

More control of research on human pathogens needed

I was going to post a piece about why I now believe that COVID-19 originated as a leak from the Wuhan Institute of Virology (WIV) but the case has been laid out with great clarity by Matt Ridley. Link.

The WHO is now calling for a thorough investigation, which is an admission that the first investigation was grossly inadequate, and suggests that they strongly suspect that WIV was somehow involved.

If the lab leak theory is correct, then a blunder by virology researchers has killed (so far) more than 15 million people and caused immense suffering. We must do all in our power to ensure that we don't do this again.

The smoking gun here as described by Ridley is a leaked document that was a grant application by Ecohealth (P.I. Peter Daszak) to the defense research agency DARPA proposing research on modifying Coronavirus. A lead investigator would be Shi Zhengli of WIV.

Two quotes from the proposal:

We will introduce appropriate human-specific cleavage sites and evaluate growth potential

Dr. Shi, Wuhan Institute of Virology, will conduct viral testing on all samples, binding assays and some humanized mouse work

COVID-19 has, surprisingly, a cleavage site of the type Ecohealth planned to engineer, that greatly increases infectivity in humans.

As far as I can make out, the plan here was for WIV to collect live virus, ship it to the USA, have US scientists genetically modify the virus, and then ship modified virus (with unknown pathogenicity) back to China to inject into mice. It was claimed that the proposed work was somehow exempt for regulation of gain-of-function work on human pathogens. If so the regulations need to be changed!

There has been a lot of special pleading arguing against an artificial origin of COVID-19. For instance Andersen [1] says that the cleavage site in COVID-19 was not optimized for human transmission (under current models). But I'm not claiming that the proposed research was directed towards biowarfare [indeed this is most unlikely, it's hard to imagine joint Chinese-US work on developing offensive bioweapons]. Ecohealth wanted to investigate how changes in the cleavage site would affect pathogenicity.

The Ecohealth proposal was rejected, but a dirty not-so-secret is that often a good slice of work proposed in a grant application has in fact already been done, and for sure when a grant is rejected the scientists involved consider how they

can proceed anyway. I think that work on similar lines to the DARPA proposal was likely continued in Wuhan.

The risks of this work were clear, even before the pandemic, and the benefits extremely nebulous. Why did the scientists involved want to do this work? The answer is in Genesis. The serpent says to Eve that if she eats the forbidden fruit ‘ye shall be as gods, knowing good and evil’. Precisely. It must feel immensely empowering to create a new pathogen, and be able to investigate its properties. A quote from Robert Oppenheimer:

When you see something that is technically sweet, you go ahead and do it and you argue about what to do about it only after you have had your technical success. That is the way it was with the atomic bomb.

From the Garden of Eden to today, humanity is very bad at deciding that there are some things it is better not to know.

So I think that molecular biologists have by accident caused a planetary disaster. It is of the utmost importance to have regulations that help prevent this happening again.

I also want to comment on the extensive network of biolabs run by the US Department of Defense. The Russians and Chinese do seem to be genuinely upset. Some of this is propaganda, for instance I’ve seen a Russian complaint that in Ukraine one year the measles rate was low and next year there was a substantial outbreak. That’s how epidemics work. But there is no doubt that these labs are collecting and storing pathogens, often near large cities. Since there are evident dangers the program needs a clear justification, which I have not seen. Some of this work was begun after the end of the cold war. The Soviet Union had a large offensive biowarfare program, and there was need for a big cleanup. But thirty years later the program continues. I suspect that the basic reason is bureaucratic inertia. The program is expensive and employs a lot of people – who is motivated to cancel it? But this is a very bad reason to continue an activity that evidently is risky.

Molecular biology has hugely improved our medical knowledge, with prospects for many more benefits, but it also has created great danger. Scientists working on human pathogens should not be allowed to regulate themselves, and much more supervision is needed than is currently happening.

Postscript

I want to briefly note the timeline of my involvement in this issue. Early in the outbreak (February 2020) I thought that the coincidence of COVID breaking out in one of the very few places in the world doing research on pathogenic coronavirus was suspicious. However I was worried about stirring up anti-Chinese feelings (as has happened). I wrote about my concerns to some senior people in the biomedicine community who I knew personally. They were sympathetic

but as far as I can tell took no action. Eventually I signed a letter to Science [2] that we need more investigation about what happened, and a little later President Biden asked the Intelligence Community to see what they could find out. Unfortunately no clear conclusion was found. When I signed the letter, I thought the lab leak was possible but far from proved. However the leak of the DARPA grant proposal changed my view. I now think that by far the most likely cause of the pandemic was an accidental leak of an engineered virus.

References

- [1] Kristian G Andersen, Andrew Rambaut, W Ian Lipkin, Edward C Holmes, and Robert F Garry. The proximal origin of sars-cov-2. *Nature medicine*, 26(4):450–452, 2020.
- [2] Jesse D Bloom, Yujia Alina Chan, Ralph S Baric, Pamela J Bjorkman, Sarah Cobey, Benjamin E Deverman, David N Fisman, Ravindra Gupta, Akiko Iwasaki, Marc Lipsitch, et al. Investigate the origins of COVID-19. *Science*, 372(6543):694–694, 2021.