

Dr. Aparna Mahakali Zama

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Education and Training

INSTITUTION AND LOCATION	DEGREE (if applicable)	YEAR	FIELD OF STUDY
Osmania University, Hyderabad, India	B.Sc	1994	Genetics
University of Hyderabad, India	M.Sc.	1997	Animal Sciences
University of Georgia, Athens, Georgia	Ph.D.	2004	Molecular Genetics
University of Kansas Medical Center, Kansas City, Kansas	Postdoctoral fellowship	2006	Reproductive Genetics

Experience

Director, Undergraduate Program, July 2017-

Pre-Vet Advisor, 2017-

Assistant Teaching Professor, Sep 2016-

Associate Graduate Faculty Member, 2013-

Department of Animal Sciences

School of Environmental and Biological Sciences, Rutgers, The State University of New Jersey

Assistant Research Professor, Nov 2012 – Aug 2016

Research Associate, Sep 2006 – Oct 2012

Department of Animal Sciences

School of Environmental and Biological Sciences, Rutgers, The State University of New Jersey

Post Doctoral Research Fellow, Sep 2004 – June 2006

Center for Reproductive Sciences, University of Kansas Medical Center, KS

Graduate Research Assistant, Sep 1997 – July 2004

Department of Genetics, University of Georgia, Athens, GA

Awards and Recognitions

- **Larry Ewing Memorial travel award for platform presentation** at the Society of Study of of Reproduction, Pittsburgh, PA, 2009
- **Travel award** from Gordon research conference on Environmental Endocrine Disruptors, New Hampshire, 2008
- **Travel award** from National Institutes of Environmental Health Sciences meeting on Future Research on Endocrine Disruption, North Carolina, 2007
- **Postdoctoral fellowship** from KUMED Biomedical Research Training Grant, University of Kansas Medical Center, 2005-2006
- **Research Assistantship**, Department of Genetics, University of Georgia, 1998-2004 (through NSF and NIH funding to PI, Mary Bedell)
- **Presidential Gold Medal** awarded for standing First with Distinction in M.Sc. 1997
- **First with Distinction** in B. Sc. 1994

Memberships

- National Association for Advisors of Health Professions, 2017-

- Society for the Study of Reproduction, 2003-
- Endocrine Society, 2013-

Editorial Board Member

- Environmental Epigenetics, 2015-

Journal Reviewer

- Reviewer, *Biology of Reproduction*, 2005-
- Reviewer, *Journal of Assisted Reproduction and Genetics*, 2012-
- Reviewer, *Reproductive Toxicology*, 2010-
- Reviewer, *Toxicology and Applied Pharmacology*, 2011-

Service- Advising

SEBS first year student advisor, 2016-
 Department of Animal Science Student advisor, 2015-
 SEBS transfer student advisor, 2017-
 Pre-vet advisor, 2017-

Service- Committees

Chair, Curriculum and Educational Policy committee, 2017-
 Department of Animal Sciences

Member, Peer evaluation committee for merit pay, 2015-
 Department of Animal Sciences

Member, G.H. Cook Honors committee, 2016-
 School of Environmental and Biological Sciences, Rutgers, The State University of New Jersey

Member, Academic Integrity Task Force, 2017-
 Rutgers University-Wide initiative, New Brunswick, Newark, and Camden

Teaching Experience

Undergraduate Courses

Course	Year	Role and Semester
1. Animal Diseases (11:067:404; 3 cr)	Seniors and qualified juniors	Sole instructor. Summer, and Fall 2012-
2. Endocrinology (11:067:450; 4 cr)	Juniors and seniors	Sole instructor. Spring 2016-
3. Careers in Animal Science (11:067:101; 3 cr)	Any	Sole instructor for professional development and coordinator for Invited speakers. Spring 2017-
4. Lab Animal Practicum (11:067:205; 2 cr)	Sophomores and above	Main instructor and coordinator of guest lecturers, demonstrations, and field trips. Spring 2017-
5. Animal Reproduction (11:067:327; 3 cr)	Sophomores and above	Guest lecturer for 4 sessions. Spring 2017-
6. Introduction to Animal Sciences (11:067:142; 3 cr)	Any	Guest lecturer on Genetics, Fall 2015-

