University of Birmingham

Professor Mark Kilby

Dame Hilda Lloyd Professor of Maternal and Fetal Medicine and Deputy Head of School

Reproduction, Genes and Development

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About

He was appointed a Professorship in Maternal and Fetal Medicine to the University of Birmingham in 2002 and to the Dame Hilda Lloyd Chair in 2006.

Professor Kilby's clinical special expertise is in prenatal diagnosis, fetal anomalies, fetal therapy and intrauterine growth restriction. He has published over 200 peer reviewed original articles on topics relating to fetal medicine and in the basic science of maternal and fetal physiology relating to his subspecialty. His research interests focus upon:

- Fetal endocrinology: especially the action of thyroid hormone upon the placenta and developing fetal central nervous system.
- The critical appraisal of diagnostic and therapeutic interventions in fetal therapy.
- The effect of fetal cells upon maternal immunity during pregnancy and the puerperium.

He is presently Lead Clinician of Fetal Medicine responsible for the administrative running of the Fetal Medicine Centre at the Birmingham Women's Hospital and has been appointed so since 1998.

Qualifications

MB BS MD FRCOG

Biography

Professor Kilby was appointed as an Honorary Consultant in Maternal and Fetal Medicine in March 1996 at the University of Birmingham Medical School and Birmingham Women's Foundation NHS Trust.

After qualification from Guy's Hospital Medical School in 1984, he performed his house jobs at Guy's Hospital. He was then attached to junior obstetrical and gynaecological posts in London, Nottingham and the West Midlands. After a period of research at Nottingham University, he was awarded an MD thesis in 1990.

After a sabbatical at the University of Toronto, Canada (Fetal Medicine Centre, Mount Sinai Hospital/Lunefeld Institute, University of Toronto), he was accredited in general Obstetrics and Gynaecology from the Royal College of Obstetricians and Gynaecologists in 1995. After further specialist training in Birmingham, he obtained full subspecialty accreditation in Maternal and Fetal Medicine in 1996.

His GMC number is 2926274 and he is on both the general and specialist registers for Maternal and Fetal Medicine at the GMC.

Professor Kilby is one of five accredited consultant subspecialists providing regional and super-regional care for pregnant women with fetal medicine problems at the West Midlands Fetal Medicine Centre at Birmingham Women's Foundation Trust. The Fetal Medicine Centre at Birmingham Women's Hospital has a catchment from other referring hospitals of approximately 8 million. It therefore provides a large referral base and extensive number of tertiary opinions.

Professor Kilby has special clinical expertise in prenatal diagnosis, the detection of fetal anomalies, intrauterine growth restriction and its placental pathology and fetal therapy. He has published over 200 peer reviewed original articles, chapters for books and review articles on topics related to Fetal Medicine and the basic science surrounding the pathophysiology of conditions in maternal and fetal medicine.

He was the fetal medicine elected representative on the Executive Committee of the British Society of Maternal Fetal Medicine between 2000 and 2007 and subsequently re-elected to serve as the academic member from 2008. In his role, he has provided expert opinions on numerous sub-documents produced by the National Institute of Clinical Excellence relating to invasive and non-invasive fetal therapy. He is an invited member of the annual International Fetoscopic Working Group (elected in 2005-). He was also elected as a member of the North American Perinatal Society (2004-) and the Society of Gynecological Investigation (2001-). He is presently Chairman of the NICE Working Party on Multiple Pregnancy (2009-).

He was an elected member of the Council of the Royal College of Obstetricians & Gynaecologists as the representative for the West Midlands region between July 2001-June 2007. He has served on the Subspecialty Training Committee at the RCOG (1998-2003), the RCOG Education Board (2001-2004), the Scientific Advisory Committee (2005-2006) and the RCOG Finance and Executive Committee (2006-2007). He was elected a Fellow of the Royal College of Obstetricians & Gynaecologists in September 2007. He is presently Chairman of the Royal College of Obstetricians & Gynaecologists Wellbeing of Women Research Advisory Committee (2008-2011). He was co-Chair and Editor of the 2006 RCOG Scientific Working Party on Multiple Pregnancies (50th Scientific Working Group).

Professor Kilby was appointed to a personal Chair in Maternal & Fetal Medicine at the University of Birmingham in July 2002 and has been lead clinician in Fetal Medicine at the Birmingham Women's NHS Foundation Trust since 1997. He presently holds the Dame Hilda Lloyd Chair of Maternal & Fetal Medicine at the University of Birmingham.

Teaching

- 2nd year medical students

- Final year medical students.
- BMedSci students and Medical Students on SSA/SSM modules.

Postgraduate :

- PhD studentships: basic science & clinical.
- RCOG Subspecialty training in Maternal/Fetal Medicine

Postgraduate supervision

PhD/MD supervision

Research

Research interests: Prenatal diagnosis, Detection of fetal anomalies, Intrauterine growth restriction, Placental pathology, Fetal therapy, Fetal development and thyroid hormone.

Professor Kilby has published over 201 peer review original articles on topics relating to fetal medicine and in basic sciences applied to this subspecialty. The main areas of research are:

Basic science.

- Malplacentation and placental pathology.
- Endocrinology of the fetus and placenta.
- Intrauterine growth restriction.
- Trophoblast-decidua interaction and human implantation: the role of immune tolerance in pregnancy.
- Pre-eclampsia.

