Cambridge Society for the Application of Research

Churchill College
Storey's Way
Cambridge
CB3 0DS

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'"Genetics and Cancer"

(Unravelling breast cancer genetics – a long and winding road)

Professor Mike Stratton
Head, Cancer Genome Project, Wellcome Trust Sanger Institute.

7.30 p.m., Monday 16th February, 2009
The Wolfson Lecture Theatre, Churchill College, Storey's Way, Cambridge

About this lecture:

Unfortunately, I do not have an abstract of the lecture from our speaker, since Professor Stratton is in the USA right now. Suffice it to say that Professor Stratton and his team unravelled the BRCA2 gene, which is a driver for many forms of breast cancer, and also (it is believed) for some prostate cancers.

Wikipedia tells us:

"Certain variations of the BRCA2 gene cause an increased risk for breast cancer. Researchers have identified about 450 mutations in the BRCA2 gene, many of which cause an increased risk of cancer. BRCA2 mutations are usually insertions or deletions of a small number of DNA base pairs (the building material of chromosomes) in the gene. As a result of these mutations, the protein product of the BRCA2 gene is abnormally short and does not function properly. Researchers believe that the defective BRCA2 protein is unable to help fix mutations that occur in other genes. As a result, mutations build up and can cause cells to divide in an uncontrolled way and form a tumor.

People who have two mutated copies of the BRCA2 gene have one type of Fanconi anemia. This condition is caused by extremely reduced levels of the BRCA2 protein in cells, which allows the accumulation of damaged DNA. Patients with Fanconi anemia are prone to several types of leukemia (a type of blood cell cancer); solid tumors, particularly of the head, neck, skin, and reproductive organs; and bone marrow suppression (reduced blood cell production that leads to anemia).

In addition to breast cancer in men and women, mutations in BRCA2 also lead to an increased risk of ovarian, Fallopian tube, prostate, and pancreatic cancers, as well as malignant melanoma. In some studies, mutations in the central part of the gene have been associated with a higher risk of ovarian cancer and a lower risk of prostate cancer than mutations in other parts of the gene. Several other types of cancer have also been seen in certain families with BRCA2 mutations."

About the speaker:

Michael Stratton is Deputy Director of the Wellcome Trust Sanger Institute, where he is Head of the Cancer Genome Project, and is Professor of Cancer Genetics at the Institute of Cancer Research. He qualified in medicine at Oxford University and Guys Hospital, trained as a histopathologist at the Hammersmith and Maudsley Hospitals and obtained a PhD in the molecular biology of cancer at the Institute of Cancer Research. His research interests have been in the genetics of cancer.

He led the group that mapped and identified the high risk breast cancer susceptibility gene, *BRCA2*. More recently he has found moderate risk breast cancer susceptibility genes such as *CHEK2*, *ATM*, *BRIP* and *PALB2* as well as genes for skin, testis, colorectal, thyroid, and childhood cancers.

At the Cancer Genome Project he conducts high throughput, systematic genome-wide searches for somatic mutations in human cancer in order to identify new cancer genes, to understand processes of mutagenesis in human cancers and to reveal the role of genome structure in determining abnormalities of cancer genomes.

These studies have led to the discovery of activating somatic mutations in the *BRAF* and *ERBB2* genes in melanoma and lung cancer respectively and have described basic patterns of somatic mutation in cancer genomes. He was elected a Fellow of the Royal Society in 2008.

Coffee available, as usual, in the foyer outside the lecture theatre from ~7.00 p.m.

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