Steroid production by maternal and embryonic tissues in a viviparous lizard demonstrate the potential for embryo-maternal signaling

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Hormones have important organisational and activational roles during embryonic development. These hormones may have maternal or embryonic origins. In viviparous (live-bearing) vertebrates, the embryo is exposed to maternal hormones via the placenta, which forms an interface between maternal and embryonic endocrine systems. We examined steroid production by embryonic and maternal tissues in the viviparous lizard *Niveoscincus ocellatus*. We hypothesised that patterns of steroid production would vary between tissues, with embryonic stage, and between different temperatures in this ectothermic species.

Females were collected in mid/late gestation and sacrificed. Embryos were removed and staged. Their adrenals and gonads were incubated at 16° or 28°C for three hours, with or without the steroid precursor pregnenolone; in younger embryos, the entire embryo trunk was incubated. Maternal tissues (oviduct, placenta, corpus luteum, non-luteal ovary, and muscle = non-endocrine control tissue) were incubated at 16° or 28°C with or without pregnenolone. Incubation media were assayed for testosterone, progesterone, estradiol and corticosterone using radioimmunoassay. The corpus luteum produced the most progesterone, but placenta and uterus were also steroidogenic. Adrenals of late stage embryos produced significant corticosterone: production was greatest at 28°C, with pregnenolone. These results suggest the potential for maternal-embryo endocrine signalling in a viviparous reptile.