Professor Joachim Dudenhansen, one of the most prominent German obstetricians, is an ambassador of German medicine and science. He is Emeritus Dean of the Faculty of Medicine and Emeritus Professor for Obstetrics at Charité—Universitätsmedizin Berlin. In addition to his pioneering work in perinatal medicine, he has been instrumental in unifying the fields of obstetrics and gynecology in Germany. He is Editor-in-Chief of two journals, the Journal of Perinatal Medicine and Case Reports in Perinatal Medicine, and editor of a book series titled Hot Topics in Perinatal Medicine.

His early work on the development of the amnioscope was important for early intrapartum monitoring of fetal well-being, and his research subsequently expanded to include biochemical testing of fetal blood, magnetic resonance imaging (MRI) of the pelvis, and sonographic assessment of labor progress. His textbooks and teachings have improved outcomes for women and children in Germany and beyond.

Professor Dudenhansen is Fellow ad eundem of the Royal College of Obstetricians and Gynaecologists, Honorary Chairman of the German Society for Perinatal Medicine, and an honorary member of the Berlin Society of Obstetrics and Gynaecology and the German Society for Gynaecology and Obstetrics. In 2010, Professor Dudenhansen was awarded the Cross of the Order of Merit of the Federal Republic of Germany. His many tributes include the Maternité Award of the German Society for Perinatal Medicine in 1981, the Honorary Medal of the Charité Berlin in 2005, the Liley Medal of the International Society of the Fetus as a Patient in 2008, the Erich Saling Award of the World Association of Perinatal Medicine (WAPM) in 2009, the Presidential Lifetime Achievement Award from the WAPM, and the Carl Kaufmann Medal of the German Society for Gynaecology and Obstetrics in 2018.

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In recognition of his scientific contributions to the field, the American Journal of Obstetrics & Gynecology recognizes Professor Joachim Dudenhansen as a “Giant in Obstetrics and Gynecology.”

Early life and inspiration from Dr Willibald Pschyrembel

Joachim was born in 1943 in Werdohl, Germany. His father, Mr Ferdinand Dudenhansen, was killed in action during World War II. He lived with his mother, Mrs Annemarie Dudenhansen, and his grandmother in Lüdenscheid until 1961, where he attended the Zeppelin-Gymnasium.

Joachim’s uncle, Dr Willibald Pschyrembel, a gynecologist and Chief Physician of the Gynecological Clinic at the Berlin Hospital in Friedrichshain, was a great influence during his nephew’s formative years. When Joachim was 13, his uncle took him to the hospital where he ran a laboratory for pregnancy testing. Before 1960, the practice was to diagnose pregnancy by using animals for bioassays—specifically, juvenile mice, and later, adult rabbits and frogs. By observing the work at the clinic, Joachim was inspired to commit to a career in medicine, specifically obstetrics and gynecology.

Dr Pschyrembel, the long-standing editor of Klinisches Wörterbuch (Clinical Dictionary), was responsible for editions 19 to 254. For German clinicians, the surname Pschyrembel remains synonymous with the medical lexicon. Dr Pschyrembel also authored two extraordinary textbooks, Praktische Geburtshilfe (Practical Obstetrics) and Praktische Gynäkologie (Practical Gynaecology), which became standards in the field. Joachim later took over as author of the publication in Obstetrics, issuing updated versions that incorporated the latest knowledge across the disciplines.

Medical training and meeting Ria

Joachim began his studies in medicine at Johannes Gutenberg University of Mainz, staying for two-and-a-half years, and continued his education at the Free University of Berlin for three years. During that time, he met Ria, a medical student. He told me about their first encounter in 1965: “We had a practical examination in internal medicine in which we learned to do a physical examination in patients. There was a very interesting lecture that evening from the director of the Women’s Hospital about early pregnancy. After our practical finished, I asked Ria to come to the lecture with me. And she came!”
At the end of their medical studies, Joachim and Ria took the state examination at the same time, and both passed. Joachim went into obstetrics and gynecology, and Ria chose radiology. They married one year later in 1969 and had two children, Hanna and Wolfram (Figures 1 and 2).

Amnioscopy with a new light

In 1965, while still a student, Joachim joined Professor Erich Saling’s group at Frauenklinik Berlin-Neukölln, then the largest obstetrics department in Germany. Professor Saling, considered by many to be the “father of perinatal medicine,” pioneered the development of the field of maternal–fetal medicine. Working in the department gave Joachim a cutting-edge view of the field.

