

**Tri-Institutional Partnership in Microbiome Research**  
**Seed Grant Initiative**  
**UC Davis – UCSF – LBNL**  
**2020 Call for Proposals and Application Guidelines**

Award Recipient List see below

## Program Overview

Microbiomes are integral to all life, from human health and food security to ecosystem processes and global nutrient cycling. Recent technological advances have deepened our appreciation for the complexities of microbiome function and its role in the health of humans and the environment, but the controlling mechanisms and inter-kingdom dependencies are not yet well understood. As laid out in the [Microbiome Interagency Working Group \(MIWG\) Strategic Plan](#), collaborative research is key to developing a predictive understanding of microbiomes function and could lead to advancements in areas such as antimicrobial resistance, food production, and biosafety. Furthermore, the malleability of microbial communities represents an opportunity to improve human health, food and biofuel production, and bioremediation through purposeful engineering of microbiomes. Such advancements will require integrative microbiome studies involving a diverse community of scientists, including microbiologists, computational scientists, geneticists, epidemiologists, and animal, plant and soil scientists.

A unique aspect of the **Tri-Institutional Partnership in Microbiome Research (Tri-P Microbiome)** Initiative is its **data-driven focus and data structural framework** brought through the participation of LBNL's DOE-funded National Microbiome Data Collaborative (NMDC). The NMDC was founded to support the long-term advancement of microbiome science by building an open and integrated data system. It seeks to address fundamental roadblocks in microbiome data science, including supporting collaborative research by making data findable, accessible, interoperable, and reusable (FAIR) and developing a platform that connects distributed data resources and compute.

The aim of the Tri-P Microbiome funding is to catalyze bold, synergistic, and potentially transformative collaborative research through joint seed grants and position the institutions favorably for follow-on extramural funding. By bringing together data scientists and biological researchers to generate novel hypotheses and co-design experiments, the Tri-P Microbiome will generate impactful and novel research with concomitant structured data that will enable additional discoveries and insights through advanced computational approaches and high-performance computing resources. Through networking and seed funding projects, the Tri-P Microbiome seeks to harness the collective institutional strengths in medicine, agriculture, engineering, computational science, and high-performance computing, to inspire synergies (current and potential) to tackle major gaps in knowledge and technology that have been identified by the MIWG FY2018-2022 [Strategic Plan](#) for Microbiome Research (an output of the 2016 National Microbiome Initiative) and advance the role of microbiome research in addressing grand challenges in environmental sciences and mammalian health.

## \$1 Million Funding Program

This Tri-Institutional Partnership in Microbiome Research initiative is built upon years of experience in developing and managing broad-based institutional programs that foster and nurture seed-funding proposals that are too bold, too preliminary, or too transformative to immediately attract traditional federal support. Accordingly, the

associated Seed Grant funding program will select from team-based multi-institutional cross-cutting microbiome research, proposals that are similarly powerful and innovative, with comparable potential for leveraged follow-on support and for transformative impact in addressing critical conceptual and technological gaps. Each institution has committed to contributing \$330,000 for at least the initial year to support their own researchers on funded teams. Successful proposals will address hypothesis-driven biological questions with a significant computational component (e.g., scale of data and/or algorithmic complexity). We hope to see a board variety of proposals that broadly concern human health, environment and host interactions, and food production and safety. Areas of special interest for funding include proposals that link descriptive microbiome studies with mechanistic investigations.

A long-term goal is for NMDC data management plans to be integrated into funding proposals across agencies that support microbiome research. In support of this goal, the Tri-P Microbiome funding proposals should also include data management plans that demonstrate the NMDC-supported standards and the NMDC data policy. Including this plan here will likely be important for future follow-on extramural funding, and will help the NMDC establish data management best practices for a broad variety of microbiome research data. The NMDC will evaluate each Tri-P Microbiome Initiative team’s proposal data management plan based on the criteria outlined below in the Application Guidelines, including how sample and experimental data will be collected, processed, and shared.

## Leadership Team

The Tri-Institutional Partnership in Microbiome Research is led by an Executive Committee, which consists of:

Institutional Leadership: UC Davis – Prasand Mohapatra; UCSF – Keith Yamamoto; LBNL – Horst Simon

Technical Leadership: UC Davis – Fred Meyer, Jonathan Eisen; UCSF – Sue Lynch; LBNL – Emiley Eloe-Fadrosh, Kjersten Fagnan

This team is supported by Administrative Leads at the three institutions:

UC Davis – Paul Dodd, Ana Lucia Cordova; UCSF – Gretchen Kiser; LBNL – Mary Maxon, Elisha Wood-Charlson, Pajau Vangay, and Kayd Miller

## Important Dates

February 28, 2020	Letters of Intent Due. (applications accepted only via UC Davis InfoReady Platform)
April 3, 2020	Full Proposals Due. (applications accepted only via UC Davis InfoReady Platform)
May/June 2020	Funding announcements. Awardees will be notified via email.

