About the Beach Lectures

David W. Beach was born in 1925 in London, England. Following service in the Royal Navy, he was married to Doris Holmes and began his career as a Chartered Accountant. Feeling the urge to expand his horizons, he moved to Canada and began a series of jobs in the aluminum industry that included General Manager of Kawneer, Canada and Vice-President of Kawneer, Inc.

As Vice-President of ALUMAX Aluminum Corporation he was instrumental in making it one of the largest and most profitable aluminum companies in the world, prior to his retirement. Inspired by his son's enthusiasm for science, he has chosen to share his good fortune by supporting this biochemistry graduate program.

This long-term support is intended to promote intellectual curiosity, a commitment to excellence, and an appreciation of science in all those involved.

Previous Speakers in the David Beach Lecture Series

2008	Tom Kunkel	National Institute of Environmental Health Sciences
2007	David Allis	The Rockefeller University
2006	Chris Somerville	Carnegie Institution and Stanford University
2005	Mark Stitt	Max Planck Institute of Molecular Plant Physiology
2004	Craig Garner	Stanford University
2000	Timothy J. Richmond	Swiss Federal Institute of Technology, Zurich, Switzerland
2000	Gerald Joyce	The Scripps Research Institute

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PURDUE UNIVERSITY

The Department of Biochemistry
Presents

The 2009 Beach Distinguished Lectures

October 26-October 27

Dr. Erich Nigg

University of Basel, Switzerland
Department of Cell Biology

Brief Biography

Dr. Erich Nigg is a cell biologist who originally trained as a biochemist. During his scientific career he moved between different fields, countries and cultures, and always found the experience of change rewarding and highly stimulating.

Erich Nigg was educated in Switzerland and studied Life Sciences at the ETH in Zurich. He completed his PhD in 1980 focusing on the mobility of membrane proteins. He then continued his research at the University of California in San Diego, U.S.A., where he investigated the influence of oncogenic protein kinases on the cytoskeleton.

Subsequently, he worked at several institutions throughout Switzerland, notably the ETH, the Swiss Institute for Experimental Cancer Research (ISREC) and the University of Geneva, before he joined the Max Planck Society in Germany. His studies encompassed many fields, primarily the structure and dynamics of the nuclear envelope, the mechanisms underlying signal transduction from the plasma membrane to the cell nucleus, and the regulation of the cell division cycle. At present, the research his laboratory aims at elucidating the molecular mechanisms that control chromosome segregation during cell division and the centrosome duplication cycle. Disruption of these processes are widely thought to contribute to the chromosomal instability of tumour cells.

Since February 2009 Erich Nigg is the director of the Biozentrum of the University of Basel, one of the most prestigous Life Science research and teaching institutions in Switzerland (http://www.biozentrum.unibas.ch/index.html). Erich Nigg was awarded several prizes and is an elected member of the German Academy of Sciences, the European Molecular Biology Organization (EMBO), the Academia Europeae, as well as the the European Academy of Cancer Sciences.

Cell Cycle Control: Chromosome Segregation during Mitosis

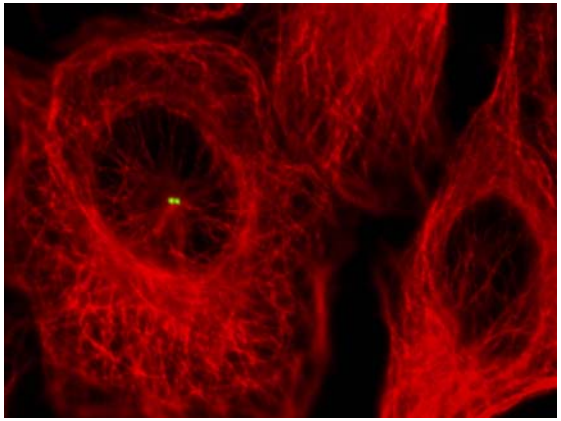
Monday, October 26
4:00pm, Deans Auditorium, PFEN

The error-free segregation of duplicated chromosomes during cell division is crucial to the development and health of all organisms. Chromosomal instability and imbalances (aneuploidy) are typical of many solid human tumors and generally correlated with increased malignancy. Chromosomal instability is likely to favor not only cancer development but also the emergence of resistance to anti-cancer therapy. Many chromosome aberrations in tumor cells are thought to result from the deregulation of mitotic progression or cytokinesis, a defective spindle assembly checkpoint and/or centrosome abnormalities. Therefore, our laboratory is interested in the control of cell division, the function of the spindle checkpoint during mitosis, and the regulation of the centrosome duplication cycle. During my lecture I will introduce the subject of chromosome segregation, with particular emphasis on the Spindle Assembly Checkpoint, and then review our ongoing spindle phosphoproteomics project, before concluding with a few remarks on the suitability of mitotic kinases as targets for anti-cancer therapy.

Cell Cycle Control: Focus on the Centrosome Cycle

Tuesday, October 27
4:00pm, Deans Auditorium, PFEN

Centrioles are complex microtubule-based structures. A pair of centrioles – embedded in a matrix of proteins known as the pericentriolar material (PCM) - forms the core of the centrosome, the major organizer of microtubule arrays in animal cells. In addition, centrioles form the basal bodies required for the formation of cilia and flagella. In proliferating cells centrioles duplicate exactly once per cell cycle, whereas in some specialized cell types hundreds of basal bodies can form near-simultaneously. How the biogenesis of centrioles and basal bodies is controlled has long been mysterious but is now beginning to be unraveled. Control of centrosome numbers is critical for accurate chromosome segregation during cell division. Following the recent identification of Polo-like kinase 4 (Plk4) as a key regulator of centriole duplication, we discovered that overexpression of Plk4 in human cells induces the (near-)simultaneous formation of multiple pro-centrioles adjoining each parental centriole. This observation provided a unique opportunity for a detailed analysis of the centriole assembly pathway in human cells. Together with related studies performed in invertebrates, the results of this analysis point to a strong evolutionary conservation of the pathways underlying centriole biogenesis. I will conclude my lecture by emphasizing the relevance of centrosomes and centrioles/basal bodies to human disease, notably cancer, brain diseases and ciliopathies.



Polo-like kinase 4 (yellow), a key regulator of centriole duplication, at the center of a microtubule array (red) in a human cancer cell