



PUTTING ONE FOOT IN FRONT OF THE OTHER...

Building a Research Program

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

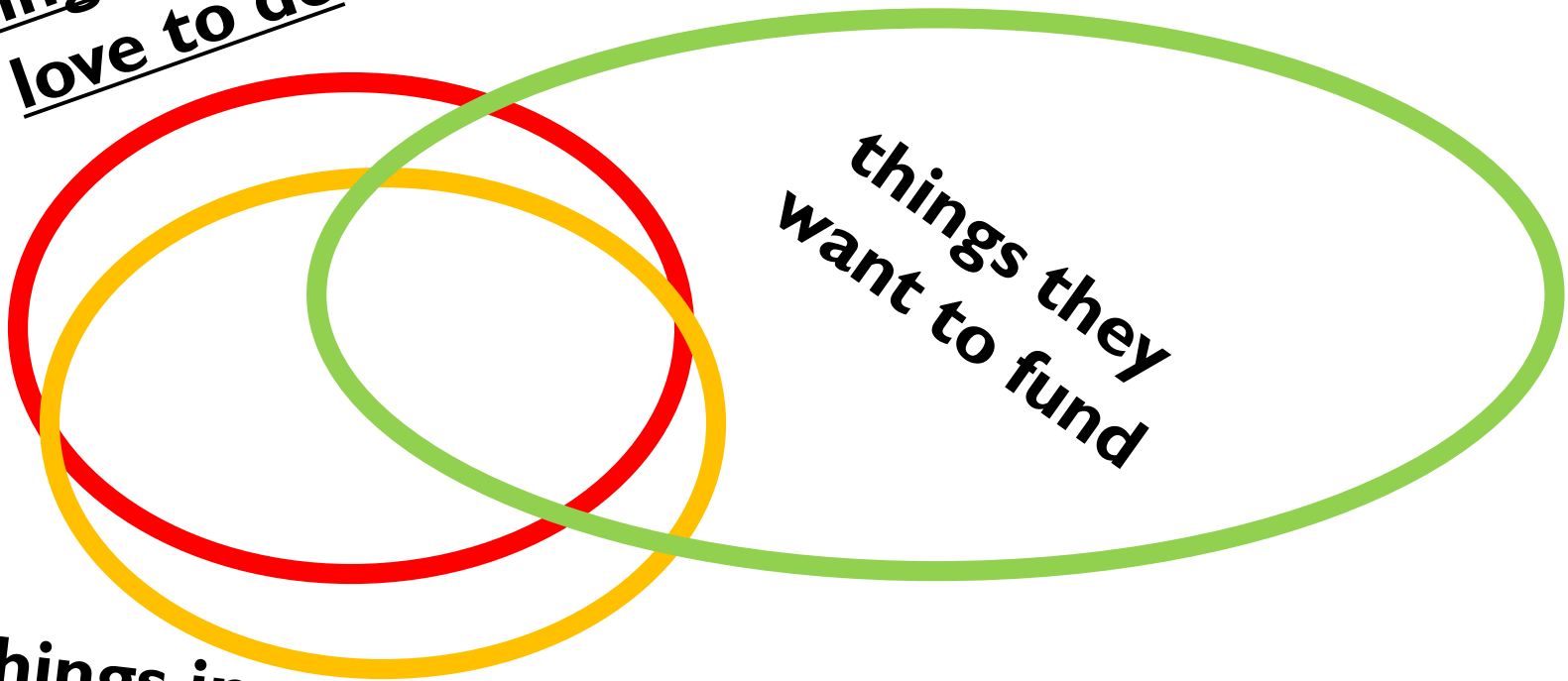
Adapted from prior work by Prof. Shelley MacDermid-
Wadsworth and Prof. Jon Harbor