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## Eligibility Criteria

- Applicants must have **Principal Investigator (PI) status** at UC Davis, UCSF or LBNL (collaborators do not need PI status and may be outside entities)
- An individual may participate as PI/multi-PI on one to three proposals. Co-investigators, consultants and other personnel may serve on more than one proposal.
- Each proposal must have at least one PI from at least two of the Partner institutions. Projects with researchers from all three institutions will be prioritized for funding.
- Partners outside of the Tri-Institutional Partners may be included but they would not be eligible to receive Tri-Institutional seed funding. They would need to “pay-to-play.” The addition of an external partner does not change the requirement that seed funding projects must include at least two of the Tri-Institutional Partners.

## Award Details

- Project awards are limited to \$200,000 per project, not to exceed \$80,000 per institution per proposal, and will be made available for an 18-month project period.
- Awards may be used to cover reasonable research expenses (e.g., research supplies, computer data storage or compute expenses, publication costs, research-related travel expenses, etc.)
- Coverage of PI salaries up to 10% of the overall budget is allowed. PI salary above the 10% guideline will need to be specifically and appropriately justified. Salary coverage for other technical personnel is allowed pursuant to appropriate budget justification. Funds may not be used to cover student tuition. However, student stipends are allowed if properly justified in the narrative and budget.
- Overhead or indirect costs will not be applied to UC Davis and UCSF funds. Budgets for proposed LBNL activities should be consistent with National Laboratory requirements.

## Application Process

Letters of Intent and full proposals must be submitted online at: <https://ucdavis.infoready4.com/> on the UC Davis Administered Programs InfoReady Review page by the listed deadlines. Letters and applications submitted through any other method will not be reviewed.

## Post-award expectations

- A progress report must be submitted mid-way and at the end of the project period.
- All publications, presentations and products from this award should acknowledge the ‘Tri-Institutional Partnership in Microbiome Research Initiative’ as the source of funds.

## Contact information

General questions: Gretchen L. Kiser, PhD (UCSF) - [gretchen.kiser@ucsf.edu](mailto:gretchen.kiser@ucsf.edu)

InfoReady proposal submission questions: Ana Lucia Cordova-Kreylos, PhD (UC Davis) - [anacordova@ucdavis.edu](mailto:anacordova@ucdavis.edu)

Data Management Plan and LBNL questions: Elisha Wood-Charlson, PhD (LBNL) - [emwood-charlson@lbl.gov](mailto:emwood-charlson@lbl.gov)

## Application Guidelines

Applications will only be accepted through the [InfoReady competition website](#), if you have any issues with the system please contact the support team at [support@inforeadycorp.com](mailto:support@inforeadycorp.com) which typically respond within the same day and if you have any questions about the application process contact the program at [microbiomemail@ucdavis.edu](mailto:microbiomemail@ucdavis.edu) or the institutional contacts listed above.

### **Letters of Intent**

Letters of intent are required (due February 28<sup>th</sup>). Teams will not be allowed to submit a full proposal without having submitted a letter of intent. The information provided in the letter of intent will be used to start the identification of potential reviewers and line up needed resources.

Complete required fields in the [competition website](#) (this information can be edited upon submission of a full proposal):

- Proposal title
- Contact PI basic information (name, email, rank/title, institution, department)
- Multi-PI(s) information (name, email, rank/title, institution, department)
- Abstract. Provide an up to 500-word abstract. The abstract should briefly describe the problem statement and the proposed experimental aims and approach.
- Keywords. Provide up to five keywords describing the proposed project.

### **Full Proposal (final requirements for full proposal will be released with invitation to submit)**

1. Complete required fields in competition website:
  - Basic information for Contact PI (name, email, rank/title, institution, department)
  - Multi-PI information (name, email, rank/title, institution, department)
  - Application details including an up to 500-word abstract
2. Upload Proposal Narrative (combined in a single pdf document) and required documents through the competition website. Adobe Acrobat-generated PDF files only to avoid compatibility issues with InfoReady system (e.g., LaTeX)
  - **Project Narrative:** Maximum of four (4) pages of scientific content, including the bulleted items below. Scientific content and all figures must remain within the four-page limit; references are not included in the four-page limit. Please use standard one-inch margins and a minimum 11-point font size Arial or similar font. Provide a concise description of the research to be undertaken, including addressing the following sections:
    - **Rationale/Background;**
    - **Proposed Research and Approach** with stated **Specific Aims;**
    - **Innovation** – The projects funded through this program are meant to fuel innovation in microbiome research by fostering creative, high risk, high impact team science projects; describe novel approaches and interdisciplinary synergies.

