

Post-Doctoral Research Fellow, Photoredox Methodology, IMED Oncology Chemistry, AstraZeneca, Waltham, MA

The AstraZeneca Oncology Medicinal Chemistry Group, located in Waltham, Massachusetts, is a team of synthetic organic, medicinal, computational, and analytical chemists dedicated to exploring the frontiers of science in order to improve patients' lives.

We are seeking a passionate, highly motivated, creative, and independent chemist to join our team as a post-doctoral research fellow to explore novel carbon-heteroatom bond forming reactions via photoredox mediated processes, allowing mild, general, and efficient access to important and interesting molecular architectures.

Formation of carbon-heteroatom bonds is a cornerstone of medicinal chemistry and the construction of drug-like small molecules. However, despite extensive advances in the field of transition-metal catalysis, the construction of carbon-heteroatom bonds in the context of highly functionalized, heterocycle containing molecules remains a challenge. The goal of this research project is to enable the synthesis of carbon-heteroatom bonds on complex substrates under extremely mild conditions using photoredox catalysis.

Our state of the art research facility in Waltham, MA is an ideal location for someone who is interested in gaining experience in the pharmaceutical industry. There are ample opportunities to interact with drug discovery scientists across many drug discovery disciplines (Biology, DMPK, Toxicology, and Translational Science) in the oncology arena.

At AstraZeneca we believe in the potential of our people and you'll develop beyond what you thought possible. We make the most of your skills and passion by actively supporting you to see what you can achieve. We need great people who share our passion for science and have the drive and determination to meet the unmet needs of patients around the world. If you're curious about what science can do, then you're our kind of person.

Primary Objective

- Develop a photoredox/transition metal catalytic system that can effect carbon-heteroatom bond formation between highly functionalized heteroaryl halides and heteroatom nucleophiles such as anilines, amines, alcohols, and phenols.

Secondary Objectives

- Discover photoredox systems that can promote novel bond forming reactions.
- Inspire and influence internal and external chemists to utilize the promise of photoredox catalysis through interactions with internal project teams, external conference presentations, and publications.

Major Responsibilities

- Develop novel synthetic methodology in the field of photoredox catalysis.
- Design, synthesize, and optimize ligands and novel ligand-metal photoredox complexes to improve the efficiency of photoredox catalysts.
- Synthesize a range of suitable heteroaryl halide species and heteroatom nucleophiles to explore the substrate scope of the catalytic process.
- Demonstrate the utility of this methodology in the context of polyfunctional molecule synthesis by performing a total synthesis of a small natural product or pharmaceutical.
- Work collaboratively with other internal and external experts in the field of photoredox catalysis to design and evaluate catalyst systems.

- Show strong initiative in developing ideas and bringing them to functional use within AstraZeneca and externally.
- Interface with scientists from across many disciplines while also being able to work independently.
- Communicate results both by presenting to global working groups within AstraZeneca and externally at conferences.
- Publish scientific papers in peer reviewed journals describing the discovery of novel reactions, along with substrate scope and mechanistic insights.

Essential Qualifications

- A PhD in organic chemistry with an emphasis on synthetic methods development and/or execution of complex multi-step reaction sequences in the total synthesis of natural and non-natural products.
- Strong knowledge and working experience with common analytical techniques in a synthetic organic chemistry laboratory, including NMR, HPLC, GC and MS.
- Demonstrated ability to conduct effective independent research, develop new ideas, create solutions, and drive cross-discipline collaborations.
- Exhibit a track record of striving for a high level of innovation and scientific excellence.
- Possess excellent oral and written communication skills.
- Demonstrated success across a broad range of synthetic challenges.
- Strong working knowledge of the mechanistic principles of photoredox and transition metal chemistry and applications to synthetic problem-solving.
- Demonstrated understanding of mechanistic organic chemistry and reaction kinetics.

Desirable Experience

- Photoredox mediated synthetic methodology.
- High throughput or parallel chemistry approaches towards novel reaction discovery and optimization.
- Computational approaches to transition metal ligand complexes.

AstraZeneca is an equal opportunity employer. AstraZeneca will consider all qualified applicants for employment without discrimination on grounds of disability, sex or sexual orientation, pregnancy or maternity leave status, race or national or ethnic origin, age, religion or belief, gender identity or re-assignment, marital or civil partnership status, protected veteran status (if applicable) or any other characteristic protected by law. AstraZeneca only employs individuals with the right to work in the country/ies where the role is advertised.

This is a 2 year Fixed Term Contract opportunity based at Waltham, Massachusetts with a competitive salary on offer.