Essentials of Developing Compelling Research Manuscripts

Erdoğan Memili, DVM, Ph.D.

Professor & Executive Associate Director

PRAIRIE VIEW A&M UNIVERSITY

College of Agriculture, Food and Natural Resources

Cooperative Agricultural Research Center

Fırat Üniversitesi
Veteriner Fakültesi

Overview

- Publish and Flourish
- Tell your stories
  - Develop blueprints/outlines of your manuscripts
  - Keep on writing
- New perspectives
  - Different types of articles
  - Write and do research concurrently
  - AI & Scientific Publications
  - Social Media and Publications

Developing Irresistible Ideas for Exciting Research

- Find a niche area
- Do comprehensive literature search
- Determine gap(s) in the knowledge base
- Develop hypothesis
- Generate preliminary data
- Re-assess the hypothesis
- Seek expert opinions
- Determine specific objectives
- Design experiment(s)
- Conduct original research
- Repeat the experiments
- Analyze results
- Develop sound manuscripts
- Publish and flourish
- Tackle next set of questions

Publish or Perish-Publish & Flourish

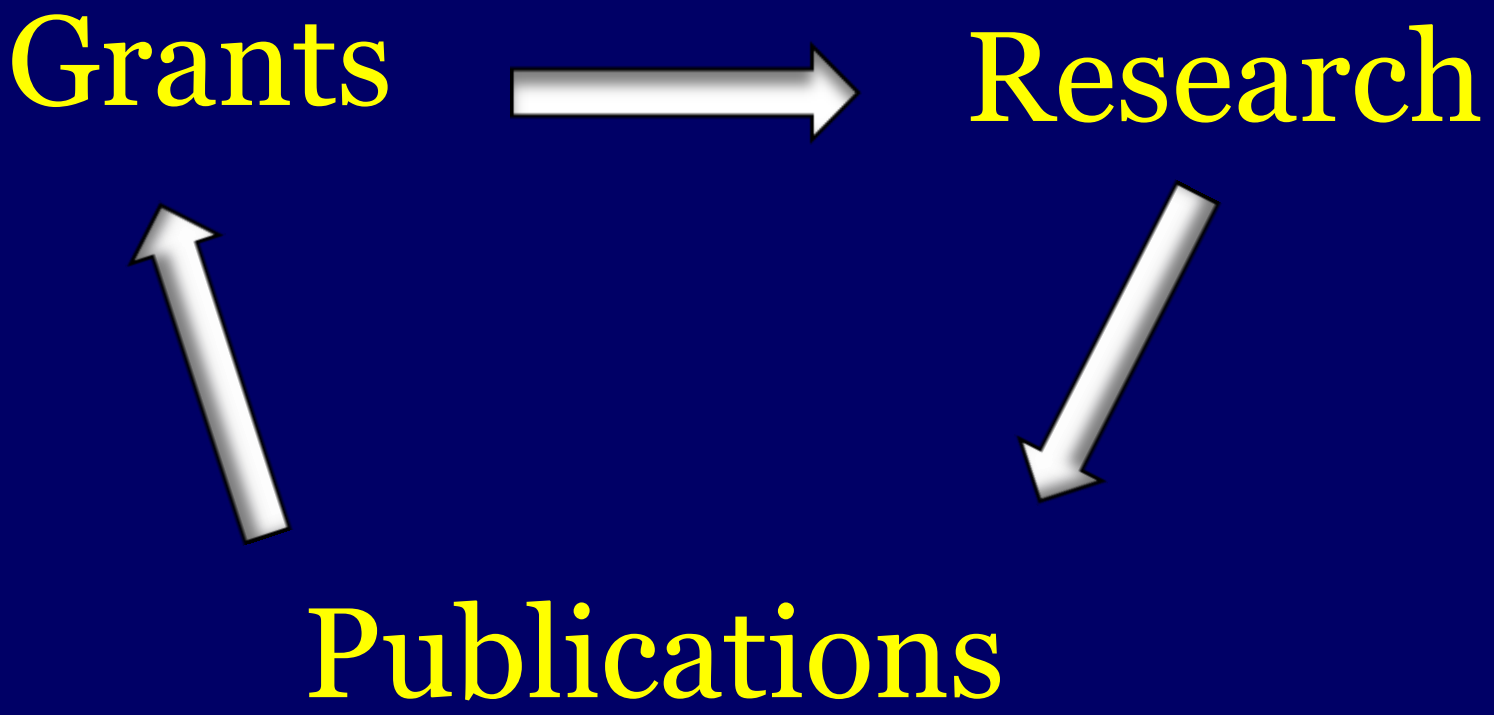
- The scientific community has long emphasized quantity and quality of scholarly publications as a way to judge the eminence of scientists.
- Granting agencies appear to do the same. Renewal rates correlate with the number of publications

Key Points

- Words are tools of science
- Research is not complete until it is communicated
- If it is not written, it did not happen
- Publication in a refereed journal is fundamental
  - Tell your story
  - Avoid the predatory journals
  - Society journals are suitable
- Not only writing but also writing well is the key
  - Sloppy writing indicates sloppy thinking
    - Both are disastrous to research and reporting
    - A badly written or prematurely published paper can hunt a scientist
    - Inspire confidence in your writing of manuscript

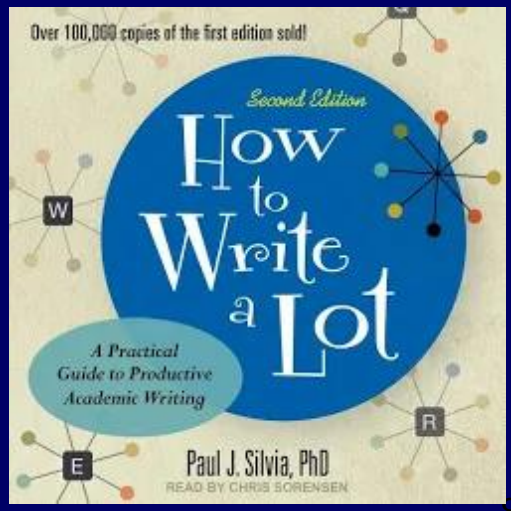
How Science Moves Forward

- A research project must generate a written publication to have a lasting value
- Written words illuminate the steps of discovery for the sake of others that follow


