



OPERA Europe Workshop

**Pforzheim, Germany
December 11-12, 2018**



Welcome to Pforzheim
Willkommen in Pforzheim

OPERA is an international, interdisciplinary program of researchers, care providers, foundations and agencies dedicated to discovering and disseminating inexpensive and accessible tools to diagnose those women and their newborns at risk for preterm birth or other adverse pregnancy or newborn health outcomes as early as possible in pregnancy and to promoting effective interventions to mitigate these risks. OPERA promotes prediction projects in local jurisdictions and connects teams and jurisdictions via a website and meetings.

Starting in 2005, an important change occurred in Germany whereby targeted policies against child abuse and neglect, together with a change in policies addressing the spectrum of children's diseases (or a '*new morbidity*') were developed. A national study by the National Centre on Early Prevention in 2007 showed that earlier intervention could be more cost-effective by a factor of 1:13. Since then, collaborative multi-sector early childhood intervention networks or *Netzwerk Frühe Hilfen* (Early Support Network, NFH) have been formed in 98.4% of local authorities (over 600) across all 16 federal states. These networks aim to identify and support at-risk families in a systematic manner. In the city of Pforzheim and the surrounding district of Enzkreis (Pop. 300,000), the NFH network (formed in 2006, one of the oldest and most established in Germany) is successfully serving the area's large migrant/refugee and family-welfare population. The health sector, in particular obstetricians-gynecologists, pediatricians, midwives and maternity clinics, provide the main entry points of individuals into the network in close cooperation with the youth welfare sector.

In Pforzheim the NFH is a multidisciplinary family perinatal support network promoted by the city's health and social care professional community that supports *Die Pforzheim Studie*, an OPERA-affiliated project. The Studie examines the effects of ancestral trauma on pregnancy and newborn risk since Pforzheim was the German city most severely harmed by World War II Allied bombings that killed one-third of the population and destroyed 80% of the buildings. Additionally, the population of Pforzheim has one of the largest migrant ratios in Germany. Currently about 53% of the population are migrants or have a migration background beginning with an influx of Turks and Southern and Eastern Europeans in the 1960's and '70's, and more recently individuals from the Middle East. As a consequence, the City of Pforzheim in comparison to the surrounding district of Enzkreis, has slightly higher low birth weight, very low birth weight, and child (age 4-5) overweight. However, the rate of inadequate school entrance language skills at age 5 is double, male suicide rates are triple, joblessness <25 years is double, the debt quotient is double, and 50% more people are receiving welfare. Hence the local population is uniquely suited for a study addressing both risk assessment and interventions to mitigate the risks; have been established in *Die Pforzheim Studie*.

Tuesday 11 December at 5th floor Conference Room, Helios Hospital, Pforzheim

08:00 – 08:30 Welcoming Addresses

Welcome to Pforzheim: *Rupert Linder*

Welcome to Enzkreis: *Brigitte Jöggerst*

Purpose of workshop and history of OPERA – *David Olson*

08:30 – 10:10 Session I – Die Pforzheim Studie

Chair: *David Olson*

Netzwerk Frühe Hilfen: early prevention networks in Germany, 2006–2018 – origins and outcomes – *Rupert Linder, Pforzheim*

Contrasting Pforzheim's public health problems with other German jurisdictions – *Brigitte Jöggerst, Enzkreis*

The day-to-day working and role of OB-GYNs and health professionals in a multi-profession, early prevention network in the city of Pforzheim – *Thomas Bernar, Pforzheim*

The Family Centre Au program for integration in Pforzheim – *Doris Winter, Pforzheim*

Group Discussion

10:10 – 10:30 Coffee Break

10:30 – 12:30 Session II – Transgenerational and migrant stress

Chair: *Gerlinde Metz*

Transgenerational stress – *Barbara Verstraeten, Ghent University*

Natural disasters and abuse – *David Olson, University of Alberta*

Migrants and refugees – *Yesim Erim, University of Erlangen-Nurnberg*

Migration, ethnicity and acculturation – impact on reproductive outcomes – *Craig Pennell, University of Newcastle*

