Reply to "The 1977 H1N1 Influenza Virus Reemergence Demonstrated Gain-of-Function Hazards"

Michelle Rozo, Gigi Kwik Gronvall

UPMC Center for Health Security, Baltimore, Maryland, USA

We thank Martin Furmanski for his interest in our article (1) concerning the unnatural origins of the 1977 H1N1 influenza virus strain. In his Letter to the Editor, he challenges our assertion that to date, there has been no real-world example of a laboratory accident that has led to a global epidemic, and he states that we ourselves concluded that the virus "originated in a microbiology laboratory and its release was unintentional," to which he added that "which laboratory is responsible matters little in the GoF debate" (2). This is a mischaracterization of our findings. While we found that the strain did indeed have a laboratory origin, the actual release of the virus was likely the result of administering an inappropriately attenuated vaccine or challenge strain to thousands of Chinese soldiers and was likely not the effect of a single escape from a laboratory. While the science behind why some viruses take off to become epidemics and others do not may still be incompletely understood, the 1977 epidemic most likely had a substantial head start, with massive, coordinated human actions. Therefore, we reiterate our findings that the 1977 influenza epidemic is not relevant to the modern debate regarding gain-of-function research and that to date, there has been no global epidemic that has stemmed from a laboratory accident.

However, regarding the biosafety concerns expressed, we agree that several laboratory accidents over the last few years are concerning and are a signal that biosafety (and not just biosecurity) precautions need to be better funded and taken more seriously. This is a broader issue that is not tied to a specific line of inquiry in research, and it is important for not only individual research scientists but also at the political level. To address these concerns, we believe there is a clear need for a no-fault reporting system for accidents and incidents to promulgate safety lessons, similar to what has worked well in the aviation industry (3), as well as international biosafety norms to encourage and guide investments in biosafety (4), among other actions.

REFERENCES

1. **Rozo M, Gronvall GK**. 2015. The reemergent 1977 H1N1 strain and the gain-of-function debate. mBio **6:**e01013-15. http://dx.doi.org/10.1128/mBio.01013-15.
2. **Furmanski M**. 2015. The 1977 H1N1 influenza virus reemergence demonstrated gain-of-function hazards. mBio **6:**e01434-15. http://dx.doi.org/10.1128/mBio.01434-15.
3. **Gronvall GK**. 2007. Proliferation of bio-laboratories in the United States. Testimony before the U.S. House of Representatives Committee on Energy and Commerce, Subcommittee on Oversight and Investigations. http://www.upmchealthsecurity.org/our-work/testimony/hearing-on-germs-viruses-and-secrets.
4. **Gronvall GK**. 2014. National-level biosafety norms needed for dual-use research. Front Public Health **2:**84. http://dx.doi.org/10.3389/fpubh.2014.00084.

Published 29 September 2015

Citation Rozo M, Gronvall GK. 2015. Reply to "The 1977 H1N1 influenza virus reemergence demonstrated gain-of-function hazards." mBio 6(5):e01524-15. doi: 10.1128/mBio.01524-15.

Address correspondence to Gigi Kwik Gronvall, ggronvall@upmc.edu.