

# OPEN SCIENCE AND EQUITABLE RESEARCH OPPORTUNITIES, INCLUDING EQUITABLE ACCESS TO DATA AND SOFTWARE CURATION RESOURCES

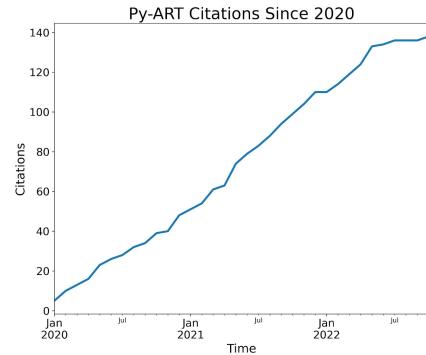
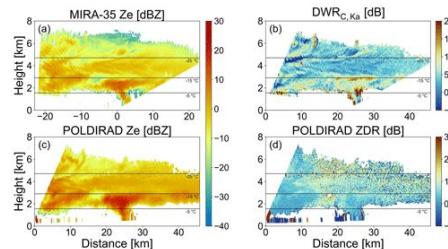


**SCOTT COLLIS**  
Head, Geospatial Computing, Innovations and Sensing  
Department.  
Senior Fellow, Northwestern Argonne Institute for Science  
and Engineering.

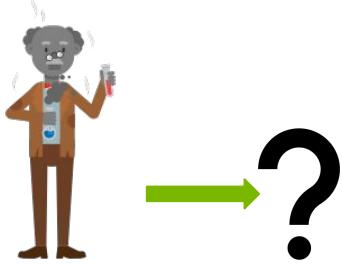
# WHO AM I?

## Open Scientist and ARM's new Workforce Development Coordinator

- I became interested in open science when I moved to the USA in 2010 and got introduced to community software in 2012.
- Lead for the Python ARM Radar Toolkit. Reproduceable radar workflows.
- Now leading workforce development for DOE-ARM.
- ESGF2 server side compute co-lead. Sustainable workflows for CMIP6



# REPRODUCIBILITY AND REUSABILITY



Current Opinion in Microbiology  
Volume 52, December 2019, Pages 55-63

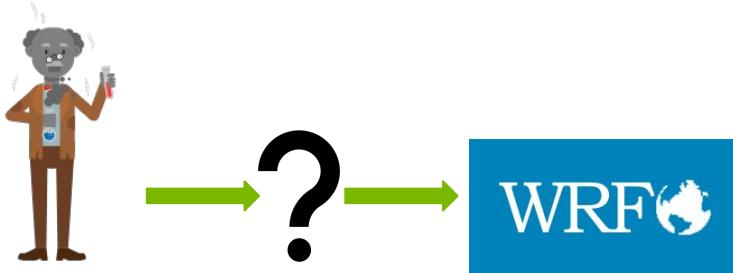
Fantastic yeasts and where to find them: the hidden diversity of dimorphic fungal pathogens

Marley C Caballero Van Dylke<sup>1</sup>, Marcus M Teixeira<sup>1,2</sup>, Bridget M Barker<sup>1</sup>

<https://doi.org/10.1016/j.mib.2019.05.002>

A screenshot of a journal article cover from Elsevier's "Current Opinion in Microbiology". The cover features a small illustration of an elephant next to the journal title. The main title of the article is "Fantastic yeasts and where to find them: the hidden diversity of dimorphic fungal pathogens". The authors listed are Marley C Caballero Van Dylke, Marcus M Teixeira, and Bridget M Barker. There is a link to the DOI: <https://doi.org/10.1016/j.mib.2019.05.002>. At the bottom right, there is a "Get rights and content" button.

