2010-Adjunct Faculty at HCS, Houston TX: Chemistry and Biology.

EDUCATION:

1994: Ph.D. (Molecular Biology), University at Albany, New York. Laboratory of

Dr. Richard S. Zitomer: Ph. D. dissertation: A study of a hypoxic repressor Rox1 in *Saccharomyces cerevisiae*.

1989: M.S. (Chemistry With minor in Physics, Mathematics and Electronics), Indian Institute of Technology, Chennai, India.

M.S. project: Effects of Selenium on the germination of Vigna radiata L.(mung bean).

1987: B.S. (Chemistry With minor in Physics and Mathematics), University of Madras, India.

POST DOCTORAL RESEARCH EXPERIENCE:

2003: Research Associate: Baylor College of Medicine: Laboratory of Dr. Shailaja Mani.

Postdoctoral work focusing on the elucidation of the signaling pathway initiated by estrogen activated progesterone in the hypothalamic neurons in feminine behavior.

1998: Baylor College of Medicine: Laboratory of Prof. David D. Moore.

1999: Fellowship from the center of reproductive biology project grant. Studying the interaction between the human Thyroid Hormone and Retinoic X-receptors hetero-dimer (TR-RXR) and Chromatin Remodeling Complexes in vivo. Identification of the interaction of hTR with hBRM (Brahma), and hISWI (Imitation SWItch) proteins.

1995: Dept. of Health, Wadsworth Center, Albany NY. Laboratory of

Dr. Randall Morse. Postdoctoral work focused on the study of the mode of binding of yeast transcriptional activator, Gal4, to its site on chromatin.

1994: Baylor College of Medicine: Laboratory of Dr. Victoria Lundblad. Postdoctoral work focused on the sequencing of *EST2*, a putative component of the telomerase complex and elucidation of the function of the protein in yeast.

TEACHING EXPERIENCE:

2004-2008: Guided and mentored high school and SMART students in research and scientific training.

2006: Took the accredited course on Intellectual Property rights and Patenting given by Dr. Turley at BCM.

2003: Participating in a pioneering new Texas teacher certification program offered as a partnership of Texas A&M and Baylor College of Medicine. The Accelaration/OPTIONS: online program also known as OPTIONS includes

-32 online instructional modules in 8-12 pedagogy and science education

-40-hr introductory experience in secondary school classrooms

-Preparation for the TexES content and pedagogy exams

-Support materials for novice teachers.

-University at Albany, NY, Dept. of Biological Sciences: served as teaching assistant for undergraduate Genetics and Biochemistry courses.

Publications:

- 1. Balasubramanian B and Mani SK. Dopamine agonist signaling in the hypothalamus of female rats is independent of calcium-dependent kinases. 2009. J Neuroendocrinol. 21(11): 954-60.
- Bhuvana Balasubramanian, Wendy Portillo, Andrea Reyna, Jian Zhong Chen, Anthony N. Moore*, Pramod K. Dash* and Shaila K. Mani. 2008. Non-classical Mechanisms of Progesterone Action in the Brain: I. PKC Activation in the Hypothalamus of Female Rats. Endocrinology. 2008 Nov;149(11):5509-17. Epub 2008 Jul 10.
- Bhuvana Balasubramanian, Wendy Portillo, Andrea Reyna, Jian Zhong Chen, Anthony N. Moore, Pramod K. Dash and Shaila K. Mani. 2008. Non-classical Mechanisms of Progesterone Action in the Brain: II. Role of CAMK II in Progesterone-Mediated Signaling in the Hypothalamus of Female Rats. Endocrinology. 2008 Nov;149(11):5518-26. Epub 2008 Jul 10.

- 4. Balasubramanian, B., and, Randall H. Morse. 1999. A study of Gal4 binding to nucleosomal site, *in vivo*. MCB. 2977-2985.
- Zitomer, R. S., Limbach, M. P., Rodriguez-Torres, A. M., Balasubramanian, B., Deckert, J., and P. M. Snow. 1997. Approaches to the study of Rox1 repression of the hypoxic genes in the yeast *Saccharomyces cerevisiae*. Methods, A companion to Methods in Enzymology.11: 279-288.
- 6. Lendvay, T. S., Danna K. Morris, Jeannie Sah, Bhuvana Balasubramanian, and Victoria Lundblad. 1996. Senescence mutants of *Saccharomyces cerevisiae* with a defect in telomere replication identify 3 additional EST genes. Genetics.144: 1399 -1412.
- Deckert, J., Roberto Perini, Bhuvana Balasubramanian and Richard Zitomer. 1995. Multiple elements and auto-repression regulate Rox1, a repressor of hypoxic genes in *Saccharomyces cerevisiae*. Genetics139: 1149-1158.
- 8. Balasubramanian, B., Charles V. Lowry, Richard S. Zitomer. 1993. The Rox1 repressor of the *Saccharomyces cerevisiae* hypoxic genes is a specific DNA-binding protein with a high-mobility-group motif. MCB.13: 6071-6078.

Manuscripts in Review:

1. Bhuvana Balasubramanian, Anthony N. Moore, Pramod K. Dash and Shaila K. Mani. A requirement for non-classical signaling pathway in Progesterone-facilitated Female Receptive behavior. In the process of reviewing at journal Endocrinology towards publication, Dec 2009.

