M403: Motivating Reluctant, Inactive, or Inexperienced Investigators to Pursue Research Funding

Marjorie Piechowski, Ph.D.
University of Wisconsin-Milwaukee

1

Learning Objectives

➢ Understand and describe specific challenges to investigators at different career levels in pursuing external funding for research or other academic projects.

➢ Learn and apply what the literature tells us about researcher motivation and institutional support.

➢ List effective strategies to motivate and encourage investigators to pursue and succeed in external funding efforts.

➢ Share successes, strategies and challenges.

Your Presenter: Marjorie Piechowski

- SRAI Past President and Distinguished Faculty
- Over 35 years experience at three Midwest universities in
  - research strategy and development, for individual and large-scale collaborative grants
  - faculty workshops and mentoring in grantsmanship, especially for new faculty
  - proposal development and pre-award services
  - research compliance and training
  - post-award oversight

  - now, independent grant writer and consultant for U.S. and global colleges and universities

Who are they? All of These

- Junior faculty/beginning researchers
  - Seeking the first entry-level grant
  - Establishing an independent research career
  - Separating from dissertation/post-doc advisor

- Mid-level, post-tenure faculty/investigators
  - Looking for new areas of research beyond first success
  - Moving beyond individual research to collaborative or large-scale projects
  - Supporting an established research team (students, post-docs)
  - Seeking career validation and recognition

- Senior faculty/investigators
  - Breaking new research ground
  - Winding down a career
  - Leaving a mark/legacy on their area of research

Starting Points: The Problem

- Grant award rates have declined steadily (5-20%)
- Average age for first NIH R01 awards ~ 42
- NIH FY 2022 success rate for new investigators = 8%
- NIH reports a decline in single-investigator awards
- NSF reports 2-3 attempts necessary to get first award
- More new Ph.D.s doing post-docs for longer periods
- Rapidly changing technology, research environment
- More collaborative, interdisciplinary expectations
- Result = reluctant, inactive, discouraged investigators
- Result = new investigators especially discouraged
- Result = new challenges for experienced investigators to increase or even to maintain grant activity

Challenges for New Researchers

- Junior investigators: overwhelmed and busy with
  - Publishing work from graduate research area
  - Developing new courses
  - Establishing labs
  - Recruiting students/post-docs
  - Finding collaborators
  - Learning the grant application process
  - Stabilizing personal life
    - House-hunting/moving
    - Marriage/family adjustments/new babies
    - Financial issues/student loans
    - Citizenship issues/change of visa status

Mid-career Challenges

- Burned out from tenure effort
- Bored with previous research and ready for a change in research emphasis
- Out of date with new technology/research trends
- Lack of stimulation from teaching, course development
- Tired of administration, service, managing labs
- Sabbatical-eligible
- Looking for new collaborators/teams/venues
- Family/financial pressures
  - Young children—school activities and time pressures
  - College-age children--financial pressures

Senior-Level Challenges

- "Mature" research
  - Need new ideas, fresh approaches
- No longer current in the discipline
  - Out of touch with the literature and new stars
  - Attend conferences for networking, socialization
- Not skilled in new technology/approaches
  - Nanoscience/technology/big data
  - Digital humanities
  - Collaborative/multi-disciplinary research
- Too far removed from hands-on research activity
  - Students and post-docs do the real research and write the grant applications and publications

More Challenges for Senior Researchers

- Retired on the job
  - No recent publications
  - Little change in research techniques or topics
  - Teaching on auto-pilot
  - Outdated labs and equipment
  - Out of touch with new generation of students
- Personal challenges
  - Family: aging parents, supporting adult children, raising grandchildren
  - Health issues (own, partner/spouse)
  - Financial security/building the retirement nest egg

Challenges for All Levels

- Secondary language/writing proficiency
- Lack of awareness of grant opportunities
- Discouragement from multiple rejections
- Unfamiliarity with the agency review process
- Isolation in discipline, geography
- Lack of collaborators
- Insufficient graduate/undergraduate assistance
- Lack of sophisticated equipment, labs, start-up funds
- Lack of mentor, disciplinary colleagues
- Weak publication record
- Heavy teaching load
- Unclear institutional expectations, research support

What motivates individuals to pursue grants and conduct research?