# REPRODUCIBILITY AND REUSABILITY



 Current Opinion in Microbiology  
Volume 52, December 2019, Pages 55-63



Fantastic yeasts and where to find them: the hidden diversity of dimorphic fungal pathogens

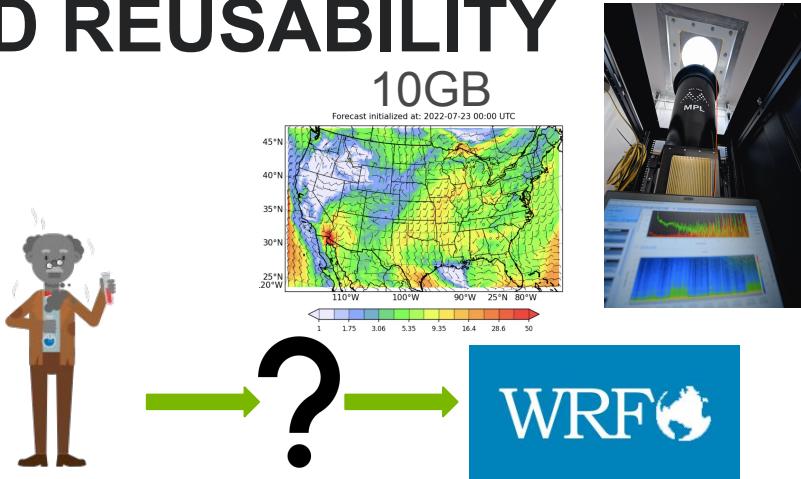
Marley C Caballero Van Dylk<sup>1</sup>, Marcus M Teixeira<sup>1,2</sup>, Bridget M Barker<sup>1</sup> 

 Show more

<https://doi.org/10.1016/j.mib.2019.05.002> 

# REPRODUCIBILITY AND REUSABILITY

10GB



 Current Opinion in Microbiology  
Volume 52, December 2019, Pages 55-63

Fantastic yeasts and where to find them: the hidden diversity of dimorphic fungal pathogens

Marley C Caballero Van Dyke<sup>1</sup>, Marcus M Teixeira<sup>1,2</sup>, Bridget M Barker<sup>1</sup> 

 Show more

<https://doi.org/10.1016/j.mib.2019.05.002> 

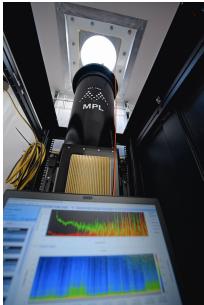
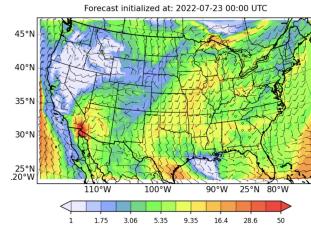


U.S. DEPARTMENT OF  
ENERGY

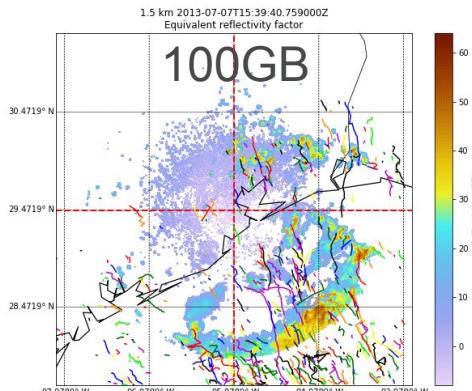
Argonne National Laboratory is a  
U.S. Department of Energy laboratory  
managed by UChicago Argonne, LLC.

# REPRODUCIBILITY AND REUSABILITY

10GB



<https://amt.copernicus.org/articles/12/2979/2019/>



Current Opinion in Microbiology

Volume 52, December 2019, Pages 55-63

ELSEVIER

Fantastic yeasts and where to find them: the hidden diversity of dimorphic fungal pathogens

Marley C Caballero Van Dyle<sup>1</sup>, Marcus M Teixeira<sup>1,2</sup>, Bridget M Barker<sup>1</sup>

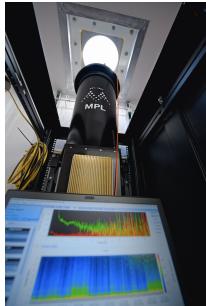
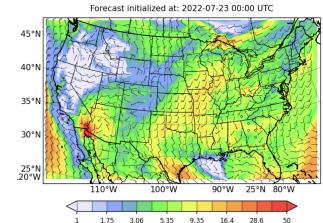
Show more

