



## Book Review

# Pandora's Gamble: Lab Leaks, Pandemics, and A World at Risk

Alison Young, New York: Hachette Book Group, 2023

Reviewed by: Alexia Gordon, MD

On September 19, 2024, NPR's "Goats and Soda" published an article, "New Research Points to Raccoon Dogs in Wuhan Market as Pandemic Trigger. It's Controversial." The headline referred to research published in the peer-reviewed scientific journal, *Cell*, that espoused the hypothesis that the "wildlife trade at the Huanan market [was] the most likely conduit for the COVID-19 pandemic's origin."<sup>1</sup> Several of the paper's authors, including Kristian G. Andersen, Edward C. Holmes, and Michael Worobey, appear in the book, *Pandora's Gamble: Lab Leaks, Pandemics, and A World at Risk*, by the award-winning investigative journalist and director of the University of Missouri's Missouri School of Journalism's Washington (D.C.) Program Alison Young. They are not, however, given a platform to promote their theory of the pandemic's origin. Rather, Young reveals details of conversations between Andersen, a pathogen genomics expert, and Holmes, an evolutionary biologist, in which Andersen shared his concerns that the SARS-CoV2 virus's genome seemed "inconsistent with expectations from evolutionary theory," based on preliminary, albeit incomplete, analysis.<sup>2</sup> Young then asks, "What prompted Andersen—in the span of about three days—to go from being concerned the virus wasn't natural to labeling any concerns about engineering [as] 'crackpot' and asserting to other scientists that data 'conclusively' show it wasn't engineered?"<sup>3</sup>

Young approaches her subject—the need for increased transparency about lab accidents and the risk these accidents pose to the public—through the lens of a science and health reporter. She spent a ten-plus year career with news organizations like *USA Today*, *Detroit Free Press*, and *The Atlanta Journal-Constitution*

reporting on safety lapses at the US Centers for Disease Control and Prevention (CDC), the US Army Medical Research Institute for Infectious Disease (USAMRIID), the National Institutes of Health (NIH), the University of North Carolina-Chapel Hill (UNC), the University of Wisconsin-Madison (UW), the Wuhan Institute of Virology (WIV), and other research labs and healthcare facilities. Over the course of about 250 pages, she takes readers through several of these incidents, like the 2018 flood of USAMRIID's steam sterilization plant, the 2007 malfunction of the CDC's air-handling system, and the 2004 severe acute respiratory syndrome (SARS) outbreak at the National Institute of Virology in Beijing, caused by improper inactivation of the SARS virus.<sup>4</sup> Young uses the examples to illustrate her arguments that lab accidents are common, "powerful people and institutions often work hard to keep the information [about lab accidents] secret," national and international oversight of laboratories that handle high consequence pathogens is lacking, and this lack risks disease outbreaks.<sup>5</sup>

Young organizes *Pandora's Gamble* into four parts, each containing several chapters. The first and fourth parts are the strongest. Parts two and three are more uneven, reading as a series of disconnected anecdotes about lab accidents, like the stories of the 2012 death of Richard Din due to infection with *Neisseria meningitidis* in a San Francisco Veterans' Affairs Medical Center laboratory and of the 1977 H1N1 influenza epidemic that began in the Soviet Union and China and was linked to vaccine trials. The book's first part, "'Skeletons' at the Birthplace of Biosafety," provides a history of the development of modern biosafety standards, beginning with the "father

of modern biological safety,” Dr. Arnold Wedum’s work at Camp (now Fort) Detrick in the 1950s.<sup>6</sup> The fourth part, “Pandora’s Gamble,” continues the discussion about the COVID-19 pandemic, WIV, and the controversy surrounding investigations into the pandemic’s origins begun in the book’s introduction.

In this fourth, and final, part of the book, Young traces a line from controversial lab-engineered H5N1 avian influenza virus gain of function (GOF) research done at UW in the early 2000s, to lab-engineered coronavirus GOF research at UNC in the 2010s, to the WIV’s reluctance, in the 2020s, to cooperate with independent investigations into the origins of the SARS-CoV2 pandemic. However, she avoids descending into conspiracy theory. She cites her sources (*Pandora’s Gamble* contains 68 pages of end notes) as she describes how UNC gained an exemption from NIH to the White House-imposed 2014 moratorium on GOF research prompted by concerns over the H5N1 studies. This exemption allowed UNC to continue efforts to combine the spike protein from a bat coronavirus collected in the wild by scientists from WIV with a lab-created mouse SARS coronavirus.<sup>7</sup> She names the scientist who headed the WIV team that collected the bat coronavirus, Shi Zhengli, a respected virologist, fellow of the American Society for Microbiology, and the public face of WIV’s denials of any possibility that SARS-CoV2 originated in its labs.<sup>8</sup> Young makes explicit the connections between Shi and members of the team, like zoologist Peter Daszak, president of a nonprofit organization that funded some of Shi’s research and co-author with Shi on multiple papers, sent to China by the World Health Organization (WHO) in 2021 to investigate COVID-19’s origins.<sup>9</sup>

