**AT: AlphaFold**

**Be skeptical of AlphaFold 3’s ability to actually access any of the links they talk about Callaway 3/27** [Ewen Callaway, (Ewen Callaway is a Senior News Reporter for the Nature Publishing Group. Callaway holds a Bachelor of Arts in Biology from Colorado College and a Master of Science in Medical Microbiology and Bacteriology from the University of Washington - School of Medicine), 3-27-2025, “AlphaFold is running out of data — so drug firms are building their own version,” Nature, https://www.nature.com/articles/d41586-025-00868-9, accessed 3-28-2025] nugwin <3 yakubclaat **AlphaFold’s ability to predict proteins’ 3D shapes from their sequences relies on access to the PDB’s huge collection of protein structures** mapped with experimental methods, such as X-ray crystallography. Many of these structures include interacting molecules — but they tend to involve biological partners such as the cellular energy source ATP, rather than drug compounds, says Karanicolas. As a result, **AlphaFold 3 does an adequate job** of predicting how proteins interact with would-be drugs, **but** “it’s**still a very open problem**”, says Mohammed AlQuraishi, a computational biologist at Columbia University in New York City who is leading the development of OpenFold. It’s possible that pharma-company protein structures, which are rarely deposited in the PDB, could help. **As part of drug-development campaigns**, **firms routinely determine multiple structures for the same protein bound to many different drug candidates**. The **full extent of** these **proprietary protein-structure data isn’t known**. **But the data could** equal or even **exceed those of the PDB**, says Stephen K. Burley, a director of one of the organizations that hosts the repository and a structural biologist at Rutgers University in Piscataway, New Jersey. AbbVie alone is contributing more than 9,000 structures to the consortium’s AI model. “It’s kind of crazy how much data there is sitting behind these walled gardens,” says AlQuraishi. **Drug companies won’t be sharing actual protein structures with each other** — or with AlQuraishi — **to develop the new model**. Instead, the effort will use a platform developed by Apheris, a Berlin-based start-up company, that will allow **OpenFold 3 to be retrained using proprietary data and without the structures ever leaving a company’s digital walls**. Karanicolas says it **will not be possible to reverse engineer the model to identify the** secret**structures it was trained on**. **Whether the extra data will boost AlphaFold’s ability to model how proteins and drugs interact is unclear**, says AlQuraishi. “That’s going to be the key question — what will the gains look like?” His team will evaluate the model, for example by comparing its predictions with experimental results, and make a detailed analysis public. “I do think the experiment, negative or positive, is incredibly valuable,” he says. Some scientists and funding agencies are looking to create structural databases like those of the pharma companies with which to feed AI models, says AlQuraishi, and it will be worth knowing whether having more data is actually useful.

**Prefer our evidence because it’s contextualized to AlphaFold 3 which is their uniqueness while their links are to AlphaFold 2 which isn’t even a generative model**

**Heintz 24** [Meghan Heintz, (Meghan Heintz is a Staff Software Engineer, AI and ML at Dune. Heintz holds a Bachelor of Science in Environmental Resources Engineering from Cal Poly Humboldt), 10-24-2024, “How AlphaFold 3 Is Like DALLE 2 and Other Learnings,” Towards Data Science,

https://towardsdatascience.com/how-alphafold-3-is-like-dalle-2-and-other-learnings-1f809010afc7/, accessed 3-28-2025] nugwin <3 yakubclaat

While DALLE’s use of diffusion helps generate detailed visual content, AlphaFold leverages similar principles in biomolecular structure prediction (no longer just protein folding!). **AlphaFold 2 was not a generative model, as it predicted structures directly from given input sequences**. Due to the introduction of the diffusion module, **AlphaFold 3 IS a generative model**. Just like with DALLE, noise is sampled and then recurrently denoised to produce a final structure. The diffusion module is incorporated by replacing the structure module. This architecture change greatly simplifies the model because the structure module predicts amino-acid-specific frames and side-chain torsion angles whereas the diffusion module predicts the raw atom coordinates. This eliminates several intermediate steps in the inference process.

**AT: Innovation**

### Answer: There will be no more research due to funding cuts

**Sainato 3/8** [Michael Sainato, (Michael Sainato is labor reporter for Guardian US), 3-8-2025, "Chaos on campuses as schools warn Trump cuts could harm US ‘for decades’," Guardian, https://www.theguardian.com/us-news/2025/mar/08/trump-universities-higher-education-cuts, accessed 3-8-2025] nugwin

# Students, researchers, faculty and leadership at universities and colleges across the US are grappling with drastic short- and long-term impacts “for decades to come” caused by funding freezes, cuts and executive orders from the Trump administration. “It’s sowing a lot of chaos on campuses,” said Sarah Spreitzer, vice-president and chief of staff of government relations at the American Council for Education, a non-profit representing more than 1,600 colleges, universities and related associations. “This is going to have long-term impacts on the American public and post-secondary education that I don’t think we can really even start to understand.” Research grants across the US have been frozen or cut, scholarships funded by the federal government have been halted and the push to reduce the administrative costs for National Institutes of Health (NIH) research funding to 15% has institutions trying to figure out how to cover those costs of doing research, Spreitzer explained. Donald Trump’s federal congressional budget is also proposing billions of dollars in cuts in federal funding for research and institutions across higher education. Cuts to research tied to foreign aid, such as the US Agency for International Development, have resulted in lab closures. Trump has also threatened to pull federal funding from universities that allow “illegal” protests. The changes and threats have incited hiring freezes, layoffs and furloughs, cuts in graduate admissions, rescissions of job offers, and institutions scaling back the amount of research they conduct. “Institutions are scrambling to figure out how they are going to support those students because they’re unable to access the federal funding, or are they just going to end the programs,” added Spreitzer. “Changing the indirect cost rate doesn’t suddenly make research cheaper to do. Someone is going to have to bear that cost.” Higher education institutions have already begun scaling back or are bracing for cuts. University of Pennsylvania has cut graduate admissions at its medical schools for fall 2025 by 35%. Graduate students across the US have reported admissions acceptances being rescinded. MIT, Stanford and numerous other institutions have enacted hiring freezes. This week Brown and Johns Hopkins warned of potential layoffs amid threats to federal funding revenues. “Our admissions have been paused for a number of big grad departments,” said Levin Kim, a graduate worker; chair of Higher Education Labor United, a coalition of labor unions representing more than 200,000 academic workers; and president of UAW Local 4121 representing academic workers at the University of Washington, which is one of the largest public recipients of federal research funding. “We’re seeing a lot of uncertainty. Careers are being curtailed right now. It’s not like once things are funded, it can just pick right back up. It’s wreaking havoc throughout the whole pipeline.” Kim argued Trump’s actions have had a “big chilling effect” on anything to do with research funding, despite ongoing legal battles to prevent research funding freezes and cuts.