Homecoming panel details what is 'new' about Life Sciences Initiative

By Lissa Harris

The publication of the discovery of the double helix structure of DNA in April 1953 by a pair of Cambridge biologists named James Watson and Francis Crick set the stage for a revolution in the way we study living organisms. Nearly 50 years later, Cornell scientists say, the life sciences stand poised at the brink of a second "biorevolution": one that will have a profound impact on science, medicine and technology for decades to come.

At a public forum in Ives Hall on Saturday morning, Sept. 28, an audience of alumni and friends visiting the campus for Homecoming Weekend was introduced to the revolutionary science behind Cornell's recently launched, $500 million New Life Sciences Initiative.

Brian Crane, left, assistant professor of chemistry and chemical biology and a presenter during the Sept. 28 biorevolution discussion in Ives Hall, speaks with Marcia G. Epstein '64, chair of the Cornell Alumni Admissions Ambassador Network for greater Philadelphia, following the Homecoming morning event. *Charles Harrington/University Photography*

The forum, titled "The Biorevolution: Accelerating Discovery and Improving Lives," featured three prominent Cornell scientists describing the role that the biorevolution will play in society in the near future -- as well as the role that Cornell seeks to play in blazing trails in the new science.

The decoding of entire genomes, or genetic codes for species, has given biologists studying organisms as different as a bacterium and a human being a common language in which to communicate. The resulting effect on research in the life sciences, said Vice Provost for Life Sciences Kraig Adler, has already been profound.

"Biology is a much more unified subject today than it was just a few years ago," said Adler, who served as moderator for the panel discussion. One of the benefits of the new biology, he said, is that our growing understanding of the genetic code common to all forms of life has enabled scientists to apply the results of animal research much more readily to human beings.

As an example, Adler noted that researchers at Cornell's Baker Institute for Animal Health -- part of the College of Veterinary Medicine -- recently discovered a cure for a type of hereditary blindness in dogs that is caused by a cluster of defective genes. Because a similar gene cluster also causes blindness in humans, he said, researchers will soon be able to begin clinical trials to adapt the gene therapy techniques used in restoring dogs' vision to human patients.

This kind of cross-pollination, said Adler, is exactly what the New Life Sciences Initiative seeks to promote at Cornell. By fostering collaboration between scientists in different branches of biology, as well as chemistry, physics, engineering and mathematics, the initiative has the lofty goal of integrating research in all these fields, using the newly available tools of genomics to tackle problems across

scientific disciplines.

Carl Batt, Liberty Hyde Bailey Professor of Food Science and director of the Cornell University/Ludwig Institute for Cancer Research Partnership, spoke enthusiastically of the ways in which this is already happening at the university. The collaborative life science projects under way at Cornell include the development of "micropumps" to deliver constant dosages of drugs within the body, the use of X-ray imaging to create microscopic images of biological tissues and the creation of hand-held fiber-optic devices that can test for the presence of disease-causing organisms, said Batt.

Brian Crane, assistant professor of chemistry and chemical biology, emphasized that despite the explosion of life sciences research in recent years, scientists are just beginning to understand how it all fits together. Crane likened the cracking of the genetic code to having a "parts list" for the cell.

"If you had a list of all the parts of an airplane, could you tell what they did or what the thing was or how they worked together?" he said. "There are probably tens of thousands of proteins in every single cell, and we have to understand how they all not only work individually, but interact with one another."

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