

QBRI shares in the identification of a genetic link between type 2 diabetes and cancer

Doha, July 27, 2013 – An international research team composed of scientists from Qatar Biomedical Research Institute (QBRI), an entity of Qatar Foundation Research and Development, Imperial College London, and CNRS-Lille France has identified a genetic marker that will help identify which patients with type 2 diabetes (T2D) are most likely to develop certain kinds of cancer.

The researchers found that patients with T2D who have the genetic marker are four times more likely than non-diabetics to develop cancer, especially blood cancers, including lymphoma and leukaemia.

The study, which was published in *Nature Genetics* this week, may lead to genetic testing of patients with T2D to determine if they are at higher risk for developing cancer.

“We are very excited about the finding,” said Dr Abdelali Haoudi, Executive Director of QBRI. “This discovery shows a link between diabetes and cancer, diseases that are especially prevalent in Qatar. As such, it represents a major step forward in QBRI’s mission to translate novel scientific discoveries into efficient therapies and better preventative strategies for the two diseases that are the highest priorities for research in Qatar’s National Research Strategy.”

The international research team led by Prof. Philippe Froguel, the newly appointed Senior Research Director at QBRI, looked at blood DNA from 7,437 individuals, including 2,208 patients with T2D, to see how many had a chromosomal abnormality known as large clonal mosaic events (CMEs).

“We found that the frequency of CME carriers was four times higher in patients with T2D than non-diabetics,” said Prof. Philippe Froguel. “We also confirmed a significant effect of age on the development of CMEs.”

Last year, two studies published in *Nature Genetics* and based on 110,000 participants showed that clonal mosaic events (CMEs) affecting a large part of the chromosomes (or even the entire chromosomes) arise in blood DNA of the elderly and predict risk of cancer, in particular leukaemia. Researchers found that the frequency of CMEs is very low in individuals younger than 50 years, but CMEs affect about two percent of people older than 70 years. Notably, individuals with CME had at least a 10 times higher risk of developing hematologic cancer.

Type 2 diabetes is an accelerating-aging disease and is associated with higher prevalence of cancers; in particular blood cancers, including lymphoma and leukaemia. The QBRI research team wondered whether, like aging, T2D would contribute to the development of CMEs in blood, which could partly explain the high prevalence of cancers in patients presenting with T2D.

Via DNA arrays, the scientists assessed the presence of CMEs in blood samples. In addition to finding a higher rate of CMEs among diabetics, the study showed that diabetic carriers of CME presented with a more severe T2D than diabetic non-carriers. Despite having a lower body weight, 70 percent of the diabetic carriers presented with micro- and/or macrovascular complication of T2D.

The present study may have profound clinical implications. Given the medical interest in detecting precancerous states, especially in T2D where cancer mortality is higher, genetic testing for CMEs may be proposed, in particular in

patients with T2D presenting with early-onset complications.

These studies have been supported by QBRI, a proud member of Qatar Foundation Research and Development. QBRI was established in 2012 to tackle diseases of major worldwide importance (and particularly prevalent in Qatar and the Middle East) such as diabetes and certain forms of cancer. QBRI has a specific focus on developing translational biomedical research and biotechnology. To fulfil its mission, QBRI has set up eight cutting-edge research centres: Stem Cell and Regenerative Medicine Research Center, Genomic Medicine and Systems Biology Research Center, Gene-based Therapy Research Center, Biomedical Engineering Research Center, Diabetes Research Center, Cancer Research Center, Genetic Diseases Research Center, and the Qatar Biobank.

Leading Qatar's vision to become an international center for research and development excellence and innovation, QF R&D is home to the Qatar Science & Technology Park (QSTP), a world-class hub for technology innovation and commercialisation, as well as the Qatar National Research Fund (QNRF), a globally renowned scientific research funding organisation, and prominent research institutes operating at the frontiers of science, including Qatar Biomedical Research Institute (QBRI), Qatar Computing Research Institute (QCRI) and Qatar Environment & Energy Research Institute (QEERI).

ENDS

For more information about this press release, please contact:

Bradley Steffens
Qatar Biomedical Research Institute
Mobile: +974 3383 6557
Email: brsteffens@qf.org.qa

For more information about Qatar Foundation, please contact: pressoffice@qf.org.qa

About QBRI

A proud member of Qatar Foundation, QBRI was established to tackle diseases prevalent in Qatar and the Middle East with a focus on developing translational biomedical research and biotechnology. To fulfill its mission, QBRI is setting up cutting-edge research centers in genomic medicine, stem cells and regenerative medicine, gene therapy, and biomedical engineering. The institute also collaborates with national stakeholders and international partners to create a biomedical research network of scientific excellence.