Studies on evolution of sociality in mammals are in the limelight of behavioral research of different animals. Some groups are formed by closely related individuals, what is consistent with kin selection theory. According to it, individual fitness is the sum of his own reproductive success as well as reproductive success of relatives, because of shared genes. However, individuals in many animal societies are not related, while even than individuals benefit of group living by survivability and adaptations.

Bats are a promising system for this kind of study, as more than 1300 bat species live in different types of social systems. During pregnancy and lactation female bats form colonies, while they benefit of group foraging and social warming. Some bat species live in societies under fission–fusion dynamic, where colonies are composed of many roost groups that vary in size and composition. Genetic relatedness is not a good measure in this type of communities, determining relatedness of dyads of individuals that share roosts is much more informative. Relatedness of dyads is important to understand fitness–related gains of cooperation as it is expected that selection for cooperative behaviours takes place at this level of social structure of societies under fission–fusion dynamics. During the time, when females stay in colonies, males of most species live solitary. These rare male colonies give the opportunity to investigate social behaviours without the confounding factors connected with parental care. It is not known what are the social associations between colony members and if there are dyads of related males. The general goal of this project is to assess if relatedness predicts membership in a social unit, if individuals captured from one roost and pairs of individuals that often share roosts are more related with each other than with another individuals from the colony.

We conduct our study on male parti–colored bats in Białowieża Primeval Forest since 2015. We already collected different types of data, i.e. data on number of bats in roost groups, roost utilization and social behaviours of males. Bats used more than 50 roosts, which were changed almost every day, as well as group composition. Moreover, we collected DNA samples. We expect that general relatedness in roost groups is low, because of highly dynamic group structure. However, we also suspect that individuals are more related among dyads than randomly. During our project we will analyse microsatellites of nuclear DNA and sequences of mitochondrial DNA. Based on capturing data we will know which individuals formed roost groups and radiotracking data will allow us to recognize which individuals were roosting together more often than randomly. To test if individuals, which roost together are related, we will combine social network with relatedness. Results of our project will give the opportunity to understand genetic basis of sociality, while benefits of male group living are not connected with parental care.