PROGRAM

THURSDAY, NOVEMBER 17

09:20–9:50AM **Light Refreshments**

9:50–9:55AM **Opening Remarks**
Christopher Kuzawa (Northwestern University)

9:55–10:20AM **The Heckman Curve, Policy Implications of Early Intervention**
James J. Heckman (The University of Chicago)

Session 1: Evolutionary Context for Maternal Buffering in Mammals and Humans

10:20–11:10AM **Setting the Stage: The Opportunities and Challenges of Harnessing the Plasticity of Fetal Life**
Christopher Kuzawa (Northwestern University)

11:10–12:00PM **The Evolution of Maternal Effects**
Alexander Badyaev (University of Arizona)

12:00–1:00PM **Lunch Break**

1:00–1:50PM **Maternal Shielding of the Fetus from Oxidative Stress in Mammals**
Jonathan Blount (Exeter)

1:50–2:40PM **Maternal-fetal Genetic Conflict and the Transfer of Resources**
Bernard Crespi (Simon Fraser University)

2:40–3:00PM **Coffee Break**

Session 2: The History and Biopolitics of Epigenetic Inheritance and Maternal Interventions

3:00–3:50PM **Historical Perspectives on Epigenetic Inheritance**
Hannah Landecker (University of California, Los Angeles)

3:50–4:40PM **History of the Science of Maternal-Fetal Effects, Social Impacts**
Sarah Richardson (Harvard University)

4:40–5:30PM **Discussion**

6:00–8:30PM **Conference Dinner:** Cafe Ba Ba Reba (2024 North Halsted Street)
(Buses leave from Saieh Hall at 6:00PM and from the Hyatt at 6:10PM)

FRIDAY, NOVEMBER 18

09:00–9:30AM Light Refreshments

Session 3: Environment-fetal Pathways: The Maternal Gestational Milieu

9:30–10:20AM **The Placenta and Nutrient Transport, Long-term Health Outcomes**
Theresa Powell (University of Colorado, Denver)

10:20–11:10AM **Nutrition-Maternal Metabolism/Nutrition and Offspring Fetal Growth and Birth Outcomes**
Hyagriv Simhan (The University of Pittsburgh)

11:10–11:20AM **Coffee Break**

11:20–12:10PM **Stress - Effects of Maternal Stress on Fetus, Maternal Lifecourse Determinants of Gestational Physiology**
Claudia Buss (Charité University Medicine Berlin)
Pathik Wadhwa (University of California, Irvine)

12:10–1:10PM **Lunch Break**

1:10–2:00PM **Immune Pathways - Epigenetic Regulation of Maternal Inflammation and Effects on Fetus/Birth Outcomes**
Thomas McDade (Northwestern University)
Greg Miller (Northwestern University)

2:00–2:50PM **Maternal Pregnancy Microbiome, Intergenerational Transmission & Inoculation of Newborn**
Elizabeth Costello (Stanford University)

2:50–3:00PM **Coffee Break**

Session 4: An example of an Intervention Success

3:00–3:50PM **Intergenerational Health/Human Capital Benefits of INCAP Nutrition Intervention**
Jere Behrman (University of Pennsylvania)

3:50–4:30PM **Closing Discussion**
Christopher Kuzawa (Northwestern University)

BIOGRAPHIES

ALEXANDER BADYAEV
University of Arizona

Alexander Badyaev is a Professor of Evolutionary Biology at the University of Arizona. The central goal of his work is to understand the interplay of adaptation, contingency, and randomness in the evolution of complex organismal forms and functions. He received his B.S. (Biology/Mathematics) and M.S. (Comparative Anatomy/Population Ecology) degrees from Moscow State University in Russia and Ph.D. in Organismal Biology and Ecology from the University of Montana. In 2002, he joined the Department of Ecology and Evolutionary Biology at the University of Arizona. Dr. Badyaev's research contributions have been recognized by some of the major awards in evolutionary biology. He is recipient of both the John Maynard Smith Prize (European Society for Evolutionary Biology) and the Theodosius Dobzhansky Prize (Society for the Study of Evolution), a Packard Fellow in Science and Engineering (2005), a Fellow of the American Association for the Advancement of Science (2012), and a Kavli Foundation Fellow of the National Academy of Sciences (2013).

JERE BEHRMAN
University of Pennsylvania

Professor Behrman is William R. Kenan, Jr. Professor of Economics at the University of Pennsylvania and a Research Associate at Penn's Population Studies Center. He also serves as the Economics/Social Science member of the National Institutes of Health (NIH)/National Institute of Child Health and Development (NICHD) National Advisory Council. He is a leading international researcher in empirical microeconomics, with emphasis on developing economies. His research interests include empirical microeconomics, labor economics, human resources (early childhood development, education, health, nutrition), project evaluation, economic demography, incentive systems, and household behaviors. The unifying dimension of much of this research is to improve empirical knowledge of the determinants of and the impacts of human resources given unobserved factors such as innate health and ability, the functioning of various institutions such as households and imperfect markets, and information imperfections.

