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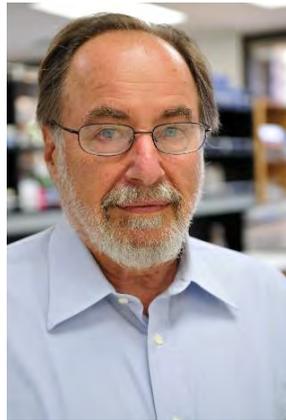
## MOLECULAR MEDICINE AND GENETICS

### George E. Palade Award and Distinguished Lecture

Tuesday, September 25, 2018

11:00 a.m. in the Green Lecture Hall, Scott Hall

# David Baltimore, PhD



**President Emeritus and the Robert Andrews Millikan Professor of Biology  
California Institute of Technology**

Dr. Baltimore is former President of Rockefeller University; Founding Director of the Whitehead Institute for Biomedical Research at the Massachusetts Institute of Technology; Co-recipient of the 1975 Nobel Prize in Physiology or Medicine; recipient of the National Medal of Science (1999)

### *“Fine Control of Gene Expression by Retaining Introns”*

#### ABSTRACT

Treatment of cells with proinflammatory stimuli like Tumor Necrosis Factor turns on a gene program that greatly alters the cells' properties. Central to that program is activation of the transcription factor, NF- $\kappa$ B. We have shown that although NF- $\kappa$ B-mediated transcriptional activation happens within 5 minutes of treatment, the induced program activates over many hours and have been investigating the basis of that spread in time. This has led us to realize that the splicing of the pre-mRNA gene transcripts from individual genes is spread out over time and is controlled at least partially by bottleneck introns that are slow to splice. We have found that the splicing of bottleneck introns involves a specific splicing factor and are in the process of understanding its function.

Please contact Suzanne Shaw ([sshaw@wayne.edu](mailto:sshaw@wayne.edu)) for more information



## 2018 George E. Palade Award & Distinguished Lecture

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**CITATION:** *for his “pioneering discovery of the primary transcription factor NF- $\kappa$ B and major contributions to the field of immunobiology”.*

### **Brief Biography:**

Professor Dr. David Baltimore, the recipient of the 1975 Nobel Prize in Physiology or Medicine, the Founder-Director of the famous Whitehead Institute, and the former President of Rockefeller University and CalTech, was born and raised in New York City.

Prof. Baltimore earned his Bachelor's degree with high honors from Swarthmore College in 1960, and credits his interest in molecular biology to Prof. Dr. George Streisinger under whose mentorship he worked for one summer at Cold Spring Harbor Laboratory. He entered MIT's graduate program in biology in 1960, where he made fundamental discoveries on virus replication and its effect on cell metabolism, including the first description of an RNA replicase enzyme, completing his PhD thesis in 1964. On completion of his PhD, Prof. Baltimore returned to MIT for postdoctoral research with Prof. Dr. James Darnell. He continued his work on virus replication using poliovirus and pursued training in enzymology with Prof. Dr. Jerard Hurwitz at Albert Einstein College of Medicine in 1964/1965. In February 1965, Prof. Baltimore was recruited by Prof. Dr. Renato Dulbecco to the newly established Salk Institute for Biological Studies in La Jolla as an independent research associate. There he investigated poliovirus RNA replication and began a long and storied career of mentoring other scientists' early careers including Marc Girard, and Michael Jacobson. They discovered the mechanism of proteolytic cleavage of viral polyprotein precursors, pointing to the importance of proteolytic processing in the synthesis of eukaryotic proteins. He also met his future wife, Prof. Dr. Alice Huang, who began working with Baltimore at Salk in 1967. He and Alice together carried out key experiments on defective interfering particles and viral pseudo types. During this work, he made the key discovery that polio produced its viral proteins as a single large polyprotein that was subsequently processed into individual functional peptides. In 1968, he was recruited by Nobel laureate Salvador Luria to the Department of Biology at MIT as an Associate Professor of Microbiology. At MIT, Prof. Baltimore extended this work and examined two RNA tumor viruses, Rauscher murine leukemia virus and Rous sarcoma virus. ***He went on to discover reverse transcriptase (RTase or RT) - the enzyme that transcribes DNA from RNA. In doing so, he discovered a distinct class of viruses, later name retroviruses, that use an RNA template to catalyze the synthesis of DNA. This overturned a "central dogma" of genetic theory, garnering him the Nobel Prize in Physiology or Medicine in 1975 at the young age of 37.***



## *George E. Palade Gold Medal Award & Lecture*

✧ Recipient of the Nobel Prize

Professor George E. Palade [Nov. 19, 1912 – Oct. 7, 2008] (*Lancet* 372:1876, 2008) considered the father of modern cell biology (*Pancreatology* 3:518-519, 2003), shared the Nobel Prize for Physiology or Medicine in 1974 with Professors Albert Claude and Christian de Duve, for his pioneering studies in the 1950's and 1960's, defining the structure and function of cellular components including the ribosome, secretory vesicles, and the endoplasmic reticulum. Professor Palade's student Professor Günter Blobel similarly for pioneering discovery in the 1970's and 1980's that 'proteins have intrinsic signals that govern their transport and localization in the cell', received the unshared 1999 Nobel Prize in Physiology or Medicine. "Similar to his grand mentor, George E. Palade, B. Jena's utilization of new nanotechnologies, such as the atomic force microscopy, in combination with conventional technologies like electron microscopy, biochemistry, and electrophysiology, brought understanding of the cell to a new next level" (*Pancreatology* 3:518-519, 2003). In May of 2003, for their pioneering contributions to cellular and molecular physiology, Babes-Bolyai University in Romania, the country of Professor Palade's birth and origin, jointly honored Professors Palade, Blobel, and Jena with honorary doctorate degree in Medicine. On Nov. of 2003, under the leadership of Wayne State University President Dr. Irvin D. Reid, and with permission of Professor Palade, the "George E. Palade Award" was established at the School of Medicine, with its first recipient being no other than Professor Palade's student Professor Günter Blobel. Among the 13 awards made since its inception by an international panel of experts, in addition to receiving other major prizes such as the Gairdner and the Lasker Award, four have received the Nobel Prize: Professors Günter Blobel, Ada Yonath, Thomas Steitz, and Joachim Frank.

**2003**



Günter Blobel

“for his pioneering discovery of the signal peptide in cells “

**2004**



David Sabatini

“for his contribution to modern cell biology “

2005



Bhanu P. Jena

“for his pioneering discovery of the porosome, the universal secretory machinery in cells “

2006



Judah Folkman

“for his pioneering discovery that all tumor growth is angiogenesis-dependent “

2007



Peter Walter

“for seminal contribution on how proteins properly localize within cells”

2008



✂ Thomas A. Steitz

“for his pioneering contributions to our understanding of ribosome structure and function “



✂ Ada Yonath

“for her pioneering contributions to our understanding of ribosome structure and function “



✂ Joachim Frank

“for his pioneering contributions to our understanding of ribosome structure and function “

**2009**



**Michael Berridge**

“for his pioneering contributions to discovery of the second messenger inositol trisphosphate (IP3) “

**2010**



**Walter F. Boron**

“ for his pioneering work on pH regulation in cells”



**William Catterall**

“ for his pioneering discovery of L-type calcium channels”



**Richard Tsien**

“ for his pioneering discovery of N-type calcium channels”

**2013**



**Arthur L. Horwich**

“for his pioneering studies elucidating our understanding of protein folding”