Fetal well-being was still an enigma in the 1960s: the technology had not yet been developed to study or monitor the status of the fetus accurately. Yet, Professor Saling treated the fetus as a patient, and to understand fetal physiology, he devised a method to take a fetal blood sample during labor with an instrument he invented—the amnioscope (Figure 3).

This type of endoscope could locate the fetus’s scalp through the vagina, permitting the physician to make a small incision and draw blood into a capillary tube. An assessment of pH and blood gases (in particular pO2) in the sample allowed the detection of acidemia.

Early models of the amnioscope used incandescent light, which did not support high-quality visualization. Locating the scalp accurately was vital when collecting fetal blood, and for his doctoral thesis, Joachim set out to determine the best approach for lighting. His objective was to identify fiberglass lighting devices that did not alter the colors of the amniotic fluid, while being of sufficient luminosity for use in the amnioscope. He completed the project in 1969 and wrote his doctoral dissertation, titled “Untersuchungen über..."
Beleuchtungs-Vorrichtungen für die Amnioskopie (“Investigations into lighting devices for amnioscopy”) (Figure 4).

**A long-term collaboration with Professor Saling**

In addition to his role at Frauenklinik Berlin-Neukölln, Professor Saling also led the Perinatal Medicine Working Group of the Free University. After passing the state medical examination, completing his work on the amnioscope, and fulfilling his role for the departmental team, Joachim took the position of Assistant Physician in the working group and at Frauenklinik Berlin-Neukölln. This appointment marked the start of decades of collaboration with Professor Saling and scientific societies in clinical work and research (Figure 5).

In 1975, Joachim became Senior Physician at Frauenklinik Berlin-Neukölln, where, later in 1977, he advanced to Chief Staff Member in the Department of Obstetrics. In 1982, he was appointed Deputy Chief of Obstetrics, Director of the Midwife School, and Associate Professor at the Free University of Berlin.

**Intrapartum surveillance: biochemical testing for fetal well-being**

Amnioscopy paved the way for the measurement of fetal blood gases and the development of the study of fetal physiology. Joachim’s collaboration with Professor Saling prompted a move to Switzerland, where he became Deputy Head Physician for the Department for Obstetrics at the University of Zürich. There, he worked with Dr Renate Huch and Dr Albert Huch, pioneers in assessing fetal well-being with transcutaneous carbon dioxide pressure (pCO₂) measurement.

Joachim’s work aimed to enable the early diagnosis of problems in the fetus by using a biochemical method: this approach involved measuring oxygen pressure (pO₂) and pCO₂ transcutaneously. In a 1985 *Archives of Gynecology* article, Joachim et al described the tracking of changes in the partial pressure of oxygen (transcutaneous oxygen pressure = PO₂) and carbon dioxide (transcutaneous carbon dioxide = PCO₂) in 34 fetuses during labor. They used transcutaneous electrodes—a new technology at the time—to show that the concentrations of PO₂ and PCO₂ changed with contractions in the first and second stages of labor and that there was a correlation with cardiotocography results. Their work was ground-breaking in the field of intrapartum surveillance (Figure 6).

Monitoring the fetus during delivery by fetal blood analyses became the subject of investigations that focused on infections, fetal anemia, and hydrops fetalis. Joachim and his working group were among the first to publish studies on the monitoring of fetal oxygen saturation by pulse oximetry.

**Tocolytic agents, surfactant, and fetal lung maturation**

Given the importance of prematurity, Joachim’s team focused on surfactant, the effects of antenatal support measures for
lung development, and the influence of tocolytic treatment in promoting lung development.8–12 (Figure 7). Joachim measured the concentration of lecithin, the lipid constituent of surfactant, before and during the administration of tocolytic agents throughout pregnancy. The studies showed that tocolytic agents decrease the concentration of lecithin and delay lung maturation.8–12

Pioneering longitudinal studies on the endocrinology of pregnancy
Before ultrasound became widely used, obstetricians relied on the study of placental hormones in maternal blood to assess the likelihood of fetal growth restriction. Joachim considered the possibility of human placental lactogen (HPL) as a biomarker for placental function. He and Dr Ria Dudenhausen coauthored a pioneering prospective study involving 2000 pregnant women.13 Their findings made it possible to use HPL measurement as a means of monitoring fetal wellbeing.

Magnetic resonance imaging, pelvimetry, and intrapartum sonography
As ultrasound grew in prominence, Joachim continued to explore different means of assessing labor progress. Because of the reported risks of X-ray during pregnancy, Joachim elected to use MRI, an imaging technique using nonionizing radiation. Joachim’s first studies with MRI involved pelvimetry, the measurement of pelvic dimensions in the pregnant patient.14,15 By the mid-2000s, the team’s exploration soon extended into monitoring the process of labor.16 They recorded a patient delivering an infant in the magnet and published the results, including video footage, in the American Journal of Obstetrics & Gynecology in 2012.17 At the time, I remember the video and the research going viral. This work was made possible by a close collaboration with members of the Charité: Professor Wolfgang Henrich, Professor Karim Kalache, and Dr Christian Bamberg.

