Impact Statement

(No more than two pages no less than 10pt.)

Project Title: Establishing an interdisciplinary microbiome research theme in the Institute for Genomic Biology at the University of Illinois

Issue:

Over the past decade, furthering our understanding the composition and function of the microbiome has emerged as one of the leading research challenges of the 21st century. The microbiota is an "ecological community of commensal, symbiotic and pathogenic microorganisms" found in and on all multicellular organisms studied to date from plants to animals. A microbiota includes bacteria, archaea, fungi and viruses. Studying the composition of the microbiota (e.g. who is there) and their genetic material (microbiome) has been facilitated by the advent of high throughput sequencing, however, understanding their functions) in animal and human health and disease requires the study of host-microbe interactions. Animals that are germ free or gnotobiotic (colonized with known bacteria) are important research tools for asking mechanistic questions about host-microbe interactions. The goal of my project was to establish a new microbiome theme and germ-free rodent facility in the Carl R. Woese Institute for Genomic Biology IGB. The IGB is dedicated to transformative, interdisciplinary research in agriculture, human health, the environment, and energy use and production.

What has been done:

I am a founding member and co-director of a new IGB theme on the Microbiome Metabolic Engineering. The goal of the MME theme is to integrate knowledge and experimental approaches from microbial physiology, microbial biochemistry, microbial ecology, nutrition, toxicology and environmental health, and systems biology to gain a better understanding of the microbiome's role in health, develop new methods to assess host-microbe interactions, and examine how environmental toxicants affect human-microbiome interactions and the host. In this leadership role, I have contributed to establishing the goals of the MME theme, recruiting faculty to join the theme, grant writing and fund raising for establishing a new facility for germ free and gnotobiotic animals. This type of leadership is collaborative, but also requires that someone take leadership to get things done. It is also working with other faculty, so there is sometimes not a clear line of seniority and everyone is busy!

Impacts/New Partnerships:

The MME theme has 18 faculty and affiliates from 8 different departments and 3 campuses. The theme recently received a large NIH grant. We have financial commitments from administrators (Vice Chancellor for Research, Deans, Department Heads) across campus to fund the germ free and gnotobiotic animal facility. Thus, over the past year, successful partnerships have been formed and the MME theme is well on its way to being an externally recognized center for excellence in microbiome research.

Outcome of Project (societal impact/ measure of increased quality of life)

In the short-term, the MME theme will provide unique research and training opportunities in the area of microbiome function. In the long term, we envision that the findings of this research will result in new approaches to improve human and animal health through modulating the microbiome through diet or other interventions (e.g. prebiotics or probiotics).

How has your project been aided by your FSLI experience?

The FSLI program has enabled me to better understand my leadership style and strengths and weaknesses as well as to understand how to engage people who have different motivations, inherent personality types, and personal and social competence. This is important, since the MME them engages faculty from across campus, from both biological sciences and engineering. Some of the practices that I have used, include: a) listen twice as much as you speak to get the best ideas; b) build consensus, while gaining input from both the extroverts and introverts in the room; and c) meet people where they "live" to gain a better perspective. Some of the lessons that I have learned, include: a) that this type of leadership takes time and patience; b) don't assume that people will share your vision; and c) the need to build soft skills. For example, emotional intelligence is key to create and change culture, enable other to work and inspiring a shared vision.

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**If you have already written a report for your project and it is available on- line please include the link to the paper. If you have a pdf you can send it to us and we will include a link to that from your summary page.*