

PROJECT CATEGORY: MedTech**STARTUP:** Arma Biosciences**CONTACT:** James Nolan**WEBSITE:** <https://www.arma-bio.com/>**EMAIL:** james.nolan@arma-bio.com

RESEARCH AREA: Arma Biosciences is commercializing a versatile platform technology for remote and personalized health monitoring. The core technology is a novel biosensor which quantitates protein biomarkers in various forms of biofluids in handheld, wearable, and implantable formats. Arma's goal is to give agency to people to understand their own health.

PROJECT TITLE: Development of a versatile biosensor for at-home monitoring for chronic disease.

PROJECT DESCRIPTION

A summer internship at Arma Biosciences would have you working closely with our scientists to develop and test our biosensing assays for cardiovascular disease on our disposable test strips and handheld reader. This involves gaining experience with:

- DNA-monolayer biosensor deposition
- Antibody-based protein binding/ELISAs
- Learn electrochemistry techniques for taking measurements of target analyte binding events
- Conducting electrochemical sensing experiments using a standard 3-electrode setup
- Optimizing conditions to improve protein binding kinetics

Helping design and run various aspects of experiments as well as analyze and report data

JOB EXPECTATIONS:

The overall goal for the internship is to advance the development of a quantitative assay using Arma Bioscience's biosensing platform. The learned outcomes include:

- Preparation of buffers and acids/bases used for assay work
- DNA probe hybridization
- Deposition of DNA probe surface monolayer onto test strips
- Protein sample preparation at various concentrations
- Sample buffer measurements using electrochemical techniques
- Confidence using analytical techniques/instruments including ELISA immunoassay, plate reader, Nanodrop, pH meter
- Interpretation of data using statistical software
- A final deliverable will be a short presentation to the Arma R&D team on the work during the summer term including techniques learned, advances made towards assay protocols, and data from selected work.

DESIRED EXPERIENCE:

The student is currently enrolled in an undergraduate or graduate program in chemistry, biology, electrochemistry, biochemistry, biotechnology, bioengineering, chemical engineering, or related field. Additional skills include:

- Laboratory skills, experience with electroanalytical techniques (e.g. potentiometry) or immunoassays (e.g. ELISA) is a plus
- Strong written and verbal communication skills
- Familiarity with data analysis and visualization

TIME COMMITMENT:

8 weeks

TRAINING MENTORING:**Initial Meeting:**

The intern will meet with the project supervisor to discuss the project goals and objectives, as well as the expectations for the internship.

The intern will be provided with a project overview, including relevant background information, literature review, and experimental protocols.

The intern will be given a tour of the lab facilities and introduced to the lab equipment and procedures.

Weekly Progress Meetings:

- The intern will attend the R&D team weekly progress meetings to listen to progress by other scientists on various projects, and to also to report on their own progress
- The supervisor will provide guidance and feedback on the experimental design and data analysis.
- The intern will also have the opportunity to ask questions and receive feedback on any challenges they may be facing.

Data Analysis and Interpretation:

- The intern will be trained on data analysis and statistical methods and will receive guidance on the interpretation of results.
- The supervisor will provide feedback on data analysis and interpretation and will help the intern to identify any trends or patterns in the data.

Final Report and Presentation:

- The intern will be required to prepare a final presentation on their research project.
- The supervisor will provide feedback on the report and presentation and will help the intern to prepare for the final submission.

Evaluation and Feedback:

- At the end of the internship, the supervisor will provide the intern with an evaluation and feedback on their performance.
- The intern will also have the opportunity to provide feedback on their mentoring experience and the internship program

