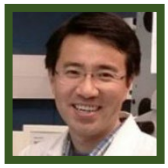
R21 and R03 Funded Investigators at JABSOM

Mariana Gerschenson, PhD (Multiple PI) - Department of Cell and Molecular Biology & Dean's Office
EPIGENETIC DYSREGULATION OF INFLAMMATION LINKED TO LONGITUDINAL CARDIAC TOXICITY IN PERINATAL HIV INFECTION (R21 AI170252, awarded to Cornell University)
Cardiotoxicity may develop in adolescents and young adults living with HIV, and we are looking for novel biomarkers to predict the development of adverse cardiac outcomes in blood samples. This exploratory proposal will use cardiac imaging data and blood specimens from the NIH Pediatric HIV/AIDS Cohort Study to profile epigenetic markers in HIV+ adolescents and young adults as well as HIV-exposed but uninfected adolescents and young adults. This research will have a major impact at optimizing cardiovascular health across the lifespan in children living with HIV.

Iain S. MacPherson, PhD - Department of Tropical Medicine, Medical Microbiology and Pharmacology
HIV VACCINE DESIGN INCORPORATING SELECTIVE AVIDITY (R21 AI181698)
Dr. MacPherson and his team will use artificial intelligence to engineer immunogens better capable of guiding the development of neutralizing antibodies against diverse HIV strains. The immunogens will then be tested for defined set of biochemical attributes in vitro, and selected ones further studied in an established mouse model.



Yusuke Marikawa, PhD - Department of Anatomy, Biochemistry and Physiology
TERATOGENECITY ASSESSMENT OF NEW ANTIVIRAL DRUGS USING 3D MORPHOGENESIS MODELS (R03 HD110743)
The COVID-19 pandemic necessitated emergency authorization of new drugs against SARS-CoV-2. There was no time, however, to thoroughly investigate potential side effects of these drugs especially during pregnancy. Dr. Marikawa will use 3D morphogenesis models made from mouse and human pluripotent stem cells developed in his laboratory to determine if these drugs affect embryonic development. The study will also provide information on the effects of different concentrations of these drugs, results that may be useful in coming up with safer doses for pregnant women.

ESTABLISHMENT OF YOLK SAC ORGANOIDS FOR DEVELOPMENTAL TOXICITY ASSESSMENT MODELS (R03 ES035972)
The study will establish an in vitro model of the human yolk sac, a vital extra- embryonic organ to support embryo development during early pregnancy. The goal is to use such an in vitro model, or yolk sac organoid, to identify environmental factors that harm embryo development. Effective and swift identification of reproductively harmful factors is crucial to ensure healthy pregnancies.

Matthew W. Pitts, PhD and **Peter R. Hoffmann, PhD** - Department of Cell and Molecular Biology
THE ROLE OF SELENOPROTEIN I IN MITIGATING NEURODEGENERATION (R21NS133944)
The goal of this project is to determine the precise role of selenoprotein I (SELENOI), a selenium-dependent enzyme, in the central nervous system (CNS). Patients carrying certain SELENOI mutations suffer from a hereditary form of neurodegeneration, indicating that the protein may have a role in healthy neurodevelopment and/or a protective role in the CNS. The researchers created a unique mouse model that does not have SELENOI in its CNS. This mouse model allows a systematic investigation of SELENOI's role in brain development and function.

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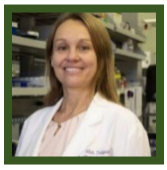
Chathura Siriwardhana, PhD - Department of Quantitative Health Sciences

RACIAL/ETHNIC DISPARITIES IN THE ALZHEIMER'S DISEASE LINK WITH HEART DISEASE AND STROKE (R03 AG075034)

This project investigates the Alzheimer's Disease (AD) link with heart disease and stroke, focusing on racial/ethnic disparities. The proposed work will be conducted under a time-continuous multi-state model framework, utilizing time-to-event data from 2009 to 2017 longitudinal Hawaii Medicare database. For a state such as Hawaii that has a strong ethnic diversity, findings of racial/ethnic effects on AD/heart/stroke links will be critically important for developing early prevention strategies in the patient care setting.



Michelle D. Tallquist, PhD - Department of Medicine

THE ROLE OF LUNG LIPOFIBROBLASTS IN ALVEOLAR DIFFERENTIATION (R21 HL156112)

One complication of premature birth is airway collapse, known as respiratory distress syndrome. This condition is cause by underdeveloped alveoli, and the goal of this project is to better understand the cellular signals that guide postnatal lung development. Information gained in these studies may lead to improved treatments for lung maturation and reduce the amount of time that infants spend on ventilators.

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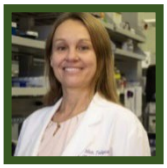

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