

UNIVERSITY OF MARYLAND, BALTIMORE COUNTY

Department of Chemical, Biochemical and Environmental Engineering • Garcia Lab • Cell-Free Synthetic Biology

Synthetic Biology Technician

Lab Operations & High-Throughput Research

Location: Garcia Lab, University of Maryland, Baltimore County (UMBC)

Term: Two-year funded appointment, with possibility of extension

Salary: Approximately \$50,000 annually, with full university benefits

Scope: Part of a multi-university collaborative effort

ABOUT THE ROLE

The Garcia Lab at UMBC specializes in cell-free synthetic biology, and we are hiring a technician for a hybrid position: roughly half lab management and half hands-on research support. You will be the operational backbone of a busy lab while working shoulder-to-shoulder with graduate students and postdocs on complex, multi-step workflows.

This position is part of a multi-university collaborative effort, so you will interact with partner labs and contribute to shared protocols, data standards, and reagent pipelines across institutions.

On the operations side, you will own reagent inventory, extract and buffer prep at scale, consumable stocking, equipment upkeep, and safety compliance. On the research side, you will execute high-throughput cloning and strain-building campaigns, produce proteins using cell-free reactions, run high-throughput plate-based assays, and help troubleshoot protocols.

A distinctive part of this role is creating a data infrastructure database connecting construct, extract, and assay data, and you will help build and maintain pipeline-integrated databases that track it, connecting bench output to structured, queryable records that the whole consortium depends on. If you like the idea of being the person who makes a lab's data actually usable, this role has room for that.

COMPENSATION & TERMS

- Salary approximately \$50,000 per year, commensurate with experience
- Full UMBC benefits package: health, dental, and vision coverage, retirement contributions, paid leave, and tuition remission
- Two-year funded appointment with possibility of extension contingent on funding and performance

EDUCATION & EXPERIENCE

- BS/BA or equivalent in molecular biology, biochemistry, bioengineering, or a related field; 1–3 years hands-on wet lab experience

CORE TECHNICAL SKILLS

- **Molecular cloning:** Gibson/Golden Gate/HiFi assembly, PCR, restriction digest, ligation, transformation
- **Nucleic acid prep at scale:** plasmid miniprep/midiprep, gDNA/RNA extraction, magnetic bead cleanup and normalization
- **Protein purification:** recombinant expression and purification (affinity, IEX, or SEC), SDS-PAGE, concentration and buffer exchange, activity QC

- **Microbial culture and strain handling:** E. coli and yeast, aseptic technique, glycerol stock management
- **Plate-based workflows:** 96- and 384-well format, multichannel pipetting
- **Data handling:** basic scripting (Python or R) for data parsing, QC, and database work
- **Sequence analysis:** SnapGene, Benchling, or Geneious

LAB OPERATIONS RESPONSIBILITIES

- Maintain reagent inventory, consumable stocking, and buffer prep at scale
- Execute SOPs precisely and repeatably across long runs; document deviations
- Draft and revise SOPs; drive process improvements as workflows evolve
- Coordinate shared equipment scheduling, maintenance, and vendor interactions

RESEARCH SUPPORT RESPONSIBILITIES

- Partner with graduate students and postdocs to execute complex, multi-step synthetic biology workflows
- Prepare and QC cell-free extracts and purified protein components for downstream reactions
- Provide continuity across projects as trainees rotate through the lab
- Help design, build, and maintain pipeline-integrated databases for tracking constructs, extracts, and assay results
- Support data and protocol exchange with collaborating labs at partner institutions
- Onboard and train new lab members on core protocols and data practices

COMPLIANCE & SAFETY

- BSL-1/BSL-2 practices; IBC and institutional biosafety training
- Chemical hygiene, waste handling, and where applicable GLP/GMP documentation practices

SOFT SKILLS

- Meticulous record-keeping and attention to detail under repetitive conditions
- Communicates clearly with scientists, undergraduate and graduate students, and computational staff
- Comfortable supporting multiple projects and researchers with competing timelines
- Comfortable with shift or weekend coverage for time-sensitive runs

PHYSICAL REQUIREMENTS

- Extended pipetting and standing; lifting up to ~25 lbs; cold room and biosafety cabinet work

USEFUL, BUT NOT REQUIRED

- Experience with cell-free protein synthesis (TXTL) systems
 - Experience with LIMS/ELN platforms or relational database design
 - Familiarity with acoustic dispensers (Echo), colony pickers (QPix), plate sealers/peelers, centrifuges, and thermocyclers
 - Ability to run, troubleshoot, and modify existing automation methods; script authoring is a plus
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