Epigenetic transfer of stress – *Richard Saffery, University of Melbourne*

Group Discussion

12:30 – 13:30 Lunch

13:30 – 15:10 Session III – Addressing and predicting risk

Chair: *Kelycia Leimert*

Precision medicine in the first 1000 days – trajectories of lifelong health rather than disease – *Craig Pennell, University of Newcastle*

The UCSF-California Preterm Birth Initiative – *Larry Rand, University of California, San Francisco*

Algorithms for predicting preterm birth risk – *Laura Jelliffe, University of California, San Francisco*

Biomarkers for predicting pre-eclampsia – *Robin Tuytten, Metabolomic Diagnostics, Cork*

Group Discussion

15:10 – 15:40 Coffee Break

15:40 – 17:00 Session IV – Environment and lifestyle stresses

Chair: *Richard Saffery*

Obesity and environmental stresses – *Angela Vinturache, Oxford University*

Generational and migrant stress predisposes to gestational diabetes – *Bee Tan, University of Leicester*

Materno-fetal metabolic disturbances and mental disorders in the offspring: the mediating role of epigenetics – *Marius Lahti-Pulkkinen, University of Helsinki*

Group Discussion

18:00 Conference Dinner – *Opera restaurant, Stadttheatre*

Evening – Pforzheim Christmas Market

Wednesday 12 December at Council Chambers in the New City Hall of Pforzheim

08:20 – 08:30 Greetings from the Mayor for Social Affairs of Pforzheim, the Honourable Frank Fillbrunn.

08:30 – 10:10 Session V – Childhood and brain development

Chair: *Rupert Linder*

Predicting adverse newborn outcomes in an animal model – *Gerlinde Metz – University of Lethbridge*

Environmental factors affecting newborn outcomes – *Matthias Schwab – University of Jena*

Prenatal stress and the developing brain: risk for neurodevelopmental disorders – *Bea van den Bergh, Government of Flanders*

Mental health of parents and infants – *Binu Singh, Leuven University*

Group Discussion

10:10 – 10:30 Coffee break

10:30 – 12:10 Session VI – Screening and interventions to mitigate stress and improve outcomes

Chair: *Barbara Verstraeten*

Advancing multi-sector approaches to intervene across the reproductive lifecourse: achieving collective impact – *Jonathan Fuchs, University of California, San Francisco*

Expressive writing – *Ashley Hyde, University of Alberta*

Perinatal Mental Health Care protocol for early detection and treatment of perinatal mental health disorders – *Rita van Damme, Ghent University*

Resilient parents – resilient communities – *Suzette Brémault-Phillips, University of Alberta*

Group Discussion

12:10 – 13:00 Lunch

13:00 – 14:00 Session VII Workshops A1 and B1

14:00 – 15:00 Session VIII Workshops A2 and B2

Workshops	A (Council Chambers)	B (Conference Room)
1. 13:00 – 13:50	Predicting & Assessing Risk – Mothers, <i>L Rand, L Jelliffe</i>	Establishing cohorts <i>M Lahti-Pulkkinen, C Pennell</i>
2. 14:00 – 14:50	Predicting Risk – Newborns <i>G Metz, M Schwab</i>	Studying migrant populations <i>Y Erim, C Pennell, D Winter</i>

Workshops are designed to offer practical information for teams and projects.

15:00 – 15:30 Coffee break

15:30 – 16:20 Session IX Establishing interventions workshop – *A Hyde, S Brémault-Phillips, B Singh, J Fuchs*

Chair: *Matthias Schwab*

16:20 – 16:40 Wrap-up – Moving forward and next steps – *Rupert Linder and Gerlinde Metz*

16:40 Conference conclusion – *Rupert Linder*

We would like to sincerely thank our
meeting sponsors:





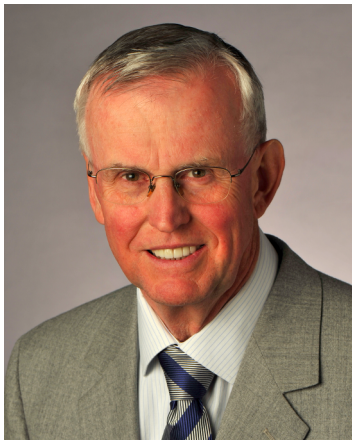
Dr. Rupert Linder, MD.

