UNIVERSITY OF GHANA

August 2020

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Inspiring UG™

ORID

OFFICE OF RESEARCH, INNOVATION AND DEVELOPMENT

CONTENTS

UG'S RESPONSE IN THE FIGHT AGAINST *The Novel* CORONAVIRUS

When the World Health Organization (WHO) declared the outbreak of the novel coronavirus disease (COVID-19) a pandemic on March 11th 2020, there was limited evidence to guide a national response.

Undoubtedly, Ghana's preparedness to contain and manage what had thus far proved to be a highly contagious respiratory disease was to be based on the best scientific evidence.

The national case management led by the Ministry of Health (MoH) and the Ghana Health Service (GHS) has been supported by the combined efforts of several Departments and Units of the University of Ghana. These include the Noguchi Memorial Institute for Medical Research (NMIMR), the West Africa Centre for Cell Biology of Infectious Pathogens (WACCBIP), University of Ghana Medical School (UGMS), School of Public Health (SPH), School of Pharmacy, Department of Psychology and the Careers and Counselling Centre. The University's Emergency Response Team also joined forces with the National Contact Tracing Team to manage the response to the pandemic.

Noguchi Memorial Institute for Medical Research

The Noguchi Memorial Institute for Medical Research (NMIMR) continues to play a lead role as Ghana's biggest COVID-19 testing centre. NMIMR is a world class Research Institute and a leading biomedical centre in Ghana. NMIMR has been instrumental in diagnosing outbreaks of diseases, including the SARS-CoV in 2002, the influenza pandemic H1N1 in 2009, the MERS-CoV in 2012, and the recent Ebola outbreak in neighbouring West African countries.

The method for diagnostic testing to detect the novel Severe Acute Respiratory Syndrome coronavirus 2 (SARS-CoV-2), the causative virus for COVID-19 cases at the Advanced Research Laboratory is the RT-PCR (reverse transcriptase polymerase chain reaction) technique. Samples collected for testing include oropharyngeal swabs, (from the back of the throat) nasopharyngeal swabs (from the sinus through the nose), nasal aspirates, and sputum. The samples are processed by extracting the viral RNA, which is subjected to

reverse transcriptase polymerase chain reaction (PCR) and analysed for the presence of the viral RNA or viral nucleic materials. Confirmed cases are reported to the Ghana Health Service (GHS), as the mandated authority for implementing the COVID-19 response policies.

The Institute has strengthened capacity for testing systems nationwide in two key areas: by providing guidance and technical support to expand COVID-19 testing centres; by evaluating their capability and preparedness for testing. Testing is ongoing nationwide, and as at 31st July, the number of tests conducted stood at 399,446 with a positivity rate of 9.47% (MoH).

West Africa Centre for Cell Biology of Infectious Pathogens

The Centre is one of the three World Bank Centres of Excellence at the University of Ghana. WACCBIP conducts applied research into biology and pathogenesis of tropical diseases. Scientists at the Centre, who include advanced bioinformatics and analytical experts, are using advanced next generation sequencing methods to track and compare viral mutations of COVID-19.

Working with colleagues from the NMIMR, WACCBIP has successfully sequenced the SARS-COV-2 genome from samples of the initial 15 confirmed COVID-19 cases in Ghana.
This achievement enables scientists to track mutations, potential evolution of the virus, and provides opportunities for tracing sources of community infections.

UG Medical School

Infectious disease specialist and other clinicians at the UG Medical School as part of the Case Management Teams, are involved in the setup, operationalizing, and provision of care to COVID-19 patients at National Treatment Centres and in developing treatment guidelines for COVID-19 case management.

The Ga East Hospital is the designated health care facility in the southern part of the country for COVID – 19 patients requiring hospitalization, whilst the University of Ghana Medical Centre serves as backup. The Korle Bu Teaching hospital, the primary clinical training institution for the UG Medical School, has also been repurposed to manage COVID-19 patients.

School of Public Health

The threat posed by the coronavirus to the public necessitated strict adherence to safety protocols recommended by public health scientists at the School of Public Health (SPH), working with national case management and contract tracing teams.

The interventions recommended to curb community spread of the virus include isolation and quarantine, community containment, surveillance and contact tracing/follow-ups, service provision and logistical support, awareness creation and advocacy, among other safety measures.

Community containment entails restrictions on large social gatherings, the closure of schools, practicing social distancing, wearing of face masks and the adoption of hygiene measures including the use of hand sanitizers.
In addition, the School advocates strict adherence to ethical principles and best practice in implementing the measures recommended.

Credit: Fundacionio

School of Pharmacy

The hygiene protocols announced by the WHO to limit the spread of the virus include the use of alcohol-based hand sanitizers, with a minimum concentration of 70% v/v alcohol. Consequently, a shortage of the recommended product led to the proliferation of substandard hand sanitizers on the local market.

The School of Pharmacy developed and manufactured an alcohol-based hand sanitizer in line with WHO recommendations; the product, known as ***UG Sanitizer – Pharmol***, has been approved and registered by the Food and Drugs Authority (FDA).

Pharmol, which has been embraced by industry, portends well for the School's plan to expand its product range to include a hand rub – (PharmRub) and a detergent (PharmaDet).

Department of Psychology

Professionals at the Department of Psychology (DoP), working with the Psychological Association of Ghana, are offering counselling services to Covid-19 patients to help them cope with stigmatization. Psychologists attribute stigmatization of affected persons and their families to misconceptions about the virus. Consequently, they advocate for effective media campaigns in all local languages to educate the public and encourage adherence to safety protocols.

Amidst the misconception of the disease that has led to stigmatization, is an inherent danger to the public, if infected persons refuse to cooperate with case management teams. Psychologists contend that prejudice against infected persons could derail government efforts at containing the pandemic. In some cases, testing and tracing teams have encountered a backlash, with identified contacts of affected persons refusing to cooperate and communities objecting to the presence of COVID task force members in their locality.

Careers and Counselling Centre

Supporting the efforts of the Department of Psychology is the Careers and Counselling Centre of the University, where psychological counselling to staff and students is ongoing.

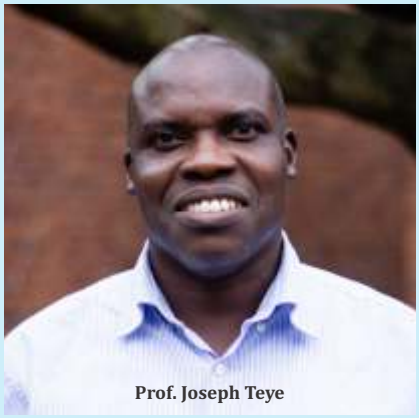
Amongst the first few cases confirmed in the country in early March, was a student of the University. This precipitated the immediate closure of the University and left many students in a state of anxiety. Together with education on coping measures the Unit provides a 'safety net' for staff and students.

As the number of COVID-19 cases increase, recovery rates have been stable, and the number of fatalities remains relatively low. The National Task Force continues to manage Ghana's case load in line with WHO protocols, providing regular updates and direction to the general public.

Meanwhile, scientists at UG are collaborating globally to find a vaccine and improve treatment methods for COVID-19.

