

FDA Public Workshop: Development Considerations of Antifungal
Drugs to Address Unmet Medical Need
4 August 2020

NIH Preclinical Services for Antifungal Product Development

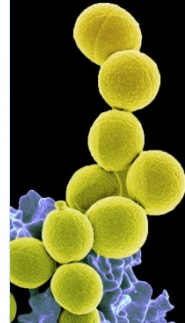
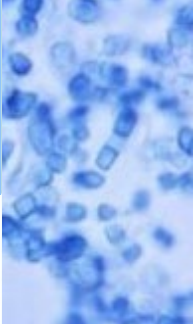
Erin Zeituni, Ph.D.

Preclinical Services Program Manager



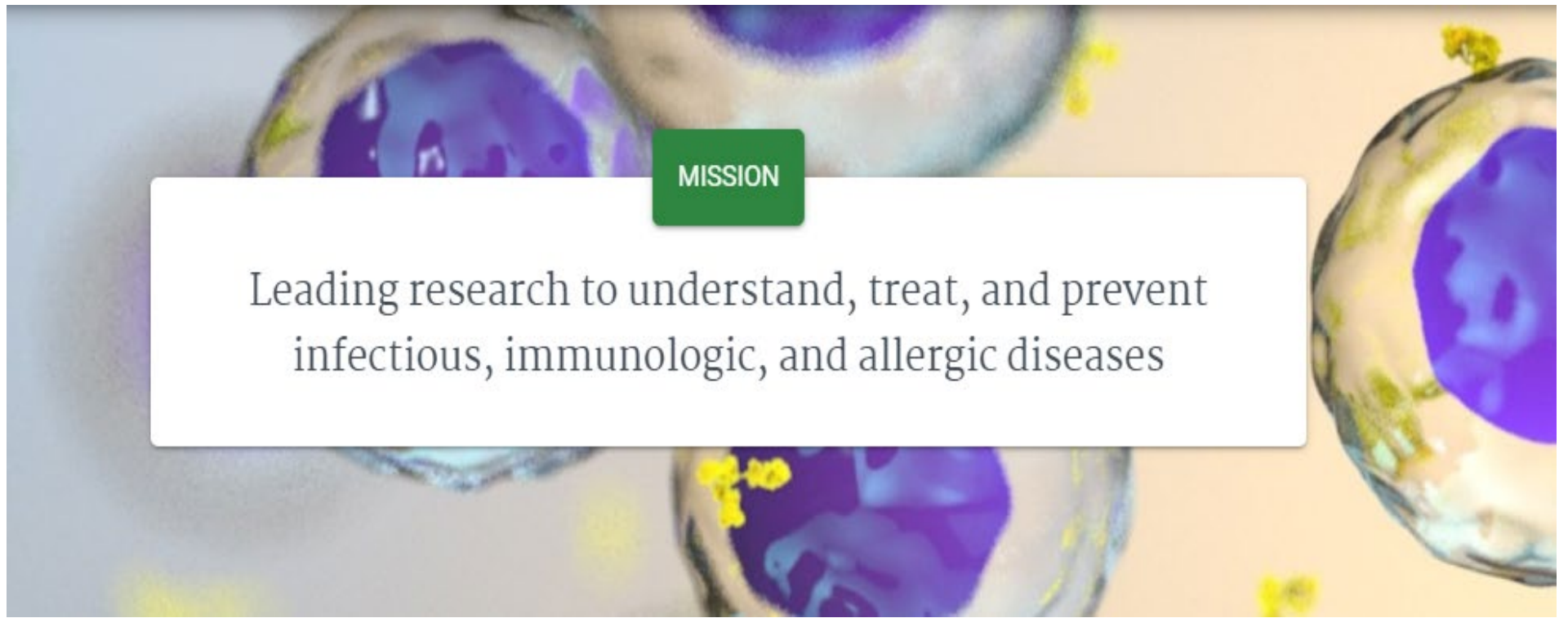
National Institute of
Allergy and
Infectious Diseases

National Institute of Allergy and Infectious Diseases
Division of Microbiology & Infectious Diseases



