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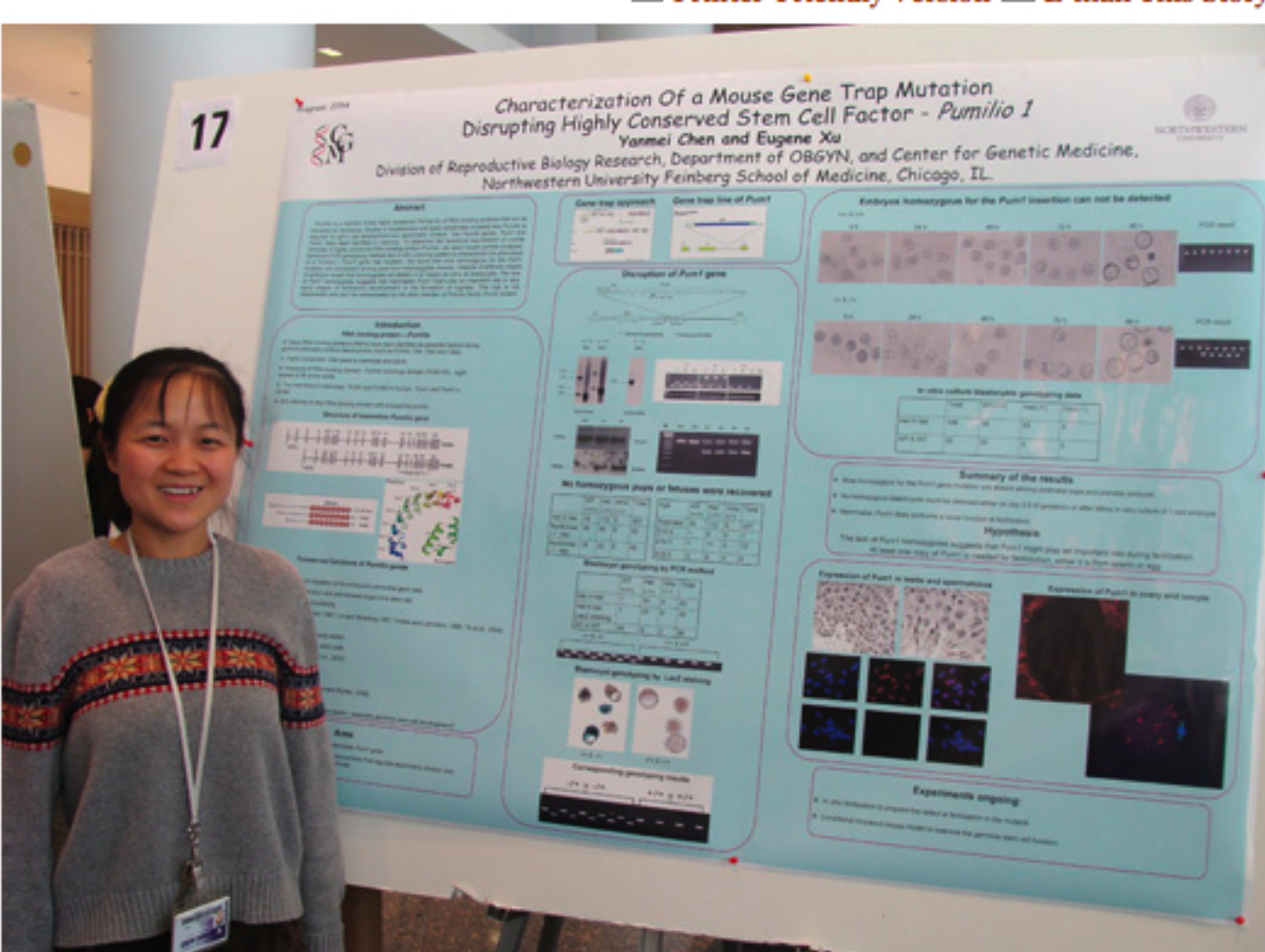
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Town Travis/Medill

Post-doc Yanmei Chen presented her project on mouse genetic mutations at a poster session at Northwestern University on Wednesday.

Mouse genetics meeting reveals possibility of new cancer treatments

BY TOWN TRAVIS APRIL 10, 2008

Genetic research with mice may hold the key to new treatments for cancer and other illnesses.

