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 (ERα) gene expression in the ventromedial and arcuate nuclei of the hypothalamus in adult female marmosets using viral vector technology. The aim is to establish ERα 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)


B. Positions and Honors

**Positions and Employment**


1990- University of Wisconsin - Madison, Wisconsin, USA.

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


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)


D. Research Support

**Ongoing Research Support**

**Ongoing Research**

P51 OD011106-53 (Mailick, PI) 07/02/13-04/30/17*  
NIH/OD $7,098,330

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
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 lectures 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