**Application for Science Collaboration Symposium**

**Kingdom of Saudi Arabia**

**Attending Countries: UK and Gulf Corporation Council Countries**

**Theme: Genomics & Precision Medicine**

**Dates: 15-16 February 2017**

**Background**

Genomics, the study of an organism’s complete set of genetic instructions, is revolutionising medicine.

*“As the microscope and x-rays revolutionised medicine in the 19th and 20th centuries, so knowledge of the human genome will dramatically change medicine in the 21st century”.*

- Sir Bruce Keogh Medical Director NHS England

Genomics & Precision Medicine is an emerging model of healthcare where the genetic makeup of a person or organism, and its interaction with the environment, is incorporated towards enabling better prevention, precise diagnosis and tailored treatment and management of a disease/condition. By establishing the sequence of an individual’s genetic material, it is possible to identify sequences or mutations which are specific to that person. Not only can these sequences identify the cause or stage of a disease, or the risk of future disease, they can also help us to predict the likely benefits or side effects of a particular treatment.

There is great scope for application of the Precision Medicine model in the Arab world, since many diseases have higher prevalence rates here (diabetes, heart disease, breast & colon cancer, birth defects, etc.). The UK is at the forefront for research in this field as many of the major scientific discoveries relating to genomics have been made in the UK, from the identification of the structure of DNA by Watson and Crick to the sequencing of the human genome at the Sanger Centre in Cambridge.

This Science Collaboration Symposium will be held at King Saud University in Riyadh on 15th and 16th February 2017. It will be attended by scientists from all Gulf countries: Saudi Arabia, Kuwait, United Arab Emirates, Qatar, and Oman, as well as researchers from the UK. It will invite open discussions and potential investment to encourage the creation of UK-Gulf research linkages to access the deep pool of information & technology sharing, which will catalyse new clinical and commercial benefits to populations in the GCC and the UK, adding to the fundamental knowledge needed to build an effective healthcare system where early screening, early diagnosis and effective management can significantly reduce morbidity and mortality rates.

This Symposium, organised in collaboration by the British Council, the UK Science & Innovation Network (SIN) and the Department for Business, Energy and Industrial Strategy, also encourages scientific researchers to present their stimulating work and ideas for knowledge transfer related to Genomics & Precision Medicine.

**Deadline for applications: 13th January 2017**

**Application to be sent to:** **Mariam.mujtaba@sa.britishcouncil.org**

**Part One: Personal Information**

### Contact Details

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| --- | --- |
| Your Name: |  |
| Job Title |  |
| Organisation: Address: |  |
| Telephone: |  |
| Email: |  |

### Passport-size photo of participants.

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**For purposes of issuing KSA visa, please attach a copy of your passport along with the application form.**

**What is the nature of your participation in the symposium?**

 Attend Only Present\*

\*If you wish to present at the symposium, please complete **Part Three** of this application.

### Part Two: Professional Information

### Brief CV of participant

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**Brief summary of your current research and innovation topics**

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**Added value of this activity for your organisation (200 words maximum)**

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**Do you have existing professional links with the UK or other Gulf countries? If yes, please provide a brief description (maximum 200 words).**

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**Please give a brief description of how you (or your institution) would engage with participants after the end of the symposium in order to strengthen existing or established potential future links/collaboration (maximum 200 words).**

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### Part Three: Presentation Brief

### Kindly ONLY fill this section if you would like to present at the symposium. If you are only applying to attend, please move to Part Four.

**Please note that presentation slots are limited and are chosen by a panel. Selected applicants will be informed by 10th January 2017.**

**Please tick the preferred format of your presentation**

 Digital Presentation Panel Discussion

### Title of Research presented (maximum 10 words)

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**Research Abstract (maximum 50 words)**

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### Please provide a brief summary of the research you are presenting (maximum 250 words)

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### Part Four: Expenditure breakdown – please note that a certain amount has been allocated per applicant. However, we welcome in-kind contributions. Please detail below cost for flights, accommodation and transport and whether you can cover these costs; meals will be provided and organised by the British Council/SIN/BEIS (eligible costs: economy flights, accommodation and transport in the country. Please be advised that lunches and dinners will be provided).

Please outline other eligible anticipated expenditure.

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| **Item**  | **Cost (£)** | **Self-funding: Y or N** |
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Note: Funded researchers will be contacted by SIN/BC/BEIS following the Symposium by Survey Monkey to monitor and evaluate the impact of the event.

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**Annex:**

**Saudi Arabia**

### The biomedical research sector in Saudi Arabia has lately received a lot of attention from the government, which is presently supporting extensive research aimed at improving the understanding and treatment of common diseases afflicting Saudi Arabian society. Saudi Arabia has a high incidence of genetic disease, from inherited diseases to more common diseases such as diabetes and cardiovascular diseases, which affects more than 30% of the population. These diseases have a high impact on individual quality of life for those affected, as well as a huge burden on national healthcare costs, contributing extensively to the USD$30 Billion approx. annual healthcare expenditures in the Kingdom. To build capacity for research and training, a number of centres of excellence were established in different areas of the country.

### Amongst these, is the Centre of Excellence in Genomic Medicine Research (CEGMR) at King Abdulaziz University, Jeddah, with its internationally ranked laboratory and highly qualified team performing translational research in the area of individualized medicine.

