



After your PhD – developing independence as a research scientist

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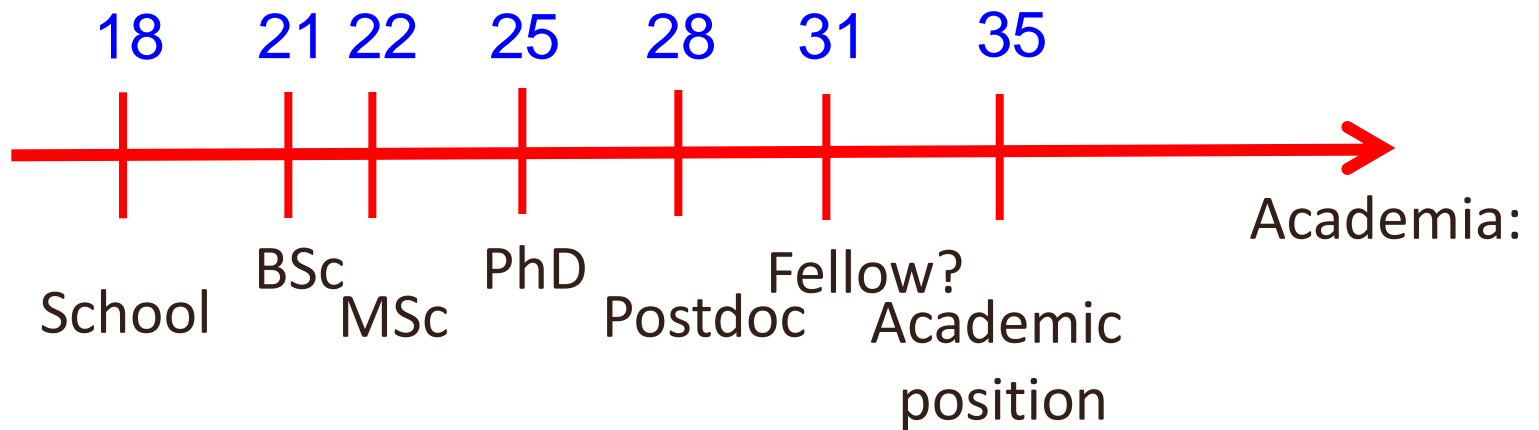
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General career pathway of biomedical scientist

age



stage

Lecturer
Senior Lecturer
Reader
Professor



What next?

- Post-doc
- Industry
- Something else.....
- Junior Fellowship/Postdoctoral Award



Postdoctoral positions (2-5 years)

- Do not feel constrained by your PhD background
- Choose a productive laboratory
- If possible, move laboratories to gain new technological experience
 - Stay in UK?
 - International opportunities in Europe, North America (and elsewhere)
- Sell yourself at interview!
- If the first postdoc position does not go well, all is not lost.....



What next?

- Post-doc
- Industry
- Something else.....
- Junior Fellowship/Postdoctoral Award



What next?

- Post-doc
- Industry
- Something else.....
- **Junior Fellowship/Postdoctoral Award**



Junior Fellowships/Postdoctoral awards

- **Medical research Council (MRC)**
 - Skills development Fellowships (3 years, 0+ yr postdoc)
- **Biotechnology & Biological Sci Res Council (BBSRC)**
 - Discovery Fellowships (£300K, 3 years?, 0-5 yr postdoc)
- **National Centre for the Replacement, Refinement & Reduction of Animals in Research (NC3Rs)**
 - Training Fellowship (2 years, salary + £15K p.a. 0-3 yr postdoc)
- **EU (Marie Skłodowska-Curie Actions)**
 - European Fellowships (Moving within Europe, 1-2 yr, 4+ yr research experience)



Charity Junior Fellowships/Postdoctoral awards

- **Wellcome Trust**
 - Henry Wellcome Postdoctoral Fellowships (4 years, 0-2 yr postdoc)
- **Disease-specific Charity fellowships (many of these):**
 - BHF Immediate Postdoctoral Research Fellowships (4 years, 0-2 yr postdoc)
 - EFSD/Lilly Research Fellowships (€50K)
 - EFSD Albert Renold Travel Fellowships (3 month, €8K)
 - JDRF Postdoctoral fellowship (3 years, 0-5 yr postdoc)
 - DRWF Basic Science Fellowship (3 years, 0+ yr postdoc)



Applying for Fellowships

- Research Area
- Sponsor Lab
- Host Institution



Applying for Fellowships: Research Area

- Identify a niche distinct from your former supervisor(s) and future sponsor
- Make sure you are not up against significant competition
- Play to your strengths!