Credit: images.app.goo.gl

HARNESSING THE BENEFITS OF SOUTH-SOUTH MIGRATION


Prof. Joseph Teye

Migration between countries of the Global South, otherwise known as South-South migration (SSM), accounts for nearly half of all international migration, reaching almost 70% in some places. The potential of SSM to contribute to the development and delivery of the sustainable development goals (SDGs) although widely acknowledged remains unrealised. This is largely due to existing inequalities at the global, national and local levels which determine who is, and is not able to migrate, where to, and under which terms and conditions. These multidimensional inequalities are associated with a lack of rights for migrants and their families; difficult, expensive and sometimes dangerous journeys; and limited opportunities to access services and protection. All of these can, in turn, exacerbate already existing inequalities.

The South-South Migration, Inequality and Development Hub (MIDEQ), which is the world's largest migration research project, is working towards ensuring that SSM is able to make a more equitable and effective contribution to poverty reduction, development, and delivery of the SDGs. MIDEQ aims to contribute to efforts to ensure that individuals, households, communities and countries in the Global South benefit fully and equitably from SSM and that its benefits are properly harnessed. MIDEQ does this by bringing together - for the first time - research and delivery partners from 12 countries which constitute six SSM 'corridors' (i.e. Burkina Faso-Cote d'Ivoire, China-Ghana, Egypt-Jordan, Ethiopia-South Africa, Haiti-Brazil, Nepal-Malaysia). These countries are working in partnership with five UN agencies and the (OECD) Organization for Economic Co-operation and Development.

MIDEQ is working with relevant stakeholders to deliver challenge-led programmes of research and evaluation to address inequalities associated with SSM. Together they are undertaking extensive new data collection and policy analysis, and testing interventions and solutions in a range of geographical contexts. As part of this project, **Professor Joseph Kofi Teye,** Director of the Centre for Migration Studies and Co-director of MIDEQ**,** is leading a group of researchers based at the University of

Ghana to examine migration and resource flows along the China-Ghana corridor. Other members of the UG research team are: **Professor Mariama Awumbila** (Geography and Resource Development), **Professor Joseph Yaro** (Regional Institute for Population Studies), **Professor Godfred Bokpin** (UGBS), **Dr Leander Kandilige** (Centre for Migration Studies), **Dr. Mary Setrana** (Centre for Migration Studies) and **Dr. Edward Asiedu** (UGBS). The UG research team is working closely with researchers at China Agricultural University and colleagues from leading Universities in the United Kingdom, to collect and analyse data on migration and resource flows between China and Ghana.

The study is very important because while the level of migration between China and Ghana is relatively small in terms of absolute numbers, its impact may be very significant due to the level of parallel Chinese investment in infrastructure projects and in private business. Moreover, it reflects a much longer term and wider trend of investment and SSM from China to Africa. The research focuses on how these processes are stimulating the economy of Ghana, as well as on how the resulting trade is leading to new patterns of migration of Ghanaian traders to China. The research is also exploring the differential patterns and impacts of migration, employment, and money flows on gender inequalities.

The Ghana component of the project is being carried out under three main work packages (WPs). First is the ***Gender Inequality and SSM WP,*** which uses intergenerational perspectives to examine how gender and gender inequalities influence and change migration opportunities and outcomes. Second is the ***Poverty and Income Inequalities WP*** which examines the extent to and ways in which poverty and income inequalities create and constrain SSM opportunities. The Ghana team is also working on the ***Resource flows WP*** which is examining the flows of money (remittances, investment finance), trade (goods, services), and knowledge (technology, skills, business capability) in both directions along the China–Ghana corridor.

This five-year research project is particularly timely given increased policy interest in inequality on the one hand and migration and development on the other. It also contributes to current discussions on the activities of Chinese migrants in Ghana. MIDEQ is committed to coming out with new policy approaches to SSM and helping to ensure national resources and international development assistance are spent effectively to empower migrants and host communities. The rich quantitative and qualitative data being gathered as part of this research will contribute to the development of migration policy in Ghana. The project will also bridge the gap between policy and practice, through strategic engagement with local project partners and international development partners.

Credit: MIDEQ, 2019

AUTHENTICATING FOOD PRODUCTION

Dr. Maame Yaakwaah Blay Adjei

Scientific analysis of food products is undertaken primarily for safety and quality considerations. Although taste is considered subjective, consistency in taste of food remains the foundation of a brand's unique identity.

Laboratory analysis of food constitutes a vital part of the production process. At the Department of Nutrition and Food Science, College of Basic and Applied Science (CBAS), a state-of-the-art Sensory Evaluation Research Laboratory has been set up for quality testing of food and non-food products.

The establishment of the modern Sensory Laboratory fulfills the sustainability component of a research project undertaken by **Dr. Maame Yaakwaah Blay Adjei** and her colleagues from different units within CBAS. The project, funded by the Skills Development Fund, is titled "***The Dairy Technology Centre Project***". Its aim is to examine the yield and quality of food produced in Ghana, with specific emphasis on small- holder dairying, through a multifaceted and holistic approach. The Sensory Evaluation Laboratory provides training for the farmers in that project, on the importance of sensory testing and how to conduct simple sensory quality checks when producing and processing milk. Currently, the laboratory provides discounted product testing services to entrepreneurs and industry practitioners in the food and agro industry to assist in their delivery of *quality value-added products.* It provides the same services for students in order to enhance research outcomes.

The Sensory Evaluation Laboratory, which was launched in September 2016, is fully functional with a permanent standing panel of trained tasters. The role of this panel is to strengthen the Department's research and training capacity in food product testing. With innovative approaches to sensory analysis of food as well as non-food products, the laboratory has the capacity to support major research projects and provide vital product testing support and quality scientific analysis of taste authentication for the food industry.

To date, the facility, which is of world class standard, has been used in scientific testing of products for international food companies such as Danone (French multi-national). Locally, through its Obaasima project, it has been used by Fan Milk, HPW, Blue Skies, and GIZ in various capacities to provide testing and training services.

The existence of the Laboratory has been pivotal in securing funding from the Bill and Melinda Gates Foundation, for the Dairy for Improved Maternal and Child Nutrition programme, and locally from the SDF Phase 2 project in the Food and Agro-Processing for non-food scientists project, in 2017. Furthermore, the establishment of the Laboratory has positioned the University of Ghana on the international stage for sensory and consumer science research. In recognition of this, the project lead, **Dr. Blay Adjei**, was elected as the founding Vice-Chairperson and Treasurer of the African Network of Sensory Evaluation Research (ANSWER), at the prestigious Pangborn Sensory Science Symposium held in Edinburgh in September 2019.

Over the years, the laboratory has trained over 30 sensory panellists (expert food tasters) and 8 sensory analysts and scientists. It has also provided hands-on sensory experience for over 60 students in various food related departments at the University of Ghana through student projects and internships. The laboratory carries out academic research into sensory methods development as well as food

product evaluation, and provides sensory testing services to various food companies in Ghana.

