

Social interactions are very important for human beings. In this respect we are not much different from many other animal species for which social interactions are crucial for survival and reproduction. The impairments of social interactions are observed in many brain disorders, such as autism spectrum disorder (ASD), schizophrenia or in disorders of personality. Studying mechanisms underlying social interactions is, therefore, of clinical relevance. One of the simplest form of social interaction that is also impaired in ASD is sharing emotions between individuals. Very little is known about the mechanisms underlying emotional sharing. The present project will enable us to answer the important questions about this phenomenon. We will model sharing of positive and negative emotions in mice living in a social group. To this end we will use a unique, naturalistic settings of Eco-HAB, the automated system allowing for automated measurement and analysis of social preference and social interactions in mice we have developed. The mice models offer a unique opportunity to get insight into mechanisms of emotional contagion by manipulating neuronal activity, which is not possible in human studies for ethical reasons. To manipulate the neural circuits involved in emotional transfer we will use optogenetics and the fully implantable miniaturized optoelectronic device compatible with the Eco-HAB system we are developing. These will allow to remotely activate and thus characterize the function of neuronal circuits in the brain that control socially shared emotions. The results obtained in the course of the project will undoubtedly contribute important information to the mainstream research conducted in the field of social interaction.