Applying for Fellowships: Sponsor & Host

- Must provide environment and infrastructure
- Must be leader in field.....
- Must allow/facilitate your development into independent principal investigator
- Choose very carefully!



Applying for Fellowships: Timescales

- Often more than 6 months between application and invitation for interview/result
- Universities often require a month before application to process finances etc.
- Awareness of timing and giving plenty of time to application is essential!



Applying for Fellowships: How am I assessed?

- **Person**

- Have you got the background? (publications, presentations, funding, training)

- **Place**

- Are the sponsor and host appropriate for the project?

- **Project**

- Is it novel?
- Is it competitive?
- Will it make a good fellowship?



Career Development

You need to show evidence of, or potential as:

- Independent researcher
- Supervisor, Leader, Manager
- Teacher, Administrator



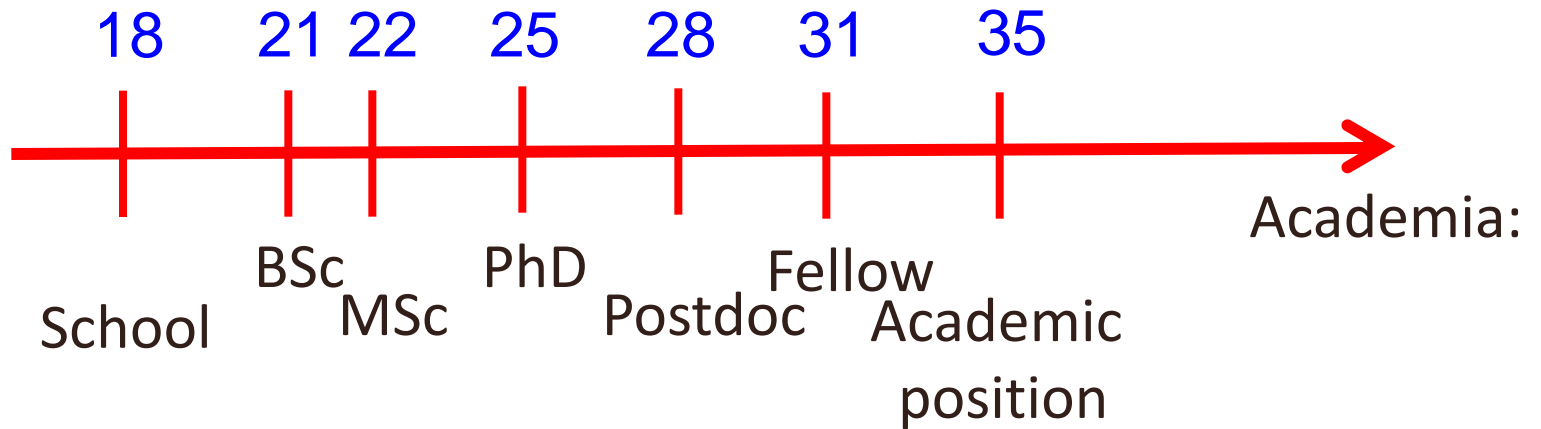
Developing Independence

- Presentations, Seminars
- Peer-reviewed publications
- Competitive grant income (small grants to fellowships)



Developing Independence

age



stage

presentations
publications

grants



Developing Independence

- Generate your own ideas
- Fund your ideas
- Communicate your ideas
- Collaborate outside your host group



Developing Your Ideas

- Read around your subject of interest
- Identify burning questions and holes in the literature
- Attend seminars, talks outside your specialist area
- Visit other labs, talk to others, talk to anybody !



Fund Your Ideas

- Travel grants (societies, local)
- Small grants (Charities, Learned Societies)
- Working towards Fellowships/Project Grants



Communicate Your Ideas

- Present at national and international meetings
- Angle for invitations to seminar programmes – swap invitations with your contemporaries
- Consider how you could apply your techniques and/or resources to other projects



