Gastrointestinal, Renal, and Endocrine Systems – Study sections formed after ENQUIRE 2019

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Kidney Group

KUFD - The **Kidney and Urological Systems Function and Dysfunction (KUFD)** study section reviews applications that focus on the developmental mechanisms and function of the kidney and urinary tract, including the ureters, bladder and urethra; the male genital tract; and the visceral pelvis and pelvic floor musculature. Renal studies focus on basic and applied aspects of normal physiology, transport biology, obstructive diseases, and renal replacement including transplant and hemodialysis. Urology and urogynecology studies address both physiology and pathophysiology, including endocrine or neural influences; epidemiology, etiology and mechanisms of genitourinary disease; diagnostic strategies and biomarkers, bioengineering, and medical and surgical management, including clinical trials.

Topics:

- Kidney epithelial and uroepithelial cell biology including mechanisms of renal transport systems; hormonal and neural regulation of renal function; and other processes relevant to normal renal physiology.
- Kidney transplantation and renal replacement therapies including basic and clinical studies of uremia, and including dialysis, kidney ablation, artificial kidneys, chronic allograft nephropathy, and prevention and/or treatment of rejection.
- Function of the bladder, ureter, and urethra and dysfunction of these and associated tissues including conditions such as lower urinary tract symptoms (LUTS), interstitial cystitis/painful bladder and pelvic pain syndromes, overactive and underactive bladder, obstructive uropathy, diabetic uropathy and neurogenic and non-neurogenic incontinence.
- Primary congenital and acquired kidney and urological conditions affecting the kidney, bladder, ureters, urethra, and genital tracts, and secondary neurogenic conditions such as spina bifida including development, epidemiology, diagnosis and management.
- Infection and inflammation in the urinary tract, including studies of susceptibility, pathogenesis and treatment of bacterial, viral and fungal infections, and the role of the genitourinary microbiome in health and disease.

- Urolithiasis and nephrolithiasis, including studies of susceptibility, pathogenesis, and treatment of upper and lower urinary tract stones.
- Function and dysfunction of the male and female genitourinary tract. Studies of the prostate and associated non-cancerous conditions such as benign prostatic hyperplasia, physiology of penile erection and the pathophysiology and treatment of erectile dysfunction; pelvic floor tissues in health and disease, including the pathogenesis and treatment of pelvic floor weakness and prolapse with associated bladder and/or bowel incontinence.

Shared interests and overlaps:

There are shared interests with **Pathobiology of Kidney Disease (PBKD)**. Injury or abnormalities associated with hypertension, renovascular disease, or other specific disease states may be reviewed in **PBKD**, while normal fluid and electrolyte transport systems may be reviewed here. Genetic mechanisms underlying specific diseases may be reviewed in **PBKD**, while developmental genetics of the urogenital tract may be reviewed here.

There are shared interests with **Kidney, Nutrition, Obesity, and Diabetes (KNOD)**, which focuses on clinical and genetic epidemiological studies that focus on conditions affecting the kidney and urinary tract.

There are shared interests with **Host Interactions with Bacterial Pathogens (HIBP)**, which focuses on the molecular basis of bacteria-host interactions and the host immune response, and with **Bacterial Pathogenesis (BACP)**, which reviews applications that address determinants of bacterial pathogenesis. However, these study sections do not focus specifically on the pathogenesis of genitourinary infections.

Applications that focus on frank cancer of the kidney and urogenital tract (e.g. prostate or bladder cancer) are reviewed elsewhere.

PBKD - The **Pathobiology of Kidney Disease (PBKD)** study section reviews grant applications involving renal tubular and glomerular cell pathophysiology and translational/clinical studies of kidney diseases including investigations of pathophysiology, diagnosis, and treatment of acute and chronic disorders of the kidney as well as the consequences of kidney disease and failure.

Topics:

- Mechanisms of acute and chronic kidney injury and repair, including acute renal failure and studies of the pathobiology of acute kidney injury transition to chronic kidney disease and renal fibrosis as well as toxic nephropathy.
- Diabetic nephropathy and aging nephropathy. Podocyte biology and its role in the pathogenesis of chronic kidney diseases including diabetic nephropathy, nephrotic syndrome, and proteinuria.
- Polycystic kidney disease, including ciliopathies and ciliary structure of the kidney tubules, and genetic models of polycystic kidney disease.
- Renal tubular and glomerular pathophysiology, renal hemodynamics, and disease resulting from disorders of fluid, electrolyte and acid-base homeostasis.
- Disorders of tubular epithelial and endothelial cells and the pharmacology of associated kidney disease.
- Renal immunology and immune glomerular diseases including lupus nephritis and IgA nephropathy.
- Vascular biology of the kidney and the role of renovasculature in blood pressure regulation and in the development of hypertension. Mechanisms of hypertensive renal injury.

