

## P36 – Cloacal microbiome is linked to ecological features of individuals in the Barn swallow

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Little is currently known about the factors that shape the structure of intestinal bacterial communities in birds. Recent studies suggest that nestlings acquire their microbiota from the nest environment immediately after hatching or through the bolus regurgitated by parents, providing an example of vertical transmission of bacteria through generations; bacteria can be transferred also between adult birds during copulation. These features suggest that birds could be a valuable model for investigating the processes that shape the bacterial communities of the intestinal tract.

We studied the cloacal microbiota (CM) of 43 adult and 40 nestling Barn Swallows (*Hirundo rustica*) a small insectivorous passerine and a long-distance migrant that breeds semi-colonially mostly in rural buildings of European farmlands. Only two published studies from Czech Republic and one preliminary study in Italy have investigated the Barn Swallow CM so far. In the light of the large variability in the microbiota of bird populations from different geographical areas, our aim was to provide a description of the CM of a geographically different population. In May-July 2016, we captured and ringed adult and nestling barn swallows at one colony near Milan (Italy) and collected CM samples using sterile DNA-free microbiological nylon swabs. CMs were then characterized by Illumina sequencing of the V5–V6 hypervariable regions of the bacterial 16S rRNA gene. CMs were dominated by bacteria belonging to the phyla Proteobacteria, Firmicutes, Actinobacteria, Tenericutes and Bacteroidetes. CMs of nestlings were more similar to one another than those of adults, but showed higher alpha diversity. Sibling nestlings, in particular, had more similar CMs than non-sibling ones. CMs also differed between adult males and adults females, but not between male and female nestlings. Finally, CMs observed in 2016 in adults that survived until the breeding season 2017 were less differentiated than those of non-surviving ones. This is among the first investigations of CMs of a bird species in the wild and shows that CMs are related to important traits of individuals, such as survival. Microbiomes should therefore be included among the traits investigated by animal and behavioural ecologists, since the currently available technologies allow their investigating at an unprecedented level of detail and at affordable costs.