BIOGRAPHICAL SKETCH

Provide the following information for the Senior/key personnel and other significant contributors.
Follow this format for each person. DO NOT EXCEED FIVE PAGES.

NAME: Radovick, Sally

eRA COMMONS USER NAME (agency login): sradovic

POSITION TITLE: Professor of Pediatrics

EDUCATION/TRAINING *(Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable. Add/delete rows as necessary.)*

INSTITUTION AND LOCATION	DEGREE (if applicable)	Completion Date MM/YYYY	FIELD OF STUDY
Youngstown State University, Youngstown, OH	BA (cum laude)	05/77	Biology/Chemistry
Youngstown State University , Youngstown, OH	MS	05/78	Theoretical Chemistry
Northeastern Ohio Universities College of Medicine, OH	MD	05/83	Medicine

A. Personal Statement

I am highly committed to mentoring Ms. Nimisha Nandankar during her training as an F31 awardee. I am a specialist in growth, development, and pubertal disorders in children. I have been involved in conducting biomedical research and mentoring students and fellows for over 25 years, mentoring over 70 graduate students, postdoctoral fellows and junior faculty and received NIH funding as a mentor for 21 post-doctoral mentees, including 6 NRSAs and 15 K01s, K08s or K23s. Additionally, the mentees received numerous private foundation training and career development awards. I also received a K24 for career development. I am currently the Chair of Pediatrics and the Senior Associate Dean for Clinical and Translational Research at Rutgers Robert Wood Johnson Medical School. In this role, I continue my commitment to mentoring fellows and faculty in biomedical research. Previously, I was the Director of the Division of Pediatric Endocrinology and the Program Director of the T32 Training Program in Molecular and Cellular Endocrinology at Johns Hopkins, reflecting my commitment to the goal of training Pediatric Endocrinologists. As I was Chief of Pediatric Endocrinology at the University of Chicago, I was also the Associate Program Director for the Integrated T32 in Endocrinology at the University of Chicago. In 2004, I was awarded the first T32 in Chicago that was specifically designed to train Pediatric Endocrinologists. Currently, I am the PI of the newly funded Rutgers CTSA KL2 program. The NIH has continuously supported my research since 1992. My research deals primarily with the development and function of neuroendocrine control of mammalian growth and development. I have a broad background in physiology and molecular biology including the generation of genetically engineered mice as models for human disease. My two current NIH awards (R01, U01) focus on the role of genetic factors in determining stature and sex steroid regulation of puberty and reproduction. I am the CO-I on two NIH awards funding the 'Boston Birth Cohort' to determine the role of early life factors on metabolic health. I am enthusiastic about Ms. Nandankar's potential as a **reproductive scientist** and am prepared to use my expertise and experience toward her success.

Highlighted References

1: Nandankar N, Negron AL, Wolfe A, Levine JE, Radovick S. Deficiency of Arcuate Nucleus Kisspeptin Results in Post-Pubertal Central Hypogonadism. Am J Physiol Endocrinol Metab. 2021 Jun 28. doi: 10.1152/ajpendo.00088.2021. PMID: 34181485

2: Negrón AL, Radovick S. High-Fat Diet Alters LH Secretion and Pulse Frequency in Female Mice in an Estrous Cycle-Dependent Manner. Endocrinology. 2020 Oct 1;161(10):bqaa146. PMID: 32841330

3: Khattab A, Marshall I, Radovick S. Controversies surrounding female athletes with differences in sexual development. J Clin Invest. 2020 Jun 1;130(6):2738-2740. PMID: 32338641

4: Radovick S, Babwah AV. Regulation of Pregnancy: Evidence for Major Roles by the Uterine and Placental Kisspeptin/KISS1R Signaling Systems. Semin Reprod Med. 2019 Jul;37(4):182-190. PMID: 31972863.

Highlighted Ongoing Research Projects

R01 HD068777/HD102169 (Radovick, MPI) 03/30/2012-03/31/2025
NICHD

Sex Steroids, Kisspeptin and Regulation of GnRH
These studies will determine the level and mechanism of central regulation of the reproductive axis by estrogen and androgens making it possible to elucidate the pathogenetic mechanism underlying common reproductive disorders associated with abnormal sex-steroid negative feedback, such as polycystic ovarian syndrome.
Role: P.I.

U01HD086838 (Radovick S., P.I.) 08/01/2017 – 6/30/2023
NIH/NICHD
Genetic Diagnosis of Childhood Growth Disorders
This is a collaborative project with the intramural program at the NIH Clinical Center to phenotype patients with short stature, perform exome sequencing and characterize potential mutations in factors responsible for growth.
Role: P.I.

