



كلية طب وايل كورنيل في قطر  
Weill Cornell Medical College in Qatar  
Member of Qatar Foundation

## Press Release

### WCMC-Q metabolism study advances knowledge of diabetes

**Doha – August 30, 2015:** Researchers at Weill Cornell Medical College in Qatar (WCMC-Q) have made new discoveries about the effects of type-2 diabetes on the human metabolism and developed a holistic understanding of biochemical changes that are associated with the disease.

The researchers cross-referenced observations of blood, urine and saliva samples from diabetes patients with those of healthy individuals, allowing them to characterize episodes of abnormal blood sugar levels across a wide range of different time scales, varying from 6-12 hours up to 2-3 months.

Previous studies have examined the three different sample types separately but the WCMC-Q team found that they could learn more about diabetes by interpreting them together to give what they call a “systems view” of the disease.

The research is based on the analysis of metabolites, which are substances produced by biochemical processes in the body and that can be found in biofluids such as blood, urine and saliva. For many years, medical science has known that several metabolites are associated with diabetes. By extending the scope of the study to multiple body fluids the researchers at WCMC-Q were able to identify many new diabetes-associated metabolites, enhancing the body of knowledge that exists about the disease.

In addition, the WCMC-Q scientists used the research data to create a comprehensive “map” of the complex network of metabolic reactions underlying type-2 diabetes. This will serve as a reference tool for researchers as they try to develop new biomarkers for early detection of diabetes and more effective therapies to treat the disease.

Dr. Karsten Suhre, Professor of Physiology and Biophysics at WCMC-Q, led the research. He said: “The metabolites in each type of sample tell us different stories about biological processes happening in various parts of the body and over different time scales. By

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analyzing the three different sample types together we were able to improve our understanding of the interactions between different organs and tissues in the development and progression of diabetes.

“This means we are getting a comprehensive and interactive view of the way diabetes impacts the health state of our body. You could say it is as if we are looking at the activity of an entire house, rather than just looking at what is happening in each room separately.”

The study, which was carried out by WCMC-Q scientists in collaboration with physicians at Hamad Medical Corporation (HMC), analyzed samples from 188 diabetes patients and 181 control patients of Arabic and Asian descent. The paper describing the research, entitled ‘A systems view of type-2 diabetes-associated metabolic perturbations in saliva, blood and urine and different timescales of glycaemic control’, has now been published in *Diabetologia*, a leading medical journal in the diabetes field.

Dr. Noha AbdelRahman Yousri, Postdoctoral Associate in Physiology and Biophysics at WCMC-Q, led the analysis of the project. She said: “Mapping the metabolites specific to type-2 diabetes onto the complex network of biochemical reactions, while considering different timescales of glycemic control, enables us to better understand the effect of the disease on the different organs.

“Future research will benefit from this advance because scientists will be able to use the map we have created to target networks of metabolites, when attempting to design new diabetes drugs. The research might also enable clinicians to identify patients at earlier stages in the development of type-2 diabetes in order to prevent further complications.”

The paper was co-authored by HMC doctors Dr. Mohammed M. El-Din Selim, Dr. Ahmed H. Takiddin, Dr. Hala Al-Homsi and Dr. Khoulood A. S. Al-Mahmoud from HMC’s dermatology department, who enrolled the volunteers and patients that participated in this study.

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The study was aided by funding from the Biomedical Research Program (BMRP) program of Qatar Foundation, which supports the research effort at WCMC-Q.

Dr. Khaled Machaca, Associate Dean for Research at WCMC-Q, said: "This research is a great example of the fruitful collaboration between researchers at Weill Cornell Medical College in Qatar and our partners at Hamad Medical Corporation. Working together we have been able to broaden our knowledge of type-2 diabetes and the way in which the disease progresses, which could eventually prove to be extremely valuable to diabetes patients in our region and beyond."

The full article can be read at:

<http://link.springer.com/article/10.1007/s00125-015-3636-2>

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### **About Weill Cornell Medical College in Qatar**

Weill Cornell Medical College in Qatar is a partnership between Cornell University and Qatar Foundation. It offers pre-medical and medical courses leading to the Cornell University M.D. degree with teaching by Cornell and Weill Cornell faculty and by physicians at Hamad Medical Corporation (HMC) and Aspetar Orthopedic and Sports Medicine Hospital who hold Weill Cornell appointments. Through its biomedical research program, WCMC-Q is building a sustainable research community in Qatar while advancing basic science and clinical research. Through its medical college, WCMC-Q seeks to provide the finest education possible for medical students, to improve health care both now and for future generations, and to provide high quality health care to the Qatari population.

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