Achieving the Transition to Personal Fellowship and Group Leader

Nicola Smart

BHF Senior Research Fellow

Department of Physiology, Anatomy and Genetics

University of Oxford
The Disclaimer...

• I am NOT an expert on this subject

• My personal perspective and views

• You may not agree

• That’s good... we can discuss!
The Scientific Century: securing our future prosperity. Royal Society Policy document 2010
The Postdoc Pile-Up

The number of researchers in US postdoctoral positions has more than tripled since 1979. The vast majority of postdocs are in the life sciences. Across fields, median salaries for postdocs are outstripped by those for non-postdoc positions, when measured up to 5 years after receiving a PhD.

Source: Nature
So why do it?

- A job that isn’t work!
- Excellent PhD students
- Grant funding = post-docs
- More papers = raise your profile in the field
- Great collaborations with people who share your interests
- Travel
My Journey...

The Postdoc: “A Special Kind of Hell”
Life after PhD...

PhD (University of London) on PKC Signalling Mechanisms   Funded by BBSCRC

2 year project grant

Signalling Mechanisms underlying Ischaemia-Reperfusion Injury and Preconditioning


Is Thymosin β4 a transcriptional target of Hand1?

Role of Tβ4 in cardiac morphogenesis
Validation of Thymosin β4 as a Hand1 target

- **Tβ4** is co-expressed with *Hand1* in the developing heart

- **Tβ4** is a direct target of Hand1

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- Hand1 regulates **Tβ4** expression


Smart *et al.* (2010) *Nature Communications* 1:46
A role for the Hand1-Tβ4 pathway in yolk sac vasculogenesis

Intraperitoneal injection of pregnant females with Tβ4 (6mg/kg)
Conditional Tβ4 Knockout: ‘floxed’ Tβ4 construct

actin binding motif

TTGAAGAAACAGAAACG

loxP sites

I
II
III

neo
Conditional RNA Interference (RNAi) for Knockdown of Tβ4 in Transgenic Mice

Transgene

+ Cre recombinase

H1 RNA pol III p

shRNA

Pol III

TTTTT

TK

EGFP

Lox P

TTTTT

Tβ4 shRNA

Lox P

Pol III

TTTTT
Cardiac-specific knockdown of Tβ4

The role of Tβ4 in coronary vessel development

Smart et al. (2007) Nature 445, 177-182
The Stimulation of Resident Cardiac Progenitor Cells


Outgrowth of EPDCs

E10.5

P4

Control
$\beta 4$ promotes migration of EPDCs from adult heart

Intermediate Basic Science Research Fellowship:

*Investigating the potential for Thymosin β4-induced neovascularisation in cardiac regeneration*
Tβ4 and the Epicardium: Neovascularisation
Neovascularisation
Myocardial Regeneration
Inflammation

Tβ4
REPAIR
Expansion of GFP+ and YFP+ cells within the epicardium and sub-epicardial regions following Tβ4 priming/injury
Activated adult EPDCs contribute de novo cardiomyocytes to the ischaemic heart

Day 14 post-MI

EPDC-derived cardiomyocytes and neovascularisation contribute to Improved cardiac function and reduced scarring

Recapitulating Heart Development in the Adult with Thymosin β4


how to make a heart?

how to repair a heart?
Next Step: Senior Fellowship Application

Key Question: Where to focus my independent research?

Y2H Screen: plenty of novel, interesting Tβ4 interactors to follow up
Thymosin β4 regulates vascular smooth muscle cell development

Tβ4 KO mice: Vascular Defects in Adulthood

BHF Senior Basic Science Research Fellowship:

“Augmenting Epicardial-Based Regeneration and Vascular Protection via Thymosin β4”

PDGFRβ  LRP1  TGFβRI

Tβ4  Endocytosis

Maintenance of Vascular Stability

Cardiac Regeneration (via Epicardium)
Routes to Group Leader

- Fellowship (Internal/External)
- Lectureship

Why a Fellowship?

- Academic Freedom (3-5 years+)
- Option to spend time in another lab (overseas)
- No teaching requirements
- Chance to establish a team (RA); strong position to apply for funding
- Independent publications
- Flexibility (financial; useful position if you want to move)
- Prestige
- Writing the application will help to clearly define the next step of your career
Fellowships

If successful, this will...
• Further your research, enable research visits
• Boost your career and self-confidence, raise your profile, give you (some) independence
• Build or maintain your team (post-docs and research assistants)
• Strengthen collaborations, networks
• Expose you to new opportunities

Even if you’re unsuccessful, you will
• Receive feedback from (expert) reviewers and panel
• Learn from the experience and improve your chances next time
• You have thought through ideas, approached collaborators and set the wheels in motion
• Option to resubmit?
• Fellowships: can apply to several funding bodies simultaneously
Although...

