

Research Development Fund – Fall 2022 Application Template

Submission Deadline: **12:00PM CDT Monday – October 10, 2022**, to rdf@tamu.edu

****Applications exceeding page limits for any section or do not follow the template will not be reviewed****

Application Title: The acquisition of an aerosol production unit on the current Whole-Body Inhalation Chamber system in Rodent Preclinical Phenotyping Core

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Key Participating Units: Rodent Whole-Body Inhalation Chamber (WBIC)

RDF Amount Requested (\$): 187,119.00

Executive Summary

This application addresses the need for an **aerosol generator unit** in a current whole-body-inhalation chamber at Rodent Preclinical Phenotyping Core. The Texas A&M Institute for Genome Sciences and Society (TIGSS) Rodent Preclinical Phenotyping Core (RPPC) has provided access to equipment, services, and training for 50 services covering rodent phenotyping and preclinical tests to the scientific community of the Texas A&M system since 2019. One of the newest additions includes the TSE rodent whole-body inhalation Chamber (WBIC) that is required for environmental studies of airway exposures. This state-of-the-art custom-built system from TSE is equipped with a vapor and gas exposure unit. Adding an aerosol generator to the current system would broaden its applicability to environmental toxicants, including but not limited to ultrafine particulate matter (UPM), diesel exhaust, chlorinated compounds, metals (lead, zinc, manganese), pesticides, per-, and polyfluoroalkyl substances. However, this addition is costly and cannot be purchased with the yearly budget allocated to the RPPC. Therefore, we are requesting funds to broaden the system's applicability that will support several new and renewal grant applications.

TSE system is the trusted leader in the preclinical in-vivo measurement of rodent behavior, metabolic, and inhalation research. Precise measurement (at the nM level) and airflow-controlling techniques enable quality research, and an additional feature of measuring the room air provides guaranteed safety to researchers. TSE whole-body inhalation chamber offers the best way to mimic human air exposure from acute toxicity to long-term exposure during diverse developmental stages. Moreover, it has full potential to be applied to toxicant-exposed-post-war symptom research or biological toxicants (e.g., aerosol-driven vaccine delivery, aerosolized pathogen exposure). Adding an aerosol generator to this recently invested cutting-edge system is expected to broaden its application capability and make the TAMU toxicology community far more competitive for substantial new funding.