

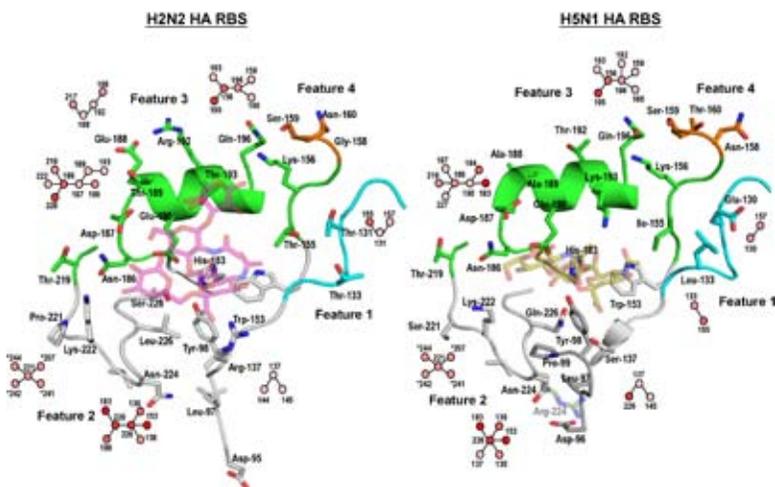
Fourth Kiran Mazumdar-Shaw Lecture

# CONVERGENCE OF LIFE SCIENCES WITH ENGINEERING

A perspective on this  
“Third Revolution”

**Prof. Ram Sasisekharan**

11.30 am, Saturday, 27<sup>th</sup> August 2016 at IBAB  
(Institute of Bioinformatics and Applied Biotechnology)



The **Kiran Mazumdar-Shaw Lecture** Series brings eminent scientists to IBAB and the broader Bangalore biotech community. Speakers in this series have been Nobelist **Dr. Venki Ramakrishnan**, in December 2011; **Dr. Dinshaw J Patel** of the Memorial Sloan-Kettering Cancer Center in January 2014 and **Dr. Sangeeta N Bhatia** of the Massachusetts Institute of Technology in February 2015.



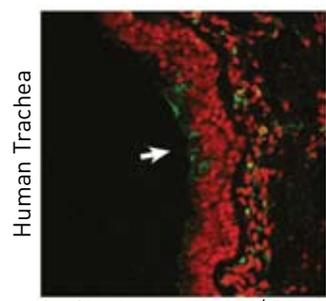
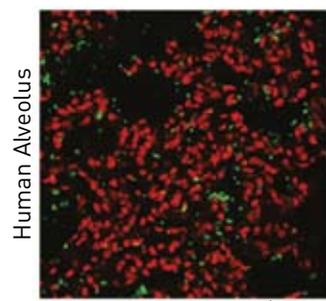
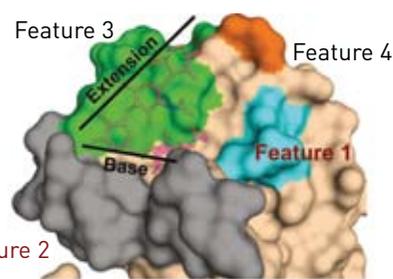
The lecture by **Prof. Ram Sasisekharan** will be the fourth in this series. Prof. Sasisekharan is Alfred H. Caspary Professor of Biological Engineering and Health Sciences & Technology David H. Koch Institute for Integrative Cancer Research of the Massachusetts Institute of Technology.

The “convergence” of the life sciences, physical sciences, and engineering sciences is an exciting phenomenon occurring on the frontier of research. Scientists and engineers have begun to move beyond traditional disciplinary stovepipes as they realize the enormous opportunities available when life science research at the molecular level is supported by technological advances from the engineering sciences. This convergence is more than simply “bioengineering”. It comprises bioengineering, synthetic biology, systems biology, and computational biology – in practice it means using the technical tools, as well as the disciplinary design approaches traditional to fields such as engineering or physics and applying them to life sciences research.

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Past decades of advances in molecular biology and genomics have created important new knowledge bases that can be more fully exploited when these two previous and ongoing revolutions are enabled by what we believe to be a third revolution: the emerging convergence of life sciences with engineering sciences. **Dr. Sasisekharan** will focus on examples from his laboratory that have been developing at the interface of life, physical, and engineering sciences as well as select new potential areas of research and solutions this convergence offers.

**Prof. Ram Sasisekharan**, at the Massachusetts Institute of Technology is a pioneer in the emerging area of glycomics. His group has developed analytical tools and platforms to study glycans and has studied glycan-degrading enzymes, in the process investigating the important roles glycans play in infectious diseases such as cancer, cardiovascular biology and so on. His work has also yielded translational applications, and he has founded six companies, including Momenta Pharmaceuticals, Cerulean Pharmaceuticals and Visterra Inc. He has published almost 200 papers, and filed almost 100 patent applications.

Interestingly, **Dr. Sasisekharan** obtained his bachelor's degree in the physical sciences from Bangalore University before his PhD from Harvard Medical School. He has been at MIT since 1996, where he was promoted to full professor a very few years after his appointment. He is a Fellow of various prestigious academies, including the American Institute for Medical and Biological Engineering and has won numerous awards. He is involved with numerous biotechnology companies, and various non-profit institutions devoted to translational research.



**Dr. Kiran Mazumdar-Shaw** needs no introduction. A pioneer of the Indian biotech industry, she is the founder and CMD of India's only publicly listed biotechnology company, Biocon. She is the recipient of several major awards including the Padmashri and Padmabhusan, the 2014 Othmer Gold Medal and the 2014 Global Economy Prize, and has been listed among TIME magazine's 100 most influential people in the world. Ms. Shaw is a member of the Board of Infosys and Chairperson of the Board of Governors of IIM-Bangalore. Ms. Shaw played a key role in establishing IBAB, since it was Karnataka's Vision Group on Biotechnology, that proposed the setting up of this institute. Her continued involvement has driven the creation of several institutions and other facilities in the State.

**The Institute of Bioinformatics and Applied Biotechnology (IBAB)** is a young academic institute. Its mandate is to help grow the biotech industry; while most of its students join industry, other students have gone on to do PhDs at prestigious institutions within the country and outside. Faculty carry out research, and students get to work on these projects. The institute also incubates young biotech companies and has helped develop the Bangalore Bioinnovation Centre, a 40,000 sq. ft. incubator next to it.



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