NIAD

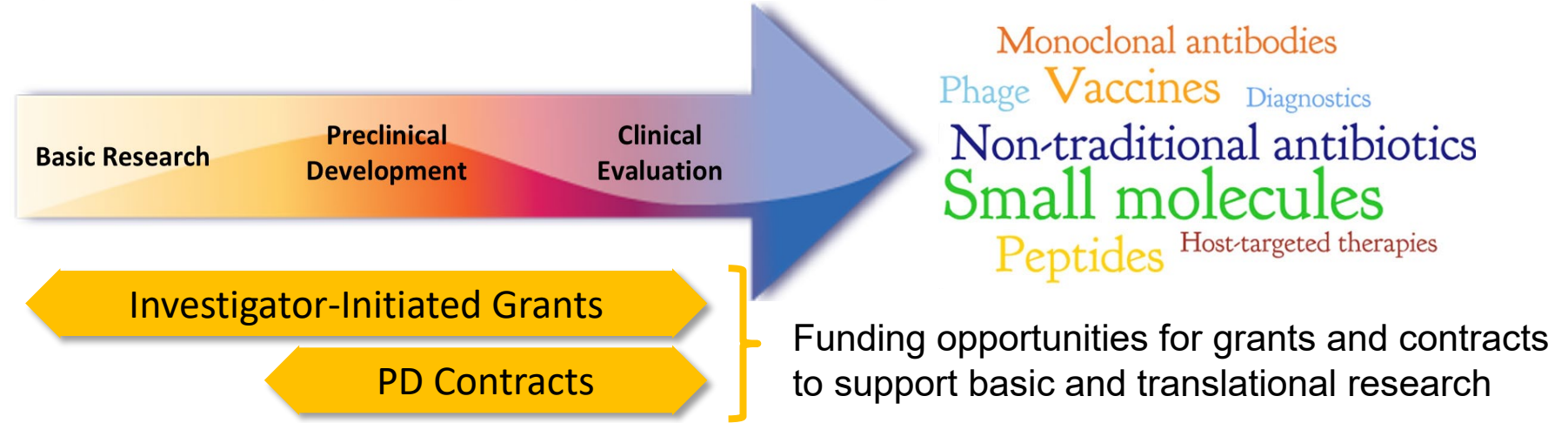
Mission of the National Institute of Allergy and Infectious Diseases (NIAID)

A microscopic image showing several cells with prominent purple nuclei and yellow structures, possibly representing a biological process or disease state. A green box with the word 'MISSION' is overlaid on the image.