<https://doi.org/10.1016/j.mib.2019.05.002>

Get rights and content

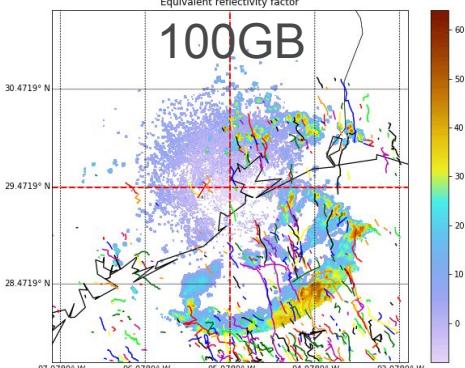
# REPRODUCIBILITY AND REUSABILITY

10GB

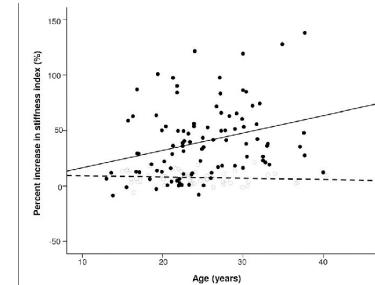


<https://amt.copernicus.org/articles/12/2979/2019/>

1.5 km 2013-07-07T15:39:40.75900Z  
Equivalent reflectivity factor



10TB



Fantastic yeasts and where to find them: the  
hidden diversity of dimorphic fungal pathogens

Marley C Caballero Van Dyle <sup>1</sup>, Marcus M Teixeira <sup>1,2</sup>, Bridget M Barker <sup>1</sup>

Show more

<https://doi.org/10.1016/j.mib.2019.05.002>

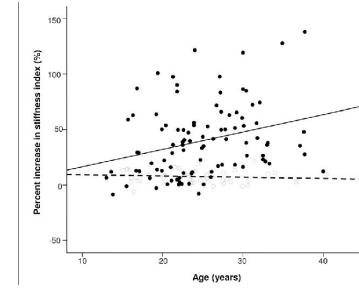


Get rights and content



U.S. DEPARTMENT OF  
ENERGY  
Argonne National Laboratory is a  
U.S. Department of Energy laboratory  
managed by UChicago Argonne, LLC.

# REPRODUCIBILITY AND REUSABILITY



Current Opinion in Microbiology  
Volume 52, December 2019, Pages 55-63

ELSEVIER

Fantastic yeasts and where to find them: the hidden diversity of dimorphic fungal pathogens

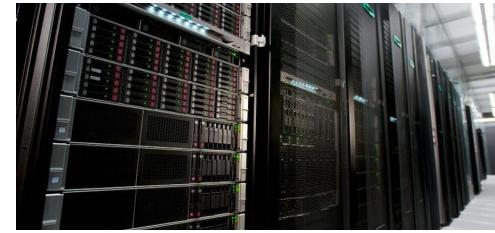
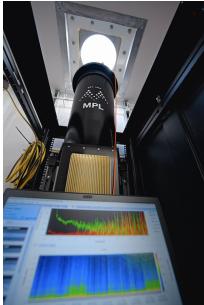
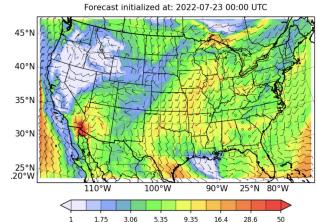
Marley C Caballero Van Dyke<sup>1</sup>, Marcus M Teixeira<sup>1,2</sup>, Bridget M Barker<sup>1</sup>

