

# Africa Centres of Excellence for Development Impact (ACE Impact)



West African Genetic Medicine Centre (WAGMC)  
University of Ghana

[www.wagmc.org](http://www.wagmc.org)

Implementation Plan (2019 –2024)

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## List of abbreviations and acronyms

AAU	Association of African Universities
AESA	Accelerating Excellence in Science in Africa
BP	Bank Procedure
CMC	Centre Management Committee
CoE	Centre of Excellence
CPT	Core Project Team
DLI	Disbursement Linked Indicator
EI	Early Investigator
ELSI	Ethical, Legal and Social Implications
ESI	Early Stage Investigator
ESF	Environmental and Social Framework
ESMF	Environmental and Social Management Framework
ESS	Environmental and Social Standards
FM	Financial Management
GNPC	Ghana National Petroleum Company
GPC	Ghana Psychology Council
H3Africa	Human Hereditary and Health in Africa
ISAB	International Scientific Advisory Board
KBTH	Korle Bu Teaching Hospital
M&E	Monitoring and Evaluation
MoH	Ministry of Health
MOU	Memorandum of Understanding
MPhil	Master of Philosophy
MSc	Master of Science
NHLBI	National Heart, Lung and Blood Institute
NIH	National Institutes of Health
NIG	National Institute of Genetics
OP	Operational Policy
PgCert	Post-graduate certificate
PhD	Doctor of Philosophy
RFU	Results Facilitation Unit
RSU	Research Support Unit
SAB	Sectoral Advisory Board
SCD	Sickle Cell Disease
SCFG	Sickle Cell Foundation of Ghana
TREFD	Translational Research and Entrepreneurship for Faculty Development
UCT	University of Cape Town
UG	University of Ghana
UGMC	University of Ghana Medical Centre
VC	Vice Chancellor
WA	West Africa
WAGMC	West African Genetic Medicine Centre
WB	World Bank
WHA	World Health Authority
WITS	University of the Witwatersrand

## 1. NARRATIVE SUMMARY

### 1.1 Development Challenge and Impact of WAGMC:

The Development Challenge of the West African Genetic Medicine Centre (WAGMC) is Human Genetic Disorders. Chief among these is Sickle Cell Disease (SCD) an inherited blood disorder that is the most common genetic disease in West Africa (WA), and in the world (1). Nearly 2% of livebirths in WA is affected by SCD with the overwhelming majority of parents not knowing the risks to their foetuses (2). Over 80% of infants born with SCD in the region die by five years (3); the overwhelming majority are not diagnosed. Somatic gene mutations also drive the disease process in leukaemia (4), lymphoma (5), solid tumours (6), kidney disease (7, 8) and diabetes (9, 10). Deaths due to these common diseases are also preventable in the West through molecular diagnosis and targeted therapy but rarely so in WA largely because of the paucity of genetic medicine services in the region. The World Health Assembly (WHA) issued resolution WHA59.20 in 2006 calling on Member States in Africa to develop *counselling and screening programmes; medical genetics services; intensification of training of all health professionals and community volunteers; health counselling and ethical, legal and social issues; effective international cooperation, and basic and applied research to address the developmental challenge of genetic disorders including SCD.*

*Improving access to genetic medicine in Africa for all is our vision.* To this end, WAGMC will develop educational, training, applied research programmes focused on: **a)** counselling, **b)** medical genetics, **c)** biochemical and molecular genetics **d)** foetal medicine/perinatology, **e)** cyto-genetics, **f)** inherited blood disorders, **g)** cancer, **h)** diabetes and **i)** kidney disease. Our 5-year goals are to graduate: **a)** 100 postgraduate Genetic Counsellors, **b)** 100 Masters-level Medical Genetic Scientists, **c)** 50 PhD-level Medical Genetic Scientists, **d)** develop a national DNA lab for resolving ambiguous cases of SCD, **e)** establish a new department of Human Genetics in the University of Ghana (UG), **f)** establish a Ghana Society of Human Genetics and **g)** establish a start-up company in predictive and precision medicine. We expect these activities to increase knowledge of genetic disorders and provide the human capacity and facilities to implement the major recommendations contained in WHA 59.20 in the region.

### 1.2 Education and Applied Research:

There is currently no postgraduate training programme in human genetics in WA (11). Thus, whereas there are thousands of accredited genetic counsellors in America, and about 25 in South Africa, there are currently none in WA (12). WAGMC will offer training in behavioural and biomedical genetics in the 2019/2020 academic year enrolling students in existing programmes related to genetics in UG. They include Dietetics (MSc and PhD), Audiology/Speech and Language Pathology (MSc), Biomedical Sciences and Biochemistry (MSc, MPhil and PhD) and Psychology (MPhil and PhD). We will develop new programmes in Genetic Counselling (PgCert, MSc) and Human and Medical Genetics (MPhil and PhD) for the 2020/2021 academic year. Student selection, education and training will be guided by international standards (13), and Telehealth education employed to maximise international faculty participation (14). Students will be taught using didactic lectures, Case- and Problem-based learning, Clinical rotations, Reflective journals and Thesis projects. Behavioural genetics competencies will include: **a)** Communication, **b)** Reflective Practice, **c)** Counselling Skills, **d)** Critical Thinking, **e)** Case Management and **f)** Professional and Ethical Practice. Students will complete up to three internships (clinical, laboratory and specialist). Biomedical genetics training will largely be based on individual research projects with students working with specific primary supervisors and co-supervisors to develop competencies in: **a)** Biochemical genetics, **b)** Developmental genetics, **c)** Cancer genetics, **d)** Neurogenetics, **e)** Renal genetics, **f)** Pharmacogenetics and **g)** Health services research focused in part on the psychosocial impact of genetic diseases and genetics testing. Experiential learning, in which students are attached to a faculty mentor for a laboratory-based experiential learning will be a major component of the research degree programmes.

A system-based research approach will be used to understand the barriers to instituting preventative measures against severe inherited disorders in WA, to understanding the paucity of precision medicine in cancer and to identifying genes that can be transcriptionally altered to ameliorate genetic disorders. A vertically integrated community-to-bedside-to-bench-to-bedside-to-community scientific inquiry will be used in all research to understand key factors that influence the prevalence and health outcomes of common diseases in WA. The broad research themes are therefore **Predictive Medicine, Personalized Medicine** and

**Therapeutic Gene Modulation.** The Centre will investigate: **a)** psychosocial aspects of both predictive and personalized medicine, **b)** omics influencing prognosis of both inherited and acquired genetic disorders, and **c)** novel agents that influence gene expression to achieve therapeutic impact focusing on Sickle Cell Disease, Diabetes and Kidney Disease and Cancer, including haematologic malignancies. Education and research programmes will be intimately integrated through the aforementioned experiential learning, thesis projects, and seminar presentations. **There are three milestones for improved learning and research infrastructure consisting of: a) Advanced Research Equipment, b) Telehealth Smart Classroom System and c) Building Complex.**

### **1.3 Academic and Sectoral Partners:**

WAGMC has strong existing partners in Africa that will be leveraged to recruit regional students. International partners bring onboard outstanding track record in genetic counselling programmes and genomics research. They will contribute in designing curricula, supervising student clinical training, advising WAGMC to prepare for international accreditation, and training faculty and staff to acquire skills in cytogenetics, and foetal tissue biopsies. Sectoral partners are in the public and private health industry and include large multinational companies such as Novartis. The Ghana Health Ministry and the Ghana Psychology Council will help to insure genetic counsellors trained by WAGMC are assimilated into the national health sector. Partnership with the African Society of Human Genetics will help the Centre to implement its regional plan for genetics. Programmes were developed in close consultation with sectoral partners. For instance, the Sickle cell Foundation of Ghana (SCFG) lobbied for the PgCert in Genetic Counselling to train mid-career workers (e.g. nurses) who will be employed in SCD treatment centres across Ghana. Several members of the WAGMC leadership advise and work closely with many of the academic and sectoral partners. The WAGMC Leader is Chair of the Scientific Advisory Board of SCFG, and member of the Advisory Board of the Centre for Proteomics and Genomics Research the leading omics service provider in Africa. These existing relationships will help to grow and sustain the partnerships with this new ACE.

### **1.4 Project Improvement Based on Site Evaluation:**

Multiple comments in the site evaluation report centred on students at UG not receiving sufficient support including in ethical clearance, and laboratory resources, resulting in some students failing to meet the deadlines for submission of projects and graduation. Action Plan 4.1 (*Build a research support unit to provide data management, regulatory and compliance support to faculty and students to accelerate research and research training outputs with competitive hiring of a bioethicist and clinical research associates*) (Table 2), was designed to directly address this problem. In addition, the procurement process in UG slows down the pace of research and inevitably the graduation of biomedical research students. Indeed, the Project Appraisal Document (PAD) rates the procurement assessment risk for the new ACE Impact I Centres in Ghana as Substantial. To address this problem, WAGMC will operate a procurement workflow that allows the Centre to interact directly (through a staff scientist) with suppliers of perishable biomedical reagents, and directly with the central Finance Directorate of UG (through a Centre Accountant). While the sole purpose of this change is to expedite purchase of biomedical reagents by the Centre, it will be consistent with the general principles of procurement and be approved by the Ghana World Bank (WB) procurement specialist. To ensure compliance and to monitor its procurement activities, the procurement audits of WAGMC will be reviewed at least once a year by the National Steering Committee. Another critique was that *“it wasn't clear the interaction between centre leader and deputy centre leader the division of labour or trainee oversight”*. To address this issue, the Deputy Centre Leader will take the lead in issues related to government relations, working with regulatory agencies to accredit genetic counsellors, and overseeing the training of clinicians who enrol in WAGMC, while the Director will oversee the training of basic and translational scientists.

## 2. OVERVIEW OF PLANNED OUTPUTS, REVENUE GENERATION, ACTIVITIES AND COST FOR FIRST YEAR

### **2.1 The Launch of WAGMC:**

The first outputs towards launching the new ACE included securing a suite of offices to house the secretariat. The UG Vice Chancellor (VC) allocated contiguous offices on the main Legon campus to the Centre. The offices were remodelled and fitted with air conditioners, furniture, and other office equipment as part of our pre-financing arrangement with UG towards institutional readiness. The Centre has appointed a Project Manager and recruited existing UG personnel to perform all other core administrative roles. The secretariat has a core staff of nine: Director, Deputy Director, Education and Training Officer, Project Manager/Administrator, Finance Officer, Procurement Officer, Monitoring and Evaluation Officer, Sectoral Liaison Officer and Environmental and Social Safeguard Officer. The Centre will host a retreat in late 2019 to officially designate the core personnel, and to sensitize directors of existing degree programmes in UG to the Centre. WAGMC has developed a new website that contains all the documents required for institutional readiness. <http://www.wagmc.org>.

### **2.2 Partnerships:**

WAGMC is forming strong internal academic partnerships with departments in UG offering postgraduate degree programs broadly related to genetics. They include seven departments in the School of Biomedical and Allied Health Sciences, where the WAGMC Director is the Dean (Anatomy, Chemical Pathology, Haematology, Dietetics, Medical Biochemistry, Medical Microbiology and Medical Laboratory Sciences), the Department of Psychology and the Department of Biochemistry, Cell and Molecular Biology. Heads of the departments have agreed for WAGMC Program Faculty to participate in shortlisting students who apply to pursue postgraduate degrees in the current academic year. Students selected by the departments will be invited to submit an essay on selected genetic medicine topics and undergo a second round of interview with the WAGMC Admission Committee. Successful candidates will become the Centre's first cohort to be trained in behavioural and biomedical genetics.

With respect to sectoral partnerships to enhancing Centre income, WAGMC has a strong partnership with the SCFG and Novartis, and is seeking additional funding from Roche and Sanofi. The SCFG is poised to establish Sickle Cell Treatment Centres in each regional capital of Ghana in the next 2-3 years, with financial support from Novartis, and support of the Ghana Ministry of Health (MoH). The tripartite partnership (Novartis-SCFG-MoH) was announced at the 2019 World Economic Forum. <http://www.moh.gov.gh/moh-novartis-foundation-signs-mou-on-treatment-of-sickle-cell-disease-at-world-economic-forum-2019/>. It will expand new-born screening for SCD throughout Ghana and sponsor 80 health workers (e.g. nurses, midwives) to be trained as genetic counsellors. The WAGMC PgCert in Genetic counselling was designed specifically to meet this sectoral need. The WAGMC Director is Chair of the Scientific Advisory Committee of SCFG and is therefore well positioned to grow this partnership.

With respect to alliances to bolster training, WAGMC is forming strategic partnerships including those with the University of Ghana Medical Centre (UGMC) <https://ugmc.ug.edu.gh>, and the Ghana Psychology Council (GPS). UGMC has provisionally provided laboratory space in its building to house the WAGMC cytogenetics and biochemical and molecular genetics core laboratories. This partnership will allow WAGMC to optimize space use in its proposed building complex for research laboratories, auditorium, and more classrooms. The WAGMC building complex will be physically adjacent to UGMC. WAGMC and GPC have developed a concept document to establish a mechanism for GPC to acquire the competences needed to regulate the training and practice of genetic counsellors in Ghana.

### **2.3 Strategic Priorities and Activities Needed to Achieve 5-year Goals:**

The 5-year goals of WAGMC designed to impact human genetic disorders in WA are to graduate: **a)** 100 postgraduate Genetic Counsellors, **b)** 100 Masters-level Medical Genetic Scientists, **c)** 50 PhD Medical

Genetic Scientists, **d)** confirm by DNA analysis difficult cases of SCD in the national new born screening programme, **e)** establish a new department of Human Genetics in UG, **f)** establish a Ghana Society of Human Genetics and **g)** establish a start-up company in precision medicine and pre-natal diagnosis in Ghana. Seven strategic priorities define the activities needed to achieve these goals (**Figure 1**). They are: **a)** Administration, **b)** Good Governance, **c)** Educational and Training, **d)** Innovation, **e)** Translational Research, **f)** Entrepreneurship and **g)** Service. Cross-cutting tools, activities, and objectives including *institutional impact, monitoring and evaluation, information and communication technology, fiduciary management and transparency, environment, social safeguards and public engagement, and sustainability* will help to efficiently and synergistically operationalize the major priorities.



**Figure 1.** Schematic diagram showing the seven priority activities of WAGMC with six cross-cutting tools, activities and objectives.

## 2.4 Administration and Good Governance:

To develop a culture of a dynamically strong and transparent governance, the roles of WAGMC Officers, Centre Management Committee (CMC) and its sub-committees, and other advisory Boards (e.g. SAB) will be clearly defined, and illustrated in an organogram that will be published on the WAGMC website. Policies and procedures governing Centre operations (e.g. procurement manual) will be displayed on the website. Request for a parchment of land directly adjacent to the UGMC complex to build the proposed WAGMC building has been submitted to the Physical Development and Municipal Services (PDMS) Committee of UG, and provisionally approved by the VC. Specifications for all major equipment (e.g. Cytogenetics Analyzer), including the Telehealth education platform will be defined, and quotations received from prospective vendors. Regular meetings will be scheduled as indicated: **a)** Core Administrative Team; Weekly, **b)** SAB; Quarterly, **c)** ISAB; Bi-annually and published as calendar events on the WAGMC website. A task-force will be set up to develop a 10-year strategic plan for the Centre.

## 2.5 Educational and Training:

Faculty profiles with areas of expertise and research will be published on the website to help attract students (**see Table 7b**). A student handbook with information on admission policies and procedures and anti-sexual harassment will be published on the website. Curricula for the new postgraduate degrees (e.g. MSc. Genetic



Counselling) are currently being drafted with support from academic partners, and will be submitted to the CMC, College of Health Sciences Quality Assurance Committee, College of Health Sciences Academic Board, and the UG Academic Board for approval. We expect these new programmes to be approved at the University-level in early 2020, and be offered to new students in the 2020/2021 academic year.

## **2.6 Innovation and Translational Research:**

The Centre will strive for innovation in ideas, tools and practice. WAGMC will seek to advance new concepts that challenge existing paradigms that have failed to overcome barriers to the diagnosis and treatment of human genetic disorders. The Centre will employ emerging point-of-care devices to address well established problems, and advocate for, and lead the implementation of emerging genetic therapies, including targeted treatment of cancers, including hematologic malignancies. Three research groups (SCD, Kidney and Diabetes, and Cancer) will be launched, and their membership and activities (e.g. seminars, publications) published on the website. The laboratory investments of the Centre detailed in Table 2 focuses on upgrading our existing molecular haematology laboratory into a cutting-edge genetics laboratory. We will install an Illumina NexSeq 550 to support molecular cytogenetics studies and nextgen sequencing, including methylation sequencing. Our students and researchers will have access to both array as well as sequencing platforms for their research. Each of the three WAGMC research groups will use the molecular genetics laboratory. Importantly, the NexSeq 550 system will upgrade the existing sequencing platforms available at UG, which currently consist of a Miseq sequencer, and it will provide the first array platform on campus. A weekly Research-in-Progress seminar will be launched, and laboratories for scientific cores inaugurated. A research administration unit will be set up to support preparation and submission of research grants, and manuscripts by faculty and students.

## **2.7 Entrepreneurship and Service:**

We will set up an intellectual property unit to document and file potentially patentable discoveries. Establish a biorepository unit to archive biological samples that are used for teaching, training and research. Establish MOUs with health facilities possessing large maternity/delivery clinics in Ghana to define the framework for referral of cases for prenatal diagnosis and molecular genetics diagnosis. Faculty will establish a genetics start-up company to provide genetic medicine services in Ghana and the West African region in alignment with the WAGMC vision of *improving access to genetic medicine in Africa for all*

Table 1. Overview of expected outputs and related income within the first project year

<b>Outputs and funds generation year 1 (US\$)</b>				
ACE results	Expected outputs in numbers	Percentages of the DLI	Unit price	Expected revenue
<b>DLI 1 Readiness</b>				
<i>DLI 1.1 Basic Readiness:</i>	1) Approval of the core WAGMC team members (Centre leader, Deputy Centre leader, FM responsible, procurement responsible, M&E responsible and sectoral liaison) and their job functions. 2) Approval of WAGMC Financing Agreement document 3) Approval of WAGMC Implementation Plan document 4) Approval of WAGMC Procurement Manual 5) Approval of WAGMC Financial Management Manual 6) Approval of WAGMC non-staff student representative to the AAU	(50)	\$450,000	\$450,000
<i>DLI 1.2 Full Readiness:</i>	1) Approval of Project Management certificate of a leading ACE core staff (Mr. Isaiah Buertey, Procurement Officer). 2) Functional WAGMC website <a href="http://www.wagmc.org">http://www.wagmc.org</a> 3) Approval of student handbook on the WAGMC website containing the adopted University of Ghana policy for sexual harassment 4) Link to the WAGMC website for details of scholarships for postgraduate studies in genetic medicine 5) Approval of the WAGMC Sectoral Advisory Board endorsement of the WAGMC implementation plan	(50)	\$450,000	\$450,000
<b>Total revenue for DLI1</b>				<b>\$900,000</b>
<b>DLI 2 Development Impact (Independent external evaluation of development impact)</b>				
<i>DLI 2.1 Relevance and impact on society of graduates, including the share of graduates hired in the target sector and feedback from key employers</i>	1) Baseline data from at least ten health centres on the qualifications of health professionals offering counselling services in Ghana and the West Africa region	(30)	\$0	\$0
<i>DLI 2.1 Relevance and impact of research on society</i>	2) Engage government agencies/ professional bodies to develop standards for the training and accreditation of genetic counsellors and medical genetic scientists in Ghana	(45)	\$0	\$0
	3) Baseline data on the knowledge of paediatricians, midwives and other health professionals about the prevalence of thalassemia in Ghana	(10)	\$0	\$0
	4) Develop database of Centre graduates and sectoral stakeholders	(10.0)	\$0	\$0
	5) Five joint health education events (e.g. symposiums, seminars, workshops) with sectoral partners	(5.0)	\$0	\$0
<b>Total revenue for DL2</b>				<b>\$0</b>
<b>DLI 3 Quantity of students</b>				

<i>DLI 3.1a New eligible PhD student's male</i>	Enrol two male students (national) into PhD programme		10,000	\$20,000
<i>DLI 3.1b New eligible PhD student's female</i>	Enrol three female students (national) into PhD programme		12,500	\$37,500
<i>DLI 3.2a New eligible Master student's male</i>	Enrol four male students (national) into Masters programme		2,000	\$8,000
<i>DLI 3.2b New eligible Master student's female</i>	Enrol six female students (national) into Masters programme		2,500	\$15,000
<i>DLI 3.3a New eligible short course student's male</i>	Enrol ten male students (national) into short course		400	\$4,000
<i>DLI 3.3b New eligible short course student's female</i>	Enrol ten female students (national) into short course		500	\$4,000
<b>Total for DL3</b>				<b>\$88, 500</b>
<b>DLI 4 Quality of Education</b>				
<i>DLI 4.3a Infrastructure improvement for research and learning (procurement and civil work)</i>	Installation of Advanced research equipment for improvement of research and learning in inherited genetic disorders	100	300,000	\$300,000
<b>Total revenue for DLI 4</b>				<b>300,000</b>
<b>DLI 5 Relevance of Education &amp; Research</b>				
<i>DLI 5.1b External generated revenue from other sectors</i>	Obtain research funding from international extramural grant awarding agencies	300,000	X 1	300,000
<i>DLI 5.2a Number of students with at least 1-month internship or staff with placement nationally</i>	Ten students or staff with at least one-month internship	10	1,000	10,000
<i>DLI 5.2b Number of students with at least 1-month internship or staff with placement regionally</i>	Establish agreements with regional sectoral partners	0	1,500	0
<b>Total revenue for DLI 5</b>				<b>310,000</b>
<b>DLI 6 Fiduciary Enhancement</b>				
<i>DLI 6.1 Timely fiduciary reporting</i>	Submit disbursement results for basic and full institutional readiness by the deadline date established by the World Bank	(100)	15,000/year/ five years	\$75,000
<i>DLI 6.3 Web Transparency on Fiduciary reports</i>	Reporting of all pre-award expenditure of the Centre on the Centre web	(100)	15,000/year	\$15,000
<i>DLI 6.4 Quality of Procurement planning</i>	Procurement plan published on Centre website	(0)	15,000/year	\$0
<b>Total revenue for DLI 6</b>				<b>\$90,000</b>
<b>DLI 7 Institutional Impact</b>				
<i>DLI 7.2b ACE host university adopts merit-based selection of department heads</i>	Selection of a new head of the Department of Medical Laboratory Sciences in 2019 through an open merit-based competition	(100)	50,000	\$50,000
<b>Total revenue for DLI 7</b>				<b>\$50,000</b>
Total revenue expected triggered from ACE program				
Additional government funding support				
Other external revenue generation				
<b>Total Income</b>				<b>\$1,738,500</b>

Table 2: Overview of expected activities and expenditures within the first project year

Code	Priority Rank	Result/Activity/Task	Budget Estimate (US\$)		
			ACE leader	Partners	Total
<b>Action Plan 1</b>	<b>(1 highest 5 lowest)</b>	<b>Establishing structures and facilities for good governance and administration</b>	<b>(Component total for ACE leader)</b>	<b>(Component total for partners)</b>	<b>(Total of component)</b>
1.1	1	Remodel and furnish existing building to set up the central ACE administration offices	100,000	0	100,000
1.2	2	Build the core ACE administrative team through competitive hiring of new staff and secondment of existing UG staff	50,000	0	50,000
1.3	2	Develop manuals for financial management, and procurement	10,000	0	10,000
1.4	1	Establish and operationalize management and leadership of WAGMC and set up Management Committee with appropriate sub-committees	20,000	0	20,000
1.5	2	Refurbish and upgrade ICT infrastructure, website design, and hosting, purchase software, and launch the WAGMC website	50,000	0	50,000
1.6	3	Constitute Sectoral Advisory Board	0	10,000	10,000
1.7	3	Set up International Scientific Advisory Board and expand the international faculty	30,000	0	30,000
		<b>Sub-Total</b>	<b>260,000</b>	<b>10,000</b>	<b>270,000</b>
<b>Action Plan 2</b>	<b>(1 highest 5 lowest)</b>	<b>Improving the infrastructure and environment for teaching, learning and research</b>	<b>(Component total for ACE leader)</b>	<b>(Component total for partners)</b>	<b>(Total of component)</b>
2.1	1	Purchase advanced research equipment	300,000	0	300,000
2.2	1	Upgrade lecture/seminar rooms and laboratories, and buy vehicles	100,000	0	100,000
2.3	1	Complete the architectural planning for the construction of the ACE building	100,000		100,000
2.4	2	Set up telehealth education platform and acquire appropriate software	60,000	0	60,000
2.5	1	Create website to house downloads of student handbook, policies and procedures of admission, fellowships, anti-sexual harassment, gender equality.	10,000	0	10,000
2.6	3	Engagement of international faculty for teaching courses and workshops, and co-supervision of students	0	20,000	20,000
2.7	3	Faculty Exchange programs with regional and national academic partners	0	25,000	25,000
		<b>Sub-Total</b>	<b>570,000</b>	<b>45,000</b>	<b>615,000</b>
<b>Action Plan 3</b>		<b>Enhancing postgraduate training to achieve excellence with increasing quantity of students and a focus on gender and regionalization</b>			
3.1	1	Upgrade the curriculum of an existing Master's degree in counselling psychology to meet international standards, and develop curricula for new postgraduate programmes in genetic counselling and medical genetics	20,000	0	20,000
3.2	1	Obtain approval for upgraded and new degree programmes	20,000	0	20,000

Code	Priority Rank	Result/Activity/Task	Budget Estimate (US\$)		
			ACE leader	Partners	Total
3.3	2	Enrol students into MSc/MPhil training programme	40,000	8,000	48,000
3.4	2	Enrol students and run Ph.D. Programme	75,000	16,000	91,000
3.5	2	Conduct national and regional outreach events targeting women and minorities	20,000	20,000	40,000
3.6	3	Develop new curricula for short courses (topics include: precision medicine, prenatal diagnosis, targeted therapy, genetic counselling)	10,000	0	10,000
3.7	2	Run short courses in genetic counselling for mid-career health professionals	10,000	25,000	35,000
		<b>Sub-Total</b>	<b>195,000</b>	<b>69,000</b>	<b>264,000</b>
<b>Action Plan 4</b>	<b>(1 highest Lowest 5)</b>	<b>Promoting innovative and translational research with increasing research publications</b>	<b>(Component total for ACE leader)</b>	<b>(Component total for partners)</b>	<b>(Total of component)</b>
4.1	1	Build a research support unit (RSU) to provide data management, regulatory and compliance support to faculty and students to accelerate research and research training outputs with competitive hiring of a bio-ethicist and clinical research associates.	30,000	0	30,000
4.2	3	Support short training visits for faculty and students outside WAGMC	25,000	20,000	45,000
4.3	2	Determine the birth frequency, and the molecular bases of sickle-beta thalassemia in Ghana	50,000	0	50,000
4.4	2	Perform joint genomics research projects with regional and national partners	30,000	50,000	80,000
4.5	2	Recruit two full time staff scientists to support student training and development of new assays, and support Centre grant applications and scientific writing	30,000	0	30,000
4.6	3	Investigate the molecular bases of rare genetic disorders in Ghana	40,000	20,000	60,000
4.7	2	Support Centre projects in laboratories that provide students high quality experience in research and mentoring	40,000	40,000	80,000
		<b>Sub-Total</b>	<b>245,000</b>	<b>130,000</b>	<b>375,000</b>
<b>Action Plan 5</b>	<b>(1 highest 5 lowest)</b>	<b>Affirming relevance of education and research through externally generated revenue, internships, and entrepreneurship</b>	<b>(Component total for ACE leader)</b>	<b>(Component total for partners)</b>	<b>(Total of component)</b>
5.1	1	Support faculty to work together with regional and international partners to sustain collaborative extramural funding to support genomics research	10,000	10,000	20,000
5.2	2	Support faculty to submit at least 3 investigator-initiated grant applications	5,000	5,000	10,000
5.3	3	Support PhD and Masters students to apply for small student grants from international agencies to support their research, attendance & presentations at scientific meetings	5,000	5,000	10,000
5.4	3	Secure internships for Centre graduates to receive practical training with sectoral partners	0	0	0
5.5	2	Set up a DNA diagnosis confirmation unit for sickle cell disease	40,000	30,000	70,000
		<b>Sub-Total</b>	<b>60,000</b>	<b>50,000</b>	<b>110,000</b>
	<b>(1 highest</b>				

