
BIOGRAPHICAL SKETCH

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NAME: Dinesh M Shah, MD

eRA COMMONS USER NAME (credential, e.g., agency login): dmshah

POSITION TITLE: Professor (Tenured) & Director, Maternal-Fetal Medicine

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
Elphinstone College, University of Bombay	Int. Sc.	1968	Biology
T. National Medical College, University of Bombay	MB, BS	1973	
T. National Medical College, University of Bombay	MD	1976	Medicine
B.Y.L Nair Hospital, T. National Medical College, Bombay, India	Intern	1972-1973	Obstetrics/Gynecology
B.Y.L. Nair Hospital, Bombay, India	Resident	1973-1975	Obstetrics/Gynecology
Rajawadi Municipal General Hospital, Bombay, India	Resident	1975-1976	Obstetrics/Gynecology
St. Joseph's Hospital, Northwestern University, Chicago, IL	Resident	1977-1981	Obstetrics/Gynecology
SUNY Upstate Medical Center, Syracuse, NY	Fellow	1981-1982	Maternal-Fetal Medicine
University of South Florida, Tampa, FL	Fellow	1982-1983	Maternal-Fetal Medicine

NOTE: The Biographical Sketch may not exceed five pages. Follow the formats and instructions below.

A. Personal Statement

I am an obstetrician with Maternal-Fetal Medicine training with more than 30 years of clinical experience at several major medical centers. [I have long standing research and clinical interest and expertise in the pathogenesis of preeclampsia, a disorder well recognized to have origin in deficiency of utero-placental blood-flow and perfusion.](#) I also have extensive relevant experience in the advanced ultrasound technologies for fetal diagnosis and for evaluation of placentation in a clinical context. My extensive experience in the use of MR imaging for clinical purposes goes back to the introduction of this technology to obstetrics, and I served, at several institutions, on committees evaluating the safety of introduction of new technologies, including MR Imaging. Most recently I served for several years at the UW-Meriter Hospital Program as the chair of the Perinatal Practice committee, and as a member of UW committee for care of pregnant patients with trauma. These two latest experiences most directly addressed the issue of use and safety of MR imaging in pregnant patients. This combined clinical, scientific and safety background provides a unique perspective as an academic sub-specialist clinician that is highly relevant to the practical and safety issues associated with this U01 proposal to use highly advanced technologies in a clinical setting. I also have collaborated with several scientists over my career. Most relevant in this context is collaboration with the internationally recognized perinatal scientists who are co-investigators on this application. Most notably my collaboration with Dr. Bird has resulted in several scientific publications. More importantly this has provided me with a unique perspective as a physician scientist curious about pathogenic mechanisms of preeclampsia. Recently there has been a convergence of our understanding of the mechanistic basis of endothelial cell injury and glomerular endothelial cell injury in preeclampsia. (1 and Pending R03: Mechanism of Renal Injury in Preeclampsia)) My recent collaboration with Dr. Magness has resulted in a manuscript pending revision for the AJOG on the subject of establishment of utero-placental circulation, a basis for pregnancy disorders. The scientific environment at the

UW-School of Medicine and Public Health has made it possible to develop the cutting edge insights that we propose to explore in this application. The renowned MRI research team at UW makes it all the more possible for us to propose the use of highly innovative technologies to push the envelope in assessment of human placental function in real-time, precisely as defined by the RFA. Beyond this RFA- although a senior clinician that holds many responsibilities, I continue to protect and defend my research activities, and to pass that love of research on to the next generation. Madison could not be a better collaborative environment for me. My continued publications in recent years, as well as my completed and pending NIH grants are a testament to my success in maintaining research productivity in collaboration with the Col's listed here, and demonstrating a level of competitiveness even in these exceptional times. One of my many responsibilities is to also direct the MFM Fellowship which provides 18 months protected time for research culminating in a Master Degree. We have successfully established and maintained this MFM fellowship for more than 10 years, and our future trainees will intentionally be exposed to this project as this will provide an exceptional opportunity for them to be at the cutting edge as they transform to become the next generation of clinician scientists.

