

1. **Research Title:** High-throughput experimental techniques for protein engineering
2. **Individual Sponsor:**
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3. **Academic Area/Field and Education Level:** Chemical Engineering, Mechanical Engineering, Electrical Engineering, Biochemistry, Bioengineering (BA/BS, MS or PhD level)
4. **Objectives:** Apply microfluidics or other high-throughput techniques to protein engineering. Discover and validate new or enhanced biomaterials based on structural or catalytic proteins.
5. **Description:** The Biomaterials Branch in the Materials and Manufacturing Directorate at the Air Force Research Laboratory is interested in developing new and sustainable biomaterials, including materials made using biocatalysis. Biomaterials based on proteins are of particular interest. For engineering biomaterials based on proteins or using enzymes for biocatalysis, it is often desirable to produce and test large numbers of protein variants. Computational or combinatorial techniques are able to propose many more candidate variants for functional testing than can be experimentally validated. This research topic invites applications to develop high-throughput techniques for protein production (high-throughput expression, in vitro transcription/translation, cell-free protein synthesis), protein purification (robotic liquid handling, droplet or microfluidic manipulations), and protein characterization (high-throughput assays, for example high-throughput mass spectrometry, droplet optical or enzymatic assays, etc.)
6. **Research Classification/Restrictions:** The research project is unclassified, open to US citizen students only
7. **Eligible Research Institutions:** Ohio state universities
8. **PA Approval #:** Distribution A: Cleared for public release. Distribution unlimited. AFRL-2024-4608