Code	Priority Rank	Result/Activity/Task	Budget Estimate (US\$)		
			ACE leader	Partners	Total
<b>Action Plan 6</b>	<b>5 lowest)</b>	<b>Promoting timeliness and quality of fiduciary management</b>	<b>(Component total for ACE leader)</b>	<b>(Component total for partners)</b>	<b>(Total of component)</b>
6.1	1	Publish the approved budget, annual work plan and the financial and procurement manuals of the Centre on the centre's websites to demonstrate transparency of expenses	0	0	0
		<b>Sub-Total</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>TOTAL BUDGET</b>			<b>1,330,000</b>	<b>304,000</b>	<b>1,634,000</b>

Table 3: Overview of budget distribution among partners for year 1

Code	Result/Activity/Task	Partner Budget Estimate (US\$)																				Total Partner Budget	
		SCFG	UGMC	GPC	GCPS	KBTH	NMI	GHS	WITS	UCT	UCS	PITT	UCC	BU	OAU	USL	UL	AAS	GCN	SCFN	CPGR		KNUST
	<b>Establishing structures and facilities for good governance and administration</b>																						
Action Plan 1	1.6 Sectoral Advisory Board	2,000	2,000	2,000	2,000			2,000															10,000
	<b>Improving the infrastructure and environment for teaching, learning and research</b>																						
Action Plan 2	2.3 Engagement of international faculty for teaching courses and workshops, and co-supervision of students								6,000	6,000	8,000												20,000
	2.6 Faculty Exchange programs with regional and national academic partners											5,000	5,000	5,000	5,000	5,000						25,000	
	<b>Enhancing postgraduate training to achieve excellence with increasing quantity of students and a focus on gender and regionalization</b>																						
Action Plan 3	3.3 Enrol students into MSc/MPhil training programme													2,000	2,000	2,000	2,000					8,000	
	3.4 Enrol students and run Ph.D Programme													4,000	4,000	4,000	4,000					16,000	
	3.5 Conduct national and regional outreach events targeting women and minorities												5,000	5,000			10,000					20,000	
	3.7 Run short courses in genetic counselling for mid-career health professionals	10,000			2,500														2,500	10,000			25,000
	<b>Promoting innovative and translational research with increasing research publications</b>																						
Action Plan 4	4.2 Support short training visits for faculty and students outside WAGMC																					20,000	20,000
	4.4 Perform "joint" genomics research projects with regional and national partners														25,000								50,000
	4.6 Investigate the molecular basis of rare genetic disorders in Ghana					20,000																	20,000
	4.7 Support Centre projects in laboratories that provide students high quality experience in research and mentoring		20,000				20,000																40,000
	<b>Affirming relevance of education and research through externally generated revenue, internships, and entrepreneurship</b>																						
Action Plan 5	5.1 Support faculty to work together with regional and international partners to sustain collaborative extramural funding to support genomics research														10,000								10,000
	5.2 Support faculty to submit at least 3 investigator-initiated grant applications													2,000	3,000								5,000
	5.3 Support PhD and Masters students to apply for small student grants from international agencies to support their research, attendance & presentations at scientific meetings													2,000	3,000								5,000
	5.5 Set up a DNA diagnosis confirmation unit for sickle cell disease		30,000																				30,000
	<b>Grand Total</b>	<b>12,000</b>	<b>52,000</b>	<b>2,000</b>	<b>4,500</b>	<b>20,000</b>	<b>20,000</b>	<b>2,000</b>	<b>6,000</b>	<b>6,000</b>	<b>8,000</b>	<b>-</b>	<b>5,000</b>	<b>20,000</b>	<b>87,000</b>	<b>11,000</b>	<b>11,000</b>	<b>10,000</b>	<b>2,500</b>	<b>10,000</b>	<b>20,000</b>	<b>25,000</b>	<b>304,000</b>

- AAS African Academy of Sciences, Kenya
- BU Bayero University, Nigeria
- CPGR Centre for Proteomics and Genomics Research, South Africa
- GCN Ghana College of Nursing
- GCPS Ghana College of Physicians and Surgeons
- GHS Ghana Health Service
- GPC Ghana Psychology Council
- KNUST Kwame Nkrumah University of Science and Technology
- KBTH Korle Bu Teaching Hospital
- NMI Noguchi Memorial Institute
- OAU Obafemi Awolowo University, Nigeria
- PITT University of Pittsburgh
- SCFG Sickle Cell Foundation of Ghana
- SCFN Sickle Cell Foundation of Nigeria
- UCC University of Cape Coast
- UCS University of California Stanislaus
- UCT University of Cape Town
- UGMC University of Ghana Medical Centre
- UL University of Liberia
- USL University of Sierra Leone
- WITS University of Witwatersrand



### 3. TIMING OF PLANNED ACTIVITIES FOR ENTIRE PROJECT PERIOD (Gantt chart)

**Table 4: Work plan for the ACE Impact project period**

Code	Result/Activity/Task	Estimate US \$																				
		2019				2020				2021				2022				2023				
		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	
<b>Action Plan 1</b>	<b>Establishing structures and facilities for good governance and administration</b>																					
	Remodel and furnish existing building to set up the central ACE administration offices.																					
	1.1 Build the core ACE administrative team through competitive hiring of new staff and secondment of existing UG staff.																					
	1.2 Develop manuals for financial management, and procurement. Establish and operationalize management and leadership of WAGMC and set up Management Committee with appropriate subcommittees.																					
	1.4 Refurbish and upgrade ICT infrastructure, website design, and hosting, purchase software, and launch the WAGMC website.																					
	1.5 1.6 Constitute Sectoral Advisory Board. Set up International Scientific Advisory Board and expand the international faculty.																					
	1.7																					
<b>Action Plan 2</b>	<b>Improving the infrastructure and environment for teaching, learning and research</b>																					
	Upgrade lecture/seminar rooms and laboratories; purchase cytogenetics analyser, and vehicles.																					
	2.1 Acquire the land and complete the architectural planning for the construction of the ACE building.																					
	2.2 Set up telehealth education platform and acquire appropriate software.																					
	2.3 Develop a student handbook containing policies and procedures of admission, fellowships and scholarships, anti-sexual harassment, gender equality and student citizenship and publish the handbook on the Centre website.																					
	2.4 Engagement of international faculty for teaching courses and workshops, and co-supervision of students.																					
	2.5 Faculty Exchange programs with regional and national academic partners.																					
	2.6 Construct the ACE building																					
	2.7																					
<b>Action Plan 3</b>	<b>Enhancing postgraduate training to achieve excellence with increasing quantity of students and a focus on gender and regionalization</b>																					
	Upgrade the curriculum of an existing Master's degree in counselling psychology to meet international standards, and develop curricula for new postgraduate programmes in genetic counselling and human genetics.																					
	3.1 Obtain approval for upgraded and new degree programmes.																					
	3.2 Enroll students into MSc/MPhil training Programme.																					
	3.3 Enroll students and run PhD programme.																					
	3.4 Conduct national and regional outreach events targeting women and minorities																					
	3.5 Develop new curricula for short courses (topics include: precision medicine, prenatal diagnosis, targeted therapy, genetic counselling).																					
	3.6 Run short courses in genetic counselling for mid-career health professionals.																					
	3.7																					
<b>Action Plan 4</b>	<b>Promoting innovative and translational research with increasing research publications</b>																					
	Build a research support unit (RSU) to provide data management, regulatory and compliance support to faculty and students to accelerate research and research training outputs, with competitive hiring of a bioethicist and clinical research associates.																					
	4.1 Support short training visits for faculty and students outside WAGMC.																					
	4.2 Initiate a study to determine the birth frequency, and the molecular bases of sickle-beta thalassemia (sickle-beta zero, and sickle beta-plus) in Ghana.																					
	4.3 Initiate joint genomics research projects with regional and national partners.																					
	4.4 Recruit two full time research fellows to focus on mentoring Centre masters and PhD student research project development, grant applications and scientific writing.																					
	4.5 Begin a study to investigate the molecular basis of rare genetic disorders in Ghana																					
	4.6 Support Centre projects in laboratories that provide students high quality experience in research and mentoring.																					
	4.7																					
<b>Action Plan 5</b>	<b>Affirming relevance of education and research through externally generated revenue, internships, and entrepreneurship</b>																					
	Support faculty to work together with regional and international partners to sustain collaborative extramural funding to support genomics research.																					
	5.1 Support faculty to submit at least 3 investigator-initiated grant applications.																					
	5.2 Support PhD and Masters students to apply for small student grants from international agencies to support their research, attendance & presentations at scientific meetings.																					
	5.3 Secure internships for Centre graduates to receive practical training with sectoral partners.																					
	5.4 Set up a DNA diagnosis confirmation unit for sickle cell disease.																					
	5.5 Register a start-up research and development genetics company																					
	5.6																					
<b>Action Plan 6</b>	<b>Promoting timeliness and quality of fiduciary management</b>																					
	Publish the approved budget, annual work plan and the financial and procurement manuals of the Centre on the center's websites to demonstrate transparency of expenses.																					
	6.1																					
<b>Action Plan 7</b>	<b>Enhancing the impact of the University of Ghana</b>																					
	Develop a regional strategy for improved access to the NIH and increase research income to West Africa.																					
	7.1 Recruit a new head of the Department of Medical Laboratory Sciences through an open merit-based competition																					
	7.2 Merit-based selection of UG Vice Chancellor																					
	7.3																					



## 4. IMPLEMENTATION ARRANGEMENTS

### 4.1 Guiding Policies, Rules and Regulations:

The UG has established guiding rules and regulations which govern all units of the University. WAGMC will function as an academic unit in the College of Health Sciences in the University and will therefore conform to the rules, policies and regulations that govern research and academic work, faculty and staff development, financial management and procurement procedures. WAGMC will adhere to all guiding rules and regulations when collaborating with Sectoral, National and Regional partners guaranteeing that collaborative research, procurement transactions and services provided by both WAGMC and its partners fall within UG's prescribed regulations and policies.

The UG has a well-established Procurement Unit headed by Mrs. Angela Awere-Kyere who is assisted by several qualified Procurement Officers. The University's procurement policies on the requisition and procurement of goods and services provides a general guide on the procedures to be followed in achieving economy, efficiency, transparency, accountability and value for money in the procurement of goods, services and works in the University. The procurement practice at the UG is under the legal framework of the Public Procurement Act 2003, Act 663. WAGMC will adhere to UG policies on purchasing and tendering and in addition to Public Procurement Regulations.

All WAGMC procurements will be processed by **Mr. Isaiah Buertey, a Senior Procurement Officer** with over 10 years-experience who has been seconded to the Centre. Mr. Buertey is a leading team member of WAGMC. He has a Master's degree in Logistics and Supply Chain with Project Management as a major component. Thus, the Centre meets the DLI1 output for Full Readiness **"Project Management certification for at least one leading team member"**.

The UG has in place robust financial regulations that will guide all procurement and financial activities of the Centre. Monitoring of the use of funds is further enhanced by the use of the Integrated Tertiary Software, which allows for easy tracking of expenditures against project budgets and preparation of financial statements and reports to clients and donors. WAGMC will operate as a financially semi-autonomous unit that reports directly to the central Finance Directorate of the UG. In this regard, WAGMC will establish a rigorous research administration office within the Centre that will be overseen by the Director.

There will be an Academic Sub-Committee of the Centre Management Committee (CMC) that will be responsible for the preparation of new academic programs and accreditation procedures. The Education and Training Officer heads this committee. The University's Academic Curriculum Quality and Staff Development Committee and the Academic Quality Assurance Unit will oversee the activities of WAGMC's Academic Sub-committee to ensure it follows due process regarding academic curriculum and approval of new programmes and guarantee high level of educational standards.

The UG has an Internal Audit Directorate with a prime responsibility to ensuring that propriety, efficiency, economy and effectiveness are achieved in all areas of the University's activity. The Internal Audit Directorate will conduct the required yearly audits of the Centre's operations. The University also engages external auditors to conduct institution wide audits annually.

### 4.2 Governance Structures:

UG statutes define a Centre as an establishment which conducts specialized programmes normally oriented to providing services including teaching, research or advocacy. WAGMC will be established as an academic division of UG dedicated to the provision of services including teaching, research and advocacy related to genetic medicine. In the first year of becoming operational, we will submit a draft proposal to the UG Academic Board for consideration and recommendation to the UG Council to establish WAGMC as a financially semi-autonomous unit of UG within the College of Health Sciences. The Centre has opened its own bank account under the clientship of the UG with permission granted by the VC. The bank account is with Standard Chartered Bank Ghana Limited, Legon Branch. WAGMC has been granted financial autonomy by the VC to

mobilize and spend its resources with oversight from the UG Finance Directorate. Mr. Samuel Nkrumah, ACCA, the Finance Officer of the College of Health Sciences will provide financial management of the Centre. As mandated by UG statutes, the WAGMC Director will have exactly the same status as a Dean in UG with the authority to hire faculty, and to develop degree programmes. All major strategic and operational activities of WAGMC will be approved by a CMC, which will be chaired by the Centre Director.

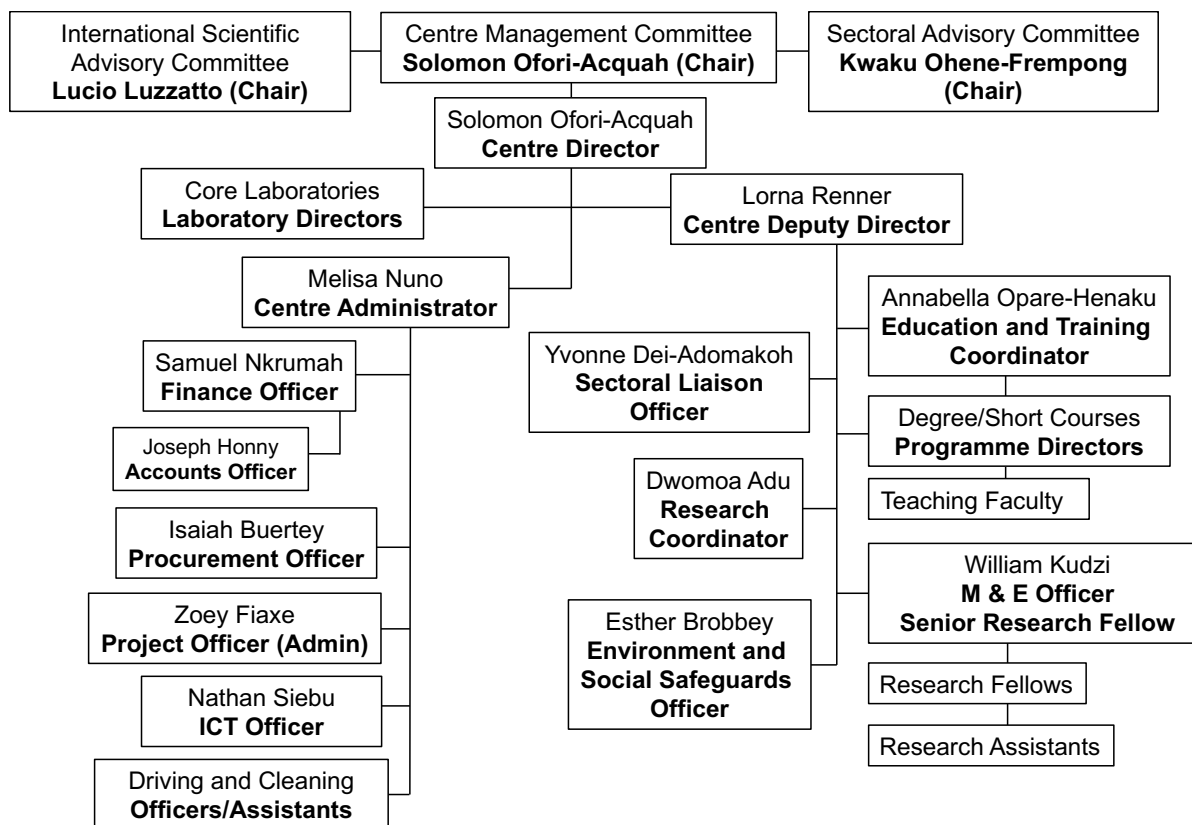
The membership of the CMC will include the following officers:

1. Director of WAGMC (chair)
2. Deputy Director of WAGMC
3. Chair of the WAGMC SAB
4. Chair of the WAGMC ISAB
5. WAGMC Education and Training Coordinator
6. WAGMC Sectoral Liaison Officer
7. WAGMC Research Coordinator
8. WAGMC Monitoring and Evaluation Officer
9. WAGMC Environmental and Social Safeguards Officer
10. Directors of the WAGMC Core Laboratories
11. Representative of the UG Vice Chancellor of professorial rank
12. Representative of the Chief Executive Officer of the major tertiary/quaternary partner hospital (e.g. UGMC) of WAGMC who holds the position of Director within the hospital
13. Industry partners representative
14. Dean of the School of Medicine and Dentistry
15. Dean of the School of Biomedical and Allied Health Sciences
16. Head, Department of Psychology
17. Head, Department of Biochemistry, Cell and Molecular Biology
18. A non-faculty staff representative of WAGMC
19. A representative of the WAGMC student body
20. Project Manager/Centre Administrator (Secretary, ex officio)

All major partners of WAGMC (i.e. ISAB, SAB) will be directly involved in the governance of the Centre through representations on the CMC, and are an integral component of the organization structure of the Centre (**Figure 2**). For instance, the Chair of the ISAB will not only represent the interest of the ISAB, but also the international faculty since virtually all members of the ISAB will contribute to the educational programmes of the Centre. Similarly, the Chair of the SAB will represent the interest of the sectoral partners. In addition, the Centre's leading hospital partner, where we expect most clinical internships to occur, and pharmaceutical industrial partners of the Centre will be represented on the CMC. We have taken this inclusive approach to managing the Centre to insure each sector of the Centre participates in the decision-making process, and is well informed of the decisions taken by the management committee.

WAGMC is the only Centre of Excellence (CoE) in UG focused on human/medical genetics and it is therefore uniquely positioned to lead the University in this field. The Centre is already becoming the referral centre in UG for collaborations focused on human genetics. Recent collaborations sought by two international institutions; Centre for Personalized Immunology, Australian National University, Australia, and the National Institutes of Genetics (NIG), Japan have been referred to WAGMC by colleagues in UG for further discussions. The WAGMC Director accompanied the VC in a three-member UG delegation that recently visited Japan to sign an MOU between foster collaborations between UG and NIG <https://www.ug.edu.gh/news/university-ghana-partners-national-institute-genetics-strengthen-its-genetics-programmes>. WAGMC recently partnered with Rare Disease Ghana Initiative <https://www.rarediseaseghana.org> to organize a genomics symposium to mark rare disease 2019 in Ghana <https://www.rarediseaseday.org/page/news/theme-2019> with the Centre Director giving the keynote address. Together, these referrals and requests for partnership, and requests by several students for mentorship in genetics positions WAGMC as the premier human genetics entity in UG. The Centre's plan to conduct cutting-edge genomics research and education employing high-quality teaching techniques and equipment to positively impact genetic disorders in WA is aligned with UG's 10-year strategic plan of becoming a world

class research-intensive university. WAGMC will attract high quality academics and opinion leaders from across the world to help the university achieve its strategic vision, while enhancing the overall learning experience. At the national level, WAGMC will produce the first cohort of nationally-trained genetic counsellors and medical genetics scientists who will be the first not only in Ghana, but also in the region.



**Figure 2.** Organization structure of the West African Genetic Medicine Centre (WAGMC)

### 4. 3 Sectoral Advisory Board (SAB):

Our sectoral partners are drawn from the health sector. They include individuals working in the private industry, and in large multinationals Sanofi and agencies of the Ghana Government such as the Ghana Health Ministry, The Allied Health Council, and professional health organizations such as the African Society of Human Genetics, hospitals such as Korle Bu Teaching Hospital (KBTH), health policymakers, and advocacy groups such as the SCFG. The Sectoral Liaison Officer (Dr. Dei-Adomakoh) leading interactions with the SAB is a haematologist/oncologist in KBTH with working relationships with several companies that supply oncology drugs in the country, and are vested in the mission of WAGMC. There were consultations with several other stakeholders including MES-Equipment, a local supplier of biomedical research reagents that has engaged Agilent Technologies to partner with WAGMC. Besides advising the Centre in carrying out its mission, the SAB will play an active role in the management of the Centre with representations on the CMC. The SAB held its first meeting on the 9<sup>th</sup> of October, 2019, and has approved the Centre's implementation plan.

**Table 5: Sectoral Advisory Board**

<b>Kwaku Ohene-Frempong</b>	
President	Sickle Cell Foundation of Ghana
+233 24 470 5631	<a href="mailto:ohene@sickleghana.org">ohene@sickleghana.org</a>
Expertise: New Born Screening	
Anticipated Contribution: Provide strategic advice on all aspects of WAGMC, including education and training activities, and the regional development of genetic health professionals in West Africa.	
<b>Samuel Y. Opoku</b>	
Registrar	Allied Health Professions Council
+233 246909283	<a href="mailto:syopoku@chs.edu.gh">syopoku@chs.edu.gh</a>
Expertise: Allied Health Professionals, and Government Health Policy	
Anticipated Contribution: Provide strategic advice on how WAGMC can help the government develop new policies to integrate genetics in healthcare in Ghana, and the region.	
<b>Dennis Odai Laryea</b>	
Programme Manager, NCDs	Ghana Health Service
+233 30 269 0549	<a href="mailto:Dennis.laryea@ghsmail.org">Dennis.laryea@ghsmail.org</a>
Expertise: Biomedical Science	
Anticipated Contribution: Provide strategic advice on how WAGMC can develop new short courses to meet the needs of the Ghana health service.	
<b>Benjamin Otchere</b>	
Regional Director	Alliance Global West Africa
+233 248 154 339	<a href="mailto:botchere@agbl.net">botchere@agbl.net</a>
Expertise: Next Generation Sequencing and other Genetics Technology Platforms	
Anticipated Contribution: Provide strategic advice on the development of income generating genetic medicine workshops, and acquisition of genetics technology platforms	
<b>Philip Anderson</b>	
Head, Medical Affairs, Sub-Saharan Africa	Roche
+233 30 276 6252	<a href="mailto:Philip.anderson@roche.com">Philip.anderson@roche.com</a>
Expertise: Precision Medicine, Targeted Molecular Therapies	
Anticipated Contribution: To provide strategic advice how WAGMC can access funds and in-kind support from the pharmaceutical industry to sustain the educational and research activities of the Centre.	
<b>Philip Ikeme</b>	
Head, Medical and Regulatory Affairs	Sanofi
+33 1 53 77 40 00	<a href="mailto:philip.ikeme@sanofi.com">philip.ikeme@sanofi.com</a>
Expertise: Precision Medicine, Targeted Molecular Therapies	
Anticipated Contribution: To provide strategic advice how WAGMC can access funds and in-kind support from the pharmaceutical industry to sustain the educational and research activities of the Centre.	
<b>Peter Mensah</b>	
	Sickle Cell Association of Ghana
+233 244271310	<a href="mailto:pmensah@sicklecellghana.org">pmensah@sicklecellghana.org</a>
Expertise: Law, Advocacy, Philanthropy	
Anticipated Contribution: As President of the Sickle cell association of Ghana, Mr. Lamptey is well connected with all aspects of advocacy and philanthropy in Ghana. He will help the Centre network, and to get buy-in from patients into various Centre programs, particularly in community outreach.	

## 4.4 Sustainability:

The Centre has planned a robust strategic plan for long-term viability beyond the WB funding. These plans are designed to make WAGMC a world-class destination entity for education and learning in human and medical genetics, and for bench-to-bedside-to-community research in genomics. The sustainability plan consists of a diversified portfolio of programmes designed to sustain the extramural support currently enjoyed by the Centre, and to attract local and national stakeholders, as well as international collaborators to invest in the Centre.

### 4.4.1 Become an Academic Unit of UG.

Integration of WAGMC into the fabric of the UG is the most important strategic move towards sustainability. To this, the Centre will submit a draft proposal to the Academic Board of UG for recommendation to the UG Council to establish WAGMC as a financially semi-autonomous unit of the University. The Centre will be administratively located in the College of Health Sciences under the collegiate system of governance adopted by UG in 2014. The centre will be granted financial autonomy to mobilize and spend its resources with oversight from the UG Finance Directorate. Investigators with extramural funding and research focused on genetic medicine will be headhunted and given primary appointments in the Centre. An endowment fund will be established to support the administrative and research core operations of the Centre.

### 4.4.2 External Funds:

Extramural grants will continue to be the primary source of financial sustainability. The Centre expects a U54 award from the NIH/NHLBI to contribute over \$3 million to its financing towards the end of 2023. The Centre will focus on four types/schemes of external grants for sustainability: **a)** individual research projects, **b)** career development awards, **c)** research training and **d)** large collaborative grants. With respect to individual research projects, the Centre Leader is planning to submit a large new R01 grant application to the NIH in 2020 (with total cost of \$2.5 million over five years) focused on the multi-omics of disease modifying genes in SCD. WAGMC will provide the enabling environment particularly for new investigators to win career development research awards from both the NIH and the Wellcome Trust. There are currently at least ten competitive junior investigators that the Centre is planning to mentor towards independent funding. To insure continuity of research training awards, WAGMC will submit a new application in June 2020 to the NIH/Fogarty Centre funding opportunity for the Chronic, Non-Communicable Diseases and Disorders Across the Lifespan: Fogarty International Research Training Award (NCD-LIFESPAN) D43 program. Since WAGMC has a track record of external funding it will lead the application with other collaborating institutions in low-and middle-income countries, as defined by the WB classification system. The D43 award is ~\$1.2 million over five years. Finally, the long-term financial sustainability of WAGMC will be secured ultimately by strong multi-disciplinary research partnerships with collaborators (international and regional) who have cutting-edge expertise to help solve intractable global medical problems. For example, stroke is a common complication of SCD that affects over 10% of patients, and yet remains an enigma to scientists all over the world. A collaborative study that brings together radiologists, neurobiologists, neurologists, geneticists, haematologists, animal model experts, and a large longitudinal cohort of SCD patients may help to unravel the genetic risks, and pathogenesis of stroke, not only in SCD, but in the general population. WAGMC will assemble the aforementioned experts and tools to lead a Collaborative Awards in Science grant application to the Wellcome Trust in 2021/2022; the award is for ~\$25 million over five years.

### 4.4.3 Endowment Fund and Scholarships:

Many large companies in Ghana and around the world have generous corporate citizenship responsibility programs. In addition to sectoral partners, such as SCFG/ Novartis and Sanofi that have pledged financial support to the Centre, the Ghana National Petroleum Company (GNPC) is a potentially attractive local source of endowment funds to support WAGMC. GNPC has previously supported a Sickle Cell Genetic Counselling Workshop, GENECIS in which the ACE Centre Leader was a faculty, and the company has provided \$4.1 million grant for construction of a Sickle Cell Treatment Centre. The ACE Centre Leader has petitioned the GNPC Board about the critical importance of also investing in discovery science to complement the company's investment in a Treatment Centre. To this end, a proposal to GNPC to establish an Endowed Chair fund with a minimum corpus of \$2 million to support SCD has been approved by the GNPC Board. The

Centre will aggressively pursue this pledge with the assistance of a paid fundraiser and use the pledge to establish an endowment fund. It is expected that a 5% return on this investment will generate \$100,000 annually as payout. Additionally, we have engaged both Roche and Sanofi to provide funds to support training. The funds from these sources will be used to support the administrative and research core activities of the Centre, as well as provide national scholarships beyond the term of the WB funding. Finally, WAGMC will employ a professional fundraiser to help launch an endowment fund campaign targeting several other companies across network member countries.

#### 4.4.4 Preclinical Partnership with Plant Medicine Institutes:

Pharmaceutical gene activation of Nrf2, the master transcriptional regulator of the response to stress has emerged as a potential therapeutic strategy for SCD, cancer, and other diseases (15-20). In a landmark paper, the Centre leader and his group have shown that prophylactic Nrf2 activation slows down organ damage in transgenic sickle mice (15). In addition, several herbal preparations exert potent antioxidant and cytoprotective effects by regulating Nrf2 (21-26). Africa is home to thousands of plants of potential medicinal value, and many plant-based medicine research centres. Hitherto, no effective herbal medicine has been identified to manage SCD although there are reports of potential agents, notably niprisan (27-34). The lack of appropriate preclinical models of SCD on the continent may contribute to the failure in bringing plant-based medicines to the clinic. To fill this gap, the Centre will establish a preclinical SCD drug testing platform using transgenic mouse models to meet the needs of the herbal medicine research community in Africa, and to generate funding to sustain core Centre functions.

