# Education

Ph.D. **Department of Neurobiology and Developmental Sciences** Graduated May 2014

University of Arkansas for Medical Sciences (Little Rock, AR)

B.S. **Microbiology** Graduated May 2009

Mississippi State University (Starkville, MS)

# Experience

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| * **Assistant Professor**, Department of Neurobiology and Developmental Sciences, University of Arkansas for Medical Sciences * **Instructor,** Department of Neurobiology and Developmental Sciences, University of Arkansas for Medical Sciences * **Postdoctoral Research**, University of Arkansas for Medical Sciences   Mentors: Gwen V. Childs, Ph.D. and Angus MacNicol, Ph.D. |  | 2019-Present  2018- Present  2014- 2018 |
| * **Graduate Research**, University of Arkansas for Medical Sciences   Mentor: Gwen V. Childs, Ph.D. |  | 2010-2014 |
| * **Undergraduate Research**, University of Arkansas for Medical Sciences   Mentor: Edgar Garcia-Rill, Ph.D. |  | 2007-2009 |
| * **Undergraduate Research**, Mississippi State University   Mentor: Lisa Wallace, Ph.D. |  | 2007-2008 |

# Research and Professional Interests

# My current research interests lie at the intersection of metabolism and reproduction. Women who have nutritional challenges are known to have an increased risk of reproductive issues, including difficulty becoming pregnant complications with pregnancy. I am particularly interested in how metabolism is integrated into the hypothalamic-pituitary-gonadal axis. My current research is focused on the role of leptin signaling in the reproductive cells of the pituitary, the gonadotropes. Our most recent work describing the role of a novel translational regulator in the pituitary has garnered much attention from our endocrinology peers. My research goals center on these molecular mechanisms involving translation in the gonadotrope and how they regulate whole-animal physiology with relation to reproduction. I am currently developing my teaching skills by creating interactive learning units and leading discussion-based classes in our department’s Neuroendocrinology course.

# Affiliations/Memberships

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| * The Endocrine Society |  |  |
| * Women in Endocrinology |  |  |

# Honors and Awards

# Winner, Judge’s Choice and Audience Choice, Endocrine Society Knockout Rounds “Why Science Matters” competition. Endocrine Society meeting, Chicago, IL USA. (March 2018).

**Presidential Poster Competition** Participant, chosen based on a top-scoring abstract. Poster featured with a 5-minute poster talk. Endocrine Society meeting, Chicago, IL USA. (March 2018).

**Presidential Poster Competition** Participant, chosen based on a top-scoring abstract. Endocrine Society meeting, Orlando, FL. (April 2017).

**Presidential Poster Competition** Participant, chosen based on a top-scoring abstract. Endocrine Society meeting, San Francisco, CA USA. (June 2013).

**Outstanding Abstract Award**. Endocrine Society meeting, San Francisco, CA USA. (June 2013).

**Early Career Forum Travel Award**. Endocrine Society meeting, San Francisco, CA USA. (June 2013).

**Overall Winner, Student Research Day**. University of Arkansas for Medical Sciences “Student Research Day” poster competition. Little Rock, AR. (2013).

**First Place Winner, Poster competition**, General Biomedical Sciences Category. SE Regional IDeA Meeting, Little Rock, AR. (November 2013).

# Research Support

# 1R01HD087057-02 G.V. Childs and A. MacNicol 08/15/2016-08/14/2021

# “Post-transcriptional Pathways that Signal Leptin Regulation of Gonadotropes”

# The goals of this study are to determine the role of leptin in the cyclic regulation of GnRHR protein expression. Potential mediators will be scrutinized, including miRNAs and translational regulators. Using transgenic animal models, the repercussions of a gonadotrope-specific leptin receptor knockout will be determined with respect to subfertility, changes in LH surge regulation, and diminished responses to GnRH.

# Role: Co-Investigator

**Editorial Work**

**Early Career Reviewer Board for Endocrinology** January 2019-December 2020

**Teaching Experience**

**Special Topics: Neuroendocrinology** Fall 2018 University of Arkansas for Medical Sciences

I created interactive learning units and test questions for seven classes, leading class discussions for each.

