July 2015

CURRICULUM VITAE

OWEN PATRICK M^{c}GUINNESS

A. Personal Data

Citizenship Status: United States of America

Birthdate: March 16, 1956

Wife: Patrice

Children: Ian, Andrew, Anna

Office Address: Department of Molecular Physiology and Biophysics
831B Light Hall
Vanderbilt University Medical School
Nashville, TN 37232-0615
(615) 343-4473

Home Address: 8356 Carriage Hills Dr.
Brentwood, TN 37027

B. Educational Background

1974-78 B.S., Biology State University of New York at Stony Brook, Stony Brook, NY 11794

1978-83 Ph.D., Physiology LSU School of Medicine, New Orleans, LA 70112

1983-84 Post Doctoral Fellow Dept. of Physiology, LSU School of Medicine

1984-86 Post Doctoral Fellow Department of Molecular Physiology and Biophysics, Vanderbilt University School of Medicine

C. Professional Experience and Positions Held

Academic Appointments

1986-89 Research Instructor Department of Molecular Physiology and Biophysics, Vanderbilt University School of Medicine

1989-96 Assistant Professor Department of Molecular Physiology and Biophysics, Vanderbilt University School of Medicine

1996-06 Associate Professor Department of Molecular Physiology and Biophysics, Vanderbilt University School of Medicine

2001-present Director Metabolic Phenotyping Center Metabolic Patho-Physiology Core: Mouse

2001-present	Faculty fellow Research and Education	Vanderbilt Institute for integrative Biosystems
2006-present	Professor	Department of Molecular Physiology and Biophysics, Vanderbilt University School of Medicine
2007-11	Director	Enrichment, Training and Outreach Program: Vanderbilt Diabetes Research and Training Center
2010-present	Associate Director	Vanderbilt Mouse Metabolic Phenotyping Center
2011-present	Associate Director	Vanderbilt Diabetes Research and Training Center
2012-present	Director	Hormone Assay and Analytical Services Core

Society Memberships

American Physiological Society
American Diabetes Association
Juvenile Diabetes Foundation International

Awards

Bell Award, American Heart Association, 1984
Career Development Award, International Juvenile Diabetes Foundation 1989-92
Teacher of the Year for First Year Medical Students 1997
Leadership of a Multi-investigator Team Award 2013

Invited Lectures

1990 Marion Merrell Dow Inc., Indianapolis, Indiana

1991 "Prevention and Treatment of Diabetes" Symposium, Marion Merrell Dow Indianapolis, Indiana

1994 LSU Medical Center, Dept. of Physiology

1994 SUNY at Stony Brook, Dept of Surgery

1999 SUNY at Stony Brook, Dept of Endocrinology

2001 University of Lausanne, Dept of Physiology (Switzerland)

2001 Servier-IGIS Symposia “Kinetics of Insulin Release in Health and Disease” Saint-Jean-Cap-Ferrat (France)

2002 Mayo Clinic (Division of Endocrinology)

2003 Nutrition Week 2003 (American Society of Parenteral and Enteral Nutrition)

2003 American Academy of Veterinary Nutrition Clinical Nutrition and Research Symposium "Key Note Speaker"

2003 LSU Medical Center, Dept of Physiology

2004 Nutrition Week 2004 (American Society of Parenteral and Enteral Nutrition)

2005 American Diabetes Association "65th Annual Scientific sessions" Symposia speaker

2005 SUNY Stony Brook (Depts. of Physiology and Pharmacology)

2005 Case Western Reserve University (Dept. of Nutrition)

2006 Pennington Biomedical Research Center

2006 Distinguished Scientist Seminar: University of South Alabama School of Medicine (Dept of Physiology)

2006 University of Rochester School of Medicine (Dept. of Pathology and Laboratory Medicine)

2009 Southeast Lipid Research Conference (Plenary lecture)

2010 Experimental Biology Symposium So you want to phenotype your mouse: Challenges to evaluating the cardiovascular and metabolic systems. (Organizer)

2011 Boshell Diabetes Research Day at Auburn University (Plenary lecture)

2011 Department of Electrical & Computer Engineering and the Nano Institute of Utah

2011 Albert Einstein School of Medicine (Diabetes Center)

2012 St. Jude Children's Research Hospital (Dept. of Infectious Diseases)

2012 University of Iowa School of Medicine (Diabetes Research Center)

2013 American Diabetes Association Annual Meeting Update Lecture "Methods for Assessing Glucose Flux"

2013 Experimental Biology 2013 "Workshop on Rodent Experimentation" Energy balance 101. How do you normalize data? Do obese mice really have lower energy expenditure?"

2014 Johnson McGuire Visiting Professor Lectureship University of Cincinnati School of Medicine (Dept. of Medicine)

2015 Experimental Biology 2015: Symposium "Inflammation in Obesity is not All Bad" Is insulin resistance a vascular disease? (Co-Organizer and speaker)

Teaching Experience

1988-94 Undergraduate Physiology Course (Physiology 281), Co-Director and lecturer (4 h)

1993-94 Interdisciplinary Graduate Program Core Course: Cell to Cell Communication Section, Director

1995-96 Interdisciplinary Graduate Program Core Course: Cell to Cell Communication Section, lecturer (3h)

1986-present Exercise Physiology, lecturer (1 h)

1989-present Metabolic Regulation *in vivo*, lecturer (12h)

1994-2004 Metabolic Regulation *in vivo*, Director

1991-2007 Medical Physiology, lecturer (23h)

1995-2007 Medical Physiology, Director

2002-2013 Renal Fellows Core Course, lecturer (2h)

2003-2007 Interdisciplinary Graduate Program Core Course: Endocrinology section, Lecturer (1h)

2005 Tutorials in Physiology, Director

2008-present The Molecular Endocrinology of Obesity and Diabetes (1h)

2005-present MMPC course: Clamping the conscious mouse (2 h; 1 week course at Vanderbilt)