#### 4.5 International Scientific Advisory Board (ISAB):

Leading global academics in medicine and genetic medicine have agreed to serve and provide guidance and input on the education and research activities of WAGMC. They include: **Charles Rotimi**, Chief of the Metabolic, Cardiovascular and Inflammatory Disease Genomics Branch and the Director of the Trans-NIH Centre for Research on Genomics and Global Health. He successfully led the establishment of the Human Heredity and Health in Africa (H3Africa) initiative with \$76 million commitment from the NIH and Wellcome Trust. **Lucio Luzzatto**, an eminent haematologist and gene therapy physician scientist. He was the first Director of the Human Genetics Department at the Memorial Sloan-Kettering Cancer Centre, New York and founding Director of the Cancer Gene Therapy Programme. He is immediate past Director of the Tuscany Cancer Centre, Italy. **Mohandas Narla**, Vice President for Research, New York Blood Centre. He served as Interim Director of the Human Genome Project for three years. **Michèle Ramsay** is President of the African Society of Human Genetics, and Professor of human genetics at the National Health Laboratory Service and the WITS. She is Director of H3Africa network focused on the Genomic and environmental risk factors for cardiometabolic disease in Africans. **Eleanor Feingold** is Interim Chair of the Human Genetics Department, University of Pittsburgh. **Richard Sullivan** is Professor, Cancer and Global Health at Kings College London, Director, Institute of Cancer Policy and the Centre for the Study of Conflict & Health and WHO expert on non-communicable diseases. **Claire Shovlin** is Professor of Clinical and Molecular Medicine at the Imperial College London. She is former Deputy Chairman of the Medical Research Society.

Table 6: International Scientific Advisory Board

<b>Lucio Luzzatto</b>	
Haematologists and gene therapy physician scientist	Muhimbili University of Allied Health Sciences
+255 684 751346	<a href="mailto:lluzzatto@blood.ac.tz">lluzzatto@blood.ac.tz</a>
Expertise: Molecular Haematologist and Geneticist	
Anticipated Contribution: Provide strategic advice on all scientific aspects of WAGMC, including research training, research and scientific service activities, as well as affiliations with other scientific bodies.	
<b>Mohandas Narla</b>	
Vice President for Research	New York Blood Centre
+1 (212) 570-3056	<a href="mailto:MNarla@nybc.org">MNarla@nybc.org</a>
Expertise: Human Genome Project, and genetic models.	
Anticipated Contribution: Provide strategic advice on all scientific aspects of WAGMC, including research training, research and scientific service activities, as well as affiliations with US-based academic institutions.	
<b>Michèle Ramsay</b>	
President of the African Society of Human Genetics	National Health Laboratory Service and the University of the Witwatersrand
+27 11 717 6631/5/6	Email:
Expertise: Human Genetics. Current President of the African Society of Human Genetics.	
Anticipated Contribution: Provide strategic advice on regionalization of the scientific programmes of WAGMC, and all the human genetics research portfolio of the Centre.	
<b>Richard Sullivan</b>	
Director, Institute of Cancer Policy	Kings College London
+44 (0) 772039840	<a href="mailto:richard.sullivan@kcl.ac.uk">richard.sullivan@kcl.ac.uk</a>
Expertise: Global expert in cancer policy and health systems	
Anticipated Contribution: Provide strategic advice on the scientific programmes of WAGMC focused on cancer genetics, and relationships with UK-based institutions.	
<b>Eleanor Feingold</b>	
Interim Chair of the Human Genetics Department	University of Pittsburgh
+44 412 383 8599	<a href="mailto:feingold@pitt.edu">feingold@pitt.edu</a>
Expertise: Human Genetics and Biostatistics	
Anticipated Contribution: Provide strategic advice on Big Data related research of WAGMC, and boost additional scientific and technical collaborations with genomics research groups and facilities in the University of Pittsburgh.	
<b>Charles N. Rotimi</b>	
Chief of the Metabolic, Cardiovascular and Inflammatory Disease Genomics Research	Trans-NIH Centre for Research on Genomics and Global Health
+1 (301) 451-2303	<a href="mailto:rotimic@mail.nih.gov">rotimic@mail.nih.gov</a>
Expertise: Human Genetics	
Anticipated Contribution: Provide strategic advice on all aspects of the Centre, and assist the Centre to assess genomics core facilities, grants and other platforms at the NIH.	
<b>Claire Shovlin</b>	
Professor of Clinical and Molecular Medicine	Imperial College London
+44 (778) 6626364	<a href="mailto:c.shovlin@imperial.ac.uk">c.shovlin@imperial.ac.uk</a>
Expertise: Clinical and Molecular Medicine	
Anticipated Contribution: Provide strategic advice on large-scale research related to haemolysis promoter deeper scientific collaborations with the Genomic Medicine group at Imperial College London.	

## 4.6 Institutional Impact:

WAGMC will engage in a diversity of activities that align UG with global best practices of higher education in gap analysis, applied research that is designed and executed with sectoral partners, boost externally generated research funding, increase smart classroom technology to minimize travel, especially by visiting professors, and increase the scope of postgraduate education in the university.

### 4.6.1 Gap Analysis:

Human genetic disorders are a global problem. However, they do not pose a major challenge in the West due in part to higher education solutions that have helped to neutralize and, in some instances, eliminate their impact in the West. The educational programmes of WAGMC are focused on genetic counselling and medical genetics, which are currently not offered by any university in the region. WAGMC therefore bears a huge responsibility to institute global best practices in all aspects of the teaching, learning and research in genetic counselling and medical genetics not only to impact the standing of UG, but genetic counselling and medical genetics in Africa. To this end, we will undertake a gap analysis of genetic counselling and medical genetics on the continent to help us to develop a rigorous and community-engaged degree program. First, we will survey the skills and knowledge that are deemed important for genetic counselling and medical genetic professionals by members of the African Society of Human genetics, representatives of industry and faculty members of the genetic counselling programmes in the University of Cape Town (UCT) and WITS. We will explore the degree to which the above respondents believed individuals in genetic counselling and medical genetics laboratories actually possessed those skills and knowledge to detect the important skills gaps based on the above responses. We will identify to what degree postgraduate programmes in UCT and WITS help students to develop the skills considered important; and to identify any gaps that are considered important but not adequately addressed by these two programmes in Africa. We will fill the gaps in best practices identified in the two genetics programmes in South Africa in the new WAGMC programmes.

### 4.6.2 Applied Research Designed and Executed with Sector Partners:

Genetic diseases have impassioned advocacy groups in the region, such as the sickle cell foundations in Ghana and Nigeria. The lack of targeted therapy for genetic disorders is generally a motivating factor for advocacy groups to push research towards clinically translatable topics. Meanwhile, the availability of targeted therapies for other diseases such as Non-Hodgkin's lymphoma, empowers advocacy groups to demand greater access to that therapy. To the best of our knowledge, UG has not previously been subject to such sectoral pressure on education and research. WAGMC is the only CoE in UG focused on human genetic disorders. The leadership of WAGMC have experience working with patient advocacy groups and sectoral industry partners particularly in the haematology space, and will bring this experience to the Centre and the university. This partnership culture will positively impact the image of the University as it assumes the mantle of a locally relevant applied research entity.

### 4.6.3 External Revenue Generation:

Currently, UG has seven NIH grants; five awarded to the university (U01TW010103, U54HL141011, U54DK116913, R01AI23074, K43TW011160), and two additional grants awarded to the Noguchi Memorial Institute for Medical Research a constituent of the UG College of Health Sciences (U54HG010275, U19AI129916). **One of the major institutional impact goals of WAGMC is to improve the quality and number of extramural funding in UG.** The WAGMC Director is a Standing Member of the NIH Respiratory Integrative Biology and Translational Research (RIBT) Study Section (2013 to 2019), and was recently appointed to serve another six-year term on the Cellular and Molecular Haematology Study Section beginning June 2019. This appointment is the only one of its kind in Ghana, and maybe unique throughout the region, and will be leveraged to develop several career development programmes. The Centre will develop a highly competitive one-year grants-training programme called Translational Research and Entrepreneurship for Faculty Development (TREFD) targeting early investigators at UG and national/regional partner academic institutions. The program will invite applications from early-stage investigators (ESI) with no prior external funding who obtained their terminal degree (e.g. PhD or MB ChB) in the last 10 years, and early investigators (EI), who completed their terminal degree over 10 years ago and have never had external funding. Mentees will receive hands-on training to develop competitive NIH and Wellcome Trust research and training



proposals targeting two specific programs/schemes: **a)** The NIH/Fogarty Emerging Global Leader Award (K43), <https://grants.nih.gov/grants/guide/pa-files/PAR-19-051.html> and **b)** Wellcome Trust International Fellowships, at the basic (<https://wellcome.ac.uk/funding/international-training-fellowships>) and intermediate stages (<https://wellcome.ac.uk/funding/international-intermediate-fellowships>). The TREFD program will include a small salary-exclusive award, and access to WAGMC core laboratories to help the early investigators generate preliminary data for their grant applications.

Secondly, research at WAGMC is organized into three disease themes [**a)** SCD, **b)** Kidney and Diabetes, and **c)** Cancer] with an impressive record of external funding. We expect the SCD group to be awarded about \$3.5 million in the duration of this WB project for its genomics projects. These funds will be deposited into the Centre's Standard Chartered bank account and will insure that WAGMC achieves the full value of disbursement linked indicator for extramural external revenue (DLI 4). The kidney disease network and is expected to also win at least \$1 million in external funding in the same period. This network has already helped to secure a Fogarty Emerging Global Leader Award (K43) award for an early-investigator physician scientist (K43TW011160), which enhances the feasibility of the WAGMC strategy of focusing on this group of investigators to improve the quality and quantity of external funding in UG. The WAGMC cancer group led by Professor Adjei is part of MADCaP (Men of African Descent and Carcinoma of the Prostate) research network <https://www.madcapnetwork.org>. Data generated from these three large research networks locally, and in collaboration with regional and international partners is expected to sprawl new projects and provide opportunities for additional external funding.

Faculty will be supported to submit at least 2 investigator-initiated grant applications per year, either new applications or resubmissions. To help achieve this goal, the WAGMC website will have an extramural grant section with links to new grant opportunities from multiple funders, including the NIH, The Wellcome Trust, Alliance for Accelerating Excellence in Science in Africa (AESAs) and Gates Foundation and others. The Centre's RSU will assist faculty with all aspects of the grant writing and submission process. A Bio-ethicist will be competitively hired to lead the RSU. Collectively, the three activities described involving the TREFD, the existing WAGMC research networks, and the investigator-initiated grants is expected to sustain external funding for WAGMC beyond this initial funding from the WB.

#### 4.6.4 Increase use of virtual meetings to reduce travel cost:

Currently, UG is located on three sites in Accra: **a)** the main campus in Legon, **b)** College of Health Sciences in the KBTH campus 14 kilometres away from the main campus, and **c)** Accra city campus. WAGMC will invest in telemedicine platforms that will link the three campuses together to improve collaboration across the three sites, and improve learning.

### 4.7 Incentive Structures and Mechanisms:

Faculty will not be paid any salaries or allowances from this WB grant. However, WAGMC will offer them a unique opportunity to advance their research with the support of the proposed scientific core facilities. This opportunity will ultimately increase the research productivity of faculty and enhance the prospect of their promotion. The Centre will provide baseline research support to faculty members by ensuring they have access to reagents and equipment to conduct research in their respective fields. The centre will also provide necessary administrative support for faculty to apply for grants to further develop and enhance their independent research. Faculty will be supported to attend reputable scientific conferences where they will have opportunities to present their research work. Networking opportunities will also be available to faculty members as they will come into contact with other researchers with whom productive collaborations can be formed to further advance their research. WAGMC will support the career development of faculty members by providing them with resources for visiting scientist programs in partner institutions. Younger faculty members will also have access to key mentorship programs where senior faculty will provide career advice and professional counsel.

Support staff will be evaluated annually by their immediate supervisors to identify training and developmental needs of individual staff. Staff will then be supported to attend training workshops and enrol for programs related to their specific roles to enhance their skills, knowledge and professionalism thereby improving their

performance and overall marketability. WAGMC will seek collaboration with partner institutions where staff exchange programs will be established for selected staff members. These exchange programs will provide an avenue for sharing work experiences and learn from each other in order to become more efficient and effective.

All mothers have a right to time off work without the loss of pay and to receive ante-natal/postnatal care. They are entitled to 26 weeks of maternity leave and have a right to return to work after maternity leave. Faculty and staff members are also entitled to vacation, study and examination leave as well as sick leave. WAGMC will emulate these policies in dealing with all staff and faculty members.

Staff members will be equipped with adequate skill set and knowledge that will positively impact the delivery of service to patients as well as ensure effectiveness of the care patients receive from trained professionals. Mid-career professionals employed by sectoral partners will acquire basic competencies that enable them to infuse genetics into their routine practice beyond the specialist services that accredited clinical and laboratory genetic professionals will offer. Sectoral and National partners will also have the incentive to work with WAGMC as it will have equipment and laboratory services that will greatly improve patient care and diagnosis. Regional partners have the incentive to work with WAGMC as they will have access to laboratory services, training of students and professionals and access to research produced by faculty of WAGMC.

#### ***4.8 Roles and responsibilities of WAGMC team members:***

The WAGMC team comprises of a Core Project Team (CPT), members of a management committee (CMC), and two advisory Boards; the ISAB and the SAB (**Figure 2**). The Director provides strategic oversight of all aspects of the Centre through direct interactions and outputs of the Deputy Director, the Core Laboratory Directors and the Project Manager/Centre Administrator. Each of the aforementioned senior officials reports directly to the Director establishing a clear high-level chain of command. In the absence of the Director, the Project Manager and Core Laboratory Directors report to the Deputy Director. The Director and Deputy Director jointly provide operational oversight of the works of the Education and Training, Coordinator, Sectoral Advisory Officer, Research Coordinator, the M& E Officer, and the Environment and Social Safeguards Officer. The Project Manager directly supervises the works of several mid-level officers as shown in the organogram (**Figure 2**). Other levels of chain of command and responsibilities involving teaching faculty and researchers are indicated. Details of the job function of the CPT, and their terms of reference are elaborated further in **Table 7a**, while **Table 7b** list the names of members of the teaching faculty.

**Table 7a: WAGMC Core Project Team**

<b>Position</b>	<b>Name/ Qualification</b>	<b>Responsibilities/Justification</b>
Centre Leader	Professor Solomon Ofori-Acquah, PhD	<ul style="list-style-type: none"> <li>• Manage and lead all aspects of the centre's activities</li> </ul>
Deputy Centre Leader	Professor Lorna Renner. MBChB	<ul style="list-style-type: none"> <li>• Represent Centre leader where necessary</li> <li>• Collaborate with Centre leader to explore ideas</li> <li>• Assume delegated responsibilities</li> </ul>
Centre Administrator/ Project Manager	Melissa Nuno, MA	<ul style="list-style-type: none"> <li>• Ms. Nuno is a new hire from the private sector following a competitive process.</li> <li>• Assist the Director in managing the Centre's projects</li> <li>• Plan and execute project activities</li> <li>• Ensure effective monitoring and evaluation of the Centre's performance</li> <li>• Provide regular feedback to management</li> <li>• Recruit and hire appropriately qualified staff</li> <li>• Plan events and activities of the Centre's</li> <li>• Prepare annual progress reports to be shared with all Centre partnerships</li> <li>• Attend meetings on behalf of Centre</li> </ul>
Finance officer	Samuel Nkrumah	<ul style="list-style-type: none"> <li>• Manages the finances of the Centre</li> <li>• Main contact for resolving finance related challenges</li> <li>• Supervises the Accounts Officer in budget preparation</li> <li>• Manage financial records and receipts</li> </ul>
M&E Officer	William Kudzi, PhD	<ul style="list-style-type: none"> <li>• Monitor project activities and expenditure</li> <li>• Ensure progress towards achieving Centre output</li> <li>• Monitor sustainability of results</li> <li>• Provide feedback on Centre activities</li> <li>• Suggest strategies to improve efficiency of Centre's activities and operations</li> <li>• Prepare and share monitoring and evaluation reports</li> </ul>
Training and Education coordinator	Annabella Opare-Henaku, PhD	<ul style="list-style-type: none"> <li>• Lead curriculum designed</li> <li>• Coordinate student recruitment</li> <li>• Assist students in accessing needed resources</li> <li>• Monitor student performance</li> <li>• Plan and develop workshops</li> </ul>
Research coordinator	Dwomoa Adu, PhD	<ul style="list-style-type: none"> <li>• Oversee research</li> <li>• Assist students and faculty in preparing research proposals</li> </ul>
Partnership Coordinator	Yvonne Dei-Adomakoh, MBChB	<ul style="list-style-type: none"> <li>• Liaise with national and regional partners to ensure and maintain commitment to WAGMC agenda</li> <li>• Share annual reports with all partners</li> <li>• Build on partner relationships to create a strong and supportive genetic medicine network in Africa</li> </ul>
Environmental and Social safeguards officer	Esther Brobbey, PhD	<ul style="list-style-type: none"> <li>• Develop and design policies that ensure the safety of staff, students, participants and the environment</li> <li>• Work with Monitoring and evaluation officer to ensure effective implementation of policies</li> </ul>
Procurement and property management Officer	Isaiah Agbovie, MA <i>(Master's degree with a Project management module)</i>	<ul style="list-style-type: none"> <li>• Will liaise with the University's head of Procurement to:</li> <li>• Place advertisement, open and evaluate tender</li> <li>• Notify Centre of awarded contracts and management of contracts</li> <li>• Ensure that goods and services meet Centre's needs and specifications</li> </ul>

Accounts Officer	Joseph Honny	<ul style="list-style-type: none"> <li>• Manage accounts of Centre</li> <li>• Liaises with Finance Officer to manage Centre finances</li> </ul>
Head of logistics and ICT	Luca Yikimpa Chicabatia, MA	<ul style="list-style-type: none"> <li>• Oversees the Centre's ICT resources and liaison between the central university central ICT unit and the Centre</li> <li>• Advises the Centre Director on purchases of ICT equipment</li> <li>• Oversees Centre ICT resources including the Telehealth platforms, other electronic resources and logistics</li> <li>• Management of the Centre's support resources (examples: vehicles, catering, travel, facilities)</li> <li>•</li> </ul>
ICT Officer	Nathan Siebu, BA	<ul style="list-style-type: none"> <li>• Manages the Centre's website</li> <li>• Assist ICT head with ICT related issues</li> <li>• Assists faculty, staff and students with ICR related issues</li> <li>• Coordinates with the central university ICT to provide electronic access to ICT services, including email accounts</li> </ul>
Communication Officer	TBN, Master's degree	<ul style="list-style-type: none"> <li>• This position will be filled with a new hire from the private sector following a competitive process.</li> <li>• Oversee all aspects of communication and public relations of the Centre</li> <li>• Responsible for managing all communications-related events and materials of the Centre including public engagements involving the media</li> <li>• Develop and write marketing material for the Centre including website, brochures, newsletters,</li> <li>• Ensure the Centre is visible on social media</li> <li>• Plan and coordinate the community engagement activities of the Centre</li> </ul>
Driver Grade II	Meet safe driving and national licensing requirements	<ul style="list-style-type: none"> <li>• Transport Centre's staff to Centre related activities.</li> <li>• Will be responsible for driving the vehicles of the Centre</li> <li>• Bus</li> <li>• SUV</li> </ul>
Two cleaners		Will be responsible for the day to day cleaning of the Centre

**Table 7b: WAGMC Faculty**

#	NAME	INSTITUTION/ DEPARTMENT	HIGHEST DEGREE	AREA OF SPECIALTY
1	Prof. Solomon. F. Ofori-Acquah (Centre Leader, and Sickle Cell Group Leader)	University of Ghana, Department of Medical Laboratory Sciences (MLS)	PhD	Molecular Genetics Sickle Cell Disease and Vascular Biology
2	Prof. George A. Asare	University of Ghana, MLS	PhD	Chemical Pathology
3	Dr. Mahmoud A. Seidu	University of Ghana, MLS	PhD	Pathology
4	Dr. Samuel Antwi-Baffour	University of Ghana, MLS	PhD	Haematology
5	Dr. Richard H. Asmah	University of Ghana, MLS	PhD	Molecular Biology
6	Dr. Charles Brown	University of Ghana, MLS	PhD	Nutrigenomics
7	Dr. Israel N. N. Trebi	University of Ghana, MLS	PhD	Virology
8	Dr. Enid Owusu	University of Ghana, MLS	PhD	Bacteriology
9	Dr. Alexander Martin-Odoom	University of Ghana, MLS	PhD	Virology
10	Ewurama Owusu	University of Ghana, MLS	PhD	Malaria, Sickle Cell Disease
11	Dr. Noah O. Nkrumah	University of Ghana, MLS	PhD	Bacteriology
12	Dr. David Adjei	University of Ghana, MLS		Biostatics
13	Prof. Lorna Renner (Deputy Centre Leader)	University of Ghana, Department of Child Health/Paediatrics (PAED)	MBChB	Oncology
14	Prof. Ebenezer Badoe	University of Ghana, PAED	MBChB	Congenital Anomalies
15	Dr. Yvonne Dei-Adomakoh (Sectoral Liaison Officer)	University of Ghana, Department of Haematology (HAEMATOL)	MBChB	Oncology, Sickle Cell Disease
16	Dr. Edeghonghon Olayemi	University of Ghana, HAEMATOL	MBBS	Oncology, Sickle Thrombophilia
17	Dr. Amma Benneh	University of Ghana, HAEMATOL	MBChB	Sickle Cell Disease, Hypertension
18	Prof. Andrew A. Adjei (Cancer Genetics Group Leader)	University of Ghana, Department of Pathology (PATH)	PhD	Cancer
19	Prof. Richard K. Gyasi	University of Ghana, PATH	MBChB	Cancer
20	Prof. Y. Tettey	University of Ghana, PATH	MBChB	Cancer
21	Prof. E. K. Wiredu	University of Ghana, PATH	MBChB, PhD	Cancer
22	Dr. Solomon E. Quayson	University of Ghana, PATH	MBChB	Cancer
23	Dr. Afua D. Abrahams	University of Ghana, PATH	MBChB	Cancer
24	Prof. Frederick K. Addai (Director, Cytogenetics Core)	University of Ghana, Department of Anatomy (ANAT)	PhD	Redox biology Cytogenetics
25	Dr. Bismarck A. Hotter	University of Ghana, ANAT	MBChB	Pre-eclampsia
26	Dr. Benjamin Arko-Boham	University of Ghana, ANAT	PhD	Cancer
27	Dr. Dwomoa Adu (Kidney and Diabetes Group Leader)	University of Ghana, Department of Medicine (MED)	MBChB	Kidney Disease
28	DR. William Kudzi (Director, Molecular Genetics Core Laboratory)	University of Ghana, MED	PhD	Pharmacogenomics, Molecular Genetics
29	Dr. Samuel Oppong (Lead, Foetal Tissue Biopsy Lab)	University of Ghana, Department of Obstetrics and Gynaecology	MBChB	Obstetrics and Gynaecology, Foetal Medicine
30	Prof. Angela Ofori-Atta	University of Ghana,	PhD	Counselling Psychology

	<i>(Chair, Ghana Psychology Council)</i>	Department of Psychiatry and Psychology		
31	Dr. Annabella Osei-Tutu <i>(Director, MPhil Counselling Psychology)</i>	University of Ghana Department of Psychology (PSY)	PhD	Counselling Psychology, Counselling Models
32	Prof. C. Mate-Kole	University of Ghana Psychology Department (PSY)	PhD	Neuropsychology of Adult Sickle Cell Disease
33	Prof. Joseph Osafo	University of Ghana, PSY	PhD	Clinical/Suicidology, Mental Health
34	Dr. Adote Anum	University of Ghana, PSY	PhD	Neuropsychology
35	Dr. Samuel Atindanbila	University of Ghana, PSY	PhD	Clinical Psychology Mental Health
36	Dr. Angela Gyasi Gyamera	University of Ghana, PSY	PhD	Reproductive Health
37	Dr. Margaret Amankwah-Poku	University of Ghana, PSY	PhD	Clinical/Health Psychology, Diabetes
38	Dr. Joana Salifu Yendork	University of Ghana, PSY	PhD	Child Development and Aging
39	Rev. Prof. K. W. Sagoe <i>(Director, Short Courses)</i>	University of Ghana, Department of Medical Microbiology (MED MICRO)	PhD	Molecular and Public Health Virology
40	Rev. Prof. E. Sampene-Donkor	University of Ghana, MED MICRO	PhD	Bacterial Genomics & Evolution
41	Prof. Yaw A. Afrane	University of Ghana, MED MICRO	PhD	Medical Entomology
42	Prof. J. A. A. Mingle	University of Ghana, MED MICRO	PhD	HIV, Hepatitis Viruses/Vaccine Preventable Diseases
43	Prof. Mercy J. Newman	University of Ghana, MED MICRO	PhD	Antimicrobial Resistance
44	Dr. Patience Tettey-Quarcoo	University of Ghana, MED MICRO	PhD	Genetics of Parasitic Infections
45	Dr. Japhet A. Opintan	University of Ghana, MED MICRO	PhD	Antimicrobial Resistance
46	Dr. Nicholas Dayie	University of Ghana, MED MICRO	PhD	Molecular Bacteriology
47	Rev. Dr. Charles Antwi-Boisiako	University of Ghana, Department of Physiology (PHYSIOL)	PhD	Vascular Physiology in Sickle Cell Diseases
48	Dr. Kwame Yeboah	University of Ghana, PHYSIOL	PhD	Physiology
49	Dr. Thomas Tagoe	University of Ghana, PHYSIOL	PhD	Epilepsy
50	Dr. Charles Hayfron-Benjamin	University of Ghana, PHYSIOL	MBChB, MPhil	Lung Function, Diabetes & Sickle Cell Disease.
51	Prof. Henry Asare-Anane	University of Ghana, Department of Chemical Pathology (CHEMPATH)	PhD	Diabetes Obesity
52	Dr. Emmanuel Ofori	University of Ghana, CHEMPATH	PhD	Cardiovascular disease, Diabetes
53	Dr. Nii Ayite Aryee	University of Ghana, Department of Medical Biochemistry (MED BIOCHEM)	PhD	Kidney Disease, Cardiovascular Disease
54	Dr. Bartholomew Dzudzor	University of Ghana, MED BIOCHEM	PhD	Cardiovascular disease, Molecular Genetics

55	Dr. Matilda Asante	University of Ghana, Department of Nutrition and Dietetics (DIET)		Diet Therapy
56	Dr. Laurene Boateng	University of Ghana, DIET	PhD	Nutrition, Dietetics
57	Prof. Kojo Senah	University of Ghana, Department of Sociology	PhD	Medical Anthropology, Ethics
58	Dr. Joel Yarney	University of Ghana, Department of Surgery (SX)	MBChB, FWACP	Oncology
59	Dr. V. Vanderpuye	University of Ghana, SX	MBChB, FWACP	Oncology
60	Dr. Laurene Boateng	University of Ghana, DIET	PhD	Nutrition, Dietetics
61	Dr. Akwasi Ayanful	University of Cape Coast, Department of Medical Biochemistry	PhD	Molecular Biology, Genetics, Cancer Epidemiology
62	Dr. Frank Ghartey	University of Cape Coast, Department of Chemical Pathology	PhD	Molecular Biology, Genetics, Cancer Epidemiology
63	Dr. Leonard Derkyi-Kwarteng	University of Cape Coast, Department of Pathology	MBChB, MBA	Onco-pathology
64	Dr. Martin T. Morna	University of Cape Coast, Department of Surgery	MBChB	General Surgery
65	Prof. Ellis Owusu-Dabo	Kwame Nkrumah University of Science and Technology, Kumasi, Ghana	MBChB, PhD	Molecular Epidemiology, Bioinformatics
66	Dr. Norah Akinola	Obafemi Awolowo University, Nigeria	PhD	Oncology
67	Dr. Titilope Adeyemo	University of Lagos	MBBS	Sickle Cell Disease, Stroke
68	Prof. Amanda Kraus	University of the Witwatersrand, South Africa (WIT)	MBBCh, PhD	Medical Genetics
69	Prof. Michelle Ramsay	WIT	PhD	Human Genetics
70	Dr. Shelley Macauley	WIT	PhD	Genetic Counselling
71	Ms. Katryn Fourie	WIT	MSc	Genetic Counselling
72	Ms. Merlyn Glass	WIT	MSc	Genetic Counselling, Nursing, Midwifery
73	Ms. Tabitha Haw	WIT	MSc	Genetic Counselling
74	Ms. Marianne Gommers	WIT	MSc	Genetic Counselling
75	Prof. Ambroise Wonkam	University of Cape Town, South Africa (UCT)		Medical Genetics, Sickle Cell Disease
76	Dr. Tina Wessells	UCT	PhD	Genetic Counselling
77	Dr. Janey Youngblom	University of California Stanislaus, USA	PhD	Genetic Counselling
78	Marsha Threadwell	University of California San Francisco, USA	PhD	Clinical Psychology
79	Prof. Charmaine Royal	Duke University, USA	PhD	Genetic Counselling, Genome Ethics
80	Prof. David Burke	University of Michigan	MBChB	Human Genetics
81	Dr. Kofi Anie, MBE	Imperial College London, University of London, UK	PhD	Clinical Psychology
82	Prof. Claire Shovlin	Imperial College London, University of London, UK	MBChB	Molecular Medicine
83	Prof. Stephen Menzel	King's College London, University of London, London	PhD	Molecular Genetics

#### **4.9 Sexual Harassment Policy:**

Policies and procedures of anti-sexual harassment and other related student information is available on the WAGMC website. <https://wagmc.org/students/student-information/index.html>. The Centre is committed to providing an environment free from discrimination and harassment ensuring staff and students are treated with dignity, courtesy and respect. Under no circumstance is a faculty member permitted to exploit, harass or discriminate against staff or student on the basis of gender, religion, race or ethnicity. The UG provides procedures by which all staff and students can have complaint of discrimination and harassment addressed in a sensitive, fair, timely and confidential manner. The university also has in place an anti-sexual harassment committee that investigates such matters. The Project Coordinator and the Monitoring and Evaluation Officer will be responsible for ensuring the WAGMC staff and faculty adhere to this policy. The UG sexual harassment policy will be disclosed on the WAGMC website.