7. Reproductive and Developmental Toxicology (11:067:491/16:340:591; 3 cr)	Seniors and graduate students	Guest lecturer on epigenetics. Fall 2014-
8. Research in Animal Science (11:067:493/494, variable credits)	Any	One-on-one research mentoring
9. G.H. Cook Thesis Research (11:067:497/498)	Seniors	One-on-one research mentoring

Previously Taught Courses

Course	Level	Role and Semester
1. Integrative Physiology Lab (11:067:301; 1 cr)	Juniors and seniors	Sole instructor. Spring and Fall 2016.
2. Introduction to Genetics	Any	Graduate Teaching Assistant, Fall 1999 Dept. of Genetics, University of Georgia
3. Introduction to Biology Lab	Any	Sole teaching instructor, Spring and Summer 1998 Dept. of Cell Biology, University of Georgia
4. Human Anatomy and Physiology Lab	Sophomores and above	Sole teaching instructor, Fall 1997 Dept. of Cell Biology, University of Georgia

Recent Research Students Trained	Last known position
Michael Esmail, 2007-2008	Lab Animal Veterinarian, Tufts University
Robert "Gus" Gesumaria, 2007- 2010	DO program, UMDNJ, Camden, NJ
Justin George, 2008- 2010	Resident, Mt. Sinai Medical Center, NY
Helaina Ghanem, 2014-2016	Chemistry, SAS
Daniel Peled, 2015-	Biology, SAS
Mirei Sakane, 2016-	Animal Science, SEBS
Anthony Scaramia, 2016-	CBN, SAS
Sneha Manikandan, 2017-	Biology, SAS
Joseph Yunga-Tigre, 2017-	Biology, SAS
G.H. Cook/Senior Thesis advisees	
Alison Caruana, 2007 - 2009	Resident, CAMC, Charleston, WV
Apurva Tamhane, 2008 - 2010	Ob/Gyn Resident, St. Peter's Hospital, NJ
Alexandra Locke, 2012 - 2013	VMD, Ross Veterinary School
Calvin Leung, 2011 - 2013	MD, Ph.D Program, UMDNJ, Newark
Rebecca Joyce, 2013-2015	Technician, Weill Cornell Medical College, NY
Kiera Brennan, 2014-2017	M.D program, TBD
Shannon Barley, 2016-	Genetics, SAS
M.S Students	
Arpita Bhurke, 2012-2014	Ph.D program, UIUC, Illinois
Seher Yirtici, 2014-2017	Veterinarian, returned to Turkey

Peer Reviewed Publications: (Search terms in PUBMED “Aparna Mahakali Zama” or “Zama AM”)