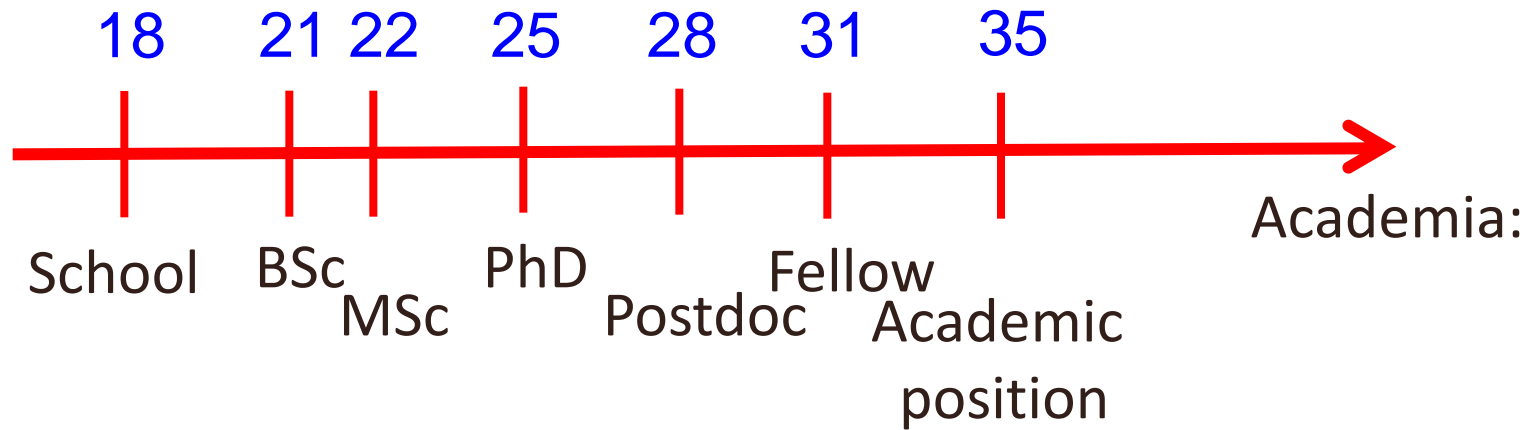
Supervision, Leadership & Management

- Project students (BSc, MSc); PhD supervisor (primary/secondary)
- Involvement with societies
- Organisational roles within group, department



Supervision, Leadership & Management

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stage

BSc, MSc supervision

organisational roles

PhD supervision



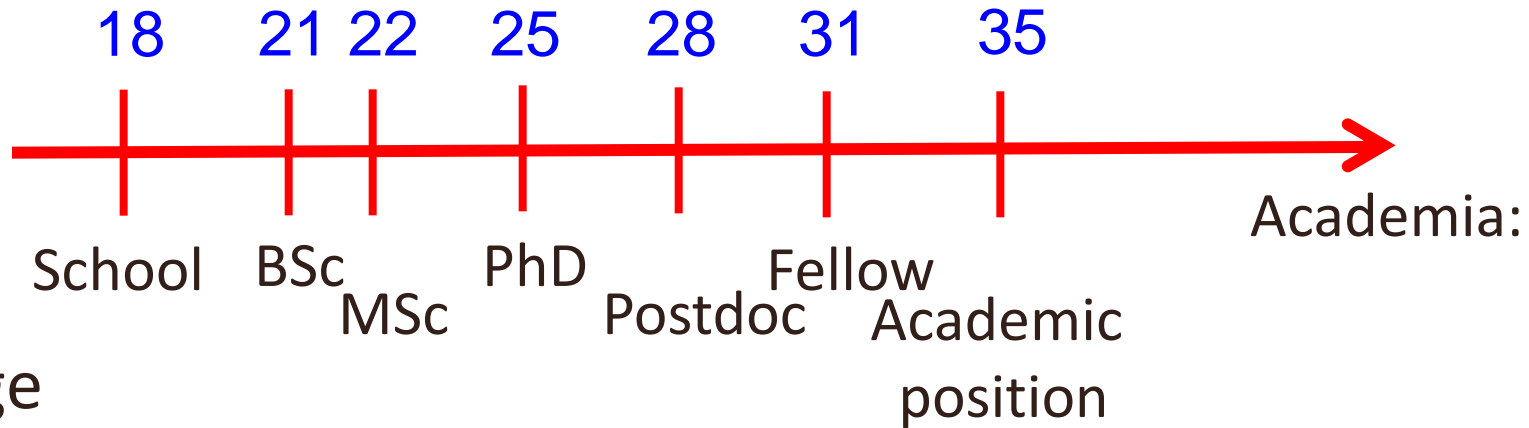
Teaching

- Laboratory classes, tutorials, lectures, PBL sessions
- Professional development workshops (university, learned societies)
- Professional qualification: PgCAP, PgCert or parts thereof