Shared interests and overlaps:

There are shared interests with **Kidney and Urological Systems Function and Dysfunction (KUFD)** for studies involving renal physiology and transport mechanisms. Studies that focus on transport mechanisms or their regulation may be reviewed in **KUFD**, while those that focus on the pathophysiological consequences of aberrant transport may be reviewed here.

There are also shared interests with **KUFD** with respect to renal hemodynamics, hypertension and salt handling. Studies focused on transport mechanisms and their regulation may be reviewed in **KUFD**, while those focused on hypertensive renal injury may be reviewed here.

There are shared interests with **Integrative Vascular Physiology and Pathology (IVPP)**. Hypertension studies involving cardiovascular biology, microcirculation, lymphatic and central or peripheral nervous system may be reviewed in **IVPP**, while studies involving hypertension-induced kidney injury may be reviewed here.

There are shared interests with **Kidney, Nutrition, Obesity and Diabetes (KNOD)**. Kidney disease studies with a sole focus on epidemiological studies involving the determinants, predictors and biomarkers of kidney disease may be reviewed in **KNOD**, whereas studies with mechanistic or physiologic pathway analyses, including those which also involve animals, may be reviewed here.

General studies of ciliary structure, function and development are more appropriately reviewed by the **Cell Biology (CB) IRG** while those that focus specifically in polycystic kidney disease may be reviewed here.

Liver Group

HBPP - The **Hepatobiliary Pathophysiology (HBPP)** study section reviews applications involving pathophysiology and treatment of inherited and acquired viral and non-viral hepatobiliary diseases; molecular and genetic regulation of liver development and biochemical function under physiologic and pathophysiologic states; mechanisms of liver injury, repair, regeneration, fibrosis, cancer and transplantation; liver cell biology, immunology and inflammation; cholesterol and bile salt metabolism; hepatic fatty acid and triglyceride metabolism, insulin and hormone signaling, hepatobiliary transporters, hepatic protein metabolism, ion channels; and alcohol metabolism and disease. The HBPP study section focuses on both animal models and clinical work.

Topics:

- The use of isolated parenchymal and non-parenchymal cells of the liver including hepatocytes, stellate cells, Kupffer cells, endothelial cells, cholangiocytes and resident lymphocytes particularly as they relate to the pathogenesis of liver disease.
- Progenitor and stem cell therapies of genetic and acquired hepatobiliary diseases.
- Mechanisms of bile formation, bile salt synthesis hepatic cholesterol and lipid metabolism and their genetic and molecular regulation of cholestatic and gallstone disease.
- Molecular genetics and biochemical basis for NAFLD and NASH and approaches to intervention and reversal.
- Physiologic mechanisms of hepatobiliary transport including mechanisms of uptake and excretion of organic solutes, heavy metals, and ions.
- Inflammatory response of the liver to injury or infection, pro- and anti-inflammatory mediators, oxidative stress and ER stress, apoptosis and autophagy.
- Mechanism of hepatocyte injury including immune response, oxidative stress, apoptosis, pro- and anti-inflammatory mediators, including signal transduction pathways and neuromediators.
- Liver development, injury, repair, regeneration, growth, differentiation, development, and aging.
- Hepatocyte and cholangiocyte dysplasia and pre-neoplasia; mechanisms of transformation; cellular immortalization and mutagenesis.
- Liver cell and organ transplantation, liver ischemia-reperfusion injury and application of transplantation to the therapy of liver diseases.
- Regulation of splanchnic blood flow and endothelial vascular function as it pertains to mechanisms of portal hypertension.
- Cellular and molecular mechanisms of liver diseases, such as, fibrosis and cirrhosis including complications such as ascites and hepatic encephalopathy.
- Viral hepatitis as it relates to the pathogenesis of hepatobiliary disease.
- Pathogenesis of alcoholic liver injury, including the role of nutrient deficiencies and endotoxemia.

Shared interests and overlaps:

There are shared interests with **Xenobiotic and Nutrient Disposition and Action (XNDA)**. Studies focused on drug or herbal-induced liver injury or alcohol-drug interactions may be reviewed in **XNDA**, while those that focus on the pathogenesis of alcoholic liver injury and other liver diseases may be reviewed here.

There are shared interests with **Nutrition and Metabolism in Health and Disease (NMHD)** in the investigation of lipid and sterol metabolic and signaling pathways of the liver. Studies focused on these nutrient and metabolite effects on hepatic metabolism and the etiology of fatty liver disease may be reviewed in **NMHD**, while those focused on sterol and lipid metabolic impacts on liver development and inflammatory diseases may be reviewed here.

There are shared interests with **Kidney, Nutrition, Obesity and Diabetes (KNOD)**. Liver disease studies with a sole focus on epidemiological studies involving the determinants, predictors and biomarkers of liver disease may be reviewed in **KNOD**, whereas studies with mechanistic or physiologic pathway analyses, including those which also involve animal models, may be reviewed here.