United Nations Educational, Scientific and Cultural Organization (UNESCO) defines investigative journalism as that which “expos[es] to the public matters that are concealed—either deliberately by someone in a position of power, or accidentally, behind a chaotic mass of facts and circumstances that obscure understanding.”<sup>10</sup> Young does this well, naming names and sharing evidence collected from her own reporting, interviews conducted by fellow journalists, open source deep-dives by internet sleuths, and documents obtained as the result of Freedom of Information Act (FOIA) requests and lawsuits.<sup>11</sup> She doesn’t back down from her advocacy of a truly “independent probe of the coronavirus labs at the Wuhan Institute of Virology, as well as other research facilities in the city,” while acknowledging the risk that “efforts to examine the lab-leak hypothesis” could be misused by racists, conspiracy theorists, and those “fighting to control

the narrative surrounding the origin of COVID-19.”<sup>12</sup> Along the way, she highlights the lack of a “universal, mandatory system for reporting laboratory accidents and lab-associated infections,” a system to “analyze mishaps and share lessons learned,” or even a way to know “how many labs are working with dangerous pathogens.”<sup>13</sup> She notes, for example, that although the gene-synthesis industry group, International Gene Synthesis Consortium, “screen[s] gene orders to identify dangerous pathogen sequences and vet customers, the group’s membership represents only about 80 percent of the world’s commercial gene synthesis capacity,” leaving the other 20 percent to “[operate] without any sort of regulation on what they can make and who they can sell it to.”<sup>14</sup> She discusses how these gaps produce a biosecurity risk and argues for the need for “stringent and enforced national and international lab standards and oversight” beyond the limited scope of the US Federal Select Agent Program.<sup>15</sup>

Just as importantly as bringing attention to biosecurity gaps and the resultant risks, Young provides insight into the culture and mindset of the researchers “drawn to work with dangerous microbes.”<sup>16</sup> She shows how the “pervasive culture of self-sacrifice” dates from the earliest days of microbiology and how the fear of “stigma and reprisal” by lab personnel contributes to underreporting of incidents.<sup>17</sup> She notes that scientists’ resistance to oversight and regulation of research stems from: their disdain for censorship (“the ultimate sin of original research”); their fears that “too much oversight...will stifle scientific advances that could lead to lifesaving vaccines, tests, and treatments”; and their sincere belief that “the benefits of the scientific knowledge gained to stay ahead of pandemic threats would outweigh the risks” of research with pathogens with pandemic potential.<sup>18</sup> She links the pushback against an independent investigation of WIV’s labs to professional respect for Shi by her scientific colleagues, like Worobey and other proponents of the hypothesis that the Huanan Wholesale Seafood Market was the nexus of the pandemic, a respect that demands “Shi...be taken at her word.”<sup>19</sup> This “behind the curtain” glimpse may help demystify the seemingly arcane worldview of pathogen researchers to those without a background in lab science.

*Pandora’s Gamble* may not appeal to everyone. Young’s approach as an investigator with an agenda—to argue in favor of oversight, regulation, and transparency of pathogen research—and her sharing of information that frequently required FOIA requests and legal action to obtain, may put some on the defensive. Few people welcome an outsider’s scrutiny and judgement

of their community. Her background as a journalist, albeit a well-respected one whose work has been recognized by the National Academies of Sciences, Engineering, and Medicine, rather than a scientist may lead some to dismiss Young as a conspiracy monger. Doing so would be a mistake. *Pandora's Gamble* is not an alarmist, anti-elitist hatchet job on science, nor is it a xenophobic attack on China. Young does not sensationalize the accidents, near-misses, and safety lapses that she details. In pushing for independent investigations into lab incidents and disease outbreaks, she is not advocating for finger-pointing. Instead, she argues that increased transparency through public reporting of incidents will lead to both changes in policy and regulation and the adoption of best practices for biosafety, as happened because of the work of Arnold Wedum seventy-five years ago. *Pandora's Gamble* is recommended for anyone interested in the history of pathogen research and biosafety, current issues in biosecurity, and an increased understanding of the scientific community's culture. ■

## Dr. Alexia Gordon

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## Notes

1. Gabriel Spitzer, "New Research Points to Raccoon Dogs in Wuhan Market as Pandemic Trigger. It's Controversial," *Goats and Soda: Stories of Life in a Changing World*, NPR, September 19, 2024, <https://www.npr.org/2024/09/19/g-s1-23605/covid-pandemic-origins-wet-market-wuhan-lab-leak-raccoon-dogs>; Alexander Crits-Christoph, et al., "Genetic Tracing of Market Wildlife and

Viruses at the Epicenter of the COVID-19 Pandemic," *Cell* 187, no. 19 (2024): 5468-5482.e11. <https://doi.org/10.1016/j.cell.2024.08.010>.

2. Alison Young, *Pandora's Gamble: Lab Leaks, Pandemics, and A World at Risk*, (New York: Hachette Book Group, 2023), 223.

3. Young, *Pandora*, 229.

4. Young, *Pandora*, 39-44, 66, 119-121.

5. Young, *Pandora*, xix, xxii, 240.

6. Young, *Pandora*, 5.

7. Young, *Pandora*, 199.

8. Young, *Pandora*, xv; "Zhengli Shi, Ph.D.," American Society for Microbiology, <https://asm.org/biographies/zhengli-shi-ph-d>; Jon Cohen, "Wuhan Coronavirus Hunter Shi Zhengli Speaks Out," *Science* 369 (2020): 487-488. <https://doi.org/10.1126/science.369.6503.487>.

9. Young, *Pandora*, xvii, 199, 235.

10. David E. Kaplan, "What Is Investigative Journalism?" Global Investigative Journalism Network, <https://gijn.org/about-us/investigative-journalism-defining-the-craft/>.

11. Young, *Pandora*, 214.

12. Young, *Pandora*, 235-236, 240.

13. Young, *Pandora*, 105.

14. Young, *Pandora*, 193; "About," International Gene Synthesis Consortium, <https://genesynthesisconsortium.org/>.

15. Young, *Pandora*, 105, 240.

16. Young, *Pandora*, 7.

17. Young, *Pandora*, 7, 106.

18. Young, *Pandora*, 174-175, 196.

19. Young, *Pandora*, 210.