

**SENIOR TRAINER  
BIOGRAPHICAL SKETCH**

NAME	<b>David H Abbott, Ph.D.</b>	POSITION TITLE	<b>Professor</b>
eRA COMMONS USER NAME	<b>davidabbott1</b>		

EDUCATION/TRAINING (*Begin with baccalaureate or other initial professional education, such as nursing, and include postdoctoral training.*)

INSTITUTION AND LOCATION	DEGREE	YEAR(s)	FIELD OF STUDY
<b>University of Edinburgh, Scotland</b>	<b>B.Sc.</b>	<b>1975</b>	<b>Biological Sciences</b>
<b>University of Edinburgh, Scotland</b>	<b>Ph.D.</b>	<b>1979</b>	<b>Zoology</b>
<b>University of Wisconsin, Madison, Wisconsin</b>	<b>Postdoc</b>	<b>1979-81</b>	<b>Repro. Physiology</b>

**A. Personal Statement**

I would be delighted to serve as a Faculty Trainer in this T32 Endocrinology-Reproductive Physiology (ERP) Training Program application in 2017. Mentees benefit from over 40 years of experience I have gained from employing investigative techniques to develop animal models of female reproductive pathophysiology so as to elucidate pathogenic mechanisms underlying a variety of reproductive and metabolic health disorders commonly found in women. In the last 20 years, as a result of a continuing, long-standing and highly productive collaboration with Dr. Dumesic (Ob/Gyn, UCLA), my laboratory developed two nonhuman primate models for polycystic ovary syndrome (PCOS): (1) prenatally androgenized (PA) and (2) naturally occurring, hyperandrogenic female monkeys. PA monkeys became the vanguard for a multitude of animal and human studies aimed at determining developmental origins of this most common cardiometabolic endocrinopathy in women. PA monkeys express a multitude of PCOS-like reproductive and metabolic pathophysiological traits in adulthood following gestational exposure to androgen excess and transient maternal hyperglycemia. Our most recent work identifies metabolic dysfunction as a key initial abnormality in early developmental origins of PCOS-like traits and shows that the initial aberrations are not as anticipated at metabolomic and epigenetic, as well as endocrinological levels. Our discovery of naturally occurring hyperandrogenic female monkeys that exhibit a combination of PCOS-like traits has not only reinforced this pathogenic understanding, but through whole genome sequencing of individual monkeys, and employing the well annotated rhesus monkey genome, we are piecing together a genetic-epigenetic pathogenesis for PCOS that is eminently testable. I am more than willing to translate such metabolic and endocrinological insights gained from our PCOS-like monkey models to enable mentored research and career development in child health. Currently, as part of two P50 NIH grants and a recent R21, I am collaborating with Dr. Jon Levine, Director of the Wisconsin National Primate Research Center (WNPRC), to silence estrogen receptor alpha (ER $\alpha$ ) gene expression in the ventromedial and arcuate nuclei of the hypothalamus in adult female marmosets using viral vector technology. The aim is to establish ER $\alpha$  as the ER regulating metabolic, sexual and pituitary-ovarian function in female primates, including women. A parallel study is underway in adult female rhesus monkeys. We have a well-established, characterized and tractable colonies of ~300 marmosets and ~1200 rhesus macaques at WNPRC nicely adapted to biomedical procedures, and supported by animal and veterinary staff steeped in species-specific expertise. Together with Assay and Pathology Services, joint WNPRC and Institute of Clinical and Translational Research (CTSA-based) resources, the combined facilities and expertise will enable investigation of the cellular and molecular mechanisms that mediate the metabolic, neuroendocrine and behavioral actions of androgens and estrogens in the primate brain, as well as dysfunction in ovaries, pancreas and adipose depots and how this altered function may be manifest during childhood.

Most recent publications relevant to T32: (student, resident, postdoc, faculty mentees underlined)

1. Salih SM, Ringelstetter AK, Elsarrag MZ, **Abbott DH**, Roti Roti EC. 2015. Dexrazoxane Abrogates Acute Doxorubicin Toxicity in Marmoset Ovary. *Biol Reprod*. 2015 92:73. (PMCID: PMC4367967)

2. Converse AC, Aubert Y, Gustison M, Farhoud M, Weichert JP, Rowland IJ, Allers KA, Sommer B, **Abbott DH**. 2015. Flibanserin stimulated partner grooming reflects brain metabolism changes in female marmosets. *J Sex Med.* 12:2256-2266. (PMCID: in process)
3. Kropp J, Roti Roti EC, Ringelstetter A, Khatib H, **Abbott DH**, Salih SM. 2015. Dexrazoxane Diminishes Doxorubicin-induced Acute Ovarian Damage and Preserves Ovarian Function and Fecundity in Mice. *PLoS One.* 10:e0142588. (PMCID: PMC4636352)
4. **Abbott DH**, Rayome BH, Dumesic DA, Lewis KC, Edwards AK, Wallen K, Wilson ME, Appt SE, Levine JE. 2017. Clustering of PCOS-Like Traits in Naturally Hyperandrogenic Female Rhesus Monkeys. *Hum Reprod.* 32: 923-936. [PubMed - in process]

