

## **Summary of the project**

### **“Gentle human interactions and positive emotions in cattle”**

**(FWF, 2017 – 2020, 396.251 €, PI S. Lürzel)**

The experience of positive emotions is essential for good well-being of farm animals. It may also have an economic impact by enhancing health and production via physiological responses. Gentle interactions (stroking and talking in a gentle voice) usually induce positive emotions in cattle but not under all circumstances. The overarching aim of the project was thus to elucidate which characteristics of gentle tactile and vocal interactions with humans improve or impair their positive perception by cattle and how they affect cattle physiology.

First, we compared the reactions of young cattle to stroking by a familiar person, either while the person was talking in a gentle voice directly to them or while a recording of the human talking was played, which might be relevant for standardization in future experiments. The behaviour did not differ substantially between the two conditions, but heart rate characteristics indicated a stronger relaxation effect after live talking. In addition, the variability in the data was not reduced consistently. Thus, using a playback stimulus is not advantageous in terms of standardization and, moreover, might be less effective in eliciting a positive perception of the interactions in the animal than talking directly to it.

We also compared different stroking styles: stroking the ventral neck, which has previously been identified as a generally preferred area, and stroking the entire head-neck area while reacting to the perceived momentary preference of the animal. The behaviour indicated that both ways of stroking were perceived as positive, but there were very few differences. This finding also reflects the methodological challenges of discriminating between different intensities of positive emotions.

We found effects of restraint during gentle vocal and tactile interactions with humans: If heifers with a good relationship with humans were free to move, they showed more behavioural signs of enjoyment than when they were stroked while restrained. Furthermore, their heart rate tended to decrease during free stroking. This is in line with the results of our experiment with cows that were fearful of humans: We found a small improvement of the animals' relationship towards humans if they experienced gentle interactions during restraint, whereas the improvement was more distinct in cows that experienced the interactions while free to move.

Finally, we did not find changes in salivary oxytocin, immunoglobulin A (IgA) or cortisol concentrations in heifers after gentle interactions with humans, although the heart rate decreased over the course of the test in animals experiencing gentle interactions, in contrast to the two controls (presence and absence of person). Oxytocin and IgA have come into the focus of animal welfare research especially as potential indicators of positive affective states, but these results speak against their usefulness in this context.