1KL2TR003018 (Radovick, PI) 03/11/2019 – 02/29/2024
NCATS/NIH
Institutional Career Development Core
The goal of the New Jersey Alliance for Clinical and Translational Science (NJ ACTS) Institutional Career Development Award (KL2) is to expand the future pool of well-trained and productive investigators in the biomedical sciences with a focus on clinical and translational research.
Role: P.I.

1R61HD105619 (Kleinman L, PI) 01/01/2021 – 11/30/2023
NIH/NICHD
Covid-19 Network of Networks Expanding Clinical and Translational Approaches to Predict Severe Illness in Children (CONNECT to Predict Sick Children)
The COVID-19 Network of Networks Expanding Clinical and Translational approaches to Predict Severe Illness in Children (CONNECT to Predict SIck Children) will develop models and biomarkers that predict risk for severe disease in children and adolescents by systematically integrating social science, epidemiological, genetic, biochemical, immunological, and computational approaches.
Role: Co-Investigator

R01HD041702 (Wang X., P.I.) 04/01/2013 – 03/31/2027
NIH/NICHD
Preterm Birth, Maternal and Cord Blood Metabolome, and Child Metabolic Risk
This is a collaboration to provide the expertise of a pediatric endocrinologist in the study design and interpretation of results in the metabolic outcomes associated with preterm birth.
Role: Co-Investigator

R01HD086013 (Wang X., P.I.) 01/01/2016 – 12/31/2023
NIH/NICHD
Early Life Determinants of Obesity in U.S. Urban Low Income Minority Birth Cohort
This study will iteratively integrate a large prospective Boston Birth Cohort with a Virtual Birth Cohort (computational simulation model) to understand the complex system connecting early life factors with subsequent childhood obesity and identify modifiable factors that intervention strategies can target. The epigenetic mechanisms underlining early life factors and childhood obesity will also be explored.
Role: Co-Investigator

B. Positions, Scientific Appointments, and Honors

Positions and Scientific Appointments

2018-2023 Member, Integrative and Clinical Endocrinology and Reproduction Study Section (ICER), NIH-CSR, Chair, 2021-2023.
2017- Henry Rutgers Term Chair, Department of Pediatrics, Rutgers-Robert Wood Johnson Medical School, New Brunswick, NJ.

2015- Professor of Pediatrics, Senior Associate Dean for Clinical and Translational Research, Rutgers-Robert Wood Johnson Medical School, New Brunswick, NJ.
2014 SEP, Opportunities for Collaborative Research at the NIH Clinical Center, Chair.
2013-2017 March of Dimes, Award Review Committee.
2013-2015 National Institutes of Health, NICHD, Institutional T32 application review committee.
2010-2017 National Institutes of Health, NIDDK, SEP, Loan Repayment Program for Clinical and Pediatric Research, Chair.
2009- Data Safety Monitoring Committee, NICHD, NIH.
2005-2015 Lawson Wilkins Professor of Pediatrics and Director, Division of Pediatric Endocrinology, Johns Hopkins Medical Institutes, Baltimore, MD.
2005 Mary Campau Ryerson Professor of Pediatrics, University of Chicago, Chicago, IL.
2005-2010 Associate Editor, J Clin Endocrinol Metab.
2002-2004 Chair, Institutional Animal Care and Use Committee (IACUC), University of Chicago, Chicago, IL.
2001-2004 Member, Biochemical Endocrinology Study Section, NIH.
2000-2005 Editorial Board, Endocrine, J Clin Endocrinol Metab.
2000-2004 Member, Reproductive Sciences Study Section (renamed Reproductive, Andrology and Gynecology), NICHD, 2003-2004, Chair.
2000- Professor, Department of Pediatrics, Chief, Section of Pediatric Endocrinology, The University of Chicago, Chicago, IL.
1999-2000 Course Director, Harvard Scientist Training Program, MEMP, Ph.D. Clerkship, Harvard Medical School, Boston, MA.
1998-2000 Associate Professor of Pediatrics, Harvard Medical School, Boston, MA.
1992-1998 Assistant Professor of Pediatrics, Harvard Medical School, Boston, MA.
1990-1992 Assistant Professor of Pediatrics, Case Western Reserve University SOM, Cleveland, OH.
1989-1990 Senior Staff Fellow, Molecular Cellular Endocrinology Branch, National Institute of Diabetes, Digestive and Kidney Diseases, National Institutes of Health, Bethesda, MD.
1986-1989 Pediatric Endocrinology Fellow, Developmental Endocrinology Branch, National Institute of Child Health and Human Development, National Institutes of Health, Bethesda, MD.
1983-1986 Internship and Residency, Case Western Reserve University, Rainbow Babies and Children's Hospital, Cleveland, OH.