There are shared interests with **Virology A (VIRA)** and **Virology B (VIRB)**. Studies addressing the cellular and molecular biology of HBV/HCV viral replication: attachment and entry; gene expression and regulation; viral genome replication; viral assembly and maturation; egress may be reviewed in **VIRA** or **VIRB**. Applications that focus on liver pathology, liver cell autophagy or necroptosis associated with viral infection are reviewed here.

Digestive Group

DHMI - The **Digestive System Host Defense, Microbial Interactions and Immune and Inflammatory Diseases (DHMI)** study section reviews applications involving gastrointestinal innate and adaptive immunity, gut microbiota/microbiome, host-microbial interactions, intestinal infections, pathophysiology and immunobiology of inflammation including inflammatory bowel diseases, inflammatory processes in the exocrine pancreas, and epithelial cell biology as it relates to mucosal defense or repair. Approaches may utilize in vitro systems, animal models, or human samples and systems.

Topics:

- GI mucosal immunology including both innate and adaptive immunity, lymphocytes and myeloid cells, IgA and secretory immunity.
- Host-microbe interactions in the GI tract including commensal, pathogenic and microbial community interactions, maintenance of barrier function.
- Intestinal infections, including parasitic and viral host responses in the GI system.
- Inflammatory bowel diseases including celiac and Crohn's disease, necrotizing enterocolitis (NEC), *C. difficile*, eosinophilic esophagitis.
- Nutritional immunology including the use of pre- and pro-biotics in the treatment of inflammatory digestive diseases.
- Pre-neoplasia as a consequence of chronic GI infection or inflammation (e.g. colitis or H. pylori).
- Regulation of gene expression as it relates to inflammatory processes, mucosal defense or repair.

Shared interests and overlaps:

There are shared interests with **Digestive and Nutrient Physiology and Diseases (DNPD)**. Studies involving GI epithelial cell biology, GI dysplasia and pre-neoplasia may be reviewed in **DNPD**, while studies focused on the mucosal layer, mucosal immunology or inflammatory processes may be reviewed here.

There are shared interests with **Kidney, Nutrition, Obesity and Diabetes (KNOD)**. Gastrointestinal disease studies with a sole focus on epidemiological studies involving the determinants, predictors and biomarkers of gastrointestinal disease may be reviewed in **KNOD**, whereas studies with mechanistic or physiologic pathway analyses, including those which also involve animal models, may be reviewed here.

Studies which focus on basic aspects of mucosal immunology are best reviewed by the **Immunology (IMM) IRG**, while studies that focus on inflammatory processes within the GI tract may be reviewed here.

DNPD - The **Digestive and Nutrient Physiology and Diseases (DNPD)** study section reviews applications involving function and physiology of the GI tract with respect to the physiology or pathophysiology of digestion, nutrition and related functional disorders. Topics include GI development and growth differentiation control, GI dysplasia and pre-neoplasia not due to immune or host-microbe interactions, brain-gut interactions, enteric nervous system, motility disorders, acid secretion and acid related disease, GI hormones, pancreatic function and dysfunction, GI system nutrient absorption and malabsorption, diarrheal diseases.

Topics:

- Epithelial biology including barrier function, stem cells, development, regeneration and restitution throughout the GI tract.
- Epithelial metaplasia, Barrett's esophagus, dysplasia and pre-neoplasia not due to immune or host-microbe interactions.
- Acid secretion and acid-related disease including GERD.
- Neurobiology of the GI system including brain/gut interactions, IBS, enteric nervous system, visceral pain, influences and role of the microbiome in these processes.
- GI motility and related disorders including fecal incontinence, regulation of sphincters, esophageal motility, and gastroparesis.
- Function and disease of the exocrine pancreas including acute and chronic pancreatitis.
- Physiology of digestion including GI hormones, integrated responses to food intake, nutrient and vitamin transport and adsorption, fluid and electrolyte absorption and secretion, effects of pre and pro-biotics.
- Genetic determinants of digestive diseases including gene regulation, risk factors, and biomarkers.

Shared interests and overlaps:

There are shared interests with **Digestive System Host Defense, Microbial Interactions and Immune and Inflammatory Disease (DHMI)**. Studies focused on the mucosal layer, mucosal immunology or inflammatory processes may be reviewed in **DHMI**, while studies involving GI epithelial cell biology, GI dysplasia and pre-neoplasia may be reviewed here. Diseases of the exocrine pancreas that are of inflammatory origin may be reviewed in **DHMI**.

There are shared interests with **Nutrition and Metabolism in Health and Disease (NMHD)** in the investigation of nutrient transport. Applications that focus on the metabolic consequences of transport may be reviewed in **NMHD**, while those focused on the absorption and transport mechanisms within the GI tract may be reviewed here.

