



# PUTTING ONE FOOT IN FRONT OF THE OTHER...

## Building a Research Program

Presented by Peter Bermel, Assoc. Prof. of ECE and  
SCALE Director

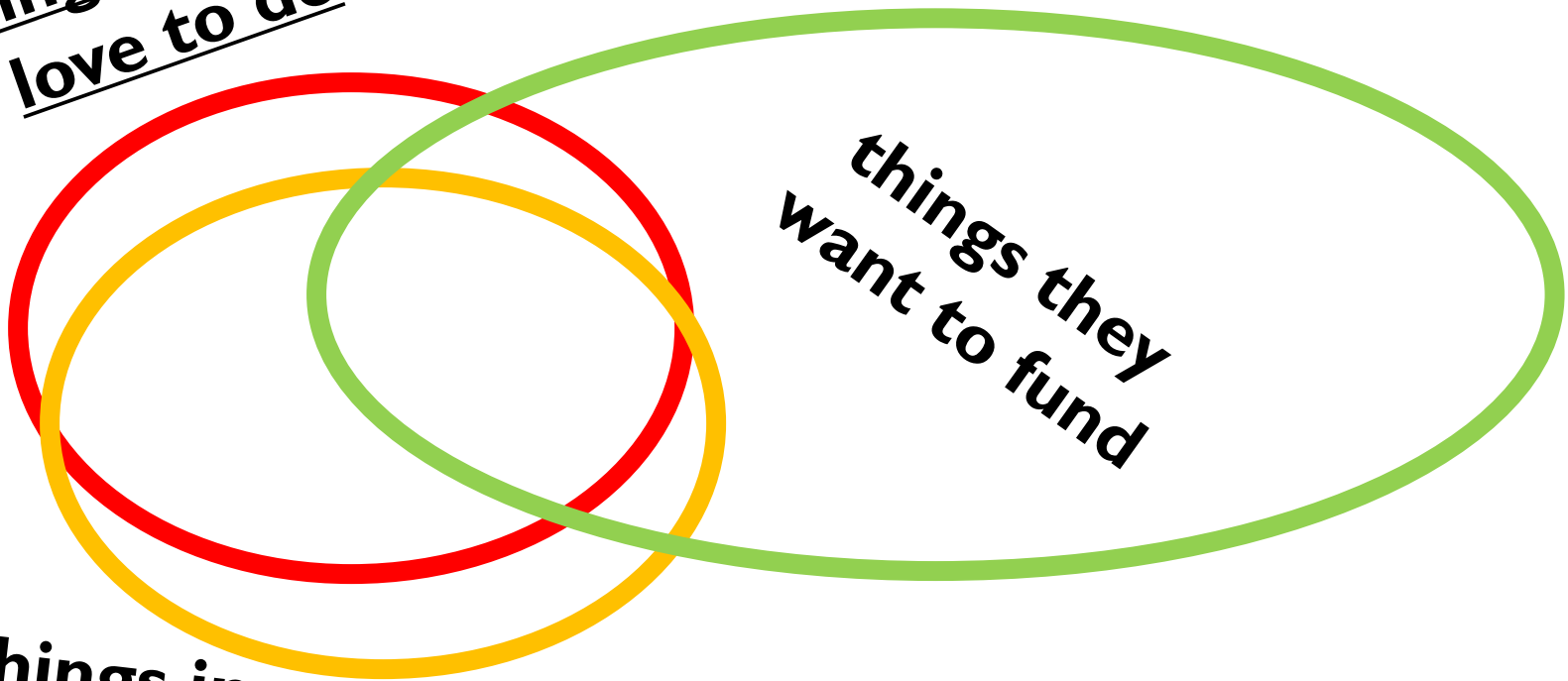
Adapted from prior work by Prof. Shelley MacDermid-  
Wadsworth and Prof. Jon Harbor