- **Impact** – describe the potential for your research to advance thinking, concepts or technologies that benefit your research field, as well describe the ‘broader impacts’ of the potential of your work to benefit society and contribute to the achievement of desired society outcomes. Describe the ways in which your proposal will incorporate student and fellow training.
- **Preliminary Data** is not required.
- **Team Synergies** – Since all PIs on a proposal are expected to contribute substantively, the proposal should also contain a brief description of each PI’s proposed contribution to the aims, including an explanation of how collectively they are able to address an issue that they cannot do separately.
- **Data Management Plan** (½ page max within the 4-page Project Narrative) – A detailed plan for how the data will be collected, processed, analyzed, and disseminated should be included to ensure compliance with the NMDC. A data management plan should include the following:
  - Types of experimental data (e.g., metagenome, metatranscriptome, metaproteome, metabolome, etc.) to be collected along with contextual data (e.g., sample metadata)
  - Experimental design, data collection/generation methodology
  - Data recording and formatting methods
    - e.g., [MIxS](#) packages, other ontological packages, or specific formats
  - Data sharing plan (specifically, with respect to sharing experimental data, sample data, code and/or documentation for reproducible analyses)
  - Justification for how the study design enables future cross-study analyses or hypotheses generation
  - Compliance with relevant extramural funding agency data management policies
    - e.g., NIH requires de-identification of data according to HIPAA, etc.
  - Agreement with the [NMDC data use policy](#).
- **Budget Form:** Use the provided budget form on competition landing page in the right-side column.
- **Budget Justification:** An accompanying budget narrative describing and justifying costs (one page max, not included in the four-page Project Narrative limit)
- **CV:** CVs for each researcher named in the proposal (not included in the four-page limit)
  - 5-page maximum for all CV’s
  - Standard NIH or NSF biosketches accepted (up to 5 pages)

### **Proposal Review and Award Selection**

Proposals will be selected for funding following subject expert review and assessment by reviewers from UC Davis, UCSF and LBNL.

Assessment is based on five criteria:

#### **1. Intellectual Merit**

- The contribution to advance knowledge and understanding within the field of study or across fields. How well qualified the team is, and how well conceived and well organized the proposed work is.

#### **2. Innovation & Interdisciplinarity**

- The extent to which the project will contribute to novel thinking and/or new technology in its field; does the proposal include contributors from multiple disciplines? Do they present a novel approach to the research question?

### 3. Impact

- The contribution to realizing important goals, and its potential to provide useful outcomes to society locally and globally, such as building capacity, influencing policy, etc.

### 4. Sustainability

- The likelihood that the project will lead to sustainable results: establishes new research directions in one or more of the team labs or initiates new interdisciplinary collaboration, or generates significant external funding. Extramural funding that may be targeted should be specifically identified.

### 5. Data Management Plan

- The extent to which the proposed work includes co-design activities aligned with the NMDC and leverages NMDC-supported standards and pipelines. Projects must adhere to the NMDC data use policy.

Highly scored proposals will be selected for funding by the Tri-Institutional Partnership in Microbiome Research Executive Committee, consisting of research leadership and microbiome initiative leaders at all three partnering institutions.

## Award Recipient List

Proposal Title	Research Team		
	UC Davis	UCSF	LBL /NMDC
Colonization resistance against Candida	Andreas Baumler (contact PI); Krystle Reagan; Hannah Savage	Suzanne Noble	Andrew Tritt
Precision editing of gut dysbiosis in inflammatory bowel disease for ameliorating inflammation	Maneesh Dave (contact PI)		Adam Arkin
FODMAP utilization by the microbiota	Andreas Baumler (contact PI)	Peter Turnbaugh	Emiley Eloie-Fadrosch
Unraveling strain-level virus-host dynamics in diverse ecosystems	Joanne Emerson (contact PI); C. Titus Brown	Peter Turnbaugh	Simon Roux
MicroMetabolome: a biological and analytical framework of the human microbiome-metabolome axis	Oliver Fiehn	Matthew Spitzer (contact PI)	James Bentley Brown