He leads a fetal endocrinology group at the *Centre for Endocrinology, Metabolism and Diabetes* (CEDAM) within the School of Clinical and Experimental medicine at University of Birmingham. This group has focused upon the following topics:

- The role of ***thyroid hormone metabolism and placental delivery of this hormone on the developing fetus***. This includes the control of endocrine, paracrine and autocrine mechanisms in delivery and action of thyroid hormones within the human placenta and developing fetal brain. This work is funded by projects grants from the MRC, Action Medical research and Wellbeing of Women. Professor Kilby also supervises and mentors Dr S Chan who holds a five year Health Foundation Clinical Fellowship investigating the role of thyroid hormone transporters in the human fetal brain and placenta.
- The ***pre-receptor regulation of glucocorticoid and mineralocorticoid steroids to the human placenta and the fetus***. This work has been funded by projects grants from Action Medical research, MRC and the Wellcome Trust.
- The role of ***vitamin D on trophoblast-decidua interaction and human implantation***: the role of immune tolerance in pregnancy. This work has been funded by the BBSRC in the form of a project grant.
- ***Fetal Microchimerism: the effect of fetal cells on maternal immune response*** in human pregnancy. This work is funded by the charity Wellbeing of Women and the Leukaemia Research Fund.

Clinical research:

- Maternal alloimmunisation and the fetal cardiovascular effects of IUT.
- The epidemiology of fetal anomalies
- The chronic consequences of fetal anomalies.
- Fetal pathology
- The management of congenital heart disease in-utero.
- Fetal therapy: critical appraisal and evaluation
- New technologies in prenatal diagnosis of cytogenetic anomalies.

Since 2000, Professor Kilby has chaired a research consortium within the University of Birmingham to systematically review and critically appraise evidence for the role of in-utero, fetal therapy. This has involved the production of a series of peer reviewed and published systematic reviews evaluating the evidence for diagnostic and therapeutic tests in fetal medicine.

In 2008, The HTA funded a 10 year follow up study (the ***PLUTO trial***). This is a RCT to evaluate (both in terms of perinatal and child hood outcome measures) the effects of in-utero vesico(bladder)-amniotic shunting in babies with the congenital anomaly, bladder neck obstruction. This study is funded for £1.2 M and Professor Kilby is the PI. This will complete analysis by end of 2011. Recruitment stopped December 2010.

In 2010, the HTA/MRC EME have funded a RCT (and basic science work to evaluate mechanisms) evaluating the effect of TPO antibodies on pregnancy outcome (with randomization to thyroxine replacement of placebo)(***the TABLET study***). This study is due to start in the new year (2011). Professor Kilby is one of the principal co-investigators.

Professor Kilby is also local PI on the following clinical studies:

- ***The PROMISE study***. A RCT to evaluate the role of progesterone in preventing first trimester miscarriage (to start 2010/2011).
- ***The StAMP study***. A RCT to evaluate the role of statins on preventing disease progression in pre-eclampsia (to start 2010/2011)

Other activities

- Director of the Fetal Medicine Centre, Birmingham Women's Hospital.
- Chairman of Academic strategy Committee, Birmingham Women's Foundation NHS Trust.
- Chair of NICE Committee on management of Multiple Pregnancy (2009-2011)
- Programme Director for Subspecialty Training in Maternal Fetal Medicine at the Birmingham Women's Hospital.

Publications

Pemberton HN, Franklyn JA, Boelaert K, Chan SY, Kim DS, Kim C, Cheng SY, Kilby MD, McCabe CJ.(2007) Separase, securin and Rad21 in neural cell growth. **J Cell Physiol**. Oct;213(1):45-53.

Chan S, Kachilele S, McCabe CJ, Tannahill LA, Boelaert K, Gittoes NJ, Visser TJ, Franklyn JA, Kilby MD. (2002) Early expression of thyroid hormone deiodinases and receptors in human fetal cerebral cortex. **Brain Res Dev Brain Res**. Oct 20;138(2):109-16.

Hewison M, Freeman L, Hughes SV, Evans KN, Bland R, Eliopoulos AG, Kilby MD, Moss PA, Chakraverty R. (2003) Differential regulation of vitamin D receptor and its ligand in human monocyte-derived dendritic cells. **J Immunol.** Jun 1;170(11):5382-90.

Boelaert K, Tannahill LA, Bulmer JN, Kachilele S, Chan SY, Kim D, Gittoes NJ, Franklyn JA, Kilby MD, McCabe CJ. (2003) A potential role for PTTG/securin in the developing human fetal brain. **FASEB J.** Sep;17(12):1631-9

Chan S, Kachilele S, Hobbs E, Bulmer JN, Boelaert K, McCabe CJ, Driver PM, Bradwell AR, Kester M, Visser TJ, Franklyn JA, Kilby MD. (2003) Placental iodothyronine deiodinase expression in normal and growth-restricted human pregnancies.**J Clin Endocrinol Metab**. Sep;88(9):4488-95.

Evans KN, Taylor H, Zehnder D, Kilby MD, Bulmer JN, Shah F, Adams JS, Hewison M. (2004) Increased expression of 25-hydroxyvitamin D-1alpha-hydroxylase in dysgerminomas: a novel form of humoral hypercalcemia of malignancy. **Am J Pathol.** Sep;165(3):807-13.

Barber KJ, Franklyn JA, McCabe CJ, Khanim FL, Bulmer JN, Whitley GS, Kilby MD. (2005) The in vitro effects of triiodothyronine on epidermal growth factor-induced trophoblast function. **J Clin Endocrinol Metab**. Mar; 90(3):1655-61.

Publications: Professor Kilby has 201 cited publications on Medline. The most recent are outlined below: (**http://www.ncbi.nlm.nih.gov/pubmed?term=Kilby%20M%20D (http://www.ncbi.nlm.nih.gov/pubmed?term=Kilby%20M%20D)**)

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