# GRANTS AREN'T JUST ABOUT YOU

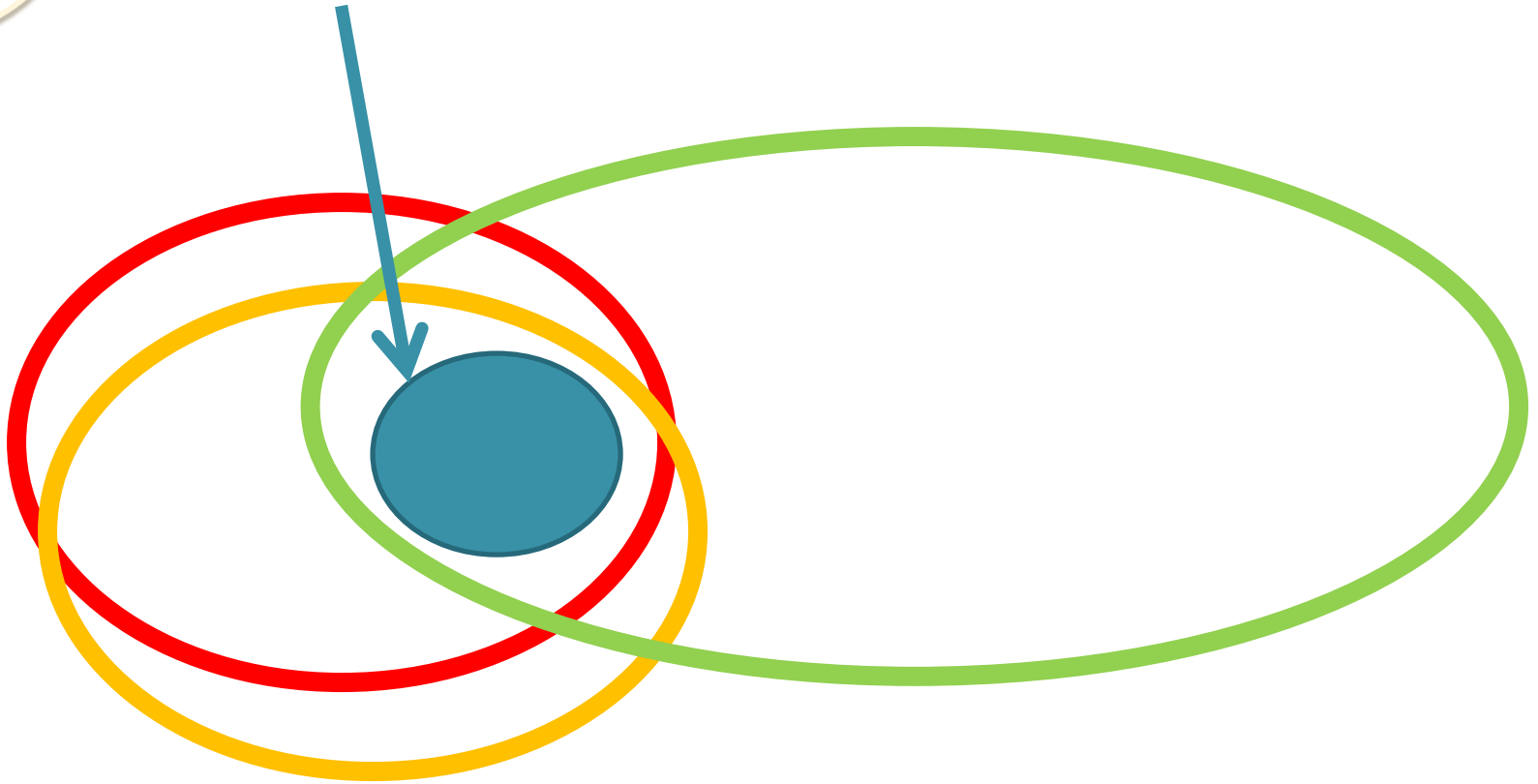
things you'd  
love to do

things they  
want to fund

things important  
for T&P



**Investigate a range  
of funding sources  
at the 'sweet' spot**



# KNOW YOUR AGENCIES; READ THEIR SOLICITATIONS

Agency	Focus	Review Process	Average Award Size	Average Award Rate
NSF	Fundamental	Panel	\$531,300	21%
DOE BES	Fundamental	Ad hoc	\$129,500*	15%
ONR	Mission	PM + ad hoc	\$510,000	18%
AFOSR	Fundamental	PM + review	\$358,600	25%

