



Inspired Life Science Technology

Going Viral

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Seeking Your Feedback - A Survey from InDevR

What methods are scientists currently using to inactivate virus particles? InDevR is interested in learning more about our readers' daily practice in their laboratories. Please take a brief moment to respond to this question by participating in our second readership survey. [Click here](#) to begin.

News in Life Science Technology

In Final Mission, Space Shuttle Atlantis Carries Vaccine Research

July 8, 2011 marked the final launch of the NASA Space Shuttle program. It also signaled the beginning of a new vaccine research opportunity. Scientists from Arizona State University hope to find methods for improving a pneumonia vaccine's efficacy from space's microgravity. Past research completed by these scientists in space found several insights. The first being that the effects of microgravity increase salmonella's virulence. The second was the development of a promising pneumonia vaccine that is currently undergoing Phase I clinical trial testing.

During the final Atlantis mission, the focus will be on harnessing a salmonella strain with an antigen from *Streptococcus pneumoniae* as an experimental pneumonia vaccine. Astronauts will work with the virus in space and researchers on the ground will mirror their efforts.

[Read more](#)

The CIA, bin Laden and the Future of Vaccine Programs

New reports from US intelligence agencies reveal that the hepatitis B vaccine program played an important role in the capture and death of Osama bin Laden on May 1st. This vaccine program helped the CIA obtain his family DNA. Now, experts who support vaccination campaigns in the developing world are worried that this covert operation may hurt their efforts. Many living in countries like Pakistan are distrustful of vaccines after hearing the Taliban and other leaders state that they would cause infertility that would control the size

of the Muslim population.

Today, 60 percent of the world's polio cases occur in Pakistan. It is the only country seeing a rise in polio cases.

[Read more](#)

Drive to Stem Shingles Meets Few Expectations

The entire adult population faces a one in three chance of being diagnosed with shingles at some point. More than 200,000 US adults ages 50 - 59 are diagnosed with the debilitating virus each year. Five years ago, the Food and Drug Administration approved the Zostavax vaccine to prevent shingles in adults over 50. In clinical trials, the vaccine produced a tremendous 51 percent reduction in outbreaks of shingles in patients 60+. However, since its FDA approval, the vaccine has had little impact across the globe.

A variety of issues have hindered the success of Zostavax - produced by Merck - including not enough quantities of the vaccine being produced to meet modest demand, the amount of time it's taking to increase production of the vaccine and the basic cost of a shingles vaccination - \$160 per dose, not counting the cost of the office visit and injection. Few insurance companies will currently pay to cover the cost of a shingles vaccination in patients under the age of 60. The Zostavax vaccine is made with a live attenuated virus that is difficult to grow in bulk. This live attenuated virus is also needed to produce the childhood chickenpox vaccine.

Just 10 percent of adults over the age of 60 were vaccinated against shingles in 2009. In comparison, two-thirds of Americans 65 and older received an influenza vaccination that year. Because the Zostavax vaccine is in short supply again, just last month a CDC advisory committee declined to vote on whether to recommend the vaccine for people in their 50s.

[Read more](#)

Virology 101

For those new to virology research, Vincent Racaniello, Ph.D., professor of microbiology at Columbia University, and his team of content experts on the Virology Blog, produce a podcast once a month that is focused on the basics of virology. From virus structure to making viral RNA, these podcasts provide a wealth of information for scientists.

[Download podcasts](#)

Virus of the Month: Dengue



In the previous issue of *Going Viral* we presented an overview of the arthropod-borne virus, dengue. Aaron Phillips is a Ph.D. candidate at Colorado State University (CSU) and the virology suite lab manager for the university's Arthropod-borne Infectious Diseases Laboratory (AIDL). The work of the CSU AIDL is well known throughout the US. The laboratory participates in numerous joint research projects with the Centers for Disease Control and Prevention Division of Vector-borne Infectious Diseases and the US Department of Agriculture Arthropod-borne Animal Diseases Research Laboratory. As an active researcher of arthropod-borne viruses, Aaron offers a personal perspective of his work with dengue in this Virus of the Month spotlight.

1. Are you aware of any exciting research taking place right now with dengue?

There has been a lot of excitement surrounding the generation of an animal model for dengue infection. Dengue virus is maintained in a natural cycle involving humans and mosquitoes. Animal models have been slow to develop due to the inability of dengue to cause disease in these animals. A new model is emerging that has a great deal of promise associated with it. By "humanizing" mice, that is implanting human stem cells into irradiated mice, the mouse immune cells repopulate from the human origins. This permits viral replication and appears to elicit similar pathology found in the human stem cells.

2. What are some of the biggest challenges in working with BSL-3 viruses?

The most concerning challenge with BSL-3 arboviruses is the fact that mosquitoes are blood-feeding arthropods. This means that when you have a mosquito escape from containment, it will actively seek you out and attempt to bite you. Therefore, containment of infected vectors is of utmost importance.

Another challenge in working with the BSL-3 pathogens in mosquitoes is the biosafety cabinet itself. The noise and airflow really impact the natural host seeking behavior of mosquitoes, which hampers efforts to invoke feeding upon both artificial blood feeders as well as live animals. Also, the airflow can blow individual mosquitoes away from you.

3. Are all of the viruses you work with in the BSL-3 amenable to plaque assay and other standard biological methods for quantification?

There are BSL-3 viruses that do not plaque well (if at all), nor do they have very good antibodies to do a fluorescent focus assay in lieu of plaques. This typically ends up requiring qPCR, but that may also be problematic since viral quasi-species may complicate the amplification.

4. What are the challenges in using standard viral plaque assay (or other standard biological assays) for the viruses you work with?

Sterility! Dengue virus can take up to 14 days to titer. This is extremely unforgiving of any contamination, since the incubation period is so long. Additionally, keeping the cells healthy and happy during that period is a technical challenge. As for the actual titration procedure itself, there is a very narrow window between your agar being too hot to put on your cells or so cold that it solidifies before lying on your cells uniformly. Titrating dengue virus is not a walk in the park.

To learn more about Aaron's work at the CSU AIDL visit this [website](#)

Green Ideas



One of the biggest green issues companies face as they grow and adapt to changing technology is what to do with their old technology. Instead of just throwing old computers away, Dell and Goodwill Industries have come up with another idea. Through the Dell Reconnect project, individuals and businesses can take used computer equipment - any brand is acceptable - to more than 2,200 participating Goodwill stores in the US and Canada. The stores will then either refurbish and sell the used equipment or make sure it is recycled responsibly.

[Click here](#) to learn more about the Dell Reconnect program.

InDevR would like to learn more about things you are doing to make your business and our planet a little "greener". Feel free to send any tips or solutions to info@indevr.com. They may be featured in an upcoming issue of *Going Viral!*

Upcoming Events

Interested in learning more about the virus quantification and pathogen detection technologies being developed at InDevR? Sign up for one of our Webinars or connect with an InDevR team member at an upcoming biotechnology conference.

The Bioprocessing Summit

Baculovirus Technology

August 24 - 25, 2011

Boston, Massachusetts

[Click here](#) to learn more about the 2011 Bioprocessing Summit.