- What the literature says:
  - Intellectual stimulation, need to stay current
  - Desire to contribute to the field/literature
  - Formal public recognition
  - Peer recognition
  - Having satisfying research collaborations
  - Institutionalized forms of recognition
  - Clear and consistent internal expectations
  - Institutional culture
  - Disciplinary expectations and norms

Source: Investigating Academics' Motivation to Pursue Research Activity, Richard Jeans and Lyndon Murphy, University of Wales, Newport, in Newport CELT Journal 2009

SRA
INTERNATIONAL

What the literature says: researcher categories and grant activity

- High Motivation-High Ability
  - Began independent research in grad school
  - Established strong research networks
  - Built strong publication record
- Low Motivation-High Ability
  - Institutional betrayal, low trust, change-resistant
  - Fatigue, isolation
  - Satisfied with status quo
  - Culture of mediocrity

- High Motivation-Low Ability
  - Writing, language issues
  - Unskilled with grant development/strategies
  - Limited publication record
- Low Motivation-Low Ability
  - Lack of engagement with discipline, networks
  - Narrow research focus
  - Limited publications
  - Approaching retirement

Source: Hammond, S., Madsen, S., and Fenton, J. "Strategically Increasing Faculty Productivity," Academic Exchange Quarterly, 8 (4) 2004.

SRA INTERNATIONAL

Customized Resources for Researcher Categories

Source: Hammond, S., Madsen, S., and Fenton, J. "Strategically Increasing Faculty Productivity," Academic Exchange Quarterly, 8 (4) 2004.

Faculty Category	Suggested Support/Resources
High Motivation-High Ability	Reduce teaching load Provide summer research support Provide conference funding Publicize research success Recognize/support for mentoring others
High Motivation-Low Ability	Provide mentoring Offer workshops on research skills, grants Offer continuing education support Publicize research success
Low Motivation-High Ability	Develop individual plan to create research networks and increase grant activity
Low Motivation-Low Ability	Develop individual plan for progress with clear articulation of research expectations Maintain teaching/service activities

How an Institution Fosters Grant Success

- Clear and consistent internal expectations
    - Position announcements, hiring process
    - Published tenure and promotion standards
    - Mentoring, helping junior faculty toward tenure process (limited committee work, adjusted teaching loads)
- Institutional culture fosters and values research
    - Public commitment to research from institutional leadership
    - Public recognition of research effort and success
    - Salary/reward structure

More Internal Ideas That Work

- ## Institution-wide
  - ○ Strong infrastructure to support and value research
    - ■ Well-staffed and competent central and distributed research administration offices
    - ■ Generous and focused internal grant programs
    - ■ Expert support for research compliance (technology transfer, intellectual property, export control, IRB, IACUC, etc.)
    - ■ Redistribution/reinvestment of recovered F&A
    - ■ Assistance in developing research collaborations
    - ■ Investment in equipment, labs, research space

SRA
INTERNATIONAL

Research Development:
Institutional Strategy to Foster Grant Success

- Research development (RD) an emerging field and approach in/from/outside of research administration
- RD a SRAI new certificate, replacing grantsmanship
- RD sometimes described as pre-pre award
- RD = integrated and institutional approach to proposal development and research success
- Increasing number of career opportunities in RD
- Needs long-term commitment from institution

- Results will not be immediate but can be profound for the investigators and the institution

What is Research Development?

- *Research Development as defined by NORDP (National Organization of Research Development Professionals) "encompasses a set of strategic, proactive, catalytic, and capacity-building activities designed to facilitate individual faculty members, teams of researchers, and central research administrations in attracting extramural research funding, creating relationships, and developing and implementing strategies that increase institutional competitiveness."*

  http://www.nordp.org

What are the many roles of RD?

