Getting on the funding ladder

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Talk overview

• Preparing properly
• Grant applications: Ingredients for success
  – Excellence and Impact
• Preliminary (pilot) data
• Collaborations
• Additional tips
• Summary
• Resources/links
Why funding, grants etc?

• Bio(Medical) research is expensive!
• Not enough funding available for all good ideas
  => competitive grant calls
• Essential for a successful research career
  – Demonstrates and facilitates independence (setting up your own lab), scientific creativity, project management skills etc
  – University metrics
  – Important for promotion
• Also relevant for Industry jobs – making a case for having your project/idea funded
Publications, Publications, Publications....!

Start writing grant applications early in your career!

(e.g. towards end of PhD for a postdoc fellowship;
And read some grant applications before then –
successful and unsuccessful applications)

Conference bursaries and travel grants for lab visits etc
Prepare

• Attend briefing sessions
• Aim for the most appropriate calls and streams
• It is worth getting to know funding agency personnel
• Link with people who have a track record
• **Start early** and allow time for budgets, collaborator forms, letters of support, internal review, multiple approval stages and auto-detect of missing or incorrect data

• Read the call document very carefully – check eligibility criteria
  • Reflect the objectives in the call documents
  • Use the terminology in the call documents
Grant applications: Ingredients for success

• A great idea
  – Novel approach to a big/important question or problem
  – High probability of success
    • High risk vs high gain?
  – Hypothesis-driven

• Excellence
  – Originality
  – Logical
  – Well-designed experiments
  – State-of-the-art approach employed
  – Likely to yield strong, important conclusions
  – Potential for high impact
    • Influence the field
    • Potential for publication in the best journals
Grant applications: Ingredients for success II

• Impact
  – Make a positive difference to:
    • Health
    • Society
    • Economy
  – Human resource dimension – PhD/Postdoc training etc
  – Commercial impact
    • Collaboration with Industry, facilitate progression to market, IP, spin-out companies

• Strong track record (or potential) of the applicant (or applicant team)
  – Publication record in the area (quantity and quality)
  – Citations
  – Invited conference presentations
  – Positions held and other measures of esteem
  – Supervisory record
  – Record in attracting grant funding
  – Institutional support and thematic alignment
Preliminary data and collaborators

- Two ways in which you can mitigate risk and deal with potential shortcomings in your own expertise
Preliminary data – Why?

• Demonstrate to reviewers that there is substance to your idea
• May play a key role in shaping your hypothesis
• Proof of principle
• Data that suggest a high probability of success for the main project
  – Feasibility
• Demonstrate your technical capability
  – Feasibility
Preliminary data – Where?

• Usually in one or more of the following sections:
  – Background
  – Current state-of-the-art
  – Work leading up to the Project

• Possibly also in the “Methodology/Approach” section if wish to demonstrate capability in a specific technique

• But keep page counts in mind!
  – Appendices?
Preliminary data – How much?

• Enough to convince reviewers that your project has substance and a high chance of success

• May depend on the scheme you are applying for and the size, scale and ambition of the proposed project

• Too much better than too little
Preliminary data – How to maximise impact?

• Use strong data that support your hypothesis
• Prepare very nice figures, with accurate and informative figure legends
• Number the figures and refer to them in the text
• If possible, position them close to the relevant text
• A schematic that pulls the main themes, mechanisms, aims together
• Also possible to use published data to support the case for the project
• Collaborators might be another source of data
Collaboration

“We like to bring together people from radically different fields and wait for the friction to produce heat, light and magic. Sometimes it takes a while.”
Collaboration – Why?