1. Krupp J, Boeldt DS, Yi FX, Grummer M, Bankowski-Anaya H, Shah DM, Bird IM. The Loss of Sustained Ca²⁺ Signaling Underlies Suppressed Endothelial Nitric Oxide Production in Preeclamptic Pregnancies: Implications for New Therapy. *Am J Physiol Heart Circ Physiol*. 2013 Oct 1 305(7): H969–H979 [Epub ahead of print 2013 Jul 26] PMID:23893163.

B. Positions and Honors

Professional Experience

- 1996 Eleventh Annual New England Biolabs Molecular Biology Summer Workshop, Clark Science Center, Smith College, Northampton, Massachusetts
- 1983-1990 Assistant Professor, Division of Maternal-Fetal Medicine, Department of Obstetrics and Gynecology, Vanderbilt University, School of Medicine, Nashville, Tennessee
- 1990-1993 Assistant Professor, Division of Maternal-Fetal Medicine, Department of Obstetrics and Gynecology, The University of Texas Health Science Center at San Antonio, San Antonio, Texas
- 1993-1997 Associate Professor, Division of Maternal-Fetal Medicine, Department of Obstetrics and Gynecology, The University of Texas Health Science Center at San Antonio, San Antonio, Texas
- 1997-2002 Associate Professor, Department of Reproductive Biology, Case Western Reserve University School of Medicine, and Tenure granted effective July 1, 2002
- 2002-2004 Marie Louise Woodson Professor (Tenured), Department of Obstetrics, Gynecology & Women's Health, University of Louisville School of Medicine, Louisville, Kentucky
- 2004-present Professor (Tenured), Department of Obstetrics & Gynecology, and Director, Division of Maternal Fetal Medicine, University of Wisconsin-Madison, Madison, WI
- 2005-present Director, Maternal Fetal Medicine Fellowship, Dept. of Obstetrics & Gynecology, University of Wisconsin-Madison, Madison, WI

Honors and Awards

- 1968 L.H. Hiranandani Scholarship, T. National Medical College, Bombay, India
- 1990 Best Teacher Award for Vanderbilt University OB/GYN full-time Faculty, Nashville, Tennessee
- 1990 Italian Perinatal Society and Italian So. Hypertension in Pregnancy, 5th Prize, Perugia, Italy
- 1993 Outstanding Achievement in Resident Education, The University of Texas Health Science Center
- 2002 National Faculty Excellence Award (Teaching), Council on Resident Education in Obstetrics and Gynecology
- 2001 Member, National Institute of Child Health and Human Development Special Emphasis Panel, (NICHD) RFA: ZHD1 MCHG-B (21), Fetal Origins of Adult Disease
- 2001 Invited Member, Maternal-Fetal Medicine Units Network Committee, National Institute of Child Health and Human Development, (NICHD)
- 2001 Member, National Institute of Child Health and Human Development Panel RFP-NICHD-2001-11 "Services in Support of the Perinatology Research Branch (PRB) of the NICHD"
- 2001 Member, National Institute of Child Health and Human Development Special Emphasis Panel, ZHD1 DSR-H 05 1, RFA (HD-01-005): Health Disparity in Preterm Birth: The Role of Infectious and Inflammatory Processes"