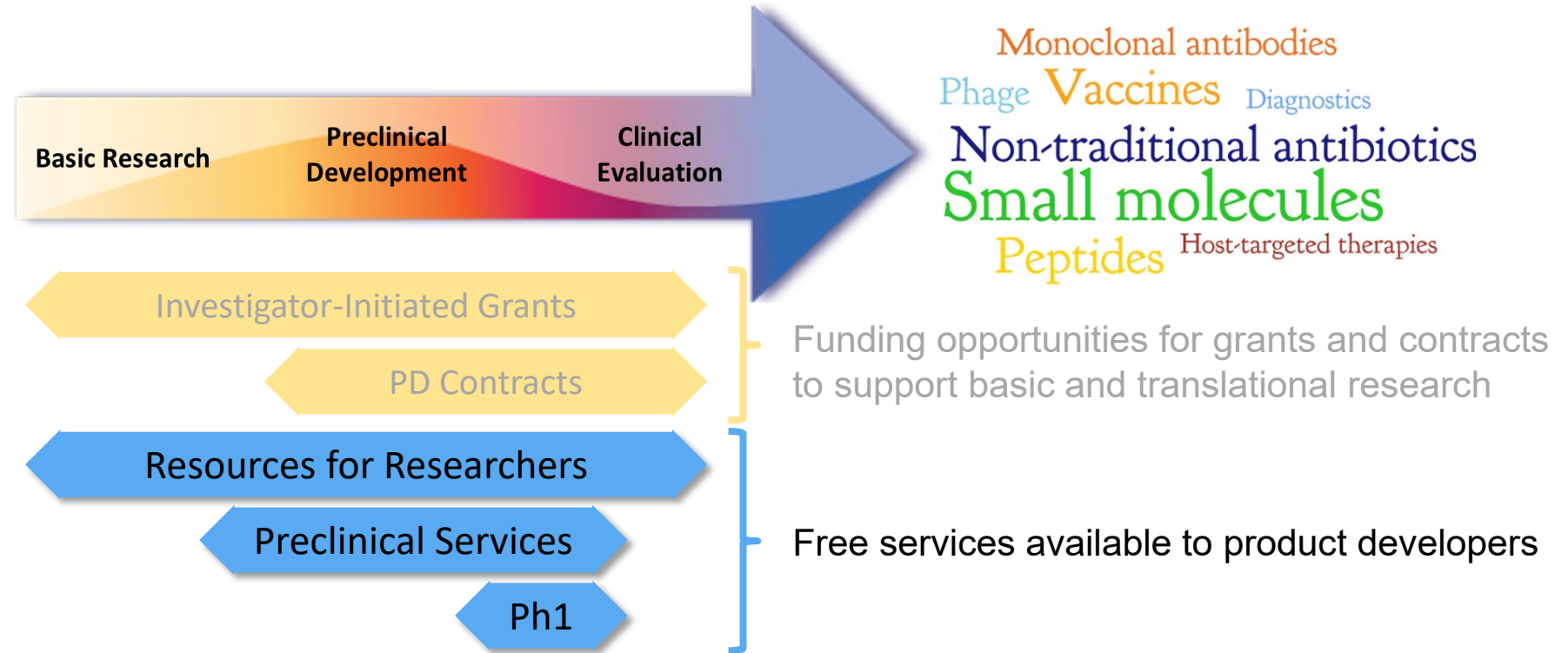
MISSION

Leading research to understand, treat, and prevent infectious, immunologic, and allergic diseases

DMID Mechanisms to Support Product Development and Reduce Product Development Risk



DMID Mechanisms to Support Product Development and Reduce Product Development Risk





NIAID Resources for researchers provide free reagents and services to investigators

NIAID Emerging and Re-emerging Infectious Diseases NIAID Bioinformatics Resource Centers NIAID Structural Genomic Centers Center for Structural Genomics of Infectious Disease

SEATTLE STRUCTURAL GENOMICS CENTER FOR INFECTIOUS DISEASE

SSGCID Project Management SARS-CoV-2 Target Status Community Requests Available Materials Partnerships Publications Contact

SSGCID

SSGCID is one of two Centers funded by NIAID in response to RFP-NIAID-DMID-NIHAI2016061, RFP-NIH-NIAID-DMID-07-19 and RFP-NIAID-DMID-NIHAI2011124 and is a consortium of four Pacific Northwest institutions (Seattle Children's Research Institute, UW, UCB and Washington State University). The other funded center (CSGID) is based out of Chicago, IL. SSGCID's primary mission is to determine the 3D atomic structures of proteins and other molecules with an important biological role in human pathogens themselves, or

Organisms Studied

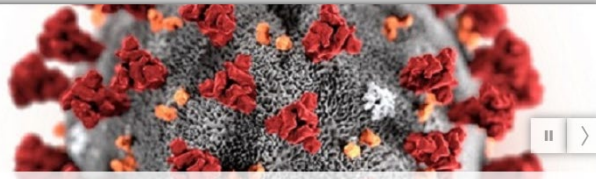
- Bacteria
- Eukaryota
 - Eukaryotic pathogens (Absidia, Acanthamoeba, Encephalitozoon, Entamoeba, Giardia, Mucor, N
- Viruses

Need reagents?
Need data?
We can help!

biei RESOURCES
SUPPORTING INFECTIOUS DISEASE RESEARCH

Home Catalog Deposits Register MR4 About

Catalog Search Choose a Resource Choose an Organism



2019 SARS-CoV-2 and currently available Coronavirus strains and reagents

[Click here](#) for available products, information and FAQs regarding the 2019 SARS-CoV-2. For any questions regarding BEI Resources and SARS-CoV-2 materials, please contact contact@beiresources.org.

