

Date of Preparation: Dec 2017

CURRICULUM VITAE

NAME: Michelle A. Puchowicz

BIRTH PLACE: Cleveland, Ohio, USA

EDUCATION:

Case Western Reserve, School of Engineering (9/1992 – 5/1995), B.S., 5/1995
Case Western Reserve, School of Medicine (9/1995 – 5/1997), M.S., Nutritional Biochemistry
Case Western Reserve, School of Medicine (5/1997 – 1/2000), M.S., Nutritional Biochemistry, 1/2000
Case Western Reserve, School of Medicine, Department of Anatomy – Postdoctoral Research Fellow
(1/2000 – 9/2003)

SOCIETY MEMBERSHIPS:

2005 – 2010 Society for Neuroscience (SFN)
2010 - present American Society for Nutrition (ASN)
2008 - present International Society on Oxygen Transport to Tissue (ISOTT)

UNIVERSITY APPOINTMENTS:

Associate Professor, University of Tennessee Health Science Center, Memphis, TN, Department of Pediatrics, Division of Pediatric Obesity Program (7/2017– current)

Associate Professor, Case Western Reserve University School of Medicine, Cleveland, OH, Departments of Nutrition and Physiology & Biophysics (9/2014 – 7/2017)

Assistant Professor, Case Western Reserve University School of Medicine, Cleveland, OH, Department of Nutrition (3/2008 - 9/2014)

Senior Research Associate, Case Western Reserve University School of Medicine, Cleveland, OH, Department of Anatomy and Center for Inherited Disorders of Energy Metabolism (9/2003 - 3/2008)

Senior Research Associate, Children's Rainbow Babies Children's Hospital, Cleveland, OH, Center for Inherited Disorders of Energy Metabolism (9/2003 - 3/2008)

OTHER ACADEMIC APPOINTMENTS:

Director of the Metabolic Phenotyping & Mass Spectrometry Cores: UTHSC, Memphis (7/2017– current)

Director of the Mass Spectrometry Analytical Cores: Case Centers for Metabolomics and Mouse Metabolic Phenotyping Center, Case Western Reserve University School of Medicine, Cleveland, OH, (3/2008 – current)

TEACHING EXPERIENCE:

International/National Annual Isotope Training Course, Little Rock, Arkansas/ Cleveland, OH or Vanderbilt, TN on *Isotope Tracers in Metabolic Research, Principles and Practice of Kinetic Analysis* (www.mmpc.org/shared/courses.aspx), Teaching Faculty / Lecturer/ Trainer for ~85 students / participants, 1 week (50 contact hrs) / annually (4/2010 – current)

Isotope Tracer Methodology, NTRN 454, Case Western Reserve University, Cleveland, OH, Course Director, 3 cr/semester, ~12 students (1/2009 – current)

Medical Physiology II, PHOL 482, Case Western Reserve University, Cleveland, OH, Lecturer, 4 contact hrs/semester, ~ 95 students (2/2011 – current)

Oxygen and Physiological Function, ANAT / PHOL 410/610, Case Western Reserve University, Cleveland, OH, Co-Director, 3 credit hrs/semester, ~ 25 students (1/2003 – current)

Food to Fuel, Nutrition Block 3, Case School of Medicine, Cleveland, OH, Lecturer, 26 contact hrs/semester, Biochemistry/ 1st year medical students ~ 220 students (11/2009 – 7/2017)

Independent Research, Graduate: NTRN 601,561; Undergraduate: NTRN 390, 398, 399, Case Western Reserve University, Cleveland, OH, Course Director 1-3 credit hrs/ semester , 2 students/ semester (9/2008 – 7/2017)

INVITED LECTURES (*National and International, selected*):

Metabolic Changes in the Aged Ketotic Rat Brain – Invited speaker, ISOTT International Conference, Halle, Germany (Aug 2017).

Diet-Induced ketosis protects against focal cerebral ischemia in mouse – Invited speaker, ISOTT International Conference, Chicago, Illinois (July 2016).

