
BIOGRAPHICAL SKETCH

NAME: Wondisford, Fredric E.

eRA COMMONS USER NAME (credential, e.g., agency login): fwondisf

POSITION TITLE: Henry Rutgers Professor and Chair of Medicine, Rutgers-Robert Wood Johnson School of Medicine

EDUCATION/TRAINING (*Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable. Add/delete rows as necessary.*)

INSTITUTION AND LOCATION	DEGREE (if applicable)	Completion Date MM/YYYY	FIELD OF STUDY
Youngstown State University, Youngstown, OH	B.S.	06/83	Combined Sciences
Northeastern Ohio College of Medicine, Rootstown, OH	M.D.	06/83	Medicine
Weill Cornell Graduate School, Cornell University NY, NY	M.S.	05/22	Health Policy Research
Johnson College of Business, Cornell University Ithaca, NY	M.B.A.	05/22	Business Administration

A. Personal Statement

I am the Henry Rutgers Professor and Chair of Medicine, Rutgers-RWJMS. In this position, I oversee a Department with 158 full-time and 440 affiliate faculty members. Before this appointment, I was Professor of Medicine, Pediatrics, and Physiology and Director of the Metabolism Division and Diabetes Institute at Johns Hopkins University School of Medicine. My laboratory is focused on two main projects. The first focus concerns the role of nuclear thyroid hormone receptors in controlling metabolism and feeding. This work will be supported by R01 DK136661: Hypothalamic Regulation by Thyroid Hormone Receptor Phosphorylation. The second focus is to understand how hepatic glucose production is regulated in patients with type 2 diabetes. My laboratory has a long-standing interest in understanding the mechanism of controlling hepatic gluconeogenesis. My work on glucose production in liver action will be supported by R01 DK129919: Glycerol Regulation of Gluconeogenesis and Fatty Acid Metabolism

B. Positions and Honors

Positions

2017- Henry Rutgers Chair
2015- Professor of Medicine and Chancellor Scholar, Rutgers-Robert Wood Johnson Medical School, New Brunswick, NJ
2015- Adjunct Professor of Medicine, Johns Hopkins University School of Medicine, Baltimore, MD
2005-2015 Professor of Medicine, Pediatrics, and Physiology (with tenure), Johns Hopkins University School of Medicine, Baltimore, MD
2004-2005 Fredrick H. Rawson Professor of Medicine, The University of Chicago, Chicago, IL
2000-2005 Professor of Medicine (with tenure), Pritzker School of Medicine, The University of Chicago, Chicago, IL
1996-2000 Associate Professor of Medicine, Harvard Medical School, Boston, MA
1992-1996 Assistant Professor of Medicine, Harvard Medical School, Boston, MA
1990-1992 Assistant Professor of Medicine, Case Western Reserve University Medical School, Cleveland, OH

- 1985-1987 Adjunct Instructor, Department of Biochemistry, Northeastern Ohio Universities College of Medicine
- 1988-1990 Senior Staff Fellow, MCNEB, NIDDK, NIH, Bethesda, MD, endocrinology research Fellowship
- 1986-1988 Medical Staff Fellow, MCNEB, NIDDK, NIH, Bethesda, MD, endocrinology research Fellowship
- 1984-1986 Department of Medicine, University Hospitals of Cleveland and Case Western Reserve University, Cleveland, OH, residency in internal medicine
- 1983-1984 Department of Medicine, University Hospitals of Cleveland and Case Western Reserve University Medical School, Cleveland, OH, internship in internal medicine

Professional Memberships

- 2015- Association of Professors of Medicine (APM)
- 2002- American Diabetes Association
- 2000- Association of American Physicians (AAP)
- 1995- American Society for Clinical Investigation (ASCI)
- 1991- American Thyroid Association
- 1990- Endocrine Society
- 1990 American Federation for Clinical (Medical) Research

Honors

- 2015 Rutgers Biomedical Health Sciences Institutional Representative for the ASCI
- 2014 W. Barry Wood Jr. Award- Given to the most outstanding preclinical teacher at Johns Hopkins University School of Medicine
- 2012 Sidney H. Ingbar Distinguished Lectureship, American Thyroid Association- This award recognizes outstanding academic achievements in the field of thyroidology and is conferred upon an established investigator who has made major contribution in thyroid-related research over many years.
- 2009 Knoll Award Finalist, The Endocrine Society (for excellence in thyroid research)
- 2007 Knoll Award Finalist, The Endocrine Society (for excellence in thyroid research)
- 2007 Ingbar Memorial Lecture and Award, Harvard Medical School, Boston MA
- 2003 American Federation for Medical Research - Outstanding Investigator Award
- 2002 University of Chicago Institutional Representative for the ASCI
- 2000 Knoll Award Finalist, The Endocrine Society (for excellence in thyroid research)
- 1999 13th Annual Farahe Maloof Lecturer, Massachusetts General Hospital, Boston MA
- 1998 Van Meter Award, The American Thyroid Association
- 1997 Knoll Award, The Endocrine Society (for excellence in thyroid research)
- 1994 Richard E. Weitzman Memorial Award, The Endocrine Society
- 1993 Knoll Award Finalist, The Endocrine Society (for excellence in thyroid research)
- 1990 Young Investigator's Award, Central Society for Clinical Research
- 1990 Henry Christian Memorial Award, American Federation for Clinical Research
- 1989 Fellowship Trainee Award, American Federation for Clinical Research
- 1986 Award for outstanding senior resident, Case Western Reserve University-University Hospitals
- 1985 Research Award, Department of Medicine, Case Western Reserve University
- 1983-1986 Medical House staff representative, Case Western Reserve University
- 1983 Clarence P. Gould Honorary (Phi Beta Kappa) Academic Society
- 1982 Alpha Omega Alpha
- 1979-1981 Medical school class representative to the Liaison Committee for Medical Education
- 1977 Bausch and Lomb Honorary Science Award for science excellence in the State of Ohio
- 1975 National Honor Society