2007-2013, 2014 Tracers in Metabolic Research: Principles and Practice of Kinetic Analysis (one week course 40 hrs)

2009-2012 A short course: an Organ Systems Approach to Target the Metabolic Syndrome (Course Director; 5h; 2 week course at Vanderbilt)

2014-present CPB 306 Introduction to Chemical and Physical Biology (6 h)

2015- present Diabetes Immersion for Medical students (4 weeks 12 h/week)

Committee Responsibilities

Local:

1989-91 Molecular Physiology and Biophysics Undergraduate Research Program

1992 Interdisciplinary Summer Undergraduate Research program - Director

1990-93 Molecular Physiology & Biophysics Graduate Program - Metabolic Track Coordinator

1995-97 Medical School Curriculum Review Committee (cardiovascular section)

1996- 2007 Medical Student Evaluation Committee

1999-01 Institutional Animal Care and Use Committee

2002-present Large Animal Faculty Advisory Committee

2002- present Research Advisory Committee, Mouse Metabolic Phenotyping Center

2007-present Molecular Physiology and Biophysics Graduate Education Committee

2008-present Diabetes Research and Training Center Executive Committee

2010-present Institutional Animal Care and Use Committee (ad hoc)

2014 Institutional Shared Resource Oversight Committee
2013-present Molecular Physiology and Biophysics Graduate Education Committee
2015-present Molecular Physiology and Biophysics Compliance Officer

National:

Reviewer American Journal of Physiology, Metabolism, Journal of Biological Chemistry, JPEN, Journal of Applied Physiology, Diabetes

1993 and 1996 Ad Hoc Reviewer National Institutes of Health

1995-2002 Secretary-Treasurer, Endocrinology and Metabolism Section
American Physiological Society

1995-96 American Heart Association: Tennessee Affiliate: Peer Review Committee

2001-05 American Diabetes Association Research Grant Review Panel

2001- 05 Diabetes Foundation Grant Review Panel

2003 Program Committee Nutrition Week 2003 (American Society of Parenteral and Enteral Nutrition)

2002-05 Committee on Committees, American Physiological Society

2004 Program Committee Nutrition Week 2004 (American Society of Parenteral and Enteral Nutrition)
2004-06 Research Advisory Committee (American Society of Parenteral and Enteral Nutrition)
2004 NIH Diabetes Endocrinology Research Center grant review panel

2004-5 American Diabetes Association 2005 Program Committee Integrated Physiology/Obesity

2005-2008 NIH IPOD study section (permanent member)

2006-08 American Diabetes Association 2006 Program Committee

2006- American Journal of Physiology: Endocrinology and Metabolism Editorial Board

2012 NIH Diabetes Endocrinology Research Center grant review panel

2013 NIH Special Emphasis Panel ZRG1 EMNR-S 10
Small Business: Endocrinology, Metabolism and Reproduction

United States Patents

Issued:

Patent # 7,435,578 Device and methods for monitoring the status of at least one cell Issued: October 14, 2008

Patent #7,704,745 Apparatus and methods for monitoring the status of a metabolically active cell April 27,2010

Pending
Application #: 20050153276 System and methods for discriminating an agent
Application # 20050158845 Device and methods for measuring the response of a least one cell to a medium
Application # 20050260680 Methods of diagnosing and treating autoimmune diseases

D. Publications

1. Romanosky, A.J., **McGuinness, O.P**., Bagby, G.J. and Spitzer, J.J. Increased muscle oxygen consumption during electrical stimulation following endotoxin administration. Adv. in Shock Res. 6:121-129, 1981.

2. Spitzer, J.J., Bagby, G.J., **McGuinness, O.P**. and Lang, C.H. Intravenous alanine tolerance in conscious septic and non septic rats. In Amino Acids: Metabolism and Medical Application. Eds. Blackburn, G.L., Grant, J. and Young, V.R. John Wright, PSG Inc., New York (1983).

3. Romanosky, A.J., **McGuinness, O.P** and Spitzer, J.J. Metabolic clearance rate of ketone bodies in dogs following Escherichia coli endotoxin administration. Circ. Shock 11:311-318, 1983.

4. **McGuinness, O.P**. and Spitzer, J.J. Changes in glycerol kinetics following E. Coli endotoxin administration in dogs. Am. J. Physiol. 246:R325-R330, 1984.

5. **McGuinness, O.P**. and Spitzer, J.J. Hepatic glycerol flux following E. coli endotoxin administration. Am. J. Physiol. 247:R687-R692, 1984.

6. **McGuinness, O.P.**, Green, D.R. and Cherrington, A.D. Glyburide sensitizes perfused rat liver to insulin induced suppression of glucose output. Diabetes 36: 472, 1987.

7. Cobelli, C., Mari, A., Toffolo, G., Cherrington, A.D. and **McGuinness, O.P**. Dynamic Control of Insulin on Glucose Kinetics: In: Tracer Experiment Design and Time-Varying Interpretative Models. 10th World Congress on Automatic Control. Ed. R. Iserman. 5:25, 1987.

8. Mari, A., Cobelli, C., Cherrington, A.D. and **McGuinness, O.P.** A model for the study of glucose kinetics in the nonsteady state. In: Modelling and Control in Biomedical Systems. Eds. Cobelli, C. and Mari, A. Pergamon Press, p 357, 1989.

9. Davis, S., **McGuinness, O.P.** and Cherrington, A.D. Insulin action in vivo. In: Diabetes Annual IV Eds. Alberti, K.G.M.M. and Krall, L.P. Elsevier Science Publishers B.V. p. 585, 1990.

10. **McGuinness, O.P.**, Friedman, A., and Cherrington, A.D. Chronic intraportal hyperinsulinemia decreases insulin stimulated glucose uptake in the dog. Metabolism 39:127-132, 1990.