#### **4.10 Environment and Social safeguards:**

Dr. Esther Brobbey, PhD, is the Environmental and Social Safeguards Officer of WAGMC. She will be the responsible faculty for developing and designing policies to ensure the safety of staff, students, participants and the environment, working closely with the Monitoring and Evaluation Officer. Dr. Brobbey is an environmental scientist with a PhD from the University of London. She will be assisted by the Physical Development and Municipal Services (PDMSD) Directorate of UG, which is staffed by architects, planning experts and other staff who will be critical in insuring the Centre is in compliance with all aspects of social safeguards related to the construction of the Centre' building.

The WAGMC Project Environment and Social Safeguards (ESS) policy is an essential tool to prevent and mitigate undue harm to people and their environment in the development process of the project. Safeguards will help assess the possible environmental and social risks and the impacts (positive or negative) associated with a development intervention. During project implementation, safeguards should help define measures and processes to effectively manage risks and enhance positive impacts. The objective of this ESS policy is to avoid or, when avoidance is not possible, to minimize and mitigate adverse project impacts on the environment and affected people, and to help strengthen safeguard systems and develop the capacity to manage environmental risks.

The Association of African Universities (AAU) that will be responsible for implementation support of the ACE Impact project in Ghana, has prepared an Environmental and Social Management Framework (ESMF) document in line with the WB Environmental and Social Framework (ESF). Extracts from this document will be referred to in this section, as it is consistent with the environmental and social safeguards policy of WAGMC. Examination of the relevant national regulations and laws designed to protect people or to provide compensation against negative impacts, will also be considered.

With respect to the legal framework, Ghana has a number of policies aimed at protecting the environment. Whole or partial sections of these policies relate directly to construction works:

- **The 1999 Environmental Assessment Regulations**, or Legislative Instrument 1652, include procedures for compliance with environmental assessment requirements.
- **The 1995 Environmental Impact Assessment Procedures**, which provide guidance on complying with the environmental assessment requirements of the Environmental Protection Agency Act, describe in detail the stepwise EA process, from registration of activities to the issuance of the environmental permitting decision.

In addition, the WB has developed policies for ten (10) environmental and social safeguards. In August 2016, it adopted a new set of environment and social policies called the Environmental and Social Framework (ESF). As of 1<sup>st</sup> October, 2018, the WB ESF applies to all new WB investment project financing.

Ten (10) Environmental and Social Standards (ESS) establish the standards that WAGMC will meet through the project life cycle, as follows:



The WB classifies all projects into one of four classifications: (1) High Risk, (2) Substantial Risk, (3) Moderate Risk or (4) Low Risk.

- (a) High Risk subprojects, in accordance with the ESSs;
- (b) Substantial Risk, Moderate Risk and Low Risk subprojects, in accordance with national law and any requirement of the ESSs that the Bank deems relevant to such subprojects.

Given its potential for environmental and social impacts during implementation, the WAGMC project triggers the WB safeguards policies, and the AAU ESMF classifies this project as "category B". This is due to the fact that its adverse effects on the population or areas of environmental importance are limited, site-specific, and likely reversible, and mitigation measures can be more easily designed/implemented.

The WB's current environmental and social policies, consists of eleven (11) Operational Policies (OPs) and Bank Procedures (BPs). Among all these safeguard policies, two (2) OPs and BPs are triggered under the WAGMC Project, namely:

- **OP/BP 4.01 Environmental Assessment**, which covers impacts on the environment, human health and safety, physical cultural resources, and global transboundary and environmental issues. OP 4.01 is activated because WAGMC is likely to have environmental risks and impacts on its area of influence. This policy requires that environmental and social consequences be identified early in the project cycle and considered in the selection, location, planning, and design of the project. The objective is to minimize, prevent, reduce, or compensate for adverse impacts and thereby maximize positive impacts, and include processes for mitigation and management of environmental and social impacts during the project cycle.
- **OP/BP 4.11 Cultural Physical Resources**, which provides cultural heritage guidelines to avoid or mitigate adverse impacts of development projects. This policy applies to: (i) any project involving major excavation, demolition, earthworks, flooding or other environmental modifications; (ii) any project located on or near a site recognized as cultural property; (iii) any project designed to support the management or conservation of physical cultural property. As part of the WAGMC Project, this will also concern buildings of historical value and which would be the subject of rehabilitation works.

#### 4.10.1 Environmental and Social Standards (ESS)

##### [ESS1 \(Assessment and Management of Environmental and Social Risks and Impacts\)](#)

###### **AIM:**

- 1) *ESS1 sets out WAGMC's responsibilities for assessing, managing and monitoring environmental and social risks and impacts associated with each stage of the project, in order to achieve environmental and social outcomes consistent with the ESSs.*

###### **Objectives:**

- 2) *To identify, evaluate and manage the environment and social risks and impacts of WAGMC in a manner consistent with the ESSs.*
- 3) *To adopt a mitigation hierarchy approach to:*
  - *(a) Anticipate and avoid risks and impacts;*
  - *(b) Where avoidance is not possible, minimize or reduce risks and impacts to acceptable levels;*

Ethical, Legal and Social Implications (ELSI): WAGMC's Development Objective is to improve the quality, quantity and development impact of postgraduate education in UG through regional specialisation and collaboration in genetic screening, counselling, and medical genetics. Genetic screening may involve testing members of a population (or sub-population) for a defect or condition, usually where there is no prior evidence of its presence in individuals or their relatives. The effects of genetic testing could extend beyond the family to

whole communities. This raises a number of ethical issues including Consent, Counselling, The risk of stigma, Confidentiality, Disclosure to family members and Possible use of genetic information by insurers or employers.

For the WAGMC, these potential challenges are recognised and solutions have been proposed.

### Challenges

- 1) ELSI regarding collection and storage of samples in a biorepository, data sharing and transmission, and maintenance of personal identifiers link to de-identified patient information within a large research network.
- 2) Potential informational harm posed by generation of substantial amounts of biological and genetic material related to human genetic disorders.

### Solutions

- 1) Efforts of community engagement.
- 2) Engaged various stakeholder communities for broad consent.
- 3) Potential informational harm will be examined in terms of the best interest of participants, including the timing, confidentiality, and context within which this information will be reported to participants or shared with others.
- 4) Investigate how potential research participants in different countries and settings will act in accordance with their value systems (societal norms) in order to remain autonomous.
- 5) Three fundamental ethical issues will be addressed through the community engagement activities to mitigate these challenges.
  - I. Autonomy (Key ethical consideration underlying informed consent)
  - II. Best Interest and
  - III. Duty of Care.

The WAGMC strategy for evaluating these ethical issues builds on previous ELSI efforts where community perspectives on SCD genomics research and public health interventions were examined by a genetic counselling group within WAGMC (35).

### ESS2 (Labour and Working Conditions)

#### **AIM:**

*“ESS2 recognises the importance of employment creation and income generation in pursuit of poverty reduction and inclusive economic growth. **WAGMC** aims to promote sound worker-management relationships and enhance the development impact of the project by treating workers in the project fairly and providing safe and healthy working conditions.”*

When assessing labour conditions, understanding country context is essential. In the context of Ghana, WAGMC will ensure that the project meets all relevant legislation as a minimum such as:

- Ghana Labour Act 2003, with sections 118 to 120 directing employers and employees in their roles and responsibilities in managing Occupational Health, Safety and Environment in the nation.
- National employment policy

The **2003 Labour Act** amended and consolidated previous laws relating to Labour and employers. Under Part XV (Occupational Health, Safety and Environment), the Act explicitly indicates that it is the duty of an employer to ensure that **every worker works under satisfactory, safe and healthy conditions**. The International Labour Organisation laws and other international best practice shall take precedence in cases where local legal requirements do not address labour related considerations.

### Implementation of ESS2

Human Resources Policies and Procedures are to be developed and implemented as workers will be employed for the WAGMC project. These will include the following, but not be exhaustive of:

- Providing all employees with documents that contain information on their employment terms, conditions and rights.

- Apply non-discrimination and equal opportunity
- Ensure that a workforce grievance mechanism is permanently available
- Comply with all local and national environmental, health and safety laws and regulations
- Provide workers with a safe and healthy work environment, considering any physical, chemical, biological, and radiological risks and hazards.
- 

### [ESS3 \(Resource Efficiency and Pollution Prevention and Management\)](#)

#### **AIM:**

*“ESS3 recognises that economic activity and urbanisation often generate pollution to air, water, and land, and consume finite resources that may threaten people, ecosystem services and the environment at the local, regional, and global levels. This Standard outlines WAGMC requirements to address resource equity, efficiency and pollution prevention over the life of the project.”*

#### Implementation of ESS3

- Implementing and adopting measures which minimise harm, add environmental value, and consistent with all Standards
  - Applying technically and financially feasible resource efficiency and pollution prevention measures to mitigate project risks and impacts
  - Implementing financially feasible and cost-effective measures to improve project resource consumption (such as energy, water, raw materials) efficiency
  - Applying cleaner production principles and processes to product design. Where applicable, use benchmarking data to establish the relative efficiency level
- More details are provided in the next section on “Community Health and Safety”.

### [ESS4 \(Community Health and Safety\)](#)

#### **AIM:**

*“ESS4 recognises that **WAGMC** project activities, equipment, and infrastructure can increase community exposure to risks and impacts. The Standard, therefore, addresses the health, safety, and security risks and impacts on the project, affected communities and the corresponding responsibility of **WAGMC** to avoid or minimise such risks and impacts, with particular attention to people who, because of their particular circumstances, may be vulnerable.”*

#### Implementation of ESS4

**Infrastructure and Equipment Design and Safety:** For the WAGMC project, a new building will be constructed within the current boundaries of UG, Legon campus. The design of the building complex will incorporate education and laboratory facilities, which will include classrooms, auditorium, research laboratories and the following equipment:

- Microscopes & Accessories
- Biochemical & Molecular Genetics Equipment
- Ultrasound Machine & Accessories
- Telegenic Equipment
- Foetal Tissue Biopsy Lab Equipment.
- Cytogenic Lab Equipment
- Reagents
- Office Furniture & Equipment
- Tele Health & Video Conference Equipment with Software
- Washrooms

The description of each potential infrastructure impact, mitigation measure, and additional action required will be provided in the WAGMC ESF document.

The negative or harmful general environmental and social impacts of these activities will be limited. However, the positive impacts are many and sustainable in the long term.

**General positive impacts:** The WAGMC will have many positive effects, which should be sustained over the long term. In general, it will institute global best practices in all aspects of the teaching, learning and research in genetic counselling and medical genetics in the region. More specifically, WAGMC will aim to improve the quality, quantity and development impact of postgraduate education in the UG through regional specialisation and collaboration in human genetics.

**Risks or negative impacts during the pre-construction phase:** During the pre-construction phase (preparation of the bidding documents), the main risk is neglect of the environmental and social aspects and their low consideration during the technical studies and/or the preparation of unsatisfactory environmental studies. This risk can be compounded if the information aspects and public participation are not considered. Furthermore, site selection could include some potential environmental and social concerns and impacts.

Key mitigation measures for these risks will be: (i) public and stakeholder consultation during site selection and preparation and validation of studies; (ii) quality control and implementation of validation procedures for environmental studies and their dissemination; and (iii) regular supervision of the building sites by environmental experts (in addition to the control of the relevant national institutions in relation to contractual specifications). These activities will be conducted largely by experts in the University's Physical Development and Municipal Services Directorate (PDMSD)

- The effects of climate change will be considered in the choice of materials, the overall design of buildings and the technological options for construction (e.g., energy efficiency). The building will be in consonance with local climatic, environmental, and meteorological conditions and will incorporate proper ventilation and provision of sunshine, air movement, and maximum usage of daylight. Importantly, WAGMC is planning to construct an energy efficient building to minimize the overall environmental impact of the building and the construction.
- Location and design of new buildings should also consider site-specific risks (such as location near gullies which are prone to flooding and erosion; near water bodies and designated forests etc.).
- Sourcing of construction materials should be considered.
- The design of the buildings will consider the gender dimension, especially in relation to the provision of a sufficient number of separate men's and women's washrooms (with the installation of lavatories, washbasins and urinals, etc.).
- All facilities, will be properly designed in strict compliance with national standards for the protection and promotion of persons with disabilities, by removing barriers for their inclusion and improving their accessibility to physical infrastructure.

**Risks or negative impacts at the construction phase:** Construction phase risks and impacts at the construction phase will be site specific. Despite the fact that they are manageable and small, this phase will have **low to moderate impacts** and could be a source of inconvenience for workers and all those living or working on the university campus. Of these impacts, the most important are:

#### Air quality, noise, water and sanitation, waste

- Pollution and nuisance (noise, dust) due to the construction of facilities.
- Occasional forms of pollution generated in construction sites by waste.
- Solid and liquid waste from construction sites.
- Impact of some works on sources of drinking water.
- Damage to some underground networks and even temporary suspension of certain services (water, electricity, etc.).
- Emissions of greenhouse gas (GHG) related to the exhaust gases of construction vehicles, as well as olfactory nuisances, health risks and pollution.

#### Vegetation and soils

- Uprooting of trees and cutting of shrubs made necessary by certain activities, with reduction of green spaces.

- Risks of localized soil degradation, despite the fact that washout works will be limited in depth.
- Certain forms of soil erosion due to the construction activities.
- Risk of subsidence and landslides due to possible excavation work.
- Risks of floods, without the adoption of soil waterproofing techniques.

Hygiene, health and safety of workers, residents and users

- Accidents caused by construction machinery traffic and possible non-compliance with safety instructions.
- Risk of accidents around unreported excavations and open trenches, unmarked and poorly lit.
- Safety of university campus users due to poor organization of work sites and work areas.
- Accidents of workers (scaffolding falls, misuse of equipment, electrocutions, etc.).

Natural risks

- Some of the proposed developments could be affected by the risks associated with the effects of climate change (in particular, the risks associated with floods caused by heavy rains).
- Air quality
  - Building emissions
  - Traffic emissions
- Water quality
  - Building effluents

Man-made risks

- Transport of hazardous materials
- Additional vehicular traffic
- Space for parking
- Fire protection
- Access for emergency response

Risks of conflicts between the workers and local populations

- The works may have impacts on the university campus, with the likely restriction of vehicle and pedestrian traffic in the vicinity of construction sites, noise and dust-related inconvenience, space congestion caused by building materials, construction and construction waste, not to mention negative impacts due to the transformation of the landscape.
  - To avoid social tension, it is desirable to recruit a **local workforce**.

**Risks or negative impacts during the maintenance phase:** During the occupancy and maintenance phase, WAGMC project activities should not pose any particular environmental or social problems. Potential negative impacts might generally be due to: inadequate design; lack of a system for the collection and transfer of waste, in particular domestic waste; a possible lack of an effective, regulatory and adapted sanitation system; lack of regular maintenance procedures; insufficient enforcement of security measures; and lack of appropriate measures for people with disabilities.

**Laboratory Facilities:** Reducing the Environmental Impact of the laboratories (teaching, research and diagnostic) is a significant consideration for the WAGMC project, as laboratories use far more energy and water per unit area than an office building, classroom or auditorium. Adopting good environmental practices are important to reduce the negative impact on the environment. It is vital to incorporate this in the management plan as there are initial cost implications, however there are various tangible and intangible benefits that can accrue in the long run. Continued education and training will be key to successful implementation of good practices.

To develop, enunciate and implement the WAGMC ESS policy, it's key features would aim to:

- Establish and maintain procedures which specify environmental objectives and targets, and, direct efforts towards continual improvement
- Minimise consumption of energy and water by appliances
- Reduce waste through the reduction in the use, reuse or recycling of materials
- Review environmental practices at least annually

- Engage in advocacy by encouraging customers, suppliers and other stakeholders to mirror the organisation's commitment to environmental responsibility.

Specific demands made on the environment by Laboratory Facilities, would require exploring options available for reducing the environmental impact of a laboratory by considering ways to limit energy, water, and chemical usage.

- Managing Hazardous Waste
- Controlling Chemical Vapor Emissions
- Controlling Liquid Effluents
- Laboratory Chemical Hoods
- Laboratory Ventilation System
- Unique and Particularly Hazardous Operations
- Access Control
- Safety Issues
- Emergency Egress
- Emergency Equipment
- Dedicated Storage Space
- Workers with Disabilities
- Space Layout Issues

Appropriate measures of the National Disaster Management Organisation will be strictly respected, mainly in terms of fires or explosions, with the installation of smoke detectors, extinguishers, and alarm devices.

- In compliance with national regulations, building companies working under the WAGMC Project will be required to regularly monitor compliance with safety and health standards, and to periodically carry out measurements, analyses and assessments of environmental conditions and, where appropriate, undertake collective or individual protection measures to prevent damage to the safety and health of workers.

Different measures (identified in this report) will be planned to reduce the potential impacts during implementation of the various activities planned under the ACE Impact Project:

- ▶ *Normative measures* to be complied with by the sub-project promoter and its contractors (companies carrying out the works), in accordance with national regulations and WB OP 4.01; and OP.4.11.
- ▶ *Mitigation measures* to reduce potential negative environmental and social effects.

### [ESS5 \(Land Acquisition, Restrictions on Land Use and Involuntary Resettlement\)](#)

#### **AIM:**

*“ESS5 recognises that project-related land acquisition and restrictions on land use can have adverse impacts on communities and persons. Project-related land acquisition or restrictions on land use may cause physical displacement (relocation, loss of residential land or loss of shelter), economic displacement (loss of land, assets or access to assets, leading to loss of income sources or other means of livelihood), or both. The term “involuntary resettlement” refers to these impacts. Resettlement is considered involuntary when affected persons or communities do not have the right to refuse land acquisition or restrictions on land use that result in displacement”*

#### Implementation of ESS5

For the WAGMC project, as the construction of the new building will be done on land belonging to the University of Ghana, Legon campus, the activities planned exclude any form of land or property acquisition or resettlement or physical displacement of populations.

### [ESS6 \(Biodiversity Conservation and Sustainable Management of Living Natural Resources\)](#)

“ESS6 recognises that protecting and conserving biodiversity and sustainably managing living natural resources are fundamental to sustainable development. Biodiversity often underpins ecosystem services

valued by humans. Impacts on biodiversity can therefore often adversely affect the delivery of ecosystem services”

#### Implementation of ESS6

Biodiversity is a measure of the variety of life, and its processes, including the variety of living organisms, genetic differences among them, and the communities and ecosystems in which they occur. Although there is no specific regulatory guidance on methods for assessing and monitoring biodiversity, the concept is widely interpreted as a measure of ecosystem integrity and stability.

Biodiversity management will be incorporated into the WAGMC Project environmental management program to promote biodiversity conservation related to its activities. Biodiversity management opportunities will be evaluated for both on-site and off-site applicability.

#### [ESS7 \(Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities\)](#)

##### **AIM:**

*“ESS7 recognises that Indigenous Peoples in Ghana comprise social groups distinct from mainstream society, who can include the most marginalised and economically, socially, and legally vulnerable community segments in which they reside. Indigenous Peoples are particularly vulnerable when investment transforms, encroaches upon, or significantly degrades their lands and resources. Indigenous peoples vulnerable status can limit their capacity to defend their rights to, and interests in lands and natural and cultural resources, and restrict their ability to participate in and benefit from development and thereby place their languages, cultures, religions, spiritual beliefs, and institutions under threat.”*

There is no universally accepted definition of “Indigenous Peoples,” however for the purpose of this WAGMC ESS, have adopted the international definition of Indigenous Peoples as comprising a distinct social and cultural group with common characteristics of self - identification to a particular cultural group, collective attachment to geographically distinct habitats, adherence to customary institutions, and practising a distinct dialect or language.

#### Implementation of ESS7

Indigenous Peoples are often closely attached to their lands on which they depend and related natural resources which are traditionally owned or under customary use. The **WAGMC** project should have **no impact** on Indigenous Peoples, with regards to lands and natural resources, as the proposed site for construction for the project is on land belonging to the University of Ghana, Legon campus, therefore **no measures** will be undertaken.

#### [ESS8 \(Cultural Heritage\)](#)

##### **AIM:**

*“ESS8 sets out measures to protect cultural heritage throughout the project life - cycle. The Standard applies to cultural heritage regardless of whether or not it has been legally protected or previously identified or disturbed”*

#### Implementation of ESS8

WAGMC will consider direct, indirect and cumulative project-specific risks and impacts on cultural heritage through:

- Implementation of globally recognised practices to conduct field-based study, documentation and protection of cultural heritage related to the project.
- Identification of potential significant cultural heritage risks and impacts during the WAGMC project life cycle.
- Engagement of cultural heritage experts to identify, value, assess and protect cultural heritage.
- Where appropriate, develop a Cultural Heritage Management Plan to mitigate any risks to cultural heritage.

#### [ESS9 \(Financial Intermediaries\)](#)



**AIM:**

*“ESS9 recognises that strong domestic capital and financial markets and access to finance are important for economic development, growth and poverty reduction. The Bank is committed to supporting sustainable financial sector development and enhancing the role of domestic capital and financial markets.”*

Implementation of ESS9

The financial posture of WAGMC, and the policies and procedures that will guide the management of WB funds are described in detail in the accompanying Financial Management Plan, and throughout this document.

ESS10 (Stakeholder Engagement and Information Disclosure)

**AIM:**

*“ESS10 recognises the importance of open and transparent engagement between the Borrower and project stakeholders as an essential element of good international practice. Effective stakeholder engagement can improve the environmental and social sustainability of projects, enhance project acceptance, and make a significant contribution to successful project design and implementation.”*

Implementation of ESS10

WAGMC recognises the importance of Stakeholder Engagement and Information Disclosure throughout the life cycle and success of this project. This document eludes to that fact by consistent reference and involvement of the Stakeholder Engagement and Information Disclosure in various sections.

**MANAGEMENT PLAN: MAIN RECOMMENDATIONS:** To ensure that WAGMC will receive necessary funding and supervision along with the other project components, the environmental and social safeguards management plan will be fully integrated into the WAGMC Project’s overall planning, design, budget, and implementation.

The main recommendations of the ESMF’s Action Plan of the ACE Impact Project in Ghana are the following:

- (i)** *Environmental and social screening*
- (ii)** *Qualified personnel*
- (iii)** *Operational Manual*
- (iv)** *Information, sensitisation and training on environmental and social management (ESM) issues*
- (v)** *Grievance redress mechanism*



## 5. PERFORMANCE MONITORING

Disbursement Linked Indicator	Verification Protocol	Amount (USD) of the Financing Allocated Per DLI (expressed in <i>Special Drawing Rights</i> (SDR))	Amount (USD) Allocated per DLR for the disbursement calculation (expressed in SDR)
<p><b>DLI 1</b> (Year 1). Institutional Readiness</p>	<p>(i) <u>Basic readiness</u>: Financing Agreement is effective; RFU Approval of ACE Implementation Plan, Procurement and Financial Management Manuals. Official designation of core team members (Centre Leader, Deputy Centre leader, FM responsible, procurement responsible, M&amp;E responsible and sectoral liaison). Designation of a non-staff student representative to the RFU.</p> <p>(ii) <u>Full readiness</u>:</p> <ul style="list-style-type: none"> <li>• Project Management Certification: <b>Isaiah Buertey, ACE Procurement Officer.</b></li> <li>• Functional centre website <a href="http://wagmc.org">http://wagmc.org</a></li> <li>• Student handbook on the website with policies for sextual harassment and scholarships.</li> <li>• Sectoral Advisory Board constituted and its endorsement of the implementation plan</li> </ul>	<p>611,160</p>	<p><u>611,160</u></p>
		<b>DLI 1 Total</b>	<b>611,160</b>
<p><b>DLI 2</b> (Year 3 and 4). Developmental Impact</p>	<p>External evaluation of the development impact of WAGMC. Criteria for evaluation include: (i) Relevance and impact on society of graduates, including the share of graduates hired in the target sector and feedback from key employers; (ii) relevance and impact of research on society; (iii) progress on DLIs; (iv) SAB annual reports; and (v) interviews with centre graduates and sectoral stakeholders.</p>		



	<p>(ii) <b>Publications:</b> ACE- relevant research articles published in internationally recognized peer reviewed journals to be verified through international bibliometric databases.</p> <p>DLI 4.1</p> <ul style="list-style-type: none"> <li>• Publications (n=50); 30 with National partners, 20 with regional partners</li> </ul> <p>(iii) <b>Milestones:</b> Completion of milestones for improved learning and research infrastructure specified in the approved Implementation Plan. This result will in the majority of cases be verified through onsite evaluation of the installation and operationalization of the civil works and equipment improvements.</p> <ul style="list-style-type: none"> <li>• <b>Yr.1</b> Installation of Advanced Research Equipment</li> <li>• <b>Yr.1</b> Installation of TeleGenetics Virtual Clinical Practicum Smart Class System</li> <li>• <b>Yr.3</b> Completion of ACE Building complex</li> </ul>	<ul style="list-style-type: none"> <li>• 215,705</li> <li>• 215,705</li> <li>• 215,705</li> </ul> <p style="text-align: right;"><b>DLI 4 Total</b></p>	<p style="text-align: right;"><u>319,644</u></p> <hr/> <p style="text-align: right;"><u>647,115</u></p> <hr/> <p style="text-align: right;"><b>1,294,315</b></p>
<p><b>DLI 5</b> (Years 1-5). Relevance of Education/Research</p>	<p>Three results can be achieved:</p> <p>(i) <b>Externally generated revenue</b> to include tuition and other student fees, research consultancies, fund raising and grants earned by the Centre.</p> <p><b>DLI 5.1</b></p> <ul style="list-style-type: none"> <li>• <b>Yr.1</b> Competitive grants</li> <li>• <b>Yr.2</b> Competitive grants</li> </ul> <p>(ii) <b>Internships:</b> Number of students and faculty with at least 1-month period internship in relevant sector institutions. <i>(The verifier validates the list of students/faculty that have participated in at least 1-month period internships/outreach</i></p>	<ul style="list-style-type: none"> <li>• 650,000</li> <li>• 321,500</li> </ul>	<p style="text-align: right;"><u>971,500</u></p>

	<p><i>in relevant sector-relevant institutions)</i></p> <p><b>DLI 5.2</b></p> <ul style="list-style-type: none"> <li>• Internships (n=200). 50 faculty; 40 in-country, 10 regional, 150 student; 100 in-country, 50 regional.</li> </ul> <p>(iii) <b>Entrepreneurship:</b> Developing entrepreneurship, innovation, start-up companies, and commercialization support programs.</p> <p><b>DLI 5.3</b></p> <ul style="list-style-type: none"> <li>• Yr. 4. Genetics start-up company launch by ACE faculty</li> </ul>	<ul style="list-style-type: none"> <li>• 60,000</li> <li>• 40,700</li> </ul> <ul style="list-style-type: none"> <li>• 71,900</li> </ul> <p style="text-align: right;"><b>DLI 5 Total</b></p>	<p style="text-align: right;"><u>100,700</u></p> <p style="text-align: right;"><u>71,900</u></p> <p style="text-align: right;"><b>1,144,100</b></p>
<p><b>DLI 6</b> (Years 1-5) Timeliness/quality of FM</p>	<p>Timely fiduciary reporting includes timely submissions of IFRs, financial audit and procurement audit for the centre; Timeliness implies respect of the deadlines established in the Financing Agreement. The procurement audit for the financial year is due when the financial audit is due.</p> <p><b>DLI 6.1</b></p> <ul style="list-style-type: none"> <li>• Yrs. 1-5 Timely fiduciary reporting</li> </ul> <p><b>DLI 6.2</b></p> <ul style="list-style-type: none"> <li>• Yrs. 1-5; Functional institutional oversight of fiduciary management of ACE</li> </ul> <p><b>DLI 6.3</b></p> <ul style="list-style-type: none"> <li>• Yrs. 1-5; Web transparency of ACE expenditures</li> </ul> <p><b>DLI 6.4</b></p> <ul style="list-style-type: none"> <li>• Yrs. 1-5; Quality of procurement planning</li> </ul>	<ul style="list-style-type: none"> <li>• 79,100</li> <li>• 79,100</li> <li>• 79,100</li> </ul>	<p style="text-align: right;"><u>79,100</u></p> <p style="text-align: right;"><u>79,100</u></p> <p style="text-align: right;"><u>79,100</u></p> <p style="text-align: right;"><u>79,100</u></p>