- Strategic planning and advancement of research mission
- Identifying and maintaining external collaborations (academia, industry, local, state, federal, international organizations and governments)
- Identifying institutional and individual research strengths
- Identifying and disseminating funding opportunities
- Presenting workshops and training in proposal development
- Team building/facilitating team science
- Managing/writing/editing large-scale, complex proposals and projects
- Editing academic publications
- Managing limited submissions/internal grant programs
- Disseminating research results/success
- Collecting, maintaining, analyzing proposal and research metrics

SRA
INTERNATIONAL

Strategies for New Investigators

- ○ Released time from teaching to develop grants
- ○ Travel funds to visit agencies or collaborators
- ○ Graduate student support (pre-grant) to begin project, proof of concept, gather preliminary data
- ○ Individual strategic research plan
- ○ Assistance in finding and interpreting RFPs
- ○ Special focused workshops (agencies, programs, budget development, new investigator awards)
- ○ Formal mentoring programs—year-long or more
    - ■ Individual, department, institution-wide, external
    - ■ Groups: women, underrepresented populations

Mid-level Researchers:
Travel, International Grant Opportunities

- U.S. examples
  - NSF International Programs/NIH Fogarty International Center
  - U.S. Agency for International Development
  - American Councils for International Education: for research in Central Asia, Moldova, Russia, the South Caucasus, Southeast Europe, and Ukraine
  - U.S. Department of Education group travel grants
  - Social Science Research Council Abe Fellowship
  - Carnegie Corporation of America
  - Fulbright Fellowships—teaching or research in 200+ countries
  - Individual residential fellowship/research grants
    - National labs, libraries, museums, other campuses

World-Wide Research Travel Grants

○ German Academic Exchange Service--DAAD

○ European Union Funding

○ International Foundation for Science

○ Human Frontier Science Program

○ U.K. Department for International Development

○ Japanese International Cooperation Agency

○ Ciencia y Tecnoligia Para el Desarrollo

○ UNICEF-UNDP-World Bank-WHO

○ Research Council of Norway

○ Canadian International Development Agency

More World-Wide Grant Opportunities

○ Third World Academy of Science
○ W.K. Kellogg Foundation—Latin America/Caribbean
○ Pan American Health Organization
○ Swedish International Development Cooperative Agency
○ Indonesia Biological Sciences Research Grant Program
○ Wellcome Trust Tropical Medicine Programme
  ● Third World Network of Scientific Organizations
  ● John D. and Catherine T. MacArthur Foundation
  ● Chiang Ching-kuo Foundation for International Scholarly Exchange
  ● And many more in many other parts of the world

Other Mid-Career Ideas:
Build Synergies and Connections

- Industry
- Federal/government laboratories
- Research consortia/grant programs for collaboration
  - Collaborative Research Infrastructure Scheme (CRIS) in Australia
- School systems
- Not-for-profit organizations
- Other countries
- Internal connections: hosted brown bag lunches, research symposia, lecture series, collaborative internal grant programs, conjoint meeting and lab space, shared equipment programs

Interdisciplinary/Collaborative Research: What the Literature Says is Necessary for Success

- Foster a collaborative environment
- Have institutional strategic plans that promote IR
- Provide investigator incentives for IR that reflect and reward involvement in IR
  - Hiring and tenure policies
  - Time and institutional support to prepare proposals
- Cross-department budgeting mechanisms
- Lab/meeting space co-location
- Cross-department/team teaching mechanisms

Source: Klein, J.T. and Porter, A.L., "Preconditions for Interdisciplinary Research," *International Research Management*, 1990. Published to Oxford Scholarship Online October 2011.