Studies of stem cells when GI stem cells are being used as a model system for basic stem cell development may be reviewed in the **Cell Biology (CB) IRG**, whereas studies of GI stem cell regulation and signaling in the context of GI development, function or repair may be reviewed here.

Studies of frank cancer within the GI tract are reviewed elsewhere.

Diabetes, Obesity, and Metabolic Diseases Group

BMDM - The **Basic Mechanisms of Diabetes and Metabolism (BMDM)** study section reviews applications concerned with the cellular regulation of metabolic homeostasis, genetics and pathobiology of diabetes (both type 1 and type 2) and obesity, relying on cellular, in vitro and in vivo experimental settings (i.e., human cells/tissues, model systems, and animal models).

Topics:

- Adipocyte biology, adipogenesis, tissue plasticity (e.g., beiging/browning of white adipose tissue).
- Signaling pathways involved in integration of thermogenic processes at cellular level.
- Stem cell biology, cell-based regenerative and tissue engineering approaches for thermogenic adipose tissue.
- Pancreatic islet cell biology, islet cell plasticity (e.g., fate switching of cells in the pancreatic islet).
- Islet cell replication, stem cell biology, cell-based regenerative and tissue engineering approaches to replace islet cell function.
- Insulin action, insulin resistance, and mechanisms of glucose transport in metabolic tissues.
- Extracellular cell matrix-parenchymal cell signaling in metabolic tissues.
- Paracrine signaling/feedback loops.
- Role of inflammatory pathways in metabolic tissues.
- Pathobiology of type 1 diabetes.
- Genetics of obesity and diabetes; analysis of the functional consequences of specific genetic alterations concerning obesity and/or diabetes.

Shared Interests and Overlaps:

There are shared interests with **Cell Signaling and Molecular Endocrinology (CSME)** in the investigation of pancreatic islet cells and adipocytes biology. Applications that seek to understand signal transduction and transcriptional regulation of hormones and growth factors on pancreatic islet cells or adipocytes function may be reviewed in **CSME**, while those that focus on genetics/epigenetic regulation and differentiation of pancreatic islet cells and adipocytes may be reviewed here.

There are shared interests with **Pathophysiology of Obesity and Metabolic Diseases (POMD)** in the investigation of insulin action, glucose homeostasis, metabolism, and diabetes. Applications that seek to understand neural regulatory pathways that modulate glucose regulation and metabolism may be reviewed in **POMD**, while those that focus on the downstream signaling pathways of glucose regulation may be reviewed here.

There are shared interests with **Human Studies of Diabetes and Obesity (HSDO)** in the investigation of metabolic regulation in type 1 and type 2 diabetes. Applications focused on human interventions and clinical trials may be reviewed in **HSDO**, while those that use cells or animal models to understand biological regulation of obesity and diabetes may be reviewed here.

There are shared interests with **Nutrition and Metabolism in Health and Disease (NMHD)** in the investigation of cellular mechanisms of macronutrient sensing and signaling in metabolic tissues. Applications focused on nutrient sensing and signaling in metabolic regulation broadly may be reviewed in **NMHD**, while those focused on macronutrient sensing and signaling related to energy metabolism by islet cells and adipocytes may be reviewed here.

There are shared interests with **Pregnancy and Neonatology Study Section (PN)** in the investigation of cellular mechanisms of maternal/fetal exposure on metabolic health. Applications focused on fetal development programs and health may be reviewed in

PN, while those focused on maternal/fetal interface on islet cell plasticity, development and function in mother and offspring may be reviewed here.

There are shared interests with **Hypersensitivity, Autoimmune, and Immune-mediated Diseases (HAI)** in the investigation of immune modulation of islet cell function and diabetes. Applications focused in understanding immune cell function and regulation may be reviewed in **HAI**, while those focused on immune cell modulation of pancreatic islet cell function, molecular alterations of islet cells contributing diabetes etiopathogenesis and pathobiology (e.g., type 1 diabetes) may be reviewed here.

There are shared interests with **Atherosclerosis and Vascular Inflammation (AVI)** in the investigation of adipose tissue depot biogenesis and remodeling. Applications focused on understanding vascular cells, atherosclerosis, or vascular inflammation in the context of obesity may be reviewed in **AVI**, while those focused on the modulation of adipocyte differentiation and function by vascular cells may be reviewed here.

There are shared interests with the **Interdisciplinary Molecular Sciences & Training (IMST) IRG (CMT study section)** and the **Surgical Sciences, Biomedical Imaging, and Bioengineering (SBIB) IRG (SAT and BTSS study sections)** in the investigation of tissue regeneration and biomedical engineering. Applications that focus on development of novel therapeutic or surgical-based interventions for maintenance or restoration of tissue function may be assigned to the **IMST** or **SBIB IRG**, while those focused on regeneration and tissue engineering of metabolic tissues (e.g., adipose, islet cells) may be reviewed here.