- 2002 Ad-Hoc Member, Maternal and Child Health Research Subcommittee, MCHG-B National Institute of Child Health and Human Development, (NICHD)
- 2003 Member, National Institute of Child Health and Human Development; Special Emphasis Panel, ZHD1 MCHG-B (25), Research on the Scope and Causes of Stillbirths in the United States.
- 2003-07 Member, Obstetrics and Maternal-Fetal Biology Subcommittee, MCHG-B, National Institute of Child Health and Human Development (NICHD)
- 2003 Member, Special Emphasis Panel, ZHD1 MCHG-B MC 1, Initiation of Human Labor: Prevention of Prematurity. NICHD
- 2002 Member, Special Emphasis Panel, ZHD1 DSR-A 20R, Women's Reproductive Health Research Career Development Centers. NICHD
- 2004 Member, Special Emphasis Panel, ZHD1 MCHG-B (MW), Program Projects: Molecular Mechanisms of Fetal Growth Restriction, NICHD
- 2004 Member, Special Emphasis Panel for WRHR Programs, ZHD1 MCGH-B (14),
- 2004 Member, Special Emphasis Panel, ZHD1 MCHG-B LL, Program Projects: Mechanisms of Acclimatization: Fetus and Adult
- 2007 Chairperson, NICHD Special Emphasis Panel, ZHD1 DSR-L (CH), Mechanisms of Preeclampsia: Impact of Obesity
- 2007 Member, NICHP Scientific Review Panel, RFA-HD—08-029 "Preterm 'Birth in Nulliparous Women: An Understudied Population at Great Risk"
- 2009 Member, NICHD Scientific Review Panel, ZHD1 DSR-K (29) "Preterm Birth in Nulliparous Women: An Understudied Population at Great Risk"
- 2009 Member, NICHD Scientific Review Panel, Special Emphasis Panel (SEP) ZRG1 PSE-E 02
- 2012 Member, NICHD Scientific Review Panel, Special Emphasis Panel (SEP) ZHD1-DSR-Z54
- 2014 Member, NICHD Scientific Review Panel, Special Emphasis Panel (SEP) to review P20 (COBRE: Center of Biomedical Research Excellence)

C. Contribution to Science

I began my career as clinician scientist examining the perinatal implications of [hypertensive disorders](#) of pregnancy. The major findings included the observations that the hypertensive state itself had adverse effects on the fetus and it would be therefore important for me to explore underlying mechanisms of this aspect of the disease process. It is this exploration that led me to identify endometrial stromal cell as the origin of reproductive tissue renin on the maternal side and to begin examining the regulation of renin secretion. (4) This then led to my investigations of role of [Renin Angiotensin System \(RAS\)](#) in *pathogenesis of preeclampsia*. The major findings allowed us to propose a conceptualization that similar to renal injury leading to hypertension, utero-placental ischemic injury leads to preeclamptic hypertension. This provided the impetus to establish a transgenic mouse model for investigation of mechanism of renal injury in preeclampsia. (Pending R03 Mechanism of Renal Injury in Preeclampsia) I have also collaborated with a well-known [placental pathologist](#) which provided me with additional insights in understanding placental biology. I also benefitted in scientific approach to [ultrasound](#) as an imaging modality by my collaboration with radiological scientists in early stages of my career. The importance of this clinical and scientific background is that I have depth of understanding of placental biology in context of disorder of pregnancy commonly seen by specialists well beyond an academic clinician. This background provided me with a broad perspective on how to think about clinical disorders, their origins in early placental events and therefore how I would approach investigations as proposed in the RFA. This then allowed me, with robust input from our perinatal scientists and primate placenta-immunologist, to approach renowned UW MR Scientists for collaboration which resulted in this robust scientific team for U01. Even though all of us have not previously pursued similar scientific adventure, I hope review panel will agree with us that this is a scientifically formidable team that one could only dream about!

[1. Hypertension and Preeclampsia:](#)

1. Diamond MP, Shah DM, Hester RA, Vaughn WK, Cotton RB, Boehm FH. Complication of insulin dependent diabetic pregnancies by pre-eclampsia and/or chronic hypertension: An analysis of outcome. *Am J Perinatol* 2:263-267, 1985. PMID: 4052175
2. Shah DM, Shenai JP, Vaughn WK. Neonatal outcome of premature infants of preeclamptic mothers. *J Perinatol* 15(4):264-267, 1995.
3. Shah DM, Reed G. Parameters associated with adverse perinatal outcome in hypertensive pregnancies. *J Hum Hypertens* 10:511-515, 1996. PMID: 8895034

- Shah DM, Higuchi K, Inagami T, Osteen KG. Effect of progesterone on renin secretion in endometrial stromal, chorionic trophoblast, and mesenchymal monolayer cultures. *Am J Obstet Gynecol* 164:1145-1150, 1991. PMID: 2014841

