



May 5, 2008

Green Fluorescent Rats Used To Help With Stem Cell Research

MILWAUKEE, Wis. -- Researchers at the Medical College of Wisconsin have taken a jellyfish's ability to turn a glowing green and given it to rats, in order to help with stem cell research in humans.

"We wanted to develop a technology for a single and inexpensive gene manipulation in an animal model," said Dr. Mikel Michalkiewicz. Michalkiewicz and his partner took a gene from a jellyfish and put it into the cells of rats. Rat pups look white under normal light but their ears and tails are green under a special light. "All organs are green, including brain, heart, kidney, liver, muscles and so on," Michalkiewicz explained.

The fluorescence of the jellyfish will help track embryonic stem cells – which have the potential to cure human disease -- in rats, according to the researchers. Fluorescent stem cells can be seen and followed and allow researchers to know if they are helping to repair damaged organs. The rat research could give scientists an idea of what might happen with stem cells in humans.

From fluorescence to luminescence -- fireflies, with their unique ability to light up, are helping researchers in another Medical College lab study breast cancer. They've taken firefly genes and put them into genetically engineered tumor cells. The tumor cells are then injected into mice. "When the tumor grows, the firefly gene divides with the cells, and produces more light," said Dr. Robert Truitt.

Images of the mice tumors are taken in a special, light-tight machine. "Normally we would have to kill the animal and autopsy it. This way we can actually monitor the growth of the tumor in the animal without killing it, over a long period of time," Truitt said.

They will know if some of the therapies they are developing to stop breast cancer are working. One of those therapies is a vaccine. "We can use what nature has created to our advantage in being able to do these types of things," Truitt explained.

Besides helping advance human health, there's a cost savings advantage to the research. Lab rats and mice – especially the genetically engineered ones – are expensive and methods that keep the animals around longer save the institution money.

Copyright 2008 by WISN.com. All rights reserved. This material may not be published, broadcast, rewritten or redistributed.