1. Rajaraman S, Davis WS, **Mahakali Zama A**, Evans HK, Russell LB, Bedell MA
An allelic series of mutations in the Kit ligand gene of mice. I. Identification of point mutations in seven ethylnitrosourea-induced Kitl (Steel) alleles.
Genetics. 2002 Sep; 162(1): 331-40.
<http://www.ncbi.nlm.nih.gov/pubmed/12242244>
2. Rajaraman S, Davis WS, **Mahakali Zama A**, Evans HK, Russell LB, Bedell MA
An allelic series of mutations in the Kit ligand gene of mice. II. Effects of ethylnitrosourea-induced Kitl point mutations on survival and peripheral blood cells of Kitl (Steel) mice.
Genetics. 2002 Sep; 162(1): 341-53.
<http://www.ncbi.nlm.nih.gov/pubmed/12242245>
3. Bedell MA, **Mahakali Zama A**
Genetic analysis of Kit ligand functions during mouse spermatogenesis.
Journal of Andrology. 2004 Mar-Apr; 25(2): 188-99.
<http://www.ncbi.nlm.nih.gov/pubmed/14760005>
4. **Mahakali Zama A**, Hudson FP, Bedell MA
Analysis of hypomorphic KitlSI mutants suggests different requirements for KITL in proliferation and migration of mouse primordial germ cells
Biology of Reproduction. 2005 Oct; 73(4): 639-47 (**Journal cover**)
<http://www.ncbi.nlm.nih.gov/pubmed/15917341>
5. Armenti, AE*, **Mahakali Zama A***, Passantino L, Uzumcu M
Developmental methoxychlor exposure affects multiple reproductive parameters and ovarian folliculogenesis and gene expression in adult rats.
Toxicology and Applied Pharmacology. 2008 Dec 1; 233(2): 286-96
(* - equal contribution) <http://www.ncbi.nlm.nih.gov/pubmed/18848953>
6. Marano JE, Sun D, **Mahakali Zama A**, Young W, Uzumcu M
Orthotopic transplantation of neonatal GFP rat ovary as experimental model to study ovarian development and toxicology.
Marano JE, Sun D, **Zama AM**, Young W, Uzumcu M.
Reproductive Toxicology. 2008 Nov-Dec; 26(3-4): 191-6 (**Journal cover**)
<http://www.ncbi.nlm.nih.gov/pubmed/18848623>
7. **Mahakali Zama A**, Uzumcu M
Fetal and neonatal exposure to the endocrine disruptor methoxychlor causes epigenetic alterations in adult ovarian genes. **Endocrinology**. 2009 Oct; 150(10): 4681-91
<http://www.ncbi.nlm.nih.gov/pubmed/19589859>
8. **Mahakali Zama A**, Uzumcu M
Epigenetic effects of endocrine-disrupting chemicals on female reproduction: An ovarian perspective
Frontiers in Neuroendocrinology, 2010 Oct; 31(4): 420-39
<http://www.ncbi.nlm.nih.gov/pubmed/20609371>

9. Andrea C. Gore, Deena M. Walker, **Aparna M. Zama**, AnnMarie E. Armenti and Mehmet Uzumcu
Early life exposure to endocrine-disrupting chemicals causes lifelong molecular reprogramming of the hypothalamus and premature reproductive aging
Molecular Endocrinology. 2011 Dec; 25(12): 2157-68 (**Cover story & Endocrine News article**) <http://www.ncbi.nlm.nih.gov/pubmed/22016562>
10. Mehmet Uzumcu, **Aparna M Zama**, Elif Oruc
Epigenetic mechanisms in the actions of endocrine-disrupting chemicals: Gonadal effects and role in female reproduction
Reproduction in Domestic Animals. 2012 Aug;47 Suppl 4:338-47
<http://www.ncbi.nlm.nih.gov/pubmed/22827390>
11. **Aparna M Zama**, Mehmet Uzumcu
Targeted genome-wide methylation and gene expression analyses reveal signaling pathways involved in ovarian disease after developmental EDC exposure
Biology of Reproduction. 2013 Feb 28; 88(2): 52
<http://www.ncbi.nlm.nih.gov/pubmed/23303685>
12. Effects of endocrine-disrupting chemicals on female reproductive health
Aparna M Zama*, Arpita Bhurke, Mehmet Uzumcu
*- **Corresponding author, The Open Biotechnology Journal, Vol 10, Suppl M6, 54-75** <http://benthamopen.com/ABSTRACT/TOBIOTJ-9-E024>
13. Developmental Effects of Endocrine-Disrupting Chemicals in the Ovary and on Female Fertility.
Mehmet Uzumcu, **Aparna M Zama**
The Epigenome and Developmental Origins of Health and Disease, Rosenfeld CS (ed). Elsevier - Academic Press, 2015 pp 143-170 (**invited book chapter**).
<http://store.elsevier.com/product.jsp?isbn=9780128013830&pagename=search>
14. Regulation of arcuate genes by developmental exposures to endocrine-disrupting compounds in female rats Jennifer Yang, Ali Yasrebi, Kyle Mamounis, Elif Oruc, **Aparna M Zama**, Mehmet Uzumcu, Troy Roepke
Reproductive Toxicology, 2016 Jul;62:18-26
15. Effects of *in-utero* and neonatal EDC-exposures via epigenetic mechanisms on a critical signaling pathway in the female reproductive tract
Aparna M Zama*, Mehmet Uzumcu, Rebecca Joyce, Daniel Peled
*- **Corresponding author, manuscript in preparation**
16. Effects of endocrine-disrupting chemicals on female reproductive health
Aparna M Zama*, Mehmet Uzumcu
*- **Corresponding author, Invited book chapter, in preparation**
Endocrine disruptors and their effects on human health, Editor: Gustavo Mita
Research Signpost, open access ebooks