Some potential treatments may enter the stage of human testing as early as this year but others will take much longer. "What we must do is first prove that a gene has a certain effect," said biologist David Valenzuela.

He said that the work has resulted in new approaches to cancer research. By targeting and blocking a specific molecule, researchers may be able to "stop blood coming to tumors and diminish tumor size," said Valenzuela at a science conference held at Northwestern University on Wednesday.

Although similar methods exist, they typically target specific cancers. Valenzuela said his research is testing a new drug that might be capable of treating a different kind of tumor than those that can be treated now. The research is still in the early stages using mice.

Valenzuela's research with the National Institutes of Health (NIH) Knockout Mouse Project has resulted in a streamlined way to analyze mice on a genetic level.

"We used to do this the hard way," gene by gene, said Valenzuela, who works with a New York pharmaceutical company and spoke at a science conference in Chicago on Wednesday. "Now we do it faster and in mass, and yet we do it with more precision."

Valenzuela said the process to test and validate new methods is very lengthy, as is the process for getting FDA approval.

"We believe that this method [of genetic analysis] is productive enough that we can advance a number of molecules, two or three a year, for the clinical process of validating them for potential use," Valenzuela said. However, he was realistic about obstacles to the process. "Not all the [molecules] will go all the way," he said.

Valenzuela, vice president of functional genomics at Regeneron Pharmaceuticals and chief of Velocigene operations, was the keynote speaker at the 2008 Mouse Genetics Group annual meeting, held at Northwestern's Center for Genetic Medicine of the Feinberg School of Medicine. He spoke on "The New Mouse Transgenics: From Genetic Research to Drug Discovery and Development."

"We were extremely pleased with the turnout," said Michael Kennedy, director of research and educational programs for the Center for Genetic Medicine. "The quality of the science presented was outstanding, and we are excited about the discussions the event generated about genetics research at Northwestern."

Valenzuela was recently awarded a \$25 million NIH grant to fund his research with the Knockout Mouse Project, so called because scientists "knock out" specific genes in mice to determine their function.

The goal of the project is to produce a public resource comprised of mutated mouse embryonic stem cells. The research uses the mouse as a model for human disease, in hopes of developing new drugs and advancing scientific knowledge.

"Mice and human beings are very similar genetically," Valenzuela said. "We have very similar physiology. There are roughly the same number of genes that take care of functions, and they are basically the same genes."

More than 95 percent of mouse genes are similar to human genes, Valenzuela said. Furthermore, the mouse has similar developmental, physiological, biochemical and behavioral patterns to humans, according to the NIH Web site.

This similarity allows for genetic research with mice to be easily applied to human conditions. Possible results of mouse genetics research include increased understanding of cancer, diabetes and Alzheimer's disease, as well as many other diseases.

"Mice are really a wonderful model," Valenzuela said. "We have tools that allow us to [work genetically] with mice that are not available with other animals. We take a piece of mouse DNA, characterize it and see if it is useful for any pharmaceutical product."

"Some of the stuff [Valenzuela] described is absolutely cutting edge in terms of making human antibodies," said Raj Awatramani, assistant professor of neurology at Northwestern University.

"In addition, this whole initiative by the NIH to knock out every single gene has its critics at this point but, in about 15 years from now, it's going to be as valuable as the human genome project."

"These mice are going to a very useful resource for understanding drug development," Awatramani said.

The mouse genetics meeting was preceded by a poster session featuring posters designed by graduate students and post-doctoral fellows. The posters documented various research projects relating to mouse genetics and other topics.

Yanmei Chen, a post-doctoral student with the department of obstetrics and gynecology at Feinberg, stood by her poster and welcomed questions from onlookers. She said her project, dealing with mouse gene mutations, was very educational, as was the poster session.

"I think it's a great communication between the people who do genetics and other labs," Chen said. "You get to know people and get some ideas when people read your posters and talk to you. I think it's a great event."



Town Travis/Medill

Northwestern University researcher Jared Flatow poses with his poster on genetics and pathogens in infant lungs.

- Related Links**
- Mouse Genetic Group meeting
 - NIH Knockout Mouse Project