JONATHAN BLOUNT
Exeter

Jonathan Blount is Associate Professor of Animal Ecophysiology at the University of Exeter. His research focuses on studies of mechanism and function in animal ecology. He has three main interests: (1) behavioural and evolutionary ecology of animal signalling; (2) nutrition ecology; and (3) oxidative stress and the biology of ageing. Some of the work carried out in his group addresses these topics in isolation. For example, they study predator-prey interactions in relation to aposematic (warning) signals, mimicry, and chemical defences. In other work he studies the mechanistic basis of ageing. His current projects are highly integrative and include studies of behaviour and underlying biochemical and molecular mechanisms. Blount received a B.Sc (Honours) in Rural Resources Management from the University of Plymouth, a M.Sc. in Ecology from the University of Wales, Bangor, and a Ph.D. in Ecophysiology from the University of Glasgow.

CLAUDIA BUSS
Charité University Medicine Berlin

Claudia Buss is a Professor of Medical Psychology at the Charité University Medicine Berlin, and an Assistant Professor in the UC Irvine Development, Health and Disease Research Program. She has background, training, and expertise in the areas of stress psychobiology and brain development. Her major interests are in developmental programming of health and disease risk, with an emphasis on the effects of stress and stress-related biological and behavioral processes during human pregnancy and fetal brain development as well as other health-related infant outcomes. She is the PI of several NIH funded studies elucidating the impact of variation in maternal stress biology during pregnancy for newborn and infant brain development and she is the PI of a center grant funded by the European Commission that focuses on epigenetic processes that may underlie the transgenerational transmission of maternal childhood trauma exposure to her offspring.

ELIZABETH COSTELLO
Stanford University

Elizabeth K. Costello, Ph.D. is a Research Associate in the Department of Medicine, Division of Infectious Diseases at Stanford University School of Medicine. A microbial ecologist and member of David Relman's laboratory, her research focuses on the dynamics of the human microbiome in the first 1,000 days of life.

BERNARD CRESPI
Simon Fraser University

Bernard Crespi is a Professor of Evolutionary Biology at Simon Fraser University. The purpose of his research program is to use integrated genetic, ecological, and phylogenetic approaches to study social evolution across all levels in the hierarchy of life, from genes, to cells, to organisms, to social systems, and to the brain. In his lab they are currently focusing on several of the outstanding questions in evolutionary biology, including the evolution of social behaviour, the evolution of human health and disease, the evolution of placentation and maternal-fetal conflict, the evolution of trophic interactions, and the roles of genetics, ecology and geography in speciation and adaptive radiation. Crespi received an A.B. from the University of Chicago, and a Ph.D. from the University of Michigan, Ann Arbor.

JAMES J. HECKMAN
The University of Chicago

James J. Heckman is the Henry Schultz Distinguished Service Professor of Economics in the Department of Economics at the University of Chicago and the founding director of the Center for the Economics of Human Development, a research center dedicated to rigorous empirical research on the economic foundations of lifecycle inequality. Heckman is actively engaged in conducting and guiding empirical and theoretical research on skill development, inequality, and social mobility and continues his work on the econometrics of policy evaluation and the choice theoretic foundations of causal inference. He has published more than 300 articles and 9 books. This work has influenced both the scholarly literature and public policy

CHRISTOPHER KUZAWA
Northwestern University

Christopher Kuzawa is a human biologist and biological anthropologist with interests in developmental biology, epidemiology, and evolutionary biology. Kuzawa's research focuses on the impact of the intrauterine and early postnatal environments on development and adult health. His work in the Philippines explores the long-term impacts of early environments on male reproduction, cardiovascular disease risk, immunity, and the intergenerational impacts of nutritional stress on birth outcomes. Kuzawa's research is currently funded by the National Institutes of Health, the National Science Foundation and the Wenner Gren Foundation. He is a Professor in the Department of Anthropology at Northwestern University, where he helped launch Cells 2 Society, a new center for the study of social disparities and health. Kuzawa received his MS.PH. in epidemiology and Ph.D. in anthropology from Emory University in 2001.

HANNAH LANDECKER
University of California, Los Angeles

Hannah Landecker is the Director of the Institute for Society and Genetics at University of California, Los Angeles. She uses the tools of history and social science to study contemporary developments in the life sciences, and their historical taproots in the twentieth century. She has taught and researched in the fields of history of science, anthropology and sociology. At UCLA she is cross-appointed between the Institute for Society and Genetics, and the Sociology Department. She is currently working on a book called *American Metabolism*, which looks at transformations to the metabolic sciences wrought by the rise of epigenetics, microbiomics, cell signaling, and hormone biology. Landecker's work focuses on the social and historical study of biotechnology and life science, from 1900 to now. She is interested in the intersections of biology and technology, with a particular focus on cells, and the in vitro conditions of life in research settings.