GRANTS AREN'T JUST ABOUT YOU

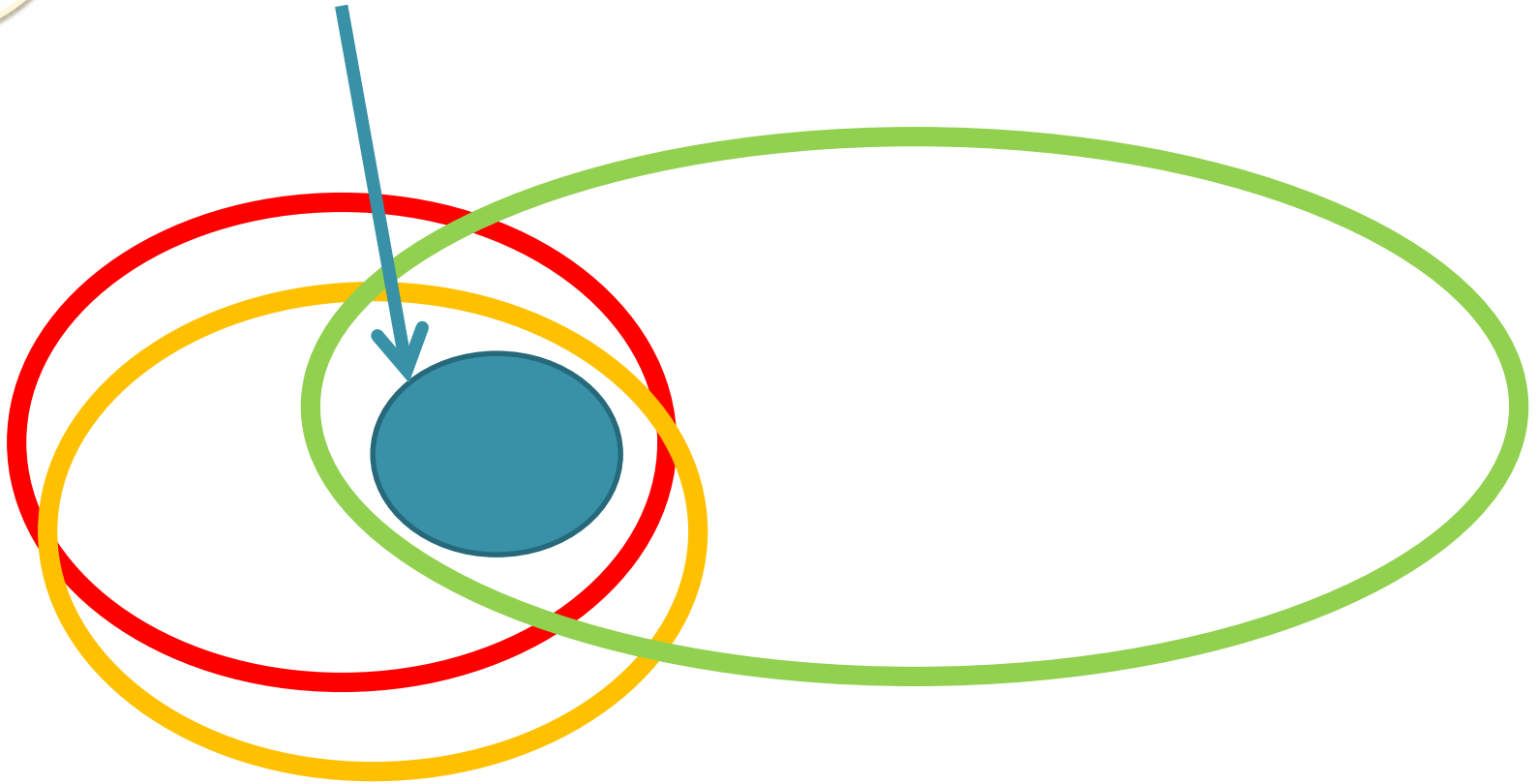
things you'd
love to do

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:

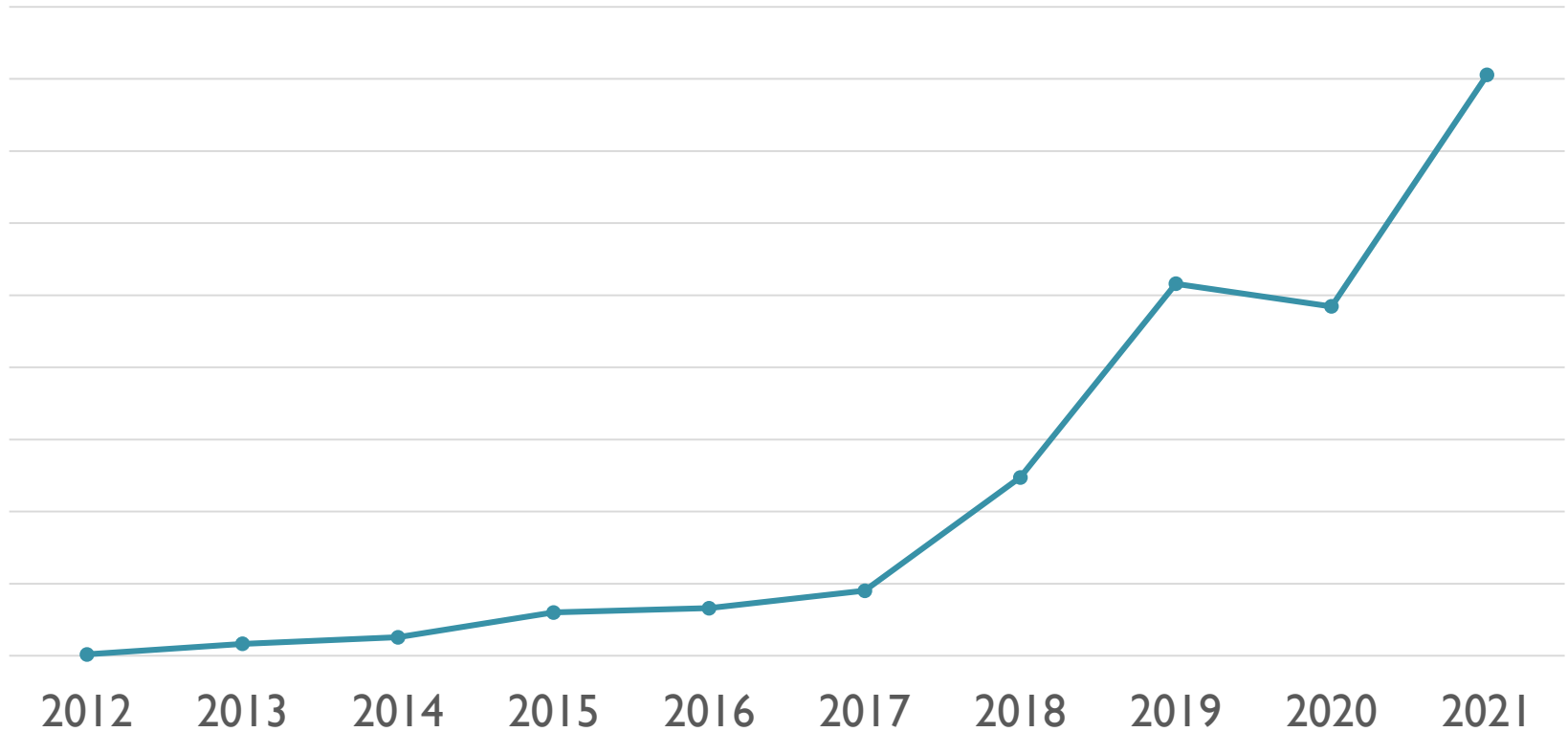
https://www.nsf.gov/about/budget/fy2016/pdf/04_fy2016.pdf

<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

Don't just say it, do it ...

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.

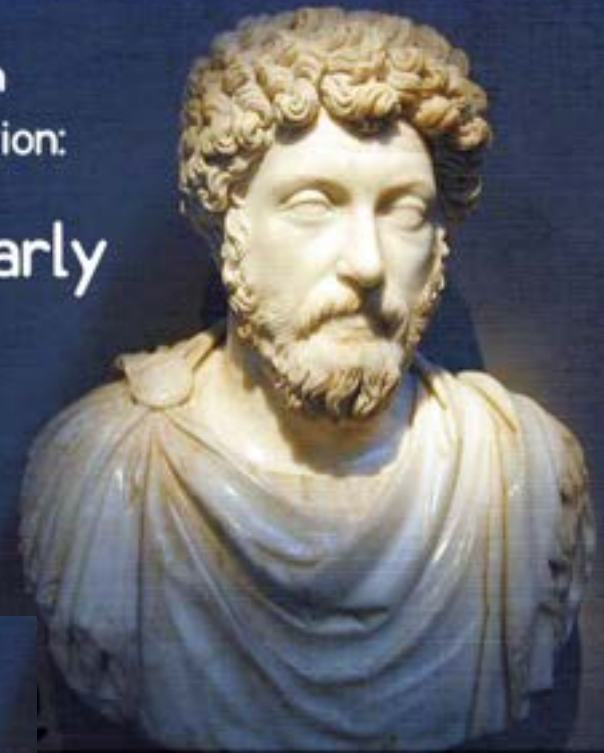
VOLUNTEER TO REVIEW PROPOSALS

Why?

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

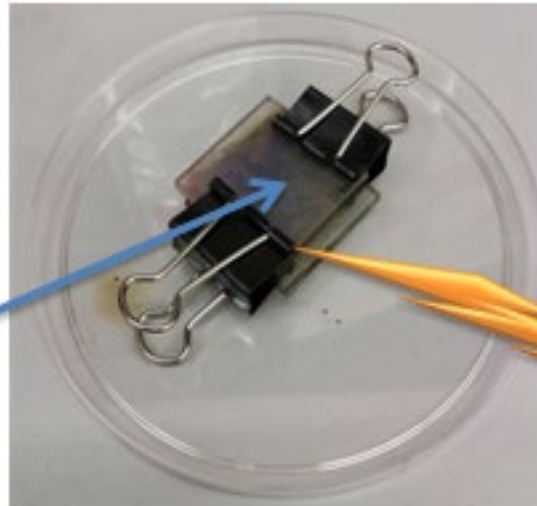
What fault of mine most nearly resembles the one I am about to criticize?

-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 text is centered on the white background to the right of the 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](#)