11. **McGuinness, O.P.**, Myers, S.R., Neal, D. and Cherrington, A.D. Chronic hyperinsulinemia decreases insulin action but not insulin sensitivity. Metabolism 39:931-937, 1990.

12. **McGuinness, O.P.** and Cherrington, A.D. Effect of glyburide upon hepatic glucose metabolism. Am. J. Medicine 89:26S-37S, 1990.

13. Cherrington, A.D., Pagliassotti, M.J., Myers, S.R., Adkins-Marshall, B. and **McGuinness, O.P**. Factors which regulate net hepatic glucose uptake in vivo. In: Journal of Parenteral and Enteral Nutrition, Ed. N. Abumrad, 15:71S-73S, 1991.

14. Myers, S.R., **McGuinness, O.P.**, Neal, D. and Cherrington, A.D. Intraportal glucose delivery enhances the effects of hepatic glucose load on net hepatic glucose uptake in vivo. J. Clin. Invest. 88:158-167, 1991.

15. Goldstein, R.E., Wasserman, D.H., **McGuinness, O.P.**, Lacy, D.B., Cherrington, A.D., and Abumrad, N. The effects of a chronic elevation in plasma cortisol on carbohydrate metabolism. Am. J. Physiol. 264: E119-E127, 1993.

16. **McGuinness, O.P.**, Murrell, S.E., Bracy, D.B. and Çherrington, A.D. Impact of chronic stress hormone infusion upon hepatic carbohydrate metabolism. Am. J. Physiol. 265: E314-E322, 1993.

17. **McGuinness, O.P.**, Burgin, K., Moran, C., Bracy, D. and Cherrington, A.D. Role of glucagon in the metabolic response to stress hormone infusion in the conscious dog. Am. J. Physiol. 266:E438-E447, 1994.

18. **McGuinness, O.P.** The impact of infection on gluconeogenesis in the conscious dog. Shock 2:336-343, 1994.

19. **McGuinness, O.P.** Assessment of Insulin Action In Vivo: Methodological Considerations. Sem. Reprod. Endocrin. 12(2):143-148, 1994.

20. **McGuinness, O.P.**, Murrell, S.E., Burgin, K.E., Bracy, D.B. and Cherrington, A.D. Impact of acute glucagon removal on the metabolic response to stress hormone infusion in conscious dogs. Metabolism 43:1310-1317, 1994.

21. Cherrington, A.D., Wasserman, D.H., and **McGuinness, O.P.** Renal contribution to glucose production after a brief fast: fact or fancy. J. Clin. Invest. 93:2303, 1994.

22. **McGuinness, O.P.**, Lacy, D. B. and Anderson, J. The effect of acute glucagon removal on the metabolic response to sepsis in the conscious dog. Am. J. Physiol. 268:E92-E99,1995.

23. **McGuinness, O.P.**, Jacobs, J., Moran, C. and Lacy, D.B. Impact of infection on hepatic disposal of a peripheral glucose infusion in the conscious dog. Am. J. Physiol. 269:E199-E207, 1995.

24. Fujiwara, T., Neal, D.N., Cherrington, A.D., and **McGuinness, O.P.** Role of cortisol in the metabolic response to stress hormone infusion in the conscious dog. Metabolism 45:571-578, 1996.

25. **McGuinness, O.P.**, Lacy,D.B. and Eliasson, K. Chronic hyperglucagonemia and hepatic glucose metabolism during infection in the conscious dog. Am. J. Physiol. 270:E580-E588,1996

26. **McGuinness, O.P.**, Lacy, D.B., Ejiofor,J. and Bagby, G. Effect of endotoxin infusion on tumor necrosis factor release from the liver in the conscious dog. Shock 5:344-348, 1996.

27. **McGuinness, O.P.** and Mari, A. Assessment of insulin action on glucose uptake and production during a euglycemic hyperinsulinemic clamp in dog: A new kinetic analysis. Metabolism 46:1116-1127,1997.

28. **McGuinness, O.P.**, Shau V., Benson, E.M., Greene J.E., Neal D.N. and Cherrington, A.D. Role of epinephrine and

norepinephrine in the metabolic response to stress hormone infusion in the conscious dog Am. J. Physiol. 273:E674-E681,1997.