C. Contributions to Science (180 publications, H-index 85)

1. **Thyroid hormone regulation of the hypothalamic pituitary thyroid (HPT) axis** My laboratory has had a long-standing interest in thyroid hormone regulation. Cell culture and mouse models with targeted disruptions of feedback regulation have been studied. Novel insights in the mechanism of negative thyroid hormone and nutritional regulation have been obtained from these studies.

- Chiamolera MI, Sidhaye AR, Matsumoto S, He Q, Hashimoto K, Ortiga-Carvalho TM, **Wondisford FE**. Fundamentally distinct roles of thyroid hormone receptor isoforms in a thyrotroph cell line are due to differential DNA binding. *Mol Endocrinol*. 2012 26(6):926-39. PMID: 22570333
 - Pinto VMS, Minakhina S, Qiu S, Sidhaye A, Brotherton MP, Suhotliv A, **Wondisford FE**. Naturally Occurring Amino Acids in Helix 10 of the Thyroid Hormone Receptor Mediate Isoform-Specific TH Gene Regulation. *Endocrinology*. 2017, 158:3067-3078. PMID: 28911178
 - Minakhina S, Bansal S, Zhang A, Brotherton M, Janodia R, De Oliveira V, Tadepalli S, **Wondisford FE**. A Direct Comparison of Thyroid Hormone Receptor Protein Levels in Mice Provides Unexpected Insights into Thyroid Hormone Action. *Thyroid*. 2020 30(8):1193-1204. PMID: 32122258
 - Minakhina S, De Oliveira V, Kim SY, Zheng H, **Wondisford FE**. Thyroid hormone receptor phosphorylation regulates acute fasting-induced suppression of the hypothalamic-pituitary-thyroid axis. *Proc Natl Acad Sci U S A*. 2021 Sep 28;118(39):e2107943118. PMID: 34544870
2. **Hormone and substrate control of hepatic glucose production in diabetes** My laboratory determined for the first time a plausible mechanism by which metformin regulates hepatic glucose production. Metformin phosphorylates CBP on a unique serine residue and these studies were extended to show that phosphorylation of this site could be used as a biomarker for metformin action. We are now using metabolomic and fluxomics to probe substrate control of gluconeogenesis.
- Wang Y, An H, Liu T, Qin C, Sesaki H, Guo S, Radovick S, Hussain M, Maheshwari A, **Wondisford FE**, O'Rourke B, He L. Metformin Improves Mitochondrial Respiratory Activity through Activation of AMPK. *Cell Rep*. 2019 29(6):1511-1523. PMID: 31693892
 - Wang Y, Kwon H, Su X, **Wondisford FE**. Glycerol not lactate is the major net carbon source for gluconeogenesis in mice during both short and prolonged fasting. *Mol Metab*. 2020, 31:36-44. PMID: 31918920. Outstanding article of the issue, featured on the cover
 - Shah A, Wang Y, Su X, **Wondisford FE**. Glycerol's contribution to lactate production outside of a glucose intermediate in fasting humans. *Metabolism*, 2022, 132:155214.
 - Xu H, Kalemba K, Wang Y, Kwon H, McMillin SM, Su X, **Wondisford FE**. Glycerol Regulates Glucagon-Stimulated Gluconeogenesis *J Biol Chem* 2022, 298:102708.
3. **Mechanisms by which the CBP/P300 co-activators act in health and disease** While studying gene regulate on in the anterior pituitary, my laboratory determined that CBP/p300 co-activators played critical and distinct roles in both cellular development and hormonal gene regulation. Subsequently, these studies were extended to the pancreatic beta cell, hepatocyte and CNS.
- He L, Sabet A, Miller R, Djedos S, Hussain MA, Sun X, Radovick S, **Wondisford FE**. Metformin and insulin suppress hepatic gluconeogenesis by inhibiting cAMP signaling through phosphorylation of CREB binding protein (CBP), *Cell* 2009, 137:635-646. PMID: 19450513. Editorial – White, MF. Metformin and insulin meet in a most atypical way *Cell Metabol*. 2009, 9:485-487.
 - Gouveia A, Seegobin M, Kannangara TS, He L, **Wondisford FE**, Comin CH, Costa LDF, Béïque JC, Lagace DC, Lacoste B, Wang J. The aPKC-CBP Pathway Regulates Post-stroke Neurovascular Remodeling and Functional Recovery. *Stem Cell Reports*. 2017 9:1735-1744. PMID: 29173896
 - Syal C, Seegobin M, Sarma SN, Gouveia A, Hsu K, Niibori Y, He L, **Wondisford FE**, Frankland PW, Wang J. Ectopic expression of aPKC-mediated phosphorylation in p300 modulates hippocampal neurogenesis, CREB binding and fear memory differently with age. *Sci Rep*. 2018 8(1):13489. PMID: 30201979
 - Kosaraju J, Seegobin M, Gouveia A, Syal C, Sarma SN, Lu KJ, Ilin J, He L, **Wondisford FE**, Lagace D, De Repentigny Y, Kothary R, Wang J. Metformin promotes CNS remyelination and improves social interaction following focal demyelination through CBP Ser436 phosphorylation. *Exp Neurol*. 2020 334:113454. PMID: 32877653
4. **Characterization of TSH subunit genes and their expression** My laboratory was the first to clone the unique TSH-beta subunit gene in humans and express it with the common TSH-alpha subunit to produce biologically active human TSH in tissue culture. Dr. Wondisford holds two US patents on TSH synthesis, and these patents were licensed to Genzyme to produce Thyrogen, which is currently used extensively in the diagnosis and treatment of thyroid cancer.
- **Wondisford FE**, Usala SJ, DeCherney GS, Castren M, Radovick S, Gyves PW, Trempe JP, Kerfoot BP, Nikodem VM, Carter BJ, Weintraub BD. Cloning of the human thyrotropin gene □-

