

BHF Early Careers Event - Career Talk



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The good news

- A career as a scientist is a privileged life
- Your brain will be happy, and you will be happy
- Your family will be happy because you are happy
- You will have a life with freedoms others don't have in the workplace - freedom to think and explore the unknown and a flexible schedule
- You will have worldwide friendships and opportunities to travel
- You can have your cake and eat it too!

LIFE AS PI

Being a PI: do you have it in you?

Personal qualities for a career in science

Necessary always..

- Competence
- Curiosity
- Creativity
- Enthusiasm
- Determination
- Resilience
- Optimism

A plus..

- Calm, yet determined
- Humble, yet self-assured
- Personable
- Collaborative
- Flexible
- Generous

You will acquire later on..

- Professionalism
- Emotional intelligence
- Strategic thinking
- Leadership skills

The (obvious) foundations

- Be an expert in your subject
- Strive to achieve excellence
- Work hard



Transition to post-doc..

- The easiest in my view
- If you know what you want to do: pick best lab that will allow you to:
 - Advance research work in your planned direction
 - Acquire a different set of technical skills
- If you do not know what you want to do: great time to try out new things
- Very good to move labs / institutions / countries
 - to broaden skills, mindset, network
- Very good to apply for own funding
 - Important training, early testing of ideas, track record
- During this period, research training and output should take precedence over everything. Can begin to acquire other types of expertise (e.g. committees, teaching) but should not interfere with research projects

Early independent fellowships

(Wellcome Trust/Royal Society Sir Henry Dale, MRC, CRUK, ERC, ...)

- Very useful for being independent, leveraging better appointments and long-term support by institutions
- Own resources (equipment, mobility etc)
- Funders often offer career support, soft skills training, peer- and mentor-networks etc

- Set aside **A LOT OF** time to think/discuss and write your idea
- Have as many people as possible read your proposal
- Ambitious but feasible: check resource allocation carefully
- Choose institution carefully
- See later for some tips...

What you should expect from an advisor

- During post-doc
 - Gives you a good research topic / project
 - Meaningfully supervises project
 - Lets you pursue your original ideas, including building pilot data for later career step
 - Protects your interests (e.g. in publication)
- Transition to independence:
 - Discusses your ideas for future grants and advises on them
 - Puts you in touch with potential novel collaborators
 - Advises on host institutions
 - Reviews your proposal in detail
 - Helps you prepare for interview, for instance arranging mock interviews
 - Writes strong letters of reference

Practical challenges as early-career PI

- Hiring a team
 - Quite difficult in my experience
 - First team members critical
 - Trust your gut instinct
- Understanding how your organisation works (administration, infrastructure etc)
 - Who can explain how things work?
 - Who can help you achieve what within your institution?
- Keeping focused on the science with so many other things happening

Valuable resources for early-career PI

- Head start on some projects from previous period
- Nurturing environment (department, institution)
 - Pump-priming/ start-up funds
 - Sounding boards / mentors
 - Facilitated access to equipment and infrastructure
- Trusted collaborators that you enjoy working with
- Other types of support (e.g. team, funders)
- Some soft skills training useful
 - Time and task management
 - Conflict negotiation
 - Grant management
 - Practical courses (how to set up your lab, etc)

General challenges as PI

- Huge diversity of roles
 - Scientist (original ideas, knowledge)
 - Manager (team, projects)
 - Administrator (team, department, institute)
 - Fundraiser
 - Communicator (papers, talks, outreach)
 - Education (lecturer, advisor, examiner)
 - Colleague (department, institute, external)
 - Mentor (team, institute, external)
 - Editorial (academic journal editor, paper review)
 - Advisory (SABs, grant review, funding committees, governing boards)
- Time management
 - How to decide which roles to accept and which ones will be useful?
 - How to protecting quality working time?
 - Also reflects how you interact with your PI
- Science
 - How do you maintain your research competitive
 - Balancing your needs vs those of your team/ collaborators etc
 - Personal vs societal outlook

