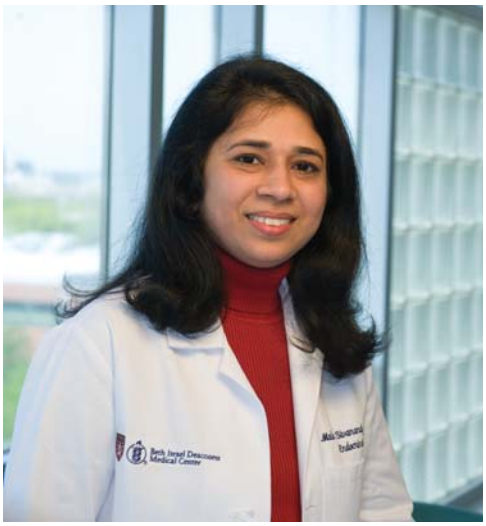
Endocrinology, Diabetes and Metabolism

Barbara Kahn, MD, Chief

Pamela Hartzband, MD, in the Thyroid Nodule Center

The Division of Endocrinology, Diabetes and Metabolism has three major goals: to deliver outstanding patient care in both the ambulatory and inpatient setting; to provide superb training for medical students, house officers and fellows; and to perform outstanding biomedical research that reaches from the laboratory bench to the patient bedside. The Division continues to grow both clinically and academically as both patient visits and research funding continue to increase. This year was another banner year for the Division in all of above the areas and we continue, in collaboration with our colleagues at the Joslin Diabetes Center, to be recognized nationally by U.S. News and World Report where we rank 14th in the nation.



Mala Sivanandy, MD

2009–2010 HIGHLIGHTS

Multidisciplinary Care for Polycystic Ovarian Syndrome (PCOS)

PCOS is one of the most common Endocrine disorders in women of all ages. It includes a multitude of symptoms and signs that can include menstrual irregularities, infertility, hirsutism, obesity and type 2 diabetes. While the underlying pathogenesis remains unclear, improvements in clinical outcome can be obtained through comprehensive medical care.

The Thyroid Nodule Center (TNC) – The TNC, under the direction of Dr. Pamela Hartzband, was established 10 years ago to allow one-stop shopping for patients and allow them to undergo complete care in a single visit with collaboration between multiple Departments. This year 671 patients were seen in the TNC.

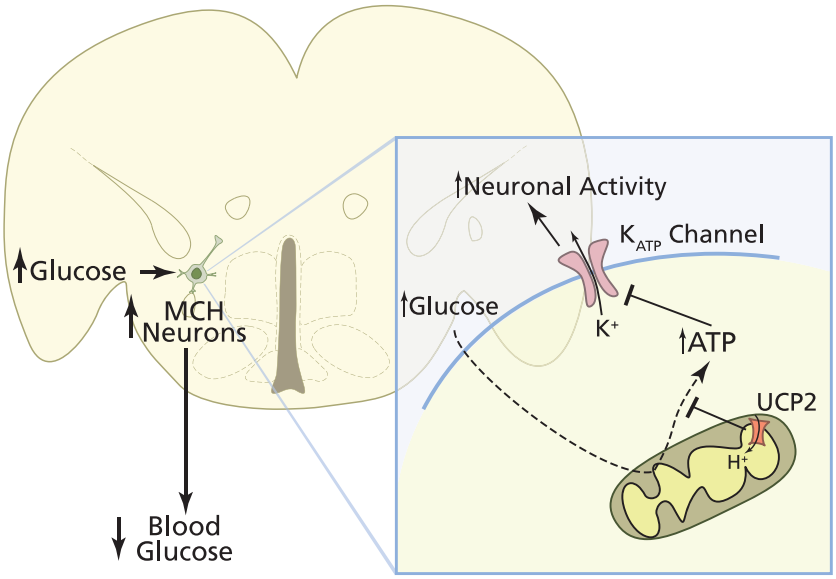
Under the direction of Instructor in Medicine Dr. Mala Sivanandy, the Division of endocrinology has established a multidisciplinary center to see patients with PCOS. In addition to complete Endocrine care for both reproductive and metabolic complications of PCOS, the center features subspecialists in Dermatology and lifestyle modifications to assist in the treatment of hirsutism and obesity, frequent complications of PCOS. Importantly, this comprehensive care plan is available to the individual patient on a single visit and establishes a unique portal for referral for patients with PCOS.

Discovery of FGF-21 as a Regulator of Metabolism

Obesity and type 2 diabetes are escalating at alarming rates around the world and new therapies based on the biology of these disorders are rapidly needed. To accomplish this, the Division has built one of the most outstanding research programs in this area in the country. An example of the progress made comes from the laboratory of Dr. Eleftheria Maratos-Flier, Professor of Medicine at Harvard Medical School.

Using a ketogenic diet in mice, her laboratory discovered that the hormone fibroblast growth factor 21 (FGF-21) was rapidly induced by this diet in the liver and played an essential role in mediating the effects of the ketogenic diet, including weight loss and fatty acid metabolism.