Published Abstracts (Presentations indicated in parentheses)

1. Sex-specific effects of ENU-induced *Steel* mutations on germ cell development
Aparna Mahakali, L. B. Russell, N.G. Copeland, N.A. Jenkins, and M.A. Bedell
13th International Mouse Genome Conference, Philadelphia 1999

2. Germ cell development in ENU-induced *Steel* mutants
Aparna Mahakali, L.B. Russell, and M.A. Bedell
Mutagenesis of the Mouse Genome, Georgia Genetics Symposium II, Athens, GA, 2000
3. Germ cell development in ENU-induced *Steel* mutants
Aparna Mahakali, L.B. Russell, and M.A. Bedell
Germ Cells Meeting, Cold Spring Harbor, NY, 2000
4. Intercellular signaling by Kit ligand and Kit receptor
Aparna Mahakali Zama and M. A. Bedell
Department of Genetics Retreat, University of Georgia, Athens, GA, 2001 (presentation)
5. Kit ligand and germ cell development in mice
Mary A Bedell, **Aparna Mahakali Zama**
SE Regional Meeting of the Society for Developmental Biology, Gatlinburg, TN, 2002
6. New insights into the role of Kit ligand during mouse spermatogenesis
Aparna Mahakali Zama Department of Genetics Retreat, University of Georgia, Athens, GA, October 2003 (presentation)
7. New Insights Into The Role of Kit Ligand During Mouse Spermatogenesis
Aparna Mahakali Zama, Monal Patel, F. Parker Hudson III, and M. A. Bedell
Biomedical and Health Sciences Initiative Meeting, Athens, GA, 2003 (presentation)
8. Different requirements for KITL in proliferation and migration of mouse primordial germ cells
Aparna Mahakali Zama, F. Parker Hudson, and Mary A Bedell
Germ Cells Meeting, Cold Spring Harbor, NY, October 2004
9. **Zama, A.M.** and Kumar, TR. "When the male gonad fails; Book review on "Male Hypogonadism: Basic, Clinical and Therapeutic Principles." *Trends in Endocrinology and Metabolism*. Edited by: Stephen J. Winters, Humana Press, Totowa, New Jersey
10. Characterization of Sertoli cell and Leydig cell defects in the absence of germ cells
Aparna Mahakali Zama, TR Kumar
Biomedical Research Training Program Symposium, University of Kansas Medical Center, Kansas City, KS, April 2006 (presentation)
11. Molecular analysis of somatic and germ cell defects in the testes of LH β knockout mice
TR Kumar, **Aparna Mahakali Zama**, and Xiaoping Ma
Endocrine Society Meeting, Boston MA, June 2006
12. Mechanism of fetal and neonatal methoxychlor exposure induced impairment of adult ovarian function
Aparna M. Zama, AnnMarie E Armenti, Lisa Passantino, and Mehmet Uzumcu
Future Research on Endocrine Disruption, NIEHS, RTP, NC, August 2007
13. Fetal and neonatal exposure to endocrine disruptor methoxychlor impairs adult ovarian function
Mehmet Uzumcu, **Aparna M Zama**, AnnMarie E Armenti, and Lisa Passantino
41st SSR Annual meeting, Hawaii, May 2008