The disadvantages (depending on your point of view):

• Time at the bench ↓

• Time teaching ↑ (Lectureship vs Fellowship)

• Time dealing with administration ↑

• Time spent seeking (and worrying about maintaining) funding ↑↑↑ to run the lab
Developing Your Career: a Fellowship Option for Every Stage

PhD/Postdoctoral is about TRAINING
- Acquire range of skills
- Equips you with the knowledge and awareness to ask the right questions

Postdoctoral/Intermediate Fellowship is about DEVELOPMENT
- Learn to lead a small scientific team
- Learn new techniques
- Experience in a second lab?

Senior Fellowship is about ESTABLISHMENT
- Grow your research team
- Be internationally recognised by the end
Fellowship Applications

For successful Fellowship Applications (3 Ps)

• Person i.e. you!
• Project
• Place

Before you start any application...

Is the institution the best place to do the work?

Do you have the right mentors, co-applicants and collaborators?

Does the project play to your strengths?

If not, you may want to think about moving or changing direction of research

Timing of application is key
Are You Ready to Apply for Your Own Funding?

When is the right time?

It’s never too early...

... but it’s perfectly acceptable in the early years to take time to gain experience and develop your own ideas

Choosing the right time for you is important

Note limits of funders (years post-PhD)
Q: What’s the minimal CV that’s good enough to apply for first Fellowship/PI position?

IF >30 (Nature, Cell, Science) – go for it!


IF 5-8 – if you have several, you’ll be competitive

IF <5 – it will be tough
The challenges of being a Principal Investigator

- For Fellows, difficulty in securing faculty (tenured) post
- Delayed job security
- Publication pressures (where we publish seen as more important than what we publish)
- Funding pressures
- Building your own niche; biological sciences have become much more multidisciplinary

Some advice

- Fellowships are competitive – be prepared to apply several times before you succeed
- Make use of collaborators
- Importance of communication
- Networking
- Protect your time
Personal qualities and skills you (ideally) need to be a successful academic

Personal attributes

• Enthusiasm
• Hard work
• Self-motivation
• Determination and commitment (particularly through the tough times)!

What are the skills needed?

• Time management
• Resilience
• Presentation Skills
• Networking
• Leadership and Management
Luck is definitely required... (but you can help it along)

1) Be prepared to work really hard

2) Work with PIs that publish a lot (and high impact)

3) Work with PIs that are leaders in their fields ("state of the art")

4) Try to be ambitious yet realistic about the likelihood of your project achieving its aims (risk vs reward)
Networking

• Positive attitude towards meeting potential collaborators

• Identify relevant people who may be future collaborators/employers

• Attend the right conferences and present your research

• Online networking: LinkedIn, Mendeley etc.

• The more people you know in your field, the easier it is to meet others

• And once you know enough people, you will enjoy networking!
The ESC Scientists of Tomorrow
by the Council on Basic Cardiovascular Science

Charalambos Antoniades
Jérémy Fauconnier
Senka Ljubojevic
Nicola Smart
Samuel Sossalla
Gemma Vilahur

To become the voice of young scientists in the council, paving the way of its future
Scientists of Tomorrow
by the Council on Basic Cardiovascular Science

We are:
a new group of young proactive basic and clinical researchers

- Basic scientists / Clinician scientists
- Junior PIs/post doctoral Fellows
- Wide spectrum of Cardiovascular research fields

Charalambos Antoniades, United Kingdom
Area of expertise: Vascular Biology/Atherosclerosis

Jérémy Fauconnier, France
Area of expertise: Calcium signalling

Senka Ljubojevic, Austria
Area of expertise: Subcellular calcium imaging

Nicola Smart, United Kingdom
Area of expertise: Cardiovascular development and regeneration

Samuel Sossalla, Germany
Area of expertise: Cellular electrophysiology

Gemma Vilahur, Spain
Area of expertise: Ischemic heart disease and cardiovascular protection
We aim to: promote and increase the visibility of the basic cardiovascular research

1) promote educational programs to young scientists
2) support career development of young investigators
3) disseminate findings from basic research to the public

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2) support career development of young investigators
3) disseminate findings from basic research to the public
4) encourage gender equality in basic research
5) connect young scientists and the leaders of the field
6) engage clinicians in basic research

Outstanding Achievement Award
ESC First Contact Initiative Grant
ESC Basic Research Fellowship

New mechanisms
New targets
New therapies

For more information, talk to us: Nicola Smart & Samuel Sossalla are here.....
Please connect to the Scientists of Tomorrow

Become a SoT member via Linked in

- Visit the SoT sessions at the ESC congresses
- Read our newsletters
- Watch our podcasts
- 2 nucleus members will retire in 2015 → new elections 2015
- Check out for our online activities (e.g. information on grants, awards)

Email SoT Address: sot@escardio.org

Webpage:
http://www.escardio.org/communities/councils/CBCS/Pages/scientists-of-tomorrow.aspx
myIDP provides:

• Exercises to help you examine your skills, interests, and values
• A list of 20 scientific career paths with a prediction of which ones best fit your skills and interests
• A tool for setting strategic goals for the coming year, with optional reminders to keep you on track
• Articles and resources to guide you through the process

http://myidp.sciencecareers.org/
Thank You for Listening
and
Good Luck