

CITY OF HOPE NATIONAL MEDICAL CENTER
Department of Diabetes, Endocrinology and Metabolism

Endocrine Fellowship Research Opportunities: 2006-2007

MOHAMAD AL-SAYED, M.D.

Assistant Professor

Dr. Mohamad Al-Sayed is the first endocrinologist in the nation certified by the United Network for Organ Sharing (UNOS) as an islet transplantation physician. He is an authority on insulin pump therapy and is experienced in adequate health care delivery of diabetic patients who qualify and receive islet transplantation. As a clinical investigator, Dr. Al-Sayed focuses on endocrine and immunological studies in addition to clinical islet transplantation.

KEN CHIU, M.D., FACE

Associate Professor

Ken Chiu, MD has an extended experience in the genetics and epidemiology of type 2 diabetes. His primary research focus is the genetic influence in the development of type 2 diabetes. With candidate gene approaches, Dr. Chiu studies the impact of the functioning common polymorphisms on insulin sensitivity and beta cell function. He also investigates the interaction of genetic and environmental factors in the development of type 2 diabetes. His third focus is to evaluate the role of the traditional Chinese medicine in the treatment of type 2 diabetes.

WEI FENG, MD

Assistant Professor

Dr. Wei Feng has lead our endocrinology team in a clinical trial to evaluate the utility of a new insulin delivery system that allows a dry powder form of insulin to be delivered to the lungs. Preliminary results have shown that inhaled insulin can be readily absorbed from the lungs and works as rapidly as injected insulin in patients with diabetes. Dr. Feng is currently conducting a clinical study to determine the effects of long-term administration of Nateglinide and Valsartan in the prevention of diabetes and cardiovascular disease.

BARRY FORMAN, M.D., PH.D.

Professor

Director, Gene Regulation and Drug Discovery

Dr. Barry Forman's laboratory uses orphan nuclear receptors to elucidate novel hormone signaling pathways that participate in normal physiological processes and in disease states. Their work has led to the discovery of unexpected regulatory molecules, including bile acids, steroid, androstans, eicosanoids and xenobiotics. The nuclear orphan receptors PPAR, LXR and FXR have been identified as being involved in cholesterol homeostasis. Dr. Forman and his colleagues also discovered Androstanol, the first new steroid-like hormone to be identified in the past 30 years. Unlike other hormones that stimulate the activity of genes, Androstanol is the first hormone found to reverse or halt gene activity. Current projects in Dr. Forman's lab are aimed at understanding the molecular mechanisms underlying hormone-dependent receptor activation, identification of natural and synthetic ligands by chemical fractionation, HPLC and high-throughput screening; and *in vivo* physiology of these receptors using gene knockout and transgenic technology.

FOUAD KANDEEL, M.D., PH.D.

Director, Department of Diabetes, Endocrinology and Metabolism

As the Director of the Department of Diabetes, Endocrinology and Metabolism, Dr. Fouad Kandeel oversees the departmental clinical and research programs. His research pursuits include studies on male and female reproductive medicine, insulin resistance, genetic linkage between diabetes and coronary disease in patients with type 2 diabetes, and islet cell transplantation in patients with type 1 diabetes. Currently, he is leading the clinical and research effort in islet cell transplantation through the establishment of the Southern California Islet Cell Resources (SC-ICR) Center at City of Hope and the development of a region-wide consortium among academic institutions to determine the safety and efficacy of islet transplantation as a treatment for patients with type 1 diabetes. Due to his strong background in endocrine tumors and thyroid cancer, Dr. Kandeel also participates in the development of guidelines for the management of neuroendocrine tumors and thyroid cancer sponsored by the National Comprehensive Cancer Network and is conducting studies in compassionate ¹³¹I-MIBG treatment and the use recombinant thyrotropin injections as a substitute for thyroid hormone withdrawal.

CHIH-PIN LIU, PH.D.