		<ul style="list-style-type: none"> <li>• 79,100</li> </ul>	<b>316,400</b>
		<b>DLI 6 Total</b>	
<b>DLI 7 (Years 1-5)</b> Institutional Impact	<p>ACE Impact host institution:</p> <p>(i) endorsing a meaningful university-wide regional strategy.</p> <p><b>DLI 7.1</b></p> <ul style="list-style-type: none"> <li>• <b>Yr. 2-3.</b> University-wide strategy to increase the visibility of higher education institutions in West Africa to the NIH towards the establishment of regional consortiums in biomedical research</li> </ul> <p>(ii) undertaking competitive selection of the heads of the university and/or the departments related to the ACE.</p> <p><b>DLI 7.2</b></p> <ul style="list-style-type: none"> <li>• <b>Yr. 1</b> Open merit-based selection of the Head of the Department of Medical Laboratory Sciences.</li> <li>• <b>Yr. 3</b> Open Merit-Based selection of the Head of the School of Biomedical and Allied Health Sciences</li> <li>• <b>Yr. 3</b> Open Merit-Based selection of the Head of the School of Medicine</li> </ul> <p>(iii) undertakes institutional wide international accreditation or a self-evaluation following an established methodology.</p> <p><b>DLI 7.3</b></p> <ul style="list-style-type: none"> <li>• <b>Yr. 3-4</b> International Institutional accreditation of University of Ghana health educational and training programs</li> </ul> <p>(iv) Meeting milestones for promoting institutional impact.</p>	<ul style="list-style-type: none"> <li>• 71,901</li> <li>• 35,950</li> <li>• 35,950</li> <li>• 35,950</li> <li>• 143,798</li> </ul>	<p><u>71,901</u></p> <p><u>107,850</u></p> <p><u>143,798</u></p>

	<b>DLI 7.4</b> <ul style="list-style-type: none"> <li>• Yr. 4 Impact of the University of Ghana in introducing genetics educational and health services to West Africa</li> </ul>	<ul style="list-style-type: none"> <li>• 71,901</li> </ul>	<u>71,901</u>
		DLI 7 Total	<b>395,450</b>
<b>Total</b>		<b>4,635,150</b> <b>(\$6.4 million)</b>	<b>4,635,150</b> <b>(\$6.4 million)</b>

## 6. BUDGET OVERVIEW FOR ENTIRE PROJECT PERIOD

**Table 8: Indicative budget, (2020 – 2024) with split between partners**

Expenditure Category	Estimated Costs in (US\$)						
	YR 1	YR 2	YR3	YR 4	YR5	Total	%of total
<b>A: Budget by Activity Plan</b>							
<b>Action Plan 1:</b> Establishing structures and facilities for good governance and administration	270,000	50,000	50,000	25,000	25,000	<b>420,000</b>	6.56
<b>Action Plan 2:</b> Improving the infrastructure and environment for teaching, learning and research	615,000	300,000	300,000	295,000	10,000	<b>1,520,000</b>	23.75
<b>Action Plan 3:</b> Enhancing postgraduate training to achieve excellence with increasing quantity of students and a focus on gender and regionalization	264,000	400,000	400,000	400,000	390,000	<b>1,854,000</b>	28.97
<b>Action Plan 4:</b> Promoting innovative and translational research with increasing research publications	375,000	300,000	296,000	300,000	300,000	<b>1,571,000</b>	24.55
<b>Action Plan 5:</b> Affirming relevance of education and research through externally generated revenue, internships, and entrepreneurship	110,000	100,000	100,000	100,000	100,000	<b>510,000</b>	7.97
<b>Action Plan 6:</b> Promoting timeliness and quality of fiduciary management	0	25,000	25,000	25,000	0	<b>75,000</b>	1.17
<b>Action Plan 7:</b> Enhancing the impact of the University of Ghana	0	50,000	50,000	50,000	0	<b>150,000</b>	2.34
<b>Action Plan 8:</b> Management and Governance	50,000	50,000	50,000	50,000	50,000	<b>250,000</b>	3.91
Contingency	10,000	10,000	10,000	10,000	10,000	<b>50,000</b>	0.78
<b>TOTAL</b>	<b>1,694,000</b>	<b>1,285,000</b>	<b>1,281,000</b>	<b>1,255,000</b>	<b>885,000</b>	<b>6,400,000</b>	<b>100</b>
<b>% of budget</b>	<b>26.47</b>	<b>20.08</b>	<b>20.02</b>	<b>19.61</b>	<b>13.83</b>	<b>100</b>	
<b>B: Budget by partners</b>							
<i>University of Ghana, Accra, Ghana (Lead institution)</i>	1,390,000	1,095,400	1,095,400	1,081,750	768,750	<b>5,431,300</b>	84.86
<b>Sectoral and Academic Partners (n=19). Total amount \$968,700 (15.1% of total)</b>							
<i>African Academy of Sciences, Nairobi, Kenya</i>	10,000	0	10,000	0	0	<b>20,000</b>	0.31
<i>Bayero University, Kano, Nigeria</i>	20,000	0	10,000	0	0	<b>30,000</b>	0.47
<i>Centre for Proteomics and Genomics Research, Cape Town, South Africa</i>	20,000	0	10,000	0	0	<b>30,000</b>	0.47
<i>Ghana College of Nursing and Midwifery, Accra, Ghana</i>	2,500	9,600	10,000	0	0	<b>22,100</b>	0.35
<i>Ghana College of Physicians and Surgeons, Accra, Ghana</i>	4,500	10,000	10,000	10,000	0	<b>34,500</b>	0.54
<i>Ghana Health Service</i>	2,000	5,000	5,000	5,000	0	<b>17,000</b>	0.27
<i>Ghana Psychology Council</i>	2,000	25,000	15,000	10,000	10,000	<b>62,000</b>	0.97
<i>Korlebu Teaching Hospital</i>	20,000	0	0	0	0	<b>20,000</b>	0.31
<i>Nuguchi Memorial Institute</i>	20,000	0	0	0	0	<b>20,000</b>	0.31
<i>Kwame Nkrumah University of Science and Technology, Kumasi, Ghana</i>	25,000	30,000	30,600	33,250	31,250	<b>150,100</b>	2.35
<i>Obafemi Awolowo University, Ile-Ife, Nigeria</i>	57,000	15,000	5,000	10,000	15,000	<b>102,000</b>	1.59
<i>University of Cape Town, Cape Town, South Africa</i>	6,000	10,000	10,000	10,000	10,000	<b>46,000</b>	0.72
<i>University of Cape Coast, Ghana</i>	5,000	10,000	10,000	10,000	10,000	<b>45,000</b>	0.70
<i>University of California Stanislaus, US</i>	8,000	25,000	20,000	20,000	0	<b>73,000</b>	1.14
<i>University of Ghana Medical Centre, Accra, Ghana</i>	52,000	0	0	5,000	0	<b>57,000</b>	0.89
<i>University of Liberia, Monrovia, Liberia</i>	11,000	0	0	5,000	0	<b>16,000</b>	0.25
<i>University of Sierra Leone, Freetown, Sierra Leone</i>	11,000	0	0	5,000	0	<b>16,000</b>	0.25
<i>Sickle Cell Foundation of Ghana</i>	12,000	25,000	20,000	20,000	20,000	<b>97,000</b>	1.52
<i>Sickle Cell Foundation of Nigeria</i>	10,000	0	0	10,000	0	<b>20,000</b>	0.31
<i>University of the Witwatersrand, Johannesburg, South Africa</i>	6,000	25,000	20,000	20,000	20,000	<b>91,000</b>	1.42
<b>TOTAL</b>	<b>1,694,000</b>	<b>1,285,000</b>	<b>1,281,000</b>	<b>1,255,000</b>	<b>885,000</b>	<b>6,400,000</b>	<b>100.00</b>

## 7. DETAILED ACTIVITY SHEETS

**Target DLI:** DLI 1. Institutional Readiness  
**Timeframe:** Quarter 1, 2 & 3  
**Activity:** 1. Establishing structures and facilities for good governance and administration  
**Sub-Activity/Task:** 1.1 Remodel and furnish existing building to set up the ACE administration offices

ACTIVITY	<ul style="list-style-type: none"> <li>Installation Air Conditioners, wiring and painting of office space</li> <li>Levelling parking space, installation of safety barriers, and canopy cover</li> <li>Installation of blinds and burglar proof to secure offices and outer units of Air Conditioners</li> <li>Procurement of office furniture including work stations, conference table and seats, storage cabinets etc.</li> <li>Procurement of office equipment (laptops, printer, shredder, internet service etc.</li> <li>Procurement of office supplies and consumables (paper, pens, staple pins etc.).</li> </ul>							
OUTPUT	<ul style="list-style-type: none"> <li>A functional ACE secretariat</li> </ul>							
OUTPUT INDICATOR:	<ul style="list-style-type: none"> <li>Office ready to be run by Centre</li> </ul>				SOURCE OF VERIFICATION			
					<ul style="list-style-type: none"> <li>WAGMC Secretariat</li> <li>University Physical Development and Municipal Services Directorate (PDMSD)</li> <li>Office of Research Innovation and Development (ORID)</li> </ul>			
IMPLEMENTATION MILESTONES	<ul style="list-style-type: none"> <li>Feb. 2019 - Offices open for use by Administrative team</li> <li>March to April 2019 –Supply of office services and products</li> </ul>							
PROCUREMENT	Work stations, conference tables, wall units, reception desk, waiting area seats, laptops, printer, shredder, office supplies and consumables, cleaning agents etc.							
RESPONSIBILITY FOR IMPLEMENTATION	<ul style="list-style-type: none"> <li>Prof. Ofori-Acquah, Centre Leader</li> <li>Prof. Renner, Deputy Centre Leader</li> <li>Melissa Nuno, Administrator</li> <li>Isaiah Agbovie Buerthey, Procurement Officer</li> </ul>							
DURATION: 5 months	Commencement: January, 2019			Completion: May, 2019				
PRIMARY CONSTITUENTS:	<ul style="list-style-type: none"> <li>Core Administrative Staff</li> <li>UG Students</li> </ul>			PARTICIPANTS:				
				<ul style="list-style-type: none"> <li>Prof. Ofori-Acquah, Centre Leader</li> <li>Prof. Renner, Deputy Centre Leader</li> <li>Melissa Nuno, Centre Administrator</li> <li>Isaiah Agbovie Buerthey, Procurement Officer</li> <li>Director PDMSD</li> <li>Director, Academic Affairs Directorate , ORID</li> <li>Environment and Social Safeguards Officer</li> </ul>				
ASSUMPTIONS	Furniture and other office equipment in place by opening of Centre							
FINANCIAL IMPLICATIONS/BUDGET LINE	ACE Budget							
Budget Line Analysis	1 <sup>st</sup> Qtr	2 <sup>nd</sup> Qtr	3 <sup>rd</sup> Qtr	4 <sup>th</sup> Qtr	5 <sup>th</sup> Qtr	6 <sup>th</sup> Qtr	Total	
1	Purchase of furniture	10,000	15,000	10,000			\$35,000.00	
2	Civil Works	10,000	5,000	5,000			\$20,000.00	
3	Office Supplies	2,500	1,500	1,000			\$5,000.00	
4	Office equipment	20,000	10,000	10,000			\$40,000.00	
TOTALS		42,500	31,500	26,000			\$100,00.00	



**Target DLI:** DLI 1. Institutional Readiness  
**Timeframe:** Quarter 1  
**Activity:** 1. Establishing structures and facilities for good governance and administration  
**Sub-Activity/Task:** 1.2 Build the core ACE administrative team through competitive hiring of new staff, and secondment of existing UG staff

ACTIVITY	Build the core administrative team for the Centre through competitive hiring of new staff, and secondment of existing UG staff						
OUTPUT	<ul style="list-style-type: none"> <li>Project manager/administrator employed</li> <li>Communications officer employed</li> <li>Monitoring and evaluation officer employed</li> <li>Deputy Centre leader assigned, finance officer, procurement officer, project officer (Admin &amp; ICT)</li> </ul>						
OUTPUT INDICATOR:	<ul style="list-style-type: none"> <li>Core administrative team operational</li> </ul>					SOURCE OF VERIFICATION	
						<ul style="list-style-type: none"> <li>WAGMC Secretariat</li> <li>College of Health Sciences</li> <li>ORID</li> </ul>	
IMPLEMENTATION MILESTONES	<ul style="list-style-type: none"> <li>December 2018 – September 2019</li> </ul>						
PROCUREMENT	N/A						
RESPONSIBILITY FOR IMPLEMENTATION	<ul style="list-style-type: none"> <li>Prof. Ofori- Acquah, Centre Leader</li> <li>Prof. Lorna Renner, Deputy Centre Leader</li> </ul>						
DURATION: 10 months	Commencement: December 2018			Completion: September 2019			
PRIMARY CONSTITUENTS:	<ul style="list-style-type: none"> <li>ACE Team</li> </ul>			PARTICIPANTS:			
				<ul style="list-style-type: none"> <li>Prof. Ofori-Acquah, Centre Leader</li> <li>Prof. Renner, Deputy Centre Leader</li> <li>Stephen Amo Mensah, School Administrator School of Biomedical and Allied Health Sciences</li> <li>College Secretary, College of Health Sciences</li> </ul>			
ASSUMPTIONS	Due process to be followed in appointing all staff						
FINANCIAL IMPLICATIONS/BUDGET LINE	Salaries to new staff						
Budget Line Analysis	1 <sup>st</sup> Qtr	2 <sup>nd</sup> Qtr	3 <sup>rd</sup> Qtr	4 <sup>th</sup> Qtr	5 <sup>th</sup> Qtr	6 <sup>th</sup> Qtr	Total
1 Salaries	2,000	8,000	20,000	20,000			\$50,000.00
TOTALS	2,000	8,000	20,000	20,000			\$50,000.00

**Target DLI:** DLI 1. Institutional Readiness  
**Timeframe:** Quarter 1 & 2  
**Activity:** 1. Establishing structures and facilities for good governance and administration  
**Sub-Activity/Task:** 1.3 Develop manuals for financial management and procurement

ACTIVITY	Developed manuals for financial management and procurement							
OUTPUT	<ul style="list-style-type: none"> <li>Draft financial management manual</li> <li>Draft procurement manual</li> </ul>							
OUTPUT INDICATOR	<ul style="list-style-type: none"> <li>Approval of procurement and financial management manuals</li> </ul>					SOURCE OF VERIFICATION		
						<ul style="list-style-type: none"> <li>WAGMC Secretariat</li> <li>RFU</li> </ul>		
IMPLEMENTATION MILESTONES	<ul style="list-style-type: none"> <li>Submit draft manuals for review, May, 2019</li> <li>Approval of manuals and implementation plan, June, 2019</li> </ul>							
PROCUREMENT	N/A							
RESPONSIBILITY FOR IMPLEMENTATION	<ul style="list-style-type: none"> <li>Prof. Ofori-Acquah, Centre Leader</li> <li>Prof. Renner, Centre Deputy Leader</li> <li>Joseph Honny, Accounts Officer</li> <li>Isaiah Agbovie, Procurement Officer</li> </ul>							
DURATION: 4 months	Commencement: Jan, 2019			Completion: May, 2019				
PRIMARY CONSTITUENTS:	<ul style="list-style-type: none"> <li>ACE core team</li> </ul>			PARTICIPANTS:				
				<ul style="list-style-type: none"> <li>Prof. Ofori-Acquah, Centre Leader</li> <li>Prof. Renner, Centre Deputy Leader</li> <li>Joseph Honny, Accounts Officer</li> <li>Isaiah Agbovie, Procurement Officer</li> <li>Dr. Kudzi, M&amp;E Officer</li> </ul>				
ASSUMPTIONS	Relevant staff interested in the process and willing to accomplish task Specific measurement to eliminate risk of corruption and improve overall efficiency of procurement and financial management included in operational manual.							
FINANCIAL IMPLICATIONS/BUDGET LINE	Logistics for meetings, eg. meeting materials, space, catering, transportation							
Budget Line Analysis		1 <sup>st</sup> Qtr	2 <sup>nd</sup> Qtr	3 <sup>rd</sup> Qtr	4 <sup>th</sup> Qtr	5 <sup>th</sup> Qtr	6 <sup>th</sup> Qtr	Total
1	Meeting materials	500	500					\$1,000.00
2.	Catering	1,000	1,000					\$2,000.00
3.	Meeting Space	500	500					\$1,000.00
4.	Accommodation	1,000	1,000					\$2,000.00
5.	Per Diem	500	500					\$1,000.00
4.	Travel cost (Tickets)	1,500	1,500					\$3,000.00
TOTALS		5,000	5,000					\$10,000.00

**Target DLI:** DLI 1. Institutional Readiness  
**Timeframe:** Quarter 1 & 2  
**Activity:** 1. Establishing structures and facilities for good governance and administration  
**Sub-Activity/Task:** 1.4 Establish and operationalize management and leadership of WAGMC and set up the Centre Management Committee with appropriate sub-committees

ACTIVITY	Establish and operationalize management and leadership of WAGMC and set up the Centre Management Committee with appropriate subcommittees							
OUTPUT	<ul style="list-style-type: none"> <li>Leadership and management of WAGMC established with defined roles</li> <li>Centre Management Committee (CMC) set up</li> </ul>							
OUTPUT INDICATOR	<ul style="list-style-type: none"> <li>Signed documentation of acceptance of role and responsibilities</li> <li>Functioning management and management committee</li> </ul>				SOURCE OF VERIFICATION			
					<ul style="list-style-type: none"> <li>WAGMC secretariat</li> <li>Vice Chancellor's Office</li> <li>Secretary, College of Health Sciences</li> </ul>			
IMPLEMENTATION MILESTONES	<ul style="list-style-type: none"> <li>Dec. 2018 to May 2019: Invite appropriate professionals to CMC</li> <li>May 2019 – Recruit qualified individuals for key management roles</li> </ul>							
PROCUREMENT	N/A							
RESPONSIBILITY FOR IMPLEMENTATION	<ul style="list-style-type: none"> <li>Prof. Ebenezer Owusu-Oduro, Vice Chancellor</li> <li>Prof. Ofori-Acquah, Centre Leader</li> <li>Prof. Lorna Renner, Deputy Centre Leader</li> </ul>							
DURATION: 8 months	Commencement: Oct. 2018			Completion: June. 2019				
PRIMARY CONSTITUENTS:	PARTICIPANTS:							
<ul style="list-style-type: none"> <li>ACE Team</li> </ul>	<ul style="list-style-type: none"> <li>Prof. Owusu-Oduro, Vice Chancellor</li> <li>Prof. Ofori-Acquah, Centre Leader</li> <li>Prof. Renner, Deputy Centre Leader</li> </ul>							
ASSUMPTIONS	Identified persons interested in accepting appointments and committed to the project.							
FINANCIAL IMPLICATIONS/BUDGET LINE	Logistics for meetings eg. travel costs, space rental, catering, etc.							
Budget Line Analysis		1 <sup>st</sup> Qtr	2 <sup>nd</sup> Qtr	3 <sup>rd</sup> Qtr	4 <sup>th</sup> Qtr	5 <sup>th</sup> Qtr	6 <sup>th</sup> Qtr	Total
1	Travel cost (Tickets)	5,000	5,000					\$10,000.00
2	Accommodation	1,500	1,500					\$3,000.00
2	Meeting Space	1,000	1,000					\$5,000.00
3	Catering	2,000	2,000					\$4,000.00
4	Materials for meetings	500	500					\$1,000.00
TOTALS		10,000	10,000					\$20,000.00

**Target DLI:** DLI 1. Institutional Readiness  
**Timeframe:** Quarter 2 & 3  
**Activity:** 1. Establishing structures and facilities for good governance and administration  
**Sub-Activity/Task:** 1.5 Refurbish and upgrade ICT infrastructure, website design, and hosting, purchase software, and launch WAGMC website

ACTIVITY	<ul style="list-style-type: none"> <li>Engage website design consultants to advise and design WAGMC website</li> <li>Procurement domain to host WAGMC website and set up email addresses for WAGMC staff</li> <li>Procurement of software and internet packages for the Centre</li> <li>Apply for installation of telephones for the offices</li> </ul>								
OUTPUT	<ul style="list-style-type: none"> <li>Internet access throughout the Centre</li> <li>Software for data management and analysis procured for research purposes</li> <li>Designed and improved Centre website</li> <li>Phone access</li> <li>Assess data storage and computing needs of center researchers</li> </ul>								
OUTPUT INDICATOR					SOURCE OF VERIFICATION				
<ul style="list-style-type: none"> <li>Data management software installed and in use</li> <li>Access to completed Centre website</li> <li>Phones installed in various offices and labs</li> </ul>					<ul style="list-style-type: none"> <li>WAGMC Secretariat</li> <li>Centre website</li> <li>Head of UG ICT</li> </ul>				
IMPLEMENTATION MILESTONES	<ul style="list-style-type: none"> <li>May 2019 – WAGMC website completed and functional</li> <li>June 2019 – Internet access and bandwidth installation/upgrade</li> <li>July 2019 – Procurement of equipment for installation of phone services, and software upgrades</li> <li>July to August 2019 – Installation of new software on applicable machines</li> </ul>								
PROCUREMENT	<ul style="list-style-type: none"> <li>Internet access equipment – routers, access points, cabling</li> <li>Phone access equipment</li> <li>Software for data analysis</li> <li>Licenses for existing statistical analysis programs</li> </ul>								
RESPONSIBILITY FOR IMPLEMENTATION	<ul style="list-style-type: none"> <li>Prof. Ofori-Acquah, Centre Leader, Prof. Renner, Deputy Centre Leader</li> <li>Melissa Nuno, Administrator, Joseph Honny, Accounts Officer</li> <li>Luca Yikimpa Chicabatia, Head of ICT and Logistics</li> <li>Nathan Siebu, Project Coordinator (ICT), Isaiah Agbovie, Procurement Officer</li> </ul>								
DURATION: 5 months			Commencement: April, 2019			Completion: August, 2019			
PRIMARY CONSTITUENTS:				PARTICIPANTS:					
<ul style="list-style-type: none"> <li>Staff and faculty of WAGMC</li> <li>Applicants to programs</li> <li>WAGMC postgraduate students</li> </ul>				<ul style="list-style-type: none"> <li>Profs. Ofori-Acquah, and Renner</li> <li>Melissa Nuno, Administrator</li> <li>Luca Yikimpa Chicabatia, Head of ICT</li> <li>Isaiah Agbovie, Procurement Officer</li> <li>Joseph Honny, Accounts Officer</li> </ul>					
ASSUMPTIONS		Vendors and suppliers identified and contracts signed to aid commencement of activities							
FINANCIAL IMPLICATIONS/BUDGET LINE			Cost of hardware and software to be purchased						
			Cost of installation						
Budget Line Analysis			1 <sup>st</sup> Qtr	2 <sup>nd</sup> Qtr	3 <sup>rd</sup> Qtr	4 <sup>th</sup> Qtr	5 <sup>th</sup> Qtr	6 <sup>th</sup> Qtr	Total
1	Website design			10,000					\$10,000.00
2	Website hosting			1,000					\$1,000.00
3	Internet access			1,000	1,000				\$2,000.00
4	Office equipment			20,000	17,000				\$37,000.00
TOTALS				32,000	18,000				\$50,000.00

**Target DLI:** DLI 1. Institutional Readiness  
**Timeframe:** Quarter 1  
**Activity:** 1. Establishing structures and facilities for good governance and administration  
**Sub-Activity/Task:** 1.6 Constitute Sectoral Advisory Board

ACTIVITY	Constitute Sectoral Advisory Board						
OUTPUT	Sectoral Advisory Board established						
OUTPUT INDICATOR	<ul style="list-style-type: none"> <li>SAB Members officially accept invitation to serve</li> </ul>					SOURCE OF VERIFICATION	
						<ul style="list-style-type: none"> <li>WAGMC Secretariat</li> <li>Secretary, College of Health Sciences</li> </ul>	
IMPLEMENTATION MILESTONES	<ul style="list-style-type: none"> <li>Oct. 2018- Initial contact and invitation to potential SAB members</li> <li>June. 2019 – Formally invite SAB members</li> <li>July, 2019: All members officially agree to serve</li> </ul>						
PROCUREMENT	N/A						
RESPONSIBILITY FOR IMPLEMENTATION	<ul style="list-style-type: none"> <li>Prof. Ofori-Acquah, Centre Leader</li> <li>Prof. Renner, Deputy Centre Leader</li> <li>Dr. Adomakoh, Sectoral Liaison Officer</li> </ul>						
DURATION: 9 months	Commencement: Oct. 2018			Completion: July. 2019			
PRIMARY CONSTITUENTS:	<ul style="list-style-type: none"> <li>Faculty and staff of WAGMC</li> <li>Students of WAGMC</li> </ul>			PARTICIPANTS:			
				<ul style="list-style-type: none"> <li>Prof. Ofori-Acquah, Centre Leader</li> <li>Prof. Lorna Renner, Deputy Centre Leader</li> <li>Dr. Adomakoh, Sectoral Liaison Officer</li> </ul>			
ASSUMPTIONS	Acceptance from members identified to sit on the Board						
FINANCIAL IMPLICATIONS/BUDGET LINE	Travel cost of members of the Board Logistics for meetings						
Budget Line Analysis	1 <sup>st</sup> Qtr	2 <sup>nd</sup> Qtr	3 <sup>rd</sup> Qtr	4 <sup>th</sup> Qtr	5 <sup>th</sup> Qtr	6 <sup>th</sup> Qtr	Total
1. Travel costs (Tickets)	6,000						\$6,000.00
2. Accommodation	2,000						\$2,000.00
3. Catering, meeting space, materials for meeting	2,000						\$2,000.00
TOTALS	10,000						\$10,000.00

**Target DLI:** DLI 1. Institutional Readiness  
**Timeframe:** Quarter 1&2  
**Activity:** 1. Establishing structures and facilities for good governance and administration  
**Sub-Activity/Task:** 1.7 Set up International Scientific Advisory Board and expand the international faculty

ACTIVITY	Set up International Scientific Advisory Board and expand the international faculty						
OUTPUT	International Scientific Advisory Board established and international faculty expanded						
OUTPUT INDICATOR	<ul style="list-style-type: none"> <li>Members of Board officially accept invitation to serve</li> <li>Functional ISAB</li> <li>Increased number of international faculty serving at WAGMC</li> </ul>					SOURCE OF VERIFICATION	
						<ul style="list-style-type: none"> <li>WAGMC Secretariat</li> <li>College of Health Sciences</li> </ul>	
IMPLEMENTATION MILESTONES	<ul style="list-style-type: none"> <li>Oct. 2018- Initial contact and invitation to potential ISAB members</li> <li>Aug. 2019 – Formally invite ISAB members</li> <li>Sept. 2019: All members officially agree to serve</li> <li>Jan. 2020 - Board set up and operational</li> </ul>						
PROCUREMENT	N/A						
RESPONSIBILITY FOR IMPLEMENTATION	<ul style="list-style-type: none"> <li>Prof. Ofori-Acquah, Centre Leader</li> <li>Prof. Lorna Renner, Deputy Centre Leader</li> <li>Dr. Annabella Osei-Tutu, Education and Training Coordinator</li> </ul>						
DURATION: 15 months	Commencement: Oct. 2018			Completion: Jan. 2020			
PRIMARY CONSTITUENTS:	<ul style="list-style-type: none"> <li>Faculty and staff of WAGMC</li> <li>Students of WAGMC</li> <li>Sectoral partners</li> </ul>			PARTICIPANTS:			
				<ul style="list-style-type: none"> <li>Prof. Ofori-Acquah, Centre Leader</li> <li>Prof. Lorna Renner, Deputy Centre Leader</li> <li>Dr. Annabella Osei-Tutu, Education and Training Coordinator</li> <li>International Partners</li> </ul>			
ASSUMPTIONS	Acceptance from members identified to serve on Board and international faculty interested in working with WAGMC						
FINANCIAL IMPLICATIONS/BUDGET LINE	Travel cost, catering, meeting space, materials for meeting						
Budget Line Analysis	1st Qtr	2nd Qtr	3rd Qtr	4th Qtr	5th Qtr	6th Qtr	Total
1	Travel costs (Tickets)	8,000	6,000				\$14,000.00
2.	Accommodation	5,000	4,000				\$9,000.00
3.	Per Diem	2,000	2,000				\$4,000.00
4.	Catering, meeting space, materials for meeting	1,500	1,500				\$3,000.00
TOTALS		16,500	13,500				\$30,000.00

