



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

Member of Qatar Foundation

Press Release

Metabolic Map of Human Body Created

Doha – May 20, 2014: A huge leap forward has been made by researchers at Weill Cornell Medical College in Qatar (WCMC-Q) who have produced a comprehensive atlas identifying the genes that influence how the body keeps our blood levels of sugars, fats and amino acids in balance.

Dr. Karsten Suhre, professor of physiology and biophysics at WCMC-Q, worked with partners at institutions in Europe to create the map, which has recently been featured in the prestigious *Nature Genetics* magazine.

A total of 7,824 people took part in the study with the scientists determining 2.1 million genetic variants in each one of those study participants. The researchers then measured the levels of over 400 different small molecules, called metabolites, that are found in the blood of every person. The relation between metabolite levels and differences between every individual's genes was recorded and, through statistical analysis, it was found that there are 145 genes that have a significant effect on the body's metabolic capacities.

Dr. Suhre said: "Many of the 145 genes we identified are enzymes. Enzymes are there to produce the different metabolites – the sugars, fats and amino acids that are the building blocks the body needs. They also eliminate toxic substances and excess metabolites from our system. Genetically, everyone has these enzymes but no-one is identical in what concerns their genetic make-up, so we're looking for differences in what an individual's enzymes can do by generating a comprehensive picture of over 400 metabolites for every blood sample we measure.

Essentially, a single genetic difference in the way that an enzyme behaves may have positive or negative benefits for that individual. It may make them more prone to certain diseases or

Office of Government
Public Affairs
WCMC-Q
Education City
P.O. Box 24144
Doha, Qatar

Nesreen Al-Refai
Director
Phone: +974 4492 8650
Fax: +974 4492 8444
nma2005@qatar-med.cornell.edu

Richard Harris
Editor
Phone: +974 4492 8660
Fax: +974 4492 8444
rih2004@qatar-med.cornell.edu



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

Member of Qatar Foundation

Press Release

protect them from some illnesses by, for example, efficiently processing a certain vitamin or being unable to process it.

“This is an atlas of how everybody is metabolically different,” said Dr. Suhre. “We can now really understand the genetic part of human metabolism as a whole; that is a first. It has never been achieved to this level before.”

The research has been going on for several years at WCMC-Q with international collaborators, and Dr. Suhre said, the map is the culmination of that, providing an extremely valuable tool for scientists. The map shows the different pathways between genes, enzymes and metabolites, demonstrating that a drug used to target one gene may have several different effects and consequences on other pathways. Perhaps most importantly, it shows how human metabolism works as a system and how it can potentially be modified in order to counteract what a disease has done.

Dr. Suhre said: “To treat a disease, such as diabetes or cancer, if you want to change the levels of a certain metabolite, the map would tell you which enzyme to target, but it would also tell you which other metabolites and enzymes surrounding the target would be affected, so that you can select the right combination of drugs in order to reach a desired effect.”

Dr. Khaled Machaca, associate dean for research at WCMC-Q, said: “This study highlights current efforts and the vision of the WCMC-Q research program to focus on personalized medicine approaches that will allow physicians in Doha in the long term to devise treatment strategies targeted to the individual. This approach is well aligned with Qatar’s 2030 vision to improve the healthcare of the Qatari population.”

To read the study in full visit www.nature.com/ng/journal/vaop/ncurrent/abs/ng.2982.html

Office of Government
Public Affairs
WCMC-Q
Education City
P.O. Box 24144
Doha, Qatar

Nesreen Al-Refai
Director
Phone: +974 4492 8650
Fax: +974 4492 8444
nma2005@qatar-med.cornell.edu

Richard Harris
Editor
Phone: +974 4492 8660
Fax: +974 4492 8444
rih2004@qatar-med.cornell.edu



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

Member of Qatar Foundation

Press Release

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.

For more info, please contact:

Hanan Lakkis
Media Relations Manager
Weill Cornell Medical College in Qatar
Mobile: +974 55536564
Direct Line: +974 44928661
hyl2004@qatar-med.cornell.edu

Office of Government
Public Affairs
WCMC-Q
Education City
P.O. Box 24144
Doha, Qatar

Nesreen Al-Refai
Director
Phone: +974 4492 8650
Fax: +974 4492 8444
nma2005@qatar-med.cornell.edu

Richard Harris
Editor
Phone: +974 4492 8660
Fax: +974 4492 8444
rih2004@qatar-med.cornell.edu