfit authorised to facilitate the conduct of research, innovation and consultancy in the University;
- Mandated to use all available physical facilities, equipment and support services in the Faculties, Research Centres and Institutes of the University in the execution of consultancy projects.

## *Experience and Expertise*

The Directorate has vast experience with both local and international donor-funded projects in research and training programmes. Some of our clients include the following:

- USAID through ADVANCE II and METTS PBS Projects
- Plan International, Ghana
- Ministry of Finance and Economic Planning through the RAFiP project
- International Labour Organisation USAID through Background studies on Ghana's Agriculture and Infrastructure Project
- USAID through the Danish Development Agency (DANIDA)
- United Nations Development Programme (UNDP)
- German Technical Corporation (GTZ)
- Kofi Annan International Peacekeeping Training Centre (KAIPTC)
- Ministry of Local Government and Rural Development, through the Local Government Service Secretariat (LGSS) and the Metropolitan Municipal and District Assemblies (MMDAs).
- Ministry of Women and Children Affairs, through the Gender Responsive Skills and Community Development Project
- Ministry of Local Government and Rural Development.
- Allan Guttmacher Institute, U.S.A.
- United Nations Fund for Population Activities UNFPA (Ghana Office)
- Brown University, U.S.A.
- Centre for Development and Population Washington DC, USA
- Department for International Development (DFID)
- Economic and Social Research Council/Department for International Development (ESRC/DFID) UK
- National Investment Bank (NIB), Ghana
- The French Embassy, Accra.
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- Rainforest Alliance
- OLAM Ghana
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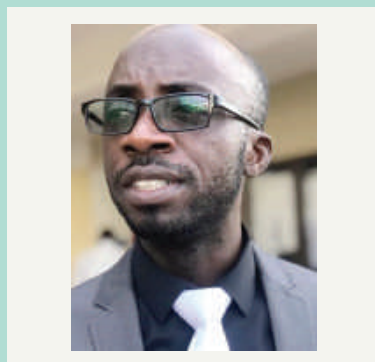
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