

NEWS FROM:



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UCT molecular genetics expert to explain how novelty and diversity evolve in plants and animals

Professor Nicola Illing to deliver inaugural lecture: Wednesday, 19 October 2011, 17h30, LT1, Kramer Law Bldg, Middle Campus, UCT

Data from large-scale DNA sequencing projects in the last two decades has shown that common sets of genes regulate development in animals and plants respectively. Given the remarkable conservation of these genes, a key challenge becomes understanding how morphological diversity has evolved in plants and animals. Professor Nicola Illing, of the Department of Molecular and Cell Biology at the University of Cape Town, will present evidence that novelty evolves from the recycling of existing genetic regulatory loops, rather than from the *de novo* appearance of new genes via protein evolution. Prof Illing will discuss her current research interests in Evolutionary and Developmental Genetics in her inaugural lecture, "Evo-devo: Clues to morphological and functional diversity in bats and resurrection plants".

Professor Illing said: "Key questions are whether morphological variation arose from a change in gene function via protein evolution, or a change in the way genes are expressed. Does gene duplication or a change in cis-regulatory sequences play a more prominent role in the generation of a change in gene function? We have explored these questions by asking i) what the genetic basis is for extended growth of digits, and retention of interdigital webbing during wing development in bat embryos that led to the evolution of flight in mammals; and ii) how desiccation tolerance in leaves and roots evolved in the resurrection plant *Xerophyta humilis*. In both cases, evidence will be presented that novelty evolved from the reactivation of existing genetic regulatory loops, rather than from the *de novo* appearance of new genes via protein evolution."

Professor Illing has a multidisciplinary background. She graduated as a Chemical Engineer from UCT in 1983. After working at Shell South Africa for two years, she completed an MSc in Microbial Molecular Genetics at UCT in 1986, and a DPhil, titled "Regulation of differential gene expression in the bacterium *Bacillus subtilis*", at Oxford University in 1990. She was awarded an Oxford Blue for tennis at the same time. She returned to UCT as a postdoctoral fellow from 1991 to 1993, before accepting a lectureship in 1994 in the Department of Biochemistry. She became Head of Department of Biochemistry from 1998 to 2000 and continued this administrative role as the Head of the merged Departments of Biochemistry and Microbiology from 2001 to 2003.

Prof Illing has published 51 scientific papers, including several in prestigious journals such as the *Proceedings of the National Academy of Sciences, USA*, and *Nature Cell Biology*.

Inaugural lectures commemorate the inaugural lecturer's appointment to full professorship. They provide a platform for the academic to present the body of research that they have been focusing on during their career. The lecture also provides UCT with the opportunity to showcase its academics and share its research with members of the wider university community and the general public in an accessible way.

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