Science & Technology

Future Shock

A controversial form of stem-cell research is well under way.

By
Leslie Hendrickson '06JRN
|
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A large, theatergoing mouse rides The 1 train to Times Square. A dog with human brain cells applies for Social Security. A human with animal cells is denied the right to marry.

Far-fetched? One should think. But as Robert Klitzman, an associate professor of clinical psychiatry at Columbia, said on a recent afternoon, the mixing of the DNA of different species to create new ones is well under way. And it’s a big issue in the stem-cell wars.

Klitzman, who is the cofounder of Columbia’s Center for Bioethics, was speaking to a gathering of about 20 physicians, medical students, and neighbors inside the Pathology Library on the 15th floor of the Vanderbilt Clinic. The room’s shelves were lined with medical texts and journals. A window at the back looked south onto the Hudson, with Riverside Church in the distance.

“When Watson and Crick discovered, or stole, DNA, they didn’t really know where it would go,” Klitzman said. “It’s the same now.”

A Broadway-bound mouse might be pushing it, but less complicated hybrids and chimeras already exist. Hybrids arise from a mixture of DNA at the cell level, and chimeras are organisms that contain two genetically different types of cells from the same or different species. “There are fears when it comes to hybrids and chimeras,” Klitzman said. “We can’t yet envision just what the research will look like, but now that these things can be done, we have to try to grapple with the ethical issues.”

Some politicians don’t want to wait for the science to evolve. Legislation in Ohio and Arizona has barred anyone from attempting to create a human-animal hybrid, to avert possible ethical and legal conflicts. “If a dog has human brain cells, is that dog somehow human?” Klitzman said. “Or if a man receives animal cells, is he less human?”

Although he welcomes further questioning into the morals of messing with nature, Klitzman believes that the potential benefits should take precedence. The line between human and animal “was never that clear anyway,” he said, and scientists have been creating hybrids for a long time, with many medical advances to their credit.

A physician spoke up. She had curly black hair, and wore her CUMC ID card around her neck. “We don’t want to let our imaginations run wild,” she said, lest fearful lawmakers “stymie wonderful work with regulations.”

Klitzman noted that stem-cell research in the United States has been stalled since President George W. Bush’s ban of the use of federal money for human embryonic stem-cell research in 2001. Because a federal stem-cell program has not been developed, states each have their own standards when it comes to research. If states were working with the same guidelines, it would be easier to share embryos or pool cell lines. Instead, we have instances in which a state like New York allows women who donate eggs for research purposes to be compensated for their time and burden, while other states don’t allow any money to change hands for a donation. That means stem-cell researchers in those states can’t use eggs from donors who have been remunerated.

“We can do this here, but it can’t go across the Hudson to New Jersey,” Klitzman said. Such disparate standards “prevent full collaboration with other universities and research institutions.”

Stem cells have been touted as the key to potential cures for many diseases, such as cancer and Parkinson’s, and Americans are getting restless for these benefits to become available. In the U.S., stem-cell therapies have yet to make it to the trial stage. “As of three months ago, there’s only been one clinical trial, which was stopped because of complications,” Klitzman said.

Desperate patients are seeking stem-cell treatments in other countries despite the lack of testing and the low rate of success. For Klitzman, the plight of these “stem-

cell tourists” points to a need to better translate the nuances of stem-cell issues to the public.

Managing expectations is crucial, too, and it’s important to keep the public interested and informed without overselling, Klitzman added. It could be another 20 or 30 years before treatments are developed, or a hybrid and a chimera want to tie the knot. But then again, it could be only five.

“We still have to see what the science can do,” said Klitzman. “We’re creating the future in ways we can’t yet envision.

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