About the Axelrod Lectures

Dr. Bernard Axelrod

Dr. Bernard Axelrod served as Head of the Department of Biochemistry and is currently Professor Emeritus. His efforts were instrumental in founding the biochemistry program at Purdue University. On the occasion of his 70th birthday, colleagues and friends established this lectureship in honor of Dr. Axelrod's many contributions to the field of biochemistry and its community of scientists.

Previous Speakers in the Bernard Axelrod Lecture Series

2007	Olke Uhlenbeck	Northwestern University
2005	Carol Greider	Johns Hopkins University of Medicine
2003	Stephen Kent	University of Chicago
2001	Winslow Briggs	Carnegie Inst. of Washington at Stanford University
2001	Gregory A. Petsko	Brandeis University
1997	Klaus Hahlbrock	Max Planck Institute, Germany
1997	Aziz Sancar	University of North Carolina
1995	Paul Nurse	Imperial Cancer Research, London
1995	Danny Reinberg	Robert Wood Johnson Medical School
1994	Arthur Kornberg	Stanford University School of Medicine

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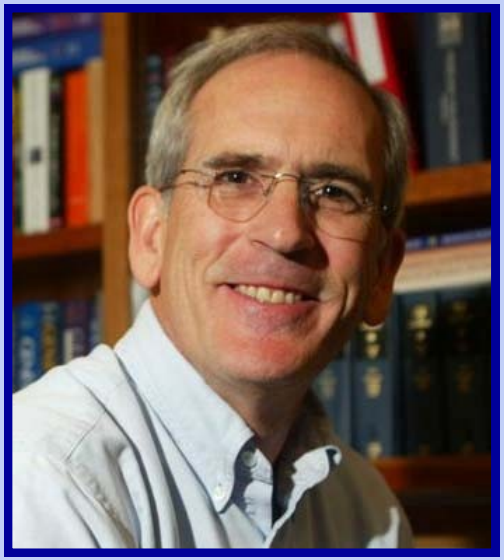
Purdue University

The Bernard Axelrod Lectures 2008

March 25 - March 26



Dr. Jasper Rine

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Brief Biography

Dr. Jasper Rine is a dynamic geneticist whose insatiable scientific curiosity has led his laboratory's research down many paths ranging from epigenetic mechanisms of gene regulation in budding yeast to dog genomics to isoprenoid metabolism and, more recently, to human genetic variations in folate metabolism. This curiosity has also led Jasper to the biotech industry, where he has co-founded several companies and served on numerous scientific advisory boards.

Jasper obtained a BS in Biological Sciences from State University of New York and received his PhD in Molecular Genetics at the University of Oregon with Professor Ira Herskowitz. Jasper conducted his postdoctoral research at Stanford University with Professor Ron Davis until 1982, when he became an Assistant Professor in the Department of Biochemistry at the University of California, Berkeley. There, Jasper was rapidly promoted to Professor of Genetics in the Department of Molecular and Cell Biology. Jasper has also served as the Director of the Human Genome Center at Lawrence Berkeley Labs and is currently the Director of the Center of Computational Biology at UC-Berkeley.

Jasper has been honored by election as an AAM Fellow, an AAAS Fellow and as a recipient of an NIH-MERIT Award. In addition to these many accomplishments, Jasper is also widely recognized for being a superb teacher. He has received a Distinguished Teaching Award from the University of California and in 2006 was awarded an HHMI Professorship to support excellence in teaching.

Looking for Good News in the Human Genome

Tuesday, March 25
4:00 pm, Pfendler Auditorium

By nearly all criteria, the human genome sequence, and the sequences of model organisms, have been an enormous boon to biologists offering an informational infrastructure that gives an unprecedented connectedness to everything they do. However, for the taxpayers who footed the bill, it is arguable that the genome project has primarily provided high resolution bad news, such as the ability to predict grievous futures with no therapeutic options. Dr. Rine's group is in search of the opposite. Inspired by pioneering studies from bacterial genetics by Bruce Ames and others in the 70's they are finding genetic variation in human genomes that makes an impact on health, and that can be ameliorated by measures as simple as nutritional supplements. Remarkably, the recommended daily values of essential nutrients have gone almost unchanged for over 60 years, during which time essentially everything else in biology has been dramatically transformed. With the coming of the $1000 personal genome sequence within a 5-year horizon, their goal is to define all the genetic variation in humanity that makes an impact on health and that responds to nutritional intervention. Their studies are suggesting new methods by which defective proteins may be ameliorated, opening a new concept for therapeutic intervention in inherited diseases.

Epigenetic Inheritance of Transcriptional States

Wednesday, March 26
4:00 pm, Pfendler Auditorium

All of developmental biology involves the creation and maintenance of heritable differences among different cell types in the absence of any underlying difference in the DNA sequence, with the exception of the T and B cells of the vertebrate immune system. Such inheritance takes place by epigenetic mechanisms, among which a particular structure of chromatin, known has heterochromatin, is the premier example. Heterochromatin refers to neighborhoods on chromosomes in which any gene in that neighborhood is prevented from expression. In *Saccharomyces cerevisiae* heterochromatin formation is established by a trio of DNA binding proteins that bind to sites called silencers. This trio along with the Sir1 protein, leads to the assembly of heterochromatin through the recruitment and spreading of a protein complex, consisting of the other Sir proteins, in a continuous coating of nucleosomes.

In this talk, Dr. Rines will focus on new experiments that allow his group to study the dynamics of heterochromatin formation and stability at single-cell resolution, in which they use genetics to "inject" heterochromatin structural proteins, one at a time, into cells lacking each. He will also describe new insights into the means by which the spread of heterochromatin is constrained by specialized nucleosomes and new readers of the epigenetic code, and the evidence that heterochromatic sweeps from telomeres have been a power force in organizing the structure of eukaryotic genomes.