There are shared interests with the **Oncology IRGs (OBT and OTC)** in the investigation of islet cell neoplasm. Applications involving basic and translational investigations that encompass cancer initiation, promotion, progression, and metastasis may be reviewed in the **Oncology 1 – Basic Translational (OBT) IRG**. Applications involving translational and clinical investigations that encompass cancer prevention, diagnosis and treatment may be reviewed in the **Oncology 2 – Translational Clinical (OTC) IRG**. Applications using islet cell neoplasms as experimental models to study molecular regulation of islet cell development and replication may be reviewed here.

POMD – Pathophysiology of Obesity and Metabolic Disease (POMD). The overall organizing theme of the POMD study section is pathogenesis and treatment of metabolic disease associated with obesity and diabetes. POMD reviews applications with emphasis on integrative systems, involving neurobiological, neuroendocrinology, system biology, nutritional, metabolic and physiological studies predominantly in animal models and model organisms.

Topics:

- Analysis of circuits in the central nervous system (CNS), and the action of gut hormonal and other peripheral endocrine signaling pathways and nutrients in the CNS that regulate metabolism, energy balance and food behavior; studies to elucidate how dysregulation of these circuits and pathways contribute to the pathogenesis of metabolic disease.
- Studies focusing on the regulation of peripheral metabolism, food intake and pathophysiology of metabolic disease by the autonomic nervous system (ANS).
- Analysis of hypoglycemia and counter regulatory responses, including glucose sensing and neural control of counter regulatory mechanisms; glucoregulation of neuronal activity in CNS areas involved in metabolic and energy control.
- Developmental processes in the CNS and ANS that regulate predisposition to offspring obesity and metabolic disorders. Perinatal diet and intrauterine environment effect on metabolic processes, tissues and disease in mother and offspring.
- Integration between circadian/sleep central and peripheral regulatory pathways and metabolic disease.
- Effects of diet and caloric excess in microbiota and impact on metabolic tissues and the development of metabolic disease.
- Mechanistic studies related to the effects of bariatric surgery, diet and exercise on metabolic tissues including adipose, liver, skeletal muscle and the central and peripheral nervous system.
- Analysis of endocrine signaling among the pancreas, adipose tissue, liver and skeletal muscle; nutrient storage and release and communication among these tissues; insulin action in adipose, liver, muscle and neural processes; and analysis of whole-body insulin resistance (including integration between tissues).
- Investigation of intermediary metabolic pathways and mitochondrial function in metabolic tissues related to diabetes and obesity; and physiologic integration of thermogenic processes and energy homeostasis.
- Inflammatory regulation of metabolism and energy balance, including the analysis of cellular and molecular responses to cytokine and adipokine levels and the role of immune cells.

Shared Interests and Overlaps:

There are shared interests with **Human Studies of Diabetes and Obesity (HSDO)** in the investigation of signaling pathways that regulate metabolic diseases. Applications focused on human interventions and clinical trials may be reviewed in **HSDO**, while those that focus on cell or animal models to investigate metabolic regulation of obesity or diabetes may be reviewed here.

There are shared interests with **Basic Mechanism in Diabetes and Metabolism (BMDM)** in the investigation of signaling pathways that modulate metabolic processes. Applications focused on genetic/epigenetic regulation, differentiation and function of islet, beta cells and adipocytes may be reviewed in **BMDM**, while those that focus on interactions of endocrine signaling pathways of adipocytes, pancreatic islet cells and their communication with the brain may be reviewed here.

There are shared interests with **Nutrition and Metabolism in Health and Disease (NMHD)** in the investigation of nutritional communication with the brain. Applications focused on nutritional, dietary, microbiota influences on brain metabolism may be reviewed in **NMHD**, while those that focus on the effect caloric excess on neural signaling pathways modulating food intake and peripheral metabolism, even when the specific contribution of microbiota changes is investigated, may be reviewed here.

There are shared interests with **Behavioral Neuroendocrinology, Neuroimmunology, Rhythms, and Sleep (BNRS)** in the investigation of neural signaling pathways and metabolic regulation. Applications focused on the neurobiological basis of behavior affecting obesity may be reviewed in **BNRS**, while those that focus on signaling pathways to investigate neural regulatory pathways modulating metabolic homeostasis, including those investigating alteration of circadian/sleep patterns, may be reviewed here.

There are shared interests with **Skeletal Muscle Biology and Exercise Physiology (SMEP)** in the investigation of metabolic pathways and mitochondrial function in skeletal muscle. Applications focused on oxidative stress, mitochondrial dysfunction, energy and substrate metabolism in normal and disease states when skeletal muscle function is the primary focus, may be reviewed in **SMEP**, while those that focus on insulin action, cytokines, adipokines and inflammatory regulation of metabolic and energy control of skeletal muscle related to obesity and diabetes may be reviewed here.

