CIMR - A CORE FOR INTEGRATED MICROBIOTA RESEARCH

Lead contact:

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Key Participating units:

Texas A&M Health Science Center (TAMHSC) - COM, COP, SPH
College of Veterinary Medicine (CVM) / Comparative Medicine Program (CMP) | AgriLife | USDA
College of Engineering (COE) | Institute of Biosciences & Technology (IBT) | College of Science

Key Team members or co-investigators:

PI - Dr. Robert C. Alaniz	Director, Cell Analysis Facility, COM-TAMHSC.
Co-PI - Dr. David Threadgill	Director, Institute for Genome Sciences & Society (IGSS), TAMU.
Co-PI - Dr. James Elliott	Director, Comparative Medicine Program, CVM-TAMU.
Co-PI - Dr. Jan Suchodolski	Assoc. Director, GI Lab - Small Animal Hospital, CVM-TAMU.
Co-PI - Dr. Arul Jayaraman	Director, Integrated Metabolomics Analysis Core (IMAC), TEES-TAMU.
Co-PI - Dr. Benjamin Morpurgo	Director, Texas Institute for Genomic Medicine (TIGM), AgriLife-TAMU.

Total amount requested: ~$1,500,000 ($1,000,000 equipment/instrumentation; $500,000 personnel/ancillary)

Executive summary:

The **Core for Integrated Microbiota Research (CIMR)** will establish a cutting-edge microbiota research facility that enables *new-to-campus*, innovative research in an area with phenomenal impact and growth in the natural, biomedical, agricultural, genomic, and clinical sciences. The CIMR technology centers on study of the **microbiota** - *the community of beneficial microbes that symbiotically inhabit host or environmental ecosystems*. *Microbiota research is predicted by the National Academy of Sciences, National Institutes of Health, and World Economic Forum to make as large or larger an impact on the future of science and medicine as did genomics decades ago*. However, the specialized research instrumentation/equipment to perform microbiota research at TAMU does not exist, and only one similar regional facility exists but is inaccessible to TAMU investigators. Thus, *the CIMR is designed to provide TAMU PIs previously unavailable resources and a seamless integrated and comprehensive workflow for the complete analysis of the microbiota in nature/biology at a high-level of technical sophistication and low-cost*. To do this, the CIMR will provide a unique germ-free animal facility (*only the second in Texas*) to perform in vivo microbiota research, as well as a functional analysis lab (*the first in Texas*) to perform mechanistic microbiota research. In addition, the CIMR will provide pre-/post-experiment consultation for investigators, will facilitate interdisciplinary collaboration among CIMR users, and will synergize with current TAMU core capabilities such as the IGSS, the IMAC, and the TIGM. Furthermore, the CIMR with the CMP will develop educational and outreach activities for training students and scientists. The CIMR facility will have an administrative home in the COM-TAMHSC and be physically located in the Medical Research and Education Building (MREB) on the HSC Bryan campus.

Because microbiota research integrates with a wide-range of disciplines from ecology and agriculture, genomics and computational biology, to basic and clinical biomedical research, it is intrinsically interdisciplinary. Realizing this, we performed a 2014 campus-wide survey and determined >50 highly productive and well-funded investigators from 5 colleges are eager to integrate microbiota studies into their current and future research programs to remain competitive for funding. As evidence of the need for the CIMR, it is a component of currently funded (CTEHR) and future center and PI grant applications. As further evidence of CIMR's need, we have secured initial seed-investment from the HSC VPR and Deans of participating colleges (CVM and COM) to initiate small-scale core activities, as well as additional funds to cost-share staff support for 2 years. However, this first investment is not sufficient for the CIMR to be of the size and scope needed for all PIs across campus. Thus with the requested RDF support, the CIMR will immediately augment campus-wide research and increase the competitiveness of single and multi-investigator grants providing a robust return-on-investment. In addition, the CIMR will propel TAMU research in this new, innovative, and burgeoning field for decades to come, thus creating regional and national prominence for TAMU.