

Dr. Uwe Mayer - CURRICULUM VITAE

Current Affiliation:

University of Trento,
Center for Mind/Brain Sciences (CIMEC)
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Personal Information

Date and place of birth: 12 April 1980, Aktobe, Kazakhstan

Nationality: German

Languages: German (fluent), English (fluent), Russian (native)

Research Experience

- 2017– present** **Assistant Professor (Principal Investigator)**
Research and teaching position (tenure-track) at the University of Trento, Italy.
- 2013 – 2017** **Postdoctoral research fellow**
Employed by an ERC advanced grant (*PREMESOR*) to Prof. G. Vallortigara to investigate **neural basis of social behaviour in domestic chicks**, University of Trento, Italy.
- 2012 – 2013** **Postdoctoral research fellow**
German Research Foundation (DFG) funded position in the 'Active Sense' group of Prof. J. Engelmann to investigate the **neural basis of spatial orientation in the weakly electric fish (*Gnathonemus petersii*)**, Bielefeld University, Germany.

Education

- 2019** **Habilitation**
Italian national habilitation (ASN) to Associate Professor in Physiology (05/D1)
- 2009 – 2012** **Dr. rer. nat. (*magna cum laude: 0.9*)**
Doctoral thesis: '**Spatial Orientation and the Avian Hippocampus: Research in Zebra Finches**' in the 'Neuroethology' group of Prof. H.-J. Bischof, Bielefeld University, Germany.
- 2006 – 2008** **M.Sc. (Systems Biology of Brain and Behaviour)**
Bielefeld University, Germany.
- 2003 – 2006** **B.Sc. (Biology)**
Bielefeld University, Germany.
- 2001 – 2002** **Alternative civilian service (*Zivildienst*)**
Von Laer Stiftung, Bielefeld, Germany.
- 1998 – 2001** **Biological Technical Assistant (State-certified BTA)**
CSB, Bielefeld, Germany.

Research interests

- Comparative cognition, evolution and behaviour
- Neural basis of social and spatial cognition
- Avian neurophysiology and comparative neuroanatomy

Current working group

- Uwe Mayer, Principal Investigator
- Dmitry Kobylkov, Post doctoral fellow (co-supervision with Prof. Vallortigara, ERC grant)
- Anastasia Morandi Raikova, Ph.D. Student
- Francesca Protti Sanchez, Ph.D. Student (co-supervision with Dr. Rowland, Max Planck Institute for Chemical Ecology, Jena, Germany)
- Carlos Daniel Corrales Parada, Ph.D. Student (co-supervision with Prof. Chagnaud, University of Graz, Austria)
- Vlad Mardare, Master Student
- Francesca Sallitti, Master Student

Research Methods

- Behavioural measurements and training of animals
- Neuroanatomical and histological preparations
- Brain lesioning and tracing techniques
- Immunohistochemistry, in situ hybridisation, PCR, qPCR, electrophoresis, western blot etc.
- Mapping brain activity on the basis of immediate early gene products
- Multichannel extracellular electrophysiology (*Spikes, LFPs*), in anaesthetised and freely moving domestic chicks
- Mini-scope based calcium imaging in freely moving domestic chicks
- Animal species: zebra finches (*Taeniopygia guttata*), domestic chicks (*Gallus gallus*), quails (*Coturnix japonica*), elephantnose fish (*Gnathonemus petersii*), mice (*Mus musculus*), anole lizards (*Anolis carolinensis*).

Current collaborations

- Dr. Hannah Rowland, Max Planck Institute for Chemical Ecology, Jena, Germany
- Prof. Verner Peter Bingman, Bowling Green State University, USA
- Dr. Barbara Caspers, University of Bielefeld, Germany
- Prof. Hans-Joachim Bischof, University of Bielefeld, Germany
- Prof. Anna Gagliardo, University of Pisa, Italy
- Dr. Peter Korsten, University of Bielefeld, Germany
- Dr. Tim Schmoll, University of Bielefeld, Germany
- Prof. Giorgio Vallortigara, CIMEC, University of Trento, Italy
- Prof. Prof. Toshiya Matsushima, Hokkaido University, Sapporo, Japan

Professional activities

Membership in societies:

- since 2006: German Neuroscience Society (NWG)
- since 2014: International Society for Neuroethology (ISN)
- since 2017: German Zoological Society (DZG)

Editorial activity

- Since 2019: Frontiers in Behavioural Neuroscience: editorial board member in the section Learning and Memory
- Since 2020: Frontier in Physiology: editorial board member in the section in the section Avian Physiology

Peer-Reviewer for:

- Animal Cognition; Scientific Reports; Philosophical Transactions of The Royal Society B Biological Sciences; Neurobiology of Learning and Memory; Neuroscience; Brain Structure and Function; Brain Research; Brain Sciences; Learning & Behavior; iScience; Biochemical and Biophysical Research Communications; Neuroscience Letters; Journal of Physiology Paris; PLoS ONE; Frontiers in Physiology; Frontiers in Behavioural Neuroscience; Symmetry; PeerJ; Laterality; Journal of Experimental Zoology; Proc Natl Acad Sci India Sect B Biol Sci.; Brazilian Journal of Medical and Biological Research.

