

Andreas Berghänel¹, Michael Heistermann², Oliver Schülke¹, Julia Ostner¹

¹ Department of Behavioural Ecology, University of Göttingen

² Endocrinology Lab, German Primate Center, Göttingen

The (mal-) adaptive value of prenatal stress during early ontogeny

Prenatal maternal stress has been shown to affect many aspects of offspring's postnatal development and adult health. These effects are usually considered as maladaptive and clinical. This interpretation may result from a health definition that is too narrow though and it is currently being debated whether most maternal effects are adaptive from an evolutionary point of view. Since most of the studies were conducted on captive animals and humans using highly artificial and/or extreme stressors, however, the adaptive value of maternal effects is currently difficult to assess. We studied the causes and consequences of prenatal maternal stress in a wild group of Assamese macaques (*Macaca assamensis*) living in their natural habitat at the Phu Khieo Wildlife Sanctuary in Thailand. We combined observations of behaviour, signs of disease, and motor skill acquisition with faecal glucocorticoid sampling, quantitative measures of natural food availability, and individual growth rates measured non-invasively via photogrammetry. We show that prenatal maternal stress is correlated to food availability during gestation and affects postnatal growth rate, motor skill acquisition, immune function and signs of distress in the offspring. We will discuss whether the results on prenatal maternal stress on offspring development suggest evolutionary adaptive or maladaptive effects on both the mother and/or the offspring.