The range of analyses carried out by the Sensory Evaluation Laboratory include;

- Discrimination tests (perceptible difference between products)
- Descriptive tests (differences in specific sensory characteristics)

Quality grading tailored projects undertaken at the Laboratory include;

- Shelf life studies using sensory methods
- Consumer-led product development for new product development and optimisation
- Taints using consumer rejection threshold
- Product concept testing
- Target market selection
- Innovative flavour/product determination

There are plans to use the Sensory Evaluation Laboratory to offer graduate students the option to specialize in sensory evaluation research at the MPhil and PhD levels. It will continue to support industry with training and testing services, as work is ongoing to accredit training with the Institute of Food Science and Technologists (IFST).

Panel Discussion Area

Product Preparation Area (Kitchen)

Product Preparation Area (Kitchen)

The Role of Science in Food Production

Nungua Black Head Sheep

Food production trends in Africa reveal disparities in efforts to attain optimal levels throughout the Continent. Shortfalls in agriculture have elicited laudable initiatives including programmes led by international bodies such as AGRA and FARA. The growing demand for food lends credence to science-based agriculture as a catalyst for sustaining local food supply.

The University of Ghana (UG) is home to the Livestock and Poultry Research Centre (LIPREC), one of three agriculture research centres at the College of Basic and Applied Sciences (CBAS). Scientist undertake training and research in production of food and livestock, with the potential to support the agribusiness needs of the Country.

LIPREC is engaged in advanced training of farmers and agriculture professionals (up to PhD level). Research and training is aimed at enhancing and sustaining profitable production of livestock and poultry, and developing innovative systems for the manufacture of dairy products and animal feed.

The specific objectives of the Centre are to:

- Carry out research into all aspects of domestic livestock and poultry production
- Provide livestock management and improvement information to farmers and stakeholders
- Provide facilities for student instruction
- Establish close collaboration with national and international institutions, NGOs and industries with similar objectives
- Develop efficient research information transfer services, including extension and consultancy services

Research at the Centre is organized around six broad themes:

- Animal Improvement and production systems
- Animal nutrition and forage science
- Animal health
- Animal traction
- Livestock produce processing
- Agribusiness and systems innovation

Dr. Eric Timpong-Jones is head of the Centre. His research interest is in the application of geomatics in the monitoring and evaluation of rangelands, harvest management, and preservation of forages, as well as climate change and livestock studies. Other Scientists at the Centre with diverse and complimentary expertise include **Dr. Leonard Adjorlolo**, (Senior Research Fellow), with interest in Ruminant Nutrition, and **Dr. Ayodele Majekodunmi**, (Research Fellow) who focuses on Epidemiology and Livestock control. **Dr. Christopher Adenyo** (Research Fellow), Genetic Maker Development for Native Livestock Species and **Dr. Felix Sarkwa** (Assistant Research Fellow), Forage Science, Livestock and Climate Change.

LIPREC operates within specialized units, namely: Monogastric Unit, Ruminants Unit, Micro-livestock Unit, Pasture Unit, the Dairy Unit, Meat Processing Unit, Animal Health Unit and Animal Traction Unit. The Scientists work to achieve the following goals;

- Improving the utilization of rangelands, cereal crop residues and non-conventional feed resources by ruminant livestock
- Improve harvest management and preservation of forages
- Developing sustainable feed options for monogastrics
- Developing genetic markers for native

livestock/poultry species
- Monitoring the transmission and control of zoonotic diseases along the value chain

The Monogastric Unit produces poultry and pigs. Poultry farming is purposely to produce eggs and broilers, the production process provides practical training for students. The Centre's piggery is a source for breeding animals for smallholder pig farmers in the country.

The Ruminants Unit conducts research into an array of indigenous and foreign breeds of small ruminants (sheep, goats) and large ruminants (cattle). These include trypano-tolerants - mainly the West African Dwarf goats. The ruminants include the West African Dwarf or Forest type the Ndama, Sanga, Sokoto Gudali and the Sahelian. Scientist have created crossbreeds from these herds, producing new breeds unique to the Centre. The *Nungua Black Head* for example, is a cross between the exotic Persian Black Head sheep and a local Forest type originating from the Centre and named after the indigenous area in which the Centre is located.

Varsity yoghurt

The Micro-livestock Unit is a recent addition which will support the Centre's teaching and research activities. The Unit currently breeds a small stock of rabbits and grasscutters. These local delicacies are organically fed, humanely slaughtered, and smoked on maturity under hygienic conditions similar to standards maintained for all the Centre's production units.

Since ruminant livestock depend mainly on pastures to meet their nutrient requirements, the Pasture Unit is key to the development and renovation of pastures and the cultivation and preservation of fodder for use in the dry season.

In the last two years, the Centre has investigated and explored dry season feeding strategies for ruminant livestock. The feed mill unit oversees feed preparation for the different types of poultry and livestock at the Centre. This is mainly through the production of pelleted feed. Two flagship research studies are underway to improve nutrition and sustain production of livestock. The first study is exploring the use of Pelletized Protein leaf meal as supplementary feed for small ruminants. Other research examines the use of Pelletized Fortified leaf meal with a high crude protein content, and is enriched with minerals such as calcium, phosphorus, iodine, sulphur, zinc, copper and cobalt.

A novel feeding practice introduced by scientists, is a nitrogen-fortified mineral salt lick which makes up for nutrients which are absent from normal animal feed. This supplement is moulded with clay and hung on trees. Animals are attracted to feed on it, and in this way get the additional nutrients required during the dry season. Preliminary results show that the mineral lick is beneficial for maintaining the condition of small ruminants, with marginal gains even in the dry season.

The Dairy Unit of the Centre is noted for the production of a pro-biotic yoghurt - aptly labelled ***Varsity yoghurt***. The Unit is equipped with state-of-the-art facilities for training and processing milk into yoghurt and cheese.

In partnership with the Dairy Research Improvement and Innovation Consortium (DRIInC), production at the Unit has been scaled up in recent times. This partnership had culminated in an increase in processing volumes of milk into a variety of dairy products - some notable products include Dairyle and Goyo yoghurt.

Other facilities at the Centre include a nutrition laboratory equipped to perform analyses on various types of animal feed. Testing processes at the lab guarantee that the high standards set by Scientist and the quality of poultry and livestock produced at the Centre is maintained.

Under the leadership of **Dr. Timpong-Jones** output of the Centre has improved, despite constraints in resources to operate at optimal level. Limitations notwithstanding, the Centre continues to develop innovative and pragmatic strategies to enhance its research and training capabilities and become commercially viable.

Piggery

Rabbits

Nitrogen Fortitude Mineral Lick

West African Dwarf Goats

Grasscutter

Grading of Eggs

Egg collection from a battery cage system

BREEDING RESILIENT DAIRY CATTLE

Rev. Dr. Richard Osei-Amponsah

Climate change has dire consequences on animal agriculture and presents challenges for humankind. Extreme weather events adversely affect animal growth and reproduction, increases disease incidence and threaten biodiversity. Research indicates that desertification has reduced the carrying capacity of rangelands, forage quantity and quality, and increased livestock diseases. This justifies the need to include thermo-tolerance as an important component of livestock breeding goals. As a result, innovative and sustainable approaches to overcome the challenges posed by global warming and climate change-induced heat stress are urgently needed.