Dr. Linder is a practicing gynaecologist, obstetrician and psychotherapist in his own office near Pforzheim, Germany. He has published on various aspects of psychosomatics in obstetrics since 1990, as well as the psychosomatics of the threat of premature birth, supportive antenatal care, methodology in prenatal psychology and preventive psychotherapy during and around pregnancy. He is Past President of the International Society for Pre- and Perinatal Psychology and Medicine (ISPPM). He is an active officer in programs for improving early mother child interaction in his local area as well as in the initiative *Childhood and Early Parenting Principles CEPPs*.



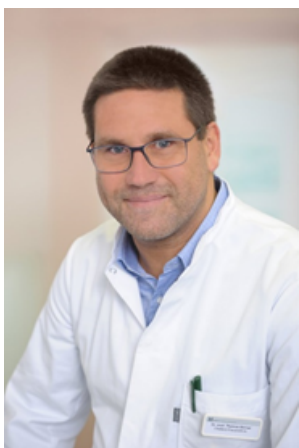
Dr. Brigitte Joggerst, MD, MPH.

Dr. Joggerst completed a medical degree from the Medical University of Freiburg in 1995, and a MPH from Rutgers University New Jersey in 1999. Dr. Joggerst became a specialist in internal medicine in 2004, and a specialist in public health medicine in 2016. She is the head of the Association of MDs in Public Health in Baden-Württemberg, and Chief of the Public Health Department of Enzkreis / Pforzheim (since 2015). Dr. Joggerst's areas of interest include health reporting and evidence based health promotion. The socio-economic determinants of inhabitants of Pforzheim differ greatly from those in the district of Enzkreis and the region of Baden-Württemberg. As socio-economic determinants are the greatest single contributor to health, these findings have implications on preventive measures. She is married to a physicist and has two daughters.



Dr. David M. Olson, PhD, FRCOG, FCAHS.

Dr. Olson is a Professor of Obstetrics and Gynecology, Pediatrics and Physiology at the University of Alberta in Edmonton, Canada. He studies the roles of inflammatory mediators and chronic and transgenerational stress on parturition and preterm birth. His laboratory and international collaborators are developing new diagnostics and therapeutic interventions to mitigate the problems of preterm birth and fetal/newborn inflammation. He currently facilitates the international Inflammatory Pathways to Preterm Birth Team and the Worldwide Universities Network-sponsored OPERA (Optimal Pregnancy Environment Risk Assessment) program.



Dr. Thomas Bernar, MD.

Dr. Bernar is the Head of the Department of Obstetrics and Gynecology at the Helios Hospital Pforzheim since 2015. He works in a multiprofessional team with physicians, pediatricians, neonatologists, pediatric surgeons, midwives, nurses and Early Care Specialists in the maternofetal center Pforzheim, one of the highest-level (Level 1) maternofetal centers in Germany. He is a specialist in obstetrics and gynecology and focused on obstetrics and perinatal medicine. His areas of expertise are also gynecological oncology, endocrinology and reproductive medicine. Dr. Bernar completed medical school at the University of Würzburg from 1991-1998 and from 1999-2014 worked at the University clinic of Würzburg in the Department for Gynecology and Obstetrics.



Doris Winter, certified Sociologist (Diplom-Soziologin).

Doris Winter has studied in Freiburg, Munich and Berlin with focus on sociology of the family. After managing the educational department of a mother-child clinic she established the first family center in Pforzheim in 2002. During the last 16 years, the concept of the family center has been continuously improved and has adapted to changes in the target group and social environment. Winter conceptualized a series of projects for supporting migrant families and developing their integrational skills. In addition, Winter has designed and incorporated projects at the family center concerning cultural and educational transitions, acquisition of basic literacy and German language, parental education and child day care.



Dr. Barbara S.E. Verstraeten, MD.