\* Annualized amount

## Sources:

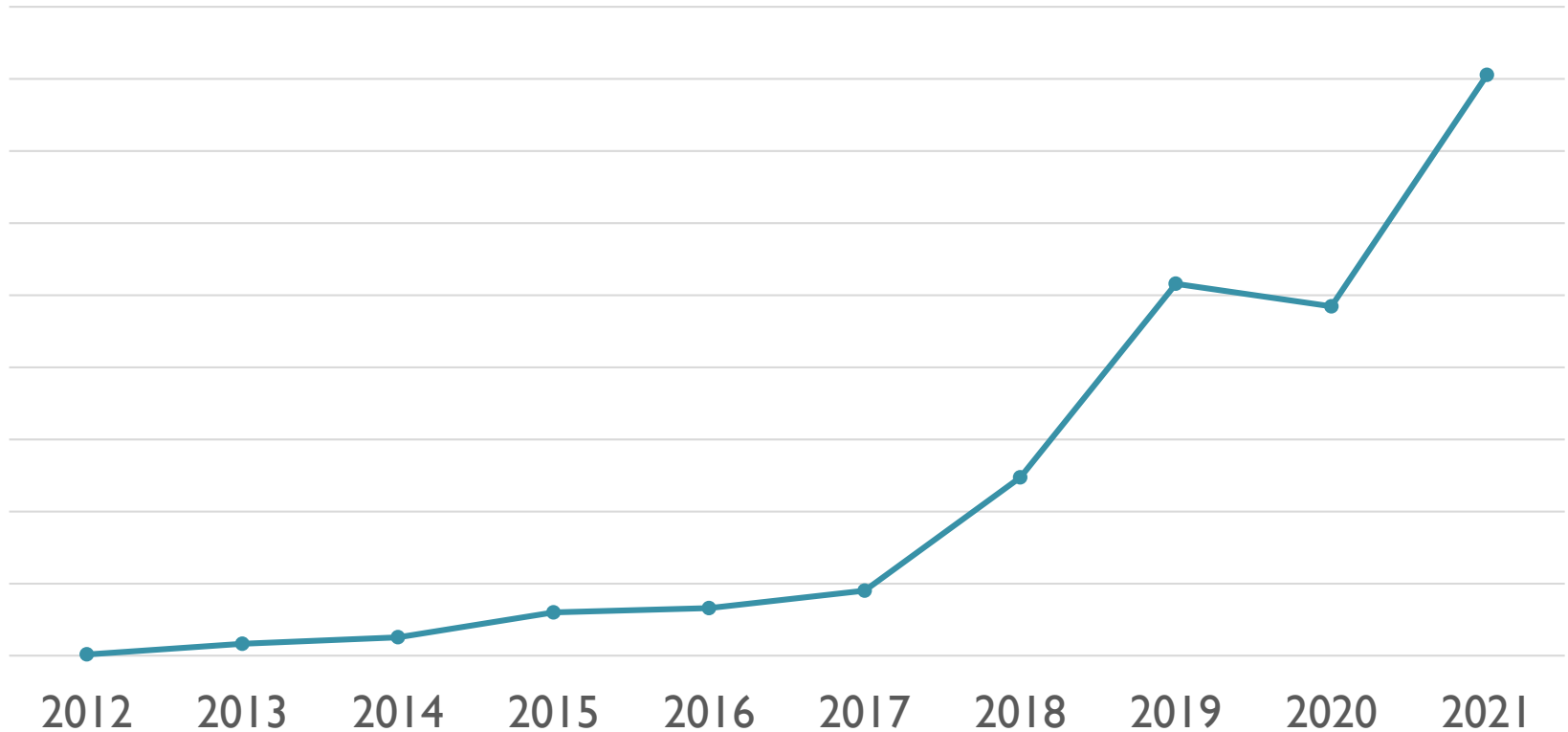
[https://www.nsf.gov/about/budget/fy2016/pdf/04\\_fy2016.pdf](https://www.nsf.gov/about/budget/fy2016/pdf/04_fy2016.pdf)

<http://www.wpafb.af.mil/News/Article-Display/Article/969772/afosr-awards-grants-to-58-scientists-and-engineers-through-its-young-investigat/>

<https://science.energy.gov/~media/bes/pdf/brochures/2018/BESUpdate2017.pdf>

# WALK BEFORE YOU RUN

Annual Awards to Energy & Nanophotonics Research Group



*Over-achieve on the initial small grants (e.g., by leveraging startup \$) to show funders you provide great return on investment!*

# MAXIMIZE EXPECTED VALUE

SUBMIT *MULTIPLE* PROPOSALS TO DIFFERENT SOURCES  
EACH YEAR

- **FREQUENT, HIGH-QUALITY SHOTS ON GOAL**
- **SHOOT AT SEVERAL GOALS AND ALWAYS LOOK FOR NEW GOALS THAT POP UP**
- **REVISE & RESUBMIT; DON'T GIVE UP EASILY**
- **FORM TEAMS WHENEVER HELPFUL**

# **BUILD INTERDISCIPLINARY, DIVERSE TEAMS**

- How many grand challenges can be solved by a single discipline?
- Most funding agencies have increasingly focused \$ on interdisciplinary teams
- It's fun and productive to bring new methods and perspectives to your work through a diverse set of collaborators
- It opens up new funding sources and new areas for your interests and talent that would not be possible on your own