Metabolic Phenotyping, Metabolomics and Biomarkers – American Society of Nutrition, *EMM-RIS mini-symposia*, Chair; Experimental Biology 2014, San Diego, CA (April 2014)

Metabolic Effects of Ketosis on Cerebral Glucose Consumption - *Britton Chance International Symposium on Metabolic Imaging/Spectroscopy*, Invited guest speaker; Perelman School of Medicine, University of Pennsylvania (June 2013)

Oxidative Metabolism: Glucose vs Ketones - Keynote speaker; *ISOTT International Conference*, Bruges, Belgium (August 2012).

Oxidative Metabolism Using Tracer Analysis: Ketones vs Glucose - Brain Energy Metabolism and Blood Flow, Invited Speaker; *Gordon Research Conference*, Colby College, Waterville, New Hampshire (August 2011)

Contribution of brain glucose and ketone bodies to oxidative metabolism - Invited guest speaker; *ISOTT International Conference*, Georgetown, Washington, DC (August 2011).

Neuroprotective properties of ketone bodies - Invited guest speaker; *ISOTT International Conference*, Ascona, Switzerland (August 2010).

COMMITTEES AND OFFICES HELD:

Conference Organization (*National/ International*):

Mini-symposia: *Metabolic Phenotyping, Metabolomics and Biomarkers*; Energy and Macronutrient Metabolism – Chair; Research Interest Section (EMM-RIS) held in conjunction with Experimental Biology, San Diego, CA (April 2014)

Mini-symposia: *Metabolic Phenotyping, Metabolomics and Biomarkers*; Energy and Macronutrient Metabolism –
Co-Chair; Research Interest Section (EMM-RIS) held in conjunction with Experimental Biology, Boston, MA (April 2013)

Symposia: *Int'l Society on Oxygen Transport to Tissue (ISOTT)* – Co-Chair / Co-Host; Case Western Reserve University, Cleveland, OH (July 2009)

Service to Institution:

- 2012 – 2017 Departmental Committee Member: Appointments, Promotions, Tenure (APT -Member, Chair), Department of Nutrition - Case School of Medicine
- 2011 – 2017 Departmental Strategic Planning - AD HOC for Metrics on Research, Department of Nutrition - Case School of Medicine
- 2010 – 2017 Case Institutional Animal Care and Use Committee (IACUC) & subcommittee on post approval monitoring (PAM) - Review Committee Member, elected- Case School of Medicine
- 2011 – 2015 Undergraduate Academic Advisor – Nutritional Biochemistry & Dietetic Tracks of Study - Department of Nutrition - Case School of Medicine
- 2010 – 2013 Faculty Council Member – Case School of Medicine, Cleveland, OH
- 2010 – 2013 By-Laws Committee Member – Case School of Medicine, Cleveland, OH

PROFESSIONAL ACTIVITIES:

- 2011 – current Teaching Faculty Member – International Course on *Isotope Tracers in Metabolic Research* -NIH/NIDDK Sponsored (www.mmpc.org).
- 2010 – 2017 Steering Committee Member – Mouse Metabolic Phenotyping Consortium, NIH/NIDDK Sponsored national organization on phenotyping of metabolic disease (www.mmpc.org).

Extramural Reviewer:

- 2017 – present Nature Reviews Neuroscience, peer reviewer
- 2016 – present The Journal of Pathology, peer reviewer
- 2015 – present Editorial Board of Neuroenergetics, Nutrition and Brain Health, a specialty of Frontiers in Neuroscience and Nutrition, review editor
- 2014 – present Neurochemical Research, peer reviewer
- 2008 – present Mouse Metabolic Phenotyping Consortium, Micromouse Pilot Funding Program, grant reviewer
- 2008 – present Journal of Neurochemistry, peer reviewer
- 2008 – present Int'l Society on Oxygen Transport to Tissue (ISOTT), peer reviewer
- 2008 – present Alzheimer's Association, study section reviewer
- 2009 – 2011 Nutritional Neuroscience, peer reviewer
- 2007 – 2011 Neurological Research, peer reviewer

