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## PROGRAMMING OBESITY IN MARMOSET MONKEYS

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Epidemiological data revealed that obesity is transmitted epigenetically from an obese mother to the next generation through perinatal programming; however, it is not known when programming takes place during the perinatal period. In a longitudinal follow-up study we investigated 30 male marmoset monkeys (one sibling from 30 twin litters) from birth until the age of 26 months. Experiments were conducted in accordance with European and German regulations. Bodyweight was recorded in weekly to monthly intervals. Blood pressure was measured non-invasively with High Definition Oscillometry (HDO®; S+B medVET, Germany) and blood samples were collected at 6, 12, 18 and 24 months. Triglycerides, HDL-Cholesterol, fasting glucose, glucose after an oral glucose load (OGTT), and HbA1c were quantified. The WHO criteria for metabolic syndrome were adapted to marmoset monkeys. At the end of the study 7 out of 30 marmoset monkeys fulfilled these criteria. Affected animals showed hyperlipidemia accompanied by lowered HDL-C, and elevations of bodyweight, fasting glucose, glucose after OGTT, HbA1c and of diastolic blood pressure. Persisting differences to controls developed from 12 months onwards. A positive significant correlation existed between adult bodyweight of the offspring, maternal postpartal bodyweight and weight gain of the offspring during the suckling period. From these data one may conclude that in marmoset monkeys – similar to the situation in humans - obese mothers program the offspring to develop obesity and metabolic syndrome in later life.

Keywords: Perinatal programming, blood pressure, hyperlipidemia, metabolic syndrome