2. Renin-angiotensin System in Preeclampsia:

- Shah DM, Banu JM, Chirgwin JM, Tekmal RR. Reproductive tissue renin gene expression in preeclampsia. *Hypertens in Preg*. 19 (3): 341-351, 2000. PMID: 11118408
- Grant WM, Shah DM. Decidual renin secretion is modulated by vascular endothelial cells. *J Matern Fetal Med* 5:58-63, 1996. PMID: 8796769
- Li C, Ansari R, Yu Z, Shah DM. Definitive molecular evidence of RAS in human uterine decidual cells. *Hypertension* 36 (2): 159-164, 2000. PMID:10948071
- Shah DM. The Role of Renin Angiotensin System in the Pathogenesis of Preeclampsia. *Am J Physiol Renal Physiol* 2005;288(4):F614-25. PMID: 15753325

3. Ultrasonography:

- Kaufman FJ, Fleischer AC, Thieme GA, Shah DM, James AE. Separated chorioamnion and elevated chorion: Sonographic features and clinical significance. *J Ultrasound Med* 4:119-125, 1985.
- Brown JE, Thieme GA, Shah DM, Fleischer AC, Boehm FH. Transabdominal and transvaginal endosonography: Evaluation of the cervix and lower uterine segment in pregnancy. *Am J Obstet Gynecol* 155:721-726, 1986.
- Shah DM, Brown JE, Salyer SL, Fleischer AC, Boehm FH. A modified scheme for biophysical scoring. *Am J Obstet Gynecol* 160:586-591, 1989.
- Worrel JA, Fleischer AC, Drolshagan LF, Durmon GR, Shah DM. Duplex Doppler sonographer of the umbilical arteries: Predictive value in IUGR and correlation with birth weight. *Ultrasound Med Biol* 17:207-210, 1991.

4. Placental Pathology:

- Redline RW, Shah DM, Saker H, Schluchter M, Salvator A. Placental Lesions Associated with Abnormal Growth in Twins. *Pediatr Dev Path* 2001;4(5):473-81.
- Redline RW, Jiang J, Shah DM. Discordancy for maternal floor infarction in dizygotic twin placentas. *Hum Path* 2003;34(8):822-4. PMID: 14506648

D. Research Support

Current Grant Support

PI/COI	AGENCY/NUMBER	EFFECTIVE DATES	TITLE OF PROJECT
DM Shah-PI	Meriter Foundation Research & Education Grant	07/01/2014-6/30/2015	Supplemental Support for Maternal-Fetal Medicine Fellowship Research Training
DM Shah-PI	KV Pharmaceuticals/ Protocol # HPC-PK-005	12/6/2013 through 12/31/2015	A Multi-Center, Non-Randomized Pharmacokinetic Study of Makena® (Hydroxyprogesterone Caproate Injection, 250 mg/mL) and its Metabolites in Blood of Women with a Singleton Pregnancy and a Previous Singleton Spontaneous Preterm Delivery
DM Shah Site PI	F09-01998 (University of British Columbia)	08/01/2009– 12/31/2015	Title: <u>C</u> ontrol of <u>H</u> ypertension <u>I</u> n <u>P</u> regnancy <u>S</u> tudy CHIPS

Recently Completed

PI/COI	AGENCY/NUMBER	EFFECTIVE DATES	TITLE OF PROJECT
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DM Shah Co-I IM Bird (PI)	NIH- R21HD069181	07/01/11 - 06/30/13	Vascular Endothelial Dysfunction in Preeclampsia
DM Shah Co-I Wakai (PI)	NIH- R01- HL063174	06/01/2008 - 3/31/2013	Optimized Signal Processing of Fetal MCG

Pending Applications

PI/COI	AGENCY/NUMBER	EFFECTIVE DATES	<i>TITLE OF PROJECT</i>
DM Shah, PI IM Bird, Co-I	NIH-R03	Pending	Mechanism of Renal Injury in Preeclampsia
IM Bird, PI DM Shah, Co-I	NIH-R01	Pending	CLA as a Therapy for Preeclampsia