RESEARCH AND OTHER EXTERNAL SUPPORT:

Tennessee Governor's Pediatrics Recruitment Fund for Research Start: 07/01/17 End: 07/01/20
UTHSC Department of Pediatrics Puchowicz (PI) \$735K
Title / Project Goal(s)
Role: PI

Completed Research Support:

SPN00227CFF Puchowicz (PI) \$108K Start: 04/01/15 End: 09/30/17
Cystic Fibrosis – National Foundation; CF Research Development Program
Title / Project Goal(s): To investigate *The role of Cfr in whole-body and skeletal muscle oxidative metabolism*; Metabolomic analyses in mice using stable isotopes and mass spectrometry.
Role: PI

NIH R01HD077886-01 Tilton (PI) \$370K Start: 07/01/2013 End: 06/30/2018
Title: Enhancement of HIV transmission by hormones and bacterial metabolites.
Project Goal(s): To investigate the effect HIV on lipid metabolism and profiles in women.
Role: Co-Investigator

1U24 DK076169-01 Brunengraber (PI) \$2.8M Start: 09/25/2011 End: 05/31/2017
NIDDK
Mouse Metabolic Phenotyping Center
Subcontract to: NIH-sponsored MMPC/AMDCC Coordinating and Bioinformatics Unit (CBU) at the Medical College of Georgia. Mouse Metabolic Phenotyping Center (MMPC)
Project Goal(s): The Case MMPC conducts *in vivo* and *ex vivo* studies on mice using sophisticated metabolic/metabolomic techniques; investigations of intermediary metabolism, using stable isotopes, mass spectrometry and NMR.
Role: Core Director (Analytical & Metabolomic Core)

SPN000594 NIH Puchowicz (CoPI) \$68K Start: 04/01/14 End: 03/31/16
Title: *Cystic Fibrosis – Pilot & Feasibility; CF Research Development Program*
Sub award (RES509107): M. Drumm (Program Director), Dept of Pediatrics, CASE
Project Goal(s): To investigate *The role of Cfr in whole-body and skeletal muscle oxidative metabolism*; Metabolomic analyses in mice using stable isotopes and mass spectrometry.
Role: Project Director

SPN00227CFF Puchowicz (CoPI) \$40K Start: 07/01/14 End: 06/30/15
Title: *Cystic Fibrosis – Pilot & Feasibility; CF Research Development Program*
Sub award (RES509107): M. Drumm (Program Director), Dept of Pediatrics, CASE
Project Goal(s): To investigate *The role of Cfr in whole-body and skeletal muscle oxidative metabolism*; Metabolomic analyses in mice using stable isotopes and mass spectrometry.
Role: Project Director

SPN02412 Borges (PI, CIA) \$192K Start: 01/01/2013 End: 03/31/2015
(FED/Univ/NIH) Univ. of Queensland
Title: Mechanisms of a novel strategy for neuroprotection in experimental models of stroke and epilepsy
Project Goal(s): This grant supports research on stroke and epilepsy and the effects of these disorders on brain metabolism. This grant will allow studying the efficacy of an oil (triheptanoin) against stroke and to investigate how it protects the brain. New knowledge obtained will help to develop new treatments for brain disorders.
Role: Co-PI, CIB

NIDDK 1R25DK082376-03 Brunengraber (PI) \$125K Start: 09/01/2009 End: 01/31/2014
Subcontract to: NIH-sponsored MMPC/AMDCC Coordinating and Bioinformatics Unit (CBU)
MMPC P&F Study

Title: *Training in isotopic techniques for metabolic research*

Project Goal(s): This grant supports the organization of a national course on isotopic techniques with an emphasis on investigations conducted in rodents.

Role: Teaching Faculty

R01 HL092933-03 LaManna (PI) \$1.6M Start: 04/01/2009 End: 03/31/2014
NIH/NHLBI/NINDS

Angiogenic Response to Hypoxia and Ketosis in Aging Rat Brain

The goals of this projects are (i) to demonstrate that increased blood ketones restore the responsiveness of HIF-1 alpha signaling system in the brains of aged rats; (ii) to investigate the mechanism of HIF-1 alpha stabilization through ketosis.