Grants
Research
Publications

Common Sense & Common Practice

- Scientific writing begins when research begins
- Develop outlines of your stories that you want to tell in different article forms:
  - Regular research article
  - Research brevia/Short Communication
  - Minireviews
  - Case studies
  - Perspectives
  - Pedagogical
- Keep on writing
- Publish and flourish



Common Sense & Common Practice

- Keep **the big picture** in mind
  - Ask yourself important questions about your research
    - Do I know what I am doing?
      - Do you have a plan on what you intend to do?
      - Will your studies be able to respond all the criticisms?
      - Are the statistical methods valid?
    - Do your proposed experiments meet accepted ethical standards?
      - Human or animal use
      - Adverse environmental effects
    - What practical and political considerations need to be answered?
      - Secrecy regulations
      - Patenting
    - How will you record the work as it proceeds?
      - Recording what you read
      - Are your records complete?
      - Can you access and understand your records later?

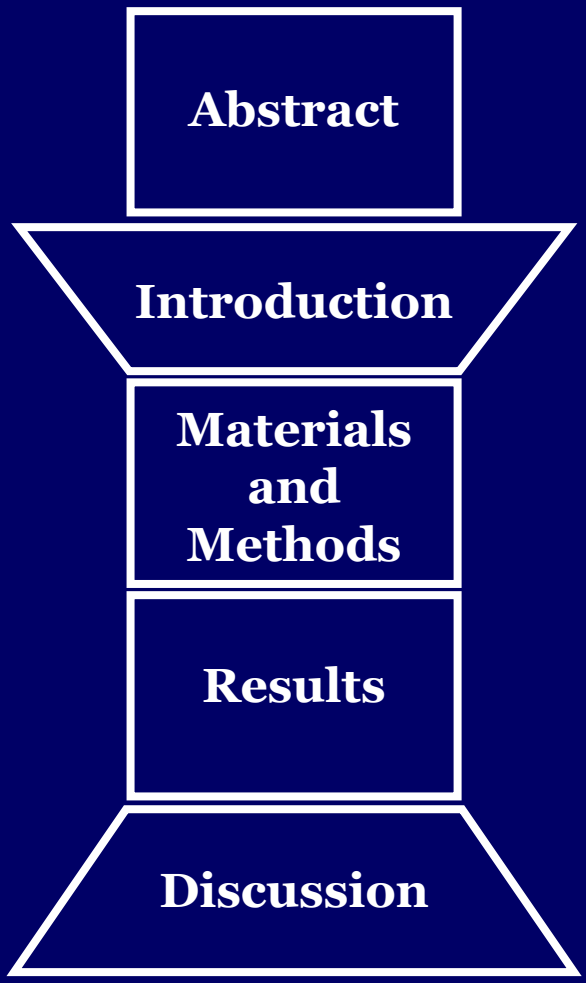
- Periodically determine research progress and direction
  - When a study has been underway for a while, it is time to check the direction the work is taking.
  - Describe the progress in writing, which will compel you to think about your work more clearly
  - Present your methods and results orally or in poster form at a public forum. The comments you receive will help you.
  - Is your research really worth writing about? Your answer is YES if your results and conclusions fulfill one of the following requirements
    - Reasonably consistent, reproducible, and complete
    - Represent significant extension of knowledge
    - Represent advances in practical application of known principles
    - Take knowledge of the subject a step further
    - Are the outcomes of your study NEW, TRUE, and MEANINGFUL? If your answer is NO, DELAY your writing

- Keep reading the literature regularly
- Develop blueprint of your manuscripts
- Take notes/Keep writing into the section of your manuscript as you read the literature
- Unintentional **plagiarism** can be avoided if you write your notes in your own words. If you must quote, identify quoted material in “ “ mark.

- Use different search strategies
- Medline/Pubmed
- Scopus
- Google Scholar
- Make it easy to relocate relevant material
  - Library of articles as pdf in your folders
  - Save the articles with easy to follow format
    - Bodu et al_Extender_Front Vet Sci, 2025

- Once the literature review is complete and research is underway ask yourself
  - What message do you want to convey/What is your story?
    - Research questions and your answer to these questions
  - Which format is the most appropriate?
    - Publication and its format determine the nature of recognition.
    - If you are the first to discover something, you must publish your discovery first.
    - Research articles, case histories, reviews, and case series are main publication types. Shorter variants such as short communication, brief notes, minireviews letters are appropriate for different messages. Who will be interested in your research?
    - Who is your audience?
  - Where should your paper be published?
    - Journal type, scope, topic occurrence, impact factor, journal's audience, rejection rate, publication time.
    - IF=citation number past 2 years/published paper number past 2 years
    - Avoid predatory journals and their misleading impact numbers

Main Sections of a Manuscript



Manuscript-Title

- Capture the essence of your study
- Product or outcome oriented
- Short and sweet; short and concise

Manuscript-Running Title

- Shorter and more concise
- Included in the second page forward of the published article.