subunit and transient expression of biologically active human thyrotropin after gene transfection. *Mol Endocrinol*, 1988; 2:32-39 PMID: 3398841.

- **Wondisford FE**, Radovick S, Moates JM, Usala SJ, Weintraub BD. Isolation and characterization of the human thyrotropin β -subunit gene. Differences in gene structure and promoter function from murine species. *J Biol Chem*, 1988; 263:12538-12542 PMID:2457586.
- **Wondisford FE**, Farr EA, Radovick S, Steinfeld HJ, Moates JM, McClaskey JH, Weintraub BD. Thyroid hormone inhibition of human thyrotropin β -subunit gene expression is mediated by a cis-acting element located in the first exon. *J Biol Chem*, 1989; 264:14601-14604 PMID: 2768233.
- Ladenson PW, Braverman LE, Mazzaferri EL, Reynolds JC, Cooper DS, Garber JR, **Wondisford FE**, Davies TF, DeGroot LJ, Daniels GH, Ross DS, Weintraub BD. Comparison of recombinant thyrotropin administration to thyroid hormone withdrawal for radioactive iodine scanning in patients with thyroid cancer, *New Engl J Med*, 1997, 337:888-896 PMID: 9302303.

5. **Mutations affecting anterior pituitary gland function** In 1992, my laboratory described the first gene mutation affecting human anterior pituitary gland development. This landmark work established the clinical syndrome of combined pituitary hormone deficiency. I also described one of the first mutations of the TSH-beta subunit gene that resulted in secretion of biological inactive hormone.

- Steinfeld HJ, Radovick S, Mroczynski MA, Hauser P, McClaskey JH, Weintraub BD, **Wondisford FE**. Role of a pituitary-specific transcription factor (Pit-1/GHF-1) or a closely related protein in cAMP regulation of human thyrotropin- β subunit gene expression. *J Clin Invest*. 1992; 89:409-419. PMID: 1310694
- Steinfeld HJ, Radovick S, **Wondisford FE**. Hormonal regulation of the thyrotropin β -subunit gene by phosphorylation of the pituitary-specific transcription factor Pit-1. *Proc Natl Acad Sci USA*. 1992; 89:5942-5945. PMID: 1321428
- Radovick S, Nations M, Du Y, Berg LA, Weintraub BD, **Wondisford FE**. A mutation in the POU-homeodomain of PIT-1 responsible for combined pituitary hormone deficiency. *Science*. 1992; 257:1115-1118. PMID: 1509262
- Medeiros-Neto G, Rajan S, Kommereddi S, De Lacerda L, Sandrini R, Boguszewski MCS, Radovick S, **Wondisford FE**. A circulating, biologically inactive thyrotropin caused by a mutation in the beta subunit gene, *J Clin Invest*. 1996; 97:1250-1256. PMID: 8636437

List of Published Work in MyBibliography:

<http://www.ncbi.nlm.nih.gov/pubmed/?term=wondisford>