factor-II, epidermal growth factor and interferon-γ toward the post implantation and placentation stage; and expression of other genes important for proliferation and vascularization like hypoxia inducible factors (HIF) and vascular endothelial growth factor. Especially HIF2A increased during placentation. Similar to dogs, the feline placenta was found capable to synthesize prostaglandin (PG)$F_{2\alpha}$, however, peak serum PGFM concentrations were measured a few days earlier than in dogs.

WS 7.2 | Establishment and maintenance of canine pregnancy

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The successful establishment and maintenance of canine pregnancy depend on luteal progesterone (P4). There is no active luteolytic mechanism in the absence of pregnancy, resulting in passive luteal regression and extended pseudopregnancy. Conversely, the prepartum luteolysis is an acute inflammatory process associated with increased amounts of circulating prostaglandin (PG)$F_{2\alpha}$. PGs are important for establishment of luteal function in the dog, however, a luteolytic role of intraluteal $PGF_{2\alpha}$ was ruled out. The endocrine control of canine parturition is not fully understood. Accordingly, although devoid of steroidogenesis, the placenta is an important endocrine organ, e.g., the fetal placental relaxin (RLN) remains the only reliable marker of pregnancy in the dog. Its expression seems to be controlled by P4. Thus, the placenta responds to circulating levels of this hormone, thereby controlling the maintenance of pregnancy. As part of this mechanism, the prepartum luteolytic cascade appears to be initiated at the level of the placental feto-maternal communication between P4 receptor (PGR)-expressing maternal decidual cells and PG-synthesizing fetal trophoblast. Interfering with PGR function initiates the luteolytic cascade. Importantly, there is no pregnancy- or parturition-related increase in estrogens and only sporadically increased levels of cortisol are detected. Moreover, increased expression of the glucocorticoid receptor (GR/NR3C1) is not needed for initiating the prepartum PG release. During the workshop, current insights into the endocrinology of canine pregnancy will be presented, together with some new, unpublished data recently generated in our laboratory. (Supported by the SNSF grant No 31003A_160251.)

WORKSHOP 8
ASSISTED BIOTECHNOLOGY IN FEMALES

WS 8.1 | Assisted biotechnologies in females: a comparative overview

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Due to differences in their physiology, histology and/or anatomy, the performances of assisted reproductive biotechnologies are amazingly variable among domestic species. The objectives and interests of the various techniques are also very different. This workshop will provide an overview of interspecific differences in assisted reproduction, with a focus on carnivores and ruminants. In cows, artificial insemination is routine (90% of dairy cows), ovarian stimulation is efficient (6.2 transferable embryos per donor and session), embryo transfer is widely performed (140,000 embryos transferred in Europe in 2015), with relatively high pregnancy rates (40%) after in vitro embryo production and freezing/thawing. Calves are born from OPU-IVF and also after somatic cell nuclear transfer (10% of births compared to the number of embryos transferred); sperm cells can easily be sex-sorted and embryos genotyped (more than 1000 embryos genotyped in Europe in 2015). Carnivores are in a contrasted advancement: in dogs, artificial insemination (75% pregnancy rate) and nuclear transfer/transgenesis (a few hundreds of puppies born) are the only techniques practiced, the first in the field, the second restricted to labs. To date, no in vitro produced puppy has been born. Some nuances have to be added since major differences exist among ruminants and among carnivores: assisted biotechnologies are less developed in sheep and goat compared to cows, whereas results are far better in feline species than in canine.

WORKSHOP 9
OMICS TECHNOLOGIES

WS 9.1 | Proteomic insights into the mechanism of sperm quality

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"Proteomics" refers to large comprehensive studies of proteins that are expressed by the genome, with a focus on the identification, quantification and localization of proteins, post-translational modifications and interactions. Because transcription and translation are silenced in mature spermatozoa, it is implied that almost all macromolecular events in sperm cells take place at the level of proteins. This makes sperm well suited for proteomic studies. A proteomic approach has recently been introduced to farm animal semen studies. Studies of bull semen shed new light on protein composition of seminal plasma and fluids from the epididymis and seminal vesicle. Some of these proteins have been proposed to be biomarkers of fertility. The maturation of spermatozoa in the epididymis has also been characterized in depth. Moreover, proteome changes in seminal plasma and spermatozoa during cryopreservation have been characterized and used for better understanding of the mechanism of cryoinjuries. Carbonylation of proteins has been recognized as an important modification related to cryocapacitation. Proteomic maps have been developed for boar and ram sperm, as well as poultry species (chicken, turkey). Recent