### The Saudi Human Genome project (SHGP), funded by King Abdul Aziz City for Science & Technology (KACST) is a national research project focusing on mapping the genome of the Kingdom, to study the genetic basis of disease and lay the foundation for the development of precision medicine in KSA and across the Middle East (SAR300 Million budget over 5 years). Its scope is to create a national network of 7 genome sequencing centres, particularly analysing the data to find the Saudi-specific gene variants (1 training laboratory for genome sequencing capacity building, 1 central genome sequencing production laboratory at KACST, and 5 satellite genome sequencing laboratories at sites across the Kingdom). This mammoth project is the largest and most comprehensive gene discovery effort ever undertaken anywhere in the world, which contributes to, and amplifies the scope for future research and developments of personalized medicine and genomic sciences.

### This opens doors for substantial research and development to find the genes and gene variants that cause these diseases so that those at risk can be identified and given proper preventative counselling, and so that rational therapies can be formulated, with the core theme of Personalized Medicine.

**Qatar:**

### The Qatar Biobank was created by Qatar Foundation in collaboration with Hamad Medical Corporation and the Ministry of Public Health to conduct medical research on prevalent health issues in Qatar. Initially, the pilot project was supported by scientists from Imperial College London to collect samples and information from the population of Qatar. The Qatar Genome Programme is managed by the Qatar Genome Committee and incubated by the Qatar Biobank to perform a comprehensive analysis of Qatari genomes to develop personalised healthcare through precision medicine. Research is carried out at different research centres in Qatar, such as Sidra. So far, the Programme has sequenced and analysed the DNA of 3,000 healthy Qataris who will represent the reference genome. The programme is now moving on to another 3,000 people, focusing on rare diseases, cardiovascular issues and diabetes. By 2019, the Programme aims to have collected the DNA of 60,000 participants.

**UAE:**

The field of genetics drew great attention in recent years in the UAE. As a result, the science of genetics became an integral part of biology and medical science academic curricula. Likewise, genetic research developed simultaneously and now has a rich pool of talented researchers and professionals, as well as centres providing genetic services. However, considering the high number of genetic disorders among the UAE population, much more genetic infrastructure needs to be developed in the near future. There are a number of researchers in the UAE with interests ranging from basic to clinical genetics. The "Genetics and Development Research Priority Group" based in the Faculty of Medicine and Health Sciences (FMHS) in Al-Ain is the most active genetic research group in the UAE. One focus of this group is in the area of birth defects and congenital abnormalities.

The Genetics and Development Research Priority Group is very active in genomic research in UAE. In additional to the local collaboration within the UAE such as UAE Ministry of Health and Centre of Arab Genomics Studies , they have an international collaboration with UK and USA leading universities such as Cambridge , Birmingham , Harvard and California.

**Oman:**

The Sultanate of Oman, like many other Arab countries, has relatively high rates of consanguinity. Reports propose that evidence of inborn errors of metabolism (IEM) is also high in Oman. This reflective cross-sectional study was intended to evaluate the number of patients with IEM being followed at the two tertiary centres in Oman treating such patients, and to calculate the consanguinity rates among these families. The electronic medical records of all patients were reviewed for demographic and clinical characteristics. The tribal structure in the community has produced unique and favourable circumstances for building foundation for the study of genetic disease. Genetic services developed in the Oman in the past decade have become an integral part of the sultanate’s health care system. The recently constructed Genetic Centre in Muscat expects to meet local and international requirements for genetic services and research.

**Bahrain:**

Bahrain was one of the ﬁrst countries in the region to tackle the issue of genetic blood disorders from 1986. Genetic blood diseases are frequent in Bahrain and they are assumed to be a major cause of morbidity and mortality. Genetic disorders are a signiﬁcant burden on health care delivery systems. The chronic nature of these conditions requires life-long medical attention, expensive supportive and symptomatic therapy and specialized care. To control these diseases effectively, their natural history, frequency and distribution have to be studied (Bahrain Health Statistics Reports, 2005).In 1983, a genetic unit was established at the Salmaniya Medical Complex (SMC). A national committee for the control of hereditary diseases was established in1993. The aim of the committee was to conduct population studies on the prevalence of genetic diseases within the country, and to improve management and treatment standards of these patients. Over the years, several studies were carried out.

Arabian Gulf University is actively involved in the area of Cytogenetic diagnostics. The Princess Al Jawhara Centre for Molecular Medicine and Inherited Disorders was established in 2011 to provide a number of services in this area including performing research in predictive health, and establishing solid diagnostic facilities to identify the genetic basis of diseases.

**Kuwait:**

The State of Kuwait is characterized by settlers from the nearby Saudi Arabia, Iran, and other regions of the Arabian Peninsula. The colonies and subsequent admixtures have formed the genetics of Kuwait. Increased incidence of recessive disorders and metabolic syndromes (that increase risk of diabetes) is seen in the Arabian Peninsula.

In 2006, Fahd Al Mulla from Kuwait University established a Molecular Genetics Diagnostic Service Division that is focused on delivering state-of-the-art diagnostic service for the Kuwaiti population. Understanding the genetic structure of its population will aid studies designed to decipher the underlying causes of these disorders.