• Cutting-edge 21\textsuperscript{st} Century science is often a team effort
  – Can’t do everything yourself (and not expected to!)
• Many papers published in the World’s best journals have multiple authors from multiple institutions and countries
• Bring in essential expertise that you don’t have
  – Technical
  – Intellectual
• Better solutions/experiments/ideas/papers usually emerge
• Support and advice when things aren’t going according to plan
• Co-supervision of students (and/or assist with training)
Mapping and sequencing of structural variation from eight human genomes

Jeffrey M. Kidd¹, Gregory M. Cooper¹, William F. Donahue², Hillary S. Hayden³, Nick Sampas⁴, Tina Graves⁵, Nancy Hansen⁶, Brian Teague⁷, Can Alkan¹, Francesca Antonacci¹, Eric Haugen³, Troy Zerr¹, N. Alice Yamada⁴, Peter Tsang⁴, Tera L. Newman¹, Eray Tüzün¹, Ze Cheng¹, Heather M. Ebling², Nadeem Tusneem², Robert David², Will Gillett³, Karen A. Phelps³, Molly Weaver¹, David Saranga², Adrianne Brand², Wei Tao², Erik Gustafson², Kevin McKernan², Lin Chen¹, Maika Malig¹, Joshua D. Smith¹, Joshua M. Korn⁸, Steven A. McCarroll⁸, David A. Altshuler⁸, Daniel A. Peiffer⁹, Michael Dorschner¹, John Stamatoyannopoulos¹, David Schwartz⁷, Deborah A. Nickerson¹, James C. Mullikin⁶, Richard K. Wilson⁵, Laurakay Bruhn⁴, Maynard V. Olson³, Rajinder Kaul³, Douglas R. Smith² & Evan E. Eichler¹

46 authors.......
Reviewers’ comments

“impressive track record in the related area of X, but no significant experience in the proposed area of Y”

“…applicant lacks experience in X, but collaborator Y’s is the world leader in the technique…”

“Dr. [X] has brought onboard excellent collaborators to see the research through and extract the most information from it.”

“A clinical/pharmaceutical collaboration would also significantly strengthen the proposal.”

“Applicant has an established track record in the field, has appropriate collaborations in place and has conducted pilot studies so that the probability of results of significant impact arising from the work is high…”

“The applicant has Prof. [X] as a collaborator who is a former post doctoral supervisor. It is anticipated that results from this work will be published with the new PI as senior corresponding author.”
Collaboration – Who?

• Choose/invite the best person (or organisation) for the job
  – Proven track record in area
  – Currently active

• People who you know you could work well with
  – Previously worked with? (but be mindful of need to develop independence on relevant grants)
  – Previously met?
  – Recommended by someone you trust?
  – Whose work you respect

• People you can trust
  – To get the job done on time
  – To maintain confidentiality
  – To collaborate rather than compete

• People who will bring fresh ideas and new ways of thinking
Some of my collaborations....

NUI Galway
- Dr Michelle Roche (Physiology)
- Prof John Kelly (Pharmacology)
- Dr Eilís Dowd (Pharmacology)
- Prof Peter Dockery (Anatomy)
- Prof Abhay Pandit (CÚRAM)
- Prof Brian McGuire (Psychology)
- Dr Michael Scully
- Dr David O’Gorman

University College Cork
- Prof George Shorten (Anaesthesia)

Dublin City University
- Dr Nick Gathergood
- Prof Oliver Dolly

Trinity College Dublin
- Prof Marina Lynch
- Dr Eric Downer

University of Madrid
- Dr Maria-Paz Viveros

University of Copenhage
- Dr Mads Werner

University of Cadiz
- Dr Esther Berrocoso

University of Nottingham
- Prof Victoria Chapman
- Dr Steve Alexander
- Prof David Kendall

University of Nice
- Prof Rene Garcia
- Ms Ophelie Nachon

University College London
- Prof Stephen Hunt

University of Granada
- Dr José Manuel Baeyens

University of Indiana
- Prof Ken Mackey

University of Bristol
- Dr David Jessop

University of Kentucky
- Prof Brad Taylor

Second University of Naples
- Dr Sabatino Maione
Collaboration – How to initiate contact?

