

Oxygen homeostasis and stress in the ductus arteriosus

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**Oxygen homeostasis and stress in the ductus arteriosus.
Studies in the chicken embryo model.**

Saskia van der Sterren, maart 2016

1. The mechanisms of oxygen sensing and signaling in the ductus arteriosus are highly preserved among species (*this thesis*)
2. Both prenatal hypoxia and hyperoxia alter local vascular mechanisms, but do not impair oxygen-induced contraction of the ductus arteriosus. (*this thesis*)
3. Isoprostanes should not only be regarded as markers of oxidative stress; they are also vasoactive agents which play a role in ductus arteriosus tone and conceivably its closure. (*this thesis*)
4. Despite the clinically observed male disadvantage among preterm infants, development of the ductus arteriosus takes place at the same pace in females as in males and is not affected by sex hormones (*this thesis*)
5. Although significant progress in our understanding of the DA pathobiology has been achieved with the use of mammalian models, their complexity yields limitations which are addressed by the chicken embryo model which proves to be an excellent model to study vascular reactivity and response to O₂ in the DA, as well as developmental changes prior to term birth. (*Sutendra and Michelakis, 2007*)
6. Patent ductus arteriosus in the very preterm infant is the consequence of underdevelopment not of misdevelopment.
7. Despite a large body of basic science and clinical research and clinical experience with thousands of infants over nearly six decades, there is still uncertainty and controversy about the significance, evaluation, and management of patent ductus arteriosus in preterm infants. (*Benitz, 2016*)
8. The best prevention of neonatal morbidity and mortality would be a cure for preterm delivery
9. Somewhere, something incredible is waiting to be known - *Carl Sagan*
10. A person's a person, no matter how small - *Dr. Seuss*
11. A multitude of words is no proof of a prudent mind - *Thales of Miletus*