Thriving in your own institution

- Appreciate the contributions of your clinical colleagues to your research - make it also their story to tell, acknowledgements are not enough
- Be a volunteer in the scientific educational mission
- Become involved in the institution as your home
- Become involved in the institution as your family
- Own a piece of the real estate - philanthropy
- Be prepared to make some sacrifices and to dig deep

TIPS ON WRITING AN INDEPENDENT RESEARCH PLAN

Writing your own independent fellowship

- Check carefully requirements for fellowship
- Ideally get insights from previous successful recipients (and unsuccessful ones)
- Set aside **A LOT OF** time to think and write your idea: you will likely need many iterations to get it right
- Discuss research ideas and plans with supervisors/collaborators/mentors/colleagues
- Ambitious but feasible: check resource allocation carefully
- Choose institution carefully
- Have as many people as possible read your proposal

Early independent fellowships: what do you need?

Two indispensable elements:

- Clear and original research idea and direction
 - Original, represents significant advance over previous research
 - Cutting-edge techniques
 - Project feasible given the resources available
 - Leverages your unique set of skills and expertise
 - Opens up opportunity for building your future career
- Personal track record / potential to lead
 - Scientific excellence is paramount
 - Demonstrating independence and potential for leadership
 - Other types of track record

Very important also:

- Fit with hosting department/ institution

Writing your own independent fellowship

1. Background

- What is the state of the field, and why is the field important
- What are the major open questions in the field
- What are the next steps that can be tackled now (e.g. through accumulating evidence, new technologies, sample collections etc)
- What is the direction of travel for the field

Writing your own independent fellowship

2. Research questions / original hypotheses

- What are the research questions that your proposal addresses (note that these are not work objectives, rather specific areas of the field that you wish to address through the experiments proposed)
- Ideally these should be the questions that the whole field is asking, should help advance the field in a significant direction, and should also lead to being able to formulate next questions at the end of the fellowship
- Important to think at this stage at what will give you an advantage over competing colleagues (e.g. unique sample collections or collaborative networks, unique technique developed previously, unique set of skills etc)
- If no-one else is working in this area, can be an indication that the area is not important

Writing your own independent fellowship

3. Research aims

- These are aims that you will seek to achieve through your research questions
- Be specific
- Typically three is a good number
- Balance of risk-taking to safe:
 - Aims 1 and 2 safe: significantly advance field but high chance of succeeding
 - Aim 3 could be higher risk: could fail, but could potentially lead to high reward if successful (e.g. open up a new area of research, demonstrate a new paradigm against the grain etc)
 - Make sure you clearly outline the risk, detail pilot evidence as much as possible, and put in place a plan B in case the aim fails

Writing your own independent fellowship

4. Work that lead to this project

- Any previous technique, results or pilot data that provides a foundation of the proposed work
- Typically this would build on an original idea that you pursued/developed during your post-doc, and/area that was developed because of you uniquely
- Helps demonstrate the feasibility of the research aims (important particularly for high-risk ones)
- Helps highlight your unique intellectual contribution and set of skills

Writing your own independent fellowship

5. Research proposal

- Develops research aims by providing details on exactly what will be done, and how
- Each aim can be broken down in sub-aims or experiments for clarity
- Give as much detail on methods, materials and techniques as space allows
 - It indicates whether you have thought your experiment in detail / have clear idea of where it is going
 - It allows reviewers to assess feasibility
- Be realistic about what can be achieved given the time and resources
- Be open about areas/protocols needing development during fellowships
- Sketch plan B in case aim does not work out how you expect
- Workflow can help illustrate complex research plans and dependencies

Writing your own independent fellowship

6. Resources / feasibility

- Think about how you are going to execute the different tasks
 - Who is doing what and when?
 - Are there dependencies in tasks?
 - Are there training needs that need to happen before one objective can be achieved?
 - Gantt chart can help thinking about sequence of events
- Essential to make sure resources are appropriate
 - Consumables
 - Staff
 - Access to resources (key equipment, mouse cages, computation, pipelines etc)
- May need feedback from mentors and hosting institution

