

The basics behind healthy growth – and disease (w/ Video)

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How does understanding the basics of what goes on in our tissues during normal development help us explain the causes and progression of diseases such as cancer? While attending a Society for Industrial & Applied Mathematics conference this summer on the life sciences, Arthur Lander – the Donald Bren Professor of Developmental & Cell Biology at UC Irvine – talked about the biological systems that control cell proliferation to achieve or maintain desired outcomes.

In this video, he explains that regulated growth not only is essential for biological development, but also establishes the context in which the out-of-control state we call [cancer](#) occurs. Lander's research group builds mathematical models that mimic real tissues in order to understand normal growth control. Using such models, his lab is learning how morphogenesis – the process by which tissues take on complex three-dimensional forms – can be achieved by turning growth on and off in certain locations, through regulated feedback between mature cells and the cells that produce them.

Lander is a recognized leader in the emerging field of systems biology, and his research is helping to identify the underlying causes for some cancers and birth defects. He's the founding director of the campus's Center for Complex Biological Systems. Founded in 2002, the center was the first of its kind in California dedicated to systems biology and employs the latest technology and computational methods to explore how networks of molecules, cells, tissues and organs interact in complex, dynamic ways to enable reliable biological functions.

Provided by University of California, Irvine

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