

## Meeting Abstract

**P3-194** Saturday, Jan. 7 15:30 - 17:30 **Interactive and Long-term Effects of Yolk Androgens and Antioxidants in Birds** GIRAUDEAU, M\*; ZIEGLER, AK; DUCATEZ, S; MCGRAW, KJ; TSCHIRREN, B; GIRAUDEAU, Mathie; ASU [giraudeau.mathieu@gmail.com](mailto:giraudeau.mathieu@gmail.com)

Conditions experienced during prenatal development can influence an individual's developmental trajectory and have long-term effects on its physiology, morphology, and behavior, ultimately influencing its fitness. Maternally transmitted resources are important mediators of such prenatal effects, but the potential interactive effects among them in shaping offspring phenotype have never been studied. Maternally derived testosterone is known to stimulate growth, but these benefits may be counterbalanced by an increase in the production of reactive oxygen species (ROS). Maternally transmitted antioxidants might have the capacity to scavenge ROS and thereby buffer an increase in oxidative stress caused by prenatal exposure to high testosterone levels. Here, we experimentally tested for such interactive effects between maternal yolk testosterone and carotenoid in Japanese quail (*Coturnix japonica*). We found that hatching mass was reduced and reactive oxygen metabolites levels increased in chicks from eggs injected with either testosterone or carotenoid. However, when both egg compounds were manipulated simultaneously, hatching mass and reactive oxygen metabolites levels were not affected, showing that both carotenoid and testosterone lose their detrimental effects when the ratio between the two compounds is balanced. In line with these results, we found that maternally-transmitted androgens and antioxidants are co-adjusted within eggs in an inter-specific comparative analysis on birds' egg yolk composition. Finally, we found long-term effects of our yolk carotenoid and testosterone manipulations on testes size and maternal investment decisions, showing that these maternally-transmitted compounds have organizational effects that last until adulthood.