Manuscript-Authorship

- The research leader should develop guidelines, and communicate with the research team before starting the research and manuscript writing
- Lead author/the first author: The person who did most of the research.
  - Differences in the authorship orders in different fields of science.
  - The numbers of authors
    - Contributors
      - Talk with your mentor
        - At the beginning and during the research
        - Record the discussion, and who did what, and date.
        - As fewer authors as possible to prevent dilution of the lead author's work
      - Research, experiments
      - Intellectual contributions
      - Providers of materials, reagents, facilities, equipment, etc: Can be acknowledged, or be coauthors if combined with other contributions or essentials for the study.
- Corresponding author

Manuscript-Abstract

[Concisely summarize the study: Opening sentence, purpose, experimental design, approach or materials and methods, chief results, significance and implications of the results]

Opening sentences: In 1-2 sentences, introduce your research area, its importance, gap(s) in the knowledge base, and the effects of these gaps in the knowledgebase (i.e., How does the gap(s) in the knowledgebase hinder progress in fundamental and applied reproductive biology, etc.)

The objectives or the hypotheses of this study were .....

To accomplish the objectives, ... (experiments/Approaches (State the experimental design, methods along with the controls, repeats, and statistical analyses):

The results showed that ..... (Summarize the key results)

The research is significant because ..... (State the rationale and significance).

Manuscript Key Words

- Can be used to search your article
- Around five
- Should not be from your title

Introduction

1st paragraph: Setting: Develop an introductory paragraph directly relevant to the study.

2nd paragraph: Literature Review: Synthesize a review (the earliest to the most current) by reviewing the most directly relevant (and high quality) studies.

3rd paragraph: Need: Describe the need with facts for this study (i.e., Why was this study necessary or urgently needed?) and cite the references.

4th paragraph: Purpose: State the objectives of the study and explain briefly. Cite the most relevant references.

5th paragraph: Justification: Explain the rational and significance, i.e., what new information (knowledge) will be produced from this study and the applications, respectively. Cite the most relevant references.

Experimental Design

- Provide a clear picture of your study
- In 2-3 sentences, describe the whole study
- Help the reviewers and the readers

Materials and Methods

- Materials and reagents
- Title of the methods
- Describe the key aspects of the methods
- Keep an order
- Include statistical analyses
- Just describe the methods, not the results

Results

[List key experiments with a relevant title, and describe the experiments including the statistical analyses]

- What is your story about?
- Subtitles for each of the key findings
- Describe the findings:
  - Concise
  - Exciting
- Just the results
- Cite tables and/or figures
- Variety helps
- Think about your reviewers and the readers

Manuscript Discussion

- Follow the format you learn in this class
- Clear and concise
- Fact based
- Exciting
- Appealing to a broad audience
- Summarize the **main findings**
- Discuss the **main findings**
- Cite references, carefully!
- Cite tables and references, carefully!
- Error free!

1st paragraph: Purpose/hypothesis

2nd paragraph: Most important findings

3rd paragraph: Explanations/speculations

4th paragraph: Limitations

5th paragraph: Implications

6th paragraph: Recommendations/practical applications

Cover letter

- Address to specific Editor-In-Chief
- Start with *"Please accept our manuscript "title of your manuscript" by Purwantara et al for the Journal of Biology of Reproduction because our findings are directly relevant to advancing reproductive processes across species"*

- Total of 3-4 paragraphs
  - Introduction: Request for publication of your manuscript for publication in the journal
  - Specify the fundamental problem tackled, i.e., objectives, and then concisely summarize the findings
  - Summarize the rationale and significance, and how the research findings are appealing to a broad spectrum of readership.
- Thank you for your consideration
- Sincerely

Manuscript Submission

- Decide on a journal
- Read the “Instructions for authors carefully”
- Follow the instructions
- Prepare all of your documents accordingly
- Open an account on journal’s web page
- Upload your documents
- May suggest reviewers and indicate conflicts
- Check to confirm everything
- Click on the “submit”
- Save all of your submitted documents with the specific dates (both documents and the folders)

Manuscript Review

- Journal editors
- Reviewers
- Reading, analyzing and understanding the reviews
  - Accept
  - Accept with revisions: How to revise?
    - Minor revision
    - Major revision
  - No decision
  - Reject
    - Options
- Revising your manuscript
- Resubmitting the revised
- Submitting to another journal

Write and Revise

- Hastily written papers
- Use Process Approach to make your writing more efficient, effective, satisfying, and enjoyable
  - Break the writing in discrete stages and tackle each stage in the most systematic and efficient way
  - First stage in process writing is planning, gathering and organizing information.
  - Start the second stage First Draft
    - Organizing thoughts, developing tables and figures
    - Write the first as continuously as possible without stopping for to fine-tune anything, and then set aside for a while.

  Revision is an essential part of process.
    - First thoughts and their arrangement are not necessarily the best.
    - Our understanding improves when we complete writing.
    - The first revision concentrates on organization and logic
    - The second on wording and style
    - The third on grammar, punctuation, and such..
  - Know when to stop
    - Do not lose the natural flow of your wording

Attention to Details

- Final copy
  - Some scientist work hard on the first drafts and the let up their efforts before completing the final draft. Do not be among that group because small mistakes may unsettle reviewers and editor, and undercut the authority of your work.
  - Recheck journal format according to information for authors
  - Number all pages
  - Double check the references
    - Spelling
    - Failure to cite the original source of information
    - Misquotation of findings. Through repeated secondary citation, a major inaccuracy may become a fact. Never copy references from someone else's list.
    - Use a reference management software
  - Give the manuscript in house review-Request pre-submission reviews

