NIH Awards Women & Infants $5M Grant to Study Perinatal Biology

PROVIDENCE – Women & Infants Hospital has recently received a nearly $5 million grant from the National Institutes of Health (NIH) to support an Institutional Development Award (IDeA) Center of Biomedical Research Excellence (COBRE) for Perinatal Biology. Of the more than 100 COBREs across the country, Women & Infants is the only one specifically focused on developmental research. The IDeA program builds research capacities in states that historically have had low levels of NIH funding by supporting basic, clinical and translational research, faculty development, and infrastructure improvements.

Under the leadership of JAMES F. PADBURY, MD, pediatrician-in-chief and chief of Neonatal/Perinatal Medicine at Women & Infants Hospital and the William and Mary Oh -William and Elsa Zopfi Professor of Pediatrics for Perinatal Research at The Warren Alpert Medical School of Brown University, and SURENDRA SHARMA, MBBS, PHD, research scientist at Women & Infants and professor of pediatrics at the Alpert Medical School, the COBRE team will continue its research in perinatal biology, including studies of fetal and newborn development, placental biology, and reproductive diseases including preterm birth and preeclampsia.

“Our projects are focused on critical windows of development and reproductive life. Environmental disturbance or other influences during these critical windows can have lasting effects,” said Dr. Padbury. “Our overarching hypothesis is that understanding these effects during critical developmental periods informs the mechanisms of health and disease throughout life.”

Work supported by the COBRE in Dr. Sharma’s laboratory has identified novel new insights into the pregnancy disorder, preeclampsia, or pregnancy-induced hypertension. “We have recently demonstrated that preeclampsia originates from protein misfolding and aggregation. This leads to disturbances in placental function and many of the mother’s symptoms,” explained Dr. Sharma. “Remarkably, transthyretin, the protein we have identified that is misfolded in preeclampsia, is also disturbed in some cases of Alzheimers disease. Our current work is focused on the mechanistic similarities between preeclampsia and Alzheimers disease and whether preeclampsia may be a risk factor for later development of Alzheimers.”

Dr. Sharma and his colleagues are also working to develop a diagnostic test to confirm that preeclampsia can be identified much earlier in pregnancy. He said, “Identifying preeclampsia earlier will certainly lead to new and better treatments.”

This is a Phase III award intended to consolidate the formation of the Center for Perinatal Biology and support the administrative activities of the Center. It will also provide state-of-the-art equipment to support the Center’s Molecular Biology and Imaging Core. The Center and the COBRE researchers’ laboratories are located in Providence’s “Knowledge District” in the Kilguss Research Institute, the Laboratory for Molecular Medicine and the Coro Research building.

Other investigators include Sunil Shaw, PhD and Shihbin Cheng, MD, PhD. Senior investigators also participating in the projects are Ulrike Mende, PhD, Walter Atwood, PhD, Qian Chen, PhD, Pamela Swiatek, PhD, and Karl Kelsey, MD.