Rev. Dr. Richard Osei-Amponsah, a Senior Lecturer of the Department of Animal Science, in collaboration with researchers from the University of Melbourne, is utilising quantitative and molecular genetics in a research project titled "***Genomic selection for heat tolerance in dairy cattle breeds***". Funded by the Department of Foreign Affairs and Trade (DFAT) of Australia, the research focuses on the identification of genes for heat tolerance, milk production and resilience in dairy cattle for climate change adaptation. The underlying hypothesis of the research is based on the fact that heat stress has negative impacts on the welfare and productivity of cows, and that variations exist in different cattle breeds as well as individual cow's ability to tolerate heat stress. The specific objectives of the project are to:

i. Measure physiological parameters (body temperature, respiratory rate and panting scores) of dairy cows during the hot seasons.
ii. Measure the effect of the hot season on production parameters, including milk production, protein content and fat content.
iii. Identify genomic markers and unique alleles in individual cows and across different breeds of cattle in Ghana and Australia.

In the first of three (3) studies conducted at the University of Melbourne Robotic Dairy at Dookie campus, **Rev. Dr. Osei-Amponsah** and his team studied the impact of heat stress on the physiological and production responses of 120 lactating dairy cows grazing in pastures over hot summer months. Preliminary findings indicate a significant ($P \leq 0.01$) drop in milk production when the temperature-humidity index (THI) increased. Under moderate and high THI, most cows sought shade, spent more time around watering points and showed signs of distress in the form of excessive drooling, open mouth panting and spending long periods at the watering points. These observations indicate that lactating dairy cows grazing summer pastures experience severe Heat Stress (HS) thereby compromising their welfare.

The team also investigated the association of thermo-tolerance with milk production, feed saver, fertility and fat percentage breeding values. The sample of cows used was the 20 most heat-sensitive and 20 most heat-tolerant cows in a herd of 150 lactating Holstein Friesian dairy cows. Investigations were based on phenotypic responses i.e increase in body temperature, panting score, and decline in milk production. Preliminary results indicate significant variation in feed saved (FS) genomic estimated breeding values (GEBVs) across age, indicating a potential for selecting particular cows over others. In addition, positive associations between heat tolerance (HT) and feed saved, fertility, and fat percent breeding values were observed.

Finally, the team examined the effect of supplementing antioxidants (oxi-care, vitamin and mineral premix containing Vitamin E, Vitamin D3, 25-hydroxycholecalceferol, Beta carotene, Selenium and Betaine) as a nutritional strategy to reduce the impacts of heat stress on dairy cow production during hot periods. Results of the study indicate that extra supplementation of mineral and vitamin antioxidants during summer help to improve the milk production. It improves the antioxidant capacity and overall oxidative status of cows - which are known to be compromised by heat stress. Oxi-care supplementation also increased cow milking frequency, as well as rumination time.

FUNDING NEWS

1ST OCTOBER 2019 TO 30TH JUNE 2020

FUNDER	UG LEAD	ORIGINATING UNIT	PROJECT TITLE	BUDGET ALLOCATED TO UG
Alliance for African Partnership	Prof. Reginald Ocansey	Department of Physical Education and Sports	Applying Positive Youth Development through Sport to Nurture Youth Entrepreneurship: Elevating the Voices of Youths and their Parents	USD 4,450.00
Ares Trading S.A	Prof. William Ampofo	Department of Virology NMIMR	Research Collaboration Agreement	EUR 55,940.00
Bill and Melinda Gates Foundation through Duke Global Health Institute, Duke University	Prof. Justice Nonvignon	Department of Health Policy, Planning and Management	Driving Health Progress During Disease, Demographic, Domestic Finance and Donor Transition (The "4Ds"): Policy Analysis and Engagement with Six Transitioning Countries	USD 48,645.00
Bill and Melinda Gates Foundation	Dr. John Ganle	Department of Population, Family and Reproductive Health	Identifying and Developing Low-Cost and Acceptable Family Planning Interventions and Service Delivery Models for Urban Slums in Ghana	USD 47,243.00
Bill and Melinda Gates Foundation	Dr. Samuel Oppong	Department of Obstetrics and Gynaecology	Limiting Adverse Birth Outcomes in Resource-Limited Settings (LABOR) Trial	USD 925,225.00
Bill and Melinda Gates Foundation Grant to IUSSP	Dr. Adriana Biney	Regional Institute for Population Studies (RIPS)	Exploring Use, Non-Use and Discontinuation of Modern Contraception among Urban Youth in Accra, Ghana	USD 33,785.95
Cambridge-Africa ALBORADA Research Fund	Prof. Gordon Awandare	West Africa Centre for Cell Biology of Infectious Pathogens (WACCBIP)	2019 Trend Neuroscience Neurogenetics Course	GBP 2,500.00
Cambridge-Africa ALBORADA Research Fund	Dr. Theresa Gwira	West Africa Centre for Cell Biology of Infectious Pathogens (WACCBIP)	Gene Expression Profiling and In Vitro Culturing of Fields Isolates of African Trypanosomes from Natural Cattle Infections in Ghana	GBP 12,135.00
Cambridge-Africa Alborada Research Fund	Dr. Fidelia Dake	Regional Institute for Population Studies (RIPS)	Health Impact Assessment of Shift in Travel Modes in Sub-Saharan African Cities	GBP 6,554.00
Cambridge-Africa ALBORADA Research Fund	Dr. Samuel Adjorlolo	Department of Mental Health	Covid 19 and Psychological Wellbeing of Frontline Workers in Ghana	GBP 16,375.00
Centre for Environment, Fisheries and Acquaculture Science, Cefas Weymouth Laboratory	Ms. Angela Ayiku Dr. Samuel Duodu (supervisor)	West Africa Centre for Cell Biology of Infectious Pathogens (WACCBIP)	Assessing the Impact and Developing Control Measures for Infectious Spleen Kidney Necrosis Virus Disease (ISKNV) in Farmed Tilapia in Ghana	USD 37,680.00
Chemonics International Inc.	Dr. Samuel Dery & Dr. Roger Atinga	Department of Biostatistics Department of Public Administration and Health Services Management	Data Collection Task for GhiLMS Benchmark Cost Study	GHS 172,534.79
Commuunal Development Cooporation North Rhine-WestPhalia of Engagement Global	Dr. Efua Mantey	Department of Social Work	Inclusive Local Planning in Ghana – Implementing the UN Convention on the Rights of Persons with Disabilities in Ghanaian Districts	
DANIDA	Dr. Dzidzo Yirenya-Tawiah	Institute for Environment and Sanitation Studies (IESS)	Coastal Communities Resilience to Climate and Diarrhoea (C2R-CD)	DKK 6,550,990.00
Defense Advanced Research Projects Agency (DARPA)	Dr. Richard Suu-Ire	School of Veterinary Medicine	Preventing Emergence and Spillover of Bat Viruses in High-Risk Global Hotspots	USD 40,597.00
Defense Advanced Research Projects Agency (DARPA)	Dr. Osbourne Quaye	Department of Biochemistry, Cell and Molecular Biology	Preventing Emergence and Spillover of Bat Viruses in High-Risk Global Hotspots	USD 24,157.00
Department for International Development (DfID)	Dr. Ama Fenny	Institute of Statistical, Social and Economic Research (ISSER)	The Fiscal and Public Health Impact of a Change in Tobacco Excise Taxes in Ghana	GBP 36,007.60
Economic & Social Research Council (ESRC), UK	Dr. Mawuli Dzodzomenyo	Department of Biological, Environmental and Occupational Health	Expanding Safe Water and Waste Management Service Access to Off-Grid Urban Populations in Africa	GBP 383,381.18

