Starting out in Academia
(and flavours thereof)
Synthesis of substituted indoles using continuous flow micro reactors

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Abstract

Indoles, the nitrogen heterocyclic system, are found in many natural products and pharmaceuticals. A novel approach to the synthesis of substituted indoles using continuous flow micro reactors has been developed. The method is simple and efficient, allowing the synthesis of a variety of substituted indoles in a high yield. The process is characterized by the use of a novel micro reactor design, which enables the synthesis of indoles under mild conditions. The method is scalable and can be adapted to the synthesis of other heterocyclic compounds.
Classical Academia...

Two classical routes:

Research: The Post Doc -> Fellowship -> ??? Lectureship?!
Teaching: The Lecturer -> Reader -> Professor
“Postdoctoral scholars are the lifeblood of any research institution”
Lawrence Berkeley National Laboratory

“As a postdoc, you'll contribute vitally to the progress of science, simultaneously filling the roles of scientist, scholar, and sucker”
Adam Ruben, *The Postdoc: A special Kind of Hell*
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There are roughly 7 postdocs per tenured lecturer in the US, and slightly less in the UK, though this is likely to change.

Postdocs offer a real chance to explore your research capability in a competitive academic environment, and allow a chance to take a look at global science
Postdoc experiences tend to vary by supervisor, and nation of work –
– it is KEY that you are a good fit for the group / supervisor
– make sure you ask about work/life balance of the group.
*Futons in the write up rooms are not a good sign.*

Typically, in the UK:

- Usually ONE project, ONE role, ONE group. *e.g.* “a chemist on Kinase X, in the Jones group
- Fixed term appointments (1-3 years), with single point deliverables

- **Devise, run and deliver their own research deliverables.**
- Write grants or support grant writing (on which they are often named)
- Write papers on original research
- Support / manage the group
Why Postdoc?

- Post docs typically start on academic **Grade 7 Salaries** (same as trainee lecturers)
- Notional hours (**37.5 hours a week**, though likely you’ll put in more)
- A chance to **take control of your own research** within a proper support network
- Can live in academic lifestyle / community
- Post-docs abroad are a way of seeing the world, and global science

There is a wider **community of support:**

- Grant writing advisors / workshops / clinics
- Post-doc forum, post-doc coffee meets
- Skills Support & Development

- There are specialist **“early career” grants** for those just starting out
- There are specialist grants to help you undertake research abroad (e.g. within EU)
The Lecturer...

- Usually permanent position

- Role split three ways, typically:
  - Lecturing (33%)
  - Research (33%)
  - Admin (33%)

Commonly it is **research time** that gets squeezed.

Modern lecturers require a PGCHE to lecture – trainee (fast track) positions often run this as part of the probation period.
Start on grade 7 as probationers (2-3 years, whilst they get their PGCHE) – their teaching load is reduced during this additional workload.

**When probation is complete, they scale to grade 8.**

Most **Senior Lecturer** positions start at grade 9 (can get there within 3 years from probation).

**Student experience** is now playing as much a role as actual quality of education in course rankings, and thusly changes the way departments and lecturers operate.

Change is coming in the way lectures are delivered in UK intuitions, and as a result, the current notion of “Lecturers” and “Post-Doc” may be a disappearing.
Modern Academia for STEM Subjects: The non-classical research paths

Nano-Factories, KTPs, DDUs, Industrial Interface / Engagement Units, KT/TT Offices, Academic Incubators)
Changing Ideas into Products

Project is run between a university and an SME (often local, but not essential). You work in both environments. Can do as a postdoc or after your first degree (salaries vary)

In the University:
- Post Doc role
- Developing new technology

In the company:
- Deploy technology
- Train staff

All academic support systems are there for you (same as if you were a student), but with additional funding for industry relevant professional training.
The Knowledge Transfer Partnership

- Government sponsored, **project managed** programs
- **Industry**: new technology or knowledge, academic links, trained staff
- **Academia**: funding, collaborative publications, business relevant teaching

- **Associate (you)**:
- **Healthy training and travel budgets**, (as well as 10% time allocated to training)
- **Management** and Leadership **training**

info.ktponline.org.uk/action/search/current.aspx

- Currently: **700 KTPs advertised (April 2016)**, covering revenue management systems to scaling up F1 engines
- Examples of 7,000 completed KTPs on the site
The Knowledge Transfer Partnership

Differences in priority (publish, patent, profit, post-doc, property, politics)
NO teaching, NO grant writing, mild PhD student support
Since the Big Pharma “reshuffle”, small biotech and biotech-like innovation units emerged...including academic drug discovery units...

- Work in academic environments but have mostly industrially trained staff
- **Product oriented** not paper-driven
- Quasi-autonomous
- **Disease area**, not science area
- Properly **project lead** and resourced
100+ years combined industrial experience

7 PhD students (more on the way),
15 research fellows & senior research fellows (more on the way)

Truly multi-disciplinary, from chemists to crystallographers...
175+ years combined industrial experience

12 PhD students
30 research fellows & senior research fellows (more on the way)
(group size expected to be ~65 by Q4 2016)

We gather “shedded talent”
Very few members have come from non-pharma industry (but there are some)
Non-Classical Postdoc:

Single role, but **many projects** (project specific chemists, but CADD, biology, crystallography and protein production work across projects)

Multi-faceted teams

**Fixed term**, but likelihood to roll over to other projects on close.
Less paper and grant writing, but some support to other grant and patent writers.
Some supervision responsibilities, as well as training of staff

**Multi-point milestones** - projects can fail early, and people may lose their roles

Interactions with many **external organisations**

Priority on **Delivery** and **Quality / Credibility**
Working in the SDDC
its like *acadustria*, but more *industremia*...

**Reading (lots)**
academic papers, patents
general competitor awareness

**Campus food**
cakes at meetings,
someone ALWAYS brings in something

**Smart Phone**
email is *the* comms method, even if
they’re next door. Audited record.

**Audio..**
music is always on somewhere,
headphones in office areas, radio in labs

**Meetings & more meetings**
(cross-project, cross discipline)
can shell shock

**“Big Pharma” safety**
stricter, safer policies

**Office**
air con, comfy office chairs,
correct lighting,
correct computing
wet space / dry space

**On campus gym...**
On campus bars.
Conclusions

There is **more to Academia** than a classical postdoc or a lectureship role, and its going to get more diverse in the face of changing roles of what a University is and does.

Don’t be a postdoc because you want a lectureship – **if you want to lecture, lecture**.

PDRA/F’s are fixed term. You will likely have to move a bit if you want to do more than one

Salaries match SME’s / CRO’s but not classical pharma models (but do they still exist?) Postdoc salaries don’t progress as fast or as high as lecturers (in general)

If you want **application focussed research**, look towards KT roles DDU’s, Industrial Engagement roles.
Acknowledgements

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http://www.sussex.ac.uk/sddc