How to Register How to Order How to Cite Schedule of Events

Advanced Search Vector Resources ARLG Strains MR4

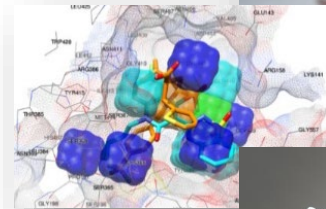
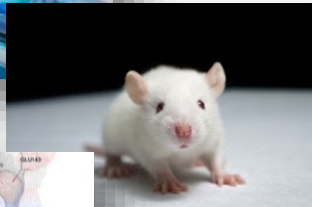
Knowledge Base HMP CEIRS Forms

Suggest A Reagent Coming Soon FR3 CDC & FDA ARISOLATE BANK

BEI Science Quick Order SR3 (Schistosomes) Target



DMID Preclinical Services (PCS) – Suite of contracts supporting anti-infective product development



- Gap-filling services, not intended to take a product to licensure
- Lower the risk and advance promising discoveries along product development pathway

Eligibility

- Innovators from academia, non-profit organizations, industry, and government
- Domestic or foreign institutions
- Do not need to have NIH funding
- Simplified Request Process – available year-round



PCS - *in vitro* testing services inform multiple stages of antifungal drug development programs

Since 2015, DMID's preclinical services has provided MIC testing against fungal species for >120 compounds from >50 institutions

- Apophysomyces sp.
- Aspergillus flavus
- Aspergillus fumigatus
- Blastomyces dermatitidis
- Candida albicans
- Candida auris
- Candida glabrata
- Candida guilliermondii
- Candida parapsilosis
- Coccidioides spp.
- Cryptococcus neoformans
- Dematiaceous fungi
- Emergomyces spp.
- Fusarium spp.
- Histoplasma capsulatum
- Pneumocystis IC₅₀
- Rhizopus oryzae
- Scedosporium spp.
- Sporothrix spp.



PCS – *in vivo* efficacy models inform antifungal drug development programs

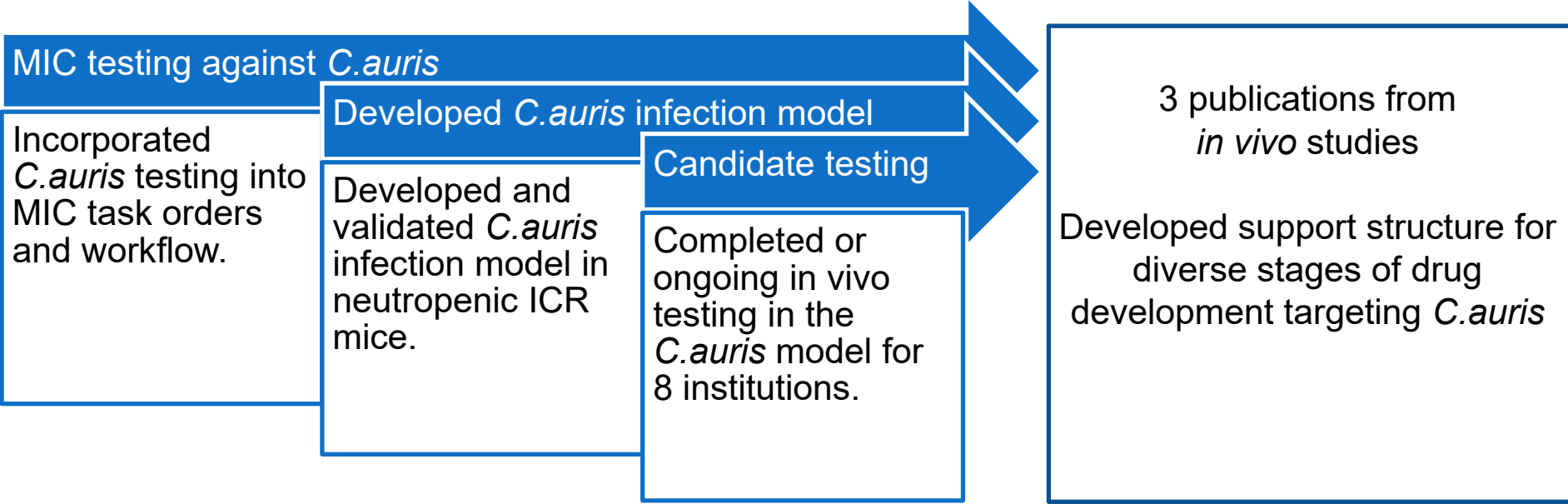
Since 2015, DMID's preclinical services has provided *in vivo* efficacy studies to >25 institutions developing antifungal drugs

