Selection of Research Topic

Novel Idea??
Mother of All Successful Proposals
There is nothing new under the sun!
Stealing from one source is plagiarism, while stealing from many is research: Jacob Kraicer, U Toronto

• Where do we get our ideas from?
  – Advisor/ Committee members/ colleagues
  – Reading literature/publications
  – Library
  – Conferences/seminars
  – Look what has been funded, who gets funded and by whom?
  – Draw inspiration from anywhere you can
  – What is a great idea?
I wish, I would have thought of it, first!

- Need based (~50%)
- Solving a problem that exists
- Something is unknown so fill in the gap
- He/she did it and I will repeat in my lab
- Less chance of survival
- INNOVATIVE IDEA!
- Try to think big and out of box!!!
Write a proposal that will solve a problem!

- Open ended research
- **Move field forward not sideways:** Gerald Greenhouse
- Obvious that has been overlooked (old topics, less information)
- Look for what was published last week in your area
Decide the topic!

- Read a lot!
- Write down your ideas: pros and cons
- Talk to people (anyone who would listen)
- Get advice from experts
- Can you do it? Any technical problem?
- Theme will slowly emerge!
- Interesting ideas for all stakeholders
- Write down a couple of ideas and try to sell them to your friends
- Think day and night (if you can dream about it, it will certainly happen one day!) Get haunted by the idea!
- Improvise your ideas! Communicate your excitement!
PI: the Principle Investigator

Simple ➔ very complex

Doable ➔ Fundable ➔ Impossible

• Is it worth doing?
• Can the PI do it?
• Is the timetable realistic?
• Is it institutional priority?
• Is the money asked for sufficient?
• Does the PI work alone or with others in the community?
• Cross the borders! Shake hands but keep some reviewers
• Make the idea palatable, interesting to strangers
• Once in a blue moon, you will get idea that will shake the foundation!
Talk to experts!

• Advisor/teacher
• Know who you are talking to?
• People in your field: talk, email
• No one steals your ideas!
• Publication fills the gap in our knowledge but proposal solves a problem!
• Narrow down from broad topic to specific idea and make it spicy hot!
Who will fund this research?

- NSF
- USDA: agriculture, forestry
- USFS: forestry
- DOE: energy related sciences
- EPA: pollution prevention and remedy
- NIH: medical
- Private Foundations
- Industries
Study the agency

- Read what they really fund? Programs!
- Study the abstracts that are close to your idea
- Understand the culture of funding agency
- How much do they fund?
- If they never funded what you have in mind, change the agency!
- You may reword your idea to fit the buzzwords agency uses!
- Talk to program manager
Is there a single rule to become successful grants writer?

- No, but smart thinking and hard work might help
- Individual skill, experience and ability
- Salesmanship
- How you package an idea?
- How readable and exciting you make it
- Make reviewers your advocates, not adversaries
- How are you the only one in the world who can do it or lead it?
Assignment for the next class

• First, think about three ideas that you want to work on and write them down, then
• Focus on one idea and polish it so that you can sell it to strangers!
• What are your testable hypotheses?
• Main goals, specific objectives
• What questions your research will solve?
The Scientist (1998)

- Significance: Will the study move the field forward? Novel, not mere confirmatory!
- Approach: Are the experiments sound and technically feasible?
- Innovation: Are your ideas creative/novel?
- You and your environment: Can YOU accomplish the goals given your training, resources, budget and collaborations?
Pearls of Wisdom
Jacob Kraicer

• Grantsmanship is the art of acquiring peer-reviewed research funding
• Good writing will not save bad idea but bad writing can kill good ones.
• Read instructions CAREFULLY and follow them EXACTLY!
• Make your proposal a joy to read!
Penn State’ top ten list
Office of Research Affairs

• In order to win, you have to play
• Do your homework
• Learn to walk before you run
• Don’t let the tail wag the dog
• If it is worth doing, it is worth doing right
• He who has gold, rules
• Keep several irons in fire
• Don’t promise what you can not deliver
• Deliver what you promise
• Try, try and try again until you succeed
Identify colleagues who could help
  >generalists
  >specialist

Have time on your side

Formulate ideas

Identify resources
  >funding
  >institute
  >research services
  >successful proposals
  >criticism

Read literature

Generate preliminary data
They can not read your mind!

• Think like a scientist
  – Define a problem
  – Ask questions
  – Formulate hypotheses
  – Design experiment
  – Plan for evaluation
  – Get rich!
Knowledge is the key!

• Know your funding agency
• Know your colleagues
• Know your topic
• Know yourself