Role: Co-PI

NIDDK 1U24DK076174-01 Brunengraber (PI) \$2.7M Start: 09/15/2006 End: 08/31/2011

Title: *Mouse Metabolic Phenotyping Center*

Project Goal(s): The Case Mouse Metabolic Phenotyping Center conducts *in vivo* and *ex vivo* studies on mice using sophisticated metabolic/metabolomic techniques; investigations of intermediary metabolism, using stable isotopes, mass spectrometry and NMR.

Role: Analytical Core Director

1U24 DK076169-01 Brunengraber (PI) \$2.5M Start: 12/01/2006 End: 06/30/2010
NIDDK

Mouse Metabolic Phenotyping Center

Subcontract to: NIH-sponsored MMPC/AMDCC Coordinating and Bioinformatics Unit (CBU) at the Medical College of Georgia. Mouse Metabolic Phenotyping Center (MMPC)

Project Goal(s): The Case MMPC conducts *in vivo* and *ex vivo* studies on mice using sophisticated metabolic/metabolomic techniques; investigations of intermediary metabolism, using stable isotopes, mass spectrometry and NMR.

Role: Core Director (Analytical & Metabolomic Core)

5R21NS062048-02 LaManna (PI) \$430K Start: 05/01/2009 End: 04/30/2011
NIH NINDS

Energy Balance During Ketosis In Rat Brain

Project Goal(s): To investigate the effects of ketosis on cerebral metabolic rate for glucose imaging modalities, such as PET analysis, and an *in vivo* rat model of ketosis will be used to determine if ketosis improves imaging and metabolic outcome following cardiac arrest and resuscitation.

Role: Co-PI

20497-21 Puchowicz (PI) \$60K Start: 10/01/2009 End: 09/31/2010
Subcontract to: NIH-sponsored MMPC/AMDCC Coordinating & Bioinformatics Unit (CBU)

MMPC P&F Study

Project Title: "Quantifying the reaction rates that affect Fatty Liver and Hepatic Function"

Project Goal(s): Method development, using mass spectrometric analysis, that reveals information on the accumulation of fat in the liver/liver function which has a negative influence on health status and is associated with development of diabetes and liver disease.

Role: PI

1R01 ES013925 NIH Brunengraber (PI) \$2.3M Start: 09/19/2005 End: 05/31/2010
Metabolomic and Isotopomer Analysis of Xenobiotic Stress

The major goal of this project is to use metabolomics coupled to mass isotopomer analysis to study the metabolic and oxidative stress exerted by two related compounds, i.e. 1,4-butanediol (14BD) and γ -butyrolactone.

Role: Co-Investigator

1R01DK069752 Brunengraber (PI) \$1.6M Start: 06/01/2005 End: 03/31/2010
NIH NIDDK

Nutritional Treatment of Fat Oxidation Defect in Mice

The goal of this project is based on the fact that current treatments administered to patients with inherited fatty acid oxidation disorders (FOD) do not prevent, in many cases, the progressive deterioration of cardiac, muscular, and/or retinal function. An initial clinical trial, conducted at Baylor University Medical by Dr. Charles Roe, has shown that replacing trioctanoin in the diet by triheptanoin, a medium odd-chain triglyceride, leads to a rapid and major improvement of the patients' clinical condition and quality of life.

Role: Co-Investigator

SPN00598 NIH NINDS LaManna (PI) \$1.5M Start: 09/30/2002 End: 06/30/2007
Treatment strategies in a rat model of cardiac arrest

This project investigated neuroprotection using treatment strategies aimed at preserving the neurovascular unit and function in a rat models of cardiac arrest and resuscitation.

Role: Co-Investigator

P50 GM066309 Saidel (PI) \$7.6M Start: 07/01/2002 End: 06/30/2007
USPHS NIH

Center for Modeling Integrated Metabolic Systems (MIMS)

The goal of this application was to establish and support a center for modeling integrated metabolic-physiologic systems.