Inoculation Route:	IV	Lung	IC	GI
<i>A. fumigatus</i> (S, azole ^R)	X	X		
<i>C. albicans</i> (S, azole ^R , echinocandin ^R)	X			X
<i>C. auris</i> (flu ^R)	X			
<i>C. glabrata</i> (S, echinocandin ^R)	X			
<i>C. neoformans</i> (S, flu ^R)	X		X	
Mucorales spp		X		
<i>Scedosporium spp.</i>	X			
<i>Pneumocystis spp</i>		X		
<i>Coccidioides spp</i>		X	X	



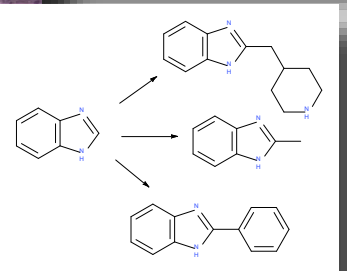
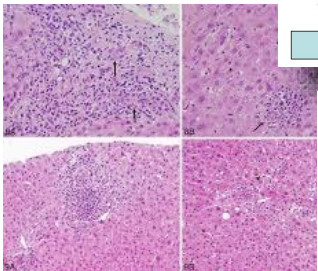
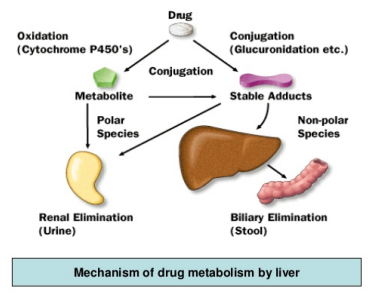
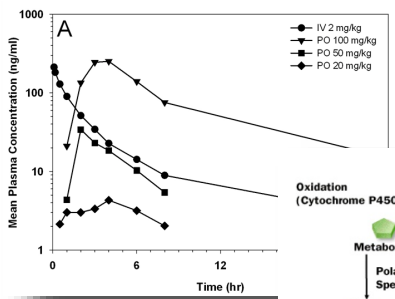
PCS – Flexibility to engage in animal model development based on the needs of the research community or emerging infectious diseases

Candida auris is an emerging multidrug-resistant yeast that can cause invasive infection and death. CDC released a Clinical Alert in June 2016.





PCS – Preclinical studies help support antifungal drug programs at multiple stages of development



- Medicinal chemistry and process chemistry/scaleup (incl GMP)
- *In vitro* and *in vivo* preclinical toxicology and pharmacokinetics (incl IND-enabling GLP studies)
- Rapid ADMET & PK screening for optimization of lead series
- Preclinical development, planning and evaluation, IND documentation

Contractors to date that have performed for antifungal programs: University of Texas Health Science Center, San Antonio; SRI International; Eurofins Panlabs, Inc.; RTI International

DMID Phase 1 Clinical Services

- Provide a **ready resource** for the conduct of clinical trials to evaluate promising vaccines, treatments, devices, and diagnostics for all infectious diseases except HIV
- Contracts provide services, not direct funding, for all aspects of the clinical trial
- NIAID sponsors the trial and holds the IND

<i>ClinicalTrials.gov</i>				NCT04208321
Status	Study Title	Conditions	Interventions	Locations
Recruiting	Safety and Pharmacokinetics of VT-1598	• Coccidioidomycosis	• Other: Placebo • Drug: VT-1598	• ICON Early Phase Services Clinical Research Unit San Antonio, Texas, United States

Interested in hearing more about how NIAID can help support your antifungal drug program? Please reach out to us!

Erin Zeituni

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Branch Chief

Dennis Dixon

Preclinical Services

Erin Zeituni, Erica Raterman

Basic Fungal Research Portfolio

Dona Love

Fungal Therapeutic, Vaccine, and Diagnostic Development

Lanling Zou, Alec Ritchie, Baoying Liu

Fungal Clinical Trial Support

Lanling Zou, Carmelle Norice-Tra, Maureen Mehigan, Baoying Liu, Varduhi Ghazaryan



DMID's Bacteriology and Mycology Branch