Prof. Barbara Gastel at TAMU

TEXAS A&M UNIVERSITY
Veterinary Medicine & Biomedical Sciences

SCIENCE & TECHNOLOGY JOURNALISM

HOME / ABOUT STJR / PROGRAM DIRECTOR

PROGRAM DIRECTOR

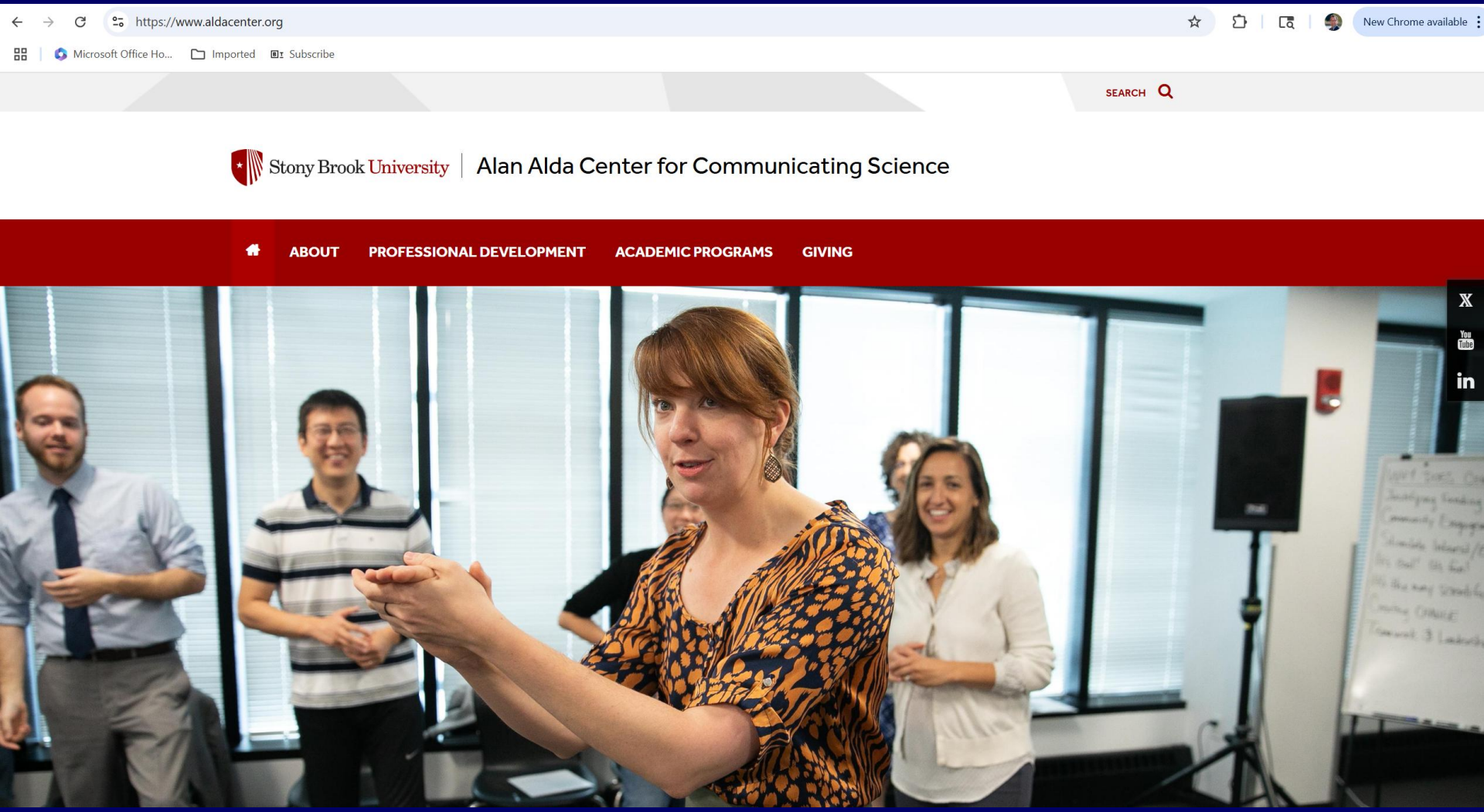
Barbara Gastel is professor of veterinary integrative biosciences and of humanities in medicine at Texas A&M University, where she directs the graduate program in science and technology journalism. Her main areas of professional interest include medical writing, science editing, and the teaching of science communication.

Dr. Gastel earned a BA from Yale and an MD and MPH from Johns Hopkins. After medical school, she completed an American Association for the Advancement of Science mass media fellowship at *Newsweek*. She then worked in communication and administration at the US National Institutes of Health. She also has taught science writing at MIT, and she spent two years teaching at the Peking University Health Science Center. Before coming to Texas A&M, she was assistant dean for teaching at the University of California, San Francisco School of Medicine.

Dr. Gastel is lead author of the latest editions of *How to Write and Publish a Scientific Paper.* She also has published three other books: *Presenting Science to the Public, Teaching Science: A Guide for College and Professional School Instructors,* and *Health Writer's Handbook.* In addition, she has written many articles and chapters on writing, editing, teaching, and medical topics. For over a decade, she edited the Council of Science Editors periodical, *Science Editor.*

