



Dummerstorf, 07. April 2017

## Are clever goats happier?

### Dummerstorf and Swiss scientists investigate the effects of targeted thinking training on animal well-being

Scientists at FBN are addressing the question of farm animals' capacity for recording and processing information, and their ability to learn, in order to design husbandry conditions that will improve animal welfare accordingly. The central issue is the level and the underlying mechanisms by which animals are able to take up and process information, as well as how they can learn recurring sequences and processes, and how this intellectual capacity can be used for the well-being of livestock in agriculture. The German Research Foundation (Deutsche Forschungsgemeinschaft, DFG) and the Swiss National Science Foundation (SNSF) are now promoting a joint research project with wild and domestic goats to investigate these animals' cognitive abilities and the effects of long-term training on husbandry and well-being of livestock. The influence of domestication on the learning behaviour and the cognitive abilities of animals is also to be investigated, with the goat as example. The aim of the research project, which is funded to a total of around 450,000 euros, is to capture the specific differences between wild and domestic goats.

Dr. Jan Langbein of the FBN Institute of Behavioural Physiology in Dummerstorf will lead the study on the German side. Identical experiments will be carried out at the Swiss Centre for Animal Welfare: Ruminants and pigs (ZTHT) at Agroscope in Tänikon. The test series with wild goats will take place in the Dählhölzli Animal Park in Berne, which has the only major wild goat population in Europe. "Cognition tests are an important tool in the comparative study of learning and cognitive performance of wild and domesticated animals. Corresponding changes in behaviour can only be investigated in a few animal species, since the presence of the wild ancestor of domesticated species is a prerequisite for this," explains Prof. Birger Puppe, manager of the Institute of Behavioural Physiology at FBN. Farm animals are exposed to conditions that allow only limited implementation of species-specific behaviour, which can quickly lead to boredom, stress and frustration. While positive effects from the stimulation of learning ability and other cognitive skills have been demonstrated in zoo animals, there are only a few studies dealing with cognitive training as a form of environmental enrichment and possible positive effects for the well-being of farm animals.

#### Advantage: wild or domestic animal?

During the next three years, the research project aims to investigate changes of performance and flexibility in learning, as well as in cognitive abilities, in the course of the development towards livestock (domestication). Of special interest are the ability for social learning in animal and man, as well as the motivation to deal with mental challenges, and the influence of cognitive training on stress and well-being. The experimental animals in the project are wild goats from the Berne Animal Park and two domesticated goat breeds with different breeding targets. "The value of the results can increase significantly, by repeating the tests at two research sites under comparable husbandry conditions," said project manager Dr. Jan Langbein.

The results of the project are intended to provide information on the extent to which domestication in general, and specific breeding purposes in particular, have altered the learning and cognitive abilities of animals. An in-depth understanding of the cognitive abilities and demands of farm animals is a prerequisite for more suitable husbandry conditions in the future, taking into account appropriate cognitive challenges, as has long been realized with zoo animals", Langbein emphasised.

### Significant experience in behavioural research

Dummerstorf scientists, more than anyone else, are to be credited with the fact that old sayings like "stupid goats", "rotten pigs" or "dumb cows" have been proven untrue. The diverse abilities and social behaviour of farm animals have been explored in Dummerstorf for more than 15 years. Among other things, it could be proven that goats, like people, can think in categories, pigs can rush to the feed trough when their personal names are called, and cows in heat can be recognised by the sounds they make.

The Dummerstorf competence in long-term cognitive research and scientific acceptance of it are also reflected in a recent publication in the renowned American research journal SCIENCE. There, the Dummerstorfer scientists Dr. Jan Langbein and Prof. Birger Puppe published a commentary\* on a novel experiment on the learning ability of ducks. Ducks can learn concepts in terms of shapes, but not in terms of colours, in an imprint-like process, as the FBN scientists qualified corresponding descriptions in the original article.

*The Leibniz Association connects 91 independent research institutions. Their orientations range from natural sciences, engineering sciences, environmental sciences, economics, space and social sciences to the humanities. Leibniz Institutes devote themselves to socially, economically and ecologically relevant questions. They pursue knowledge-orientated and application-orientated research, also within inter- or transdisciplinary Leibniz research alliances, or support scientific infrastructures and provide research-based services. The Leibniz Association focuses on the transfer of knowledge, especially with the Leibniz Research Museums. It advises and informs politics, science, business and the public. Leibniz institutions maintain close co-operation with universities, among others in the form of the Leibniz ScienceCampi, with industry, and with other partners at home and abroad. They are subject to a transparent and independent Evaluation. Due to their national significance, the Federation and the Länder jointly promote and fund the institutes of the Leibniz Association. The Leibniz Institutes employ about 18,600 people, including 9,500 scientists. The institutes' total budget is more than EUR 1.7 billion.*

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### **\*Comment on „Ducklings imprint on the relational concept of same or different“**

Jan Langbein and Birger Puppe, [www.sciencemag.org/content/355/6327/806.3](http://www.sciencemag.org/content/355/6327/806.3)

### **Original article „Ducklings imprint on the relational concept of same or different“**

Antone Martinho/Alex Kacelnik, <http://science.sciencemag.org/content/353/6296/286/tab-e-letters>

### **Fotos: FBN**

The Dummerstorf dwarf goats have already proven their quick perception at the FBN learning devices. These studies will now be continued and expanded.

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