Dr. Verstraeten is a fifth year PhD student in the laboratory of Dr. David Olson at the University of Alberta, Canada, in collaboration with Ghent University, Belgium. She will defend her thesis “Two-hit prenatal maternal stress: acceleration of adverse pregnancy and offspring outcomes” shortly. In this work, she evaluated the effects of exposure to multiple gestational stressors in rats, showing effects not only on pregnancy and short-term maternal and offspring outcomes, but also on offspring anxiety-related behaviour as adults. Starting January 2019, she will aid in setting up a birth cohort in Accra, Ghana, as a postdoctoral fellow, after which she will enroll in OB/GYN residency to continue her research as a clinician-scientist.



Dr. Yesim Erim, MD.

Dr. Erim is a professor of Psychosomatic Medicine and Psychotherapy and the director of the Psychosomatic Department in the University Hospital of Erlangen, Friedrich-Alexander University of Erlangen-Nürnberg. She has completed a medical degree at the University of Istanbul in Turkey. In Germany she became a specialist for psychiatry and psychosomatic medicine and psychotherapy. Her areas of interest are interactions of chronic physical illness and mental distress, especially psychosocial aspects of transplantation and psychooncology. She studies the impact of migration and acculturation processes in samples of labor migrants and refugees, she also examines the necessity of adapting the psychotherapeutic method in intercultural encounters.



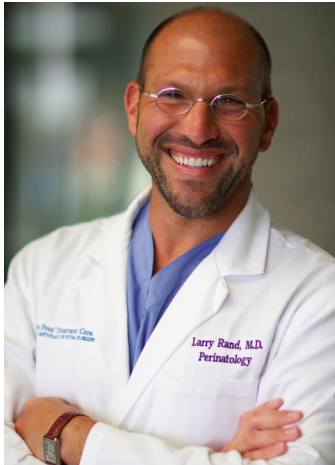
Dr. Craig Pennell, MD, FRANZCOG, PhD.

Dr. Pennell is the University of Newcastle's Chair in Obstetrics and Gynaecology, and Professor of Maternal Fetal Medicine. As a clinical academic, he combines his work as a subspecialist in maternal-fetal medicine at the John Hunter Hospital, Newcastle, and as a principal researcher at the Hunter Medical Research Institute (HMRI). Professor Pennell has an outstanding global reputation for academic and research excellence and is recognised as a leading authority in obstetrics, gynaecology and maternal fetal medicine. Having held a number of clinical and academic roles in NSW, WA, SA and Canada for more than 15 years, Professor Pennell leads a large portfolio of research projects looking at personalised, precise and preventative medicine, including the developmental origins of health and disease, and preterm birth prediction and prevention. Professor Pennell is Chair of the Red Nose National Scientific Advisory Group, which reviews and recommends research development, research initiatives and educational campaigns.



Dr. Richard Saffery, PhD.

Dr. Saffery trained as a Molecular and Cellular Biologist following a PhD in Genetics. He is currently a Principal Research Fellow at the Murdoch Children's Research Institute and Professor of Paediatrics at the University of Melbourne. He has over 230 publications in the field of early life programming and epigenetics. This includes novel discoveries on the factors that regulate the early life human epigenome and the role epigenetics in childhood. He recently led the Epigenetics Work Package for a large European FP7 project *EarlyNutrition* and is a CI on a National Natural Science Foundation and 111 programme grant in Chongqing China.



Dr. Larry Rand, MD.

Dr. Rand is the principal investigator and director of the UCSF California Preterm Birth Initiative, a leading, transdisciplinary research enterprise working to reduce the burden and instance of preterm birth. Dr. Rand is also both the Perinatal Director of UCSF's Fetal Surgery Center and the Lynne and Marc Benioff endowed Chair in Maternal-Fetal Medicine. As an OBGYN who specializes in high-risk pregnancy and maternal-fetal medicine, he has a special interest in fetal disorders. Also trained as an anthropologist, Dr. Rand believes deeply in the importance of place, history, and partnership in developing culturally relevant and translatable research. His approach centers on health equity and accessibility.



Dr. Laura Jelliffe-Pawlowski, PhD.

