

Board Member Spotlight: Stephen K. Hunter, MD, PhD



With a BS degree in Engineering, a PhD in Pharmaceutics, and passion for perinatal outreach, Dr. Stephen Hunter is not the typical physician scientist. According to Dr. Kimberly Leslie, Head of Obstetrics and Gynecology at the University of Iowa, “Stephen Hunter is a *bona fide* triple threat. He’s an outstanding clinician, is the Associate Director of the Iowa Statewide Perinatal Care Program, and maintains a high-quality research program.”

Dr. Hunter received a BS degree in Materials Science and Engineering from the University of Utah in 1982. His first insight into the power of translational research came that same year when Barney Clark was the first human implanted with an artificial heart at the University of Utah. At that time, Dr. Hunter was working there with the artificial heart team in the Division of Artificial Organs, so this landmark medical achievement was of particular importance to him. Because of his interest in research, he continued his academic pursuits and received a PhD in the Department of Pharmaceutics at the University of Utah in 1987. For his PhD dissertation, he developed an artificial fallopian tube that could be used for fertility treatments because, at the time, *in vitro* fertilization was still in its infancy. Dr. James Scott, who was the chair of the Department of Obstetrics and Gynecology and a member of his PhD committee, became one of Dr. Hunter’s first and greatly admired mentors. According to Dr.

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-Dr. Kimberly Leslie

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Please cite this paper as: Stephen K. Hunter, MD, PhD. Proc Obstet Gynecol. 2011 Apr;1(3):Article 10[3 p.]. Available from: <http://ir.uiowa.edu/pog/>. Free full text article.

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Hunter, he learned from Dr. Scott the importance of providing the best care you can to patients. Dr. Scott is now the Editor-in-Chief of the Green Journal (aka Obstetrics & Gynecology), the largest obstetrics journal in the country. While Dr. Hunter's research program has moved beyond generation of artificial organs, some aspects of his PhD research can still be seen in one of his current research endeavors – using tissue engineering to treat maternal phenylketonuria (PKU) syndrome.

After completing his PhD and MD at the University of Utah, Dr. Hunter moved to the University of Iowa in 1989 for a residency in Obstetrics and Gynecology. He went on to complete his Maternal-Fetal-Medicine fellowship at Iowa and joined the ranks of faculty in 1996 as an Assistant Professor in the Departments of Obstetrics and Gynecology, Chemical and Biochemical Engineering, and Biomedical Engineering. He is now a full professor of Obstetrics and Gynecology. In November 2010, he was appointed to Director of the Division of Maternal and Fetal Medicine (MFM). Of note, Dr. Hunter was recently bestowed with the National Perinatal Association's 2009 Individual Contribution to Maternal and Child Health Award. This award is to honor an individual who has worked tirelessly to enhance the maternal and child health cause.

One of Dr. Hunter's passions as a physician is to prevent preterm births. He believes the physician's role is to be an advocate for both the mother and the unborn child. Dr. Hunter long-standing commitment to perinatal care led him to become a part of the Iowa Statewide Perinatal Care Program in 2005 as Associate Director and MFM specialist.

He assumed this position when the previous Associate Director, Dr. Frank Zlatnik, retired. According to Dr. Hunter, it was a great honor when Dr. Zlatnik asked him to take over his position with the program, particularly since he considers Dr. Zlatnik to be another of his greatest mentors. The mission of the Iowa Statewide Perinatal Care Program is to review the obstetrics programs in every hospital in Iowa, of which there are currently 80, to ensure high quality care to mothers and children and maintain a regionalized care pattern in the State of Iowa. The primary focus of the program is on quality and safety issues, particularly to eliminate elective inductions earlier than 39 gestational weeks. Dr. Hunter is also the March of Dimes Iowa State Prematurity Chair, which clearly demonstrates his commitment to high-quality perinatal care in Iowa.

In his research program, Dr. Hunter leverages the knowledge he gained with his degrees in engineering and pharmaceuticals to develop nanoparticle targeted therapies and vaccines. His research program has three main focuses: preeclampsia, Group B Streptococci vaccine development, and tissue engineering to treat maternal PKU syndrome. In addition to the deleterious consequences of infant infection with Group B Streptococci during birth, some evidence indicates that Group B strep may also increase the risk of preterm birth. Therefore, a vaccine would have a multitude of benefits to the infant. He is also interested in applying tissue engineering technology to develop treatments for maternal PKU syndrome. This syndrome is characterized by an inability to process the essential amino

acid phenylalanine into tyrosine; phenylalanine crosses the placenta and results in birth defects. The current treatment for maternal PKU syndrome is removing phenylalanine from the diet, which is both difficult and expensive. Dr. Hunter's goal is to devise a new method to restore the enzyme that converts phenylalanine to tyrosine, phenylalanine hydroxylase.

In addition to his responsibilities with a research lab and the perinatal outreach program, Dr. Hunter was recently appointed Director of the MFM Division in the Department of Obstetrics and Gynecology. His immediate goals are to expand the division by hiring new faculty members and increasing extramural funding for research. His vision for the division is to set a standard of safety and quality of care for the rest of the state to follow.

Dr. Hunter still strives to maintain balance in his life. He continues to teach young physicians about the importance of patient care. One of his favorite questions to ask is, "What is the most important exam you'll ever take?" According to Dr. Hunter, the responses are normally medical boards, but he strongly believes that the patient lying before you is the most important exam you'll ever take – "if you flunk that exam, someone pays the price, and it's not you." Finally, family remains the most important thing in his life. Dr. Hunter believes that his greatest accomplishments are not listed on his CV, but within the walls of his home.

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Proceedings in Obstetrics and Gynecology