THOMAS MCDADE
Northwestern University

Thom McDade is a biological anthropologist who conducts research on health and human development in relation to social and cultural contexts and processes. His work is focused on three topics: impact of social stratification on stress and health; life course perspectives on immune function and the regulation of inflammation; and the integration of biological measures into population-based, social science research. He is director of the Laboratory for Human Biology Research, and director of Cells to Society (C2S): The Center on Social Disparities and Health. He conducts his research in diverse, community- and population-based settings, including ongoing projects in Bolivia, the Philippines, and the US. In the Bolivian Amazon, he is investigating the impact of social, economic, and cultural transitions on child and adolescent health. McDade received a B.A. in biosocial anthropology from Pomona College in 1991 and a Ph.D. in Anthropology from Emory University in 1999.

GREG MILLER
Northwestern University

Greg Miller is a Professor in the Department of Psychology at Northwestern University. Dr. Miller's research examines the behavioral and biological mechanisms through which stress affects health. His current research is supported by grants from the the National Heart, Lung, and Blood Institute, the National Institute of Child Health and Human Development, and the National Institute on Drug Abuse. Previous studies have been supported by the Brain and Behavior Research Foundation (NARSAD), the Canadian Institutes of Health Research, the Michael Smith Foundation, the Heart and Stroke Foundation of Canada, and the American Heart Association.

THERESA POWELL
University of Colorado, Denver

Theresa Powell is a Professor in the Department of Pediatrics at the University of Colorado. Dr. Powell is internationally recognized for her work in determining the molecular mechanisms regulating ion and macronutrient transport in the human placenta and characterizing changes in placental function in association to important pregnancy complications. Currently, the primary focus of Dr. Powell's research is to better understand how the abnormal metabolic environment of obesity or gestational diabetes in pregnant women affects placental function and the long-term health of her baby. Specifically, Dr. Powell is interested in identifying endocrine signals linking maternal adipose tissue to placental function and fetal growth and developing novel intervention paradigms for improving the maternal metabolic environment and pregnancy outcomes in obese women.

SARAH RICHARDSON
Harvard University

Sarah S. Richardson is John L. Loeb Associate Professor of the Social Sciences at Harvard University. She is jointly appointed in the Department of the History of Science and the Committee on Degrees in Studies of Women, Gender, and Sexuality. Richardson's research uses the tools of history, philosophy, and social studies of science to analyze how scientists, in the twentieth and twenty-first centuries, understand sex and gender. Richardson is the author of *Sex Itself: The Search for Male and Female in the Human Genome* (2013) and is currently completing a second book, *The Maternal Imprint*, forthcoming from University of Chicago Press.

HYAGRIV SIMHAN
University of Pittsburgh

Hyagriv Simhan is Associate Professor of Obstetrics, Gynecology, and Reproductive Sciences at the University of Pittsburgh School of Medicine and Chief of the Division of Maternal-Fetal Medicine and Medical Director of Obstetrical Services at Magee-Womens-Hospital of the UPMC. He is active in establishing and implementing obstetrical patient safety and health care quality efforts, including obstetrical crisis medical emergency teams and labor induction process improvement. These efforts have been acknowledged through receipt of the Fine Award for Health Care Quality Improvement from the Pittsburgh Regional Health Initiative and the Hospital Association of Pennsylvania, Achievement Award for Health Care Quality Improvement/Patient Safety. Simhan received his B.A. and M.D. from Boston University.

BURT SINGER
University of Florida

Burton Singer is Courtesy Professor in the Emerging Pathogens Institute and the Department of Mathematics at the University of Florida. On July 1, 2009, he retired from Princeton University where he had been Charles & Marie Robertson Professor of Public and International Affairs. Singer's research has focused on three principal areas: identification of social, biological, and environmental risks associated with vector-borne diseases in the tropics; integration of psychosocial and biological evidence to characterize pathways to alternative states of health; and statistical and mathematical methods for empirical representation of multi-dimensional interacting stochastic processes. Singer received a B.S. in Engineering Science and M.S. in Mechanical Engineering, both from the Case Institute of Technology in 1959 and 1961 respectively, and a Ph.D. in Statistics from Stanford University in 1967.

PATHIK WADHWA
University of California, Irvine

Pathik Wadhwa is Professor of Psychiatry & Human Behavior, Obstetrics & Gynecology, Pediatrics, and Epidemiology at the Univeristy of California, Irvine School of Medicine. He is interested in fetal/developmental programming of health and disease risk, behavioral medicine, stress, pregnancy, fetal development, prematurity, neuroendocrine, immune, genetic, epigenetic, telomere biology, maternal-child health, and reproductive epidemiology.