• Look carefully at grant eligibility criteria
  – Collaborator vs Co-applicant/Co-PI
• Best if you can meet at least once in person (especially if never met before)
• Conferences, phone, Skype/video-con, email
• **Invite** them to be a collaborator
  – Basic outline of idea and their role to begin with
  – Further detail later if they show interest
• What are you asking of them and what can they expect in return? (see next slide)
• Make contact as early as possible
• If they sign up, keep them in the loop at all stages thereafter
• Letter of support required?
  – Write it for them and send it as a draft, asking them to review and change as they see fit
• Signatures in good time
Collaboration – Roles and Expectations

• Be crystal clear on these
• In writing in an e-mail
  – Probably also in the letter of support and proposal itself
• What exactly is collaborator required to do and when?
• Will they (can they?) receive funding?
  – Agree budget up front where possible
  – Contract research vs collaboration
• Co-authorship on publications
• Ownership of IP?
• Student/researcher visits?
Collaborations with Industry

- Can be very rewarding
  - Translation
  - Commercialisation
  - Relevance/Impact
- Milestone driven, deliverables, deadlines
- Often short duration projects
- Company priorities and focus can change quickly
- IP Agreements and Contracts essential
Features of Successful Collaboration

- A positive and productive partnership
  - Joint publications
  - Joint funding
  - Shared supervision/training of students
  - Joint IP
- Mutual trust and respect
- Mutually beneficial
- Regular contact, discussions, meetings
- Each party delivers on their commitments in a timely manner
- Opens up new ideas and projects
Additional Tips

• Know your audience and write for them
  – Expert versus non-specialist reviewers

• Be concise and precise – word limits can be constraining

• Be really clear about methodological details

• Be realistic when outlining KPIs

• Budgets in grant proposals can be tight...
  – Realistic, feasible?
  – Overheads included or not?
  – Budget justification
  – Liaise with your Research Accounts Office
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<td>Literature review and Part A (c-Fos immunohistochemistry)</td>
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<td>Part B (intra-cerebral microinjection of I$_2$ ligands)</td>
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<td>Objectives 1 &amp; 3: neurochemistry (PD1)</td>
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<td>Establish proteomics methodology (PhD &amp; EO)</td>
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<td>Objective 5: behaviour &amp; immunohistochemistry (PD1 &amp; PD2)</td>
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PD1 = post-doctoral researcher 1; PD2 = post-doctoral researcher 2; PhD = PhD student; ST = Senior Technician; EO = Experimental Officer
Remember

• It’s a combination of strategy, timing, intelligence, hard work, perseverance and luck!

• Failure is the norm!
  • Success rates ~10 – 20%.

• Reviews can be contradictory – a bad review can sink you!

• Rebuttal or resubmission is sometimes allowed

“It’s a foolproof formula for writing grant applications.”
Checklist

– High quality ideas and science
– Appropriate background literature review in terms of quality and quantity
– Clarity and quality of hypothesis, aims and objectives
– Detailed experimental design
– Appropriate models/methodologies
– Appropriate data analysis/statistics
– Feasibility of project and timeline
– Reasonable budget
– Strong impact statement
– Clarity of project management plan
– High quality presentation, nice figures, grammar and spelling ok, all sections completed

(Always follow formatting instructions to the letter!)
Summary

• Excellence and Impact
• Hypothesis
• Attention to detail; high quality presentation
• Preliminary data and collaborators are important factors for most grant proposals
• Preliminary data gives substance to your ideas and helps convince reviewers
• Collaborators bring additional expertise
• Ask colleagues to critique your draft proposal!
Some relevant links and grant calls

- [http://www.research.ie/funding/postgraduate-funding](http://www.research.ie/funding/postgraduate-funding)
- [http://www.embo.org/funding-awards](http://www.embo.org/funding-awards)
- [http://www.research.ie/funding/postdoctoral-funding](http://www.research.ie/funding/postdoctoral-funding)
- [http://www.sfi.ie/funding/funding-calls/programmes-for-early-and-mid-career-researchers.html](http://www.sfi.ie/funding/funding-calls/programmes-for-early-and-mid-career-researchers.html)
- [https://ec.europa.eu/research/mariecurieactions/](https://ec.europa.eu/research/mariecurieactions/)
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- [http://libguides.library.nuigalway.ie/StartingyourResearchatJamesHardimanLibrary](http://libguides.library.nuigalway.ie/StartingyourResearchatJamesHardimanLibrary)
- [http://info.researchprofessional.com/](http://info.researchprofessional.com/)
- Also check the websites of the societies of which you are a member
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  – Supervisors
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  – Funding agencies
  – Reviewers
  – Friends and Family!