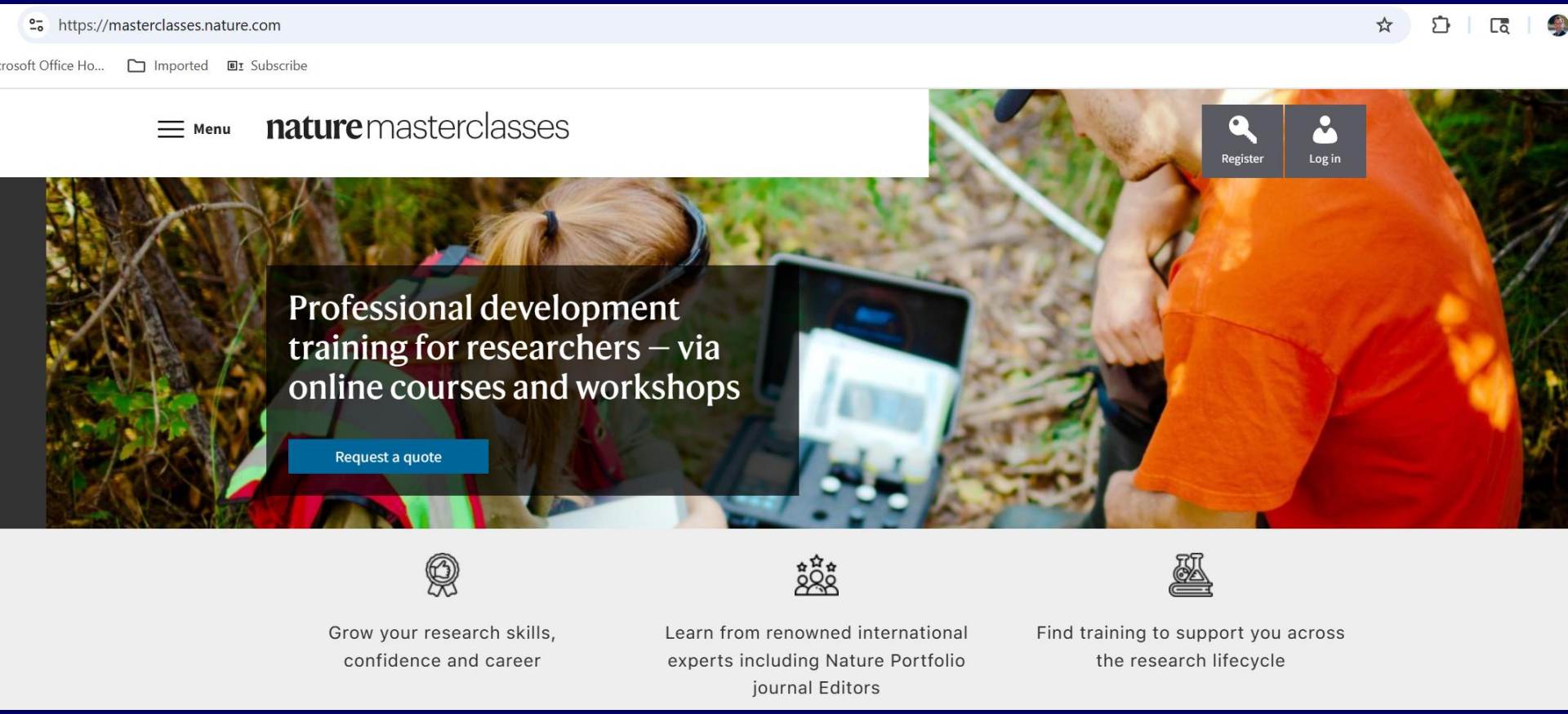
https://vetmed.tamu.edu/stjr/about-stjr/programdirector/

Alan Alda Center for Communicating Science



https://www.aldacenter.org/

Nature Journal's Masterclasses



https://masterclasses.nature.com/

Power of Productive Collaborations

The Increasing Dominance of Teams in Production of Knowledge

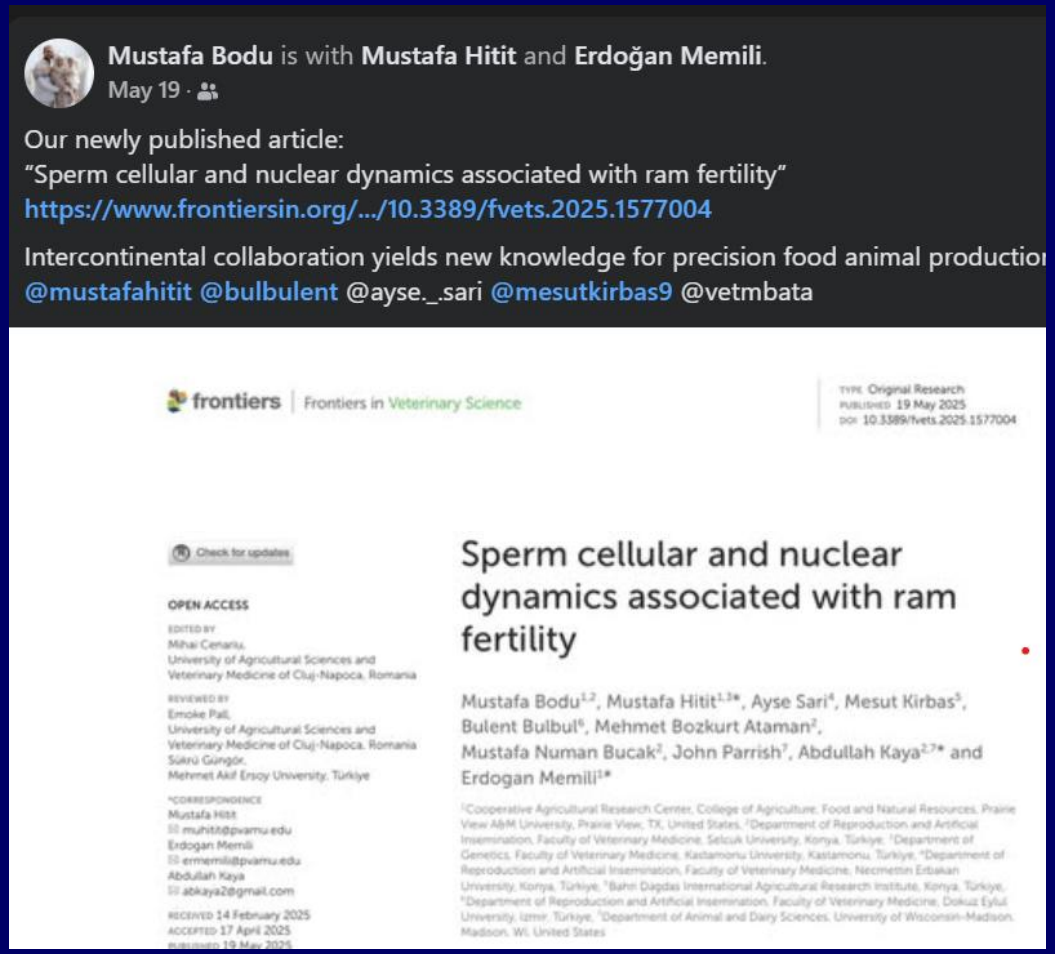
Stefan Wuchty,[1]* Benjamin F. Jones,[2]* Brian Uzzi[1,2]*†