Other Experience and Professional Memberships

2004- American Pediatric Society (APS)
2004- Association of American Physicians (AAP)
1997- American Society for Clinical Investigation (ASCI)
1995- Society for Pediatric Research (SPR)
1990- Lawson Wilkins Pediatric Endocrine Society, Drug and Therapeutics Committee, Chair 2001–2006, Director 2006 – 2009, Chair, Research Council 2009-2013
1988- Endocrine Society
1986- American Academy of Pediatrics

Honors

2021 Inaugural 2021 Dr. Robert M. Blizzard Founder's Award, Human Growth Foundation (HGF), December 2021.
2009 Susan Lynn Shackman Lecture in Reproductive Endocrinology and In Vitro Fertilization, Johns Hopkins University, May 2009.
2005 138th woman Professor at John Hopkins University School of Medicine.
1991 Young Investigator Award, Society for Pediatric Research.
1990 Griff T. Ross Award, Award for Reproductive Endocrinology, Endocrine Society (06/90)
1986-1989 National Research Science Award, NICHD, NIH, Bethesda, MD.

C. Contributions to Science

The goals of my research are to define the molecular basis of physiologic events associated with normal growth and development. My focus has been on understanding the role of sex steroids on the neuroendocrine control of reproduction and recently on the association of metabolic function and reproduction. I have been

funded by NIH awards for more than 25 years, including collaborative projects, being the PI on a U54 Baltimore-Chicago Specialized Cooperative Research Center in Reproduction and Infertility Research and the Cooperative Research Partnerships to Promote Workforce Diversity in the Reproductive Sciences (CPDR, U01) Program and the multi-PI R01 grant. I have been the director of cores in the Diabetes Research Centers at two institutions.

1. **Kisspeptin regulation of reproduction and metabolism**

   An investigative avenue in the laboratory is to determine the role of kisspeptin signaling in the reproductive axis during pubertal onset, the gonadotropin surge and pulsatility. Cell culture systems and mouse models have been developed in the laboratory to define the signaling pathways responsible for regulation of GnRH neurons and feedback regulation of kisspeptin neurons in by sex steroids. Dynamic testing in mice is performed to determine the cellular signaling pathways mediating puberty and reproductive function. The characterization of kisspeptin expression in peripheral tissues has lead to an understanding of the role of kisspeptin in modulating glucose-insulin homeostasis.

   1: de Oliveira V, Schaefer J, Abu-Rafea B, Vilos GA, Vilos AG, Bhattacharya M,Radovick S, Babwah AV. Uterine aquaporin expression is dynamically regulated by estradiol and progesterone and ovarian stimulation disrupts embryo implantation without affecting luminal closure. Mol Hum Reprod. 2020 Mar 26;26(3):154-166. PMID: 31977023

   2: Radovick S, Babwah AV. Regulation of Pregnancy: Evidence for Major Roles by the Uterine and Placental Kisspeptin/KISS1R Signaling Systems. Semin Reprod Med. 2019 Jul;37(4):182-190. PMID:31972863

   3: Guzman S, Brackstone M, Radovick S, Babwah AV, Bhattacharya MM. KISS1/KISS1R in Cancer: Friend or Foe? Front Endocrinol (Lausanne). 2018 Aug 3;9:437. PMID: 30123188

   4: Novaira HJ, Negron AL, Graceli JB, Capellino S, Schoeffield A, Hoffman GE, Levine JE, Wolfe A, Wondisford FE, Radovick S. Impairments in the reproductive axis of female mice lacking estrogen receptor β in GnRH neurons. Am J Physiol Endocrinol Metab. 2018 Nov 1;315(5):E1019-E1033. PMID: 30040478

2. **Diabetes and Metabolism**

   My studies also focus on the role of growth factors (insulin, IGF1 and kisspeptin) on the metabolic syndrome and reproductive function. My interest in diabetes research began at the University of Chicago, when a great unmet need of children with obesity and diabetes was present in the community while the University had a large well-funded Diabetes program. With the assistance of the University of Chicago DRTC, we developed programs to promote activities aimed at decreasing the incidence of metabolic syndrome. I was the co-mentor of a K23 to Deborah Burnet, M.D. and several manuscripts resulted from this research. Further, my interactions with the members of DRCs have influenced my research interests toward understanding metabolic aspects of growth factor and nuclear hormone receptor signaling to the neuroendocrine control of metabolism during puberty and reproduction. I have developed mouse models to study insulin receptor signaling on the central control of reproduction and growth factor signaling on insulin secretion. As a clinician, I found the dosing of metformin was not quantitative and the effects on glucose metabolism not measurable, and have collaboratively developed a plasma biomarker for metformin action.

