“YOU HAVE TO LEARN THE RULES OF THE GAME. AND THEN YOU HAVE TO PLAY BETTER THAN ANYONE ELSE.”

Albert Einstein
Learning the rules of the game

• Who is eligible to apply?
• What types of proposals the sponsor is looking for?
• What is the funding rate?
• What does the proposal entail?
• What is the budget limit?
• How are proposals reviewed?
• How is funding determined?
Is this the right type of grant I should apply for?

- Am I eligible?
  - Do I meet the qualifications based on training and experience?
- What types of proposals is the sponsor looking for?
  - Are they looking for proposals on basic, clinical, translational or implementation science?
  - Is this a 1, 2, 3 or 5 year grant?
    - Is my proposal a short-duration pilot study or a long-duration definitive study or is it a multi-aim proposal?
    - Can I finish the proposed studies within the time frame of the grant?
- Who got funded in the past?
  - Do I have similar or better training and accomplishments?
  - Is my research proposal similar or more innovative and impactful?
- What are my odds of getting funded?
What is the chance that my proposal will be funded?

Depends on
  - funding source and size of the grant
  - your training and track record
  - novelty, significance and feasibility of your proposal, BUT

You will never win any lottery if you never play
Use the resources available to you

• Mentors (including virtual mentors)
• Senior colleagues (including those in other departments at your institute) who have been successful in securing grant funding (from same or different sponsors)
• Peers who have applied for similar types of grants
• Grants administrators / research office staff at your institute
  – Sample copies of previously successful grants
  – Administrative components particularly budgets
  – Logistics: internal review, sign offs, timelines, actual submission
Preparation for the Proposal

• What does the proposal entail
  – Scientific
  – Personal statement, career development and training, mentoring plan
  – Administrative
    • Environment, facilities, equipment
    • Resources: patient volume, clinical or population database, biorepository, statistical support
  – Budget
    • Maximum limit, what is allowable and what is not
    • How much should be budgeted for each item, anticipate inflation and cuts
• What is the internal review process?
  – Sign off and timeline
• Read the instructions carefully
Writing the Scientific Section

• Title
• Abstract
• Specific aims and hypotheses
• Background and rationale for study
• Preliminary data
• Approach / methods
• Significance / innovation
• Analysis plan
• Limitations and contingencies
• Timeline
Title

• First thing the reviewers see
• Informative
• Convey significance / novelty of the proposal
Abstract

• After the title, this is the first section reviewers read but often this is the last section you will work on

• Within the space allowed state clearly
  – What are you trying to study (aims)
  – How will you address the aims (methods)
  – Why is this study important
  – What new information will be generated and how relevant will the information be (why should this proposal be funded)

• First impression matters
Specific aims
What are you trying to study?

• This is the first section you will work on
• Need to define the aims before you can design the study
• Articulate your ideas and develop them into testable hypotheses
• Aims need to be focused, measurable, and able to be accomplished within the time and budget allowed
• Avoid being overly ambitious, if >1 aim should be interrelated but not dependent on each other
• Specific aims page also includes synopsis of methods, study population, outcomes, and hypotheses
• Convince the reviewers this is an important topic and you know how to tackle it
Idea ≠ Specific Aims

• Taking chronic hepatitis B patients off nucleos(t)ide analogue (NA) therapy may improve rate of HBsAg loss

• To compare the rates of HBsAg loss (outcome) in patients with HBeAg- chronic hepatitis B who had been on NA therapy for ≥3 years with undetectable serum HBV DNA (patient population), who discontinue NA vs. continue NA (intervention and comparator)
Background and rationale for study

• Literature review
  – What is already known
  – What are the gaps in knowledge
  – How will the proposed study fill in those gaps

• Demonstrate to reviewers how much you know and understand the subject, what is the rationale for the proposed study, and whether the proposed study if successful will provide valuable new information and fill in the gaps
  – Critical appraisal of literature, pertinent to proposed study, need not be exhaustive
  – Up-to-date, objective
Preliminary data

- Demonstrate to reviewers you have the knowledge, skills and resources to carry out the proposed work
- Commitment to the field
- Feasibility of the study
- Proposed study builds on earlier studies
- Show pertinent data only
- Generous use of tables and figures
Research design / Methods

• Study population and recruitment strategies
• Intervention and comparator or observations
• Data to be collected, methods, time points
  – Define data and variables, how they will be measured, collected, entered
• Outcomes – what, how (measured), when
  – Primary, secondary and exploratory endpoints/outcomes
• Tie methods to aims, provide enough details for reviewers to know what will be done
• Convince reviewers proposed methods are feasible and will address aims, and you understand the pitfalls and how to overcome them
Data Analyses

• Consult a statistician early on
  – Sample size: impacts budget and feasibility
  – Confounders, missing data, drop outs

• Anticipated results

• Analysis plan

• Convince reviewers you know how to analyze the results and understand the limitations

• Must have a plan how to analyze the data when study is completed and not wait until data are in hand and then figure out what to do
**Timeline**

- Can the proposed study be completed within the grant funding period?
- Particularly important for proposal with multiple aims, more so if later aims depend on results of earlier aims

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Preparing the administrative sections

• CVs / Biosketches of investigators
  – Necessary training, skills, experience + track record

• Environment, equipment, resources
  – Necessary patients, technologies, support

• Budget
  – Match proposed studies
  – Provide justification
  – Convince reviewers you know what it takes to do the study
  – Work with grants administrators
It’s finally done or is it?

• Now you have the draft of the entire proposal
• Review for clarity, consistency, flow
• Double check instructions, format
• Proof read, polish, proof read again
• Make sure key points are highlighted
• Ask trusted colleague / external expert to review and critique
• Ask grants office to verify budget, administrative sections, format
• Get internal sign off
• Submit on time
Technical / formatting tips

• Use a font type that is easy to read: Arial, Calibri, Times New Roman, Courier, Pristina; a font size that is readable: 10, 16, 24; and a generous margin

• Generous use of figures and tables to show concepts and data

• Review for clarity, consistency, flow

• Double check instructions, format

• Proof read, polish, proof read again

• Make sure key points are highlighted

• Ask trusted colleague / external expert to review and critique

• Ask grants office to verify budget, administrative sections, format

• Get internal sign off

• Submit on time
What happens after my proposal is submitted?

- Staff at funding organization checks for eligibility of applicant and completeness of proposal
- Proposal assigned to a review panel
- 2-3 members of panel assigned to review each proposal in depth
- Scores and comments of primary, secondary, tertiary reviewers submitted
- Bottom half proposals triaged (not discussed)
- Top half presented by assigned reviewers
- Open discussion by review panel
- Scores revisited and finalized
Congratulations, your grant will be funded and you are on the way to success.
10 Tips for successful grant writing

1. Pick the right grant to apply, understand the requirements, find out who and what got funded before
2. Start early and allow enough time
3. Pick a topic that will help you win – of interest to others and to you, unique environment/resources that give you an advantage
4. Define aims clearly, avoid being overly ambitious
5. Match methods to aims – innovation, feasibility
6. Show you can pull it off – prior training, skills, preliminary data
7. Demonstrate knowledge of the topic
8. Get an in-house review prior to submission
9. Read and follow instructions, proof read
10. Put yourself in reviewers’ place – make your proposal interesting, easy to read, and easy to grasp