Role: Co-Investigator

GRANT PROPOSALS Pending / In Progress

NIH: RO1 NINDS Puchowicz (PI) \$3.1M Submit: 2/01/18 End: 11/30/24

Title: *Dietary determinates of neurovascular injury and protection*

Project Goal(s): Metabolic and targeted metabolomic techniques will be applied to discern the role of dietary fat and carbohydrate loading in brain injury. We specialize in investigations of intermediary metabolism, using stable isotopes and mass spectrometry as well as imaging methods for assessing neurovascular function.

Role: PI

BOOKS AND BOOK CHAPTERS:

1. **Puchowicz MA**, Xu K, and LaManna JC. Single pass dual-label indicator method: Blood-to-brain transport of glucose and short-chain monocarboxylic acids. In: *"Blood Brain Barrier: Biology and Protocols"*, (ed. Nag S) Humana Press, *Methods Mol Med.* 89: 265-76 (2003).
2. Zechel J, Lust W D, and **Puchowicz M**. Biochemical methods to assess the coupling of brain energy metabolism in control and diseased states. In: *Methods Molec Biol* v. 399, "Neuroprotection and Protocols", (ed. Borsello T), Humana Press, 79-98 (2007).
3. **Puchowicz MA**, Koppaka SS, and LaManna JC. Brain Metabolic Adaptations to Hypoxia. In: *Metabolic Encephalopathy* (ed. McCandless DW), Springer 15-30 (2009).

4. Kombu RS, Brunengraber H, and **Puchowicz MA**. Analysis of the Citric Acid Cycle Intermediates using Gas Chromatography-Mass Spectrometry In: *Methods Molec Biol*, “Metabolic Profiling: Methods and Protocols” (ed. Metz TO), Humana Press, 708:147-57. (2011).
5. LaManna JC, **Puchowicz MA**, Xu K, Harrison DK, and Bruley DF; Editors. Oxygen Transport to Tissue XXXII. In: *Advances in Experimental Medicine and Biology* (vol 701). Springer (2011).
6. Xu K, LaManna JC, and **Puchowicz MA**. Ketogenic Diet, Aging, and Neurodegeneration. In “*Ketogenic Diet and Metabolic Therapies*”, Expanded Roles in Health and Disease (ed. Masino SA), Oxford University Press, 216-226 (2017).

PEER-REVIEWED JOURNAL ARTICLES:

1. Haze, J.W., Yang, D., Powers, L., Previs, S.F., David, F., Beaulieu, A.D., **Puchowicz MA**, Potter, J.L., Palmquist, D.L., and Brunengraber, H. Tracing gluconeogenesis with deuterated water: measurement of low deuterium enrichments on carbons 6 and 2 of glucose. (1997) *Anal. Biochem.* 248: 158-167.
2. **Puchowicz MA**, Bederman, I. R., Comte, B., David, F., Stone, E., Jabbour, K., Wasserman, D.H., Brunengraber, H. Zonation of acetate labeling across the dog liver: Implications for studies of lipogenesis using mass isotopomer distribution analysis. *Am J. Physiol.* (1999) 277: E1022-E1027.
3. Yang, D., **Puchowicz MA**, David, F., Powers, L., Halperin, M.L., Brunengraber, H. 15N-enrichment of ammonia, glutamine-amide and urea, via mass isotopomer distribution analysis of hexamethylenetetramine. *J. Mass Spectrom.* (1999) 34 (11): 1130-6.
4. **Puchowicz MA**, Smith CL, Bomont C, Koshy J, David F, and Brunengraber H. Dog model of therapeutic ketosis induced by oral administration of R,S-1,3-butandiol acetoacetate. *J. Nutr. Biochem.* (2000) 11: 281-287.
5. Comte B, Kasumov T, Pierce BA, **Puchowicz MA**, Scott ME, Dahms W, Kerr D, Nissim I, Brunengraber H. Identification of phenylbutyrylglutamine, a new metabolite of phenylbutyrate metabolism in humans. *J Mass Spectrom.* (2002) 37(6): 581-90.
6. Agani FH, **Puchowicz M**, Chavez JC, Pichiule P, LaManna J. Role of nitric oxide in the regulation of HIF-1alpha expression during hypoxia *Am J Physiol Cell Physiol.* (2002) Jul;283(1):C178-86.
7. Xu K, **Puchowicz MA**, and LaManna JC. Renormalization of regional brain blood flow during prolonged mild hypoxic exposure in rats. *Br. Res.* (2004) 1027: 188-91.
8. Kasumov T., Brunengraber L.L., Comte B, **Puchowicz MA**, Jobbins K, Thomas K, France D, Kinman R., Wehrli S., Dahms W., Kerr D., Nissim I., Brunengraber H. New secondary metabolites of phenylbutyrate in humans and rats *Drug Metabolism and Disposition.* (2004) Jan;32: 10-19.
9. **Puchowicz M**, Xu, K., Magness, D., Lust, W.D., Kern, T., LaManna JC. Comparison of glucose influx and blood flow in retina and brain of diabetic rats. *J Cereb Blood Flow Metab.* (2004) 24: 449-457.
10. **Puchowicz MA**, Varnes ME, Cohen BH, Friedman NR, Kerr DS, Hoppel CL. Oxidative phosphorylation analysis: assessing the integrated functional activity of human skeletal muscle mitochondria-case studies *Mitochondrion.* (2004) Sep;4(5-6):377-85.
11. **Puchowicz MA**, Emancipator D.S., Xu K., Magness D.L., Ndubizu O.I., Lust W.D., LaManna J.C. Adaptation to chronic hypoxia during diet induced ketosis. *Adv Exp Med Biol.* (2005) 566: 51-58.
12. **Puchowicz M.A.**, Radhakrishnan K., Magness D.L., LaManna J.C. Computational study on use of single-point analysis method for quantitating local cerebral blood flow in mice. *Adv Exp Med Biol.* (2005) 566: 99-104.
13. **Puchowicz MA**, Varnes M.E., Cohen B.H., Friedman N.R., Kerr DS, Hoppel CL. Oxidative phosphorylation analysis: assessing the integrated functional activity of human skeletal muscle mitochondria-case studies. *Mitochondrion* (2005) 4: 377-85.