Dr. Jelliffe-Pawlowski is an Associate Professor of Epidemiology & Biostatistics in the UCSF School of Medicine and Director of Precision Health and Discovery with the UCSF California Preterm Birth Initiative, who works to identify new tools, tests, and technologies to identify pregnant women and babies at increased risk for preterm birth and associated complications. She has a particular focus and interest in work that leverages molecular markers to help predict outcomes and identify in-roads for intervention and has developed tests to predict preterm birth, metabolically date babies at birth, and tests to predict survival and severe complications in vulnerable babies. She leads cohort studies in the United States and Africa that focus on vulnerable populations of color with the aim of uncovering and addressing cell-to-society drivers of pregnancy and newborn complications.



Dr. Robin Tuytten, PhD.

Dr. Tuytten is the Vice President Research & Development at Metabolomic Diagnostics. Robin directs all R&D programs within Metabolomic Diagnostics, a company focused on developing early pregnancy risk stratification tests for obstetrical syndromes like preeclampsia and preterm birth. He trained as an analytical chemist, specialized in mass spectrometry, and received a PhD from the University of Antwerp. After 7 years with a Belgian proteomics biomarker discovery company, where he led the preeclampsia program, Robin joined Metabolomic Diagnostics in 2013. Since then, he and his team established a translational research workflow which overcomes the challenges of translating promising biomarkers into novel products. Their first product targeting preterm preeclampsia is currently progressing into commercialisation.



Dr. Angela Vinturache, LLB, MD, PhD.

Dr. Vinturache is an obstetrician and gynecologist with clinical interest in maternal medicine and high-risk obstetrics, and a focus on obesity in pregnancy. Her expertise is in developmental physiology and pharmacology and maternal health epidemiology. She has published in renowned journals and presented on the international, national, and regional circuit. Dr. Vinturache reviews regularly for several journals and serves as senior editor for the Clinical Case Reports Journal and as Pregnancy section editor for the Maternal and Child Health Journal. At present, she studies nutrition in pregnancy in the Ob/Gyn department at Oxford University, with a focus on understanding the putative mechanisms through which maternal obesity and its associated pregnancy complications mediate maternal long-term cardiovascular and metabolic health and the programming effects on the health of the offspring.



Dr. Bee K. Tan, MD, PhD, MRCOG, FRCS.

Dr. Tan is a Professor of Obstetrics and Reproductive Sciences based at University of Leicester, United Kingdom. He is also an Honorary Consultant Obstetrician at University Hospitals Leicester NHS Trust, and Royal College of Obstetricians & Gynaecologists (RCOG) accredited subspecialist in reproductive medicine (he completed his fellowship in Reproductive Medicine and Surgery in Cambridge). He obtained his MD from Norwich Medical School and his PhD from the University of Warwick. He is a Member of the RCOG (MRCOG) and Fellow of the Royal College of Surgeons (FRCS) of Glasgow. His research focuses on metabolic and cardiovascular reproductive disorders.



Dr. Marius Lahti-Pulkkinen, PhD.

Doctor/Docent Lahti-Pulkkinen is a researcher at the Developmental Psychology Research Group at the University of Helsinki. His key expertise areas are the prenatal origins of mental disorders and the consequences of early life, particularly prenatal developmental adversity on psychological well-being throughout the lifespan. Recently, he has focused in his research on the consequences of maternal mood and somatic health during pregnancy on offspring mental health, and examined the neurobiological correlates of prenatal adversity. He has coauthored in over 50 articles in peer-reviewed international scientific journals.



Dr. Gerlinde A.S. Metz, PhD.

Dr. Metz is the Board of Governors Research Chair in Healthy Futures and recipient of the Speaker Medal for Distinguished Research. Her research program at the University of Lethbridge focuses on the influence of experience and environment on behaviour, brain plasticity and birth outcomes. Her laboratory has developed unique models to explore transgenerational inheritance of stress responses. Her team showed that through transgenerational programming, experience in parents, grandparents and beyond can influence health and disease from early development to old age. This work is now leading to the discovery of new predictive and diagnostic biomarkers.



Dr. Matthias Schwab, MD.

