BIOGRAPHICAL SKETCH

T32 PI, Steering Committee, Senior Trainer

NAME: BIRD, IAN

eRA COMMONS USER NAME (agency login): IMBIRD

POSITION TITLE: Professor -OB/GYN

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

INSTITUTION AND LOCATION	DEGREE (if applicable)	Completion Date MM/YYYY	FIELD OF STUDY
Birmingham University, Birmingham	BS	07/1984	Medical Biochemistry
University of London, London	PHD	11/1987	Biochemistry
University of Edinburgh, Edinburgh	Fellow	01/1989	Biochemistry
University of Edinburgh, Edinburgh	Fellow	04/1991	Clinical Chemistry
University of Texas, Dallas	Fellow	01/1993	Reproductive Biology Sciences

A. Personal Statement

I trained as Medical Biochemist, and then undertook two highly successful postdoctoral fellowships focused on cell signaling and molecular endocrinology at the level of adrenal steroid biosynthesis and its relationship to zone specific cell signaling as it impacts upon P450/HSD gene expression. This lead to an interest in the analysis of circulating steroids as an indicator of normal vs incomplete development, and as an indicator of normal vs prolonged stress. As a result of my move to an ObGyn department I then applied my knowledge to the investigation of changes in vascular function during pregnancy, I identified for the first time that pregnancy induced adaptation of endothelial function occurs through adaptive programming of cell signaling. Since pioneering the first use of endothelial cell primary culture models (1996) to identify this adaptive programming of cell signaling in response to pregnancy, this laboratory has also gained the unique expertise to image simultaneous real time cell imaging of Ca2+ and NO. The most important recent advance has been the realization that the mechanistic basis for adaptation and failure of adaptation in humans is mediated at the level of Cx43 through the growth factors and cytokines of wounding that are also seen in preeclampsia. My more recent collaboration with Dr Dinesh Shah (Former Head MFM Division) has also allowed the realization of a joint goal to undertake more translational studies in this area to extend our observation from sheep to diseases of human pregnancy, namely preeclampsia. The specific goal of a recently completed R21 investigation was the validation of the UV Endo preparation and associated HUVEC cell model as a suitable basis for study of pregnancy adapted function at the level of Ca2+ signaling and associated NO production and its corresponding failure in PE subjects, and that is a part of what drives this application. In addition, we have recently partnered with Oliver Wieben and his colleagues from Radiology and Medical Physics in the first application of MRI to study human pregnancy (U01 Parent Application) at the level of blood flow, blood oxygenation, and placental perfusion.

Beyond my research interests, I also have taken on a leadership role in research and training nationally as well as on campus. I mentor trainees through junior faculty in research and grant writing at the Society Reproductive Investigation and Perinatal Research Society. On campus I serve as Division Director and Vice Chair in the dept ObGyn, and I am Director of both the Endocrinology and Reproductive Physiology Training Program and the Integrated Program in Endocrinology. I personally train from Predoctoral PhD through faculty on traditional tenure and clinical tracks. I am PI of a Predoctoral T32 (ERP - funded 4 cycles), CoI on an R25 Bridges award to Molly Carnes, CoI of a Health Disparities T32 led by Deb Ehrenthal, and I chair the ObGyn dept committee of tenured professors that works with the Chairs office to guide those undergoing promotions. I lead two RCR courses on campus aimed at trainees from predoc (ObGyn955) through faculty K applicants (ObGyn956). In 2018 I was awarded the Doris Schlesinger award for excellence in mentoring of women faculty.

B. Positions and Honors

Positions and Employment

1993 - 1994 Assistant Instructor, University of Texas Southwestern Medical Center, Dallas, TX

1994 - 1999 Assistant Professor -OB/GYN, University of Wisconsin, Madison, WI

1999 - 2003	Associate Professor with Tenure, University of Wisconsin, Madison, WI
2000 -	Affiliate Appointment -Pediatrics, University of Wisconsin, Madison, WI
2000 -	Chair and Director -Endocrinology Reproductive Physiology Graduate School Program, University of Wisconsin, Madison, WI
2003 -	Professor -OB/GYN, University of Wisconsin, Madison, WI
2013 -	Director Integrated Graduate Training -OB/GYN, University of Wisconsin, Madison, WI
2014 -	Vice Chair Integrated Graduate Training -OB/GYN, University of Wisconsin, Madison, WI
2016 -	Director Division reproductive Sciences, -OB/GYN, University of Wisconsin, Madison, WI
2016 -	Vice Chair Research -OB/GYN, University of Wisconsin, Madison, WI

Other Experience and Professional Memberships

1986 - 1997	Member, Biochemical Society (UK)
1997 -	Member, Perinatal Research Society
1997 - 1997	Co-Organizer, No-Name Society Retreat
1997 - 1998	Associate Member, Society Gynecologic Investigation (USA)
1997 - 2006	Member, Endocrine Society (USA)
1998 -	Full Member, Society Gynecologic Investigation (USA)

