

**BIOGRAPHICAL SKETCH**

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NAME Ormond A. MacDougald	POSITION TITLE Professor		
eRA COMMONS USER NAME (credential, e.g., agency login) macdougald			
EDUCATION/TRAINING <i>(Begin with baccalaureate or other initial professional education, such as nursing, and include postdoctoral training.)</i>			
INSTITUTION AND LOCATION	DEGREE <i>(if applicable)</i>	YEAR(s)	FIELD OF STUDY
University of Guelph	B.Sc.	1986	Animal Science
Michigan State University	M.S.	1988	Animal Science
Michigan State University	Ph.D.	1992	Physiology
Johns Hopkins University School of Medicine	Postdoc	1996	Biological Chemistry

**A. Positions and Honors.**

- 1996-2002. Assistant Professor, Dept Physiology, Univ. of Michigan School of Medicine  
 2002-2006 Associate Professor, Molecular & Integrative Physiology, Univ. of Michigan School of Medicine  
 2005-2006 Associate Professor, Internal Medicine, Univ. of Michigan School of Medicine  
 2006-present Professor, Molecular and Integrative Physiology, and Internal Medicine, Univ. of Michigan School of Medicine
- 1999-present NIH study sections (ad hoc): Metabolism, SBIR, Endocrinology & Metabolism, Obesity and Adipocyte Development, Life Cycle of the Adipocyte, Special Emphasis Panels.
- 2003-present International Advisory Board. Graduate School of Metabolism. University of Southern Denmark.
- 2005 Henry Pickering Bowditch Award, American Physiological Society  
 Basic Science Achievement Award, University of Michigan Medical School  
 Editorial Boards. Journal of Biological Chemistry (2003 – 2009), Obesity (2007 – 2009)
- 2008-present Director of Graduate Studies, Molecular and Integrative Physiology

**B. Selected peer-reviewed publications (of more than 75)**

- Ross, S.E., N. Hemati, K.A. Longo, C. Bennet, P. Lucas, and R.L. Erickson, O.A. MacDougald. 2000. Inhibition of Adipogenesis by Wnt Signaling. *Science* 289: 950-953.
- Erickson, R.L., N Hemati, S.E. Ross, and O. A. MacDougald. 2001. p300 Coactivates the Adipogenic Transcription Factor C/EBP $\alpha$ . *J. Biol. Chem.* 276: 16348-16355.
- MacDougald, O.A. and S. Mandrup. 2002. Adipogenesis: Forces that Tip the Scales. *T.E.M.* 13: 5-11.
- Ross, S.E., R.L. Erickson, I. Gerin, P.M. DeRose, L. Bajnok, K.A. Longo, D.E. Misek, R. Kuick, S.M. Hanash, K.B. Atkins, S. Mahle, H.I. Nebb, L. Madsen, K. Kristiansen, and O.A. MacDougald. 2002. Microarray analyses during adipogenesis: understanding the effects of Wnt-signaling on adipogenesis and the roles of LXR $\alpha$  in adipocyte metabolism. *Mol. Cell. Biol.* 22: 5989-5999.
- Bennett, C.N., S.E. Ross, K.A. Longo, L. Bajnok, N. Hemati, K.W. Johnson, S.D. Harrison, and O.A. MacDougald. 2002. Regulation of Wnt signaling during adipogenesis. *J. Biol. Chem.* 277: 30998-31004.
- Longo, K.A., J.A. Kennell, M.J. Ochocinska, S.E. Ross, W.S. Wright, and O.A. MacDougald. 2002. Wnt signaling protects 3T3-L1 preadipocytes from apoptosis through induction of insulin-like growth factors. *J. Biol. Chem.* 277: 38239-38244.
- Kennell, J.A., E.E. O'Leary, B.M. Gummow, Gary D. Hammer, and O.A. MacDougald. 2003. TCF-4N, a novel isoform of mouse TCF-4, synergizes with  $\beta$ -catenin to coactivate C/EBP $\alpha$  and SF-1 transcription factors. *Mol. Cell. Biol.* 23: 5366-5375.
- Chiang, S.-H. and O.A. MacDougald. 2003. Will fatty worms help cure human obesity? *Trends in Genetics* 19: 523-5.
- Ross, S.E., H.S. Radomska, F. Schaufele, P. Zhang, J.N. Winnay, L. Bajnok, W.S. Wright, D.G. Tenen and O.A. MacDougald. 2004. Phosphorylation of C/EBP $\alpha$  inhibits granulopoiesis. *Mol. Cell. Biol.* 24: 675-686.