Although MRI was an effective, remarkable tool, Joachim also promoted intrapartum sonography. His team at the Charité, including his deputy Dr Henrich, remains at the forefront of this field (Figure 8), and their papers on intrapartum sonography were among the first in the field18,19 (Figure 9).

Multiple gestation
Joachim, long committed to encouraging a decrease in the rate of multiple gestations, has supported the need to reduce the number of embryos transferred during assisted reproductive technology. For more than two decades, he conducted studies on the antenatal monitoring and delivery management of multiple pregnancies.20–23 One such study23 described the care provided for and the outcomes of very preterm triplet pregnancies in hospitals across Europe in 2011 and 2012. Mortality was similar in singleton and twin gestations.21 Preterm delivery is a serious concern in multiple pregnancy, and Joachim’s focus was on primary prevention. In several publications, Joachim’s group reported on the diagnosis and prevention of
preterm deliveries, and their reports included international comparisons.  

Fetal death and rescue by birth

Joachim also developed a particular interest in the mechanisms responsible for fetal death. He asked if I knew how many neonates would undergo a pathologic examination after stillbirth. “Eight percent, in Berlin,” he emphasized. “The investigation of the causes of fetal death is inadequate today. Yet, this is important to improve the quality of obstetrical care.”

Studying the causes of fetal death has been important for Joachim and his coauthors. More than one-half of perinatal losses represent fetuses at a viable gestational age, and Joachim believed that studies of the placenta offer insights into the causes of fetal death. His team assessed data on 17,415 placentas: 993 (5.7%) showed a disorder in villous maturation. Although the rate of associated fetal deaths was low (2.3%), it was still 70 times higher than that of pregnancies with a normal placenta. Placental maturational disorders can cause fetal hypoxia, but in many cases, the fetus is rescued by birth, as reflected in the title of one of Joachim’s papers: “Rescue by birth: defective placental maturation and late fetal mortality.”

Perinatal programming and primary prevention

Another important phenomenon—fetal programming—captured Joachim’s attention. He collaborated with Professor Andreas Plagemann, who, together with Professor Günter Dörner, had coined the term “perinatal
One aspect of their focus was perinatal overfeeding, which can occur when a fetus is exposed to an obese or diabetic intrauterine environment. Overfeeding may permanently increase a child’s risk of becoming overweight and expose it to more immediate perinatal risks. They also studied the role of epigenetics in fetal programming; the group’s observation of an association between the mother’s pregravid body mass index and the neonatal body weight has been of considerable interest.31

Reunification of physicians and surgeons in East and West Berlin

In addition to Joachim’s pioneering scientific contributions, he led the scientific community through a pivotal change in the field of obstetrics and gynecology in Germany. After two years as Deputy Director of the Department of Obstetrics at University Hospital, Zürich, Joachim returned to Berlin to take up the position of Director of the Department of Obstetrics at the Free University of Berlin in 1989, two months before the Cold War ended. At the same time, as Dean of the Faculty of Medicine at the Charité, he assumed the prodigious task of merging three large institutions: the Charité, connected to Humboldt University in East Berlin, and Benjamin Franklin Hospital and Rudolf Virchow University Clinic, both connected to the Free University in West Berlin. The prestigious Charité was chosen as the central institution, with which the others would merge. The merger was no small feat: the Charité was Berlin’s biggest employer, with 12,000 staff members, including 3000 physicians. By 2003, the unification of the three institutions into one medical faculty—the Charité, with three campuses, Campus Virchow-Klinikum, Campus Benjamin Franklin, and Campus Mitte—was accomplished.

Leadership in Doha, Qatar

Joachim enjoyed a lengthy, successful career at the Charité in Berlin. When the time came for him to step down from his position in 2010, he spent a sabbatical year in New York at the Weill Cornell Medical College. At the time, Cornell was involved in establishing the Sidra Medical Center in Doha, Qatar, a hospital devoted to the care of mothers and children and created by Her Highness Sheikha Moza bint Nasser. The Center’s search for a leader with expertise led to the appointment of Joachim as Deputy Chief Medical Officer. Joachim’s task was to recruit talented physicians, including the hospital’s executive leadership. He spent four years in Doha and then returned to Berlin.