We have used 19.9 million papers over 5 decades and 2.1 million patents to demonstrate that teams increasingly dominate solo authors in the production of knowledge. Research is increasingly done in teams across nearly all fields. Teams typically produce more frequently cited research than individuals do, and this advantage has been increasing over time. Teams now also produce the exceptionally high-impact research, even where that distinction was once the domain of solo authors. These results are detailed for sciences and engineering, social sciences, arts and humanities, and patents, suggesting that the process of knowledge creation has fundamentally changed.

18 MAY 2007 VOL 316 SCIENCE

Social Media & Publications

- Pursue high quality research
- Publish quality articles
- Post the article news with links to the article on FB, Instagram, LinkedIn, and others
- Watch your h index to soar!



Conclusions

- Publish and Flourish
- Tell your stories
  - Develop blueprints/outlines of your manuscripts
  - Keep on writing
- New perspectives
  - Different types of articles
  - Write and do research concurrently
  - AI & Scientific Publications
  - Social Media and Publications

Essentials of Developing Manuscripts Competitive Research Grant Proposals

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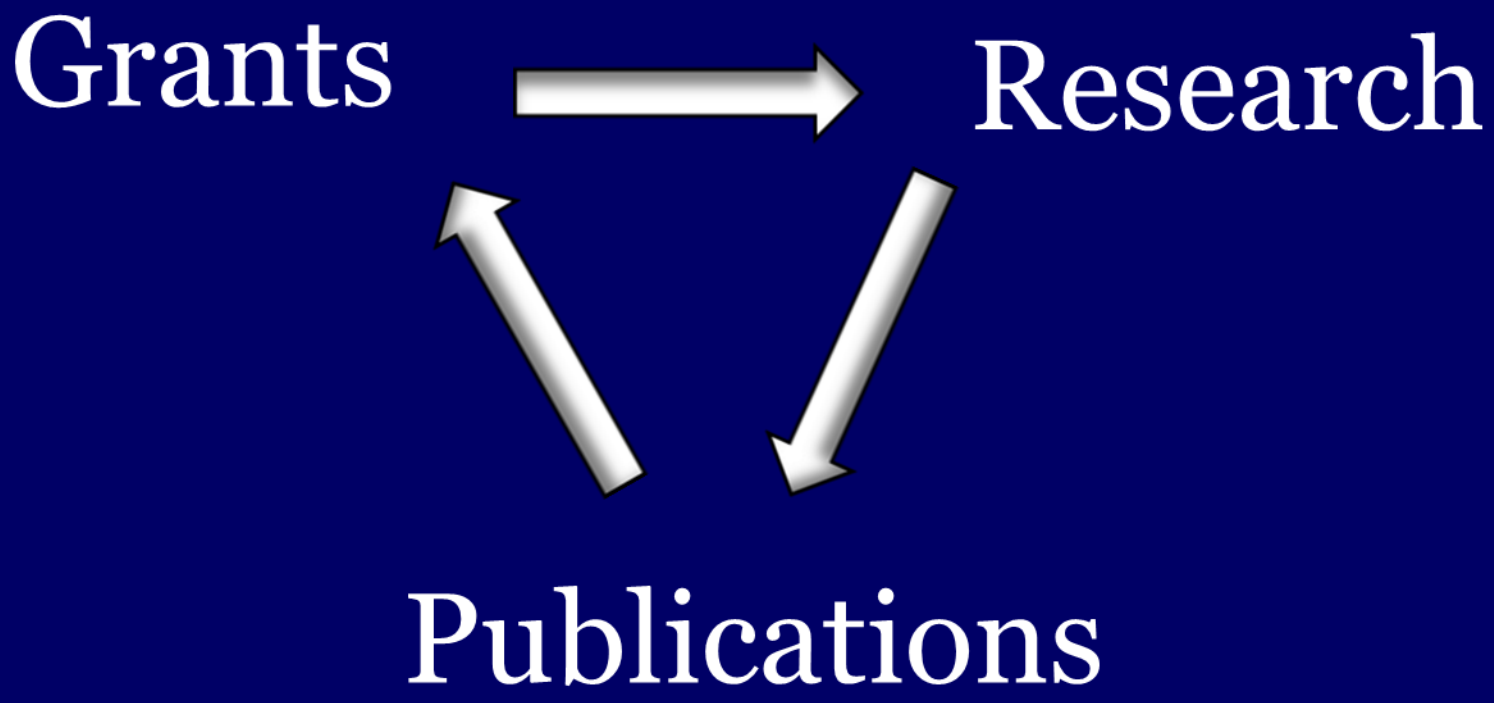
Overview

- Nature of Research
- Envision stories
  - Find out the funding sources
  - Develop blueprints/outlines of your research grant proposals
  - Keep on writing
- New perspectives
  - Different types of grants
  - Write and do research concurrently
  - AI & grant writing
  - Serving in grant review panels