Show more

<https://doi.org/10.1016/j.mib.2019.05.002>

# REPRODUCIBILITY AND REUSABILITY

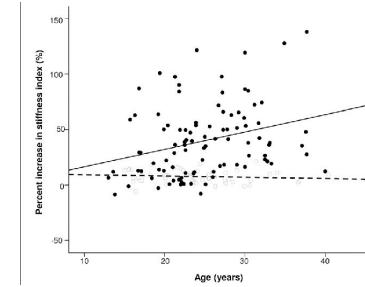
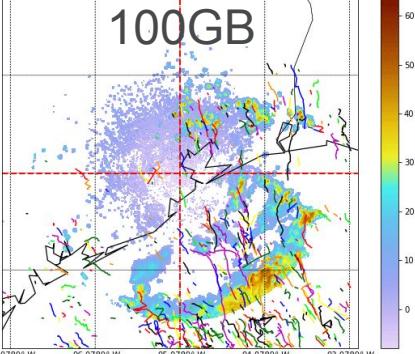
10GB



10TB



<https://amt.copernicus.org/articles/12/2979/2019/>



Current Opinion in Microbiology  
Volume 52, December 2019, Pages 55-63

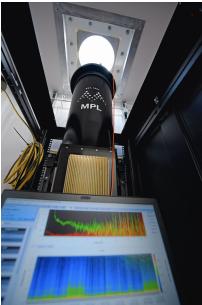
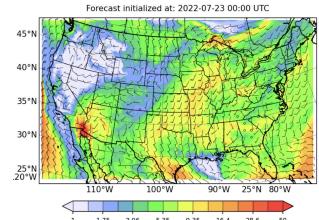
Fantastic yeasts and where to find them: the hidden diversity of dimorphic fungal pathogens

Marley C Caballero Van Dyle <sup>1</sup>, Marcus M Teixeira <sup>1,2</sup>, Bridget M Barker <sup>1</sup>

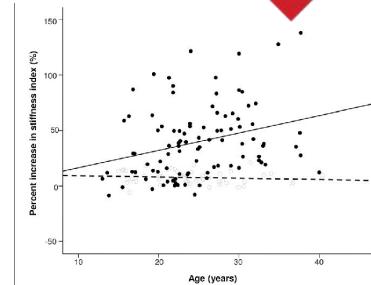
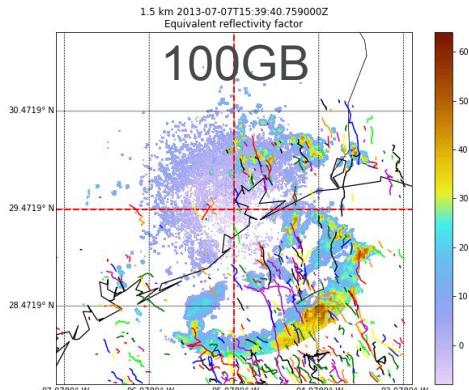
<https://doi.org/10.1016/j.mib.2019.05.002> [Get rights and content](#)