Honors

1984	Science and Engineering Research Council, CASE Postgraduate Studentship
1988	Post-Doctoral Research Fellowship, Faculty of Medicine, University of Edinburgh
1990	Sir Stanley and Lady Davidson Lectureship and Research Award, Faculty of Medicine, University of Edinburgh
1991	Sir Stanley and Lady Davidson Lectureship and Research Award, Faculty of Medicine, University of Edinburgh
1991	Post doctoral Fellowship/Assistant Instructorship with JI Mason funded from NIH Training Grant to Cecil and Ida Green Center, UTSW Medical center, Dallas TX
1996	R13 Travel Grant Recipient, Perinatal Research Society, Napa Valley, CA
1999	Awarded Competitive SGI Medical Student Stipend for Research in Reproduction Award for further work on “Effects of betamethazone on adrenal function”, Student Jackie Cale, SGI
2001	Awarded Competitive SGI Medical Student Stipend for Research in Reproduction Award for further work on “zonal expression of eNOS in ovine adrenal”, Student Jane Peterson, SGI
2004	SGI Presidents presenters award and NICHD competitive Travel stipend to FuXian Yi, Postdoctoral Trainee, SGI, NICHD
2005	Nominated Perinatal Research Society (PRS) Council, PRS
2007 - 09	PRS Council. Basic Science Representative, PRS
2009 - 14	Secretary Treasurer Perinatal Research Society, PRS
2012	Established and R13 funded the NIH-Abbott Grants Writing Workshop for PRS Young Investigators, PRS.
2015 - 16	President Perinatal Research Society
2017 -	Secretary Treasurer - Society Reproductive Investigation.
2018	Doris Schlesinger award for excellence in mentoring of women faculty

C. Contribution to Science

1. My studies of endothelial adaptation to pregnancy began in 1994. The major breakthrough was the direct result of establishing the uterine artery endothelial cell (UAEC) culture model. While we initially observed that pregnancy altered the expression of key proteins responsible for vasodilator synthesis in uterine artery endothelium in vivo, the finding that these differences in expression were lost in primary culture, yet differences in vasodilator production still remained lead us to realize this was associated with additional pregnancy specific differences in cell signaling.

a. Bird IM, Sullivan JA, Di T, Cale JM, Zhang L, Zheng J, Magness RR. Pregnancy-dependent changes in cell signaling underlie changes in differential control of vasodilator production in uterine artery endothelial cells. Endocrinology. 2000 Mar;141(3):1107-17. PubMed PMID: 10698187.

b. Di T, Sullivan JA, Magness RR, Zhang L, Bird IM. Pregnancy-specific enhancement of agonist-stimulated ERK-1/2 signaling in uterine artery endothelial cells increases Ca(2+) sensitivity of endothelial nitric oxide synthase as well as cytosolic phospholipase A(2). Endocrinology. 2001 Jul;142(7):3014-26. PubMed PMID: 11416023.

c. Gifford SM, Cale JM, Tsoi S, Magness RR, Bird IM. Pregnancy-specific changes in uterine artery endothelial cell signaling in vivo are both programmed and retained in primary culture. Endocrinology. 2003 Aug;144(8):3639-50. PubMed PMID: 12865347.

2. Further investigation revealed that pregnancy altered both kinase signaling and Ca2+ signaling. Further, Ca2+ signaling was more sustained in duration and took the form of successive Ca2+ bursts (mediated via TRPC under the permissive control of Cx43). As a result, pregnancy literally recruited more cells into a synchronous response, and then sustained that response for much longer. However agents (growth factors and cytokines) that promoted ERK or Src mediated inhibitory phosphorylation of Cx43 could reverse that adaptation back to nonpregnancy levels.

a. Gifford SM, Yi FX, Bird IM. Pregnancy-enhanced Ca2+ responses to ATP in uterine artery endothelial cells is due to greater capacitative Ca2+ entry rather than altered receptor coupling. J Endocrinol. 2006 Aug;190(2):373-84. PubMed PMID: 16899570.

b. Gifford SM, Yi FX, Bird IM. Pregnancy-enhanced store-operated Ca2+ channel function in uterine artery endothelial cells is associated with enhanced agonist-specific transient receptor potential channel 3-inositol 1,4,5-trisphosphate receptor 2 interaction. J Endocrinol. 2006 Aug;190(2):385-95. PubMed PMID: 16899571.

c. Yi FX, Boeldt DS, Gifford SM, Sullivan JA, Grummer MA, Magness RR, Bird IM. Pregnancy enhances sustained Ca2+ bursts and endothelial nitric oxide synthase activation in ovine uterine artery endothelial cells through increased connexin 43 function. Biol Reprod. 2010 Jan;82(1):66-75. PubMed PMID: 19741206; PubMed Central PMCID: PMC2802114.