29. Heinz H. Lacy, D.B. and Ejiofor J., and **McGuinness O.P.** Alterations In Hepatic Gluconeogenic Amino Acid Uptake And Gluconeogenesis In The Endotoxin Treated Conscious Dog. Shock 9:296-303,1998.
30. **McGuinness, O.P.**, Ejiofor,J., Audolay L.P. and Schrom N. Regulation of glucose production by NEFA and gluconeogenic precursors during chronic glucagon infusion Am. J.Physiol.275:E432-E439,1998.
31. **McGuinness, O.P.**, Donmoyer, C., Ejiofor, J.E., McElligott, S. and Lacy, D.B. Hepatic and muscle glucose metabolism during total parenteral nutrition: impact of infection Am. J. Physiol. 275:E763-E769,1998.
32. Lang, C.H., R.A. Frost, J. Ejiofor, D.B. Lacy, and **O.P. McGuinness.** Hepatic production and intestinal uptake of IGF-1: response to infection. Am .J. Physiol. 275:G1291-G1298, 1998.
33. **McGuinness, O.P.** Snowden, R.T., Moran C, Neal,D.W., Fujiwara,T. and A.D. Cherrington. Impact of acute epinephrine removal on hepatic glucose metabolism during stress hormone infusion Metabolism 48: 910-914,1999.
34. **McGuinness, O.P.**, J. E. Ejiofor, Lacy, D.B. and Schrom N. Hepatic glucose metabolism during intraduodenal glucose infusion: Impact of infection. Am. J. Physiol. 279:E108-E115, 2000.
35. Chen, S-S., Donmoyer, C.M. , Zhang, Y., Hande, S.A., Lacy D.B. and **McGuinness,O.P.** Impact of Enteral and Parenteral Nutrition on Hepatic and Muscle Glucose Metabolism. JPEN 24:255-260, 2000.
36. Donmoyer, C.M. Song-Chen, S., Hande, S.A., Lacy D.B., J.E. Ejiofor and **McGuinness,O.P**. Hyperinsulinemia compensates for infection-induced impairment in net hepatic glucose uptake during TPN administration. Am. J. Physiol. 279:E235-E243, 2000.
37. Donmoyer,C.M. Ejiofor, J.E., Lacy D.B., Chen, S.S., and **McGuinness,O.P**. Fructose augments infection-impaired net hepatic glucose uptake during TPN administration. Amer. J. Physiol. 280:E703-E711, 2001.
38. Cherrington, A.D., Sindelar, D., Edgerton, D. Steiner, K., and **McGuinness,O.P**. Physiological Consequences of Phasic Insulin Release in the Normal Animal. Diabetes 51: S103-S108, 2001.
39. Chen, S.S., Donmoyer, C.M., Ejiofor,J.E., McCay, J., Archuletta, R. Lacy D.B. and **McGuinness,O.P.** Impact Of Intraportal L-NNA Infusion on Hepatic Glucose Metabolism in TPN adapted dogs: Interaction with infection. Metabolism 51:274-283, 2002.
40. Donmoyer,C.M. Lacy D.B., Zhang,Y., Chen, S.S., and **McGuinness,O.P**. Impact of Chronic Fructose infusion on Hepatic Metabolism during TPN Administration Am. J. Physiol. 283:E1151-E1158, 2002.
41. Donmoyer, C.M., Lacy D.B., Chen, S.S. Y. Zhang and **McGuinness, O.P**. Infection impairs insulin-dependent liver glucose uptake. Am. J. Physiol.284:E574-E582, 2003.
42. Chen, S.S., Lacy, D.B., Donmoyer, C.M., Zhang, Y., and **McGuinness, O.P**. Impact of infection on glucose-dependent liver glucose uptake during TPN: interaction with insulin. Am. J. Physiol. 286:E286-E295, 2004
43. Ma, Li-Jun, Mao S. Kanjanabuch, T. Guan, Y. Zhang, Y. Brown, N.J. Swift, L.S., **McGuinness, O.P.**, Wasserman, D.H. and Fogo, A.B. Prevention of obesity and insulin resistance in mice lacking PAI-1. Diabetes 53:336-346, 2004.
44. Rocheleau, J.V., Walker, G.M., Head, W.S., **McGuinness, O.P.**, Piston, D.W. Microfluidic glucose stimulation reveals limited coordination of pancreatic islet $[Ca2+]_i$ oscillations. PNAS 101(35):12899-903,2004
45. Fueger, P.T, Shearer, J., Bracy, D.B., Posey, K.A., Pencek, R.R., **McGuinness, O.P.**, and Wasserman, D.H. Control of Muscle Glucose Uptake: Test of the Rate-Limiting Step Paradigm in Conscious, Unrestrained Mice. J. Physiol. 562:925-935,2005
46. Chen, S.S., Torres-Sanchez, C.J., Hosein, N., Zhang, Y.,Lacy D.B. and **McGuinness, O.P**. Time course of the hepatic adaptation to TPN: Interaction with glycogen depletion Am. J. Physiol. 288:E163-E170,2005
47. Grubert, J.M., Lautz, M., Lacy, D.B., Moore, M.C., Farmer, B., Penaloza, A., Cherrington, A.D. and **McGuinness, O.P**. Impact of continuous and pulsatile insulin delivery on net hepatic glucose uptake Am. J. Physiol. 289:E232-40,

2005.

48. Chen, S.S., Torres-Sanchez, C.J., Hosein, N., Lacy, D.B., Donmoyer, C.M., Zhang, Y. and **McGuinness, O.P.** Route dependent effect of nutrient delivery on liver glucose uptake. Am. J. Physiol. 289:R1319-27, 2005

49. Kurosu,H., Yamamoto, M., Clark, J.D., **McGuinness, O.P.**, Chikuda, H., Kawaguchi, H., Shimomura, I., Alphonsus T. Dang,A.T., Kahn,C.R. and Kuro-o, M. Suppression of Aging in Mice by the Hormone Klotho. Science 309:1829-33, 2005.

50. Nunemaker C.S., Wasserman D.H., **McGuinness, O.P.**, Sweet, I.R., Teague, J.C., and Satin, L.S. Insulin secretion in the conscious mouse is biphasic and pulsatile. Am. J. Physiol. 290:E523-9, 2006.

51. Maddux BA, Chang YN, Accili D, **McGuinness OP,** Youngren JF, Goldfine ID. Overexpression of the Insulin Receptor Inhibitor, PC-1/NPP1, in Liver and Muscle Induces Hyperglycemia. Am. J. Physiol. 290:E746-9, 2006.

52. Nunemaker, C.S, Zhang, M., Wasserman, D.H., **McGuinness, O.P.**, Powers, A.C., Bertram, R., Sherman, A, and Satin, L.S. Individual mice can be distinguished by the period of their islet calcium oscillations: is there an intrinsic islet period that is imprinted in vivo? Diabetes 54:3517-22, 2005

53. Ayala, JE, Bracy, DP, **McGuinness, O.P.**, and Wasserman, D.H. Considerations in design of the hyperinsulinemic-euglycemic clamp in the conscious mouse. Diabetes 55:390-7, 2006.

54. Jacobson. L., Ansari T, and **McGuinness, O.P**. Counterregulatory deficits occur within 24 h of a single hypoglycemic episode in conscious, unrestrained, chronically-cannulated mice. Am. J. Physiol. :E678-84,2006

55. Jacobson L, Ansari T, Potts, J. and **McGuinness, O.P**. Glucocorticoid-deficient corticotropin-releasing hormone knockout mice maintain glucose requirements but not autonomic responses during repeated hypoglycemia Am. J. Physiol. 290:E678-84, 2006.

