

# Kimberly O'Brien

## Web Bio

### Information

### Biography

#### Biographical Statement

Kimberly O'Brien received her B.S. in Biology from the University of New Hampshire and her PhD in Nutrition from the University of Connecticut, Storrs. Her professional training included fellowships with the National Institute of Child Health and Human Development, Laboratory of Theoretical and Physical Biology/Section for Metabolic Analysis and Mass Spectrometry and the Children's Nutrition Research Center, Department of Pediatrics, Baylor College of Medicine. Professor O'Brien joined the faculty in the Division of Nutritional Sciences after working for 10 years as a faculty member in the Center of Human Nutrition at Johns Hopkins Bloomberg School of Public Health.

Professor O'Brien's research has centered on studies designed to better understand mineral metabolism and bone health in infants, children, and pregnant and lactating women in both developed and developing countries. To address issues of calcium metabolism, she has undertaken metabolic studies in groups including children from osteoporotic families, pregnant and lactating adolescents, and children with chronic diseases such as cystic fibrosis and HIV infection. Her current research focuses on the impact of adolescent pregnancy, particularly among minority populations, on maternal and fetal bone health, risk of anemia, vitamin D insufficiency and risk of infections, birth outcomes and nutritional status in women carrying multiples. Partitioning of nutrients between the mother and fetus is addressed at the cellular level by assessing placental mineral transporters in relation to maternal and neonatal status.

To allow for kinetic studies of human mineral metabolism, a mass spectrometry laboratory has been added to the existing resources in the Human Metabolic Research Unit. This laboratory includes instrumentation for high-sensitivity mineral stable isotope analysis using a Triton TI magnetic sector thermal ionization mass spectrometer. This laboratory also provides analytical services through collaboration with other academic institutions in the country.

#### Department Website Summary

**Professor Kimberly O'Brien's** area of expertise is maternal and child nutrition with a focus on mechanisms controlling mineral homeostasis and placental

mineral transport across pregnancy and during early childhood using stable mineral isotopes and biomedical mass spectrometry.

## **Teaching**

### **Teaching and Advising Statement**

I teach an undergraduate Human Anatomy and Physiology course and co-teach a graduate course on micronutrient metabolism. I am committed to promoting hands-on, investigative, opportunities for undergraduate and graduate students interested in clinical research. Our laboratory group also typically includes 15-20 undergraduates; many of whom are co-authors on the research generated. Scientific writing is emphasized and facilitated with weekly undergraduate and graduate writing groups and with weekly meetings for all on-site and off-site study personnel. Graduate and post-doctoral students gain mentoring experience by providing guidance in methods development and data analysis to undergraduate laboratory students.

## **Professional**

### **Current Professional Activities**

Adjunct Professor, University of Rochester School of Medicine and Dentistry, Department of Obstetrics and Gynecology, Rochester, NY

## **Research**

### **Current Research Activities**

Calcium Metabolism and Bone Health; Maternal and Neonatal Anemia, Control of Maternal/Fetal Nutrient; Partitioning and Placental Mineral Transport; Micronutrient Status in International Settings; Development of Mass Spectrometric Methodology; Pregnancy and Mineral Metabolism in Adolescents and in Women Carrying Multiples, Vitamin D and inflammation

## **Extension**

## **Education**

### **Education**

NRSA Fellowship 1993-1995 - Baylor College of Medicine, Children's Nutrition Research Center, Houston, TX

IRTA Fellowship - 1991-1993 - National Institutes of Health, Section on Metabolic Analysis and Mass Spectrometry, Bethesda, MD

PhD - 1991 University of Connecticut, Nutrition

BS - 1985 University of New Hampshire, Biology

## **Courses**

### **Courses Taught**

NS3410 - Human Anatomy and Physiology

NS6310 - Micronutrients (Primary Instructor Robert Parker)

## **Websites**

### **Related Websites**

[PubMed](#)

[O'Brien Laboratory](#)