**Publications**

1. **Odle A,** Allensworth-James M, Childs GV. The War on the Placenta: The Differing Battles of High-Fat Diet and Obesity. *Endocrinology*. 2018 Apr 1; 159(4): 1642-1643. PMID: 29471404.
2. **Odle AK**, Beneš H, Melgar Castillo A, Akhter N, Syed M, Haney A, Allensworth-James M, Hardy L, Winter B, Manoharan R, Syed R, MacNicol MC, MacNicol AM, Childs GV. Association of Gnrhr mRNA With the Stem Cell Determinant Musashi: A Mechanism for Leptin-Mediated Modulation of GnRHR Expression. *Endocrinology*. 2018 Feb 1; 159(2): 883-894. PMID: 29228137
3. **Odle AK,** Akhter N, Syed MM, Allensworth-James ML, Beneš H, Melgar Castillo AI, MacNicol MC, MacNicol AM, Childs GV. Leptin Regulation of Gonadotrope Gonadotropin-Releasing Hormone Receptors As a Metabolic Checkpoint and Gateway to Reproductive Competence. *Front Endocrinol (Lausanne)*. 2018 Jan 5; 8: 367. PMID: 29354094
4. **Odle AK**, Allensworth-James ML, Akhter N, Syed M, Haney AC, MacNicol M, MacNicol AM, Childs GV. A Sex-Dependent, Tropic Role for Leptin in the Somatotrope as a Regulator of POU1F1 and POU1F1-Dependent Hormones. *Endocrinology*. 2016 Oct; 157(10): 3958-3971. PMID: 27571135
5. **Odle AK,** Allensworth-James M, Haney A, Akhter N, Syed M, Childs GV. Adipocyte Versus Somatotrope Leptin: Regulation of Metabolic Functions in the Mouse. *Endocrinology*. 2016 Apr; 157(4): 1443-56. PMID: 26859333
6. Allensworth-James ML, **Odle A,** Haney A, Childs G. Sex Differences in Somatotrope Dependency on Leptin Receptors in Young Mice: Ablation of LEPR Causes Severe Growth Hormone Deficiency and Abdominal Obesity in Males. *Endocrinology*. 2015 Sep; 156(9): 3253-64. PMID: 26168341
7. **Odle AK**, Drew PD, Childs GV. Giant mice reveal new roles for GH in regulating the adipose immune microenvironment. *Endocrinology*. 2015 May; 156(5): 1613-5. PMID: 25886070
8. Hyde J, MacNicol M, **Odle A,** Garcia-Rill E. The use of three-dimensional printing to produce in vitro slice chambers. *J Neurosci Methods*. 2014 Dec 30; 238:82-7. PMID: 25251556
9. **Odle AK,** Haney A, Allensworth-James M, Akhter N, Childs GV. Adipocyte versus pituitary leptin in the regulation of pituitary hormones: somatotropes develop normally in the absence of circulating leptin. *Endocrinology*. 2014 Nov; 155(11): 4316-28. PMID: 25116704
10. Akhter N, CarlLee T, Syed MM, **Odle AK,** Cozart MA, Haney AC, Allensworth-James ML, Beneš H, Childs GV. Selective deletion of leptin receptors in gonadotropes reveals activin and GnRH-binding sites as leptin targets in support of fertility. *Endocrinology.* 2014 Oct; 155(10): 4027-42. PMID: 25057790
11. Syed M, Cozart M, Haney AC, Akhter N, **Odle AK,** Allensworth-James M, Crane C, Syed FM, Childs GV. Ghrelin restoration of function in vitro in somatotropes from male mice lacking the Janus kinase (JAK)-binding site of the leptin receptor. *Endocrinology*. 2013 Apr; 154(4): 1565-76. PMID: 23417423
12. Akhter N, **Odle AK,** Allensworth-James ML, Haney AC, Syed MM, Cozart MA, Chua S, Kineman R, Childs GV. Ablation of leptin signaling to somatotropes: changes in metabolic factors that cause obesity. *Endocrinology*. 2012 Oct; 153(10): 4705-15. PMID: 22865370
13. Childs GV, Akhter N, Haney A, Syed M, **Odle A,** Cozart M, Brodrick Z, Gaddy D, Suva LJ, Akel N, Crane C, Benes H, Charlesworth A, Luque R, Chua S, Kineman RD. The somatotrope as a metabolic sensor: deletion of leptin receptors causes obesity. *Endocrinology*. 2011 Jan; 152(1): 69-81. PMID: 21084451
14. Kezunovic N, Simon C, Hyde J, Smith K, Beck P, **Odle A,** Garcia-Rill E. AROUSAL FROM SLICES TO HUMANS: Translational studies on sleep-wake control. *Transl Neurosci*. 2010 Mar 1; 1(1): 9-15. PMID: 22639732
15. Beck P, **Odle A,** Wallace-Huitt T, Skinner RD, Garcia-Rill E. Modafinil increases arousal determined by P13 potential amplitude: an effect blocked by gap junction antagonists. *Sleep*. 2008 Dec; 31(12): 1647-54. PubMed PMID: 19090320

# Presentations

Silva Moreira, A.R., Miles, T.K., Haney, A., Hardy, L., Allensworth, M., Kharas, M., Lengner, C., MacNicol, M., MacNicol, A., Childs, G.V., **Odle, A.K.** **(July 2019)** Translational control in the gonadotrope: Musashi mediates crosstalk between metabolism and reproduction. Oral presentation (by ASM) Society for the Study of Reproduction meeting, San Jose, CA USA.