14. Fetal and neonatal methoxychlor exposure impairs early folliculogenesis and adult ovarian function through estrogen receptor- β mediated and epigenetic mechanisms
Aparna M Zama, AnnMarie Armenti, Jason Marano, Lisa Passantino, and Mehmet Uzumcu. Gordon Research Conference of Environmental Endocrine Disruptors, Waterville Valley, NH, June 2008
15. Long-term effects of perinatal methoxychlor or estradiol on gene expression in the hypothalamus of the aging female rat
Deena M Walker, Andrea C Gore, AnnMarie E Armenti, **Aparna M Zama** and Mehmet Uzumcu. Endocrine Society Meeting, Washington DC, June 2009
16. Fetal and neonatal methoxychlor exposure causes global and gene-specific alterations in methylation patterns in adult rat ovaries
Aparna M Zama and Mehmet Uzumcu. 42nd SSR Annual Meeting, Pittsburgh, PA, July 2009 (presentation)
17. Immunolocalization of hepatocyte growth factor system proteins during embryonic and adult testis development
Mehmet Uzumcu, **Aparna M Zama** and Rob Zachow 42nd SSR Annual Meeting, Pittsburgh, PA, July 2009
18. Age- and hormone-dependent modulation of effects of methoxychlor (MXC) on ovarian estrogen receptor (ER) β expression and DNA methylation patterns
Aparna M Zama and Mehmet Uzumcu. 43rd SSR Annual Meeting, Milwaukee, WI July 2010 (presentation)
19. Genome-wide analysis of methylation patterns in ovaries exposed to endocrine-disrupting chemicals
Aparna M Zama, Korhan Altunbas and Mehmet Uzumcu. 44th SSR Annual Meeting, Portland, OR, July 2011
20. Follicular stage-specific gene expression analysis in rat ovary
Aparna M Zama, Korhan Altunbas and Mehmet Uzumcu. 45th SSR Annual Meeting, State College, PA, August 2012
21. Epigenetic effects of endocrine-disrupting chemical methoxychlor on female reproduction
Mehmet Uzumcu, **Aparna M Zama**. The International Workshop in Neuroendocrinology (IWNE 2013), Dourado, Sao Paulo, Brazil, August 2013
22. Effect of developmental exposure to DEHP on female reproductive function and ovarian follicular composition in rats
Arpita Bhurke, **Aparna M Zama**, Mehmet Uzumcu 47th SSR Annual Meeting, Grand Rapids, Michigan, July 2014
23. Effects of *in-utero* and neonatal EDC-exposures on adult rat uteri
Aparna M Zama, Mehmet Uzumcu, Daniel Peled
Gordon Research Conference on Cellular and Molecular Mechanisms of Toxicity, Proctor Academy, Andover NH, August 2015

24. Effects of developmental exposure to endocrine-disrupting chemicals methoxychlor and bisphenol A on ovarian follicular dynamics and reproductive parameters in rats
Seher Yirtici, **Aparna M Zama**, Mehmet Uzumcu 48th SSR Annual Meeting, San Diego, California, July 2016

Research Support

Pending

R21 ES025319-01A1, **Zama (PI)** 04/01/2018

National Institute of Environmental Health Sciences/NIH

Epigenetic reprogramming of a critical signaling pathway in the ovaries and uteri after developmental endocrine-disrupting chemical exposure

Status: To be resubmitted

Ongoing

R21 ES026454-01A1 Uzumcu (PI) **Zama (Co-I)** 04/01/2016 – 03/30/2018

Detrimental effects on female reproduction of *in-utero* and neonatal exposure to common phthalates DEHP and its replacement DiNP

EOHSI CEED pilot grant, **Zama (Co-PI)**, Uzumcu (Co-PI) 2016

Epigenetic reprogramming of PI3K signaling pathway in females after developmental endocrine-disrupting chemical exposure

Completed

R21 ES017847-01, Uzumcu (PI), **Zama (Key Personnel)** 08/12/2011 - 07/31/2015 NCE

National Institute of Environmental Health Sciences (NIEHS)

Epigenetic transgenerational effects of endocrine disruptors via the female germ line.

R56 ES017059, Uzumcu (PI), **Zama (Key Personnel)** 09/01/2010 – 08/31/2011

National Institute of Environmental Health Sciences (NIEHS)

Epigenetic effects of developmental endocrine disruptor exposure in the ovary.

Busch Biomedical Research Grant, Uzumcu (PI), **Zama (Key Personnel)** 07/1/2009-06/31/2011
Rutgers Busch Biomedical Research Fund

Direct epigenetic effects of endocrine disruptors on the ovary.