# REPRODUCIBILITY AND REUSABILITY

10GB



<https://amt.copernicus.org/articles/12/2979/2019/>



Current Opinion in Microbiology  
Volume 52, December 2019, Pages 55–63

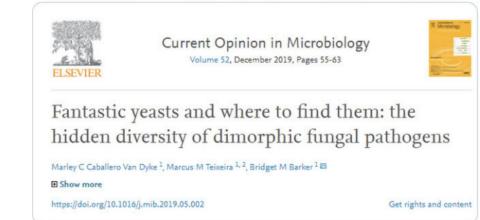
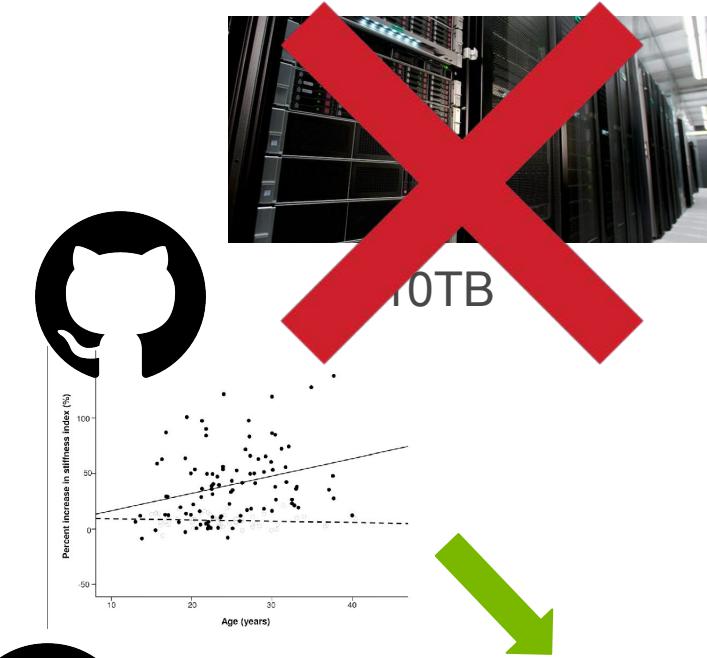
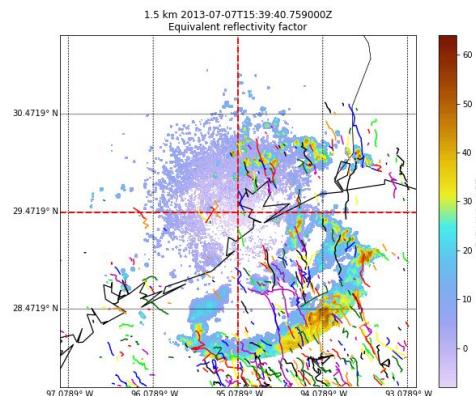
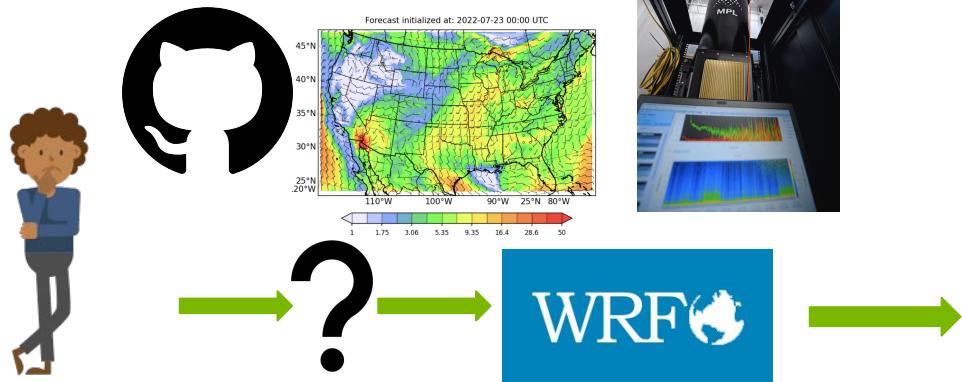
Fantastic yeasts and where to find them: the hidden diversity of dimorphic fungal pathogens

Marley C Caballero Van Dyle <sup>1</sup>, Marcus M Teixeira <sup>1,2</sup>, Bridget M Barker <sup>1</sup>

