DEPARTMENT OF PRE-CLINICAL SCIENCES

The Department offers M.Phil. and Ph.D. degrees in Biochemistry, Human Anatomy, Human Nutrition, Human Physiology, Molecular Genetics and Neuroscience. Current areas of research include:

MPHIL/PHD BIOCHEMISTRY

The postgraduate programme offers students the opportunity to do research in specific areas such as:
1. Mechanistic and conformational studies of cytochrome c-oxidase
2. Cytochrome c oxidase in neurological disorders of humans and animals.
3. Biochemical and nutritional risk markers for coronary heart disease, diabetes and other chronic diseases.
4. Calcium handling proteins in the diabetic heart.
5. Adiponectin, inflammatory markers and risk type II diabetes.
6. Anticancer and other medicinal properties of Caribbean plant extracts.

MPHIL/PHD HUMAN ANATOMY

The postgraduate programme currently offers research in modern morphological and functional investigations of the brain in the normal and pathological conditions, for example, Alzheimer’s disease and other mental disorders. Other specific areas include:
1. Vagal involvement in peripheral neuropathy associated with chronic diabetic states.
2. Effect of vagotomy on enteroendocrine cells in the gastrointestinal tract.
3. Anatomical studies of the Agouti (Dasyprocta Leporina) including (i) vagal innervation of the gastrointestinal, respiratory and cardiovascular organs, (ii) skull morphology and morphometry and (iii) the brain in stereotaxic coordinates.
4. Prevalence, ethnicity and polymorphism of anatomical variations and congenital malformations in Trinidad and Tobago.
5. Effects of diabetes mellitus on the reproductive organs of Sprague Dawley rats.
6. Effect of paw-paw seed extract on the histology and histochemistry of the testes in Sprague Dawley rats.

MPHIL/PHD HUMAN PHYSIOLOGY

Human Physiology is the study of the normal biological systems in the body. The subject covers both macro systems (for example, the heart and circulation) and Microsystems (for example, the function of cell membrane proteins in maintaining the electrical properties of the cell). The postgraduate programme offers research in:
- The biological principles underlying learning and memory.
  1. Intrinsic physiological mechanisms that protect the brain from certain neurological disorders such as stroke, epilepsy, migraine and dementia.
3. Physiological actions of abused substances on the brain.
4. Effects of environmental pollutants on respiratory functions.
5. Development of non-invasive diagnostic criteria for diseases of the cardiovascular and autonomic nervous system.

MPHIL AND PHD HUMAN NUTRITION

The postgraduate programme currently offers students the opportunity to do research on ethnic variability & nutrition-related chronic non-communicable diseases in Trinidad & Tobago.

MPHIL AND PHD MOLECULAR GENETICS

Students have the opportunity to do research in areas such as:
1. Molecular epidemiology, evolution and phylodynamics of emerging and re-emerging pathogens (esp. dengue and other mosquito-borne viruses).
2. Evolutionary and ecological factors involved in emergence, dispersal and maintenance of viral pathogens, and in particular zoonotic and vector-borne RNA viruses.
3. Viral diversity in bats and bats as a source of emerging pathogens.

MPHIL AND PHD NEUROSCIENCE

The postgraduate programme offers students the opportunity to do research on neurodegenerative disorders:
1. Evaluation of neuroprotective drugs using ischemia and other neurodegenerative models.
2. Protective effects of calorie restriction on aging and inflammation in the brain.
3. The roles of excessive calorie intake, metabolic disorder and diabetes on brain function.
5. The role of immune mechanisms of the central nervous system in the pathogenesis of neurodegenerative disorders.
6. Central nervous system development
7. Effects of ultrasound on brain development

In collaboration with the Psychiatric Unit Department of Medicine and the Department of Paraclinical Sciences:
1. Prevalence of dementia in Trinidad and the region.
2. Risk factors and Biomarkers associated with Alzheimer’s disease and other dementias.
3. Dermatoglyphics in patients with bronchial asthma, pulmonary tuberculosis, schizophrenia, dementia and psychiatric disorders.