## B. Positions and Honors

### Positions and Employment

1981-1984	Research Associate, Department of Anatomy, University of Cambridge, England.
1984-1990	Research Fellow and Unit Head, Institute of Zoology, MRC/AFRC Comparative Physiology Research Group, Zoological Society of London, University College London, England.
<u>1990-</u>	<u>University of Wisconsin - Madison, Wisconsin, USA.</u>
1990-1992	Visiting Associate Professor, Department of Obstetrics and Gynecology and Wisconsin National Primate Research Center
1990-1999	Chair, Physiological Ethology Research Group, Wisconsin National Primate Research Center
1992-	Senior Scientist, Wisconsin National Primate Research Center
1992-1998	Associate Professor, Department of Obstetrics and Gynecology
1993-	Faculty Member, Endocrinology/Reproductive Physiology Training Program
1998-	Professor, Department of Obstetrics and Gynecology

### Other Experience and Professional Memberships

1981-	Member, Society for Endocrinology
1994-	Member, Endocrine Society
1994-	Member, Society for Neuroscience
2009-	Member, Society for Behavioral Neuroendocrinology
1995-	Editorial Board, Psychoneuroendocrinology
2003-2008	External Advisory Board, European Union Consortium investigating fetal programming of metabolic, endocrinological, behavioral and neural function
2006-	Editorial Board, Neuroendocrinology
2007-	Ad hoc Member, NIH IPOD, ICER and ad hoc Study Sections
2008-	Editorial Board, Int. J of Obesity
2009-2016	Board, AE-PCOS Society
2014-2017	Member, Annual Meeting Steering Committee, Endocrine Society

### Honors

1990	Co-recipient, Laurent-Perrier Champagne Award for Wild Game Conservation
2012-2016	President-Elect AE-PCOS Society (2012-13), President (2013-14), Past President (2014-16)

## C. Selected Peer-reviewed Publications (Selected from 157 peer-reviewed publications, h-index = 57)

**Most relevant to the current application in addition to those listed above** (Graduate students, residents/postdoc/faculty mentees underlined)

1. **Abbott DH**, Zhou R, Bird IM, Dumesic DA, Conley AJ. 2008. Fetal programming of adrenal androgen excess: lessons from a nonhuman primate model of polycystic ovary syndrome. *Endocr Dev* 13:145-58. (PMCID: PMC2531212)

2. Dumesic DA, Patankar M, Barnett DK, Lesnick TG, Hutcherson BA, **Abbott DH**. 2009 Early prenatal androgenization results in diminished ovarian reserve in adult female rhesus monkeys. *Hum Reprod*. 24:3188-3195. (PMCID: PMC2777787)
3. **Abbott DH**, Bruns CR, Barnett DK, Dunaif A, Goodfriend TL, Dumesic DA, Tarantal AF. 2010. Experimentally-induced gestational androgen excess disrupts glucoregulation in rhesus monkey dams and their female offspring. *Am J Physiol Endocrinol Metab*. 299:E741-E751 (PMCID: PMC2980359)
4. Abbott AD, Colman RJ, Tiefenthaler R, Dumesic DA, **Abbott DH**. 2012 Early-to-Mid Gestation Fetal Testosterone Elongates Right Hand 2D:4D Finger Length Ratio in Polycystic Ovary Syndrome-Like Monkeys. *PLoS ONE* 7:e42372. (PMCID: PMC3425513)
5. Aubert Y, Gustison ML, Gardner LA, Bohl MA, Lange JR, Allers KA, Sommer B, Datson NA, **Abbott DH**. 2012 Flibanserin and 8-OH-DPAT implicate serotonin in association between female marmoset monkey sexual behavior and changes in pair-bond quality. *J Sex Med*. 9:694-707.
6. Converse AC, Aubert Y, Farhoud M, Weichert JP, Rowland IJ, Ingrisano NM, Allers KA, Sommer B, **Abbott DH**. 2012. 8-OH-DPAT-mediated changes in cerebral glucose metabolism in female marmosets assessed by positron emission tomography (PET). *NeuroImage* 60:447-455. (PMCID: In Process).
7. Aubert Y, Bohl MA, Lange JR, Diol NR, Allers KA, Sommer B, Datson NA, **Abbott DH**. 2012 Chronic systemic administration of serotonergic ligands flibanserin and 8-OH-DPAT enhance HPA axis responses to restraint in female marmosets. *Psychoneuroendocrinology* 38:145-154. PMCID: In Process
8. Roti Roti EC, Leisman SK, **Abbott DH**, Salih SM. 2012 Acute Doxorubicin Insult in the Mouse Ovary is Cell- and Follicle-Type Dependent. *PLoS ONE* 7:e42293. (PMCID: PMC3410926)
9. Aubert Y, Allers KA, Sommer B, de Kloet ER, **Abbott DH**, Datson NA. 2013. Brain region-specific transcriptomic markers of serotonin-1A receptor agonist action mediating sexual rejection and aggression in female marmoset monkeys. *J Sex Med* 2013 Apr 2. [Epub ahead of print] (PMCID: In Process).
10. **Abbott DH**, Nicol LE, Levine JE, Xu N, Goodarzi MO, Dumesic DA. 2013. Nonhuman Primate Models of Polycystic Ovary Syndrome. *Mol Cell Endocrinol*. 2013 Jan 28. [Epub ahead of print]. (PMCID: In Process).
11. Nicol LE, O'Brien TD, Dumesic DA, Tarantal AF, **Abbott DH**. 2014. Developmental origins of abnormal pancreatic islet morphology in a nonhuman primate model of polycystic ovary syndrome. *PLoS ONE* 9:e106527. (PMCID: PMC4160158)
12. Roti Roti EC, Ringelstetter AK, Kropp J, **Abbott DH**, Salih SM. 2014. Bortezomib prevents acute Doxorubicin ovarian insult and follicle demise, improving the fertility window and pup birth weight in mice. *PLoS ONE* 9:e108174. (PMCID: PMC4176970)
13. Whigham LD, Butz DE, Dashti H, Tonelli M, Johnson LK, Cook ME, Porter WP, Eghbalnia HR, Markley JL, Lindheim SR, Schoeller DA, **Abbott DH**, Assadi-Porter FM. 2014. Metabolic Evidence of Diminished Lipid Oxidation in Women With Polycystic Ovary Syndrome. *Current Metabolomics* 2:269-278. (PMCID: PMC3994884)
14. Whigham LD, Butz DE, Johnson LK, Schoeller DA, **Abbott DH**, Porter WP, Cook ME. 2014. Breath carbon stable isotope ratios identify changes in energy balance and substrate utilization in humans. *Int J Obesity* 38:1248-50. (PMCID: PMC3994884)
15. Kropp J, **Abbott DH**, Roti Roti EC. 2016 The possibility of dexrazoxane to prevent ovarian damage caused by toxicity. *Expert Review of Quality of Life in Cancer Care* 1:269-275.