56. Chueh, F, Malabanan, C. and **McGuinness, O.P.** Impact of portal glucose delivery on glucose metabolism in the conscious unrestrained mouse. Am. J. Physiol. 291:E1206-11, 2006.

57. Gao, Z., Wang, Z., Zhang, X., Butler, A., Zuberi, A., Gawronska-Kozak, B., Lefevre, M., York, D., Ravussin, E., Berthoud, H., **McGuinness, O.P.,** Cefalu, W.T. and Ye, J. Inactivation of PKCθ Leads to Increased Susceptibility to Obesity and Dietary Insulin Resistance in Mice. Am. J. Physiol. 292:E964-76, 2007.

58. Wang, Y., Oeser, J.K., Yang, C., Sarkar, S., Hackl, S.I., Hasty, AH, **McGuinness, O.P**., Paradee, W., Hutton, J.C., Powell, D.R., O'brien, R.M. Deletion of the gene encoding the ubiquitously expressed glucose-6-phosphatase catalytic subunit-related protein (UGRP)/G6pase-beta knockout mice results in lowered plasma cholesterol and elevated glucagon. J. Biol. Chem. 281:39982-9, 2006.

59. Sun, H., Malabunga, M., Tonra, J., Carrick,F. Di Renzo, R., **McGuinness, O.P.**, Zheng, H., Bethoud, H. Amasia M.Li, H. Deevi, D., Mangalampalli, V., Balderes, P. Covino, N., Shen,J., Vil, M., Zhu Z., Hicklin, D., Kussie, P., Boblen, P.Monoclonal antibody antagonists of hypothalamic FGFR1 cause potent but reversible hypophagia and weight loss in rodents and monkeys. Am. J. Physiol. 292:E964-76, 2007

60. Wang, Y., Martin, C,C., Oeser, J.K., Sarkar, S, **McGuinness, O.P.**, Hutton, J.C., O'Brien. R,M. Deletion of the gene encoding the islet-specific glucose-6-phosphatase catalytic subunit-related protein autoantigen results in a mild metabolic phenotype. Diabetologia 50:774-8, 2007.

61. Rao, R,, Hao, C.M., Redha, R., Wasserman, D.H., **McGuinness, O.P.**, Breyer, M.D. Glycogen synthase kinase 3 inhibition improves insulin-stimulated glucose metabolism but not hypertension in high-fat-fed C57BL/6J mice. Diabetologia 50:452-60, 2007.

62. Chen, S.S., Zhang, Y., Santomango, T.S., Williams, PE Lacy, D.B., and **McGuinness, O.P**. Glucagon chronically impairs hepatic and muscle glucose disposal Am. J. Physiol.292:E928-35, 2007.

63. De Taeye B, Novitskaya T, **McGuinness OP**, Gleaves, L, Medda, M, Covington, JW, Vaughan DE. Macrophage TNF-{alpha} contributes to insulin resistance and hepatic steatosis in diet-induced obesity. Am. J. Physiol. 293:E713-25, 2007.

64. Chen, S.S., Santomango T, Williams PE, Lacy, D.B., and **McGuinness, O.P**. Glucagon mediated impairments in hepatic and peripheral tissue nutrient disposal are not aggravated by increased lipid availability Am. J. Physiol. 296:E1172-8, 2009. PMC2681308

65. Kawamori, D. Kurpad A.J., Hu, J., Shih, J.L., Ford, E., Herrera, P.L., Polonsky, K.S ., **McGuinness, O.P.**, Kulkarni, R.N. Insulin Signaling in α-cells Modulates Glucagon Secretion in vivo. Cell Metabolism 9: 350-361, 2009. PMC2694613

66. Gao, Z., Yin, J, Zhang, J., He, Q., **McGuinness, O.P.** and Ye, J. Inactivation of NF-κB p50 leads to insulin sensitization in liver through post translational inhibition of P70S6K. J. Bio. Chem 284:18368-76, 2009 PMC2681308

67. Pound, L.D., Sarkar,S., Benninger, R.K.P. Wang, Y., Suwanichkul, A., Shadoan, M.K. Printz, R.L. Oeser, J.K. Lee, C.E. Piston, D.W. **McGuinness, O.P.**, Hutton, J.C., Powell, D.R., O'Brien, R.M. Deletion of the Mouse Slc30a8 Gene Encoding Zinc Transporter-8 Results in Impaired Insulin Secretion. Endocrinology 421:371-6, 2009 PMC2929527

68. Lee-Young RS, Griffee SR, Lynes SE, Bracy D.P., Ayala J.E., **McGuinness, O.P.**, and Wasserman DH. Skeletal Muscle AMP-Activated Protein Kinase is Essential for the Metabolic Response to Exercise In Vivo. *J Biol Chem*: 284:23925-34, 2009. PMC2781986

69. Vaitheesvaran, B, Chueh, F., Xu,J., Trujillo, C., Saad, M.F., Lee, W.P. **McGuinness, O.P.**, and Kurland, IJ. Advantages of dynamic "closed loop" stable isotope flux phenotyping over static "open loop"clamps in detecting silent genetic and dietary phenotypes. Metabolomics 6(2):180-190,2010 PMC2862950

70. Shi, S., Hida, A., **McGuinness, O.P.**, Wasserman, D, Shin Yamazaki, S. and Johnson, C.H. Circadian Clock Gene Bmal1 Is Not Essential After All; Functional Replacement with its Paralog, Bmal2. Current Biology 20(4):316-21,2010. PMC2907674

71. Irimia, J.M., Meyer C.M., Peper C.L., Zhai L, Bock C.B., Previs S.F., **McGuinness, O.P.**, Depaoli-Roach AA, and Roach PJ. Impaired glucose tolerance and predisposition to the fasted state in liver glycogen synthase knockout mice. J Biol Chem. 285:12851-61, 2010. PMC2857087