FUNDER	UG LEAD	ORIGINATING UNIT	PROJECT TITLE	BUDGET ALLOCATED TO UG
Economic and Social Research Council (ESRC)	Prof. Kwasi Appeaning Addo	Institute for Environment and Sanitation Studies (IESS)	Teleconnected Sargassum Risks across the Atlantic: Building Capacity for Transformational Adaptation in the Caribbean And West Africa (SARTRAC)	GBP 50,865.23
Economic and Social Research Council (ESRC)	Prof. Kwadwo Owusu	Department of Geography Resource Development	DAMS 2.0: Design and Assessment of Resilient and Sustainable Interventions in Water-Energy-Food-Environment	GBP 24,960.00
Erasmus +	Dr. Yaw Boafo	Centre for Climate Change and Sustainability Studies	Mobility for Learners and Staff – Higher Education Student and Staff Mobility	EUR 5,240.00
Erasmus+ (EU)	Mrs. Barbara Blankson	Central Administration	Key Action 1 - Mobility for Learners and Staff - Higher Education Student and Staff Mobility	USD 31,230.00
European and Developing Countries Clinical Trials Partnership (EDCTP)	Dr. Kwadwo Kusi	Department of Immunology	Clinical and Immunopathological Consequences of Chronic HBV and Plasmodium Falciparum Co-Infections	EUR 499,910.00
European and Developing Countries Clinical Trials Partnership (EDCTP)	Dr. Helena Lamptey	Department of Immunology	Determining the Role of Fc Gamma Receptor (FCCR) Gene Polymorphisms in HIV Infection Progression and Treatment Outcomes in Ghanaian Adults using Next Generation Sequencing	EUR 69,652.02
European and Developing Countries Clinical Trials Partnership (EDCTP)	Prof. Dorothy Yeboah-Manu	Department of Bacteriology NMIMR	Impact of Diabetes on TB Disease and Treatment Outcome in Ghana	EUR 498,750.00
European and Developing Countries Clinical Trials Partnership (EDCTP)	Dr. Ndong Cheng	Department of Epidemiology NMIMR	Determining the Impact of Scaling Up Mass Testing, Treatment and the Tracking on Malaria Prevalence among Children in the Pakro Sub-District of Ghana	EUR 146,536.75
European and Developing Countries Clinical Trials Partnership (EDCTP)	Prof. Kennedy Addo	Department of Bacteriology NMIMR	Clinical Evaluation of a Loop-Mediated Isothermal Amplification Test for Treponema Parllidum Pertenue: A Diagnostic Tool to Support Yaws Eradication (LAMP4Yaws)	EUR 239,375.00
Fleming Fund	Dr. Nicholas Dayie	Department of Medical Microbiology	Fleming Fellowship Grant	GBP 18,190.00
Gerda Henkel Foundation	Prof. Samuel Offei & Prof. Samul Agyei-Mensah	Department of Geography Resource Development	Enhancing Doctoral Training in the Humanities in West Africa	EUR 1,634,720.00
Global Challenge Research Fund through The Academy of Medical Sciences	Dr. Yaw Bediako	West Africa Centre for Cell Biology of Infectious Pathogens (WACCBIP)	West African Immunology Network (WAIN) - Building Immunological Research Capacity to Promote Sustainable Improvements in Health	GBP 24,630.00
Global Challenges Research Fund (GCRF)	Dr. Lydia Mosi	Department of Biochemistry, Cell and Molecular Biology	Capacity Building for Ultra-Long Read-Length Sequencing of Mycobacterium Ulcerans to Explore Transmission Dynamics	GBP 1,750.00
Higher Education Funding Council for England	Dr. Benedict Weobong	Department of Social and Behavioural Sciences	Understanding Psychological and Socio-Cultural Influences on Young People's Alcohol Consumption in Ghana	GBP 19,870.00
International Crops Research Institute for the Semi-Arid Tropics (ICRISAT)	Dr. Dilys MacCarthy	Soil and Irrigation Research Centre (SIREC)	Capacitating African Stakeholders with Climate Advisories and Insurance Development (CASCAID-II)	USD 19,855.00
International Development Research Centre (IDRC)	Dr. Elaine Lawson	Institute for Environment and Sanitation Studies (IESS)	Digital Agricultural Services (Digital)	CAD 78,100.00
International Food Policy Research Institute	Prof. Richmond Aryeetey	Department of Population, Family and Reproductive Health	Understanding Adolescent Nutrition in Urban Areas of Ghana	USD 38,570.00
Medical Research Council (MRC)	Prof. Gordon Awandare & Dr. Kanny Diallo	West Africa Centre for Cell Biology of Infectious Pathogens (WACCBIP)	The Orpharyngeal Microbiome Dynamics and Invasive Bacterial Diseases	GBP 258,568.00
Medicines for Malaria Venture	Dr. Richard Amewu	Department of Chemistry	South African Malaria Drug Discovery (SAMDD) Programme	USD 25,000.00
Medicines for Malaria Venture	Dr. Richard Amewu	Department of Chemistry	South African Malaria Drug Discovery (SAMDD) Programme	USD 50,000.00