There are shared interests with **Cellular Mechanisms in Aging and Development (CMAD)** in metabolic regulation. Applications focused on dietary/caloric restrictions to regulate metabolism in extending lifespan may be reviewed in **CMAD**, while those studying neural signaling pathways in metabolic regulation in response to dietary changes may be reviewed here.

HSDO - The **Human Studies of Diabetes and Obesity (HSDO)** study section primarily reviews applications related to clinical and translational research associated with prevention and treatment of diabetes and obesity. Interventions may include lifestyle, diet, exercise, pharmacotherapies, behaviors, and surgery. Approaches may include human studies and clinical trials.

Topics:

- Clinical trials across the life span to evaluate the efficacy of lifestyle (e.g. diet,physical activity, sleep), pharmacologic, biologic, or surgical interventions for prevention or treatment of diabetes and obesity and their metabolic complications.
- Translational studies to understand the mechanisms of interventions for preventing or treating diabetes and obesity.
- Human studies to understand the pathogenic mechanisms of diabetes and obesity, including retrospective studies, secondary data analysis.
- Studies to validate applications of genomics, phenotyping, technologies, and biomarkers or other new outcome measures for therapeutic purpose for diabetes and obesity.
- Studies to investigate the effects of gestational diabetes or maternal obesity on mother/ offspring metabolic health, and the effects of interventions on the metabolicoutcomes.
- Effects of central nervous system and behavioral interventions on prevention or treatment of diabetes and obesity.

Shared Interests and Overlaps:

There are shared interests with **Pathophysiology of Obesity and Metabolic Disease (POMD)** in the investigation of pathogenic mechanisms and treatment of diabetes and obesity. Application that utilize cells or animal models to address these interests may be reviewed by **POMD**, while those that focus on human studies and clinical trials on these interests may be reviewed here.

There are shared interests with **Basic Mechanisms of Diabetes and Metabolism (BMDM)** in the investigation of metabolic regulation of type 1 and type 2 diabetes. Applications that utilize cells or animal models to address these interests may be reviewed in **BMDM**, while those that focus on human studies and clinical trials on these areas may be reviewed here.

There are shared interests with **Nutrition and Metabolism in Health and Disease (NMHD)** in the investigation of effects of maternal nutrition on fetal development and metabolic health in offspring. Applications that focus on impacts of maternal nutrition on metabolic health outcomes in offspring (including animal models) may be reviewed by **NMHD**, while those that focus on the effects

of human gestational diabetes or maternal obesity on mother/fetal metabolic health during pregnancy and postnatal stage may be reviewed here.

There are shared interests with **Pregnancy and Neonatology Study Section (PN)** in the investigation of effects of obesity and gestational diabetes on pregnancy. Applications that focus on understanding the physiology underlying diabetic complications to pregnancy progression, placental/fetal development and clinical obstetric may be reviewed in **PN**, while those that focus on effects of maternal obesity and gestational diabeteson maternal and offspring metabolic health outcomes may be reviewed here.

There are shared interests with **Kidney, Nutrition, Obesity and Diabetes (KNOD)** in the investigation of prevention of diabetes and obesity. Applications that focus on characterizing risk or protective factors of diabetes and obesity at the population level may be reviewed in **KNOD**, while those that focus on the identification of factors that modulate diabetes and obesity prevention and treatment may be reviewed here.

There are shared interests with **Genetics of Health and Disease (GHD)** in the investigation of genomic regulation of obesity and diabetes. Applications focused on disease gene discovery with complex genetic and genomic methods may be reviewed in **GHD**, while those that focus on the understanding of genomic regulation of diabetes and obesity pathogenesis may be reviewed here.

There are shared interests with **Lifestyle Change and Behavioral Health (LCBH)** and **Biobehavioral Medicine and Health Outcomes (BMHO)** in the investigation of obesity risk factors. Applications that focus on psychosocial/behavioral understanding of obesity risks or weight loss maintenance may be reviewed in **LCBH** or **BMHO**, while those that focus on biological and physiological risk factors of obesity may be reviewed here.

Nutrition and Metabolism Group

NMHD - The **Nutrition and Metabolism in Health and Disease (NMHD)** study section reviews applications concerned with mechanisms of macro- and micro-nutrient transport and processing and impacts on metabolism and physiological and pathophysiological pathways and outcomes. Emphasis spans relevant research performed in vitro and in animal models and human subjects, including clinical trials.