**Target DLI:** **DLI 4.** Quality of Education and research through international accreditation, research publications and improved teaching and research infrastructure

**Timeframe:** Quarter 2, 3 & 4

**Activity:** 2. Improving the infrastructure and environment for teaching, learning and research

**Sub-Activity/Task:** 2.1 Purchase advanced research equipment

ACTIVITY	Purchase advanced research equipment						
OUTPUT	<ul style="list-style-type: none"> <li>• Illumina nextseq 550 system purchased for Cytogenetics laboratory</li> </ul>						
OUTPUT INDICATOR	<ul style="list-style-type: none"> <li>• Illumina nextseq 550 installed</li> </ul>			VERIFICATION SOURCES			
				<ul style="list-style-type: none"> <li>• Academic Affairs Directorate</li> <li>• Secretary, College of Health Sciences</li> <li>• School of Graduate Studies</li> <li>• Physical Development and Municipal Services Directorate</li> <li>• ORID</li> </ul>			
IMPLEMENTATION MILESTONES	<ul style="list-style-type: none"> <li>• June. 2019 – Begin purchasing process and award contract for the purchase of illumine nextseq 550</li> <li>• April, 2020- Illumina array analyzer installed</li> </ul>						
PROCUREMENT	Illumina nextseq 550						
RESPONSIBILITY FOR IMPLEMENTATION	<ul style="list-style-type: none"> <li>• Prof. Ofori-Acquah, Centre Leader</li> <li>• Prof. Renner, Deputy Centre Leader</li> <li>• Melissa Nuno, Administrator</li> <li>• Isaiah Agbovie Buertey, Procurement Officer</li> <li>• Dr. Kudzi, M&amp;E Officer</li> <li>• Dr. Esther Brobbey, Environmental and Social Safeguards Officer</li> </ul>						
DURATION: months	13	Commencement: June, 2019			Completion: June. 2020		
PRIMARY CONSTITUENTS:	<ul style="list-style-type: none"> <li>• Faculty and Students of WAGMC</li> <li>• Administrative Staff</li> </ul>		PARTICIPANTS:				
			<ul style="list-style-type: none"> <li>• Prof. Ofori-Acquah, Centre Leader</li> <li>• Prof. Renner, Deputy Centre Leader</li> <li>• Melissa Nuno, Administrator</li> <li>• Graduate School Committee</li> <li>• Department Heads</li> <li>• Office of the Registrar</li> <li>• ORID</li> <li>• Isaiah Agbovie Buertey</li> <li>• Dr. Kudzi, M&amp;E Officer</li> <li>• Dr. Esther Brobbey, Environmental and Social Safeguards Officer</li> </ul>				
ASSUMPTIONS	Proper procurement procedure followed						
FINANCIAL IMPLICATIONS/BUDGET LINE	Cost of remodelling halls and seminar rooms, cost of vehicles						
1 Illumina NextSeq 550 System				300,000			\$300,000.00
TOTALS				300,000			\$300,000.00

**Target DLI:** **DLI 4.** Quality of Education and research through international accreditation, research publications and improved teaching and research infrastructure

**Timeframe:** Quarter 2, 3 & 4

**Activity:** 2. Improving the infrastructure and environment for teaching, learning and research

**Sub-Activity/Task:** 2.2 Upgrade lecture/seminar rooms and laboratories, and buy vehicles

ACTIVITY	Upgrade lecture/seminar rooms and laboratories and buy vehicles						
OUTPUT	<ul style="list-style-type: none"> <li>• Refurnished lecture/seminar rooms</li> <li>• Refurbished laboratories</li> <li>• New Vehicles</li> </ul>						
OUTPUT INDICATOR	<ul style="list-style-type: none"> <li>• Functional lecture/seminar rooms</li> <li>• Functional laboratories</li> <li>• Functional vehicles in use by WAGMC staff</li> </ul>			VERIFICATION SOURCES			
				<ul style="list-style-type: none"> <li>• Academic Affairs Directorate</li> <li>• Secretary, College of Health Sciences</li> <li>• School of Graduate Studies</li> <li>• Physical Development and Municipal Services Directorate</li> <li>• College of Health Sciences, Transport Unit</li> <li>• Various Departments hosting lecture halls and seminar rooms</li> <li>• ORID</li> </ul>			
IMPLEMENTATION MILESTONES	<ul style="list-style-type: none"> <li>• May 2019 - Begin negotiations for rooms to be used for laboratories and seminars</li> <li>• June 2019 - Identify lecture halls in need of upgrade and begin negotiations</li> <li>• June. 2019 – Begin purchasing process and award contract for the purchase of vehicles</li> <li>• June. 2020 – Vehicles delivered to WAGMC</li> </ul>						
PROCUREMENT	Construction materials, Vehicles, Cytogenetics Analyser, Audio-visual aids etc.						
RESPONSIBILITY FOR IMPLEMENTATION	<ul style="list-style-type: none"> <li>• Prof. Ofori-Acquah, Centre Leader</li> <li>• Prof. Renner, Deputy Centre Leader</li> <li>• Melissa Nuno, Administrator</li> <li>• Isaiah Agbovie Buertey, Procurement Officer</li> <li>• Dr. Kudzi, M&amp;E Officer</li> <li>• Dr. Esther Brobbey, Environmental and Social Safeguards Officer</li> </ul>						
DURATION: months	13	Commencement: May, 2019			Completion: June. 2020		
PRIMARY CONSTITUENTS:	<ul style="list-style-type: none"> <li>• Faculty and Students of WAGMC</li> <li>• Administrative Staff</li> </ul>		PARTICIPANTS:				
			<ul style="list-style-type: none"> <li>• Prof. Ofori-Acquah, Centre Leader</li> <li>• Prof. Renner, Deputy Centre Leader</li> <li>• Melissa Nuno, Administrator</li> <li>• Graduate School Committee</li> <li>• Department Heads</li> <li>• Office of the Registrar</li> <li>• ORID</li> <li>• Isaiah Agbovie Buertey</li> <li>• Dr. Kudzi, M&amp;E Officer</li> <li>• Dr. Esther Brobbey, Environmental and Social Safeguards Officer</li> </ul>				
ASSUMPTIONS	Proper procurement procedure followed						
FINANCIAL IMPLICATIONS/BUDGET LINE	Cost of remodelling halls and seminar rooms, cost of vehicles						
Budget Line Analysis	1 <sup>st</sup> Qtr	2 <sup>nd</sup> Qtr	3 <sup>rd</sup> Qtr	4 <sup>th</sup> Qtr	5 <sup>th</sup> Qtr	6 <sup>th</sup> Qtr	Total
1. Civil works			10,000				\$10,000.00



2.Conference and seminar equipment				10,000			\$10,000.00
1. Vehicles		80,000					\$80,000.00
TOTALS		80,000	10,000	10,000			\$100,000.00

**Target DLI:** **DLI 4.** Quality of Education and research through international accreditation, research publications and improved teaching and research infrastructure

**Timeframe:** Quarter 2, 3 & 4

**Activity:** 2. Improving the infrastructure and environment for teaching, learning and research

**Sub-Activity/Task:** 2.3 Complete the architectural planning for the construction of the ACE building

ACTIVITY	Complete the architectural planning for the construction of the ACE building						
OUTPUT	<ul style="list-style-type: none"> <li>Location for new ACE building identified</li> <li>All documents required for necessary approvals submitted</li> <li>Architectural plan of the building</li> </ul>						
OUTPUT INDICATOR	<ul style="list-style-type: none"> <li>Documents indicating approval of architectural plans</li> <li>Land allocated and assigned for the building</li> <li>Architect and contractors engaged for consultations</li> </ul>			VERIFICATION SOURCES			
				<ul style="list-style-type: none"> <li>Physical Development and Municipal Services Directorate</li> <li>College of Health Sciences</li> <li>School of Graduate Studies</li> <li>ORID</li> </ul>			
IMPLEMENTATION MILESTONES	<ul style="list-style-type: none"> <li>August 2019 - Negotiations for building (architects, contractors, suppliers etc.)</li> <li>Dec. 2019 – Site visits by architects/contractors</li> <li>Feb. 2020- Drawings of WAGMC Building complex</li> </ul>						
PROCUREMENT	Consultations						
RESPONSIBILITY FOR IMPLEMENTATION	<ul style="list-style-type: none"> <li>Prof. Ofori-Acquah, Centre Leader</li> <li>Prof. Lorna Renner, Deputy Centre Leader</li> <li>Director, PDMDS</li> <li>Isaiah Agbovie Buerterey, Procurement Officer</li> <li>Dr. Kudzi, M&amp;E Officer</li> <li>Dr. Esther Brobbey, Environmental and Social Safeguards Officer</li> </ul>						
DURATION: months	6	Commencement: August, 2019	Completion: Feb. 2020				
PRIMARY CONSTITUENTS:	<ul style="list-style-type: none"> <li>Faculty and Students of WAGMC</li> <li>Administrative Staff</li> </ul>		PARTICIPANTS:				
			<ul style="list-style-type: none"> <li>Prof. Ofori-Acquah, Centre Lead</li> <li>Prof. Lorna Renner, Deputy Centre Leader</li> <li>Director, PDMDS</li> <li>Isaiah Agbovie Buerterey</li> <li>Dr. Kudzi, M&amp;E Officer</li> <li>Dr. Esther Brobbey, Environmental and Social Safeguards Officer</li> </ul>				
ASSUMPTIONS	University authorities willing to assist Centre Leader in land acquisition process.						
FINANCIAL IMPLICATIONS/BUDGET LINE	Budget allocated from ACE funding						
Budget Line Analysis	1 <sup>st</sup> Qtr	2 <sup>nd</sup> Qtr	3 <sup>rd</sup> Qtr	4 <sup>th</sup> Qtr	5 <sup>th</sup> Qtr	6 <sup>th</sup> Qtr	Total
1.Drawings		20,000					\$20,000.00
2 Contractor			40,000	40,000			\$80,000.00
TOTALS		20,000	40,000	40,000			\$100,000.00

**Target DLI:** **DLI 4.** Quality of Education and research through international accreditation, research publications and improved teaching and research infrastructure

**Timeframe:** Quarter 3 & 4

**Activity:** **2.** Improving the infrastructure and environment for teaching, learning and research

**Sub-Activity/Task:** **2.4** Set up telehealth education platform and acquire appropriate software

ACTIVITY	Set up telehealth education platform and acquire software						
OUTPUT	<ul style="list-style-type: none"> <li>Telehealth education platform installed and ready for use</li> </ul>						
OUTPUT INDICATOR	<ul style="list-style-type: none"> <li>Functional Telehealth education platform</li> </ul>				VERIFICATION SOURCES		
					<ul style="list-style-type: none"> <li>School of Graduate Studies</li> <li>ORID</li> <li>WAGMC Secretariat</li> <li>WAGMC Students</li> </ul>		
IMPLEMENTATION MILESTONES	<ul style="list-style-type: none"> <li>July 2019 – Identify suitable telehealth systems</li> <li>Dec. 2019 – Award contract for telehealth platform</li> <li>March, 2020- Install telehealth system</li> <li>April. 2020 - Train faculty and staff on use of telehealth system</li> </ul>						
PROCUREMENT	Consultations and procurement of telehealth education platform components						
RESPONSIBILITY FOR IMPLEMENTATION	<ul style="list-style-type: none"> <li>Prof. Ofori-Acquah, Centre Leader</li> <li>Prof. Renner, Deputy Centre Leader</li> <li>Melissa Nuno, Administrator</li> <li>Nathan Siebu, Project Officer (IT)</li> <li>Dr. Annabella Opere-Henaku, Education and Training Coordinator</li> <li>Isaiah Agbovie Buerthey, Procurement Officer</li> <li>Dr. Kudzi, M&amp;E Officer</li> </ul>						
DURATION: 10 months	Commencement: July, 2019			Completion: April 2020			
PRIMARY CONSTITUENTS:	<ul style="list-style-type: none"> <li>Faculty and Students of WAGMC</li> <li>Administrative Staff</li> </ul>			PARTICIPANTS:			
				<ul style="list-style-type: none"> <li>Prof. Ofori-Acquah, Centre Leader</li> <li>Prof. Renner, Deputy Centre Leader</li> <li>Melissa Nuno, Administrator</li> <li>Nathan Siebu, Project Officer (IT)</li> <li>Dr. Annabella Opere-Henaku</li> <li>Graduate School Committee</li> <li>ORID</li> <li>Isaiah Agbovie Buerthey</li> <li>Dr. Kudzi, M&amp;E Officer</li> </ul>			
ASSUMPTIONS	Purchases made based on consultations with UGCS						
FINANCIAL IMPLICATIONS/BUDGET LINE	Cost of telehealth education platform						
Budget Line Analysis	1 <sup>st</sup> Qtr	2 <sup>nd</sup> Qtr	3 <sup>rd</sup> Qtr	4 <sup>th</sup> Qtr	5 <sup>th</sup> Qtr	6 <sup>th</sup> Qtr	Total
1 Cost of hardware and software			50,000				\$50,000.00
2 Software training			5,000	5,000			\$10,000.00
TOTALS			55,000	5,000			\$60,000.00

**Target DLI:** DLI 1. Institutional Readiness  
**Timeframe:** Quarter 2 & 3  
**Activity:** 2. Improving the infrastructure and environment for teaching, learning and research  
**Sub-activity/Task:** 2.5 Create website to house downloads of student handbook, policies and procedures of admission, fellowships, anti-sexual harassment, gender equality

ACTIVITY	Create website to house downloads of student handbook, policies and procedures of admission, fellowships, anti-sexual harassment, gender equality						
OUTPUT	Completed student handbook						
OUTPUT INDICATOR	<ul style="list-style-type: none"> <li>Student handbook accessible on Centre's website</li> <li>Hard copies of student handbook available at the Centre for students, admin staff and faculty</li> </ul>					SOURCE OF VERIFICATION	
						<ul style="list-style-type: none"> <li>WAGMC Secretariat</li> <li>WAGMC Website</li> <li>School of Graduate Studies</li> <li>College of Health Sciences</li> </ul>	
IMPLEMENTATION MILESTONES	<ul style="list-style-type: none"> <li>April 2019 – Review of existing student handbooks at the University</li> <li>May 2019 - First draft of handbook ready for review</li> <li>August 2019 - Final draft ready for review and approval, and uploaded onto website</li> <li>September 2019 – Publish hard copies of Student handbook</li> </ul>						
PROCUREMENT	Competitive sourcing of Printing Houses						
RESPONSIBILITY FOR IMPLEMENTATION	<ul style="list-style-type: none"> <li>Prof. Ofori-Acquah, Centre Leader</li> <li>Prof. Lorna Renner, Deputy Centre Leader</li> <li>Melissa Nuno, Centre Administrator</li> <li>Dr. Annabella Opare-Henaku, Education &amp; Training Coordinator</li> <li>Isaiah Agbovie Buertery, Procurement Officer</li> </ul>						
DURATION: 6 months	Commencement: March 2019			Completion: September 2019			
PRIMARY CONSTITUENTS:	<ul style="list-style-type: none"> <li>Staff and faculty of WAGMC</li> <li>Applicants to WAGMC programmes</li> <li>Students of WAGMC</li> </ul>			PARTICIPANTS:			
				<ul style="list-style-type: none"> <li>Prof. Ofori-Acquah, Centre Leader</li> <li>Prof. Lorna Renner, Deputy Centre Leader</li> <li>Melissa Nuno, Centre Administrator</li> <li>Isaiah Agbovie Buertery, Procurement Officer</li> <li>ORID</li> </ul>			
ASSUMPTIONS	Timely provision of content for handbook						
FINANCIAL IMPLICATIONS/BUDGET LINE	Cost of printing hard copies of handbook						
Budget Line Analysis	1 <sup>st</sup> Qtr	2 <sup>nd</sup> Qtr	3 <sup>rd</sup> Qtr	4 <sup>th</sup> Qtr	5 <sup>th</sup> Qtr	6 <sup>th</sup> Qtr	Total
1 Printing of hardcopies			5,000	5,000			\$10,000.00
TOTALS			5,000	5,000			\$10,000.00

**Target DLI:** **DLI 4.** Quality of Education and research through international accreditation, research publications and improved teaching and research infrastructure

**Timeframe:** Quarter 1, 2, 3 & 4

**Activity:** 2. Improving the infrastructure and environment for teaching, learning and research

**Sub-Activity/Task:** 2.6 Engagement of international faculty for teaching courses and workshops, and co-supervision of students

ACTIVITY	Engagement of international faculty for teaching courses and workshops, and co-supervision of students						
OUTPUT	<ul style="list-style-type: none"> <li>Faculty and students exposed to current content</li> <li>Opportunity for research collaboration</li> <li>Exposure to international laboratory practices</li> </ul>						
OUTPUT INDICATOR	<ul style="list-style-type: none"> <li>Increased number of international faculty</li> <li>Collaborative research between local faculty and international faculty</li> <li>Students working on research projects with international faculty</li> <li>Students and faculty co-publishing with international faculty</li> </ul>				SOURCE OF VERIFICATION		
					<ul style="list-style-type: none"> <li>WAGMC Secretariat</li> <li>College of Health Sciences</li> <li>School of Graduate Studies</li> </ul>		
IMPLEMENTATION MILESTONES	<ul style="list-style-type: none"> <li>May. 2019 – Confirmation of WAGMC international faculty members</li> <li>May 2019 – Begin videoconferencing with international faculty to encourage buy-in and input for program development</li> <li>Dec. 2019 – International faculty formally accept Visiting Faculty positions</li> </ul>						
PROCUREMENT	N/A						
RESPONSIBILITY FOR IMPLEMENTATION	<ul style="list-style-type: none"> <li>Prof. Ofori-Acquah, Centre Leader</li> <li>Prof. Lorna Renner, Deputy Centre Leader</li> <li>Dr. Annabella Osei-Tutu, Education and Training Coordinator</li> <li>Melissa Nuno, Administrator</li> </ul>						
DURATION: 12 months	Commencement: Jan. 2019			Completion: Dec. 2019			
PRIMARY CONSTITUENTS:	<ul style="list-style-type: none"> <li>Staff and faculty of WAGMC</li> <li>WAGMC students</li> </ul>			PARTICIPANTS:			
				<ul style="list-style-type: none"> <li>Prof. Ofori-Acquah, Centre Leader</li> <li>Prof. Lorna Renner, Deputy Centre Leader</li> <li>Melissa Nuno, Centre Administrator</li> <li>Dr. Annabella Opare-Henaku, Education &amp; Training Coordinator</li> <li>School of Graduate Studies</li> </ul>			
ASSUMPTIONS	International faculty availability						
FINANCIAL IMPLICATIONS/BUDGET LINE	Travel, accommodation and per diem						
Budget Line Analysis	1 <sup>st</sup> Qtr	2 <sup>nd</sup> Qtr	3 <sup>rd</sup> Qtr	4 <sup>th</sup> Qtr	5 <sup>th</sup> Qtr	6 <sup>th</sup> Qtr	Total
1	Travel costs (Tickets)		10,000				\$10,000.00
2	Accommodation		8,000				\$8,000.00
3	Per Diem		2,000				\$2,000.00
TOTALS			20,000				\$20,000.00

**Target DLI:** **DLI 4:** Quality of Education and research through international accreditation, research publications and improved teaching and research infrastructure

**Timeframe:** Quarter 4

**Activity:** 2. Improving the infrastructure and environment for teaching, learning and research

**Sub-activity/Task:** 2.7 Faculty Exchange programs with regional and national academic partners

ACTIVITY	Faculty Exchange programs with regional and national partners							
OUTPUT	<ul style="list-style-type: none"> <li>Various faculty members engaged in exchange programs with WAGMC partners</li> </ul>							
OUTPUT INDICATOR				SOURCE OF VERIFICATION				
<ul style="list-style-type: none"> <li>Faculty exposed to international standards in education</li> <li>Publication and research collaborations for faculty members</li> <li>Students benefit through training, research and publication opportunities from seasoned faculty members</li> </ul>				<ul style="list-style-type: none"> <li>College of Health Sciences</li> <li>Pro- Vice Chancellor Academics</li> <li>School of Graduate Studies</li> <li>Academic Partners</li> </ul>				
IMPLEMENTATION MILESTONES	<ul style="list-style-type: none"> <li>Sept. 2019 – Develop relations with academic partners to create opportunities for exchange programs</li> </ul>							
PROCUREMENT	Flight Costs, Accommodation, incidentals etc.							
RESPONSIBILITY FOR IMPLEMENTATION	<ul style="list-style-type: none"> <li>Prof. Ofori-Acquah, Centre Leader</li> <li>Prof. Lorna Renner, Deputy Centre Leader</li> <li>Melissa Nuno, Administrator</li> <li>Dr. Annabella Opore-Henaku, Education and Training Coordinator</li> </ul>							
DURATION: 3 months		Commencement: Sept. 2019			Completion: Dec. 2019			
PRIMARY CONSTITUENTS:				PARTICIPANTS:				
<ul style="list-style-type: none"> <li>Faculty of WAGMC</li> <li>Potential applicants to postgraduate programs</li> </ul>				<ul style="list-style-type: none"> <li>Prof. Ofori-Acquah, Centre Leader</li> <li>Prof. Lorna Renner, Deputy Centre Leader</li> <li>Melissa Nuno, Administrator</li> <li>Dr. Annabella Opore-Henaku, Education and Training Coordinator</li> <li>ORID</li> <li>Academic partners</li> </ul>				
ASSUMPTIONS	Strong relationships with academic partners to foster development of exchange programs							
FINANCIAL IMPLICATIONS/BUDGET LINE	Travel costs							
Budget Line Analysis		1 <sup>st</sup> Qtr	2 <sup>nd</sup> Qtr	3 <sup>rd</sup> Qtr	4 <sup>th</sup> Qtr	5 <sup>th</sup> Qtr	6 <sup>th</sup> Qtr	Total
1.	Travel cost (Tickets)				15,000			\$15,000.00
2.	Accommodation				5,000			\$5,000.00
3.	Per Diem				5,000			\$5,000.00
TOTALS					25,000			\$25,000.00

**Target DLI:** DLI. 3. Quantity of students with focus on gender and regionalization  
**Timeframe:** Quarter 2, 3 & 4  
**Activity:** 3. Enhancing postgraduate training to achieve excellence with increasing quantity of students and a focus on gender and regionalization  
**Sub-Activity/Task:** 3.1 Upgrade the curriculum of an existing Master's degree in counselling psychology to meet international standards, and develop curricula for new postgraduate programmes in genetic counselling and medical genetics

ACTIVITY	<ul style="list-style-type: none"> <li>Upgrade existing Master's degree in counselling psychology</li> <li>Develop new curricula for genetic counselling and medical genetics postgraduate programmes (PgCert, MSc, MPhil and PhD)</li> </ul>							
OUTPUT	<ul style="list-style-type: none"> <li>MPhil Counselling Psychology curriculum</li> <li>Postgraduate Certificate in Genetic counselling curriculum</li> <li>MSc in Genetic Counselling curriculum</li> <li>MPhil Medical Genetics curriculum</li> <li>PhD in Medical Genetics curriculum</li> </ul>							
OUTPUT INDICATOR				SOURCE OF VERIFICATION				
<ul style="list-style-type: none"> <li>Students enrolled in upgraded counselling psychology programme</li> <li>New curricula submitted to the Academic Curriculum Quality Committee of the University of Ghana and Academic Board</li> </ul>				<ul style="list-style-type: none"> <li>Office of the Registrar University of Ghana</li> <li>Pro- Vice Chancellor Academics</li> <li>School of Graduate Studies</li> <li>College of Allied Health Sciences</li> </ul>				
IMPLEMENTATION MILESTONES	<ul style="list-style-type: none"> <li>August 2019 – Upgrade counselling psychology programme</li> <li>February 2020 – Final drafts of new programmes in genetic counselling and medical genetics</li> <li>June 2020- Submit new curriculum for approvals</li> </ul>							
PROCUREMENT	N/A							
RESPONSIBILITY FOR IMPLEMENTATION	<ul style="list-style-type: none"> <li>Prof. Ofori-Acquah, Centre Leader</li> <li>Prof. Lorna Renner, Deputy Centre Leader</li> <li>Dr. Annabella Opere-Henaku, Education and Training Coordinator</li> <li>Melissa Nuno, Centre Administrator</li> </ul>							
DURATION: 12 months		Commencement: July, 2019			Completion: June, 2020			
PRIMARY CONSTITUENTS:				PARTICIPANTS:				
<ul style="list-style-type: none"> <li>Faculty of WAGMC</li> <li>Students of WAGMC</li> </ul>				<ul style="list-style-type: none"> <li>Prof. Ofori-Acquah, Centre Leader</li> <li>Prof. Lorna Renner, Deputy Centre Leader</li> <li>Melissa Nuno, Centre Administrator</li> <li>Dr. Annabella Opere-Henaku, Education and Training Coordinator</li> <li>Biomedical and Allied Health Sciences faculty</li> <li>International Academic Partners</li> <li>International faculty</li> </ul>				
ASSUMPTIONS	Schedules to be planned to make meetings convenient for participants. Timely submission of application documents for approval							
FINANCIAL IMPLICATIONS/BUDGET LINE	\$20,000.00 from ACE budget							
Budget Line Analysis		1 <sup>st</sup> Qtr	2 <sup>nd</sup> Qtr	3 <sup>rd</sup> Qtr	4 <sup>th</sup> Qtr	5 <sup>th</sup> Qtr	6 <sup>th</sup> Qtr	Total
1	Travel cost (Tickets)				10,000			\$10,000.00
2	Accommodation				5,000			\$5,000.00

3	Per Diem				2,500			\$2,500.00
4.	Meeting Space				500			\$500.00
5.	Meeting materials				500			\$500.00
6.	Catering				1500			\$1,500.00
TOTALS					20,000			\$20,000.00



**Target DLI:** **DLI.3.** Quantity of students with focus on gender and regionalization  
**Timeframe:** Quarter 3 & 4  
**Activity:** **3.** Enhancing postgraduate training to achieve excellence with increasing quantity of students and a focus on gender and regionalization  
**Sub-Activity/Task:** **3.2** Obtain approval for upgraded and new degree programmes

ACTIVITY	Obtain approval for upgraded and new degree programmes							
OUTPUT	<ul style="list-style-type: none"> <li>Centre management committee approval</li> <li>College of Health Sciences approval</li> <li>University of Ghana approval</li> <li>Submission of new programmes to national accreditation boards</li> </ul>							
OUTPUT INDICATOR				SOURCE OF VERIFICATION				
<ul style="list-style-type: none"> <li>Increased number of applicants</li> <li>Attraction of regional faculty</li> <li>Approval of new programs by College/University</li> </ul>				<ul style="list-style-type: none"> <li>Office of the Registrar University of Ghana</li> <li>The National Accreditation Board of Ghana</li> <li>College of Allied Health Sciences</li> </ul>				
IMPLEMENTATION MILESTONES	<ul style="list-style-type: none"> <li>Aug. 2020 - Curriculum submitted for national accreditation</li> </ul>							
PROCUREMENT	N/A							
RESPONSIBILITY FOR IMPLEMENTATION	<ul style="list-style-type: none"> <li>Prof. Ofori-Acquah, Centre Leader</li> <li>Prof. Lorna Renner, Deputy Centre Leader</li> <li>Dr. Annabella Opare-Henaku, Education and Training Coordinator</li> <li>Melissa Nuno, Centre Administrator</li> <li>Dr. Kudzi, M&amp;E Officer</li> </ul>							
DURATION:18 months		Commencement: March, 2019			Completion: September, 2020			
PRIMARY CONSTITUENTS:				PARTICIPANTS:				
<ul style="list-style-type: none"> <li>WAGMC faculty</li> <li>Students of WAGMC</li> </ul>				<ul style="list-style-type: none"> <li>Prof. Ofori-Acquah, Centre Leader</li> <li>Prof. Lorna Renner, Deputy Centre Leader</li> <li>Dr. Annabella Opare-Henaku, Education and Training Coordinator</li> <li>Melissa Nuno, Centre Administrator</li> <li>Dr. Kudzi, M&amp;E Officer</li> </ul>				
ASSUMPTIONS	Ability to follow schedules and timelines of accreditation bodies							
FINANCIAL IMPLICATIONS/BUDGET LINE	Provision will be made for national accreditation fees from ACE budget							
Budget Line Analysis		1 <sup>st</sup> Qtr	2 <sup>nd</sup> Qtr	3 <sup>rd</sup> Qtr	4 <sup>th</sup> Qtr	5 <sup>th</sup> Qtr	6 <sup>th</sup> Qtr	Total
1	Accreditation Fees				20,000			\$20,000.00
TOTALS					20,000			\$20,000.00

