# Optimizing One's Health: Genetic and Environmental Regulation of Metabolic Health

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Enhancement of health and well-being by alleviation of the adverse physical, societal and economic effects of stressful, chronic diseases and conditions in humans and animals, especially metabolic dysregulation and obesity, is the goal of this One Health proposal. Texas A&M University will lead the systematic approach to the discovery of the mechanisms linking stressful environmental factors, epigenetics, metabolic syndrome, and obesity to the burden of chronic, inflammatory diseases and conditions. Twenty-five faculty within 14 schools/colleges/centers/institutes came together to create this proposal that was chosen to move forward the "Chronic Diseases and Conditions" research area.

The obesity epidemic and stress are two terms widely used by the media, the public, policy makers, health providers, and scientists. Obesity in people and companion animals is associated with stressful, chronic inflammatory conditions, and chronic diseases are the leading causes of disability and death of humans in the United States even though these are markedly preventable conditions. A common thread across many of these conditions that contribute to morbidity and mortality of animals and humans is an increased degree of psychological and environmental stress. Stress has been recognized as a key modulator of diseases that range from behavioral disorders, metabolic syndrome, cardiovascular and infectious diseases, and cancer. Stress is in many ways an ideal vehicle to deploy an integrated biomedical systems approach to address several key health problems in animals and humans.

This One Health proposal emphasizes enhancement of metabolic health of animals and humans in recognition of the dynamic interdependencies of animals, humans, and ecosystems. This initiative provides the Texas A&M University System an enduring, over-arching program to cohesively promote basic and translational research to elucidate the mechanisms linking stressful environmental factors, epigenetics, metabolic health, and obesity to the burden of chronic, inflammatory disease. The immediate steps in this initiative include targeting the multiple aspects by which stress and obesity impact metabolic health, conducting bi-weekly seminar sessions to advance cohesion and sharpen researchable targets/grant options, processing big data attendant to epigenetic and microbiotic regulation of physiological processes associated with sustaining homeostasis and health, hosting a TAMU System-wide 2-day symposium to highlight internal strengths, obtain insight from prominent external scientists and speakers, and submitting grant proposals to pertinent extramural requests. The longer range sustainability of the initiative include the assemblage of integral, cohesive, nimble teams that will publish results, acquire external funds, train students, and translate knowledge to practice to alleviate as much as possible stressful, chronic diseases and conditions.

Faculty collaborators:

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