

Opportunity Title: Understanding AI Enhanced Biotechnology Risks Fellowship

Opportunity Reference Code: ICPD-2024-44

Organization Office of the Director of National Intelligence (ODNI)

Reference Code ICPD-2024-44

How to Apply **Create and release your Profile on Zintellect** – Postdoctoral applicants must create an account and complete a profile in the on-line application system. **Please note: your resume/CV may not exceed 3 pages.**

Complete your application – Enter the rest of the information required for the IC Postdoc Program Research Opportunity. The application itself contains detailed instructions for each one of these components: availability, citizenship, transcripts, dissertation abstract, publication and presentation plan, and information about your Research Advisor co-applicant.

Additional information about the IC Postdoctoral Research Fellowship Program is available on the program website located at:
<https://orise.ora.gov/icpostdoc/index.html>.

If you have questions, send an email to ICPostdoc@ora.gov. Please include the reference code for this opportunity in your email.

Application Deadline 2/28/2024 6:00:00 PM Eastern Time Zone

Description **Research Topic Description, including Problem Statement:**

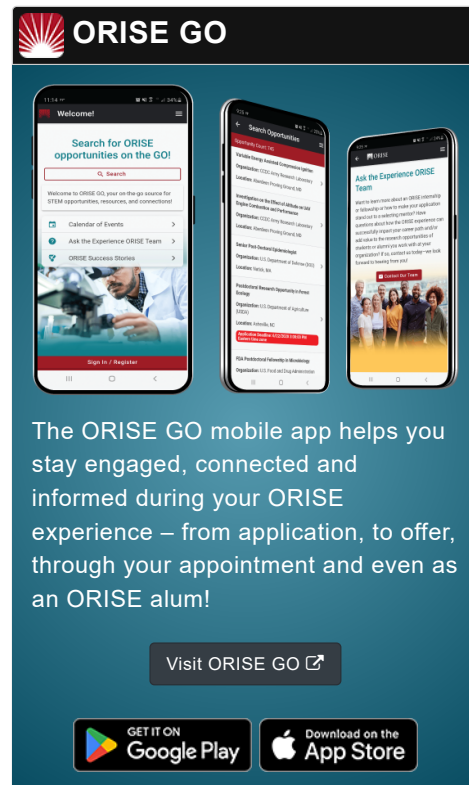
The latest generation of Artificial Intelligence (AI) models have the potential for broad applicability across science, with an associated set of opportunities and risks (Birhane et al., Nat. Rev. Phys., 5, 277-280, 2023). For example, researchers have identified the risk of AI giving enhanced access to dual-use biotechnology tools like DNA sequencing and gene editing, with associated potential for misuse (O'Brien & Nelson, Health Secur., 18(3) 219-227, 2020).

Soice et al. 2023 (arXiv:2306.03809) present a case study investigating the possibility of Large Language Models (LLMs) being used to cause a pandemic, finding they could suggest potential pandemic pathogens to a user, explain how they could be generated from synthetic DNA, supply the details of DNA synthesis companies who might produce the pathogen, and troubleshoot possible problems.

Sandbrink 2023 (arXiv:2306.13952) discuss the risk from Biological Design Tools (BDTs) like RFDiffusion and ProGen2, suggesting they likely increase the ceiling of possible harm from misuse of biotechnology.

Example Approaches:

The researcher will first perform a literature review of a) possible engineering biology security risks enabled by AI (both LLMs and BDTs, but also other model classes), and b) the current

ORISE GO

The ORISE GO mobile app helps you stay engaged, connected and informed during your ORISE experience – from application, to offer, through your appointment and even as an ORISE alum!

Visit ORISE GO

GET IT ON Google Play | Download on the App Store

Opportunity Title: Understanding AI Enhanced Biotechnology Risks Fellowship

Opportunity Reference Code: ICPD-2024-44

landscape of AI safety research, before conducting novel research to identify which security measures are most appropriate to biotechnology and bioengineering AI risks – this is a global problem and the researcher will be expected consider global perspectives and possible global solutions. Possible measures could include novel improvements to Reinforcement learning from human feedback (RLHF), different pre-release evaluation approaches, more reliable DNA screening methods, controlled access/authentication for BDT use, but the researcher is encouraged to develop new approaches, anticipating how the field may evolve in the future.

Key Words: PNT (Positioning, Navigation and Timing), CNI (Critical National Infrastructure), resilience, threats, risks, mitigation, emergency services, technology.

Qualifications

Postdoc Eligibility

- U.S. citizens only
- Ph.D. in a relevant field must be completed before beginning the appointment and within five years of the appointment start date
- Proposal must be associated with an accredited U.S. university, college, or U.S. government laboratory
- Eligible candidates may only receive one award from the IC Postdoctoral Research Fellowship Program

Research Advisor Eligibility

- Must be an employee of an accredited U.S. university, college or U.S. government laboratory
- Are not required to be U.S. citizens

Eligibility Requirements

- **Citizenship:** U.S. Citizen Only
- **Degree:** Doctoral Degree.
- **Academic Level(s):** Postdoctoral.
- **Discipline(s):**
 - **Chemistry and Materials Sciences** (12 )
 - **Communications and Graphics Design** (3 )
 - **Computer, Information, and Data Sciences** (16 )
 - **Earth and Geosciences** (21 )
 - **Engineering** (27 )
 - **Environmental and Marine Sciences** (14 )
 - **Life Health and Medical Sciences** (45 )
 - **Mathematics and Statistics** (11 )
 - **Other Non-Science & Engineering** (2 )
 - **Physics** (16 )
 - **Science & Engineering-related** (1 )
 - **Social and Behavioral Sciences** (30 )