Writing your own independent fellowship

7. Research direction

- At the end of the research fellowship you should be fully established as an independent researcher
- So it is important that you know how achieving your aims will open up a wider research direction for you
- What will be the next questions that you will be able to tackle after the fellowship?
- How will you need to expand your team/ skills etc
- 5-year horizon

Writing your own independent fellowship

8. Research environment

- Why was the institute/ department chosen?
 - Best place to do that project due to colleagues, infrastructure, potential to develop, access to resources, commitment for future development etc
- Describe how the department has committed to you long-term
 - Commitment for appointment at the end of the fellowship
 - Lab space
 - New instrumentation
 - Access to pool of PhD students etc
- Is it obvious that they helped you prepare the application? (should be: sign of their commitment)
- Is the hosting institution able/prepared to support your research needs in the long term?

Writing your own independent fellowship

9. Independence

- Important to move institutes
- Staying is possible under exceptional circumstances if project justifies, but in that case it is essential to demonstrate independence from your current supervisor
 - What will be your niche?
 - Have you agreed that you can take research project with you?
 - Will he/she continue to be on your papers?
 - Will he/she continue to act as a mentor?
- Collaborators should be your own, should be the best possible, and should make real contributions to your research aims through new skills etc
- Mobility plans should be real and allow you to acquire new skills etc

Interview

- Expert examiners have read your proposal in detail
- Will pick up reviews as well as their own questions
- Will seek to clarify:
 - Hypotheses tested
 - Detail of experimental plans (where lacking or questionable)
 - Feasibility (where plans not sufficiently clear)
 - Resource allocation
 - Independence (where in doubt)
 - Choice of institute (where not optimal)
- Will ask about directions after the fellowship
- Plans for first independent paper

Alternative careers

- Switching careers is NOT a personal failure
 - There simply aren't sufficient numbers of academic jobs
 - Everybody is different – do that makes **you happy**
- Many interesting alternative options
 - Industry/ Biotech (technical, commercial, regulatory etc)
 - Charities
 - Publishing
 - Events
 - Teaching
 - Completely different career

Alternative careers

- What do you do if you are unsure of next step
 - Choice can be overwhelming: narrow down your options
 - Apply to diverse jobs, talk to people, do internships
 - You may need to pitch yourself differently when applying for a non-academic job (e.g. emphasizing soft skills, specific training etc)
 - Nothing is forever, but think in close-ended timelines (~1-3 yrs)
 - Think about what type of person you are, your likes and dislikes (e.g. structured routine vs freedom)

What I liked in pharma

- Professionalism
- Clear rules of engagement
- Getting to know how industry operates

What I did not like

- Lack of ownership: goals set externally
- Lack of purpose: projects often terminated due to commercial/other consideration
- Not cutting-edge (applied) science

Alternative careers

- Switching career is possible at any stage, but:
 - Can entail lag time
 - Try out before committing long-term
 - Get to know the organisation as much as possible
 - Interview in multiple different roles/companies
 - Gut instinct

Women in science

- Women dropping out of scientific leadership positions
- ~50-60% at PhD/post-doc level, ~5% after
- Complex reasons
- Complex solutions

Achieving a work-life balance

- Take the longer-term view
- Personal, family and work needs change all the time
- Recognise critical moments in your career/life
- Prioritise tasks and roles depending on circumstances
- Buy whatever services you can afford to make your life easier
- Nurture relationships
- Be flexible
- Use support networks
- Choose a supportive partner

What worked for me so far...

- Enjoy whatever you decide to do..
 - Be proactive..
 - Keep an open mind to new opportunities arising (calculated risk)..
 - Be flexible in re-assessing priorities..
 - Don't settle for participation as part of the infrastructure; take a leadership role
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- Journey is very personal..
 - Doubt is part of the process..
 - Failure is part of the process..
 - Trusted colleagues and mentors are key..
 - Learn your limits and operate within them..
 - In case of problems, reach out to mentors/colleagues..