FUNDER	UG LEAD	ORIGINATING UNIT	PROJECT TITLE	BUDGET ALLOCATED TO UG
Economic and Social Research Council (ESRC)	Prof. Kwasi Appeaning Addo	Institute for Environment and Sanitation Studies (IESS)	Teleconnected Sargassum Risks across the Atlantic: Building Capacity for Transformational Adaptation in the Caribbean And West Africa (SARTRAC)	GBP 50,865.23
Economic and Social Research Council (ESRC)	Prof. Kwadwo Owusu	Department of Geography Resource Development	DAMS 2.0: Design and Assessment of Resilient and Sustainable Interventions in Water-Energy-Food-Environment	GBP 24,960.00
Erasmus +	Dr. Yaw Boafo	Centre for Climate Change and Sustainability Studies	Mobility for Learners and Staff – Higher Education Student and Staff Mobility	EUR 5,240.00
Erasmus+ (EU)	Mrs. Barbara Blankson	Central Administration	Key Action 1 - Mobility for Learners and Staff - Higher Education Student and Staff Mobility	USD 31,230.00
European and Developing Countries Clinical Trials Partnership (EDCTP)	Dr. Kwadwo Kusi	Department of Immunology	Clinical and Immunopathological Consequences of Chronic HBV and Plasmodium Falciparum Co-Infections	EUR 499,910.00
European and Developing Countries Clinical Trials Partnership (EDCTP)	Dr. Helena Lamptey	Department of Immunology	Determining the Role of Fc Gamma Receptor (FCCR) Gene Polymorphisms in HIV Infection Progression and Treatment Outcomes in Ghanaian Adults using Next Generation Sequencing	EUR 69,652.02
European and Developing Countries Clinical Trials Partnership (EDCTP)	Prof. Dorothy Yeboah-Manu	Department of Bacteriology NMIMR	Impact of Diabetes on TB Disease and Treatment Outcome in Ghana	EUR 498,750.00
European and Developing Countries Clinical Trials Partnership (EDCTP)	Dr. Ndong Cheng	Department of Epidemiology NMIMR	Determining the Impact of Scaling Up Mass Testing, Treatment and the Tracking on Malaria Prevalence among Children in the Pakro Sub-District of Ghana	EUR 146,536.75
European and Developing Countries Clinical Trials Partnership (EDCTP)	Prof. Kennedy Addo	Department of Bacteriology NMIMR	Clinical Evaluation of a Loop-Mediated Isothermal Amplification Test for Treponema Parllidum Pertenue: A Diagnostic Tool to Support Yaws Eradication (LAMP4Yaws)	EUR 239,375.00
Fleming Fund	Dr. Nicholas Dayie	Department of Medical Microbiology	Fleming Fellowship Grant	GBP 18,190.00
Gerda Henkel Foundation	Prof. Samuel Offei & Prof. Samul Agyei-Mensah	Department of Geography Resource Development	Enhancing Doctoral Training in the Humanities in West Africa	EUR 1,634,720.00
Global Challenge Research Fund through The Academy of Medical Sciences	Dr. Yaw Bediako	West Africa Centre for Cell Biology of Infectious Pathogens (WACCBIP)	West African Immunology Network (WAIN) - Building Immunological Research Capacity to Promote Sustainable Improvements in Health	GBP 24,630.00
Global Challenges Research Fund (GCRF)	Dr. Lydia Mosi	Department of Biochemistry, Cell and Molecular Biology	Capacity Building for Ultra-Long Read-Length Sequencing of Mycobacterium Ulcerans to Explore Transmission Dynamics	GBP 1,750.00
Higher Education Funding Council for England	Dr. Benedict Weobong	Department of Social and Behavioural Sciences	Understanding Psychological and Socio-Cultural Influences on Young People's Alcohol Consumption in Ghana	GBP 19,870.00
International Crops Research Institute for the Semi-Arid Tropics (ICRISAT)	Dr. Dilys MacCarthy	Soil and Irrigation Research Centre (SIREC)	Capacitating African Stakeholders with Climate Advisories and Insurance Development (CASCAID-II)	USD 19,855.00
International Development Research Centre (IDRC)	Dr. Elaine Lawson	Institute for Environment and Sanitation Studies (IESS)	Digital Agricultural Services (Digital)	CAD 78,100.00
International Food Policy Research Institute	Prof. Richmond Aryeetey	Department of Population, Family and Reproductive Health	Understanding Adolescent Nutrition in Urban Areas of Ghana	USD 38,570.00
Medical Research Council (MRC)	Prof. Gordon Awandare & Dr. Kanny Diallo	West Africa Centre for Cell Biology of Infectious Pathogens (WACCBIP)	The Orpharyngeal Microbiome Dynamics and Invasive Bacterial Diseases	GBP 258,568.00
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FUNDER	UG LEAD	ORIGINATING UNIT	PROJECT TITLE	BUDGET ALLOCATED TO UG
Medicines for Malaria Venture (USTTB-MMV) through Universite des Sciences, des techniques et des technologies de Bamako	Dr. Yaw Aniweh	West Africa Centre for Cell Biology of Infectious Pathogens (WACCBIP)	Screening MMV Compounds against Non-Falciparum Species	USD 30,130.00
National Institute of Heath Research (NIHR) Global Health Research	Prof. Gordon Awandare	West Africa Centre for Cell Biology of Infectious Pathogens (WACCBIP)	TIBA - Building the Capacity of Local TIBA Partners for Ethical use of Data and Big Data Management and Analysis	GBP 20,000.00
National Institutes of Health	Dr. Seth Adu-Afarwuah	Department of Nutrition and Food Science	Neural Mechanisms of Protective Effects of Early Nutrition on the Development of Social-Emotional Difficulties Among Children in Ghana	USD 265,341.00
National Institutes of Health	Prof. Kwasi Torpey	Department of Population, Family and Reproductive Health	Multi-Level Intervention Addressing Intersectional Stigma to Improve HIV Testing	USD 154,346.00
National Institutes of Health	Dr. Linda Amoah	Department of Immunology, NMIMR	Plasmodium Falciparum Gametocytogenesis In Vitro and In Vivo	USD 148,465.00
NIH through New York University, Grossman School of Medicine	Prof. Richard Adanu	Department of Population, Family and Reproductive Health	Stroke and Cardiovascular Research Training (Scart) Institute	USD 124,010.00
NIH through Regents of the University of Michigan	Dr. Ernest Kenu	Department of Epidemiology and Disease Control	Understanding and Improving the Effectiveness of Public Health Laboratory Networks for Infectious Diseases in Ghana	USD 169,205.00
NIH through Washington University, St. Louis	Dr. Ibrahim Abdallah	School of Public Health	Intervention to Improve Developmental and Health Outcomes for Female Adolescents	USD 60,096.00
NOUL Next Generation Open Platform U-Health Laboratory and Columbia University	Prof. Gordon Awandare	West Africa Centre for Cell Biology of Infectious Pathogens (WACCBIP)	Image Analysis of Plasmodium Ovale and Machine Learning for Differentiating the Plasmodium Species Using NOUL's miLab@ in Ghana	USD 64,860.00
Organization for Women in Science for the Developing World (OWSD - UNESCO)	Dr. Edem Mahu	Department of Marine and Fisheries Sciences	Developing Android/Interactive Voice Response (IVR) Soil Nutrient Test Kits to Guide Fertilization Application around the Keta Lagoon Complex in Ghana	USD 50,000.00
Research England's Global Chanllenge Research Fund through The University of Sheffield	Dr. Richard Amewu	Department of Chemistry	Better Outcomes for Buruli Ulcer Sufferers: Improved Diagnostics and Behavioural Change	GBP 27,600.00
Riksbankens Jubileumsfond	Dr. Charles Ackah	Institute of Statistical, Social and Economic Research (ISSER)	Special Economic Zones: A Force for Good to Reduce Inequality	EUR 321,260.00
Swedish International Development Cooperation Agency (SIDA)	Prof. Peter Quartey	Institute of Statistical, Social and Economic Research (ISSER)	Environment and Natural Resource Research Initiative (ENRRI) - EfD Ghana Work Plan 2020	SEK 2,346,000.00
Swiss Programme for Research on Global Issues for Development (r4d programme)	Dr. Edward Asiedu	Department of Finance	Health Systems Governance for an Inclusive and Sustainable Social Health Protection in Ghana and Tanzania. Phase II	CHF 243,962.25
The Alliance for Agricultural R&D for Food Security and the Commonwealth of Australia represented by the Australian Centre for International Agricultural Research and the Crawford fund through the University of Queensland, Australia	Prof. Eric Danquah	West Africa Centre for Crop Improvement (WACCI)	Demand-Led Plant Variety Design for Emerging Markets in Africa	USD 154,500.00
The Andrew W. Mellon Foundation	Dr. Nii-Dortey Moses	Institute of African Studies (IAS)	Mapping Africa's Musical Identities: A MOOC Project under the Auspices of the Pan-African Music Initiative	ZAR 855,000.00

