

Sébastien Derégnaucourt



Associate professor

Phone : (33) 1 40 97 74 77
Mail : sebastien.deregnaucourt@parisnanterre.fr

Research interests

- Comparison between vocal learner and vocal non-learner species in birds
 - Vocal ontogeny of mating signals
 - Genetic determinism of vocalizations
- Circadian aspects of vocal production
 - Role of sleep on vocal learning
 - Influence of melatonin on birds' vocalizations

Research Experience

- 2005-2011: Research Scientist, Max Planck Institute for Ornithology, Seewiesen, Germany
- 2001-2005: Post-Doctoral Research Fellow, Dept of Biology, City College, City University of New York, USA
- 1999-2001: Lecturer, University of Burgundy, France

Education

- 2000: Ph.D. in Biology, UMR CNRS 6552 Ethology-Evolution-Ecology, University of Rennes, France

Thesis: *Hybridization between the European quail and the domestic Japanese quail*. (Supervisor: Dr. J-C. Guyomarc'h)

- 1996: MA Biology of Behaviour, University Université Paris NanterreIII
- 1995: Master Biology of Organisms and Populations; University Lille I

Summary of main research achievements: mechanisms of vocal learning in birds

My research largely focuses on vocal communication in birds. From a mechanistic viewpoint, I am interested in vocal transformations during vocal development, and my recent research has focused on the effects of sleep and melatonin on vocal learning. From an evolutionary viewpoint, I am interested in the origins of vocal learning. Please find below a short abstract of these research achievements.

Effect of sleep on developmental song learning: we observed that during periods of rapid learning, song structure exhibited a pronounced deterioration after night-sleep. Furthermore, birds that showed stronger post-sleep deterioration during development achieved a better final imitation of the playback song. Additional experiments showed that song deterioration was due to sleep. This study was the first to demonstrate the role of sleep in developmental learning, establishing birdsong as an interesting model to investigate these aspects.

Melatonin affects the temporal pattern of courtship vocalizations: we observed that the song of the Zebra Finch and the crow of the Japanese quail became shorter in constant light, a treatment known to abolish melatonin production. A shortening of the song duration was observed in finches following the ablation of the pineal gland, which is the main source of melatonin. A lengthening of the song was observed following a melatonin treatment. We propose that melatonin could be part of an evolutionary conserved neuro-endocrine pathway of control of species-specific signals.

Comparison between vocal learner and vocal non-learner species: we estimated heritability of vocalizations in the Zebra Finch. In Quail (genus *Coturnix*), we used interspecific hybridization to demonstrate that crow and conspecific mating preference exhibit a hereditary basis. We also described ontogenetic changes in the crow of the Japanese quail and we proposed that mechanisms used by quails to transform sounds during ontogeny resemble those described in songbirds during the sensitive phase of song learning.

Research projects

- Cultural evolution of birdsong : funded by the ANR, click [here](#) to learn more
- Use of a robot bird as a social agent (in collaboration with the Autonomous Systems Laboratory at the ETH Zurich, Switzerland, and the Max Planck Institute for Ornithology in Seewiesen, Germany)

Publications

Gehrold, A., Leitner, S., Laucht, S. & **Derégnaucourt, S.** 2013. Heterospecific exposure affects the development of secondary sexual traits in male zebra finches (*Taeniopygia guttata*). Behavioural Processes. Sous Presse.

Derégnaucourt, S., Poirier, C., Van der Kant, A., Van der Linden, A. & Gahr, M. 2012. Comparisons of different methods to train a young zebra finch (*Taeniopygia guttata*) to learn a song. Journal of Physiology Paris. Sous presse.

Derégnaucourt, S., Saar, S. & Gahr, M. 2012. Melatonin affects the temporal pattern of vocal signatures in birds. Journal of Pineal Research 53, 245-258.