10. Longo, K.A., W.S. Wright, S. Kang, I. Gerin, S.-H. Chiang, P.C. Lucas, M.R. Opp, and O.A. MacDougald. 2004. Wnt10b Inhibits Development of White and Brown Adipose Tissues. *J. Biol. Chem.* 279: 35503-35509.
10. Kang, S., L. Bajnok, K.A. Longo, R.K. Petersen, J.B. Hansen, K. Kristiansen, O.A. MacDougald. 2005. Effects of Wnt signaling on brown adipocyte differentiation and metabolism mediated by PGC-1 $\alpha$ . *Mol. Cell Biol.* 25: 1272-1282.
11. Gerin, I., V.W. Dolinsky, J.G. Shackman, R.T. Kennedy, S.-H. Chiang, C.F. Burant, K. Steffensen, J.-Å. Gustafsson, and O.A. MacDougald. 2005. LXR $\beta$  is required for adipocyte growth, glucose homeostasis and  $\beta$  cell function in aged mice. *Journal of Biological Chemistry* 280: 23024-23031.
12. Bennett, C.N., K.A. Longo, W.S. Wright, L.J. Suva, T.F. Lane, K.D. Hankenson and O.A. MacDougald. 2005. Regulation of osteoblastogenesis and bone mass by Wnt10b. *Proceedings of the National Academy of Sciences.* 102: 3324-3329.
13. Kennell, J.A. and O.A. MacDougald. 2005. Inhibition of adipogenesis by  $\beta$ -catenin-dependent and independent Wnt signaling. *Journal of Biological Chemistry.* 280: 24004-24010.
14. Venkatesh, J., H.U. Bryant, and O.A. MacDougald. 2006 Regulation of bone mass by Wnt signaling. *Journal of Clinical Investigation* 116: 1202-1209.
15. Xu, Y., Y.L. Zhou, W. Luo, Q.-S. Zhu, D. Levy, O.A. MacDougald, and M.L. Snead. 2006. NF-Y and CCAAT/Enhancer-binding protein  $\alpha$  synergistically activate the mouse amelogenin gene. *Journal of Biological Chemistry* 281: 16090-16098.
16. Inoki, K., H. Ouyang, T. Zhu, Y. Wang, C. Lindvall, Y. Wang, X. Zhang, Q. Yang, C. Bennett, Y. Harada, K. Stankunas, C.-Y. Wang, X. He, O.A. MacDougald, M. You, B.O. Williams, and K.-L. Guan. 2006. TSC2 integrates Wnt and energy signals via a coordinated phosphorylation by AMPK and GSK3 to regulate cell growth. *Cell* 126: 955-968.
17. Wright, W.S., K.A. Longo, V.W. Dolinsky, I. Gerin, S. Kang, C.N. Bennett, S.-H. Chiang, T.C. Prestwich, C. Gress, C.F. Burant, V.S. Susulic, and O.A. MacDougald. 2006. Wnt10b inhibits obesity in *ob/ob* and *agouti* mice. *Diabetes* 56: 295-303.
18. E.D. Rosen and MacDougald, O.A. 2006. Adipocyte differentiation from the inside out. *Nature Reviews - Molecular and Cellular Biology* 7: 885-896.
19. Datta, J. S. Majumder, H. Kutay, W. Frankel, R. Costa, H.C. Cha, O.A. MacDougald, S.T. Jacob, and K. Ghoshal. 2007. Metallothionein expression is suppressed in primary human hepatocellular carcinomas and is mediated through inactivation of C/EBP $\alpha$  by phosphatidylinositol 3 kinase signaling cascade. *Cancer Research* 67: 2736-46.
20. Kang, S., C.N. Bennett, L.A. Rapp, K.D. Hankenson, and O.A. MacDougald. 2007. Wnt signaling stimulates osteoblastogenesis of mesenchymal precursors by suppressing C/EBP $\alpha$  and PPAR $\gamma$ . *J. Biol. Chem.* 282: 14515-24.
21. Bennett, C.N., H. Ouyang, Y. Ma, I. Gerin, K. Sousa, Q. Zeng, T.F. Lane, V. Krishnan, K.D. Hankenson, and O.A. MacDougald. 2007. Expression of Wnt10b increases postnatal bone formation by enhancing osteoblast differentiation. *Journal of Bone and Mineral Research* 22: 1924-1932.
22. Keller, P., J. Petrie, P. de Rose, I. Gerin, W.S. Wright, A. Rinnov, C.P. Fischer, B.K. Pedersen, and O.A. MacDougald. 2008. Fat specific protein 27 regulates storage of triacylglycerol. *J. Biol. Chem.* 283: 14355-65.
23. Cha, H.C., N.R. Oak, S. Kang, T.-A. Tran, S. Kobayashi, S.-H. Chiang, D.G. Tenen, and O.A. MacDougald. 2008. Phosphorylation of C/EBP $\alpha$  regulates GLUT4 expression and glucose transport in adipocytes. *J. Biol. Chem.* 283: 18002-11.
24. Gerin, I., G.W. Louis, X. Zhang, T.C. Prestwich, M.G. Myers, O.A. MacDougald\*, and W.B. Nothnick\*. 2009. Hyperphagia and obesity in female mice lacking tissue inhibitor of metalloproteinase-1. *Endocrinology* 150: 1697-704.
25. Gerin, I., G.T. Bommer, M.E. Lidell, A. Cederberg, S. Enerback, and O.A. MacDougald. 2009. On the role of FOX transcription factors in adipocyte differentiation and insulin-stimulated glucose uptake. *J. Biol. Chem.* 284: 10755-63.
26. Mori, H., K. Inoki, H. Münzberg, D. Opland, M. Faouzi, E.C. Villanueva, T. Ikenoue, D. Kwiatkowski, O.A. MacDougald, M.G. Myers, Jr., and K.-L. Guan. 2009. Critical role for hypothalamic mTOR activity in energy balance. *Cell Metabolism* 9: 362-74.