**Odle, A.**, Silva Moreira, A.R., Haney, A., Allensworth-James, Hardy, L., MacNicol, M., Childs, G., MacNicol, A. **(March 2019)** The Gonadotrope Leptin Signal is Critical for the Early-Morning Estrus Rise in FSH in Female Mice. Endocrine Society meeting, New Orleans, LA USA.

**Odle, A.,** Silva Moreira, A.R., Haney, A., Hardy, L., Allensworth-James, M., Kharas, M., Lengner, C., MacNicol, M., Childs, G., MacNicol, A. **(September 2018)** Metabolic control of reproduction through the RNA-binding protein Musashi: Translational regulation of the pituitary gonadotrope. Translational Control meeting, Cold Spring Harbor Laboratory, NY USA.

**Odle, A.** “Nutrition and Reproduction at the Level of the Pituitary”. **(March 2018**) Presented as a talk in the “Why Science Matters? Knockout Rounds” competition. Endocrine Society meeting, Chicago, IL USA.

**Odle, A.**, Allensworth-James, M., Haney, A., Melgar Castillo, A., Benes, H., Hardy, L., MacNicol, M.C., MacNicol, A.M., and Childs, G.V. **(March 2018)** A Role for Leptin in the Post-transcriptional Regulation of the Luteinizing Hormone Surge. Endocrine Society meeting, Chicago, IL USA.

**Odle A.**, Melgar Castillo, A., Allensworth-James, M., Haney, A., MacNicol, A., MacNicol, M., and Childs, GV. **(April 2017)** Leptin Signaling on Gonadotropes Is Crucial for Normal Cyclicity and Ovarian Follicular Development: Associations with Pituitary Estrogen Receptor Expression and Reproductive Capacity. Endocrine Society meeting, Orlando, FL USA.

**Odle, A.**, Allensworth-James, M., Haney, A., Akhter, N., Syed, M., MacNicol, A., MacNicol, M., Childs, G. **(April 2016)**. Severe subfertility in a new model of gonadotrope leptin resistance: Potential mechanisms of post-transcriptional control of GnRHr by leptin. Endocrine Society meeting, Boston, MA USA.

**Odle, A.**, Allensworth-James, M., Haney, A., MacNicol, A., MacNicol, M., Childs, G. **(November 2015)**. Leptin Stimulation of GnRHr in Gonadotropes: Is Musashi involved? Southeast Regional IDeA Symposium, Biloxi, MS USA.

**Odle, A.**, Allensworth-James, M., Haney, A., Akhter, N., Syed, M., MacNicol, A., MacNicol, M., Childs, G. **(April 2015)**. Does leptin stimulation of gonadotropes involve the translational regulator Musashi? Endocrine Society meeting, San Diego, CA USA.

**Odle, A.**, Allensworth-James, M., Haney, A., Childs, G.V. **(June 2014)**. Investigating sources of leptin important to the regulation of pituitary and hypothalamic mRNA production and pituitary hormone secretion. Endocrine Society Meeting, Chicago, Illinois USA.

**Odle, A.**, Allensworth, M., Haney, A., Childs, G. **(June 2014)**. The pituitary as a regulator of the postnatal leptin surge and somatotrope development. National IDeA Symposium, Washington, D.C. USA.

**Odle, A.**, Allensworth-James, M., Haney, A., Childs, G.V. **(November 2013)**. Pituitary leptin, not adipocyte leptin, maintains somatotrope cell populations. Southeast Regional IDeA Meeting, Little Rock, Arkansas USA.

**Odle, A.**, Allensworth-James, M., Haney, A., Childs, G.V. **(April 2013)**. Pituitary leptin contributes to the postnatal leptin surge and the maintenance of growth hormone cells. UAMS Student Research Day, Little Rock, Arkansas USA.

**Odle, A.**, Allensworth, M., Haney, A., Childs, G.V. **(June 2013)**. Pituitary derived leptin regulates somatotropes and contributes to the postnatal leptin surge. Endocrine Society Meeting, San Francisco, CA USA.

**Odle, A.**, Allensworth, M., Haney, A., Akhter, N., Childs, G. **(June 2012)**. Development of a Tissue-Specific Leptin Knockout Mouse: Validation and Unexpected Challenges. Endocrine Society Meeting, Houston, Texas USA.

**Odle, A.**, Akhter, N., Haney, A., Cozart, M., Syed, M., Childs, G. **(2011)** Somatotrope-specific knockout of leptin causes activity changes in the mouse. UAMS Student Research Day, Little Rock, Arkansas USA.

**Odle, A.**, Smith, K., Kezunovic, N., Syed, M., Akhter, N., Childs, G., Garcia-Rill, E. **(2010, July)**. Enhancement of NMDA receptor function in the pedunculopontine nucleus by leptin. Federation of European Neurosciences annual meeting, Amsterdam, Netherlands.

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