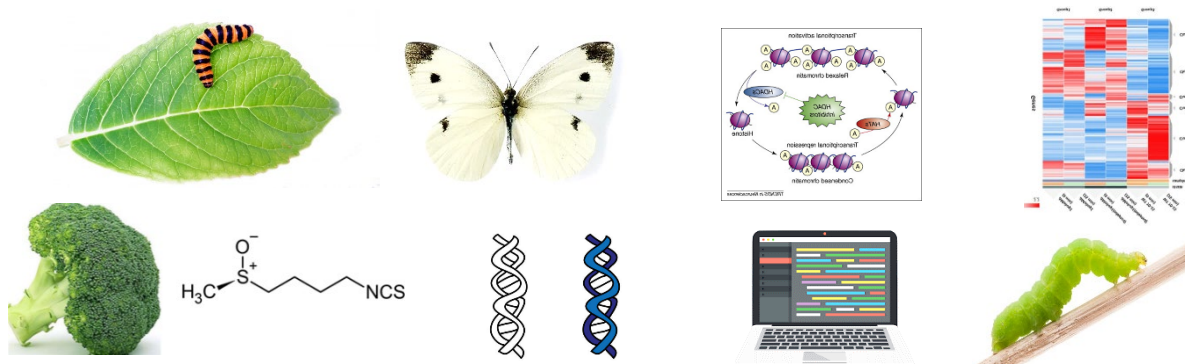


2025 Summer Research Opportunities



Chemical Ecology, Gene Expression, Epigenetic Systems

Three summer research assistantships are available in the laboratories of Prof. Arnold, Somers, and Kushner to participate in research sponsored by the National Science Foundation. The project uses bioinformatic approaches to determine how plant natural products sabotage the epigenetic systems of herbivorous insects. Students will work as a team to conduct experiments with caterpillars, moths, and butterflies, isolate RNA from tissues, and analyze RNAseq data to uncover changes in gene expression caused by plant natural products. Research students will learn the required computational techniques with us during summer. This summer's projects include:

- Raising caterpillars to butterflies, for multiple generations.
- Isolating tissues from ovaries, fat bodies, and the nervous system by microdissection.
- Exploring the impact of natural plant products and pharmaceutical HDAC inhibitors on enzyme activity and gene expression using RNAseq.
- Documenting the potential for plant natural products and drugs to slow development & aging.
- Testing the potential for trans-generational epigenetic inheritance of induced phenotypes.
- Exploring the impact of climate warming on the effectiveness of these "epigenetic weapons".

Applicants should have completed at least one Biology, Chemistry, or Environmental Science course at the upper-level (200-level or higher). Students should have interest in learning some bioinformatics techniques, including basic programming, during a summer bioinformatics bootcamp. These are paid 8-week positions located on the Dickinson College campus, starting on May 28. Research students earn \$450/week (\$3600 for 8 weeks) and receive free housing on campus. To be eligible, students must be a current Dickinson student in summer 2023.

To apply send the following information to Prof. Arnold via e-mail – arnoldt@dickinson.edu – by Friday 2/14/25. Letters of applications should be 1-page in length and include your name, email, major(s) & minor(s), anticipated month and year of graduation, and a list of courses taken or in-progress in Biology, Chemistry, Mathematics, Computer Science, and/or Environmental Science. In addition, please (a) share why do you want to engage in laboratory-based research this summer, (b) describe your career goals for the next five years, and (c) list any relevant laboratory experience and related skills you have developed or hope to develop.