The new Brandenburg Faculty of Health Sciences

Even while living abroad, Joachim remained an important figure in German obstetrics and gynecology. He was invited to join an expert group that would make decisions about health-science program funding in Brandenburg, a state in northeastern Germany. After some discussion, the government of Brandenburg established a joint faculty of three universities—University of Potsdam, Brandenburgische Technische Universität, and Medizinische Hochschule Brandenburg Theodor Fontane, known as the Brandenburg Medical School Theodor Fontane. In 2017, the government asked Joachim to become the Founding Dean of the Faculty. This appointment is recognition of Joachim’s stature not only in medicine but also in science in Germany.

International leadership through societies

Through his power of convocation, Joachim has played an important role in promoting scientific exchange in Europe. Fresh out of medical school, while working with Professor Saling, he became involved in the European Congress of Perinatal Medicine, which held its first meeting in Berlin in 1969—the first worldwide to focus on this topic. He would go on to manage this biannual event from 1970 until 1996. In 1984, he was one of the founding members of the International Society of the Fetus as a Patient. From 1991 until 1995, Joachim served as chairman of the German Society for Perinatal Medicine, and he organized the first German-German Symposium of Perinatal Medicine of 1989. Under his leadership, two societies in
the former blocs of West Germany and East Germany merged into a single national society, in which all members enjoyed equal rights. Joachim was a founding member of the WAPM and served as Secretary General until 1999. In 2004, he was inducted as a Fellow of the International Academy of Perinatal Medicine. In 2009, he organized the 9th World Congress of Perinatal Medicine in Berlin and served as its president.

Editor-in-Chief
Joachim has always believed that the discipline of obstetrics and gynecology needs a global outlook. Accordingly, in 1972, he cofounded the Journal of Perinatal Medicine, a publication led by an international group of editors. Joachim has served as Editor-in-Chief of the journal since 1983 (Figure 10). In 2012, he launched the journal Case Reports in Perinatal Medicine and a book series titled Hot Topics in Perinatal Medicine (Figure 11). Over the years, he has built an international network of professionals around these publications, crediting the journals’ success to their contributors. Since 1986, Joachim has also served as Editor of Praktische Geburtshilfe (Practical Obstetrics), which was founded by Dr Pschyrembel (Figure 12), now in its 22nd edition. In the intervening years, Practical Obstetrics has been published in a number of additional languages, including Polish, Japanese, and Russian.

In 1972, Joachim and his uncle coauthored a seminal book titled Grundriß der Perinatalmedizin (Outline of Perinatal Medicine), which presented in a simple way what was then a new subject (Figure 13). He described the collaboration as bringing together Dr Pschyrembel’s didactic skills and his own enthusiasm. Joachim recalled his comment to the publisher: “Looking back several decades, I would say that this experience contributed to my growth as an author and that was more important than the sales of the book.”

Reading, art, music
In addition to his zest for work, Joachim is also passionate about the arts. He watches movies on historical topics and enjoys the paintings of Max Liebermann, one of Germany’s leading Impressionists. He also enjoys literature and classical music. His favorite literary works include those of German writers, such as Thomas Mann, Johann Wolfgang von Goethe, and Friedrich Schiller, particularly his trilogy of dramas Wallenstein. A fan of the Berliner Philharmoniker, a German orchestra based in Berlin, he continued to attend concerts digitally during the COVID-19 pandemic.

Because Joachim’s capacity for ground-breaking work and leadership is remarkable, I asked him to reveal his secret. He replied: “The first thing is that I work hard, and I like to work. The second is that I respect the opinions of other people.”
gets up at 6 or 7 AM, and he works all the way to 11 PM, with a half-hour break for exercise.

His unshakable integrity and genuine interest in other points of view makes him adept at conflict resolution. Bringing people together in this way is an art, and his gift has undoubtedly been fundamental to the network of people he has assembled over the years around his work, societies, congresses, and publications. He greatly respects and values his mentors, collaborators, and coworkers, who include Professor Saling, Professor Plagemann, and Professor Henrich.

Professor Dudenhausen’s achievements have also been recognized internationally in the form of honorary professorships at Tongji Medical College, Wuhan, China; Medical University of Havana, Cuba; Dubrovnik International University, Croatia; Tashkent Medical Academy, Uzbekistan; and the Medical Institution of Surgut State University, Russia.

For his innovative, influential work in perinatal and fetal well-being and for his leadership role in the fields of medicine and science in Germany, the American Journal of Obstetrics & Gynecology recognizes Professor Joachim Dudenhausen as a “Giant in Obstetrics and Gynecology.”

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