**Target DLI:** **DLI. 3.** Quantity of students with focus on gender and regionalization  
**Timeframe:** Quarter 2, 3 & 4  
**Activity:** **3.** Enhancing postgraduate training to achieve excellence with increasing quantity of students and a focus on gender and regionalization  
**Sub-Activity/Task:** **3.3** Enroll students into MSc/MPhil training Programme

ACTIVITY	Enroll students and into MSc/MPhil training programme						
OUTPUT	<ul style="list-style-type: none"> <li>Students undertaking postgraduate studies in genetic medicine</li> </ul>						
OUTPUT INDICATOR	<ul style="list-style-type: none"> <li>Advertisement material (with strategy on how to target and attract female and regional students)</li> <li>Successful enrolling of students 60% of which are female</li> <li>Students complete required coursework on schedule in one year</li> <li>Students complete required research thesis in one year</li> <li>Students publish their research</li> <li>Students obtaining small grants</li> <li>Students attending national and international scientific conferences</li> </ul>					SOURCE OF VERIFICATION	
						<ul style="list-style-type: none"> <li>WAGMC Secretariat</li> <li>School of Graduate Studies</li> <li>College of Health Sciences</li> <li>National newspapers</li> <li>WAGMC Fellows</li> </ul>	
IMPLEMENTATION MILESTONES	<ul style="list-style-type: none"> <li>June 2019 – Publish manual for admissions</li> <li>September, 2019 – Advertise and accept applications for MSc/Mphil programmes</li> <li>Nov. 2019 – Offer provisional fellowships</li> </ul>						
PROCUREMENT	<ul style="list-style-type: none"> <li>Advertisement of programme</li> <li>Purchasing of lab supplies for required classes</li> </ul>						
RESPONSIBILITY FOR IMPLEMENTATION	<ul style="list-style-type: none"> <li>Prof. Ofori-Acquah, Centre Leader</li> <li>Prof. Lorna Renner, Deputy Centre Leader</li> <li>Melissa Nuno, Centre Administrator</li> <li>Dr. Annabella Opere-Henaku, Education and Training Coordinator</li> <li>Communications Officer</li> </ul>						
DURATION: 5 months	Commencement: August, 2019			Completion: November, 2019			
PRIMARY CONSTITUENTS:	<ul style="list-style-type: none"> <li>WAGMC faculty</li> <li>National and regional institutions of higher learning</li> <li>Non-academic institutions and donor community</li> <li>Youth with first or second degree</li> </ul>			PARTICIPANTS:			
				<ul style="list-style-type: none"> <li>Prof. Ofori-Acquah, Centre Leader</li> <li>Prof. Renner, Deputy Centre Leader</li> <li>Melissa Nuno, Centre Administrator</li> <li>Dr. Annabella Opere-Henaku, Education and Training Coordinator</li> <li>School of Graduate Studies</li> <li>School of Biomedical and Allied Health Sciences</li> <li>School of Medicine</li> <li>Psychology Department</li> <li>Department of Biochemistry</li> </ul>			
ASSUMPTIONS	High number of quality applicants to advertised programmes						
FINANCIAL IMPLICATIONS/BUDGET LINE	<ul style="list-style-type: none"> <li>Advertisement for applicants</li> <li>Logistics and supplies will be procured guided by approved procurement manual</li> <li>Scholarships awarded based on merit to students</li> </ul>						
Budget Line Analysis	1 <sup>st</sup> Qtr	2 <sup>nd</sup> Qtr	3 <sup>rd</sup> Qtr	4 <sup>th</sup> Qtr	5 <sup>th</sup> Qtr	6 <sup>th</sup> Qtr	Total
1	Advertisement		4,000	4,000			\$8,000.00
2	Logistics and Supplies				10,000		\$10,000.00
3	National Scholarships				30,000		\$30,000.00
TOTALS			4,000	4,000	40,000		\$48,000.00

**Target DLI:**

**Timeframe:**

**Activity:**

**Sub-Activity/Task:**

**DLI 3.** Quantity of students with focus on gender and regionalization  
Quarter 2, 3 & 4

**3.** Enhancing postgraduate training to achieve excellence with increasing quantity of students and a focus on gender and regionalization

**3.4** Enroll students and run PhD programme

ACTIVITY	Enrol students and run PhD programme						
OUTPUT	<ul style="list-style-type: none"> <li>PhD students undertaking studies/research in genetic medicine</li> <li>Students successfully complete course work</li> </ul>						
OUTPUT INDICATOR	<ul style="list-style-type: none"> <li>Advertisement material (with strategy on how to target and attract female and regional students)</li> <li>Successful enrolling of students, 60% of which are female</li> <li>Students complete required coursework on schedule in one year</li> <li>Students complete experiential learning and the comprehensive exam in year two</li> <li>Student publications of their research</li> <li>Students attending national and international scientific conferences</li> </ul>					SOURCE OF VERIFICATION	
						<ul style="list-style-type: none"> <li>WAGMC Secretariat</li> <li>School of Graduate Studies</li> <li>College of Health Sciences</li> <li>Office of the Registrar University of Ghana</li> <li>Advertisement records</li> </ul>	
IMPLEMENTATION MILESTONES	<ul style="list-style-type: none"> <li>June 2019 – Publish manual for admissions</li> <li>September, 2019 - Advertise and accept applications for PhD programmes</li> <li>Nov. 2019 – Offer provisional fellowships</li> </ul>						
PROCUREMENT	Advertisement of program and procurement of lab supplies for required courses						
RESPONSIBILITY FOR IMPLEMENTATION	<ul style="list-style-type: none"> <li>Prof. Ofori-Acquah, Centre Leader</li> <li>Prof. Renner, Deputy Centre Leader</li> <li>Melissa Nuno, Centre Administrator</li> <li>Dr. Annabella Opere-Henaku, Education and Training Coordinator</li> <li>Communications Officer</li> </ul>						
DURATION: 5 months	Commencement: June, 2019			Completion: November, 2019			
PRIMARY CONSTITUENTS:	<ul style="list-style-type: none"> <li>WAGMC faculty</li> <li>National and regional institutions of higher learning</li> <li>Non-academic institutions and donor community</li> <li>Youth with first or second degree</li> </ul>			<ul style="list-style-type: none"> <li>PARTICIPANTS:</li> <li>Prof. Ofori-Acquah, Centre Leader</li> <li>Prof. Renner, Deputy Centre Leader</li> <li>Melissa Nuno, Centre Administrator</li> <li>Dr. Annabella Opere-Henaku</li> <li>School of Graduate Studies</li> <li>School of Biomedical and Allied Health Sciences</li> <li>School of Medicine</li> <li>Psychology Department</li> <li>Department of Biochemistry</li> </ul>			
ASSUMPTIONS	High number of quality applicants to advertised programmes						
FINANCIAL IMPLICATIONS/BUDGET LINE	Advertisement for applicants Logistics and supplies will be procured guided by approved procurement manual Scholarships awarded based on merit to students all budgeted under ACE funding						
Budget Line Analysis	1 <sup>st</sup> Qtr	2 <sup>nd</sup> Qtr	3 <sup>rd</sup> Qtr	4 <sup>th</sup> Qtr	5 <sup>th</sup> Qtr	6 <sup>th</sup> Qtr	Total
1	National and International Scholarships		25,000	25,000			\$50,000.00
2	Logistics and Supplies		13,000	15,000			\$28,000.00
3	Advertisement		4,000	4,000	5,000		\$13,000.00
TOTALS		4,000	42,000	45,000			\$91,000.00

**Target DLI:** **DLI 3.** Quantity of students with focus on gender and regionalization  
**Timeframe:** Quarter 3 & 4  
**Activity:** **3.** Enhancing postgraduate training to achieve excellence with increasing quantity of students and a focus on gender and regionalization  
**Sub-Activity/Task:** **3.5** Conduct national and regional outreach events targeting women and minorities

ACTIVITY	Conduct regional recruitment events targeting students residing in the rest of Africa (locations will include cities in Nigeria, Kenya, Liberia)						
OUTPUT	<ul style="list-style-type: none"> <li>Increased numbers of regional students enrolled in MPhil, MSc and PhD programs</li> <li>Increased numbers of female students enrolled in MPhil, MSc and PhD programs (both regional and national)</li> </ul>						
OUTPUT INDICATOR	<ul style="list-style-type: none"> <li>Meet goal of 40% female student enrollment</li> <li>Completion of two regional university outreach programs</li> <li>Advertisement on UG of partner university website</li> <li>Hosting of one event targeted at women at each short course</li> <li>Regional partners host at least one event targeting women and minorities or both in their communities</li> <li>Completion of 2 university outreach programs</li> <li>Presence at the H3Africa meeting 2019</li> <li>Presence at the African Society of Human Genetics meeting 2020</li> <li>Website advertising of WAGMC programmes by national and regional partners</li> </ul>				SOURCE OF VERIFICATION		
					<ul style="list-style-type: none"> <li>WAGMC Secretariat</li> <li>School of Graduate Studies</li> <li>University International Studies Office</li> </ul>		
IMPLEMENTATION MILESTONES	<ul style="list-style-type: none"> <li>July-August, 2019 - Advertise through partners across the region</li> <li>Jan to March 2020 - outreach events at regional academic partner institutions</li> <li>July 2020: Regional partners host at least one event each targeting women</li> </ul>						
PROCUREMENT	Advertisement, Logistics						
RESPONSIBILITY FOR IMPLEMENTATION	<ul style="list-style-type: none"> <li>Prof. Ofori-Acquah, Centre Leader</li> <li>Prof. Renner, Deputy Centre Leader</li> <li>Melissa Nuno, Centre Administrator</li> <li>Dr. Annabella Opere-Henaku, Education and Training Coordinator</li> <li>Dr. Yvonne Dei-Adomakoh, Sectoral Liaison Officer</li> <li>Communications Officer</li> <li>Dr. Kudzi, M&amp;E Officer</li> </ul>						
DURATION: 12 months	Commencement: July, 2019			Completion: July, 2020			
PRIMARY CONSTITUENTS:	<ul style="list-style-type: none"> <li>WAGMC faculty</li> <li>Potential regional students</li> <li>Regional academic partner institutions</li> </ul>			PARTICIPANTS:			
				<ul style="list-style-type: none"> <li>Prof. Ofori-Acquah, Centre Leader</li> <li>Prof. Renner, Deputy Centre Leader</li> <li>Melissa Nuno, Centre Administrator</li> <li>Dr. Annabella Opere-Henaku, Education and Training Coordinator</li> <li>Dr. Yvonne Dei-Adomakoh, Sectoral Liaison Officer</li> <li>Communications Officer</li> <li>Dr. Kudzi, M&amp;E Officer</li> <li>Regional Partners</li> </ul>			
ASSUMPTIONS	Outreach would increase number of regional students enrolled in postgraduate degree programmes with higher success rates of female applicants						
FINANCIAL IMPLICATIONS/BUDGET LINE	Travel, accommodation and per diem for faculty and staff. Cost of hosting events (food, logistics, etc.)						
Budget Line Analysis	1 <sup>st</sup> Qtr	2 <sup>nd</sup> Qtr	3 <sup>rd</sup> Qtr	4 <sup>th</sup> Qtr	5 <sup>th</sup> Qtr	6 <sup>th</sup> Qtr	Total

1	Travel (Tickets)			3,000	3,000			\$6,000.00
2	Accommodation			2,000	2,000			\$4,000.00
3	Per Diem			2,000	2,000			\$4,000.00
2	Logistics for hosting events			3,000	3,000			\$6,000.00
3	Regional partner events			10,000	10,000			\$20,000.00
TOTALS				20,000	20,000			\$40,000.00

**Target DLI:** **DLI 4.** Quality of Education and research through international accreditation, research publications and improved teaching and research infrastructure

**Timeframe:** Quarter 3 & 4

**Activity:** 3. Enhancing postgraduate training to achieve excellence with increasing quantity of students and a focus on gender and regionalization

**Sub-Activity/Task:** 3.6 Develop new curricula for short courses (topics include: precision medicine, prenatal diagnosis, targeted therapy, genetic counselling)

ACTIVITY	Develop curricula for new short courses and improve curriculum for existing short courses						
OUTPUT	<ul style="list-style-type: none"> <li>Improved curriculum for existing short course in Nucleotides</li> <li>Short courses in Precision Medicine</li> <li>Short course in Genetic Counselling</li> <li>Short course in Prenatal Diagnosis</li> </ul>						
OUTPUT INDICATOR	<ul style="list-style-type: none"> <li>Application number for short courses</li> <li>Enrolment in short courses</li> <li>Regional and Women's enrolment in short courses</li> </ul>			SOURCE OF VERIFICATION			
				<ul style="list-style-type: none"> <li>WAGMC Secretariat</li> <li>College of Health Sciences</li> <li>School of Graduate Studies</li> <li>Ghana College of Physicians and Surgeons</li> <li>Ghana College of Nursing</li> <li>Sickle Cell Foundation of Ghana</li> </ul>			
IMPLEMENTATION MILESTONES	<ul style="list-style-type: none"> <li>Sept. 2019 – Final drafts of curriculum for short courses in various genetic medicine topics</li> </ul>						
PROCUREMENT	N/A						
RESPONSIBILITY FOR IMPLEMENTATION	<ul style="list-style-type: none"> <li>Prof. Ofori-Acquah, Centre Leader</li> <li>Prof. Renner, Deputy Centre Leader</li> <li>Melissa Nuno, Centre Administrator</li> <li>Dr. Annabella Opere-Henaku, Education and Training Coordinator</li> <li>Dr. Yvonne Dei-Adomakoh, Sectoral Liaison Officer</li> <li>Dr. Kudzi, M&amp;E Officer</li> </ul>						
DURATION: 6 months	Commencement: Aug. 2019			Completion: March 2020			
PRIMARY CONSTITUENTS:	<ul style="list-style-type: none"> <li>WAGM Faculty</li> </ul>			PARTICIPANTS:			
				<ul style="list-style-type: none"> <li>Prof. Ofori-Acquah, Centre Leader</li> <li>Prof. Renner, Deputy Centre Leader</li> <li>Melissa Nuno, Centre Administrator</li> <li>Dr. Annabella Opere-Henaku, Education and Training Coordinator</li> <li>Dr. Yvonne Adomakoh, Partnership Coordinator</li> <li>Dr. Kudzi, M&amp;E Officer School of Graduate Studies</li> <li>Ghana College of Physicians and Surgeons</li> <li>Ghana College of Nursing</li> <li>SCFG</li> </ul>			
ASSUMPTIONS	Faculty availability to aid development of curricula						
FINANCIAL IMPLICATIONS/BUDGET LINE	Travel cost for regional and international faculty						
Budget Line Analysis	1 <sup>st</sup> Qtr	2 <sup>nd</sup> Qtr	3 <sup>rd</sup> Qtr	4 <sup>th</sup> Qtr	5 <sup>th</sup> Qtr	6 <sup>th</sup> Qtr	Total
1	Travel Cost (Tickets)		5,000				\$5,000.00
2	Accommodation		2,500				\$2,500.00
3	Per Diem		1,500				\$1,500.00

4	Meeting Space			500				\$500.00
5	Catering			500				\$500.00
TOTALS				10,000				\$10,000.00



**Target DLI:** **DLI 4.** Quality of Education and research through international accreditation, research publications and improved teaching and research infrastructure

**Timeframe:** Quarter 4

**Activity:** 3. Enhancing postgraduate training to achieve excellence with increasing quantity of students and a focus on gender and regionalization

**Sub-Activity/Task:** 3.7 Run short courses in genetic counselling for mid-career health professionals

ACTIVITY	Run short course in genetic counselling for mid-career health professionals						
OUTPUT	<ul style="list-style-type: none"> <li>Number of students enrolled in short course</li> </ul>						
OUTPUT INDICATOR	<ul style="list-style-type: none"> <li>Advertise approved short courses</li> <li>Receive applications for short courses</li> <li>Students enrolled in short courses</li> </ul>			SOURCE OF VERIFICATION			
				<ul style="list-style-type: none"> <li>WAGMC Secretariat and Website</li> <li>College of Allied Health Sciences</li> <li>Partner Institutions: (<i>Ghana College of Physicians and Surgeons, Ghana College of Nursing, Sickle Cell Foundation of Ghana, Ghana Psychology Council</i>)</li> </ul>			
IMPLEMENTATION MILESTONES	<ul style="list-style-type: none"> <li>November 2019 – Short courses approved by Center Management Committee</li> <li>March 2020 – Begin enrollment of students</li> <li>July 2020- Run short course in genetic counselling</li> </ul>						
PROCUREMENT	N/A						
RESPONSIBILITY FOR IMPLEMENTATION	<ul style="list-style-type: none"> <li>Prof. Ofori-Acquah, Centre Leader</li> <li>Prof. Renner, Deputy Centre Leader</li> <li>Melissa Nuno, Administrator</li> <li>Dr. Yvonne Dei-Adomakoh, Sectoral Liaison Officer</li> <li>Dr. Annabella Opere-Henaku, Education and Training Coordinator</li> <li>Communications Officer</li> </ul>						
DURATION: 9 months	Commencement: Nov. 2019			Completion: Aug. 2020			
PRIMARY CONSTITUENTS: WAGMC faculty	PARTICIPANTS:			<ul style="list-style-type: none"> <li>Prof. Ofori-Acquah, Centre Leader</li> <li>Prof. Renner, Deputy Centre Leader</li> <li>Dr. Annabella Opere-Henaku, Education and Training Coordinator</li> <li>School of Graduate Studies</li> <li>Regional and international Faculty</li> <li>Sectoral partners</li> </ul>			
ASSUMPTIONS	Faculty availability to aid development and running of curriculum Mid-level health professionals enthusiasm to participate in short genetic counselling short course						
FINANCIAL IMPLICATIONS/BUDGET LINE	Travel for regional and international faculty						
Budget Line Analysis	1 <sup>st</sup> Qtr	2 <sup>nd</sup> Qtr	3 <sup>rd</sup> Qtr	4 <sup>th</sup> Qtr	5 <sup>th</sup> Qtr	6 <sup>th</sup> Qtr	Total
1	Travel Costs (Tickets)			10,000			\$10,000.00
2	Accommodation			15,000			\$15,000.00
3	Per Diem			5,000			\$5,000.00



4	Advertisement				3,000			\$3,000.00
5	Stationary				2,000			\$2,000.00
TOTALS					35,000			\$35,000.00



**Target DLI:** **DLI 4.** Quality of Education and Research through international accreditation, research publications and improved teaching and research infrastructure.

**Timeframe:** Quarter 3 & 4

**Activity:** **4.** Promoting innovative and translational research with increasing research publications.

**Sub-Activity/Task:** **4.1** Build a research support unit (RSU) to provide data management, regulatory and compliance support to faculty and students to accelerate research and research training outputs, with competitive hiring of a bioethicist and clinical research associates.

ACTIVITY	Build a research support unit (RSU) to provide data management, regulatory and compliance support to faculty and students to accelerate research and research training outputs with competitive hiring of a bioethicist and clinical research associates.								
OUTPUT	<ul style="list-style-type: none"> <li>• Biostatistician employed</li> <li>• Clinical research associates employed</li> <li>• Functional RSU</li> </ul>								
OUTPUT INDICATOR				SOURCE OF VERIFICATION					
<ul style="list-style-type: none"> <li>• Approval of manuals/protocols for procedures for IRB submission and biostatistical support by WAGMC Management Committee</li> <li>• Utilization of RSU by faculty and students</li> <li>• Timely submission of IRB and other research compliance related documents to College and University units</li> <li>• Quality of manuscripts submitted for peer-review</li> <li>• Timely graduation of students</li> </ul>				<ul style="list-style-type: none"> <li>• WAGMC Secretariat</li> <li>• College of Health Sciences</li> <li>• Institutional Review Board, College of Health Sciences.</li> </ul>					
IMPLEMENTATION MILESTONES	<ul style="list-style-type: none"> <li>• August 2019 - Advertisement for vacancies</li> <li>• November, 2019 - Recruit Bioethicist and Clinical Research Associates</li> <li>• February, 2020 – Manuals/Protocols for Procedures for IRB submission and Biostatistical support developed</li> </ul>								
PROCUREMENT	N/A								
RESPONSIBILITY FOR IMPLEMENTATION	<ul style="list-style-type: none"> <li>• Prof. Ofori-Acquah, Centre Leader</li> <li>• Melissa Nuno, Centre Administrator</li> <li>• Dr. Adu Dwomoa, Research Coordinator</li> <li>• Dr. Kudzi, M&amp;E Officer</li> <li>• Communications Officer</li> </ul>								
DURATION: 6 months			Commencement: August, 2019			Completion: Feb. 2020			
PRIMARY CONSTITUENTS:				PARTICIPANTS:					
<ul style="list-style-type: none"> <li>• Students and Faculty of WAGMC</li> </ul>				<ul style="list-style-type: none"> <li>• Prof. Ofori-Acquah, Centre Leader</li> <li>• Prof. Renner, Deputy Centre Leader</li> <li>• Faculty Allied Health Sciences</li> <li>• College Secretary, College of Health Sciences</li> </ul>					
ASSUMPTIONS	Application from qualified and interested scientists								
FINANCIAL IMPLICATIONS/BUDGET LINE	Salaries of new recruits and working tools such as software, computers/laptops from ACE								
Budget Line Analysis		1 <sup>st</sup> Qtr	2 <sup>nd</sup> Qtr	3 <sup>rd</sup> Qtr	4 <sup>th</sup> Qtr	5 <sup>th</sup> Qtr	6 <sup>th</sup> Qtr	Total	
1	Advertisement of vacancies			0	0			\$0.00	
2	Salary			10,000	10,000			\$20,000.00	
3	Software and hardware to set up Unit				10,000			\$10,000.00	
TOTALS				\$10,000	\$20,000			\$30,000.00	

**Target DLI:** **DLI 4.** Quality of Education and Research through international accreditation, research publications and improved teaching and research infrastructure Upgrade and refurbish labs to support faculty and student research

**Timeframe:** Quarter 3 & 4

**Activity:** 4. Promoting innovative and translational research with increasing research publications

**Sub-Activity/Task:** 4.2 Support short training visits for faculty and students outside WAGMC

ACTIVITY	Support short training visits for faculty and students outside WAGMC							
OUTPUT	<ul style="list-style-type: none"> <li>Students exposed to real industry processes and procedures and application research with sectoral and national partners</li> <li>Exchange visits between staff across national and regional partner institutions</li> </ul>							
<b>OUTPUT INDICATOR</b> <ul style="list-style-type: none"> <li>New exchange opportunities for WAGMC students and faculty with both national and regional partners</li> </ul>				<b>SOURCE OF VERIFICATION</b> <ul style="list-style-type: none"> <li>WAGMC Secretariat</li> <li>Research Coordinator</li> <li>National and Regional partners</li> </ul>				
IMPLEMENTATION MILESTONES	<ul style="list-style-type: none"> <li>May 2019 - Assessment of training needs of students and faculty to guide outreach attachments</li> <li>July 2019 – Match training needs with partner institutions with appropriate training facilities</li> <li>Dec. 2019 - Commence exchange visits for regional trainees</li> </ul>							
PROCUREMENT								
RESPONSIBILITY FOR IMPLEMENTATION	<ul style="list-style-type: none"> <li>Prof. Ofori-Acquah, Centre Leader</li> <li>Prof. Renner, Deputy Centre Leader</li> <li>Melissa Nuno, Centre Administrator</li> <li>Dr. Annabella Opere-Henaku, Training and Education Coordinator</li> <li>Dr. Yvonne Dei-Adomako, Sectoral Liaison Officer</li> </ul>							
DURATION: 12 months		Commencement: May 2019			Completion: June 2020			
PRIMARY CONSTITUENTS: Faculty and Students of WAGMC				PARTICIPANTS: <ul style="list-style-type: none"> <li>Prof. Ofori-Acquah, Centre Leader</li> <li>Prof. Renner, Deputy Centre Leader</li> <li>Melissa Nuno, Centre Administrator</li> <li>Dr. Annabella Opere-Henaku, Training and Education Coordinator</li> <li>Dr. Yvonne Dei-Adomako, Sectoral Liaison Officer</li> <li>National and Regional Partners</li> </ul>				
ASSUMPTIONS	Matching of student research interests with partners in industry and health institutions Matching of training needs of faculty and staff with partners in industry and health institutions							
FINANCIAL IMPLICATIONS/BUDGET LINE		Travel, accommodation and per diem from ACE budget						
Budget Line Analysis		1 <sup>st</sup> Qtr	2 <sup>nd</sup> Qtr	3 <sup>rd</sup> Qtr	4 <sup>th</sup> Qtr	5 <sup>th</sup> Qtr	6 <sup>th</sup> Qtr	Total
1	Travel Cost (Tickets)			10,000	15,000			\$25,000.00
2	Accommodation			5,000	10,000			\$15,000.00
3	Per Diem			2,000	3000			\$5,000.00
TOTALS				\$17,000	\$28,000			\$45,000.00

**Target DLI:** **DLI 4.** Quality of Education and Research through international accreditation, research publications and improved teaching and research infrastructure Upgrade and refurbish labs to support faculty and student research

**Timeframe:** Quarter 3 & 4

**Activity:** **4.** Promoting innovative and translational research with increasing research publications

**Sub-Activity/Task:** **4.3** Determine the birth frequency, and the molecular bases of sickle-beta thalassemia (sickle-beta zero, and sickle beta-plus) in Ghana

ACTIVITY	Initiate a study to determine the birth frequency, and the molecular bases of sickle-beta thalassemia (sickle-beta zero, and sickle beta-plus) in Ghana							
OUTPUT	<ul style="list-style-type: none"> <li>Sites identified to commence data collection</li> <li>Study coordinators assigned to oversee and monitor the study</li> <li>Clinicians assigned to various sites to begin data collection</li> </ul>							
OUTPUT INDICATOR	<ul style="list-style-type: none"> <li>Data collection and analysis</li> <li>Development of effective policies</li> </ul>			SOURCE OF VERIFICATION				
				<ul style="list-style-type: none"> <li>WAGMC Secretariat</li> <li>Research Coordinator</li> <li>National and Regional partners</li> </ul>				
IMPLEMENTATION MILESTONES	<ul style="list-style-type: none"> <li>July 2019 – Begin writing proposal for study</li> <li>Aug. 2019 – Finalize proposal and seek ethics approval</li> <li>Oct. 2019 and continuous – Begin data and sample collection</li> <li>Dec. 2019 and continuous – Begin sample testing and analysis</li> </ul>							
PROCUREMENT	Consumables and reagents							
RESPONSIBILITY FOR IMPLEMENTATION	<ul style="list-style-type: none"> <li>Prof. Ofori-Acquah, Centre Leader</li> <li>Prof. Renner, Deputy Centre Leader</li> <li>Dr. Adu Dwomoa, Research Coordinator</li> <li>Research Fellows</li> </ul>							
DURATION: 12 months	Commencement: July 2019			Completion: June 2020				
PRIMARY CONSTITUENTS:	<ul style="list-style-type: none"> <li>WAGMC Students</li> <li>Patients</li> <li>Health Care Institutions</li> <li>National and Regional Partners</li> </ul>			PARTICIPANTS:				
				<ul style="list-style-type: none"> <li>Prof. Ofori-Acquah, Centre Leader</li> <li>Prof. Renner, Deputy Centre Leader</li> <li>Dr. Adu Dwomoa, Research Coordinator</li> <li>Research Fellows</li> <li>Recruited participants</li> <li>Health Care Institutions</li> </ul>				
ASSUMPTIONS	All protocols regarding research studies and ethics duly followed							
FINANCIAL IMPLICATIONS/BUDGET LINE	Budget from ACE							
Budget Line Analysis		1 <sup>st</sup> Qtr	2 <sup>nd</sup> Qtr	3 <sup>rd</sup> Qtr	4 <sup>th</sup> Qtr	5 <sup>th</sup> Qtr	6 <sup>th</sup> Qtr	Total
1	Field work			10,000	10,000			\$20,000.00
2	Consumables and reagents			15,000	15,000			\$30,000.00
TOTALS				25,000	25,000			\$50,000.00

**Target DLI:** **DLI.4** Quality of Education and research through international accreditation, research publications and improved teaching and research infrastructure

**Timeframe:** Quarter 3 & 4

**Activity:** 4. Promoting innovative and translational research with increasing research publications

**Sub-Activity/Task:** 4.4 Initiate joint genomics research projects with regional and national partners

ACTIVITY	Initiate joint genomics research projects with regional and national partners						
OUTPUT	Research projects yielding translatable results						
OUTPUT INDICATOR	<ul style="list-style-type: none"> <li>Number of collaborative research projects between Centre and partner institutions</li> <li>Number of students co-supervised by regional faculty</li> <li>Number of regionally co-authored publications</li> </ul>					SOURCE OF VERIFICATION	
						<ul style="list-style-type: none"> <li>WAGMC Secretariat</li> <li>National and Regional Partners</li> </ul>	
IMPLEMENTATION MILESTONES	<ul style="list-style-type: none"> <li>Jan. 2019 – Approve proposal of joint research</li> <li>March. 2020 – Establish sub-award with partner institutions</li> <li>Jan. 2020 - Begin collaborative research and training at partner institutions</li> </ul>						
PROCUREMENT	Equipment, reagents and consumables						
RESPONSIBILITY FOR IMPLEMENTATION	<ul style="list-style-type: none"> <li>Prof. Ofori-Acquah, Centre Leader</li> <li>Prof. Renner, Deputy Centre Leader</li> <li>Dr. Adu Dwomoa, Research Coordinator</li> <li>Regional and National partners</li> <li>Research Fellows</li> </ul>						
DURATION: Continuous	Commencement: July 2019			Completion: Continuous			
PRIMARY CONSTITUENTS:	<ul style="list-style-type: none"> <li>National and regional students</li> <li>Research fellows of WAGMC</li> <li>Faculty of Allied Health Sciences</li> </ul>			PARTICIPANTS:			
				<ul style="list-style-type: none"> <li>Prof. Ofori-Acquah, Centre Leader</li> <li>Prof. Renner, Deputy Centre Leader</li> <li>Dr. Adu Dwomoa, Research Coordinator</li> <li>Research Fellows</li> <li>Regional and National partners</li> <li>Isaiah Agbovie Buertey, Procurement Officer</li> <li>Joseph Honny, Finance Officer</li> <li>ORID</li> </ul>			
ASSUMPTIONS	Interested partners willing to collaborate with WAGMC faculty on research projects						
FINANCIAL IMPLICATIONS/BUDGET LINE	Field work, reagents and consumables cost from ACE budget and partner institutions						
Budget Line Analysis	1 <sup>st</sup> Qtr	2 <sup>nd</sup> Qtr	3 <sup>rd</sup> Qtr	4 <sup>th</sup> Qtr	5 <sup>th</sup> Qtr	6 <sup>th</sup> Qtr	Total
1	Research cost		15,000	15,000			\$30,000.00
2	Supplies and Reagents		15,000	15,000			\$30,000.00
3	Publications			20,000			\$20,000.00
TOTALS			30,000	50,000.00			\$80,000.00

**Target DLI:** **DLI 4.** Quality of Education and Research through international accreditation, research publications and improved teaching and research infrastructure Upgrade and refurbish labs to support faculty and student research

**Timeframe:** Quarter 3

**Activity:** **4.** Promoting innovative and translational research with increasing research publications

**Sub-Activity/Task:** **4.5** Recruit two full time staff scientists to support student training and development of new assays, grant applications and scientific writing.