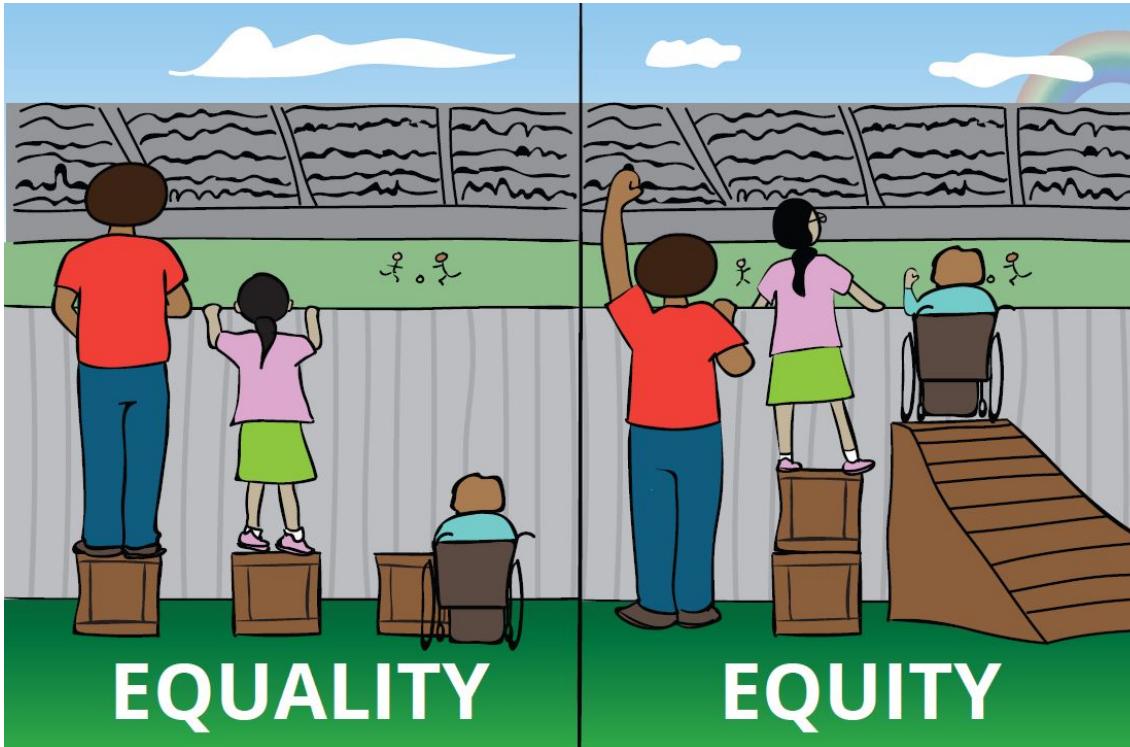
<https://doi.org/10.1016/j.mib.2019.05.002>

[Get rights and content](#)

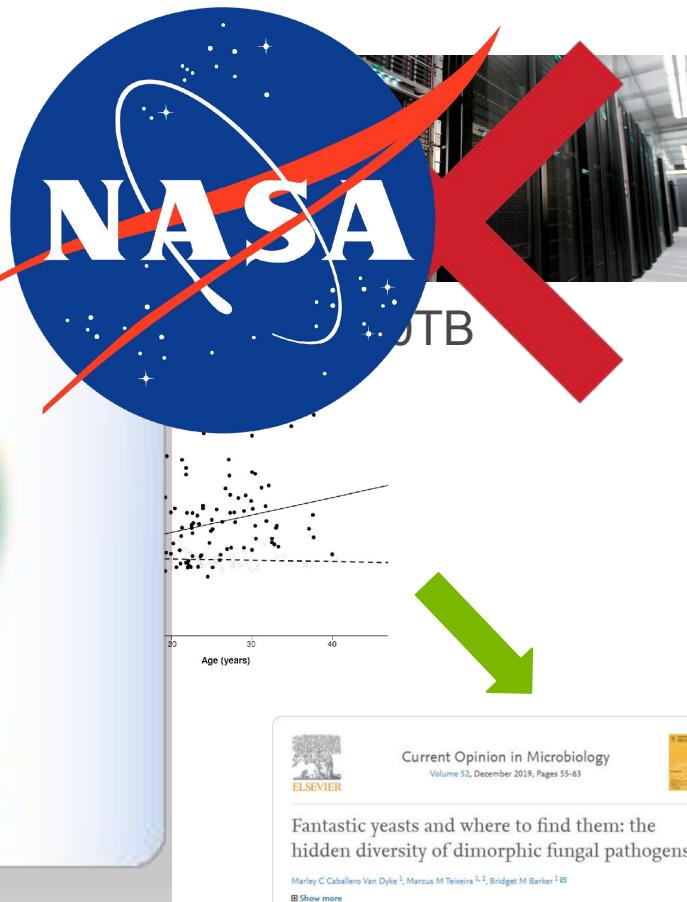
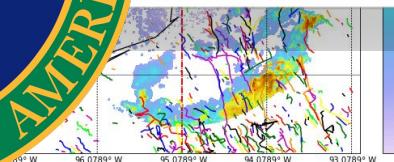
# REPRODUCIBILITY AND REUSABILITY