FUNDER	UG LEAD	ORIGINATING UNIT	PROJECT TITLE	BUDGET ALLOCATED TO UG
The British Academy	Prof. Samuel Codjoe	Regional Institute for Population Studies (RIPS)	Reducing the Impact of Extreme Heat to Improve Well-Being in Cities (REFIT)	GBP 34,565.00
The Royal Society	Dr. John Ganle	Department of Population, Family and Reproductive Health	Testing the Effect of an Integrated Intervention to Promote Access to Sexual/Reproductive Health and Rights Among Disabled Women/Girls	GBP 297,159.20
The Royal Society	Dr. Edem Mahu	Department of Marine and Fisheries Sciences	Fishing for the Future (F4F): Sustaining Livelihoods through Gender-Sensitive Climate Risk Assessment of Brackish-Water Shellfisheries in the Gulf of Guinea	GBP 296,937.88
UK Department for Int'l Development (DFID) through the institute of Development Studies	Prof. Felix Asante	Institute of Statistical, Social and Economic Research (ISSER)	ACHA - Action on Children's Harmful Work in African Agriculture – Inception Phase	GBP 14,349.59
UNICEF - Ghana	Dr. Charles Ackah	Centre for Social Policy Studies (CSPS)	DACF Media Engagement and Budget Credibility Analysis	USD 29,906.25
UNICEF - Ghana	Dr. Charles Ackah	Centre for Social Policy Studies (CSPS)	District Assembly Common Fund Formula Media Dialogue	USD 5,500.00
UNICEF - Ghana	Dr. Abdul-Gafaru Abdulai	Department of Public Administration and Health Services Management	Baseline Research: Creation of Awareness on Social Protection Rights and Entitlements in Ghana	GHS 453,079.00
United Nations Institute for Traning and Research (UNITAR)	Prof. Justice Bawole	Department of Public Administration and Health Services Management	Developing a Tailor-Made Training Course on Green Finance for Ghana	USD 27,525.00
United Nations University World Institute for Development Economics (UNU-WIDER)	Prof. Robert Osei	Institute of Statistical, Social and Economic Research (ISSER)	GHAMOD Policy Workshop	USD 6,699.00
Universities Canada	Prof. Erasmus Owusu	Department of Aninal Biology and Conservation Science	Societal Transformation and Climate Change: Training the Next Generation of Scholars in Sub-Saharan Africa and Canada (Nextgen Climate Change Advanced Scholars)	CAD 23,363.44
University of Bonn	Dr. Caesar Atuire	Department of Philosophy and Classics	Ontologies of Personhood: African Perspectives	EUR 1,875.00
Wellcome Trust	Dr. Irene Ayi	Department of Parasitology NMIMR	Building Capacity and Collaboration on Cryptosporidium Research between University of Dundee and University of Ghana	GBP 47,000.00
Wellcome Trust	Prof. Samuel Codjoe	Regional Institute for Population Studies (RIPS)	Evaluating Health Impacts of Climate Adaptation Strategies	GBP 91,860.00
World Bank & Others through International Centre of Insect Physiology and Ecology (ICIPE), Kenya	Prof. Irene Egyir	Department of Agricultural Economics and Agribusiness	The Management of Research Support, Innovation and Capacity Building Activities of the Regional Scholarship and Innovation Fund (RSIF) under the Partnerships for Skills in Applied Sciences, Engineering and Technology (PASET) Initiative	USD 288,000.00
World Health Organisation	Prof. Richard Adanu	Department of Population, Family and Reproductive Health	Prevalence and Outcomes of Abnormal Continuous Wave Doppler Flow Indices in Unselected Obstetric Populations in Low-And Middle-Income Countries: The Umbiflow International Study	USD 11,623.00
World Health Organisation	Dr. Benedict Weobong	Department of Social and Behavioural Sciences	Y-CHECK Phase 1: Reaching Adolescents with Health Services: A Multi-Country Study of Adolescent Health Check-Ups in Low - and Middle-Income Countries	USD 50,000.00

AWARDS & Appointments

ASTMH President Professor Chandy John congratulating Emerita Professor Quakyi

Emerita Professor Isabella A. Quakyi, Professor of Immunology and Parasitology of the Department of Biological, Environmental and Occupational Health Sciences of the School of Public Health, has been awarded the 2019 Clara Southmayd Ludlow Medal by the American Society of Tropical Medicine and Hygiene.

The Clara Southmayd Ludlow Medal is a prestigious award conferred by the America Society of Tropical Medicine and Hygiene (ASTMH) in honour of outstanding female scientist in the field of Tropical Medicine.

l-r: Prof. Farzin Farzaneh (Global Editor, Europe), Prof. Gordon Awandare and Prof. Steven Gordon (Editor-in-Chief, EBM)

The Director of the West African Centre for Cell Biology of Infectious Pathogens (WACCBIP), **Professor Gordon Awandare**, has been named the first Africa Global Editor of the Experimental Biology and Medicine (EBN) journal.

The EBM journal, founded in 1903 is the flagship journal for the Society for Experimental Biology and Medicine (SEBM). The Journal publishes research at the overlapping junctions of the biological, physical and engineering sciences that impact health and welfare of the world's population.

Professor Solomon Fiifi Ofori-Acquah, Dean, School of Biomedical and Allied Health Sciences, and Director of the West African Genetic Medicine Centre (WAGMC) has been appointed by the National Institutes of Health (NIH) to serve as a Permanent Member of the Haematology research committee, known as the Molecular and Cellular Haematology Study Section from 2019-2025.

Prof. Solomon Ofori-Acquah is a renowned haematology scientist with interest in sickle cell disease and genomic research.

Professor Henrietta J.A.N Mensa-Bonsu, a distinguished Professor of Law, has joined the Supreme Court of Ghana following her nomination and the unanimous approval of her appointment by Parliament.

Professor Mensa-Bonsu has served the University of Ghana and the nation in various capacities during her long career. She has an extensive list of publications on criminal law and criminal justice, family law and child rights and has lectured and mentored many leading scholars in her fraternity.

Professor Mensa-Bonsu currently serves as President of the prestigious Ghana Academy of Arts and Sciences.

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HEALTH SCIENCES INVESTIGATIONS JOURNAL Volume 1 Issue 1

Editors' choice

- Human coronavirus in persons with acute respiratory infections in Ghana, Pages 5-11
- Reticulocyte count changes in paediatric patients with uncomplicated malaria treated with artemisinin combination therapy, Pages 12-15

Coronavirus Illustration: Illustration of purified virions. The notable feature is a fringe of widely spaced club-shaped spikes that project from the virion surface. The halo of the spikes has been described as giving the viral particle the appearance of a solar corona and this prompted the name. Almeida JD et al. 1968

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UG MMAEDA

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PROJECT LEAD

The Office of Research, Innovation and Development **(ORID)** in partnership with the Institute of Applied Science and Technology **(IAST)** seeks to develop and manage a UG Makerspace through a multi-disciplinary approach.