72. Tweedell A, Mulligan KX, Martel JE, Chueh F-Y, Santomango T, and **McGuinness, O.P**. Metabolic response to endotoxin in vivo in the conscious mouse: role of interleukin-6. Metabolism 60: 92-98, 2011. PMC2889039

73. Johnson PM, Chen SS, Santomango TS, Williams PE, Lacy DB, and **McGuinness, O.P**. Continuous low-dose fructose infusion does not reverse glucagon-mediated decrease in hepatic glucose utilization. Metabolism 60(6):867-73, 2011. PMC3736817

74. Yin DP, Gao Q, Ma LL, Yan W, Williams PE, **McGuinness, O.P.**, Wasserman DH, and Abumrad NN. Assessment of different bariatric surgeries in the treatment of obesity and insulin resistance in mice. Ann Surg 254: 73-82, 2011. PMC3115424

75. Lin L, Saha PK, Ma X, Henshaw IO, Shao L, Chang BHJ, Buras ED, Tong Q, Chan L, **McGuinness, O.P**., and Sun Y. Ablation of ghrelin receptor reduces adiposity and improves insulin sensitivity during aging by regulating fat metabolism in white and brown adipose tissues. Aging Cell 6:996-1010, 2011. PMC3215833

76. Cho S.H, Ahn A.K, Bhargava, P, Lee C-H, Eischen C.M, **McGuinness, O.**, and Boothby M. Glycolytic rate and lymphomagenesis depend on PARP14, an ADP ribosyltransferase of the B aggressive lymphoma (BAL) family. Proceedings of the National Academy of Sciences 108: 15972-15977, 2011. PMC3179111

77. Mulligan, KX, Morris, RT, Otero, YF, Wasserman, DH, **McGuinness, O.P**. Disassociation of Muscle Insulin Signaling and Insulin-stimulated Glucose Uptake during Endotoxemia. PLoS ONE 1: e30160, 2012. PMC3262801

78. Ganesh Kumar, K, Zhang J, Gao S, Rossi J, **McGuinness O.P**, Halem HH, Culler MD, Mynatt RL and Butler A. Adropin deficiency is associated with increased adiposity and insulin resistance. Obesity 20:1394-402, 2012. PMC3905465

79. Haldar S.M, Jeyaraj D, Anand P, Zhu H, Lu Y, Prosdocimo DA, Eapen B, Kawanami D, Okutsu M. Brotto L, Fujioka, Kerner J, Rosca MG, **McGuinness, O.P.**, Snow RJ, Russell AP, Gerber AN, Bai X, Yan Z, Nosek TM, Brotto M, Hoppel CL and Jain MK. Kruppel-like factor 15 regulates skeletal muscle lipid flux and exercise adaptation. Proceedings of the National Academy of Sciences 109: 6739-6744, 2012. PMC3340075

80. Pound L.D, Sarkar S.A, Ustione A, Dadi P.K, Shadoan M.K, Lee C.E, Walters J.A, Shiota M, **McGuinness, O.P.**, Jacobson DA, Piston DW, Hutton JC, Powell DR, and O'Brien RM. The Physiological Effects of Deleting the Mouse *Slc30a8* Gene Encoding Zinc Transporter-8 Are Influenced by Gender and Genetic Background. PLoS ONE 7: e40972, 2012. PMC3400647

81. Kocalis, H.E, Turney M.K., Printz R.L., Laryea G.N., Muglia L.J, Davies S.S, Stanwood G.D, **McGuinness, O.P.**, and Niswender KD. Neuron-Specific Deletion of Peroxisome Proliferator-Activated Receptor Delta (PPARδ) in Mice Leads to Increased Susceptibility to Diet-Induced Obesity. PLoS ONE 7: e42981, 2012. PMC3423438

82. Zhu L., Brown W.C., Cai Q., Krust A, Chambon P., **McGuinness, O.P.**, and Stafford J.M. Estrogen treatment after ovariectomy protects against fatty liver and may improve pathway-selective insulin resistance. Diabetes 62:424-34, 2012. PMC3554377

83. Berglund E.D., Li C.Y., Ayala J.E., **McGuinness O.P.**, and Wasserman D.H. Regulation of Endogenous Glucose Production in Glucose Transporter 4 Over-Expressing Mice. PLoS ONE 7: e52355, 2012. PMC3524103

84. Pound, L.D, Oeser J.K., O'Brien T.P., Wang Y., Faulman C.J., Dadi P.K., Jacobson D.A, Hutton J.C., **McGuinness O.P.**, Shiota M., and O'Brien R.M. G6PC2: A Negative Regulator of Basal Glucose-Stimulated Insulin Secretion. Diabetes 62:1547-56, 2013. PMC3636628

85. Shi, S., Ansari, T., **McGuinness, O.P.**, Wasserman, D.H. and Johnson, C.H. Circadian Disruption Leads to Insulin Resistance and Obesity. Current Biology 23:1-10, 2013. PMC3595381

86. Li, J.H. Jain, S., McMillin, S.M., Cui, Y., Gautam, D., Sakamoto, W., Lu, H., Jou,W., **McGuinness,O.P.**, Gavrilova,O., and Wess, J. A Novel Experimental Strategy to Assess the Metabolic Effects of Selective Activation of a Gq-Coupled Receptor in Hepatocytes in vivo. Endocrinology154:3539-51, 2013. PMC3776870

87. Wei, K., Piecewicz, S., McGinnis, L.M., Taniguchi, C.M., Stanley Wiegand, S., Keith Anderson, K., Chan, C.W-M, Mulligan, K.X., Kuo, D.K, Yuan, J., Vallon,M., Morton, L., Lefai, E., Celeste Simon, M., Maher, J.J., Rajas,F., Annes, J., **McGuinness, O.P,** Thurston, G., Giaccia, A.J., and Kuo, C.K. A liver HIF-2α/IRS2 pathway sensitizes hepatic insulin signaling and is modulated by VEGF inhibition. Nature Med. 19:1331-7, 2013. PMC3795838

