May 25, 2010

Letter from the Dean: “Strategic Plan Features Stem Cell Research”

Strategic Research Plan Update

Three weeks before officially becoming dean, in my May 10, 2006, letter to the Einstein community, I wrote that I intended “to engage the faculty and members of the Einstein community in a strategic research planning effort that will help define how we can best utilize the wonderful new facilities of the [yet to be completed] Michael F. Price Center for Translational and Genetic Medicine/Harold and Muriel Block Research Pavilion.” I went on to say that “a research plan can never fully anticipate all the changes that need to occur in a successful research enterprise, but if carefully done, it is invaluable in prioritizing how best to allocate precious resources.” The research plan, carefully crafted with the input of Einstein’s leading researchers, was published in April 2007, and it has indeed served us well in prioritizing resource allocation. Given the pace of change in biomedical research, last fall we initiated a process for updating our research plan, leading up to an April 26, 2010, retreat in which more than 100 Einstein scientists participated. The proposals emanating from the retreat are being written up at this time, and will be shared in future communications with the broader Einstein community. In this letter, I wanted to focus on a major theme of both the original strategic plan and its updated version: stem cell research.


(For those who wish to read a more general description of the stem cell research field, please see my piece “The Promise of Stem Cell Research: Hope or Hype?” in the Dean’s View section of the Einstein website: http://www.einstein.yu.edu/home/publications/stemcell_hope_hype.pdf.)

When I arrived at Einstein four years ago, I was aware that we had several outstanding investigators working in the stem cell field. Just a few examples are Eric Bouhassira, Ingeborg and Ira Leon Rennert Professor of Stem Cell Biology and Regenerative Medicine, studying how to differentiate human embryonic stem cells (hESC), a potentially unlimited source, into adult red blood cells; Sanjeev Gupta, the Eleazar & Feige Reicher Chair in Translational Medicine, studying several stem cell types with the...
goal of treating genetic and intrinsic liver diseases by transplanting new liver cells; Mark Mehler, Alpern Family Foundation Professor of Cerebral Palsy Research and chair of the Saul R. Korey Department of Neurology, studying nerve cell regeneration; and Carl Schildkraut, professor of cell biology, conducting fundamental studies on the timing of DNA replication in hESC. Bouhassira and several other Einstein investigators had also competed successfully for an NIH exploratory center grant for research on hESC. With a core group of superb stem cell scientists in place, the undoubted potential importance of stem cell research for treating human disease, and the fact that no single institution had established a dominant position in the field, our April 2007 strategic research plan identified investment in stem cell research as a high priority. The critical element in turning that plan into reality was a major gift from Ruth and David Gottesman that enabled us to establish the Ruth L. and David S. Gottesman Institute for Stem Cell and Regenerative Medicine Research.

Because of the restrictions the Bush administration had placed on hESC research, several states established their own funds to support such research. While California took the early lead in 2005 after voters approved proposition 71 creating a $3 billion fund, New York in 2007 established the Empire State Stem Cell Fund (NYSTEM) with $600 million to be distributed over 10 years through competitive, peer-reviewed grants. Einstein investigators, including several members of the Marion Bessin Liver Center headed by David Shafritz, Herman Lopata Chair in Liver Disease Research, and Ales Cvekl, professor of ophthalmology and visual sciences and of genetics, have received over $15 million in awards to date from NYSTEM. A $5.9 million facilities grant from NYSTEM, on which Eric Bouhassira was the principal investigator, helped upgrade core facilities critical for support of stem cell research. New Einstein recruits such as Jeff Pessin, Judy R. and Alfred A. Rosenberg Professorial Chair in Diabetes Research, who works on stem cells from fat, and Uli Steidl, the Diane and Arthur B. Belfer Faculty Scholar in Cancer Research, who works on leukemia stem cells, also garnered NYSTEM grants. Additionally, NIH funding provided under the American Recovery and Reinvestment Act (ARRA “stimulus” funds) led to Einstein’s being awarded a $9.5 million construction grant for renovation of labs to be used for investigators in the Gottesman Institute.

**Stem Cell Research at Einstein (2010 and beyond)**

An international search by a committee cochaired by Art Skoultchi, Judith and Burton P. Resnick Chair in Cell Biology, and Rick Kitsis, the Dr. Gerald and Myra Dorros Chair in Cardiovascular Disease and director of the Wilf Family Cardiovascular Research Institute, culminated early this year with my appointment of Paul Frenette as the first Ruth L. and David S. Gottesman Chair of Stem Cell and Regenerative Medicine Research and director of the Gottesman Institute. Frenette has been a professor in the department of medicine, hematology and oncology division, and the department of gene and cell medicine at Mt. Sinai and a member of its Stem Cell and Cancer Institutes. He is an internationally recognized expert in blood stem cell research and vascular biology whose lab has made outstanding

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contributions to our understanding of the basic mechanisms that regulate the travels of blood stem cells to and from bone marrow, an understanding critical to such practical issues as more effective harvesting of blood stem cells from donors. This summer, Frenette will transfer his laboratory to the first floor of the Price Center/Block Pavilion, and will be responsible for recruitment of new investigators to the Gottesman Institute. The updated Strategic Research Plan will help define the areas within stem cell biology for additional recruitment, and the resources, such as a stem cell and tissue repository and a clinical stem cell bank, necessary to link basic stem cell research to clinical applications.

Our partnership with Montefiore Medical Center offers the real prospect of bringing the products of Einstein stem cell research to patients in need of novel treatment approaches. The Montefiore-Einstein Transplant Center, formally opened earlier this month, provides an interdisciplinary approach to patients, adult and pediatric, in need of organ transplants. It represents an eloquent testimonial to Montefiore’s growing standing as a leading provider of “quaternary” care. But for patients with end-stage kidney, liver and heart disease, there will never be enough organs available for transplantation to satisfy demand. Certainly we need to do a better job of preventing organ failure to obviate the need for transplantation, but for the many patients who will always end up requiring organ replacement, stem cell research really does offer the prospect of a new era of regenerative medicine. Studies of induced pluripotent stem cells (IPS cells), derived from differentiated cells such as skin cells through a process termed “reprogramming,” are expected to lead to novel treatment approaches. High-throughput screening of hESC and IPS cells will enable discovery of factors required for regeneration of new heart, blood, lung, liver, pancreatic, kidney and brain cells. Not only cell replacement treatment, but also treatment with “regenerative factors,” will likely represent the future in treating currently incurable diseases. Einstein can, and should be, at the forefront of developing these novel treatments, but this will require all the creativity and dedication of our scientists, along with philanthropic funds—in addition to federal and state support—to enable their work.

One Final Thought

As I complete my fourth year as dean, and anticipate with pleasure handing diplomas to members of the Class of 2010 at Commencement on June 3, I look back at what I wrote in my first letter (April 3, 2006) to the Einstein community: “My time at the NIH was extraordinarily fulfilling. But now I am very much looking forward to a new challenge, one that will enable me to focus on a broader array of diseases and a broader scope of responsibilities, including educating the next generation of physicians. I feel especially privileged that I will be able to do this at Albert Einstein College of Medicine, a great medical school with an inspiring history, a remarkable record of achievement, and a future of infinite opportunity.” Those words ring truer now than ever.

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