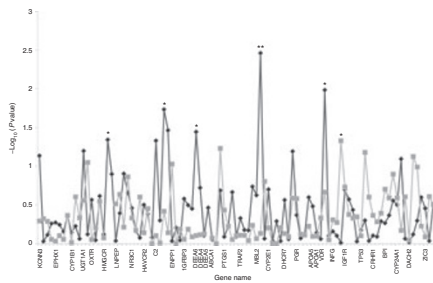


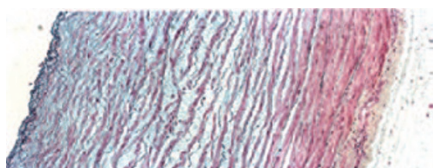
doi:10.1038/pr.2012.192

## Genes and preterm birth



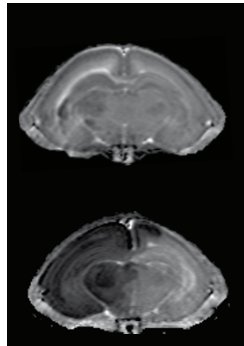
Bream and colleagues aimed to identify genetic variants contributing to preterm birth using a linkage candidate-gene approach. Their study of 99 single-nucleotide polymorphisms for 33 genes in 257 families with preterm births suggests the involvement of six genes acting through the infant and/or the mother in the etiology of preterm birth. [See page 135](#)

## Extracellular matrix structure



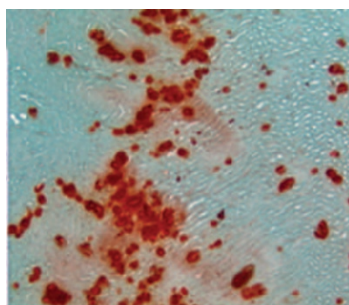
Fetal intrauterine growth restriction (IUGR) results in increased placental resistance to blood flow, fetal hypertension, and increased pulsatility stresses shown to lead to vascular remodeling. Dodson and coauthors used a sheep model to test the hypothesis that IUGR decreases compliance in the carotid and umbilical arteries owing to altered extracellular matrix (ECM) composition and structure. They found that placental insufficiency-induced IUGR increased arterial stiffness and collagen engagement. Disrupted ECM deposition may provide a link between IUGR and adult hypertension. [See page 147](#)

## Too much oxygen makes things worse



In rats, hypoxia-ischemia (HI) induces delayed inflammation and long-term gray and white matter brain injury that Morken *et al.* hypothesized may be altered by hyperoxia. Their results, however, showed that exposure to hyperoxia after HI in the P7 rat induced a more severe initial brain injury with greater tissue loss in the following weeks as compared with exposure to room air. Hyperoxia caused more severe tissue destruction and increased inflammatory response, exacerbating the trajectory of injury after HI in developing gray and white matter. [See page 171](#)

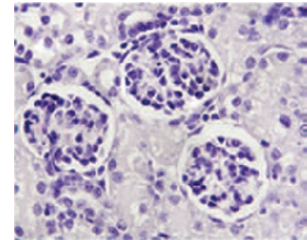
## Model of nephrocalcinosis



Tuchman *et al.* sought to develop a reproducible and clinically relevant rat model of nephrocalcinosis (NC) for critically ill preterm infants as well as to explore the impact of contraction of extracellular fluid (ECF) volume induced by sodium and chloride depletion. Severe ECF volume contraction induced by

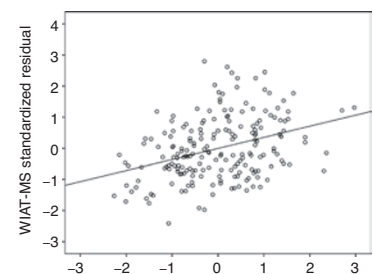
chronic sodium and chloride depletion appears to play an important role in the pathogenesis of NC. [See page 194](#)

## Maternal creatine supplementation



Ellery and colleagues investigated whether kidney structure and function were affected by birth asphyxia in a mouse model and whether maternal dietary creatine supplementation could provide energy reserves to the fetal kidney, thereby maintaining cellular respiration during asphyxia and preventing acute kidney injury. Their findings show that maternal creatine supplementation may be useful in ameliorating kidney injury associated with birth asphyxia. [See page 201](#)

## Mathematical performance in preterm children



Preterm children born before 26 weeks of gestation have been observed to have poor academic achievement in comparison with their term-born peers. Simms and coinvestigators compared the mathematical performance of 11-year-olds born preterm with those born at term. Their study suggests that aberrant numerical representation may partly explain the poor mathematical performance of children born preterm. [See page 236](#)