

**Statement on HB 5042,  
"An Act Concerning the Regenerative Medicine Research Fund"  
Richard Jacob, Yale University  
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Senator LeBeau, Representative Perone, Senator Frantz, and Representative Lavielle – thank you for this opportunity to present Yale University's written statement about HB 5042, an "Act Concerning the Regenerative Medicine Research Fund."

Yale commends the Governor for proposing this bill, which will help to sustain the pace of research on stem cells and regenerative medicine in Connecticut. This is an area of high scientific interest that is beginning to accelerate the development of new therapies and the growth of the bioscience industry. We also applaud the General Assembly for its support of investments in medical research, and we urge the Committee to approve HB 5042.

Our understanding of stem cells and the techniques for manipulating them to grow tissues and organs, is advancing rapidly and is creating the potential for remarkable improvements in medical care. Yale is at the forefront of these advances, through the work of the 74 faculty research teams affiliated with the Yale Stem Cell Center. The Director of the Yale Stem Cell Center, Haifan Lin, has discovered a large number of a new types of genes that produce more than 15 million of a new type of RNAs, beyond the currently 23,000 types of RNAs known in our cells.

Laura Niklason, Professor of Anesthesiology and Biomedical Engineering, is conducting a clinical trial of arteries grown from stem cells; the company she founded is developing the arteries for implantation in dialysis patients.

In 2012, Chris Breuer, a former Professor of Pediatric Surgery, implanted an artery, grown with her own stem cells, in a three-year old girl in Bridgeport who was born with a congenital heart defect, saving the young girl's life. The technique for growing and implanting the replacement artery was a collaboration among Breuer, Yale pediatric surgeon Toshi Shinoka, and Mark Saltzman, Chair of the Department of Biomedical Engineering.

Yale has a stem cell culture laboratory that meets the Food and Drug Administration's standards for good manufacturing practices. The University has also established a Laboratory for Advanced Cell and Immune Therapies.

Yale researchers are widely acclaimed in scientific conferences. Each year, Yale scientists are invited to give talks at the highest forms of stem cell conferences.

These advances in fundamental understanding of stem cells, and the accomplishments in developing actual therapies that benefit patients, were made possible by generous funding from the Connecticut Stem Cell Fund, as well as the National Institutes of Health, supplemented by Yale's own investments. Yale spent \$90 million on the construction of the Stem Cell Research Center, as well as more than \$20 million in start-up funds for faculty research teams. In recent years, Yale faculty won at least \$36 million each year in grant funds from the National Institutes of Health, as a result of leveraging the about \$5 million per year that Yale researchers received from the Connecticut Stem Cell Fund.

We urge the General Assembly to enact HB 5042. Passing this legislation will help to ensure that Connecticut remains a leader in advancing fundamental understanding of stem cells and the development of commercially viable therapies based on stem cells.

We have a few recommendations for improvement of HB 5042.

- First, a Regenerative Medicine Research Fund should continue to support fundamental research into stem cells. We have learned a great deal about stem cells and how they can be used in therapies, but there is much more that we need to know. We should continue scientific exploration.
- Second, the Stem Cell Research Fund was effective in large part because it selected grants through rigorous evaluation of their scientific merit, as judged by national experts drawn from outside of Connecticut. A Regenerative Medicine Research Fund should continue to select projects through competitive peer review. We understand that Connecticut Innovations intends to contract with the American Association for the Advancement of Science, a highly respected national scientific society, for peer review. That approach would provide sound evaluation of applications.
- We commend the Administration for finding administrative efficiencies by consolidating oversight of the Regenerative Medicine Research Fund within Connecticut Innovations. However, we do not agree with the plan to have the Stem Cell Research Advisory Committee – which receives the recommendations of external peer review and selects the projects to be funded – subject to further oversight by the Bioscience Innovation Fund Advisory Committee.

Having two layers of decision-making, as well as discretionary decisions by the Director of CI, would be unnecessarily cumbersome. In addition, the Regenerative Medicine Research Fund and the Bioscience Innovation Fund serve different purposes, and it would be prudent to have separate lines of reporting to the Director of Connecticut innovations.

We are grateful for this opportunity to present Yale's views about HB 5042.