14. Zechel JL, Gamboa JL, Peterson AG, **Puchowicz MA**, Selman WR, Lust WD. Neuronal migration is transiently delayed by prenatal exposure to intermittent hypoxia. *Birth Defects Res B Dev Reprod Toxicol.* (2005) 74(4): 287-99.
15. Xu K, **Puchowicz MA**, Lust WD, LaManna JC. Adenosine treatment delays posts ischemic hippocampal CA1 loss after cardiac arrest and resuscitation in rats. *Brain Res.* (2006) 1071(1): 208-17.
16. Occhipinti R, **Puchowicz MA**, LaManna JC, Somersalo E, Calvetti D. Statistical analysis of metabolic pathways fo brain metabolism at steady state. *Ann. Biomed. Eng.* (2007) 35(6): 886-902.
17. **Puchowicz M**, Xu K, Sun X, Ivy A, Emancipator D, LaManna JC. Diet-induced ketosis increases capillary density without altered blood flow in rat brain. *Am. J. Physiol. Endocrinol Metab* (2007) 292: E1607-E1615
18. Xu K, Sun X, **Puchowicz MA**, LaManna JC. Increased sensitivity to transient global ischemia in aging rat brain. *Adv Exp Med Biol.* (2007) 599: 199-206.
19. Koppaka SS, **Puchowicz, M.A.**, LaManna, J.C, Gatica, J.E. Effect of alternate energy substrates on mammalian brain tissue metabolism during ischemic events. *Adv Exp Med Biol.* (2008) 614: 361-70.
20. Xu K, **Puchowicz MA**, Sun X, LaManna. Mitochondrial dysfunction in aging rat brain following transient global ischemia. *Adv. Exp. Biol. Med.* (2008) 379-386. PMC3071507
21. Wong LC, Brunetti-Pierri N, Zhang Q, Yazigi N, Bove KE, Dahms BB, **Puchowicz MA**, Gonzalez-Gomez I, Schmitt ES, Tryong C, Hoppel CL, Chou P-C, Wang J, Baldwin EE, Adams, Leslie N, Boles RG, Kerr DS, and Craigen WJ. Mutations in the MPV17 gene are responsible for rapidly progressive liver failure in infancy. *Hepatology.* (2008) 47(2): 768.
22. **Puchowicz MA**, J Zechel, J Valerio, D Emancipator, K Xu, S Pundik, JC LaManna and WD Lust. Neuroprotection in Diet Induced Ketotic Rat Brain Following Focal Ischemia. *J Cereb Blood Flow Metab* 1:10 (2008) 28(12): 1907-16. PMC3621146
23. Shenk JC, Liu J, Fischbach K, Xu K, **Puchowicz M**, Obrenovich ME, Gasimov E, Alvarez LM, Ames BN, Lamanna JC, Aliev G. The effect of acetyl-L-carnitine and R-alpha-lipoic acid treatment in ApoE4 mouse as a model of human Alzheimer's disease. *J Neurol Sci.* (2009) 283(1-2): 199-206. PMC2713369
24. LaManna JC, Salem N, **Puchowicz M**, Erokwu B, Koppaka S, Flask C, Lee Z. Ketones suppress brain glucose consumption. *Adv Exp Med Biol.* (2009) 645: 301-6. PMC2874681
25. Millward CA, DeSantis D, Hsieh C-Wen, Heaney JD, Pisano S, Olswang Y, Reshef L, Beidelschies M, **Puchowicz M**, Croniger C. Phosphoenolpyruvate carboxykinase (Pck1) helps regulate the triglyceride/fatty acid cycle and development of insulin resistance in mice. *J Lipid Res.* (2010) 51(6): 1452-1463. PMC3035508
26. Xu K, Sun X, Eroku BO, Tsipis CP, **Puchowicz MA**, LaManna JC. Diet-induced ketosis improves cognitive performance in aged rats. *Adv Exp Med Biol.* (2010); 662:71-5. PMC2874682
27. Xu K, **Puchowicz MA**, Sun X, Lamanna JC. Decreased brainstem function following cardiac arrest and resuscitation in aged rat. *Brain Res.* (2010) 1328: 181-189. PMC2877401
28. Xu K, Radhakrishnan K, A. Serhal, F. Allen, LaManna JC, **Puchowicz M**. Regional Brain Blood Flow in Anesthetized Mouse: Quantitative Measurement Using Single-Pass Radio-Tracer Method. *Adv Exp Med Biol.* (2011) 701: 255-60.
29. Hsieh CW, Huang C, Bederman I, Yang J, Beidelschies M, Hatzoglou M, **Puchowicz M**, Croniger CM. Function of phosphoenolpyruvate carboxykinase in mammary gland epithelial cells. *J Lipid Res.* (2011) 1352-62. PMC3122918
30. Scherer T, O'Hare J, Diggs-Andrews K, Schweiger M, Cheng B, Lindtner C, Zielinski E, Vempati P, Su K, Dighe S, Milsom T, **Puchowicz M**, Scheja L, Zechner R, Fisher SJ, Previs SF, Buettner C. Brain insulin controls adipose tissue lipolysis and lipogenesis. *Cell Metab.* (2011) 183-94. PMC3061443