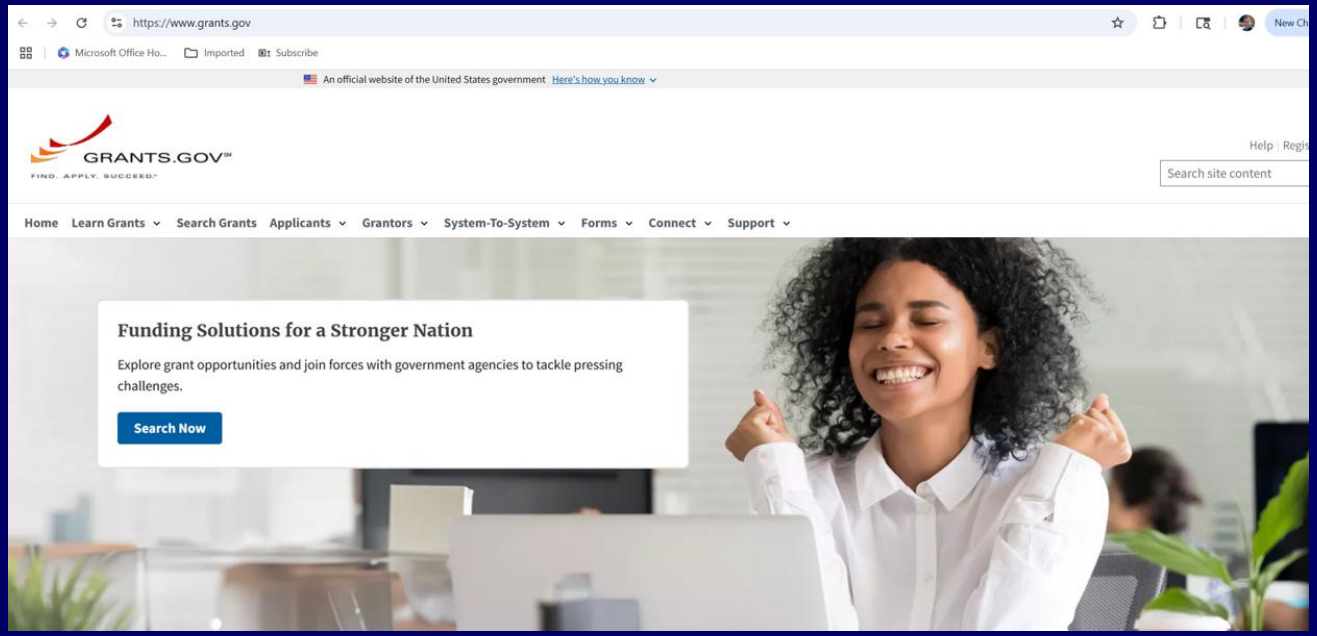
Significance of Quality Research

- Generate new data
    - Exploratory/discovery/descriptive research
    - Hypothesis driven research
- Produce new knowledge
- Apply/Transfer the new knowledge
- Enhance the quality of life


Grants
Research
Publications

Finding Funding Opportunities

- Global
- Federal
  - www.grants.gov in the USA
  - Tübitak and others in Türkiye
- State
- Universities
- Foundations
- Industry



Creative Ideas

- Develop the summary of your research
- Send it to the Program Director of the Funding Agency; request a meeting and attach the summary
- Get the Director's reviews and suggestions during the meeting, and then revise accordingly

Creative Ideas

- Read the Request For Application (RFA) or call for grant proposals
- Develop a blueprint/outline of the proposal from the RFA and include the review criteria as well
- Write the grant proposal for each section with the above information
- Get your grant reviewed by at least three people, and revise accordingly
- Read the summaries of the previously funded projects

Review Criteria of Research Proposals

Scientific Merit: Significance, novelty, innovation, the suitability of the methodology, feasibility, and potential for generating impactful results.

Qualifications of Project Personnel: Expertise and experience of the project team, active researchers.

Environment: Equipment, Facilities and Other Resources: **S**uitability and availability of resources and infrastructure needed to successfully carry out the project.

Relevance to Program Priorities: **A**lignment with the specific program area priorities identified in the Request for Applications. Potential impact of the project on the national agriculture and related areas, including its contribution to enhancing human capital and addressing potential pitfalls.

Overall Impact: Overall likelihood of the project achieving significant outcomes/outputs and impact.

Research Proposal-Title

- Short and concise
- Relevant
- Product or outcome oriented
  - *i.e., Identification of Genomic Markers for Disease and Heat Resistance in Cattle*
- Appealing

Research Proposal-Project Summary

Opening sentences: In 1-2 sentences, introduce your research area, its importance, gap(s) in the knowledge base, and the effects of these gaps in the knowledgebase (i.e., How does the gap(s) in the knowledgebase hinder progress in fundamental and applied reproductive biology, etc.)

The central hypothesis is that .....

The objectives of this study are .....

To accomplish the objectives, ... (experiments/Approaches (State the experi-mental design, methods along with the controls, repeats, and statistical analyses):

The expected results are..... (Summarize the key expected results)

The research is significant because ..... (State the rationale and significance).

Results from prior support

Summary of accomplishments:

- Grant number
- Amount the funding received
- The period of support
- The title of the project
- Summary of the results
- Long term effects of these results
- Publications resulted from this support

Rationale and Significance

Concise and fact-based paragraphs on:

- **Rationale**
  - Clear and fact based
  - What new information you will generate (once you successfully complete the proposed research)
- **Significance**
  - What will be the application of your research findings (the new information)?
  - What real-world problems will the applications help with?
  - How will the applications impact the bottom line, i.e., profits/economy and the public?

Review of Relevant Literature

- Opening paragraph/Introduction
- Gaps and in the knowledge base and why it is so important
- The issues and the solutions: Urgent need for innovative, transformative, translational and, transdisciplinary research
- Alignment of the proposed research with the research priorities of the stakeholders, your university, and the funding agency

Preliminary data

- How to Generate a Preliminary Data?
  - Relevant to the targeted problem
  - Review of literature: What is known, what is not?
  - What are the gaps in the knowledge base?
  - How can they be best filled?
  - Write these down and think about it for a while
  - Will this idea impact significantly on my field?
  - Can I convince others of that fact?
  - Ask colleagues familiar with the field.