Topics:

- Nutrient sensing of dietary patterns, components and metabolites (including carbohydrates, amino acids, fatty acids, bile acids and other substrates) and impacts on metabolic regulation.
- Nutrient (including prebiotic) effects on microbiota community structure and function and impacts on host metabolism and disease etiology.
- Effects of maternal and postnatal nutrition on fetal and postnatal metabolic programing, development and health.
- Sterol, lipid and lipoprotein transport and metabolism in physiological and pathophysiological processes, including nonalcoholic fatty liver disease (NAFLD) and related aspects of cardiometabolic syndrome.
- Vitamin and mineral requirements, absorption, utilization, metabolism and function, including genetics affecting these processes.
- Physiologic and pathophysiologic mechanisms of chronic and intermittent micro- and macronutrient excess, deficiency and restriction, including impacts on brain development, cognition, immune function, and metabolic homeostasis; identification and assessment of biomarkers of food and nutrient exposures.
- The role of phytochemicals and food additives, including non-caloric artificial sweeteners, on metabolism, oxidative stress, inflammation and other cellular and physiologic and pathophysiologic processes.

Shared Interest and Overlaps:

There are shared interests with **Pathophysiology of Obesity and Metabolic Disease (POMD)** in the investigation of nutrient effects on the central nervous system. Applications focused on nutrient impacts on neuronal circuits and signaling pathways regulating food behavior and energy metabolism may be reviewed in POMD, while those focusing on nutritional and microbiota influences on brain development and cognition may be reviewed here.

There are shared interests with **Basic Mechanisms of Diabetes and Metabolism (BMDM)** in the investigation of cellular mechanisms of macronutrient sensing and signaling in metabolic tissues. Applications focused on macronutrient sensing and signaling related to energy metabolism by islet cells and adipocytes may be reviewed **BMDM**, while those focused on nutrient sensing and signaling in metabolic regulation broadly may be reviewed here.

There are shared interests with **Human Studies of Diabetes and Obesity (HSDO)** in the investigation of effects of maternal nutrition on fetal development and metabolic health in offspring. Applications that focus on the effects of human gestational diabetes or maternal obesity on mother/fetal metabolic health during pregnancy and postnatal stage may be reviewed in **HSDO**, while those that focus on impacts of maternal nutrition on metabolic health outcomes in offspring (including animal models) may be reviewed here.

There are shared interests with **Pregnancy and Neonatology (PN)** in the investigation of maternal and postnatal nutrient and dietary exposures and effects on fetal health outcomes. Applications focused on impacts of other metabolism-related complications, including gestational diabetes, on fetal development and health may be reviewed in **PN**, while those that focus on nutritional effects on maternal and infant programming and metabolic health may be reviewed here.

There are shared interests with **Digestive and Nutrient Physiology and Diseases (DNPD)** in the investigation of nutrient transport. Applications focused on the absorption and transport mechanisms within the GI tract may be reviewed in **DNPD**, while those that focus on the metabolic consequences of transport may be reviewed here.

There are shared interests with **Hepatobiliary Pathophysiology (HBPP)** in the investigation of lipid and sterol metabolic and signaling pathways in the liver. Applications focused on sterol and lipid metabolic impacts on liver development and inflammatory diseases may be reviewed in **HBPP**, while those that focus on these nutrient and metabolite effects on hepatic metabolism and the etiology of fatty liver disease may be reviewed here.

There are shared interests with **Atherosclerosis and Vascular Inflammation (AVI)**. Applications focused on cholesterol, lipid and lipoprotein interactions with vascular cells and impacts on atherogenesis and associated processes may be assigned to AVI, while those focused on the role of cholesterol, lipids and lipoproteins, including their synthesis, degradation, metabolism, utilization, and inter-organ flux and turnover, may be reviewed here.

Applications focused on cholesterol, lipid and lipoprotein interactions with vascular cells and impacts on atherogenesis and associated processes may be reviewed in **Atherosclerosis and Vascular Inflammation (AVI)**, while those focused on the role of cholesterol, lipids and lipoproteins, including their synthesis, degradation, metabolism, utilization, and inter-organ flux and turnover, may be reviewed here.

There are shared interests with **Cancer Prevention Study Section (CPSS)** in the investigation of nutritional and metabolic impacts on cellular physiology. Applications focused on corresponding nutritional effects on cancer chemoprevention may be reviewed in **CPSS**, while applications that focus on signaling pathways associated with specific nutrients, dietary patterns and obesity and effects on cell differentiation and growth may be reviewed here.

There are shared interests with **Skeletal Biology Development and Disease (SBDD)** in the investigation of nutrients effects and metabolic regulation of bone diseases. Applications focused on the corresponding effects on bone- and joint-related diseases may be reviewed in **SBDD**, while those that focus on nutrient metabolic and signaling pathways that modulate bone physiology may be reviewed here.

There are shared interests with **Skeletal Muscle Biology and Exercise Physiology (SMEP)** in the investigation of vitamins and nutrients effects on muscle function. Applications focused on the corresponding effects on skeletal muscle diseases, when skeletal muscle function is the primary focus, may be reviewed in **SMEP**, while those that focus on nutrient-related pathways that modulate muscle physiology may be reviewed here.

