

SEEWIESEN

# LECTURE SERIES

FALL/WINTER 2019/20

Max Planck Institute  
for Ornithology

MAX PLANCK  
GESELLSCHAFT

THURSDAY | January 23rd, 2019 | 13 P.M. | HOUSE 4 LECTURE ROOM

## STEFFEN HAGE

Eberhard Karls University, Tübingen | Host: Research Group Vallentin

### Vocal motor control mechanisms in marmoset monkeys: new insights into the evolution of human speech

Monkey vocalizations have been assumed to be largely innate, highly affective, and stereotyped for over 50 years. Recently, this perception has dramatically changed. Current studies including our own have revealed distinct learning mechanisms during vocal development and vocal flexibility allowing monkeys to cognitively control when, where, and what to vocalize, all of which are crucial biological preadaptations in monkeys for the emergence of a language system in humans. I will give an overview on our recent studies on marmoset monkeys. I will present data that are indicating that vocalizations of marmoset monkeys do not consist of one discrete call pattern but are built out of many sequentially uttered units, like human speech. Furthermore, I will give insights into recent studies that indicate a potential role of auditory feedback on vocal development in marmoset monkeys. Finally, I will show first data indicating that marmosets are able to control their vocal output in a goal-directed way to perform a specific task successfully and how this behavior can be used to investigate neural mechanisms underlying vocal motor control.

#### WHO IS STEFFEN HAGE?

2005	PhD, German Primate Center, Göttingen
2007	Guest researcher, MPI Ornithology
2007	DFG Postdoctoral Fellowship, UCLA, USA
2009	Group Leader, University of Tübingen
2014	Independent Junior Research Group Leader, CIN, University of Tübingen

#### SELECTED PUBLICATIONS

- Pomberger T, Risueno-Segovia C, Gultekin YB, Dohmen D, Hage SR (2019) Cognitive control of complex motor behavior in the marmoset monkey. *Nature Communications* 10, 3796
- Brecht KF, Hage SR, Gavrilov N, Nieder A (2019) Volitional control of vocalizations in corvid songbirds. *PLoS Biology* 17, e3000375
- Pomberger T, Risueno-Segovia C, Löschner J, Hage SR (2018) Precise motor control enables adaptive plasticity in vocal behavior of marmoset monkeys. *Current Biology* 28, 788-794.

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