



SPECIAL SEMINAR

**MONDAY 20 FEBRUARY 2012 AT 11.00AM
B FLOOR MEETING ROOM, CBCRC, QIMR**

The human epigenome in health and disease



Professor Peter Jones
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Molecular Biology
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Professor Jones was born in South Africa, raised and attended college in Rhodesia (now Zimbabwe), and received his PhD from the University of London. He joined the University of Southern California in 1977, attaining the rank of Professor in 1985, Distinguished Professor in 1999, and was Director of the USC Norris Comprehensive Cancer Center 1993-2011. His laboratory discovered the effects of 5-azacytidine on DNA methylation and linked this process to the activation of silenced genes.

He is known for his studies on the molecular biology of cancer and of basic mechanisms of DNA methylation and its role in cancer and differentiation. He is a past President of the American Association for Cancer Research. Professor Jones has published more than 300 scientific papers and received several honors, including the Outstanding Investigator Grant from the National Cancer Institute. He shared the Kirk A. Landon Award for Basic Cancer Research from the AACR in 2009 and the Medal of Honor from the American Cancer Society in 2011 with Stephen Baylin.

It is now possible to map entire epigenomes in normal differentiated and diseased cells. Epigenetic processes are necessary for packaging and controlling the output of the genome, are essential for development and are increasingly recognised as being responsible for human diseases. Histone modifications, positioning of histone variants, nucleosomal remodeling and DNA methylation, among other processes, control genomic activity. These mechanisms interact with transcription factors and other chromatin constituents to regulate gene expression and establish patterns which are inherited during cell division. These patterns underlie embryonic development, differentiation and cell identity and control the transitions from a stem cell to a differentiated cell.

Although epigenomic changes are heritable in somatic cells, drug treatments can potentially reverse them. This has significant implications for the prevention, diagnosis and treatment of several human diseases and also for aging. Four drugs, thought to alter epigenetic processes, are already in the clinic and the era of epigenetic therapy is upon us.