While earlier studies had identified FGF-21 as potentially playing a role in glucose homeostasis, this discovery established FGF-21 as a bona fide



Glucose-Excited MCH Neurons in Lateral Hypothalamus. Work from the laboratory of Brad Lowell identified a set of neurons in the lateral hypothalamus that play a key role in sensing and determining blood glucose levels. (Cell Metab 2010; 12:545-52)

HONORS AND AWARDS

Christian Bjorbaek, MD, was elected to Editorial Board, *Endocrinology*

Alina Gavrila, MD, received Excellence in Ambulatory Teaching in Subspecialty Medicine Award, Shapiro Institute, Beth Israel Deaconess Medical Center, Harvard Medical School

James Hennessey, MD, was Chair, 2009-2010 Program Planning Committee, American Association of Clinical Endocrinologists, New England Region; and received the 2010 Peter Forsham Award, Society of Uniformed Endocrinologists for Academic Excellence

Alan Malabanan, MD, was listed in "Best Doctors in America" database

Barbara Kahn, MD, was the 2009 Inaugural Willard J. and Priscilla F. Visek Lecturer, University of Illinois, Urbana, IL; and the 2010 Beth Zaruby Lecturer at the Julia McFarlane Diabetes Research Centre, University of Calgary, Alberta, Canada. She also received a 2010-2011 Fellowship for Advanced Study from the Radcliffe Institute, Harvard University, Cambridge, MA

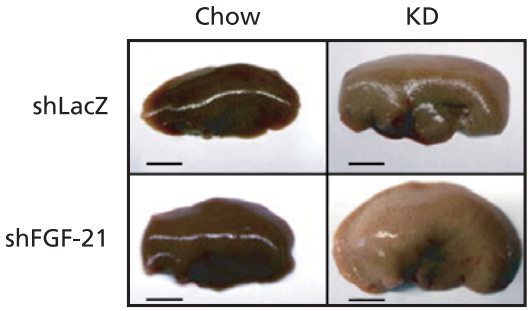
Christos Mantzoros, MD, DSc, was appointed Professor of Medicine, Harvard Medical School and Professor of Environmental Health, Harvard School of Public Health. He was named Chief, Endocrinology Section, Boston VA Healthcare System

Eleftheria Maratos-Flier, MD, was promoted to Professor of Medicine, Harvard Medical School

Johanna Pallotta, MD, received AACE Outstanding Clinical Endocrinologist Award (Conferred at AACE's 19th Annual Meeting and Clinical Congress, Boston, April 2010)

Evan Rosen, MD, was elected to the American Society for Clinical Investigation; and promoted to Associate Professor of Medicine, HMS

Harold Rosen, MD, received Clinician of the Year Award, International Society of Clinical Densitometry



FGF-21 regulates hepatic fat accumulation. The ketogenic diet (KD) is known to cause fat accumulation in the liver. However, when FGF-21 levels are reduced (shFGF-21), fat accumulation is significantly greater.

regulator of metabolism and potentially a new therapy for obesity and type 2 diabetes. Indeed, recent studies by Dr. Jody Dushay, Instructor in Medicine at HMS, have established a potential role for FGF-21 in humans with non-alcoholic liver disease including fatty liver (NAFLD) and steatohepatitis (NASH) a significant complication of obesity. It is hoped that further work on FGF-21 both at the bench and at the bedside will establish a role for it in the treatment of metabolic disorders in humans.

SELECTED PUBLICATIONS

Herman M, She P, Peroni OD, Lynch CJ, Kahn BB. Adipose tissue branched-chain amino acid (BCAA) metabolism modulates circulating BCAA levels. *J Biol Chem* 2010; 285:11348-56.

Hennessey JV, Malabanan AO, Haugen BR, Levy EG. Adverse event reporting in patients treated with levothyroxine: Results of the Phamacovigilance Task Force. *Endocr Pract* 2010; 16:357-70.

Alexandrov BS, Gelev V, Yoo SW, Alexandrov LB, Fukuyo Y, Bishop AR, Rasmussen KØ, Usheva A. DNA dynamics play a role as a basal transcription factor in the positioning and regulation of gene transcription initiation. *Nucleic Acids Res* 2010; 38:1790-5.

Whittaker LG, Rosen RJ, Malabanan AO, Rosen HN. Effect of implementing a computerized system for bone mineral density storage and report preparation on result turnaround time and savings in cost, time, and space. *Endocr Pract* 2010; 16:30-5.

Hartzband P, Groopman J. Keeping the patient in the equation – humanism and health care reform. *N Engl J Med* 2009; 361:554-5.

Dushay J, Chui PC, Gopalakrishnan GS, Varela-Rey M, Crawley M, Fisher FM, Badman MK, Martinez-Chantar ML, Maratos-Flier E. Increased fibroblast growth factor 21 in obesity and nonalcoholic fatty liver disease. *Gastroenterology* 2010; 139:456-63.

Ruschke K, Fishbein L, Dietrich A, Klöting N, Tönjes A, Oberbach A, Fasshauer M, Jenkner J, Schön MR, Stumvoll M, Blüher M, Mantzoros CS. Gene expression of PPARgamma and PGC-1alpha in human omental and subcutaneous adipose tissues is related to insulin resistance markers and mediates beneficial effects of physical training. *Eur J Endocrinol* 2010; 162:515-23.

Kong D, Vong L, Parton LE, Ye C, Tong Q, Hu X, Choi B, Brüning JC, Lowell BB. Glucose stimulation of hypothalamic MCH neurons involves KATP channels, is modulated by UCP2, and regulates peripheral glucose homeostasis. *Cell Metab* 2010; 12:545-52.

FACULTY

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