

Description of a Golden Retriever Cohort: an open science study to better characterize the first days of life and their short, medium and long-term consequences in dogs.

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Introduction and Aims

In many mammalian species, events occurring during the perinatal period induce physiological changes that can persist throughout an individual's life, with consequences for long-term health (developmental origins of health and disease concept). In dogs, four major canine longitudinal studies are in progress ("Dogslife", "Golden Retriever Lifetime Study", "Generation Pup", "Dog Ageing Project"). The objectives of these cohorts are to identify environmental, genetic, and lifestyle factors that influence aging in dogs and the risk of common disorders. However, none of these cohorts have carried out longitudinal follow-up from birth to adulthood to evaluate the influence of gestation and early life on health. This abstract describes the design of a longitudinal cohort of Golden Retriever dogs (TGC) that has been set up to collect data prospectively from the end of gestation until adulthood. The TGC focuses on three main objectives: (1) to develop minimally invasive clinical studies in order to investigate the effects of the fetal and neonatal periods on the health of dogs in the short, medium and long term, (2) to breed and select puppies to become future assistance dogs, (3) to support the training of students in reproduction, neonatology and preventive medicine.

Materials and Methods

Launched in 2022, the project initially constituted an "early cohort (EC)" of 113 Golden Retriever dogs, followed prospectively from the end of gestation to 18 months of life. Pregnant females (18 bitches in the EC) were admitted to a dedicated maternity room about two weeks before parturition where they remained with their puppies until adoption at 2 months of age. Once weaned, dams returned to their owners, whereas puppies were adopted to become assistant dogs, breeding females (for TGC purposes), or companion dogs. Puppies and their dams underwent close clinical follow-up, first in the maternity room and after 2 months of life during dedicated check-up veterinary visits (at 2, 3, 4, 6, 12 and 18 months of age). A wide range of clinical parameters (e.g., temperature, weight, clinical scores, morphometric measurements, behavioral information, skin pH and trans-epidermal water loss) and biological samples (e.g., blood tests, fecal scores, coproscopy, skin surface tape stripping) were collected. All samples—such as blood, swabs (buccal, cutaneous, rectal, ear, genital), urine, hair, and feces—were stored in a dedicated biorepository. This cohort is now being perpetuated using

the same protocol, with additional follow-up at 24 months and then annually. In total, 587 variables are being recorded.

Results and Conclusions

Preliminary results confirmed the feasibility of collecting extensive, high-quality data and biological samples. The minimally invasive procedures allowed for continuous, detailed monitoring of the early life stages and their effects on health status. Our goal is to maintain this cohort indefinitely, with the infrastructure that has been created serving as a foundation on which other studies can be built. The TGC makes available to the research community not only some of the data it collects, but also its research platform, acting as a facilitator to explore new hypotheses and develop new technologies in connection with developmental biology.