d. Boeldt DS, Grummer MA, Yi F, Magness RR, Bird IM. Phosphorylation of Ser-279/282 and Tyr-265 positions on Cx43 as possible mediators of VEGF-165 inhibition of pregnancy-adapted Ca2+ burst function in ovine uterine artery endothelial cells. Mol Cell Endocrinol. 2015 Sep 5;412:73-84. PubMed PMID: 26033246. (In press- PMCID in process)

3. Our development of a simultaneous imaging method for Ca2+ and NO and its application to endothelium still on the lumenal surface of intact vessels allowed us to directly observe that pregnancy enhanced Ca2+ bursts actively drive pregnancy enhanced NO output in ovine uterine artery. This adaptive response is exactly paralleled in Human Umbilical Vein Endothelium. We have more recently shown that growth factors and cytokines inhibit endothelial Cx43 function and so Ca2+ bursts and associated NO down to a level of nonpregnancy or preeclamptic vessel dysfunction in both vessel types, and the two dysfunctional states are indistinguishable.

a. Yi FX, Magness RR, Bird IM. Simultaneous imaging of [Ca2+]i and intracellular NO production in freshly isolated uterine artery endothelial cells: effects of ovarian cycle and pregnancy. Am J Physiol Regul Integr Comp Physiol. 2005 Jan;288(1):R140-8. PubMed PMID: 15297265.

b. Yi FX, Boeldt DS, Magness RR, Bird IM. [Ca2+]i signaling vs. eNOS expression as determinants of NO output in uterine artery endothelium: relative roles in pregnancy adaptation and reversal by VEGF165. Am J Physiol Heart Circ Physiol. 2011 Apr;300(4):H1182-93. PubMed PMID: 21239633; PubMed Central PMCID: PMC3075018.

c. Krupp J, Boeldt DS, Yi FX, Grummer MA, Bankowski Anaya HA, Shah DM, Bird IM. The loss of sustained Ca(2+) 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):H969-79. PubMed PMID: 23893163; PubMed Central PMCID: PMC3798749.

For Full Publications List see:

http://www.ncbi.nlm.nih.gov/myncbi/ian.bird.2/bibliography/43580851/public/?sort=date&direction=descending

D. Research Support

Ongoing Research Support

2018/05/01-2023/04/30 (4th cycle)
T32 HD41921, NIH
BIRD, IAN (PI)
Endocrinology and Reproductive Physiology Training Grant
Role: PI

2015/09/01-2020/08/31
U01 HD087216, NIH
Shah Dinesh (PI), Wieben Oliver (PI)
Advanced MRI FOR Uteroplacental Flow, Perfusion, Oxygenation & Inflammation
Role: Co-Investigator/Alternate PI

2015/04/01-2019/06/30
R13 HD036244, NIH
BIRD, IAN (PI)
Perinatal Research Society Annual Meeting
Role: PI

2014/05/01-2019/04/30 (3rd cycle)
T32 HD41921, NIH
BIRD, IAN (PI)
Endocrinology and Reproductive Physiology Training Grant
Role: PI

2013/07/01-2019/06/30 (No cost extension)
P01 HD38843, NIH
BIRD, IAN (PI)
Importance of Endothelial Cell-Cell Communication at the Maternal Fetal Interface
Project Leader Project 1 Director Core A, Core C
Role: PI

2013/07/01-2018/06/30
R13 HD079163, NIH
BIRD, IAN (PI)
Perinatal Research Society YI Grants Writing Workshop
Role: PI

2012/05/01-2017/04/30, Renewed to 2022, Deb Ehrenthal MD (PI)
T32 HD049302, NIH
Gloria Sarto (PI)
Health Disparities Research Scholars
Role: Co-Investigator

2012/02/01-2017/01/31, Renewed to 2022
R25, NIH
Mary Carnes (PI)
Training and Education to Advance Minorities in Science (TEAM-Science)

Role: Co-Investigator

Completed Research Support

2011/05/01-2016/04/30
R01 HL079020, NIH
BIRD, IAN (PI)
Pregnancy/NO Induced Changes in UAE Ca2+ Signaling
Role: PI

2009/07/01-2014/06/30
R01 HL093282, NIH
Murphy, William L (PI)
Biomaterials for local regulation of growth factor signaling
Role: Co-Investigator

2009/05/01-2014/04/30
T32 HD41921, NIH
BIRD, IAN (PI)
Endocrinology and Reproductive Physiology Training Grant
Role: PI

2011/07/01-2013/06/30
R21 HD069181, NIH
BIRD, IAN (PI)
Vascular Endothelial Dysfunction in Preeclampsia
Role: PI

2007/07/01-2012/06/30
RO1 HL087144, NIH
Magness, Ronald R (PI)
Physiologic Cardiovascular and Uterine eNOS responses: Role of Endogenous Estrogen in Pregnancy
Role: Co-Investigator

2007/04/01-2012/03/31
P01 HD38843, NIH
Magness, Ronald R (PI)
Mechanisms of Endothelial and Embryonic Stem Cell Regulation in Pregnancy
Project Leader project 1 Co-Director Core C
Role: CPI