Illuminate Steering Committee (ISC)

Proposal Submission Form

**Illuminate Steering Committee Charge:** Formulate the overall strategy for the implementation of the Illuminate goal of achieving R1 status within a 10-year time period.

**Instructions:** Upon completion of this proposal submission form, the P.I. should email the form and other required documents (biographical sketches, detailed project description, and impact on R1 metrics) to [Illuminate@baylor.edu](mailto:Illuminate@baylor.edu). This proposal process and all proposals submitted will be treated as confidential.

## Please rank the initiatives in order of relevance to this proposal, 1 being most relevant. If only one initiative is applicable, please type “1” by that initiative:

1 Health

1 Data Sciences

Click or tap here to enter text. Materials Science

Click or tap here to enter text. Human Flourishing, Leadership, and Ethics

Click or tap here to enter text. Baylor in Latin America

## Check the appropriate box for requested funding type:

Seed funding to advance R1 metrics

Endorsement for multi-stage, multi-year funding (e.g. new centers or institutes)

**Project Title** (10 words max) : Decoding the fiber-microbiome relationship to prevent and reduce infections.

**Project Summary** (1/2 page max)

This proposal brings together the collective research power of multiple Baylor University faculty, as well as, those from Mayo Clinic, and Baylor College of Medicine to decode the dietary fiber-microbiome relationship. Just as penicillin was a life-saving drug to combat infections at the turn of the century, food fortification was critical in preventing life-threatening disease and fetal deformities. Despite these discoveries, we are now plagued with both antibiotic-resistant ‘superbugs’ and our low-fiber Western diet is further increasing mortality and disease risk. We hypothesize that precision dietary prebiotic fibers may prevent or reduce deadly infections. Dietary fiber is critical to support the health of the bacteria in the gut, the microbiome, especially microbes which possess the ability to evict pathogens. Deaths from pathogen infections accounts for approximately 700,000 death each year globally, with 23,000 U.S. deaths attributed to antibiotic resistant bacteria. Among the major culprits are C. difficile, which is related to approximately 15,000 deaths per year in the U.S., and enterotoxic B. fragilis (ETBF), which is a major cause of hospital-related infections. The standard treatment for these infections is a combination of antibiotics, however, as we run out of antibiotics to combat these ‘superbugs’, we must look for alternatives and preventative strategies, which has ignited a new effort to develop pre- and probiotics to address this critical situation. Currently, we have very little understanding of which types of dietary fibers support those microbes that convey protection from infection nor the mechanisms by which specific dietary fibers are protective. To address this issue, we have designed a multi-phase strategy to develop precision medicine prebiotics by utilizing a new tool, the Mini-Bioreactor Array system (MBRA). This new system will allow us to test dietary fibers in a controlled gut microbiome community setting.   
The purpose of this research is to identify the prebiotics and microbial factors conveying resistance to infection while accounting for inter-individual microbiome variability. The results from this initial study will allow us to pursue a multi-phase research strategy designed to address an outstanding need in our field to identify critical microbes and metabolites that are altered as a result of exposure to dietary fibers and pathogens. Ultimately, this evidence will expand our understanding of the fiber-microbiome relationship, and allow us to develop preventative interventions using prebiotics. Further, this research will result in propelling Baylor University to R1 status through increased research scholarship, transformational educational experiences, production of high-quality graduate students, generation of collaborative multi-disciplinary teams, and strong preliminary data for competitive funding proposals.

**Principal Investigator Information**

To add additional P.I.s, click by “Name” below and then click the plus sign at the bottom right corner of the field.

Name K. Leigh Greathouse

Baylor University, Robbins College of Health and Human Sciences, Family and Consumer Sciences, Rinn Cloud, Chair

Name Ramon Lavado

Baylor University, School of Arts and Sciences, Environmental Science, George Cobb, Chair

Name Robert A. Britton

Baylor College of Medicine, Molecular Virology and Microbiology, Joseph Petrosino, Chair

Name Nicholas Chia

Mayo Clinic, Center for Individualized Medicine, Keith Stewart, Chair

**Biographical Sketch for all Principal Investigators** (type or paste below or attach to email as separate file)   
2 pages max per P.I. – includes recent publications and previous grant experience

Attached

**Detailed Project Description -** The description should be 3-5 pages max and should address the points below:

* + 1. **Research question(s) addressed**
    2. **Clear link to Initiatives and Pillars – Why it is important to engage in this research?**
       1. Describe how the project encourages collaboration between faculty/schools/universities
    3. **Project situated within a broader research agenda - How is this project linked to the PI’s broader research agenda? How does the proposed work differ from or augment ongoing studies?**
    4. **Requested funding level and why**
       1. How funds will be used
       2. Detailed Project Budget
       3. Annual implementation plan

(type or paste below or attach to email as separate file)

“Detailed Project Description” - Attached

**Measures of Success** - This section should be no longer than one page and should address the points below:

1. **Expected impact and project deliverables**
2. **Proposed timeframe within which to report back to the ISC (set the meeting date/time)**
3. **How will this research impact our pillar of pursuing transformational education?**

(type or paste below or attach to email as separate file)

“Measures of Success” - Attached

**Impact on R1 Metrics** – This section should be no longer than 3-5 pages and should address the points below:

1. **Compelling case (with documentation) on funding source possibilities with citations of external funding sources’ RFPs. What is your plan to communicate with external funding sources that will increase the likelihood of your proposal to them being accepted?**
2. **What is the Return on Investment to Baylor University for this project?**  (This can include doctoral production and hiring of postdocs.)
3. **Has this work been the subject of previous proposals, either internal or external? What future proposals are planned to advance the larger research agenda?**

(type or paste below or attach to email as separate file)

“Impact on R1 Metrics” - Attached

**Principal Investigator(s) Acknowledgement of Completed Proposal**

Please type your name below. To add additional P.I.s, click by “P.I. Name” below and then click the plus sign at the bottom right corner of the fields.

P.I. Name K. Leigh Greathouse

Date 03/28/2019

P.I. Name Ramon Lavado

Date 03/28/2019

P.I. Name Robert A. Britton

Date 03/28/2019

P.I. Name Nicholas Chia

Date 03/28/2019