88. Reinert, R.B., Brissova, M., Shostak, A., Pan, F.C., Poffenberger, G., Cai, Q., Hundemer, G.L., Kantz, J., Thompson, C.S., Dai, C., **McGuinness, O.P.**, and Powers, A.C. Vascular Endothelial Growth Factor-A and Islet Vascularization are Necessary in Developing, but not Adult, Pancreatic Islets. Diabetes 62:4154-64, 2013. PMC3837071

89. Cappel, D. A., Palmisano, B. T., Emfinger, C. H., Martinez, M. N., **McGuinness, O. P.**, and Stafford, J. M. Cholesteryl ester transfer protein protects against insulin resistance in obese female mice. Molecular Metabolism 2:457-67, 2013. PMC3854988

90. Li, J.H., Jain S., McMillin, S.M., Cui, Y., Gautam, D., Sakamoto, W., Lu, H., Jou, W., **McGuinness, O.P**., Gavrilova, O., and Wess, J. A Novel Experimental Strategy to Assess the Metabolic Effects of Selective Activation of a Gq-Coupled Receptor in Hepatocytes in Male Mice in Vivo. Endocrinology. 154: 3539-51, 2013. PMC 3776870.

91. Chen, S.S., Otero Y.F., Mulligan K.X., Lundblad, T.M., Williams PE, and **McGuinness, O.P**. Liver, but not muscle, has an entrainable metabolic memory. Plos1 9: e86164, 2014. PMC3900485

92. Otero, Y.F., Lundblad, T.M., Ford, E.A., House, L.M., and **McGuinness, O.P**. Liver but not adipose tissue is responsive to the pattern of enteral feeding. Physiological Reports 2: e00250, 2014. PMC3966249

93. Chen, Z., Guo, L., Zhang, Y., R, L. W., Pendergast, J. S., Printz, R. L., Morris, L. C., Matafonova, E., Stien, X., Kang, L., Coulon, D., and **McGuinness, O. P**., Niswender, K. D. and Davies, S. S. Incorporation of therapeutically modified bacteria into gut microbiota inhibits obesity. J. Clin. Invest. 124:3391-3406, 2014. PMC4109548

94. Barnes, T. M., Otero, Y. F., Elliott, A. D., Locke, A. D., Malabanan, C. M., Coldren, A. G., Brissova, M., Piston, D. W. and **McGuinness, O. P.** Interleukin-6 Amplifies Glucagon Secretion: Coordinated Control via the Brain and Pancreas. Am J Physiol Endocrinol Metab. 307:E896-E905,2014. PMC4233256

95. Cordoba-Chacon, J., Gahete, M., **McGuinness, O.P.**, and Kineman, R. Differential impact of selective GH deficiency and endogenous GH excess on insulin-mediated actions in muscle and liver of male mice. Am J Physiol Endocrinol Metab. 307:E928-E934, 2014. PMC4233257

96. House,L.M., Morris, R.T., Barnes, T.M., Lantier,L, Cyphert,T.J. **McGuinness,O.P.** and Otero,Y.F. Tissue inflammation and nitric oxide-mediated alterations in cardiovascular function are major determinants of endotoxin-induced insulin resistance. Cardiovascular Diabetology 14:56,2015 PMC4484635

97. Kolumam G., Chen, M.Z., Tong, R., Zavala-Solorio, J., Kates, L., van Bruggen, N., Ross, J., Wyatt, S.K., Gandham V.D., Carano, R.A.D., Dunshee, D.R., Wu, A-L., Haley, B., Anderson, K., Warming, S., Rairdan, X.Y., Lewin-Koh, N., Zhang, Y., Gutierrez, J., Baruch, A., Gelzleichter, T.R., Stevens, D., Rajan, S., Bainbridge, T.W., Vernes, J-M., Meng, Y.G., Ziai, J., Soriano, R.H., Brauer, M.J., Chen, Y., Stawicki, S., Kim, H.S., Comps-Agrar, L., Luis. E., Spiess, C., Wu, Y., Ernst, J.A., **McGuinness, O.P.**, Peterson, A.S., and Sonoda, J. Sustained Brown Fat Stimulation and Insulin Sensitization by a Humanized Bispecific Antibody Agonist for Fibroblast Growth Factor Receptor 1/βKlotho Complex. EBioMedicine 2:730-743, 2015. PMC4534681

INVITED REVIEWS/BOOK CHAPTERS:

1. **McGuinness, O.P.,** Steiner, K.E., Abumrad, N.N. and Cherrington, A.D. Insulin Action In Vivo. In Diabetes Annual Eds. Alberti, K.G.M.M., and Krall, L.P. Elsevier Science Pub. B.V., p 398, 1987.
2. **McGuinness, O.P.** Regulation of glucose metabolism during infection. In: The Role of the Liver in Maintaining Glucose Homeostasis. Pagliassotti, M., Davis, S., and Cherrington, A.D. (Eds.). R.G. Landes Company, Austin, pp 139-143, 1994.
3. Mandarino,L.J. Bonadonna,R. **McGuinness,O.P**. and Wasserman,D.H. Regulation of muscle glucose uptake *in vivo*. Handbook of Physiology Section 7 The Endocrine System (Ed. L.S. Jefferson and A.D. Cherrington) Oxford University Press, 1st edition.p.803 2001.
4. **McGuinness O.P**. and Cherrington A.D. Effects of fructose on hepatic metabolism. Curr. Opin. Clin. Nutr. Metab. Care. 6:441-448, 2003
5. **McGuinness O.P.** Defective glucose homeostasis during infection. Annual Review of Nutrition 25: 9-35,2005
6. **McGuinness O.P**. Point-counterpoint: Interleukin-6 does/does not have a beneficial role in insulin sensitivity and glucose homeostasis. J Appl. Physiol. 102:823, 2007.
7. Wasserman D.H., Ayala J.E., and **McGuinness, O.P**. Lost in Translation. Diabetes 58:1947-50, 2009. PMC2731517