Teaching

age



stage

practicals, tutorials

professional development

formal qualifications



Intermediate Fellowships (RCUK)

- MRC
 - Career Development Award (£1M, 5 years, no time criteria)
- BBSRC
 - David Phillips Fellowships (£1M, 5 years, >3 yr postdoc)
- NC3Rs
 - David Sainsbury Fellowships (3 years, 2-6 yr postdoc)



Intermediate Fellowships (Charities)

- Wellcome Trust
 - Sir Henry Dale Fellowship (5 years, no time criteria)
- Disease-specific, e.g:
- Diabetes UK
 - RD Lawrence Fellowship (5 years, 3-6 yr postdoc)
- JDRF
 - Career Development Awards
- BHF
 - Intermediate Basic Science Fellowship (5 years, 3-6 yr postdoc)



Career Re-entry Fellowships

- MRC
- Wellcome Trust
- BBSRC
- BHF



Case History 1: Ian Salt

- 18-22 BSc Biochemistry (Bristol) including year at Pfizer (Sandwich)
- 23-26 PhD: Protein kinase signalling in β cells (Dundee)
- 26-27 Postdoc 1: Protein kinases and insulin action (Dundee)
- 27-28 Postdoc 2: Glucose transporter biology (Glasgow)
- 29-32 BHF Intermediate **Fellowship** – vascular insulin action (Glasgow)
- 32-35 Diabetes UK RD Lawrence **Fellowship** – vascular insulin action (Glasgow)
- 35-38 Lectureship in Molecular Cell Biology (Glasgow)
- 38- Senior Lecturer



My Experiences

- A supportive sponsor and institution is fundamental
- Make sure you speak to the staff/students of any potential supervisor/sponsor
- Be flexible and take advice on any applications you may make
- Do not be put off by being rejected for funding – grant funding runs at less than 20% in most cases
- Don't put all of your eggs in one basket
- Be positive and enthusiastic. Enthusiasm can do wonders in an interview.
- It is worth it



Case History 2: Gwyn Gould

BSc Biochemistry (Southampton)

PhD: Ca²⁺ signalling (Southampton)

JDRF **Fellowship**: Glucose transporter biology (Dartmouth, USA)

Lecturer, Senior Lecturer (Glasgow)

Lister **Fellowship** (Glasgow)

Reader, Professor (Glasgow)



Case History 3: Prof. X

BSc Biology (Coventry)

PhD: Neuroendocrinology of lactation (NIMR)

Postdoc 1: Neuroendocrinology of pregnancy (NIMR)

Postdoc 2: Beta Cell Biology (Queen Elizabeth College)

Diabetes UK RD Lawrence **Fellowship** (KCL)

MRC Senior **Fellowship** (KCL)

Lectureship in Physiology(KCL)

Senior Lecturer, Reader, Professor (KCL)



Case History 4: Prof Y

BSc Physiology (Sheffield)

PhD: Ca^{2+} signalling in neurones & β -cells (Sheffield)

Postdoc 1 Ca^{2+} signalling in gut (Vancouver, Canada)

Diabetes UK RD Lawrence **Fellowship** (KCL)

Lecturer, Senior Lecturer, Reader (Warwick)

Professor (Lincoln)



Case History 5: Prof Z

BSc Biochemistry (Edinburgh)

PhD: Yeast cell Biology (Edinburgh)

Postdoc 1 Yeast cell biology (Edinburgh)

Postdoc 2 Yeast vesicle trafficking (Oregon, USA)

Postdoc 3 – Vesicle trafficking (Queensland, Australia)

Fellowship – Glucose transporter biology (Garvan Institute, Sydney)

Lecturer, Senior Lecturer (Glasgow)

Lister **Fellowship** (Glasgow)

Reader, Professor (Glasgow)

Professor (York)



Lessons from case histories

- First (BSc degree) not limiting: biochemistry, biology, biomedical sciences, neuroscience, pharmacology, physiology, zoology
- PhD not limiting to career: neuroendocrinology, cell signalling, cell trafficking, neuroscience, physiology, vascular biology, islet biology
- Postdoc 1 not defining: islet biology, vascular biology, yeast subcellular trafficking, neuroendocrinology.



Lessons from case histories

- Moving between labs is essential
- Working overseas is probably beneficial but not essential
- Fellowship: highly beneficial in career progression as demonstrates independence
- Many become academics without securing a competitive fellowship, but must demonstrate independence, supervision, leadership and management skills.