New virus discovered in stranded dolphin

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Researchers at the Center for Infection and Immunity at Columbia University's Mailman School of Public Health and colleagues have identified a new virus associated with the death of a short-beaked dolphin found stranded on a beach in San Diego. It is the first time that a virus belonging to the polyomavirus family has been found in a dolphin. Results appear online in the journal *PLOS ONE*.

Polyomavirus is known to cause disease in birds, but in mammals it is usually mild or subclinical, explains lead author Simon Anthony, PhD, a researcher in the Center for Infection and Immunity at the Mailman School. "It is therefore interesting that this particular polyomavirus appears to be what killed this dolphin. It's no immediate cause for alarm, but it's an important data point in understanding this family of viruses and the diseases they cause."

This discovery will help prepare scientists for future disease outbreaks and could even be useful in solving past unsolved cases. "There are many cases of disease in animals that we never have solved," says Dr. Anthony. When we make a new discovery like this, it allows us to ask, Have we seen it before? Will we see it again?"

The dolphin, a female calf, was found dead in October 2010. Judy St. Leger, DVM, of SeaWorld in San Diego, a co-author of the study, conducted a necropsy that identified the cause of death as tracheal bronchitis with signs of an infection, which an electron microscope revealed to be of possible viral origin. To identify the culprit, she sent a biological sample to the Center for Infection and Immunity in New

York, where Dr. Anthony used high throughput DNA sequencing and a number of other techniques to identify the novel polyomavirus.

Genetic analysis showed that the polyomavirus in the San Diego dolphin was distinct from other members of the virus family. Drs. Anthony and St. Leger postulate that this might be one of many such viruses that exist in dolphins and other marine mammals. They are now searching for more examples of polyomavirus in dolphins. "It's possible that many dolphins carry this virus or other polyomaviruses without significant problems. Or perhaps it's like the common cold where they get sick for a short while and recover," says Dr. St. Leger.

Dr. Anthony stresses that without more work to study the diversity and prevalence of polyomaviruses in dolphins and other marine mammals, it is difficult to know what the specific threat of this new virus is. "We don't even know if this is even a dolphin virus. It could also represent a spillover event from another species." While unknown in this case, the possibility intrigues him. "Several important outbreaks in the past have resulted from viruses jumping into new hosts," he says, citing another Anthony-St. Leger collaboration where they documented a case of bird flu in a seal population in New England (findings were published in mBio).

But for now, the significance of the discovery of a polyomavirus in a dolphin is that it appears to be the cause of death of this animal, and as Dr. Anthony notes, "One of our main goals is to protect the health of wildlife."

Provided by Columbia University's Mailman School of Public Health