- Preliminary data should convey that facts that you:
  - Have narrowed down your scientific questions/specific research objectives
  - Have generated the essential data for confidence in the research project
  - Can do it
  - Have the feasibility factors

Approach

- Write down the specific research objective (verbatim)
  - Specific research objective 1. …… (from the Overview and Objective section)
- Develop a concise paragraph
  - Working hypothesis
  - Gaps in the knowledge base and why the gaps are important
  - Aims and approach
- List the experiments in numerical order
  - Experiment 1.Title of the experiment
  - Experiment 2. Title of the experiment
  - …..
- Describe each experiment
  - Concise
  - Include the essentials
  - Not too many technical details
  - Expected outcomes
  - Potential problems and alternative strategies

Expected Results

- For each specific research objective
- List what you expect to uncover
  - Critical, creative and applied thinking
  - Directly relevant
  - Shows that you have thought out, and that the proposed research is essential
  - You may provide evidence and cite references

Potential Problems and Alternative Strategies

- List three potential and relevant problems
- Develop alternative strategies for each in the event that those problems occur
- The goal is that even if the problems occur, you will still accomplish the goals of the proposed research.

Conflicts of Interest

- Recent collaborators
- Co-authors
- Advisors and advisees
- Relatives
- Competitors
- Reviewers at current institutions

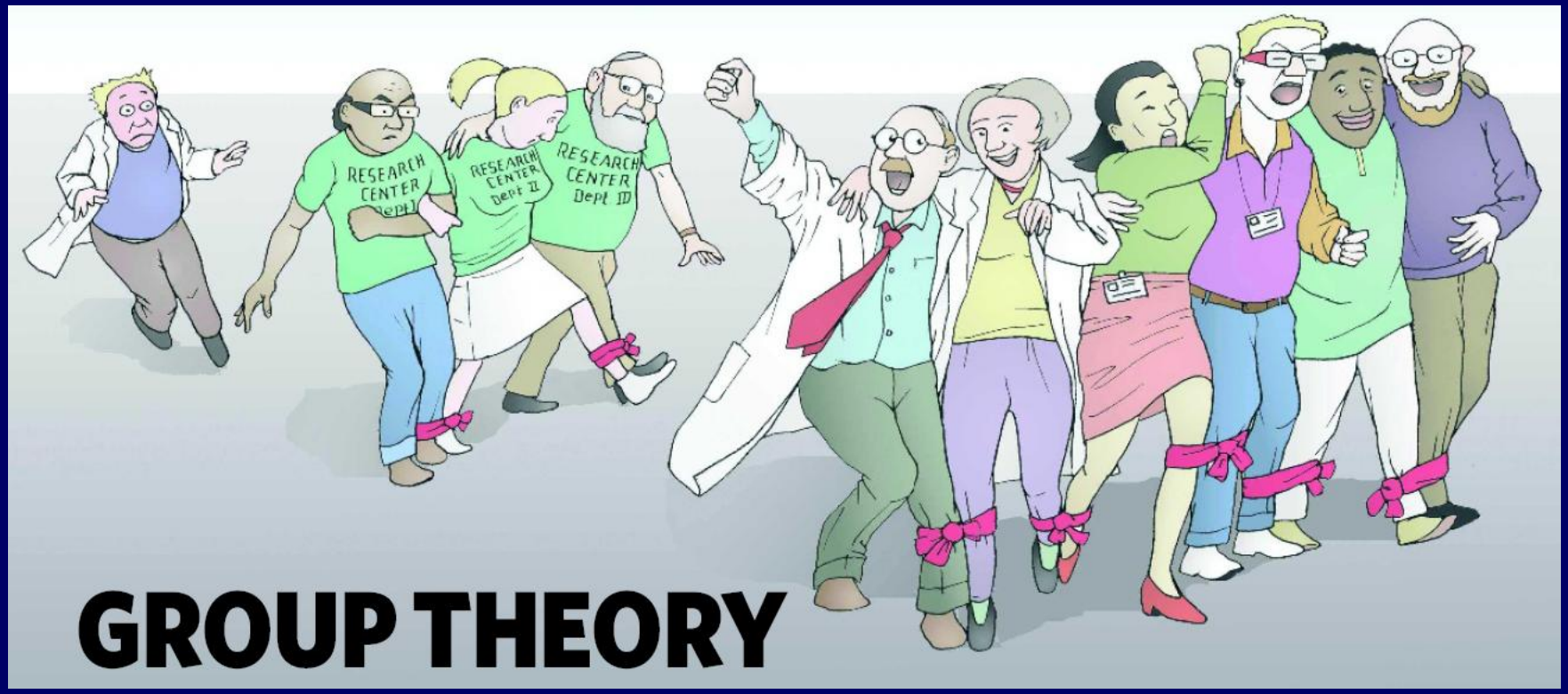
Proposal Submission and Review

- Submission
  - Develop all of the documents
- Work with the Office of Sponsored Programs at the Universi
- Upload your proposal electronically
- Review
  - Federal grant offices
  - Reviewers
  - Review panel
  - Reading, analyzing and understanding the reviews
  - The next steps
    - Revising
    - Moving on to a different topic

Resources

- Senior professors
- Deans of Research
- Office of Sponsored Research Programs
- Web sites of funding agencies
- Grant Writers Central

Collaborations are Vital



Nature (455) October 9, 2008

https://www.grantcentral.com/

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  - AI & grant writing
  - Serving in grant review panels
  - Get pre-submission reviews

Teşekkürler
Fırat Üniversitesi & Veteriner Fakültesi
Dekan Prof. Kazım Şahin
Prof. Gaffari Türk
Prof. Mehmet Çalıcıoğlu
Tübitak-2221Konuk Bilim Insanı Destekleme Programı

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Keep on Pursing Transdisciplinary,

Innovative & Globally Impactful Research