Dr. Schwab is Assistant Medical Director at the Dept. of Neurology, Jena University Hospital and Head of the Division of Sleep Medicine and of the Multiple Sclerosis Center. He is a trained pathophysiological and neurologist. He had research fellowships at the Perinatology Research Laboratory, University of Florida, Gainesville, Florida and at the Dept. of Biomedical Sciences, Cornell University, Ithaca, New York. He became Adjunct Associate Professor at the Dept. of Ob/Gyn, University of Texas, San Antonio. Dr. Schwab leads the research group “Fetal Brain Development and Programming of Diseases” that focuses on the effects of fetal stress and malnutrition on brain development and function.



Dr. Bea R.H. Van den Bergh, PhD.

Dr. Van den Bergh has a full-time position at the Department of Welfare, Public Health and Family of the Flemish Government (Brussels, Belgium) and is honorary professor at the Health Psychology Department (University of Leuven, KU Leuven, Belgium). She is a pioneer in prenatal stress research. She studied the prenatal developmental origins of cognition and mental health problems and the developmental programming of the stress system and the brain, from infancy through adulthood. She is now mainly involved in public health policy aspects of the primary mental health care in the first 1000 days of life.



Dr. Binu Singh, MD.

Dr. Singh is child psychiatrist and psychotherapist specialised in infant mental health care and president of WAIMH-Flanders in Belgium. She leads the care program young child 0-6y at University Psychiatry Center Leuven and contributes regularly to providing information on the mental health care of young children through media, lectures and education.



Dr. Jonathan Fuchs, MD, MPH.

Dr. Fuchs is a Clinical Professor of Medicine at UCSF and Director of the Center for Learning & Innovation (CLI) at the San Francisco Department of Public Health. His past research efforts have focused on the design and conduct of early and late stage HIV vaccine trials and use of novel technologies to promote adherence to pre-exposure prophylaxis (PrEP). He is also the Principal Investigator of a CDC-funded Capacity Building Assistance (CBA) program which provides technical assistance to the HIV prevention workforce at health departments nationwide. For the California Preterm Birth Initiative (PTBi), Dr. Fuchs is the Director for Collective Impact- an implementation science effort that aims to mobilize cross-sector partners to achieve population-level reductions in preterm birth in Fresno, San Francisco, and Oakland. He is also dedicated to training and mentoring the next generation of applied public health investigators through his leadership of the PTBi Transdisciplinary Post-doctoral Fellowship, the UCSF Center for AIDS Research Mentoring Program, and an NIH R25-funded mentored research program for undergraduates from underrepresented minority backgrounds.



Ashley Hyde, RN.

Ashley Hyde is a Registered Nurse and doctoral candidate in the Faculty of Nursing at the University of Alberta. She has worked clinically in pediatric neurology and in the neonatal intensive care unit, where she developed an interest in preterm birth research. Ashley is the study coordinator for the Fort McMurray Mommy Baby Study, a CIHR-funded project examining the health effects of the 2016 wildfires on pregnant women and their children.



Rita van Damme, MSc.

Rita van Damme is a psychologist and behavioural therapist at the University Clinic of Ghent (Belgium) with a special interest in perinatal mental health problems. Currently she is the coordinator of a Perinatal Mental Health Care pathway at the University Clinic, and is the coordinator of a Flemish Expertise Centre for Perinatal Mental Health Problems (Flemish Government) that examines the effect of early screening and detection in the perinatal period.



Dr. Suzette Brémault-Phillips, BMR, MA, PhD.

Dr. Brémault-Phillips is an Associate Professor, Department of Occupational Therapy, Faculty of Rehabilitation Medicine, University of Alberta, and Director of the Heroes in Mind Advocacy and Research Consortium (HiMARC). Her research interests include the mental and spiritual health of vulnerable and trauma-affected populations (civilian and military), resilience and well-being, implementation science and system change. Suzette and her team utilize mixed-methods to identify and trial resilience-building interventions among women at risk for preterm birth or adverse pregnancy outcomes in advance of, during and following exposure to environmental stressors.



Dr. Kelycia Leimert, PhD.