PRESENTATIONS:

1. Poster presentation at the Yeast Genetics and Molecular Biology meeting, Madison Wisconsin, June 1993.

2. Attended the 1995 Chromatin Meeting at Penn. State, College Station, Pennsylvania.

3. Presented Poster at the Transcription Meeting at Salve Regina College, Newport, Rhode Island, May 1996.

4. Presented Poster at the August 1999 Chromatin meeting at Penn. State, College Station, Pennsylvania.

5. Presented Poster at the March 2000 Nuclear Hormone Receptors Keystone Symposium in Steamboat Springs, Colorado.

6. Attended the Society for Neuroscience Meeting at San Diego, 2005.

7.Poster presented at the October 2006, Atlanta GA, titled "Non-genomic regulation by Progesterone involves Calcium as Second messenger in the VMN and POA of the female brain."

AWARDS AND RECOGNITIONS:

2008: Invited to the US-Japan Symposium, September 8-12th, 2008 to present poster titled" Role of second messenger kinases in the non-classical regulation by Progesterone in the hypothalamus of female rats in the facilitation of reproductive behavior"

2000-2002: Postdoctoral fellowship from the Centre of Reproductive Biology

General Proficiency Award for the years 1984-85, 1985-86 and 1986-87.

Worked for the National Social Service Organization 1984-87 and was recognized as one of the outstanding Project leaders for 1987.

President of the Chemistry Club 1987.

Participated in several extramural competitions and won awards and recognitions Best Outgoing Student award 1987.

REFERENCES:

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4. Richard Zitomer, Ph.D. Dept of Biological Sciences University at Albany 1400 Washington Ave. Albany, NY 12222. Office:(518) 591-8860 Lab: (518) 591-8859 Email: <u>Rz144@Csc.Albany.Edu</u>

SUMMARY OF MOST RECENT RESEARCH WORK AND INTERESTS:

My most recent work dealt with the regulation of female behavior in rodents by the gonadal steroids, estradiol and progesterone. Specifically we are interested in the early non-classical action of progesterone in the hypothalamus and medial pre-optic area of the brain involved in the facilitation of female reproductive behavior. I have now been able to show the rapid modulation of signaling cascades and their targets in these regions of the brain by progesterone. I have two manuscripts in Endocrinology journal, 2008. These involved the activation of activation of calcium induced second messengers, PKC and CaMKII due to non-clasical P-regulation in the two regions of the brain. We also demonstrated the effect of PKC and CaMKII specific inhibitors on the kinase activities, respectively, and showed their effect on lordosis behavior, which is a quantifiable feature of the female reproductive behavior in rodents. Finally we speculate on the effect of multiple 2nd messengers in the cytosol and the temporal consequences of these kinases in signal transduction to the nucleus resulting in gene regulation. I have also worked on the involvement of dopamine in the facilitation of feminine behavior and it was published in Journal of Neuroendocrinology in 2009. I have another manuscript which is being processed for publication dealing with the signal transduction pathways favored by these 2nd messengers in the phosphorylation of CREB and progesterone receptor and the activation of the immediate early gene, cFOS.

My interest in endocrinology was fostered in Dr. David Moore's laboratory during my work on identifying the Chromatin Remodeling proteins interacting with the human Thyroid Hormone and Retinoic X-receptors hetero-dimer (TR-RXR) *in vivo*. I demonstrated the interaction of hTR with hBRM (Brahma) and hISWI (Imitation SWItch) proteins. These proteins are components of two independent remodeling complexes. Furthermore, the hISWI complex was shown to be necessary for the maintenance of higher order chromatin structure. Since TR functioned both as a repressor and an activator in the absence of and presence of its ligand respectively, this project showed great promise of an interesting study. So I went on to probe the temporal and spatial nature of these interactions in this in vitro system. I demonstrated an interaction between hTR and hBRM, a component of the hSWI/SNF chromatin complex, which was specific and ligand-dependent. I was also able to demonstrate the ligand specific interaction of hTR with hISWI. These results have not been published, as additional *in vivo* verification is required.

My doctoral research work involved the analysis of a DNA-binding repressor called Rox1, which regulated the transcription of the anaerobic genes in the yeast, *Saccharomyces cereivisiae*, a facultative aerobe. Rox1, an aerobic gene product, is an HMG-box DNA-binding repressor of the anaerobic family of genes. I worked on delineating the temporal expression of Rox1 and its function. I then worked briefly in Dr. Victoria Lundblad's laboratory on Est2, a telomere-binding protein and its sequence derivation.

I have extensive experience in biochemical and molecular biology techniques using microorganisms cell culturing and animal work. I enjoyed my research in neuroendocrinology and would like to continue in any aspect of endocrine research. I have a good working knowledge of computational biology and bioinformatics. I have some Basic and UNIX programming knowledge. I enjoy teaching and have mentored high school students, SMART students and graduate students in my previous laboratories. I have a good grasp of the fundamentals of chemistry, Physics and Math. I have considerable knowledge in the theory and analysis of mass spectrometry and chromatography. I am a sociable person and can fit into any environment. I can design and translate my research work into manuscripts for publication, prepare and deliver presentations. I have experience in writing, reading and assessing grant proposals and manuscripts. I can send you a copy of my most recent manuscript or abstract and poster that I presented at a Japan-US symposium on Endocrine and behavior Sept. 8-12th, 2008, upon request. I am not fazed by the unknown and am willing to learn and understand, in a very short time, what I do not know or procedures I am not familiar with, in my undertakings.