Derégnaucourt, S. Birdsong learning in the laboratory, with especial reference to the song of the Zebra Finch (*Taeniopygia guttata*) In: Pepperberg, Irene M. (ed.), Avian Cognition and Social Interaction: Special issue of Interaction Studies 12:2, pp. 323-349 (2011)

Derégnaucourt, S.: Interspecific Hybridization as a Tool to Understand Vocal Divergence: The Example of Crowing in Quail (Genus *Coturnix*). PLoS ONE 5 (2), e945 (2010) Open Access

Forstmeier, W., Burger, C., Temnow, K. and **Derégnaucourt, S.**: The genetic basis of zebra finch vocalizations. Evolution 63 (8): 2114-2130 (2009)

Derégnaucourt, S., Saar, S., Gahr, M.: Dynamics of crowing development in the domestic Japanese quail (*Coturnix coturnix japonica*). Proceedings of the Royal Society of London, Series B, 276, 1665: 2153-2162 (2009)

Saar S., Mitra P.P., **Derégnaucourt S.** and Tchernichovski O: Developmental song learning in the zebra finch. In Neuroscience of Birdsong (H.P. Ziegler and P. Marler Eds). Cambridge University Press, Cambridge (2008)

Barilani M., **Derégnaucourt S.**, Gallego S., Galli L., Mucci N., Piombo R., Puigcerver M., Rimondi S., Rodríguez-Teijeiro J.D., Spanò S., Randi E.: Detecting hybridization in wild (*Coturnix c. coturnix*) and domesticated (*Coturnix c. japonica*) quail populations. Biological Conservation, 126: 445-455 (2005)

Derégnaucourt S., Guyomarc'h J.-C. and Spanò S.: Behavioural evidence of hybridization (Japanese × European) in domestic quail released as game birds. Applied Animal Behaviour Science 94: 303-318 (2005)

Derégnaucourt S., Guyomarc'h J.-C. and Belhamra M.: Comparison of migratory tendency in European Quail *coturnix c. coturnix*, domestic Japanese Quail *Coturnix c. japonica* and their hybrids. Ibis 147: 25-36 (2005)

Derégnaucourt S., Mitra P.P., Fehér O., Pytte C. and Tchernichovski O.: How sleep affects the developmental learning of bird song. Nature 433: 710-716 (2005)

Tchernichovski O., Lints T.J., **Derégnaucourt S.**, Cimenser A. and Mitra P.P.: Studying the Song Development Process. Rationale and Methods. Ann. N.Y. Acad. Sci. 1016: 348-363 (2004)

Derégnaucourt S., Mitra P.P., Fehér O., Maul K.K., Lints T.J. and Tchernichovski O.: Song Development: In Search of the Error-Signal. Ann. N.Y. Acad. Sci. 1016: 364-376 (2004)

Derégnaucourt S. and Guyomarc'h J.-C.: Mating Call Discrimination in Female European (*Coturnix c. coturnix*) and Japanese Quail (*Coturnix c. japonica*) quail populations. Ethology 109: 107-119 (2003)

Derégnaucourt S., Guyomarc'h J.-C. and Aebischer N.J.: Hybridization between European Quail *coturnix coturnix* and Japanese Quail (*Coturnix japonica*). Ardea 90, 1: 15-21 (2002)

Préault M., **Derégnaucourt S.**, Sorci G., Faivre B.: Does beak coloration of male blackbirds play a role in intra and/or intersexual selection?. Behavioural Processes 58: 91-96 (2002)

Derégnaucourt S., Guyomarc'h J.-C., Richard V.: Classification of hybrid crows in quail using artificial neural networks. Behavioural Processes 56: 103-112 (2001)

Guyomarc'h C., Lumineau S., Vivien-Roels B., Richard J.-P. and **Derégnaucourt S.**: Effect of melatonin supplementation on the sexual development in European quail (*Coturnix coturnix*). Behavioural Processes 53: 121-130 (2001)

Updated on 20 mars 2013

Contact

Laboratory of Compared Ethology and Cognition
EA 3456

Université Paris Nanterre

BSL 1er étage
200, avenue de la République
92001 Nanterre Cedex
France

Tel. (33)1.40.97.74.76
Fax. (33)1.40.97.74.74

[Secretary](#)

<https://lecc-eng.parisnanterre.fr/members/sebastien-deregnacourt-384834.kjsp?RH=1222937907380>