### C. Research Support

#### Ongoing Research Support

Mentor-Based Post Doc Fellowship MacDougald (PI) 7/1/08-6/30/12

American Diabetes Association

Regulation Of Adipocyte Differentiation And Metabolism

Major Goals: The postdoctoral fellow can chose to study one of the following research areas: regulation of adipocyte differentiation and phosphorylation in metabolism by microRNAs or Wnt signaling, or role of C/EBP adipocyte insulin sensitivity.

Role: PI

PA-03-008 Hongjiao (PI) 7/1/2007-2/28/2011

University of Pittsburgh ,NIH

mTOR Signaling: A Novel Molecular Mechanism of Wnt's Anabolic effects on Bone

Major Goals: The goals of this grant are to explore the role of mTOR in mediating effects of Wnt signaling on osteoblast function.

Role: Co-Investigator

RO1 (Richard Neubig, PI) 7/1/06 – 6/30/10

NIH

Pharmacological Targeting of Regulators of G Protein Signaling

Major Goals: The goals of this grant are to explore mechanisms whereby Regulators of G Protein Signaling influences energy balance and potentially adipogenesis.

Role: Co-Investigator

RO1 DK51563(Ormond MacDougald, PI) 7/1/06 – 6/30/11

NIH

Regulation of adipocyte differentiation and metabolism

Major Goals: The major goals of this grant are to define the basis for Wnt activity during adipogenesis.

Eli Lilly 12/7/07 – 12/06/10

Regulation of bone mass by Wnt Signaling and micro RNAs

Major Goals: The major goals of this grant are to explore potential targets for influencing bone formation rate.

RO1 DK62876 (Ormond MacDougald, PI) 7/1/09– 6/30/14

NIH

Roles of Wnt Signaling in Adipose Tissue

Major Goals: To investigate the role of Wnt signaling in adipocyte metabolism and function, including evaluation of specific roles for Frizzled 4.

OVERLAP: None