Dr. Leimert is a postdoctoral fellow at the University of Alberta. She completed her PhD in August of 2018 in the laboratory of Dr. David Olson. Her dissertation presented cooperativity between ligands, cells and tissues in the uterus as a hallmark of human parturition. Dr. Leimert designed a co-culture model that allowed us to study for the first-time tissue crosstalk between the maternal myometrium, or uterine musculature, and the fetal membranes of the placenta. Her work has contributed to the identification of new 'targets' for attacking preterm birth. Dr. Leimert was recently awarded a QES Advanced Scholar Fellowship to collaborate with the University of Ghana in the creation of a longitudinal pregnancy cohort in Accra, Ghana beginning in January 2019.

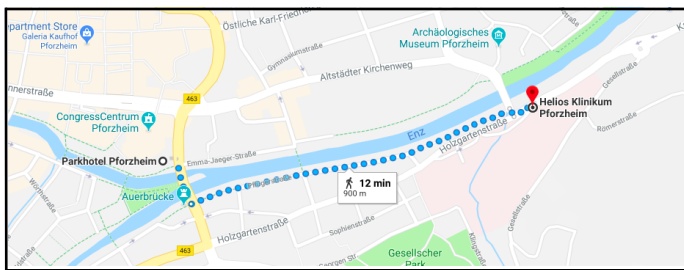
Venues and Locations



Conference accommodation:

Parkhotel Pforzheim
Deimlingstraße 32-36
75175 Pforzheim, Germany

Walking directions from Parkhotel:



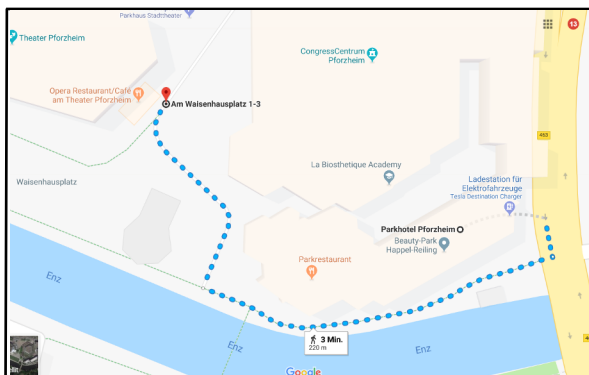
December 11 meeting venue:

Helios Hospital
5th floor conference room
Kanzlerstraße 2-6
75175 Pforzheim, Germany



December 12 meeting venue:

New City Hall of Pforzheim
Marktplatz 1
75175 Pforzheim, Germany



Conference dinner venue (December 11):

Opera restaurant
Am Waisenhausplatz 5
75172 Pforzheim, Germany



Optimal Pregnancy
Environment Risk Assessment

OPERA

Topics and themes typically addressed at OPERA meetings and workshops

1. Identification of population level risk factors for preterm birth and adverse pregnancy problems involving migration, conflict, natural disasters, environmental (air, soil & water pollutants, green space, crime), and climate change/global warming factors.
2. Identification of personal markers of risk including clinical and medical histories, mental health, history of abuse, serum, metabolomic, and epigenetic factors.
3. Discussion of implementing risk assessment and intervention programs in various jurisdictions (e.g. LMIC, HIC) and stratification of risk assessment techniques to suit the community and its resources.
4. Recommendations and resources for continuing work and projects (collaborative projects, too) and implementation of risk prediction tools.

List of past and upcoming OPERA meetings and workshops

- Preparatory workshops: World Health Organization, Geneva, 2013, 2014
- International Preterm Birth – Industry Meeting, Ottawa, November 2014 (www.ptbmeeting.org)
- Inaugural OPERA meeting: San Francisco, March, 2015 (see www.operamtg.org for presentations)
- OPERA China Workshop: Chongqing, November, 2016
- OPERA China Update: Chongqing, September 18, 2018
- OPERA Europe Workshop: Pforzheim, Germany, December 11–12, 2018
- OPERA India: several regional conferences, 17 February – 27 February, 2019
- OPERA Preterm Birth Symposium: DOHaD Meeting, Melbourne, October, 2019
- OPERA Africa: Accra, Ghana, May 2020