ACTIVITY	Recruit two full time staff scientists to support student training and development of new assays, grant applications and scientific writing						
OUTPUT	<ul style="list-style-type: none"> <li>Two new research fellows hired</li> <li>Efficient organization and execution of student research projects</li> <li>Efficient coordination of preparation and submission of grant proposals</li> <li>Efficient coordination of preparation and submission of research publications</li> </ul>						
OUTPUT INDICATOR	<ul style="list-style-type: none"> <li>Number of publications and conference abstracts</li> <li>Number of grant applications submitted</li> <li>Percentage of on-time execution of Centre research projects</li> </ul>				SOURCE OF VERIFICATION		
					<ul style="list-style-type: none"> <li>WAGMC Secretariat</li> <li>College of Health Sciences</li> <li>ORID</li> </ul>		
IMPLEMENTATION MILESTONES	<ul style="list-style-type: none"> <li>Jan, 2020 – Recruit two research fellows</li> <li>Feb. 2020 – Submit grant applications</li> <li>July, 2020 – Commencement grant writing workshops</li> </ul>						
PROCUREMENT	Working tools for new staff						
RESPONSIBILITY FOR IMPLEMENTATION	<ul style="list-style-type: none"> <li>Prof. Ofori-Acquah, Centre Leader</li> <li>Melissa Nuno, Centre Administrator</li> <li>Dr. Adu Dwomoa, Research Coordinator</li> <li>Dr. Kudzi, M&amp;E Officer</li> <li>Communications Officer</li> </ul>						
DURATION: 12 months	Commencement: August 2019			Completion: July 2020			
PRIMARY CONSTITUENTS: WAGMC faculty WAGMC Students	PARTICIPANTS: <ul style="list-style-type: none"> <li>Prof. Ofori-Acquah, Centre Leader</li> <li>Prof. Renner, Deputy Centre Leader</li> <li>Melissa Nuno, Centre Administrator</li> <li>Dr. Adu Dwomoa, Research Coordinator</li> <li>Dr. Kudzi, M&amp;E Officer</li> <li>Communications Officer</li> <li>ORID</li> </ul>						
ASSUMPTIONS	Receive qualified applicants for positions of research fellows						
FINANCIAL IMPLICATIONS/BUDGET LINE	Salary						
Budget Line Analysis	1 <sup>st</sup> Qtr	2 <sup>nd</sup> Qtr	3 <sup>rd</sup> Qtr	4 <sup>th</sup> Qtr	5 <sup>th</sup> Qtr	6 <sup>th</sup> Qtr	Total
1 Salary			10,000	10,000			\$20,000.00
2 Office equipment and furniture			7,000				\$7,000.00
3 Software			3,000				\$3,000.00
TOTALS			20,000	10,000			\$30,000.00

**Target DLI:** **DLI 4.** Quality of Education and Research through international accreditation, research publications and improved teaching and research infrastructure Upgrade and refurbish labs to support faculty and student research

**Timeframe:** Quarter 3 & 4

**Activity:** 4. Promoting innovative and translational research with increasing research publications

**Sub-Activity/Task:** 4.6 Investigate the molecular bases of rare genetic disorders in Ghana

ACTIVITY	Investigate the molecular bases of rare genetic disorders in Ghana						
OUTPUT	<ul style="list-style-type: none"> <li>Report of investigation into the molecular bases of rare genetic disorders in Ghana</li> </ul>						
OUTPUT INDICATOR	<ul style="list-style-type: none"> <li>Data collection and analysis</li> <li>Development of effective policies</li> </ul>				SOURCE OF VERIFICATION		
					<ul style="list-style-type: none"> <li>WAGMC Secretariat</li> <li>Office of Research and Innovative and Development (ORID)</li> </ul>		
IMPLEMENTATION MILESTONES	<ul style="list-style-type: none"> <li>June, 2019 – Begin writing proposal for study</li> <li>Aug. 2019 – Finalize proposal and seek ethics approval</li> <li>Oct. 2019 to April, 2020 – Begin data and sample collection</li> <li>Dec. 2019 to May, 2020 – Begin sample testing and analysis</li> </ul>						
PROCUREMENT	Reagents and Supplies						
RESPONSIBILITY FOR IMPLEMENTATION	<ul style="list-style-type: none"> <li>Prof. Ofori-Acquah, Centre Leader</li> <li>Prof. Renner, Deputy Centre Leader</li> <li>Dr. Kudzi, M&amp;E Officer</li> <li>Dr. Adu Dwomoa, Research Coordinator</li> <li>Research Fellows</li> </ul>						
DURATION: 12 months	Commencement: June 2019			Completion: May 2020			
PRIMARY CONSTITUENTS:	<ul style="list-style-type: none"> <li>WAGMC Students</li> <li>Health Care Institutions</li> <li>Patients</li> </ul>			PARTICIPANTS:			
				<ul style="list-style-type: none"> <li>Prof. Ofori-Acquah, Centre Leader</li> <li>Prof. Renner, Deputy Centre Leader</li> <li>Melissa Nuno, Centre Administrator</li> <li>Dr. Adu Dwomoa, Research Coordinator</li> <li>Dr. Kudzi, M&amp;E Officer</li> <li>Research Fellows</li> <li>ORID</li> <li>Health Care Institutions</li> </ul>			
ASSUMPTIONS	All protocols and ethics procedures followed and approvals received.						
FINANCIAL IMPLICATIONS/BUDGET LINE	Budget from ACE						
Budget Line Analysis	1 <sup>st</sup> Qtr	2 <sup>nd</sup> Qtr	3 <sup>rd</sup> Qtr	4 <sup>th</sup> Qtr	5 <sup>th</sup> Qtr	6 <sup>th</sup> Qtr	Total
1	Field Work		15,000	15,000			\$30,000.00
2	Reagents and Supplies		15,000	15,000			\$30,000.00
TOTALS			30,000	30,000			\$60,000.00

**Target DLI:** **DLI 4.** Quality of Education and Research through international accreditation, research publications and improved teaching and research infrastructure Upgrade and refurbish labs to support faculty and student research

**Timeframe:** Quarter 3 & 4

**Activity:** 4. Promoting innovation and translation research with increasing research publications and improved teaching and research infrastructure

**Sub-Activity/Task:** 4.7 Support Centre projects in laboratories that provide students high quality experience in research and mentoring.

ACTIVITY	Support Centre projects in laboratories that provide students with high quality experience in research and mentoring							
OUTPUT	<ul style="list-style-type: none"> <li>• Experiential research for WAGMC students</li> <li>• Increased faculty and student collaborative research</li> </ul>							
OUTPUT INDICATOR	<ul style="list-style-type: none"> <li>• Joint faculty-student publications</li> <li>• Number of students presenting research at international conferences</li> </ul>					SOURCE OF VERIFICATION		
						<ul style="list-style-type: none"> <li>• WAGMC Secretariat</li> <li>• WAGMC Faculty</li> <li>• WAGMC Students</li> </ul>		
IMPLEMENTATION MILESTONES	<ul style="list-style-type: none"> <li>• Sept. 2019 – Select ongoing faculty research projects on which trainees can be attached for experiential learning</li> <li>• Oct. 2010 – assess specific reagents and consumables to be procured for ongoing projects</li> <li>• Oct. 2019 – Procurement of reagents and consumables</li> <li>• Dec. 2019 - continued attachment of students to ongoing research projects</li> </ul>							
PROCUREMENT	Reagents and consumables							
RESPONSIBILITY FOR IMPLEMENTATION	<ul style="list-style-type: none"> <li>• Prof. Ofori-Acquah, Centre Leader</li> <li>• Prof. Renner, Deputy Centre Leader</li> <li>• Melissa Nuno, Centre Administrator</li> <li>• Dr. Adu Dwomoa, Research Coordinator</li> <li>• Dr. Annabella Opere-Henaku, Training and Education Coordinator</li> <li>• Isaiah Agbovie Buerthey, Procurement Officer</li> <li>• Joseph Honny, Accounts Officer</li> </ul>							
DURATION: Continuous	Commencement: Sept 2019			Completion: Continuous				
PRIMARY CONSTITUENTS:	<ul style="list-style-type: none"> <li>• Allied Health Sciences Faculty</li> <li>• Students of WAGMC</li> </ul>			PARTICIPANTS:				
				<ul style="list-style-type: none"> <li>• Prof. Ofori-Acquah, Centre Leader</li> <li>• Prof. Renner, Deputy Centre Leader</li> <li>• Melissa Nuno, Centre Administrator</li> <li>• Dr. Adu Dwomoa, Research Coordinator</li> <li>• Dr. Annabella Opere-Henaku, Training and Education Coordinator</li> </ul>				
ASSUMPTIONS	Availability of ongoing research projects that suit student's area of research							
FINANCIAL IMPLICATIONS/BUDGET LINE	Reagents and Consumables							
Budget Line Analysis		1 <sup>st</sup> Qtr	2 <sup>nd</sup> Qtr	3 <sup>rd</sup> Qtr	4 <sup>th</sup> Qtr	5 <sup>th</sup> Qtr	6 <sup>th</sup> Qtr	Total
1	Reagents			20,000	20,000			\$40,000.00
2	Supplies and Consumables			20,000	20,000			\$40,000.00
TOTALS				40,000	40,000			\$80,000.00



**Target DLI:** **DLI 5.** Relevance of Education and Research through externally generated revenue, internships, and entrepreneurship.

**Timeframe:** Quarter 4

**Activity:** **5.** Affirming relevance of education and research through externally generated revenue, internships, and entrepreneurship.

**Sub-Activity/Task:** **5.1** Support faculty to work together with regional and international partners to sustain collaborative extramural funding to support genomics research.

ACTIVITY	Support faculty to work together with regional and international partners to sustain collaborative extramural funding to support genomics research.						
OUTPUT	<ul style="list-style-type: none"> <li>• Advancement of research by faculty</li> <li>• Increase in faculty derived funding for Centre's research projects</li> <li>• Increased faculty collaboration with regional and international partners</li> </ul>						
OUTPUT INDICATOR	<ul style="list-style-type: none"> <li>• Increase in faculty co-authored publications</li> <li>• Number of students presenting research at international conferences</li> <li>• Increased collaboration for relational research results which are applicable to developmental challenges</li> </ul>					SOURCE OF VERIFICATION	
						<ul style="list-style-type: none"> <li>• WAGMC Secretariat</li> <li>• WAGMC Faculty</li> <li>• Regional and International partners</li> </ul>	
IMPLEMENTATION MILESTONES	<ul style="list-style-type: none"> <li>• Oct. 2019 – Identify partners with similar research interests as faculty members</li> <li>• Nov. 2010 – Submit proposals requesting collaboration with faculty</li> <li>• Nov. 2019 – Commence and continue collaborative efforts to win grants for research</li> </ul>						
PROCUREMENT	N/A						
RESPONSIBILITY FOR IMPLEMENTATION	<ul style="list-style-type: none"> <li>• Prof. Ofori-Acquah, Centre Leader</li> <li>• Prof. Renner, Deputy Centre Leader</li> <li>• Melissa Nuno, Centre Administrator</li> <li>• Dr. Adu Dwomoa, Research Coordinator</li> <li>• Dr. Kudzi, M&amp;E Officer</li> </ul>						
DURATION: Continuous	Commencement: Oct. 2019			Completion: Continuous			
PRIMARY CONSTITUENTS:	<ul style="list-style-type: none"> <li>• Allied Health Sciences Faculty</li> <li>• Students of WAGMC</li> </ul>			PARTICIPANTS:			
				<ul style="list-style-type: none"> <li>• Prof. Ofori-Acquah, Centre Leader</li> <li>• Prof. Renner, Deputy Centre Leader</li> <li>• Melissa Nuno, Centre Administrator</li> <li>• Dr. Adu Dwomoa, Research Coordinator</li> <li>• Research fellows</li> </ul>			
ASSUMPTIONS	Strong relations with industry partners that will foster collaboration						
FINANCIAL IMPLICATIONS/BUDGET LINE	Travel & Accommodation						
Budget Line Analysis	1 <sup>st</sup> Qtr	2 <sup>nd</sup> Qtr	3 <sup>rd</sup> Qtr	4 <sup>th</sup> Qtr	5 <sup>th</sup> Qtr	6 <sup>th</sup> Qtr	Total
1	Travel Cost (Tickets)			10,000			\$10,000.00
2	Accommodation			5,000			\$5,000.00
3	Per Diem			2,500			\$2,500.00
4	Conference Fees			2,500			\$2,500.00
TOTALS				20,000			\$20,000.00

**Target DLI:** **DLI 5.** Relevance of Education and Research through externally generated revenue, internships, and entrepreneurship  
**Timeframe:** Quarter 4  
**Activity:** 5. Affirming relevance of education and research through externally generated revenue, internships, and entrepreneurship  
**Sub-Activity/Task:** 5.2 Support faculty to submit at least 3 investigator-initiated grant applications

ACTIVITY	Support faculty to submit at least 3 investigator-initiated grant applications						
OUTPUT	Increased number of research grants submissions by faculty						
OUTPUT INDICATOR	<ul style="list-style-type: none"> <li>Number of research projects available to students</li> <li>Funding opportunities for students who work with faculty members with grants</li> <li>Co-author opportunities for faculty</li> </ul>					SOURCE OF VERIFICATION	
						<ul style="list-style-type: none"> <li>WAGMC Secretariat</li> <li>WAGMC Faculty</li> <li>ORID</li> </ul>	
IMPLEMENTATION MILESTONES	<ul style="list-style-type: none"> <li>Oct 2019 – Provide faculty with proposal writing support</li> <li>Dec 2019 - Submission of proposal to donor bodies</li> </ul>						
PROCUREMENT	N/A						
RESPONSIBILITY FOR IMPLEMENTATION	<ul style="list-style-type: none"> <li>Prof. Ofori-Acquah, Centre Leader</li> <li>Prof. Renner, Deputy Centre Leader</li> <li>Dr. Adu Dwomoa, Research Coordinator</li> <li>Research Fellows</li> </ul>						
DURATION: 12 months	Commencement: Oct 2019				Completion: Continuous		
PRIMARY CONSTITUENTS:	<ul style="list-style-type: none"> <li>WAGMC faculty</li> </ul>			PARTICIPANTS:			
				<ul style="list-style-type: none"> <li>Prof. Ofori-Acquah, Centre Leader</li> <li>Prof. Renner, Deputy Centre Leader</li> <li>Dr. Adu Dwomoa, Research Coordinator</li> <li>Research Fellows</li> <li>ORID</li> <li>Pro-Vice Chancellor of Research</li> </ul>			
ASSUMPTIONS	Availability of organisations which will be willing to collaborate and fund research ideas of faculty						
FINANCIAL IMPLICATIONS/BUDGET LINE	ACE budget						
Budget Line Analysis	1 <sup>st</sup> Qtr	2 <sup>nd</sup> Qtr	3 <sup>rd</sup> Qtr	4 <sup>th</sup> Qtr	5 <sup>th</sup> Qtr	6 <sup>th</sup> Qtr	Total
1 Logistics for stakeholder meetings				10,000			\$10,000.00
TOTALS				10,000			\$10,000.00

**Target DLI:** **DLI 5.** Relevance of Education and Research through externally generated revenue, internships, and entrepreneurship

**Timeframe:** Quarter 3 & 4

**Activity:** **5.** Affirming relevance of education and research through externally generated revenue, internships, and entrepreneurship

**Sub-Activity/Task:** **5.3** Support PhD and Masters students to apply for small student grants from international agencies to support their research, attendance & presentations at scientific meetings

ACTIVITY	Support PhD and Masters students to apply for small student grants from international agencies to support their research, attendance & presentations at scientific meetings							
OUTPUT	Increased number of grant submissions by students							
OUTPUT INDICATOR	<ul style="list-style-type: none"> <li>Students improve their proposal writing ability</li> <li>Increased number of approved grants for students</li> </ul>				SOURCE OF VERIFICATION			
					<ul style="list-style-type: none"> <li>WAGMC Secretariat</li> <li>International Agencies and Donor Bodies</li> </ul>			
IMPLEMENTATION MILESTONES	<ul style="list-style-type: none"> <li>Sept. 2019 – Identify suitable opportunities for scholarships, fellowships and travel awards</li> <li>Oct. 2019 – Assign research fellows and faculty to help students develop proposals</li> <li>Nov. 2019 – Hold proposal writing workshops</li> <li>Dec. 2019 – Review draft proposals</li> <li>Feb. 2020 and continuous - Submit proposal to donor agencies or potential private sector sponsors</li> </ul>							
PROCUREMENT	N/A							
RESPONSIBILITY FOR IMPLEMENTATION	<ul style="list-style-type: none"> <li>Dr. Adu Dwomoa, Research Coordinator</li> <li>Research Fellows</li> </ul>							
DURATION: Continuous	Commencement: October 2019			Completion: Continuous				
PRIMARY CONSTITUENTS:	<ul style="list-style-type: none"> <li>WAGMC students</li> </ul>				PARTICIPANTS:			
					<ul style="list-style-type: none"> <li>Prof. Ofori-Acquah, Centre Leader</li> <li>Prof. Renner, Deputy Centre Leader</li> <li>Melissa Nuno, Centre Administrator</li> <li>Dr. Adu Dwomoa, Research Coordinator</li> <li>Research Fellows</li> <li>ORID</li> <li>Pro-Vice Chancellor of Research</li> </ul>			
ASSUMPTIONS	Availability of grants that students can take advantage off							
FINANCIAL IMPLICATIONS/BUDGET LINE	Meeting venues, catering, travel							
Budget Line Analysis		1 <sup>st</sup> Qtr	2 <sup>nd</sup> Qtr	3 <sup>rd</sup> Qtr	4 <sup>th</sup> Qtr	5 <sup>th</sup> Qtr	6 <sup>th</sup> Qtr	Total
1	Workshop and meeting logistics			5,000	5,000			\$10,000.00
TOTALS				5,000	5,000			\$10,000.00

**Target DLI:** **DLI 5.** Relevance of Education and Research through externally generated revenue, internships, and entrepreneurship

**Timeframe:** Quarter 4

**Activity:** **5.** Affirming relevance of education and research through externally generated revenue, internships, and entrepreneurship

**Sub-Activity/Task:** **5.4** Secure internships for Centre graduates to receive practical training with sectoral partners

ACTIVITY	Secure internships for Centre graduates to receive practical training with sectoral partners						
OUTPUT	Increase number of internships undertaken by students						
OUTPUT INDICATOR	<ul style="list-style-type: none"> <li>Number of students who participate in internships with sectoral partners</li> </ul>			SOURCE OF VERIFICATION			
				<ul style="list-style-type: none"> <li>WAGMC Secretariat</li> <li>Research Fellows</li> <li>Sectoral Partners</li> </ul>			
IMPLEMENTATION MILESTONES	<ul style="list-style-type: none"> <li>Oct. 2019 – Engage organisations for internship opportunities</li> <li>Nov. 2019 – Publish internship opportunities</li> </ul>						
PROCUREMENT	N/A						
RESPONSIBILITY FOR IMPLEMENTATION	<ul style="list-style-type: none"> <li>Prof. Ofori-Acquah, Centre Leader</li> <li>Prof. Renner, Deputy Centre Leader</li> <li>Melissa Nuno, Centre Administrator</li> <li>Dr. Yvonne Dei-Adomakoh</li> <li>Dr. Adu Dwomoa, Research Coordinator</li> </ul>						
DURATION: Continuous	Commencement: October 2019			Completion: Continuous			
PRIMARY CONSTITUENTS:	<ul style="list-style-type: none"> <li>Graduate students of WAGMC</li> </ul>			PARTICIPANTS:			
				<ul style="list-style-type: none"> <li>Prof. Ofori-Acquah Centre Leader</li> <li>Prof. Renner, Deputy Centre Leader</li> <li>Melissa Nuno, Centre Administrator</li> <li>Dr. Adu Dwomoa, Research Coordinator</li> <li>Research Fellows</li> <li>Pro-Vice Chancellor of Research</li> </ul>			
ASSUMPTIONS	Partner organisations willing to collaborate with WAGMC to create internship opportunities.						
FINANCIAL IMPLICATIONS/BUDGET LINE	N/A						
Budget Line Analysis	1 <sup>st</sup> Qtr	2 <sup>nd</sup> Qtr	3 <sup>rd</sup> Qtr	4 <sup>th</sup> Qtr	5 <sup>th</sup> Qtr	6 <sup>th</sup> Qtr	Total
1			0				\$0.00
TOTALS			0				\$0.00

**Target DLI:** **DLI 5.** Relevance of Education and Research through externally generated revenue, internships, and entrepreneurship  
**Timeframe:** Quarter 4  
**Activity:** 5. Affirming relevance of education and research through externally generated revenue, internships, and entrepreneurship  
**Sub-Activity/Task:** 5.5 Set up a DNA diagnosis confirmation unit for sickle cell disease

ACTIVITY	Set up a DNA diagnosis confirmation unit for sickle cell disease							
OUTPUT	Functioning unit for molecular diagnosis of sickle cell disease							
OUTPUT INDICATOR				SOURCE OF VERIFICATION				
<ul style="list-style-type: none"> <li>Increased number of patients tested for Sickle cell status</li> <li>Increased number of professionals trained to provide service to patients after diagnosis</li> </ul>				<ul style="list-style-type: none"> <li>Centre Secretariat</li> <li>Sickle Cell Foundation of Ghana</li> <li>UGMC</li> </ul>				
IMPLEMENTATION MILESTONES	<ul style="list-style-type: none"> <li>Dec. 2019 - DNA diagnosis unit set up</li> <li>Train laboratory technicians and relevant staff on maintenance and use of equipment</li> <li>Software training for relevant staff</li> </ul>							
PROCUREMENT	Equipment, reagents, consumables							
RESPONSIBILITY FOR IMPLEMENTATION	<ul style="list-style-type: none"> <li>Prof. Ofori-Acquah, Centre Leader</li> <li>Prof. Renner, Deputy Centre Leader</li> <li>Dr. Adu Dwomoa, Research Coordinator</li> <li>Research Fellows</li> </ul>							
DURATION: Continuous		Commencement: Dec. 2019			Completion: Continuous			
PRIMARY CONSTITUENTS:				PARTICIPANTS:				
<ul style="list-style-type: none"> <li>Patients</li> <li>Health professionals</li> <li>Students of WAGMC</li> </ul>				<ul style="list-style-type: none"> <li>Prof. Ofori-Acquah, Centre Leader</li> <li>Prof. Renner, Deputy Centre Leader</li> <li>Dr. Adu Dwomoa, Research Coordinator</li> <li>Research Fellows</li> </ul>				
ASSUMPTIONS	All necessary approvals and certification for laboratory received							
FINANCIAL IMPLICATIONS/BUDGET LINE	ACE Budget							
Budget Line Analysis		1 <sup>st</sup> Qtr	2 <sup>nd</sup> Qtr	3 <sup>rd</sup> Qtr	4 <sup>th</sup> Qtr	5 <sup>th</sup> Qtr	6 <sup>th</sup> Qtr	Total
1	Laboratory equipment				30,000			\$30,000.00
2	Software				10,000			\$10,000.00
3	Reagents and Consumables				30,000			\$30,000.00
TOTALS					70,000			\$70,000.00

**Target DLI:**

**Timeframe:**

**Activity:**

**Sub-Activity/Task:**

**DLI 6.** Timeliness and quality of fiduciary management

Quarter 3

**6.** Promoting timeliness and quality of fiduciary management

**6.1** Publish the approved budget, annual work plan and the financial and procurement manuals of the Centre on the Centre's website to demonstrate transparency of expenses

ACTIVITY	Publish the approved budget, annual work plan and the financial and procurement manuals of the Centre on the center's websites to demonstrate transparency of expenses						
OUTPUT	Approved budget, annual work plan and the financial and procurement manuals published on website						
OUTPUT INDICATOR	<ul style="list-style-type: none"> <li>Access to budget, annual work plan and the financial and procurement manuals</li> </ul>					SOURCE OF VERIFICATION	
						<ul style="list-style-type: none"> <li>Centre Website</li> </ul>	
IMPLEMENTATION MILESTONES	<ul style="list-style-type: none"> <li>Sept. 2019 - Continuous</li> </ul>						
PROCUREMENT	N/A						
RESPONSIBILITY FOR IMPLEMENTATION	<ul style="list-style-type: none"> <li>Prof. Ofori-Acquah, Centre Leader</li> <li>Prof. Lorna Renner, Deputy Centre Leader</li> <li>Melissa Nuno, Centre Administrator</li> <li>Dr. Kudzi, M&amp;E Officer</li> <li>Communications Officer</li> </ul>						
DURATION: Continuous	Commencement: Sept. 2019			Completion: Continuous			
PRIMARY CONSTITUENTS: <ul style="list-style-type: none"> <li>Students</li> <li>Staff and faculty</li> <li>Partners</li> <li>General public</li> </ul>				PARTICIPANTS: <ul style="list-style-type: none"> <li>Prof. Ofori-Acquah, Center Leader</li> <li>Prof. Lorna Renner, Deputy Centre Leader</li> <li>Melissa Nuno, Center Administrator</li> <li>Dr. Kudzi, M&amp;E Officer</li> </ul>			
ASSUMPTIONS	Efficient and effective documentation of operations of the Centre						
FINANCIAL IMPLICATIONS/BUDGET LINE	N/A						
Budget Line Analysis	1 <sup>st</sup> Qtr	2 <sup>nd</sup> Qtr	3 <sup>rd</sup> Qtr	4 <sup>th</sup> Qtr	5 <sup>th</sup> Qtr	6 <sup>th</sup> Qtr	Total
1	Publication of reports		0.00				\$0.00
TOTALS			0.00				\$0.00

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