**But don't you have to be a solo PI for promotion & tenure (P&T)?**

No, not always; in fact, a mix is best

# BUILDING INTERDISCIPLINARY, DIVERSE TEAMS

My co-authors and co-PIs include:

- A range of disciplines (Physics, Math, Mechanical & Chemical Engineering, Chemistry, Engineering Education, Agronomy, and more)
- A range of identities (both genders, domestic and international backgrounds, first-generation and highly-pedigreed academics)
- Established leaders in the field, as well as first-timers

Relationships can take years to build. Usually, I know someone for at least two years before we collaborate.  
**USE CONFERENCES STRATEGICALLY.**



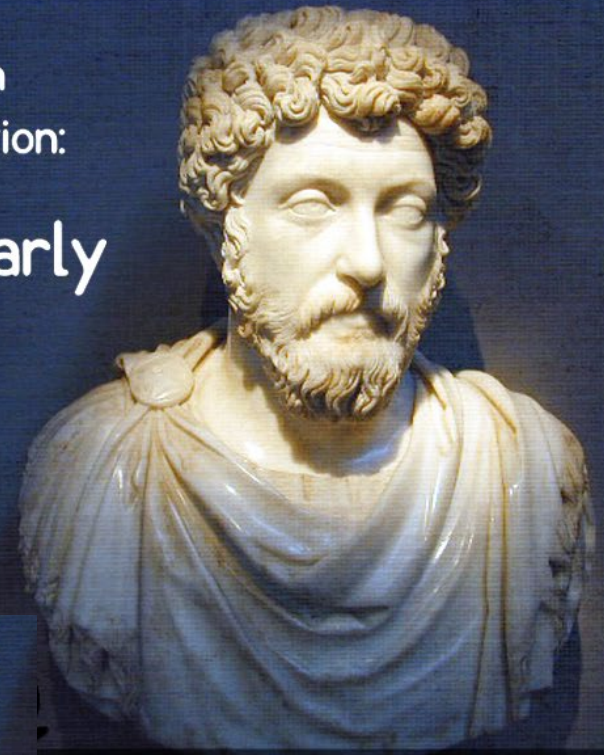
# VOLUNTEER TO REVIEW PROPOSALS

*Why?*

Whenever you are about to find fault with someone, ask yourself the following question:

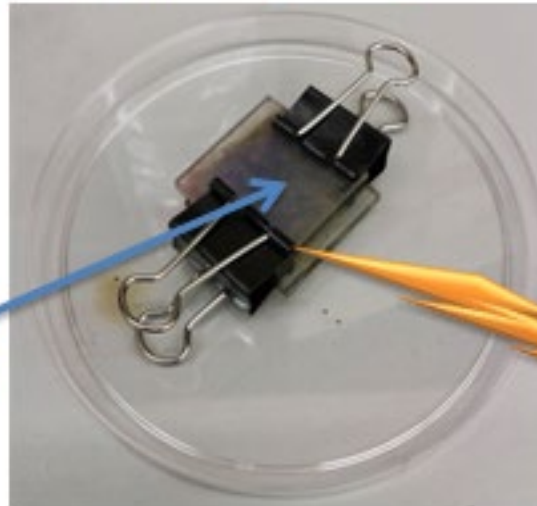
What fault of mine most nearly resembles the one I am about to criticize?

-Marcus Aurelius



# CONSIDER LINKING RESEARCH, TEACHING, AND SERVICE

*Even if it is not required, it can be a significant competitive advantage and is often helpful for P&T.*



# SUMMARY: DEVELOP A RESEARCH VISION

- Understand your unique strengths (and weaknesses!) as a researcher
- Establish unique, long-term research goals
- Apply to opportunities that fit in with those goals
- Ensure that goals can provide enough resources to hire students and meet your tenure & promotion needs
- Establish collaborations as appropriate

Sources:

<https://intranet.bloomu.edu/documents/research/ebook-funding.pdf>

A decorative graphic on the left side of the slide. It features a vertical bar with a light brown, textured pattern. Overlapping the top of this bar are two circles: a larger, thin gold circle and a smaller, thicker grey circle. The main text is positioned to the right of this graphic.

**YOU ARE STARTING A WONDERFUL  
ADVENTURE: PLEASE ENJOY IT!**

# ADDITIONAL RESOURCES

- [HHMI: Making the Right Moves](#)
- [Drs. Cronin & Deckard: New Faculty Guide to Competing for Research Funding](#)
- [Lewis-Burke Associates: How to Engage with Federal Research Funding Agencies](#)
- [Dr. Rob Porter: What Do Grant Reviewers Really Want, Anyway?](#)
- [MSU Libraries: Grants and Related Resources](#)