



ARTIFICIAL INTELLIGENCE AND BIOTECHNOLOGY (AIXBIO)

AixBio refers to the convergence of AI and biotechnology

The convergence of artificial intelligence and biotechnology (AixBio) has the potential to yield extraordinary benefits as well as serious risks. Highly capable large language models (LLMs) that train primarily on language and AI models that train primarily on biological data are two of the most important classes of AI models that will impact this convergence.

AixBio has the potential for great societal benefits but also extraordinarily dangerous consequences

AI technologies could revolutionize how healthcare is organized and delivered, how medicines and vaccines are developed, how diseases are understood and diagnosed, the speed with which new outbreaks are detected, and more.

However, AI models could also increase the risks of high-consequence accidents or misuse of biology and the life sciences. Two potential harms that are critical to govern effectively are AI models or tools that could either:

- Greatly accelerate or simplify the reintroduction of dangerous extinct viruses or dangerous viruses that only exist now within research labs that could have the capacity to start pandemics in humans, animals, or plants; or
- Substantially enable, accelerate, or simplify the creation of novel variants of pathogens or entirely novel biological constructs that could also start pandemics

Governance measures should promote beneficial applications of AixBio while preventing pandemic-level risks

To promote continued US innovation and leadership in AI development, new governance measures should be narrowly tailored to both allow the benefits of AixBio models to advance rapidly but also prevent model capabilities from being developed and deployed that could lead to accidental or deliberate creation of new pandemic-level risks.

Congress could act to establish effective governance of AixBio by ensuring the federal government is establishing the right governance to promote benefits while protecting against risks

Key elements of this could include implementing effective risk assessments performed at the stage the most powerful new biological AI models are being designed; creating narrowly tailored mechanisms to ensure that the capabilities of powerful AI models cannot be maliciously used to create pandemic-capable pathogens; or establishing a process to determine if particularly sensitive US biological datasets used to train AI models should be accessible only through managed access to prevent adversaries from creating pandemic-capable pathogens. The Department of Commerce and federal funding agencies will play key roles.