## **Administration**

## **Publications**

### **Selected Publications**

1. Whisner CM, Young BE, Queenan RA, Cooper EM, Pressman EK, O'Brien KO. Maternal Diet but not Gestational Weight Gain Predicts Fetal Fat Accretion in Utero. In Press; International J of Obesity (Lond). 2014; Dec 3. doi: 10.1038/ijo.2014.202. [Epub ahead of print]
2. Cao C, Thomas C, Insogna KL, O'Brien KO. Duodenal Absorption and Tissue Utilization of Dietary Heme and Non-Heme Iron in a Rat Model of Iron Overload. J Nutr 2014; 144:1710-1717
3. Finkelstein JL, Pressman EK, Cooper EM, Kent TR, Bar HY, O'Brien KO. Vitamin D Status Impacts Serum Metabolomic Profiles in Pregnant Adolescents. Reproductive Sciences 2014; Nov 2. pii: 1933719114556477. [Epub ahead of print]
4. Lumish RA, Young SL, Lee S, Cooper E, Pressman E, O'Brien KO. Gestational Iron Deficiency is Associated with Pica Behavior in Adolescents. J Nutr. 2014 144:1533-39.
5. Lee S, Cooper EM, Pressman EK, Queenan RA, McIntyre AW, Guillet R, O'Brien KO. Determinants of Anemia and Iron Deficiency among Pregnant Adolescents. J Nutr. 2014; 144:1524-32.
6. Smith SM, Castaneda-Sceppa C, O'Brien KO, Abrams SA, Gillman P, Brooks NE, Cloutier GJ, Heer M, Zwart SR, Wastney ME. Calcium Kinetics during Bed Rest With Artificial Gravity and Exercise Countermeasures. Osteoporosis International 2014; 25:2237-44.
7. Cao C, Pressman EK, Cooper EM, Guillet R, Westerman M, O'Brien KO. Placental heme receptor, LRP1 correlates with the heme exporter FLVCR1 and neonatal iron status. Reproduction 2014; 148:295-302.

8. Whisner CM, Young BE, Witter FR, Harris ZL, Queenan RA, Cooper EM, O'Brien KO. Pre-pregnancy weight, PTH and season at delivery predict maternal bone loss in pregnant adolescents. *J Bone Miner Res* 2014; 29(9):2109-17.
9. Smith SM, Abrams SA, Davis-Street JE, Heer M, O'Brien KO, Wastney ME, Zwart SR. 50 Years of Human Space Travel: Implications for Bone and Calcium Research. *Annu Rev Nutr* 2014; 34:1.1-1.24.
10. Lee S, \*Essley BV, Cooper EM, Pressman EK, Queenan RA, McIntyre AW, Guillet R, O'Brien KO. Pregnant Adolescents Consume Diets Deficient in Calcium and Iron. *Infant Child and Adolescent* 2014; 6:152-159.
11. Young BV, McNanley TJ, Cooper EM, McIntyre AW, Witter F, Harris ZL, O'Brien KO. Placental Vitamin D Receptor (VDR) Expression is Related to Neonatal Vitamin D Status, Placental Ca Transfer and Fetal Bone Length in Pregnant Adolescents. *FASEB J.* 2014 May 28(5):2029-37.
12. O'Brien KO, Li S, Cao C, Kent B, Young BV, Queenan RA, Pressman EK, Cooper EM. Maternal and Neonatal Vitamin D Status and Regulation of CYP27B1 and CYP24A1 Expression in Human Placental Tissue. 2014 *J Clin Endocrinol Metab* 2014 Apr 99(4):1348-56.
13. Bihuniak JD, Sullivan RR, Simpson CA, Caseria DM, Huedo-Medina T, O'Brien KO, Kerstetter JE, Insogna KL. Supplementing a low protein diet with dibasic amino acids results in higher urinary calcium excretion and modest improvements in calcium absorption. *J Nutr* 2014; Mar 144(3):282-8.