8. **McGuinness O.P.** Ayala J.E., Laughlin M.R. and Wasserman, D.H. NIH Experiment in Centralized Mouse Phenotyping: The Vanderbilt Experience and Recommendations for Evaluating Glucose Homeostasis in the Mouse. Am. J. Physiol. 297: E849 - E855, 2009. PMC2763792

9. **McGuinness O.P.** and Shiota M. Carbohydrate Metabolism In Loeb and Quimby's Clinical Chemistry of Laboratory Animals 3rd edition, Chapter 10 (e.d. D.M. Kurtz, J. S. Prescott, G. S. Travlos), CRC press, Taylor & Francis Group, 2014.

10. Ayala JE, Samuel VT, Morton GJ, Obici S, Croniger C.M, Shulman, G.I, Wasserman, D.H, **McGuinness, O.P.**; for the NIH Mouse Metabolic Phenotyping Center Consortium. Standard operating procedures for describing and performing metabolic tests of glucose homeostasis in mice. Disease Models & Mechanisms 3:525-34, 2011. PMC2938392

11. Ayala, JE, Bracy, DP, Malabanan, C, James, FD, Ansari, T, Fueger, PT, **McGuinness, O.P.**, and Wasserman, DH. Hyperinsulinemic-euglycemic Clamps in Conscious, Unrestrained Mice. J Vis Exp, e3188. 2011. PMC3308587

12. Ye J, **McGuinness O.P.** Inflammation during obesity is not all bad: Evidence from animal and human studies. Am. J. Physiology 304: E466-E477, 2013. PMC3774179

13. Drake K.J, Sidorov V.Y, **McGuinness O.P.**, Wasserman DH, and Wikswo JP. Amino acids as metabolic substrates during cardiac ischemia. Exp Biol Med (Maywood) 237: 1369-1378, 2012. PMC3816490

14. Otero, Y., Stafford, J.M., **McGuinness, O.P**. Pathway-Selective Insulin Resistance and Metabolic Disease: The Importance of Nutrient Flux. J. Biol. Chem. 289:20462-20469, 2014. PMC4110258

E.Active Support

NIH RO1- DK043748-22
"Nutrition, Infection and Hepatic Carbohydrate Metabolism"
PI: Owen McGuinness - 50%
07/01/05-4/30/19; $447,985 $519,422
The grant examines the effect of infection on hepatic glucose metabolism during total nutritional support.

NIH U24 DK059637
"Mouse Metabolic Physiology Center"
PI: David Wasserman (Associate Director and Metabolic Core Director McGuinness-10%)
06/01/06-05/30/16; $747,466
This core is designed to allow investigators to characterize metabolic and cardiovascular phenotypes in genetically modified mice.

NIH R01- DK078188-01
Impact of inflammation on the Control of Muscle Glucose Uptake
PI: Owen McGuinness (20%)
06/09/09-05/14/14 $242,961 (no cost extension)
This grant examines the mechanism for the impairment of insulin action in skeletal muscle during endotoxemia and inflammation

NIH 5T32-DK007563
Multidisciplinary Training in Molecular Endocrinology
P.I.: Richard O'Brien (Executive Committee-2%)
06/01/2008-05/31/2018 $581,320
This program supports graduate student and postdoctoral fellow training in endocrinology and metabolism.

NIH 5P60-DK020593
Vanderbilt Diabetes and Research Training Center
PI: Alvin Powers (Associate Director McGuinness-5%; Core Director 5%)

4/01/06-3/30/17 $1,000,000
The DRTC at Vanderbilt is one of a network of Core Centers to conduct research and training in diabetes mellitus and related endocrine and metabolic disorders. Dr. McGuinness is director of the Hormone Assay and Analytical Services Core.

ADA Grant #7-13-BS-119
Regulation of glucose-6-phosphatase gene expression and activity
07/01/2013-06/30/2016 $100,000
PI: Richard O'Brien (Co-Investigator McGuinness-2%)
Goal: We will assess the impact of glucose-6-phosphatase on the function of the liver and islet.

NIH 1R24 DK093421-01
Molecular and Cellular Basis for the Efficacy of Bariatric Surgery
07/01/2103-06/30/2015 $660,211
PI: Cone (Co PI McGuinness 5%)
Goal: Perform studies designed to assess glucoregulatory effects of bariatric surgery in mice.

MMPC Micromouse Program (U24-GK076169; subcontract with Georgia Reagents University))
The impact of bile acid flux on insulin action
7/01/2015-6/30/2016 $75,000
PI: Owen McGuinness (0.5%)
Goal: Assess the impact of circulating bile acids on insulin action.

Pending

R01 DK101558-01 (Hamm)
Regulation of insulin secretion by modulation of the release machinery
04/01/2014-03/31/2019 $499,781
PI: Hamm (Co- investigator McGuinness 5%)
The goal of the project is to generate potent, specific, bioavailable inhibitors of the G beta gamma-SNARE interaction to amplify insulin secretion.

NIH R01- DK105061
Impact of Interleukin-6 on glucagon secretion during inflammatory stress in vivo
PI: Owen McGuinness - 20%
04/01/2005-3/31/20; $250,000
Goal: The proposed studies will identify the physiological and molecular mechanisms whereby inflammation interacts with IL-6 signaling to amplify autonomic tone to the alpha cell.

NIH R01- DK078188-01
Impact of inflammation on the Control of Muscle Glucose Uptake
PI: Owen McGuinness (20%)
06/09/09-11/30/2020 $250,000
Goal: This grant examines the mechanism for the impairment of insulin action in skeletal muscle during endotoxemia and inflammation