

Scientists 'paint' viruses to track their fate in the body

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Biologists from Austria and Singapore developed a technique that adds a new twist on the relationship between biology and art. In an article recently published online in *The FASEB Journal* and scheduled for the August 2008 print issue, these researchers describe how they were able to coat—or paint—viruses with proteins.

This breakthrough should give a much-needed boost to the efficiency of some forms of gene therapy, help track and treat viral disease and evolution, improve the efficiency of vaccines, and ultimately allow health care professionals track the movement of viral infections within the body.

Specifically, the new method should make it easier to track and treat infectious diseases such as HIV/AIDS, influenza, hepatitis C, and dengue fever. And because viruses can also be used to introduce biotechnology drugs and replacement genes, and act as vaccines, this research should lead to new treatments for cancer, cardiovascular, metabolic and inherited disorders.

“This technology should provide a new tool for the treatment of many diseases,” said Brian Salmons, one of scientists who co-authored the study. “Even if you are working with a virus that is unknown or poorly characterized, it is still possible to modify or paint it. This is very interesting for emerging diseases.”

In the article, Salmons and colleagues explain how they mixed purified

proteins (glycosylphosphatidylinositol anchor proteins) with lipid membranes to make it possible to bind these proteins to the outer “skin” (the lipid envelope) of viruses. Even with the new paint job, the viruses remained infectious. While the experiment only involved one type of protein and two types of viral vectors, Salmons says the technique could be expanded and used to apply “paint” made up of other proteins, dyes, and a variety of unique markers.

“Biology and art converge daily: people paint their nails, color their hair, and tattoo their skin,” said Gerald Weissmann, M.D., Editor-in-Chief of The FASEB Journal. “Now this convergence has entered a new dimension as painted viruses permit scientists to track, cure and prevent disease.”

Source: Federation of American Societies for Experimental Biology

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