Endocrinology Group

CSME - The **Cell Signaling and Molecular Endocrinology (CSME)** study section review applications addressing molecular and cellular aspects of endocrine organs and their products in normal and pathological states. Areas covered include structural and molecular studies, receptor-mediated cell signaling mechanisms of hormones, growth factors, polypeptides and lipid-based ligands and regulation of gene expression. In vitro studies as well as in vivo models are included.

Topics:

- Molecular pathways involved in the synthesis, processing, folding, trafficking and secretion of local and circulating peptides and hormones (including insulin, steroid and thyroid).
- Nuclear Receptors: regulation, biochemistry and molecular mechanisms of action of androgen and estrogen receptors.
- Regulation, biochemistry and molecular mechanisms of action of glucocorticoids and other nuclear receptors (*e.g.* thyroid, PPARs, RXRs).

- Structural, biological and biophysical interactions of G-protein-coupled, nuclear and peptide hormone receptors.
- Hormonal regulation of gene expression: Epigenetics, chromatin structure, transcriptional regulators (*e.g.* DNA-binding proteins, coactivators/ corepressors), nuclear and mitochondrial transcription factors.
- Cell signaling and metabolic regulation of endocrine organs (thyroid, adrenal, parathyroid, endocrine pancreas, pituitary, bone); energy homeostasis (e.g. mitochondria).
- Hormone regulation of non-malignant cell growth and differentiation events.
- Cell signaling and epigenetic mechanisms controlling cell function, and gene expression in metabolic tissues (liver, adipocytes, skeletal muscle).
- Signaling mechanisms and epigenetic regulation of pancreatic islets cells growth and function.

Shared Interests and Overlaps:

There are shared interests with **Basic Mechanism in Diabetes and Metabolism (BMDM)** in the investigation of signaling pathways that regulate adipocytes and pancreatic islet cells. Applications focused on genetic determinants of pancreatic islets cells and adipocytes development and differentiation may be reviewed in **BMDM**, while those that focus on signaling pathways of factors that modulate pancreatic islets cells, and adipocytes growth and function may be reviewed here.

There are shared interests with **Cellular, Molecular and Integrative Reproduction (CMIR)** in the investigation of steroid/hormone signaling. Applications focused on endocrine regulation of male and female germ cell differentiation may be reviewed in **CMIR**, while those that focus on endocrine regulation of male and female reproductive physiology may be reviewed here.

There are shared interests with **Integrative and Clinical Endocrinology and Reproduction (ICER)** in the investigation of endocrine organ physiology. Applications focused on the regulation of non-malignant disorders of endocrine organs may be reviewed in **ICER**, while those that focus on endocrine organ(s): pituitary, thyroid, and adrenal may be reviewed by here.

There are shared interests with **Skeletal Biology Development and Disease (SBDD)** in the investigation of signaling pathways of peptide hormones and their receptors. Applications focused on paracrine factors involved in bone regulation may be reviewed in **SBDD**, while those that focus on steroid hormone signaling regulation of muscle and bone cells may be reviewed here.

There are shared interests with the **Molecular and Integrative Signal Transduction (MIST)** in the investigation of molecular mechanisms of cellular signaling. Applications focusing on basic biochemical and structural mechanisms of signal transduction, including G-proteins coupled receptors (GPCR) and their regulation may be reviewed in **MIST**, while applications that focus on the structural, biological and biophysical interactions of G-protein-coupled receptors in cell biology may be reviewed here.

There are shared interests with the **Membrane Biology and Protein Processing (MBPP)** in the investigation of the regulation of protein synthesis, processing and trafficking. Applications focusing on understanding the basic mechanisms of these processes may be reviewed by **MBPP**, while those that focus on molecular pathways involved in the synthesis, processing, folding, trafficking and secretion of local and circulating peptides and hormones may be reviewed here.

There are shared interests with the **Skeletal Muscle Biology and Exercise Physiology (SMEP)** in the investigation of molecular and cellular mechanisms of skeletal muscle function. Applications focusing on biochemical and molecular biology of muscle-specific proteins, skeletal muscle adaptation, energy and substrate metabolism when skeletal muscle function is the primary focus, may be reviewed in **SMEP**, while those that focus on cell signaling, energy homeostasis, epigenetic mechanisms controlling cell function and gene expression in skeletal muscle may be reviewed here.

There are shared interests with the **Oncology IRGs (OBT and OTC)** in the investigation of steroid/hormone signaling and their receptors and endocrine organs. Applications that encompass cancer initiation, promotion, progression, and metastasis may be reviewed in the **Oncology 1 – Basic Translational (OBT) IRG**. Applications involving investigations that encompass cancer prevention, diagnosis and treatment may be reviewed in the **Oncology 2 – Translational Clinical (OTC) IRG**. Applications focused on normal physiology of endocrine organs (e.g. adrenal, thyroid, parathyroid etc.) and applications using cancer cells as experimental models to study mechanisms of action of hormones and nuclear receptors may be reviewed here.