Working as a Student and Employee in Pharmaceutical Research

Dr Robert Law
GSK
Overview

- My background and education
- My career path into pharmaceutical research
- The GSK/University of Strathclyde Collaborative PhD Programme
- Working as a medicinal chemist
- Summary
My Background and Education

- University of Bristol 2008-2012; MSci Chemistry with Industrial Experience

- Industrial Placement year with AstraZeneca, Alderley Park
  - A 12 month full time placement in an industrial lab
  - Working on organic synthesis for medicinal chemistry

- Final year project focusing on natural product analogue synthesis

- Career goal of working as an industrial organic chemist

- But which route to take?
GSK/University of Strathclyde Collaborative PhD Programme

- Collaborative PhD with GSK and Strathclyde University
- Research conducted primarily at GSK Stevenage with a 3-6 month secondment at Strathclyde
- Co-supervisors from both institutions
- Research focuses on medicinal, process or computational chemistry
- Courses on chemistry theory delivered by leading academics, with formal interim assessments
- Worked within project teams, and independently on the development of bromodomain inhibitor chemical probes and boron-mediated cross-couplings
GSK/University of Strathclyde Collaborative PhD Programme

- Over 100 candidates and GSK staff enrolled to date
- Over 40 publications and 37 conference prizes

Discovery of 1-BRD5, a Selective Cell Active Chemical Probe for Bromodomain Containing Protein 9 Inhibition

Nina H. Thakur et al.

Abstract: A bromodomain containing protein 9 (BRD9) inhibitor screened in a novel cell-based assay using a novel reporter assay was identified. The inhibitor, 1-BRD5, exhibits selective inhibitioin of BRD9 in live cells and shows promise as a chemical probe for the study of BRD9 function in cells and in vivo. The results suggest that 1-BRD5 has potential as a therapeutic agent for the treatment of cancer.

Contra-thermodynamic Hydrogen Atom Abstraction in the Selective C-H Functionalization of Trialkylamine-\(N\)-Alkyl Groups

Johsua F. Lattin, John A. John, and John A. Murphy

Abstract: The reaction of \(\text{RNH}_2\) with a ketone is a well-known process. However, the use of a diazo compound to initiate the reaction has been limited. Here, we report a new method for the selective functionalization of trialkylamine-\(N\)-alkyl groups using a diazo compound.

JACS

OPR&D

C-H Arylation of Heterocyclic N-Oxides Through in Situ Diazotisation

Abstract: The reaction of a heterocyclic N-oxide with a diazo compound results in the formation of a diazo compound. This method has been used to prepare heterocyclic N-oxides, including pyridine-2,5-dicarboxylic acid, and has been used in a number of applications. The reaction is rapid and can be controlled by the choice of diazo compound and the reaction conditions.

JOC

SCI Day of Science and Careers, 26th April 2017
Working as a Student in Pharmaceutical Research

– Studentships in chemistry research are an excellent opportunity to enhance your skills
– Chemistry roles are typically lab-based, providing lots of practical experience
– Students gain exposure to unfamiliar areas of science and industry
– Gain expertise and knowledge through group meetings, seminars and mentoring
– Students work within project teams and are valued members of the department
– Contribute to high-level research projects, while also being given ownership of work packages
– People are always willing to support students and share their skills
Working as a Medicinal Chemist in Pharmaceutical Research

- Currently employed as a medicinal chemist at GSK, in the Protein Degradation DPU
- Designing and synthesising novel molecules as potential therapeutic agents

Using biological data, structural information and team knowledge to develop a hypothesis
Designing new compounds which test that hypothesis and aim to improve activity or properties

Collating and analysing data from multiple sources
Elucidation of structure-activity relationships
Using computational tools to analyse large data sets

Developing and executing synthetic routes for new targets
Optimising the synthesis of key compounds
Adapting literature methodology and developing new reactions
Working with CROs

Working closely with Biological Sciences to generate useful data
Assessing compound performance against isolated proteins, cell lines and in animal models
Working as a Medicinal Chemist in Pharmaceutical Research

- Intellectually and practically challenging – something different every day!
- Cutting edge research focussed on patients
- Working closely with biologists, computational and analytical chemists in a close team and integrated R&D community
- Strong focus on personal development and career progression
- Opportunities to develop transferrable skills outside the lab
- Helping others develop - involved in interviews, mentoring and supervision of students
Is a Job in Pharmaceutical Research for You?

- Working in a multi-disciplinary team to solve stimulating scientific problems
- Exciting, patient-focussed science
- Strong emphasis on personal development

- What does GSK look for?
  - Excellent scientific skills
  - Teamwork
  - Mental agility and the ability to adapt to new challenges
  - Communication skills
Summary

- Studentships in industrial chemistry are an excellent way to improve practical and theoretic scientific skills, explore potential careers and network
- Pharmaceutical research provides an engaging science-based career with a strong focus on your personal and career development
- Publication of work can be slower due to intellectual property considerations, but other avenues for recognition and sharing science are available

- My key reflections from my career so far:
  - Find something you enjoy doing and are passionate about
  - Embrace new challenges and opportunities to expand your skills
  - Assistance from inspirational people has shaped my career path - ask for guidance and experience as much as you can