31. Ye F, Lemieux H, Hoppel CL, Hanson RW, Hakimi P, Croniger CM, **Puchowicz M**, Anderson VE, Fujioka H, Stavnezer E. Peroxisome proliferator-activated receptor γ (PPAR γ) mediates a Ski oncogene-induced shift from glycolysis to oxidative energy metabolism. *J Biol Chem.* (2011) 286(46): 40013-40024. PMC3220574
32. Li Q, Tomcik K, Zhang S, **Puchowicz MA**, Zhang GF. Dietary regulation of catabolic disposal of 4-hydroxynonenal analogs in rat liver. *Free Radic Biol Med.* (2012); 52(6): 1043-53. PMC3289253
33. Xu K, Lamanna JC, **Puchowicz MA**. Neuroprotective properties of ketone bodies. *Adv Exp Med Biol.* (2012) 737: 97-102.
34. Harris SR, Zhang GF, Sadhukhan S, Wang H, Shi C, **Puchowicz MA**, Anderson VE, Salomon RG, Tochtrop GP, Brunengraber H. Metabolomics and Mass Isotopomer Analysis as a Strategy for Pathway Discovery: Pyrrolyl and Cyclopentenyl Derivatives of the Pro-Drug of Abuse, Levulinate. *Chem Res Toxicol.* (2012) 26(2): 213-20. PMC3997259
35. Zhang Y, Kuang Y, LaManna JC, **Puchowicz MA**. Contribution of brain glucose and ketone bodies to oxidative metabolism. *Adv Exp Med Biol.* (2012) 765: 365-70.
36. Lindtner C, Scherer T, Zielinski E, Filatova N, Fasshauer M, Tonks NK, **Puchowicz M**, Buettner C. Binge drinking induces whole-body insulin resistance by impairing hypothalamic insulin action. *Sci Transl Med.* (2013) 30: 5(170). PMC3740748
37. Kumashiro N, Beddow SA, Vatner DF, Majumdar SK, Cantley JL, Guebre-Egziabher F, Fat I, Guigni B, Jurczak MJ, Birkenfeld AL, Kahn M, Perler BK, **Puchowicz MA**, Manchem VP, Bhanot S, Still CD, Gerhard GS, Petersen KF, Cline GW, Shulman GI, Samuel VT. Targeting pyruvate carboxylase reduces gluconeogenesis and adiposity and improves insulin resistance. *Diabetes* (2013) 62:21831-94. PMC3712050
38. D'Agostino DP, Pilla R, Held HE, Landon CS, **Puchowicz M**, Brunengraber H, Ari C, Arnold P, Dean JB. Therapeutic ketosis with ketone ester delays central nervous system oxygen toxicity seizures in rats. *Am J Physiol Regul Integr Comp Physiol.* (2013) 304:R829-36.
39. Prince A, Zhang Y, Croniger C, Puchowicz M. Oxidative Metabolism: Glucose vs Ketones. *Adv Exp Med Biol.* (2013) 789:323-8.
40. Krokowski D, Han J, Saikia M, Majumder M, Yuan CL, Guan BJ, Bevilacqua E, Bussolati O, Bröer S, Arvan P, Tchórzewski M, Snider MD, **Puchowicz M**, Croniger CM, Kimball SR, Pan T, Koromilas AE, Kaufman RJ, Hatzoglou M. A self-defeating anabolic program leads to β -cell apoptosis in endoplasmic reticulum stress-induced diabetes via regulation of amino acid flux. (2013) *J Biol Chem.* Jun 14;288(24):17202-13 PMC 36825
41. Zhang Y, Kuang Y, Xu K, Harris, D, Lee Z, LaManna J, **Puchowicz MA**. Ketosis Proportionately Spares Glucose Utilization in Brain. (2013) *J Cereb Blood Flow Metab.* Aug;33(8):1307-11. PMC3734783
42. Ruiz R, Jideonwo V, Ahn M, Surendran S, Tagliabracci VS, Hou Y, Gamble A, Kerner J, Irimia-Dominguez JM, **Puchowicz MA**, Depaoli-Roach A, Hoppel C, Roach P, Morral N. Sterol Regulatory Element Binding Protein-1 (SREBP-1) Is Required To Regulate Glycogen Synthesis And Gluconeogenic Gene Expression In Mouse Liver *J Biol Chem.* (2014) Feb 28;289(9):5510-7.
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