Associate Professor

Associate Professor, Division of Immunology

Dr. Chih-Pin Liu's laboratory is investigating T-cell antigen receptor (TCR) signaling events in T-cell mediated immunity and the role of T-cells in autoimmune disease. Through their research, they have been able to isolate several lines of potent regulatory T-cells (Tr cells) that are specific for glutamic acid decarboxylase, which is a major protein involved in type 1 diabetes. These studies have provided evidence that Tr cells may exert regulatory function by suppressing the proliferation of disease-causing T cells and can function by secreting various immunosuppressive soluble factors. Current projects in Dr. Liu's lab are aimed at understanding the molecular and cellular mechanisms underlying T-cell mediated immunity against tumors and the roles of T-cells in regulating inflammatory and autoimmune diseases, determining the mechanisms that regulate T-cell functions responsible for tumor immunity and autoimmunity, and understanding the molecular and cellular mechanisms underlying the regulation of pathogenic T cell by Tr cells that lead to prevention of type 1 diabetes and examine whether Tr cells can be used as a treatment to prevent the immune destruction of islet grafts in an animal model for islet transplantation.

YOKO MULLEN, M.D., PH.D.

Research Scientist

Director, Islet Quality Control and Research Development at the SC-ICR Center

Dr. Yoko Mullen is an established investigator in islet cell isolation and preparation for transplantation into humans for over 20 years. She is recognized nationally and internationally for her islet cell work and has developed a patented unique and efficient two-step method for islet isolation. As Director of Islet Quality Control and Research Development, Dr. Mullen supervises all activities performed by the islet isolation core and is responsible for evaluating yield, function and viability of each islet preparation as well as granting islet certification for human transplantation. Currently, Dr. Mullen's lab is performing investigations on animal and human cell biology and transplantation, including the development of new immune tolerance induction strategies and alternative sites to the portal vein infusion of transplanted islets.

RAMA NATARAJAN, PH.D.**Professor**

Dr. Rama Natarajan is leading a research team to study mechanisms involved in the development of atherosclerosis and kidney disease in diabetic patients. Her team collaborates with investigators at University of California Los Angeles (UCLA) and University of Southern California (USC), as well as several research teams across the country. Dr. Natarajan is also initiating studies to evaluate potential markers of islet rejection in type 1 diabetes patients undergoing islet transplantation. Studies show that infiltration of monocytes/macrophages into islets release cytokines, which can play major roles in pancreatic islet destruction leading to diabetes. Dr. Natarajan's studies are expected to yield important data that will allow clinicians to predict and/or monitor the development of islet rejection. Such research may also lead to the development new therapies, such as gene transfer approaches, that will not only improve islet graft survival, but may also delay and/or prevent the development of type 1 diabetes.

MICHAEL RACINE, M.D.**Staff Physician**

Dr. Michael Racine's primary area of research interest is in hypothalamic-pituitary function and growth in survivors of childhood cancer. He is currently conducting clinical studies to better understand type 1 diabetes and its onset in the relatives of patients with type 1 diabetes, determine an effective treatment regimen for advanced or metastatic adrenocortical carcinoma, and employ the use of Thyrogen[®] to detect thyroid cancer.

SAMUAL RAHBAR, PH.D.**Professor**

The early work of Dr. Samuel Rahbar resulted in the fundamental discovery of Hgb-A1c as an indicator of blood glucose in diabetes. More recently, Dr. Rahbar's studies have focused on advanced glycation endproducts (AGEs). Often AGEs can lead to one or more of the many life-threatening complications associated with diabetes, including damage to the kidneys, nerves, blood vessels and heart and have also been found to accelerate the aging process. A three-year study conducted by Dr. Rahbar in association with Albert Einstein College of Medicine in New York has resulted in the development of compounds that can inhibit the formation of AGEs. The success of this trial could provide a means for preventing and/or reversing diabetic complications and delaying the aging process.

DEFU ZENG, M.D.**Assistant Professor**

Dr. Defu Zeng is an established scientist in the field of immune tolerance and has studied the composition of bone marrow T cells and their potential role in organ transplantation. Dr. Zeng's lab works closely with the islet transplantation and bone marrow transplantation teams at City of Hope to develop new strategies for inducing immune tolerance of transplanted islets via the establishment of mixed chimerism using bone marrow stem cells and regulatory T cells. Additionally, Dr. Zeng is expanding his research to develop new immune therapy approaches to prevent type 1 diabetes. Projects in Dr. Zeng's lab also include anti-CD3 conditioning for induction of mixed chimerism for islet cell transplantation, anti-CD3 conditioning for allogeneic BMT for treatment of leukemia, anti-CD3 conditioning for induction of mixed chimerism for treatment of new onset diabetes; and stimulation of the human immune system in mice.