



## Professor Jack W. Szostak

Nobel Prize in Physiology or Medicine 2009

Investigator, Howard Hughes Medical Institute  
Professor of Genetics, Harvard Medical School  
Professor of Chemistry and Chemical Biology, Harvard University

### “The Origin of Cellular Life”

The complexity of modern biological life has long made it difficult to understand how life could emerge spontaneously from the chemistry of the early earth. The key to resolving this mystery lies in the simplicity of the earliest living cells. Through our efforts to synthesize extremely simple artificial cells, we hope to discover plausible pathways for the transition from chemical evolution to Darwinian evolution. We view the two key components of a primitive cell as a self-replicating nucleic acid genome, and a self-replicating boundary structure. I will describe simple and robust pathways for the coupled growth and division of model primitive cell membranes, along with recent experimental progress towards the synthesis of self-replicating nucleic acids. I will also discuss model systems that may provide a route to artificial life with a biochemistry that is distinct from that of existing biology.

Dr. Szostak is Professor of Genetics at Harvard Medical School, Professor of Chemistry and Chemical Biology at Harvard University, Investigator at the Howard Hughes Medical Institute, and the Alex Rich Distinguished Investigator in the Department of Molecular Biology and the Center for Computational and Integrative Biology at Massachusetts General Hospital. Dr. Szostak's early research on telomere structure and function and the role of telomere maintenance in preventing cellular senescence was recognized by the 2006 Albert Lasker Basic Medical Research Award and the 2009 Nobel Prize in Physiology or Medicine. In the 1990s Dr. Szostak and his colleagues developed in vitro selection as a tool for the isolation of functional RNA, DNA and protein molecules from large pools of random sequences. In April 2019, Dr. Szostak was elected a Fellow of the Royal Society based on his 'substantial contribution to the improvement of natural knowledge'. Dr. Szostak's current research interests are in the laboratory synthesis of self-replicating systems and the origins of life.

**Wednesday, April 8, 2020**

**3:00 - 4:00 PM**

**Genome and Biomedical Sciences Facility, Auditorium**

Reception to follow

*The lecture is free and open to the community. The series honors the memory of David L. Weaver, a distinguished biophysicist and professor at Tufts University for whom the endowment was established in 2006.*