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Title: Development of tools for monitoring the European Hamster (*Cricetus cricetus*) in the wild.

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Abstract (280 words):

A solid understanding of the biology of the endangered European hamster requires the monitoring of these animals in their natural environment, so that information on vital rates (survival and reproductive success), as well as behavioural aspects (burrow use, foraging movements, habitat selection) can be investigated. Unfortunately, adequate tools/techniques to achieve such studies are currently lacking. Hence, within the context of the French 'Plan National d'Action' for the European hamster (2019-2028) and within 'Action 6' of the 'Inter-Reg CRICETUS' program (2020-2023), we are developing two new research tools.

A 'Track-logger' that allows to monitor the behaviour, energy expenditure, burrow location and movement patterns of hamsters, as well as their survival. This implantable logger makes use of both VHF tracking and datalogging technology. Onboard processing of data sampled at a high frequency (triaxial accelerometer, 50 Hz) allows to reduce the required memory space. In the case of the acceleration signal, data for 7 parameters will be stored every second, from which a proxy of energy expenditure (VeDBA), body posture and activity can be derived in real time, accessible after instrument retrieval. Vital status can be checked via VHF localisation (signal reception up to ~80 m), through the frequency of the transmitted beeps, coded according to temperature and VeDBA of the animal. A flexible programming schedule allows to increase recording duration (~14 months), with a minimized logger-mass (~7.5g).

A 'Smart trap' to automatically monitor and capture or not targeted individuals. The device in its basic version (already available), is equipped with a RFID antenna awakened by the passage of any animal. The first version already developed allows the control of burrow activity with ~10 days of recording duration.

Keywords (6 max): Hamster - Biologging - Accelerometry - VHF-Monitoring - Smart-Trap

Meeting link :

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