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Helen Lin

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## Glow-in-the-Dark Cats

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The potential new frontier for HIV research may be fluorescent cats. While humans are susceptible to HIV, felines suffer from FIV, feline immunodeficiency virus. Despite affecting different species, the viruses cause nearly identical symptoms because most of their basic biochemistry is identical. Previous studies have shown that the protein TRIMCyp may keep humans and monkeys from being infected with FIV. As expected, cats lack this protein. The protein is believed to recognize FIV's protein coat and disable it as the protein tries to invade a cell.

To test whether cats given TRIMCyp would become immune to FIV, scientists at Mayo Clinic created genetically altered cats. They used the technique, gamete-targeted lentiviral transgenesis, a process by which genes are inserted into feline oocytes before sperm fertilization. The technique has worked previously with mice and cows. Researchers created a lentivirus containing the TRIMCyp gene and a fluorescent protein gene as a marker. If the cats began to glow green, researchers would be able to determine that the cats have TRIMCyp. Once the oocytes were infected and fertilized with normal cat sperm, the oocytes were injected into the fallopian tubes. Each cat received 30 to 50 eggs. Of the 22 cats fertilized, five cats became pregnant with multiple embryos. Ten of the embryos contained the target gene, but only three kittens with the genes survived. When the researchers tried to infect blood taken from the kittens, the virus did not replicate well. The cats themselves have not yet been infected with FIV.

These fluorescent cats will join the ranks of other fluorescent animals in science that include fish, pigs, macaque monkeys, and mice. Scientists hope that experiments like this one will provide additional strategies to address the HIV epidemic.

### References

"Mayo Clinic teams with glowing cats against AIDS, other diseases: New technique gives cats protection genes". EurekaAlert. <[http://www.eurekaalert.org/pub\\_releases/2011-09/mc-mct090811.php](http://www.eurekaalert.org/pub_releases/2011-09/mc-mct090811.php)>. 20 Sept 2011.

"Glowing Kittens Fight Feline AIDS". Science. <<http://news.sciencemag.org/sciencenow/2011/09/glowing-kittens-fight-feline-aid.html?ref=hp>>. 20 Sept 2011.



### Reference for Image

"Mayo Clinic teams with glowing cats against AIDS, other diseases: New technique gives cats protection genes". EurekaAlert. <[http://www.eurekaalert.org/pub\\_releases/2011-09/mc-mct090811.php](http://www.eurekaalert.org/pub_releases/2011-09/mc-mct090811.php)>. 20 Sept 2011.