
PETER PALESE

Don't censor life-saving science

Controlling who is allowed access to information about mutations in the H5N1 bird flu virus is unacceptable, says **Peter Palese**.

The recent arguments over the creation of a transmissible form of the bird flu virus (H5N1) feel very familiar. My colleagues and I were at the centre of a similar controversy in 2005, when we reconstructed the 1918 flu virus, which had killed up to 50 million people worldwide. News stories around the globe debated the merits of our research and television pundits argued opposing viewpoints. Naturally, the US government was concerned — as it is now. Yet our research was published in full. So why are similar concerns being used now to demand unacceptable censorship of the H5N1 scientific papers?

I have spent my career studying potentially dangerous pathogens — 20 years ago, my lab developed the technique that has enabled the H5N1 researchers to insert the mutations that render the virus more easily transmissible. In the 1990s, researchers discovered degraded samples of the 1918 virus in lung tissue from US soldiers who had died from the 'Spanish flu'. Using polymerase chain reaction technology, they amplified and sequenced the virus's RNA. We then took an existing influenza virus and, one by one, swapped its genes with those from the 1918 virus, eventually recreating a live version.

As we prepared our results for publication, the US government convened the National Science Advisory Board for Biosecurity (NSABB), which advises the community about research using agents that pose threats to national security or public health. Our experiments had made some people nervous.

During our discussions with members of the NSABB, we explained the importance of bringing such a deadly pathogen back to life. Although these experiments may seem dangerously foolhardy, they are actually the exact opposite. They gave us the opportunity to make the world safer, allowing us to learn what makes the virus dangerous and how it can be disabled. Thankfully, the discussions were largely constructive — within a week, the NSABB recommended that we continue to study the virus under biocontainment conditions, and publish the results so that other scientists could participate in the research. After we published our full paper in 2005 (T. M. Tumpey *et al. Science* **310,** 77–80; 2005), researchers poured into the field who probably would not otherwise have done, leading to hundreds of papers about the 1918 virus. As a result, we now know that the virus is sensitive to the seasonal flu vaccine, as well as to the common flu drugs amantadine (Symmetrel) and oseltamivir (Tamiflu). Had we not reconstructed the virus and shared our results with the community, we would still be in fear that a nefarious scientist would recreate the Spanish flu and release it on an unprotected world. We now know such a worst-case scenario is no longer possible.

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This experience has made the NSABB's latest recommendation — that the H5N1 researchers not reveal the mutations behind the virus's transmissibility — all the more frustrating. I make the same argument today that we made in 2005 — publishing those experiments without the details is akin to censorship, and counter to science, progress and public health. Why did the (different) members of the committee come to a different conclusion in this case? I can only hope that they take a more sensible stance and change their minds, or that the scientific community at large convinces them to do so. Certainly, the authors of the papers, as well as the journals considering them for publication (including this one), should resist the committee's unworkable compromise that the full information should be released only to approved experts, and insist on full disclosure.

Giving the full details to vetted scientists is neither practical nor sufficient. Once 20–30 laboratories with postdoctoral fellows and students have such information available, it will be impossible to keep the details secret. Even more troublesome, however, is the question of who should decide which scientists are allowed to have the information. We need more people to study this potentially dangerous pathogen, but who will want to enter a field in which you can't publish your most scientifically interesting results?

Knowing which mutations render the virus more dangerous could help on a public-health level — if an outbreak of bird flu occurs in Taiwan, for instance, and researchers sequence the virus and see those mutations, we would know to ramp up the production of appropriate vaccines and antiviral drugs.

Incidentally, I believe that the risk of future outbreaks in humans is low: H5N1 has had the opportunity to cause widespread pandemics for many, many decades, yet it has not done so. Although we know the virus is transmissible between ferrets, little is known about how it will behave in other animals, including humans.

The more danger a pathogen poses, the more important it is to study it (under appropriate containment conditions), and to share the results with the scientific community. Slowing down the scientific enterprise will not 'protect' the public — it only makes us more vulnerable. ■

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Peter Palese *is the Horace W. Goldsmith professor and chair of the Department of Microbiology at the Mount Sinai School of Medicine, New York.*
e-mail: peter.palese@mssm.edu

Editor's note: *Nature* is considering one of the papers and the NSABB's recommendations. It is also involved in consultations about how restricted access to the scientific methods and data might be implemented.