   1: Chen LK, Wang G, Bennett WL, Ji Y, Pearson C, Radovick S, Wang X. Trajectory of Body Mass Index from Ages 2 to 7 Years and Age at Peak Height Velocity in Boys and Girls. J Pediatr. 2021 Mar;230:221-229.e5. PMID: 33253732

   2: Wang Y, An H, Liu T, Qin C, Sesaki H, Guo S, Radovick S, Hussain M, Maheshwari A, Wondisford FE, O'Rourke B, He L. Metformin Improves Mitochondrial Respiratory Activity through Activation of AMPK. Cell Rep. 2019 Nov 5;29(6):1511-1523.e5. PMID: 31693892

   3: Wang G, Sun Q, Liang L, Clash C, Zhang C, Hong X, Ji Y, Radovick S, Pearson C, Bartell TR, Zuckerman B, Cheng TL, Hu FB, Wang X. Inter-generational link of obesity in term and preterm births: role of maternal plasma acylcarnitines. Int J Obes (Lond). 2019 Oct;43(10):1967-1977. PMID: 31332276

4: Wang G, Radovick S, Xu X, Xing H, Tang G, Bartell TR, Wang B, Wang X. Strategy for early identification of prediabetes in lean populations: New insight from a prospective Chinese twin cohort of children and young adults. Diabetes Res Clin Pract. 2018 Dec;146:101-110. PMID: 30312713

3. The molecular basis of hypopituitarism

In 1992, our laboratory described the R271W mutation in 1992 and has had a continuous interest in elucidating novel mutations in transcription factors resulting in hypopituitarism. The mutation was novel in that the patient was heterozygous and the mutation resulted in a dominant negative effect on the expression of target genes. Hence, this began a nearly 20-year interest in how heterozygous expression of mutant genes causes disease. The laboratory has become a repository for DNA of patients with hypopituitarism. Although we are interested in describing novel mutations in the ever-expanding list of pituitary developmental factors, our major interest is in understanding the mechanism of action of the mutations. Thus, the focus has been on expression of the somatotroph signaling pathways converging on POU1F1 mediating GH gene expression. These studies include the development of mouse models to understand the role of GH DNA elements mediating POU1F1 structure as targets of physiologically relevant pathways in pituitary cells. The laboratory has characterized CBP as a mediator of cell signaling and phosphorylation status in the somatotroph from a structural, functional view gained from insightful human mutations.

1: Terakawa J, Serna VA, Nair DM, Sato S, Kawakami K, Radovick S, Maire P, Kurita T. SIX1 cooperates with RUNX1 and SMAD4 in cell fate commitment of Müllerian duct epithelium. Cell Death Differ. 2020 Dec;27(12):3307-3320. PMID: 32572167

2: Jee YH, Won S, Lui JC, Jennings M, Whalen P, Yue S, Temnycky AG, Barnes KM, Cheetham T, Boden MG, Radovick S, Quinton R, Leschek EW, Aguilera G, Yanovski JA, Seminara SB, Crowley WF, Delaney A, Roche KW, Baron J. DLG2 variants in patients with pubertal disorders. Genet Med. 2020 Aug;22(8):1329-1337. PMID: 32341572

3: Collett-Solberg PF, Jorge AAL, Boguszewski MCS, Miller BS, Choong CSY, Cohen P, Hoffman AR, Luo X, Radovick S, Saenger P. Growth hormone therapy in children; research and practice - A review. Growth Horm IGF Res. 2019 Feb;44:20-32. PMID: 30605792.

4: Gangat M, Radovick S. Pituitary Hypoplasia. Endocrinol Metab Clin North Am. 2017 Jun;46(2):247-257. PMID: 28476222.

Complete List of Published Work in MyBibliography:
http://www.ncbi.nlm.nih.gov/pubmed/?term=radovick