## D. Research Support

### Ongoing Research Support

#### Ongoing Research

P51 OD011106-53 (Mailick, PI)

NIH/OD

Wisconsin National Primate Research Center

Dr. Abbott forms part of the Behavioral Services Unit.

\*Competitive renewal achieved fundable score of 22 (05/01/17-04/30/22)

Role: Co-Investigator

07/02/13-04/30/17\*

\$7,098,330

P50 HD044405 (Dunaif, PI) 07/01/13-06/30/17\*  
NIH/NICHD \$231,473  
SCOR Center: Genes, androgens and intrauterine environment in PCOS  
In Subproject #3 in this competitive renewal, Dr. Abbott will be collaborating with Dr. Jon Levine (Subproject PI and Associate Director of the P50) to investigate the contribution of hypothalamic estrogen resistance in the pathogenesis of obesity, insulin resistance and PCOS in marmoset monkeys, a new nonhuman primate model for PCOS in humans. \*P50 1-year bridge funding application pending at NIH.  
Role: Co-Investigator, Subproject III

P50 HD028934 (Marshall, PI) 04/01/14-03/31/19  
NIH/NICHD \$231,712  
Clinical and Basic Studies in Polycystic Ovarian Syndrome (RFA-HD-14-017)  
Project II: Hypothalamic Steroid Receptors and the Pathogenesis of PCOS  
Studies related to this project will make use of viral vector-mediated gene silencing and a validated nonhuman primate model of androgen induced reproductive PCOS phenotypes to address these major gaps in our understanding of the mechanisms that mediate the pathogenesis of PCOS.  
Role: Co-Investigator, Project II

R21 HD084992 (Levine, PI) 01/01/16-12/31/17  
NIH/NICHD  
Neuroestrogen Restraint of GnRH in Juvenile Female Primates  
Dr. Abbott is Co-I responsible for MRI-guided neurosurgical infusion of gene silencing viral vector specific for aromatase and neuroendocrine assessment of the monkeys.

T32 HD041921 (Bird, PI) 05/01/14-04/30/19  
NIH/NICHD \$172,704  
Endocrinology-Reproductive Physiology Training Grant  
Dr. Abbott is one of the faculty mentors and he lecturers in ERP courses. He currently mentors two students (B. Hutcherson for MS ['04-present, minority]; M. Kraynak for PhD ['13-present]). M. Kraynak was competitively awarded a 1-2 year T32 stipend for 2016-18.  
Role: Trainer

T32 DK077586 (Allen, PI) 06/01/14-05/31/19  
NIH/NIDDK \$118,290  
Childhood Diabetes Clinical & Molecular Research Training Program (CDCMRT)  
Dr. Abbott is one of the research trainers. He has successfully mentored two fellows (L. Nicol, MD, 2007-2010; K. Henrichs, MD, 2011-2014) through to faculty appointments.  
Role: Trainer