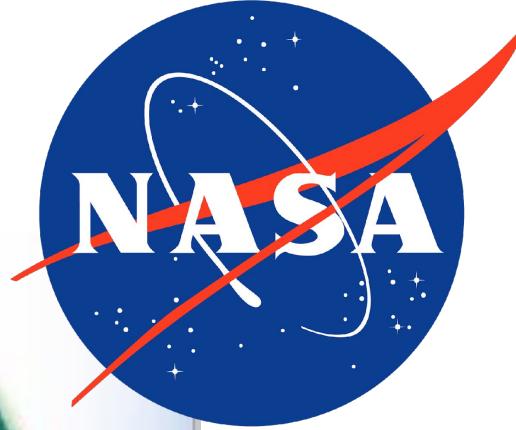


# But what about Equity?



# EXECUTABLE WORKFLOWS





# HOT OFF THE PRESSES



EXECUTIVE OFFICE OF THE PRESIDENT  
WASHINGTON, D.C. 20503



M-22-15

July 22, 2022

MEMORANDUM FOR THE HEADS OF EXECUTIVE DEPARTMENTS AND AGENCIES

FROM: SHALANDA D. YOUNG *Shalanda D. Young*  
DIRECTOR  
OFFICE OF MANAGEMENT AND BUDGET

DR. ALONDRA NELSON  
*Alondra Nelson*  
DEPUTY ASSISTANT TO THE PRESIDENT  
PERFORMING THE DUTIES OF THE DIRECTOR  
OFFICE OF SCIENCE AND TECHNOLOGY POLICY

SUBJECT: Multi-Agency Research and Development Priorities for the FY 2024 Budget

Agencies should balance priorities to ensure that resources are allocated for agency-specific, mission-driven R&D, including discovery-oriented research and use-inspired research, while at the same time focusing resources, where appropriate, on the following multi-agency R&D and STEM education activities that cannot be addressed by a single agency.

- Preparing for and preventing pandemics
- Reducing the death rate from cancer by half
- Tackling climate change
- Advancing national security and technological competitiveness
- Innovating for equity
- Cultivating an equitable STEM education, engagement, and workforce ecosystem
- Promoting open science and community-engaged R&D

The following sections describe in greater detail the motivation and priorities within these seven domains.

Agencies should seek out public participation in R&D programs wherever possible. Community participation in the scientific endeavor enriches and extends the benefits to the Nation, can increase public trust in science, and leads to more innovative research of all kinds, including research that addresses the needs of diverse communities. Examples of public participation in R&D include open science, which broadens public access to scientific data and publications, and participatory modes of research, such as community-based datahubs that give members of the American public access to Federal resources and data, as well as community-engaged research that respectfully provides opportunities for the public, especially those historically excluded from the scientific enterprise, to contribute to the development of research questions.

# EQUITABLE OPEN SCIENCE IS GOOD FOR ALL

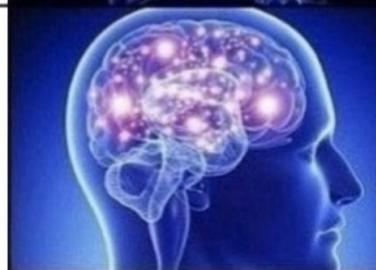
## Share Workflows

- Increasingly we are using more and more complex tools.
- Sharing all data to achieve reproducibility is burdensome.
- Sharing workflows has dual benefits of less G/T/PB and also more reusability.
- True equity = Cross agency or agency duplicated HPC+Cloud facility for executable workflows.

**CLOSED SCIENCE**



**SHARING  
DATA**



**SHARING  
WORKFLOWS**



**PROVIDING  
EQUITABLE ACCESS  
TO WORKFLOWS!**



**THANK YOU!**  
**SCOLLIS@ANL.GOV**  
**CYCLOGENESIS\_AU**  
**OPENSKY.PRESS**



Argonne National Laboratory is a  
U.S. Department of Energy laboratory  
managed by UChicago Argonne, LLC.