OUR VISION

"A space that promotes creativity and futuristic innovations designed through collaboration and synergies using basic tools to provide solutions that impact our society." July 2019

OUR COLLABORATORS

External Technical Partners

- Impact Hub
- Kumasi Hive
- The University of the Arts, Berlin

Internal Collaborators

- School of Engineering Sciences
- Institute of Applied Science and Technology
- School of Continuing and Distance Education
- Department of Chemistry
- Department of Biochemistry, Cell and Molecular Biology
- Department of Agricultural Economics and Agribusiness
- Department of Earth Sciences
- School of Nuclear and Allied Sciences
- Department of Family and Consumer Sciences
- Department of Nutrition and Food Science
- University of Ghana Creativity Group

FOCUS AREAS

- Climate Change and Food/Agriculture
- Health Care
- Sanitation and Waste Management
- Renewable Energy
- Entrepreneurship and Leadership

OVERVIEW

A trend in academic institutions across the world has identified a movement of combining research and teaching with innovation. This approach is in recognition of the fact that problems of development require different science, technology and innovation disciplines working together. This movement has increased the demand for spaces at various Universities that can foster such collaboration and bridge the gap between theory and practice. The Makerspace aims to create a space for students to experiment, test and cultivate new ideas, explore and master new concepts, work through problems with faculty members and collaborate across disciplines.

Enhancing the capacity of students to think, conceptualize and visualize their ideas will begin to instill in them attributes of exploration and experimentation. This could ultimately increase their drive to venture into entrepreneurship or develop innovations that would interest industry and the private sector.

Technical expertise for the establishment of the Makerspace has been generously provided by the Impact Hub, Accra. http://accra.impacthub.net/

WHAT IS A MAKERSPACE?

A makerspace is a 21st-century digitally-connected community workshop and lab, open to entrepreneurs and people in general who are interested in learning, designing and working together in a collaborative environment. Makerspaces are modern workshops where students can create projects, they are passionate about in an environment that fosters and encourages learning through experimentation.

Typical equipment ranges from low- to high-tech, but spans 3D printers, laser cutters, CNC machines (e.g. routers, mills, lathes), sewing machines, soldering irons and electronics tool kits. Makerspaces help people gain skills through learning-by-doing: using CAD/CAM software to apply 3D modeling, 3D printing, coding, robotics, carpentry, metalwork and other tools for rapid prototyping of physical objects and hardware. Makerspaces complement Science, Technology, Engineering, Art and Math (STEAM) fields and support entrepreneurship through new product development. See example of a Makerspace at www.icecairo.com/fablab.

Through the kinds of hands-on learning offered by makerspaces, students are able to deepen their understanding of higher-level concepts, allowing lessons to leave more of an impact. Consequently, makerspaces will inspire cross-disciplinary projects that are tied to standards and deeply engage students in learning.

Makerspaces are defined more by what they enable than what they actually look like. A makerspace can take many forms, from a mobile cart loaded with crafting supplies to a room full of computers, tools, and tables. Makerspaces are a combination of a traditional lab, art room, shop and conference room, where hands-on learning takes place and people are encouraged to collaborate to turn ideas into reality. Makerspaces are all about getting hands-on and creating real-world projects using the tools and expertise on hand.

Makerspace is effective at demonstrating mastery, can be used as a formative or summative assessment, and can impact student engagement. Through making, students learn how important even the smallest detail can be, a lesson which can translate into paying more attention to their work and higher levels of achievement in all of their classes.

UG MMAEDA Collaborators Meeting 2019 @ Impact Hub

Design Thinking Workshop 2019 @ Impact Hub

WHO ARE THE BENEFICIARIES?

STUDENTS

This space will be designed to stimulate student innovation and can allow students to reach their full potential by providing the place and means for them to dig deep into their interests. These extracurricular learning spaces can bridge the gap between students' academic and professional lives and allow them to put theory into practice .

Most students can't afford the broad spectrum of equipment needed for maximum exploration, and most lack the space to spread out and try their ideas. The Makerspace will be stocked with both low- and high-tech equipment, these spaces allow student innovators to create real prototypes, and serve as starting places for students to launch startups, get advice about bringing a product to market, and network with alumni and potential funders. See examples of this at https://venturewell.org/makerspace-masters/

FACULTY

It will provide the opportunity for Faculty to mentor students and guide them as they bring inventions to life. It would also serve a space for faculty to translate research outcomes into tangible prototypes.

INDUSTRY

Provide the opportunity for industry stalwarts to serve as inventors in residence to share their practical experiences with students of the Makerspace. It would also provide them with access to innovations that they could translate into businesses. Industrialists that visit the makerspace can also open their industries to students to undertake internships.

Left: Group Photo after inspection of the potential site for 'UG MMAEDA' @ University of Ghana

Right: Group Photo after Internal & External Collaborators Meeting 2019 @ University of Ghana

IN SUMMARY, UG MMAEDA WILL

- Inspire and support students who want to better understand, articulate, and reflect on the pedagogies and learning approaches that connect to the design and development of problem-solving and critical-thinking skills.
- Bring transformative and progressive approaches to learning in a mainstream education through hands on experiences through the Makerspace Movement.
- Provide practical examples that connect Makerspaces to deep thinking pedagogies.
- Assist faculty in articulating and reflecting on their teaching approaches and practices and facilitate research activities undertaken by faculty.
- Engage Industry to work with students and faculty to develop solutions to problems.
- Prepare students for employment in STEAM fields in the future.

TYPICAL DESIGN OF SPACE

CONCLUSION

The establishment of the Makerspace is being pursued with the aim of increasing creativity and innovation at the University while creating a window to address business challenges and/or challenges at the University that can be transformed into business opportunities. It will also help students develop their ideas in ways that are market relevant and execute solutions to developmental issues in Ghana and within the continent. The Makerspace will serve as a channel for innovative thinking and will be part of a change management process for the University.

COMING UP...

This October we will be organizing a two week training session to create more awareness about the makerspace culture within the university community.

Pop-Up Space activities will include Design Thinking (Human Centered Design), Website/App Development, Entrepreneurship and Speed Mentoring, Machining and Crafts, Rapid Prototyping, Digital Printing and Graphic Design. It's a free event so all students are encouraged to take advantage of the training programme.

LOOKING AHEAD...

In the interim, we look forward to leveraging on virtual spaces within the University to promote the vision of the Makerspace. We are advancing plans to get a permanent space for establishing a hub that will be named "UG MMAEDA". There is more to come...

PROTECT YOURSELF AGAINST COVID-19

Wear your mask

Wash your hands with soap under running water

Avoid touching your mouth, eyes and nose

Use alcohol based hand sanitizer

Keep your distance

Consult the Physician when you are not feeling well

STAY SAFE

UNIVERSITY OF GHANA
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