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Reply

Reply to Lipsitch et al., "Public role in research oversight"

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In "Virology—the path forward" (1), we stated our belief that diverse expertise is required to implement meaningful oversight of virology research. Virologists have long partnered with institutional and federal authorities to mitigate risk. We do not argue for the exclusion of other stakeholders or a wholly self-regulated system but for the inclusion of virology expertise. Without this, scarce research dollars will be used to construct and navigate a regulatory system that does not meaningfully reduce risk but makes it more difficult for the United States to be prepared to fight the next pandemic.

Although the authors of "Virology-The Path Forward" collectively have hundreds of years of experience working with viruses and have advanced our understanding of these threats, many critical questions remain about how viruses cause harm and how they may be defeated. We strongly urge that all stakeholders embrace humility in pandemic preparedness and response efforts. There is much we still do not know about viral evolution, pathogenicity, and transmissibility.

Lipsitch et al. assert that it is feasible to prepare for the next pandemic through research that avoids the use of infectious pathogens. However, theoretical assumptions and contrived experimental systems have serious limitations and often do not support accurate the prediction of risk. A common example is the use of pseudotyped viruses, which can be useful for examining viral entry but may be misleading due to differences in the 3D arrangement and density of spikes (2, 3). Pseudotyped viruses cannot provide information about post-entry stages of the viral life cycle or complex virus-host interactions required for transmission and pathogenesis. Furthermore, prototype viruses, such as murine coronaviruses, are valuable for studying basic virus biology but inadequate for understanding the transmission, virulence, and pandemic potential of emerging viruses. Deciphering these nuances is where virology expertise is essential.

To enable an effective response to the next pandemic, oversight of pathogen research must be calibrated to ensure safety while allowing research to thrive. Without a robust microbiology enterprise in the United States, we will be dependent on international partners in situations where lives depend on rapid, informed responses. Broad prohibitions on pathogen research will diminish response capacity at the expense of the American public. Consider that the rapid development of COVID-19 vaccines relied on research with SARS-CoV-1 that would be curtailed by the recent recommendations of the NSABB.

Lipsitch et al. highlighted our citation of a single source describing the chilling effect these proposed rules have already had on US virology, implying that we overestimate the impact of uninformed, hastily conceived oversight. However, this chilling effect is our current reality. Although new oversight has not yet been implemented, our trainees see more promising futures in areas other than combatting pandemics, our colleagues reconsider essential pandemic research based on foreseen delays in review, and those evaluating research prioritize political palatability over scientific merit and public health benefit. To add to these pervasive effects of the current climate, there are numerous historical examples of how oversight based on hypothetical concerns has stymied efforts to counter infectious threats (4–8).

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Public mistrust of science is a predicament that necessitates myriad responses by the scientific community. It will not engender trust to abandon science in favor of optics. There will be future infectious disease emergencies that may be more deadly than COVID-19. To be ready, we must fuel scientific progress toward reducing risks and increasing capacity to save lives. We need an oversight system that works. And for that, technical expertise in virology is required.

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