Nathan Mackouse

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EDUCATION

Temple University – Honors College - College of Science and Technology **Philadelphia, PA**
Bachelors of Science in Chemistry and minor in Math | **GPA:** 3.79 May 2021

- **Honors:** President's Scholarship, Temple Honors Program, 2018 National Merit Finalist
- **Relevant Coursework:** Advanced Organic Chemistry Structures and Mechanisms, Biochemistry, Computational Chemistry, Analytical Chemistry I and II with lab, Physical Chemistry I & II with lab, Inorganic Chemistry, Probability Theory 1, Statistics Methods and Concepts

University of Oviedo - Study Abroad in Spain **Oviedo, Spain**
- Lived in Spain with a host family, took classes, and practiced the Spanish language. Jun. - Jul. 2019
- Improved my conversational fluency in Spanish and immersed myself in a different culture.

WORK EXPERIENCE

Progenra Inc.| Medicinal Chemistry | Malvern, PA May. 2021 - present
- Worked with a small team to develop novel small molecule PROTACs as part of a pre-clinical drug discovery program
- Synthesized a compound library comprised of over 100 NCE ligands for hit expansion of a novel E3 ligase
- Planned and executed multi-step organic syntheses to optimize PROTAC activity.
- Maintained chemistry lab, ordered reagents, repaired lab instruments, performed quality control on samples
- Presented research progress updates to colleagues and collaborators.
- Worked with CROs to procure starting materials and key intermediates for efficient synthesis

RESEARCH EXPERIENCE

Professor Matsika Research Lab | Computational Chemistry | Temple University Apr. 2020 - May 2021
- Worked on a computational chemistry study of small systems (about 12 atoms).
- Performed ab initio excited state calculations on nucleobase analogues to study DNA/RNA damage mechanisms.
- Computed geometry optimizations and excited state calculations using various methods and interpreted results.
- Conducted frequent literature searches to verify computational accuracy.
- Created charts to summarize findings and gave presentations to communicate progress to other group members.
- Publication: Description of Two-Particle One-Hole Electronic Resonances Using Orbital Stabilization Methods The Journal of Physical Chemistry A 2020 124 (43), 9011-9020. DOI: 10.1021/acs.jpca.0c07904

Professor Andrade Research Lab | Organic Chemistry | Temple University Dec. 2018 - Apr. 2019
- Collaborated with a team of 5 to optimize the synthesis of a biologically active natural product.
- Successfully optimized a key step in the synthesis, scaling yields from a few milligrams up to multiple grams.
- Prepared yeast media and performed biochemical transformation of natural products.
- Mastered various lab equipment and procedures, including ^{1}H NMR, centrifuge, & extraction technique.

AFFILIATIONS

American Chemical Society	Sep 2018 - present
Temple University Chemical Society	Sep. 2018- May 2021
Resnick Center Calculus Tutoring	Dec 2018- May 2021
Temple University Climbing Club	Jan 2018- May 2021
Temple University Choirs	Jan 2019 - Jan 2020
Temple University Board Game Club	Sep 2018 - May 2021

SKILLS

- LC-MS, preparative HPLC, preparative TLC, solvent extraction, rotovap, multistep synthesis, organometallic synthesis, Schlenk line, medicinal chemistry, Reaxys
- Microsoft Office, Python, Pymol, Autodock Vina, Unix, Gaussian, Q-Chem, Chemdraw and Spartan modeling,