More Mid-Career Ideas: Increase Visibility

- Individual, department, college, institution:
  - Grant review panels
  - Editorial review boards
  - Site visits
  - Journal editing
  - Leadership roles in professional organizations
  - Community/political leadership
  - Membership on corporate boards
  - Consulting

Senior Investigators: Large-Scale Grants

- Some NSF examples:

  - Materials Engineering Research Centers

  - Engineering Research Centers

  - Centers for Chemical Innovation

  - Science and Technology Centers: Integrative Partnerships

  - Industry/University Cooperative Research Centers

- NIH Center Grants

- DOD/DHS/DOE Centers of Excellence

- Centers for International Business Education (ED)

More ideas for Seniors

- Institutional nominations for major professional awards
  - Fellows in disciplinary or professional societies
  - National academies
  - Major research prizes, awards
    - NIH Lasker Medical Research Award, American Academy of Arts Gold Medals, Nobel Prize
- NSF Rotator Position as Program Officer
- Major equipment grants: NSF, NIH, DURIP
- Educational programs/curriculum development
  - ED GAANN Program, McNair Program, NIH Training Grants, NSF Educational Programs

SRA
INTERNATIONAL

NSF Educational Programs

- Improving Undergraduate STEM Education
- Nanotechnology Undergraduate Education in Engineering
- Transforming Undergraduate Education in Science, Technology, Engineering and Mathematics (TUES)
- NSF Scholarships in Science, Technology, Engineering and Mathematics (S-STEM)
- Advanced Technological Education
- Widening Implementation & Demonstration of Evidence-Based Reforms (WIDER)
- Revolutionizing Engineering and Computer Science Departments (RED)

What else motivates investigators?

- Credit for proposals submitted as well as awarded
- Method to recognize multi/cross disciplinary research
  - Allocation of F&A, tenure considerations, joint publications, teaching loads
- Metrics?
  - Rankings of program, college, institution
  - Benchmarking research productivity
- What metrics to use and for what purposes?
  - Individual?
  - Department?
  - College?
  - Institution?
  - Against whom? Peer institutions? Aspirational institutions?

Other individual motivators

- Good leadership and organizational practices
  - Meeting basic needs
    - Work-life-family issues
    - Compensation and work load
    - Difficult relationships/toxic departments
    - Policies/structures
    - Transparent communication
- Positive institutional culture regarding grants
- Active encouragement to apply
- Perceived benefits from grants
- Promotion and tenure recognition

What about money as motivation?

- Indirect cost allocation to PI
- Summer stipends for developing proposals
- Course releases for developing proposals
- Internal grant programs to get started on research
- Payment for submitting a proposal
- Payment for getting a grant award
- Salary supplement for managing a large-scale grant
- Other incentives: clerical support, extra travel
- Paid external reviewers for draft proposals
- Professional grant writers/editors, internal or external

Parting Ideas for Discussion

- What strategies work at your institution?

- What strategies have you tried and dropped?

- What strategies do you plan to use in the future?

- What best practices and strategies would you use in an ideal institution and world?

- Should we identify/work with reluctant, inactive, inexperienced or discouraged investigators?

- Is it worth the time and effort?

- Other ideas?

References Consulted

- Bland, C. et al. "A Theoretical, Practical, Predictive Model of Faculty and Department Research Productivity." *Academic Medicine*, 80(3) 2005, pp. 225-237.

- "Building a Culture of Research: Recommended Practices," *Hanover Research*, May 2014.

- Hammond, S., Madsen, S., and Fenton, J. "Strategically Increasing Faculty Productivity," *Academic Exchange Quarterly,* 8 (4) 2004.

- Hardré, Patricia L. et al. "Faculty Motivation to do Research: Across Disciplines in Research-Extensive Universities," *The Journal of the Professoriate*, 5(1),2011, pp. 35-69.

- Jeans, Richard, Murphy, Lyndon. "Investigating Academics' Motivation to Pursue Research Activity," University of Wales, Newport, in *Newport CELT Journal,* 2009.

- Klein, J.T. and Porter, A.L., "Preconditions for Interdisciplinary Research," *International Research Management*, 1990. Published to Oxford Scholarship Online October 2011.

Thank you for your attention

Questions or Comments?

Marjorie Piechowski, Ph.D.
Emerita Director of Research Support
College of Engineering & Applied Science
University of Wisconsin-Milwaukee
Milwaukee, WI USA

piechow4@uwm.edu

414-963-9055