

PolyU 80th Anniversary • The D. H. Chen Foundation
香港理工大學八十周年 • 陳廷驊基金會

NOBEL LAUREATE LECTURE SERIES

諾貝爾獎學人講座系列



Prof. Randy W. Schekman

Nobel Laureate in Physiology or Medicine (2013)

Date: 14 March 2017 (Tuesday)

Time: 11:00 a.m. - 12:15 p.m. (Reception at 10:30 a.m.)

Venue: Silverbox Ballroom, Level 1, Hotel ICON
17 Science Museum Road
Tsim Sha Tsui East, Kowloon

RNA sorting and packaging in extracellular vesicles secreted by mammalian cells

Mammalian cells secrete vesicles, or exosomes. Exosomes are enriched in specific membrane proteins, eg. the tetraspanin protein CD63, and selected microRNAs that may be conveyed between tissues to control gene expression in target cells, such as in the creation of a pre-metastatic niche in the spread of tumor cells. We devised a purification scheme for the isolation of a unique exosome species from cultured human cells culminating in the immunoisolation of vesicles on anti-CD63 antibody beads. Purified vesicles were highly enriched in selected microRNAs. Next, we developed a cell-free reaction to detect the selective incorporation of an exosomal microRNA, miR-223. Using this reaction, we have defined an RNA-binding protein, YBX1, required for miRNA sorting in vitro and in cultured human cells, and an RNA sequence necessary and sufficient of the sorting of miR-223.

Reference:

Y-box protein 1 is required to sort microRNAs into exosomes in cells and in a cell-free reaction
Shurtleff, M, Temoche-Diaz, Morayma, Karfilis, Kate V., Ri, S. and Schekman, R., *eLife* (2016)
DOI: <http://dx.doi.org/10.7554/eLife.19276>

BIOGRAPHICAL SKETCH

Prof. Randy Schekman is a Professor in the Department of Molecular and Cell Biology, University of California, Berkeley, and an Investigator of the Howard Hughes Medical Institute. He studied the enzymology of DNA replication as a graduate student with Arthur Kornberg at Stanford University. His current interest in cellular membranes developed during a postdoctoral period with S. J. Singer at the University of California, San Diego. At Berkeley, he developed a genetic and biochemical approach to the study of eukaryotic membrane traffic. Among his awards are the Eli Lilly Award in Microbiology, the Rosenstiel Award, the Gairdner International Award, the Albert Lasker Award in Basic Medical Research and the Nobel Prize in Physiology or Medicine, which he shared with James Rothman and Thomas Südhof. He is a member of the National Academy of Sciences, the Institute of Medicine, the American Academy of Arts and Sciences, the American Philosophical Society, a Foreign Associate of the Accademia Nazionale dei Lincei and a Foreign Associate of the Royal Society of London. In 1999, he was elected President of the American Society for Cell Biology. In 2002, he was appointed Editor-in-Chief of the Annual Reviews of Cell and Developmental Biology. From 2006 - 2011 he served as Editor-in-Chief of the Proceedings of the NAS. In 2011, he was appointed Editor-in-Chief of an Open Access journal, *eLife*, sponsored by the HHMI, Wellcome Trust and the Max Planck Society.

Online registration at www.polyu.edu.hk/fast/80anniversary/nobel_mar/



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