Selected talks:

- 2021 'Chagnaud Lab.', University of Graz, Austria.
- 2021 'Sound Communication and Behaviour Group', University of Southern Denmark, Odense, Denmark.
- 2019 RIN Conference on Animal Navigation, London, United Kingdom.
- 2018 'TUM School of Life Sciences Weihenstephan', Technical University Munich, Germany.
- 2017 'Prof. Onur Güntürkün Lab', Biopsychology Department, Ruhr University Bochum, Germany.
- 2017 'International Conference of Neuroscience', Akdeniz University, Antalya, Turkey.
- 2017 'Annual Meeting of the German Zoological Society (DZG)', Bielefeld, Germany.
- 2015 'Mini Symposium on Laterality', CIMeC, Rovereto, Italy.
- 2011 'Neuroethology Satellite Symposium at the Meeting of the German Zoological Society (DZG)', Saarbrücken, Germany.

Teaching

Summer semester

- 'Current Issues in Neuroscience: Animal Models' in the master's program 'Cognitive Science'. Co-organiser of the course and leadership of the spatial navigation module (14 frontal lectures).
- Seminar: 'Weekly neuroethology seminar' for master's student (1 lecture per week).

Winter semester

- 'Brain evolution and comparative neuroanatomy' in the master's program 'Cognitive Science'. Development and leadership of the full course (42 frontal lectures).
- 'Scientific communication' course in the master's program 'Cognitive Science'. Co-organiser of the course and leadership of scientific writing module (12 frontal lectures).
- 'Systems physiology' in the master's program at CIBIO, University of Trento. Co-organiser of the course and leadership of the animal physiology module (18 frontal lectures).
- Frontal lectures: 'Achieving Expertise/Introduction to Methods: Animal Cognition and Neuroscience Module' in the doctoral program 'Cognitive and Brain Sciences' (4 lectures).
- Seminar: 'Weekly neuroethology seminar' for master's students (1 lecture per week)

Past teaching:

- 2017-2018 'Conference presentations' course in the doctoral program 'Cognitive and Brain Sciences', University of Trento (12 frontal lectures per year).
- 2017-2018 'How to review an article' course in the doctoral program 'Cognitive and Brain Sciences', University of Trento (6 frontal lectures per year).
- 2016 "Inside the Minds (and Brains) of Other Animals", teaching assistant in the Harvard Summer School, Study Abroad in Trento, Italy (42 hours, frontal lectures and practical).
- 2007-2012: Teaching neuroanatomical and behavioural methods to students, University of Bielefeld, Germany.

- 2009-2011: Assisting in 'Comparative Neuroanatomy' seminars by Prof. H-J. Bischof and Dr. M. Piefke, Bielefeld University, Germany.
- 2008-2010: Assisting in 'Neuro- and Behavioural Biology Course' for undergraduate students in biology, by Prof. H-J. Bischof, Bielefeld University, Germany.

Institutional responsibilities

Leading role:

- 2021-present: **Scientific advisor** of the shared laboratories at the Animal Cognition and Neuroscience division at the Center for Mind/Brain Science, University of Trento, Italy.

PhD school:

- 2019-present: Member of the Executive Committee, PhD school, CIMEC, University of Trento, Italy
- 2017-present: Member of the PhD school 'Cognitive and Brain Sciences', CIMEC, University of Trento, Italy

PhD evaluation committees:

- 2019: Member of the Selection Committee for PhD School Admission, CIMEC, University of Trento, Italy
- 2019: Member of the End Year Evaluation Committee, PhD school, CIMEC, University of Trento, Italy
- 2018: Member of the End Year Evaluation Committee, PhD school, CIMEC, University of Trento, Italy

Master's Thesis Defence committees:

- 2021 Member of Master's Defence Committee (14 July 2021), CIMEC, University of Trento
- 2020 Member of Master's Defence Committee (10 Dec 2020), CIMEC, University of Trento
- 2019 Member of Master's Defence Committee (9 Oct 2019), CIMEC, University of Trento
- 2018 Member of Master's Defence Committee (9 Oct 2018), CIMEC, University of Trento
- 2018 Member of Master's Defence Committee (10 July 2018), CIMEC, University of Trento
- 2017 Member of Master's Defence Committee (12 Oct 2018), CIMEC, University of Trento
- 2017 Member of Master's Defence Committee (12 Oct 2017), CIMEC, University of Trento

Poster evaluation committees:

- 2017 Member of the Poster Evaluation Committee DS DAY, CIMEC, University of Trento, Italy

Supervision and mentoring

Post docs:

- **Dr. Anastasia Morandi-Raikova** (Dec 2021 - present), main advisor, University of Trento, Italy
- **Dr. Dmitry Kobylkov** (Apr 2020 - present), supervision of the electrophysiological projects in collaboration with Prof. Vallortigara, University of Trento, Italy.
- **Dr. Lori Schweikert** (Oct 2018 - Dec 2018), visiting post doc from the group of Dr. Rowland, Max Planck Institute for Chemical Ecology, Jena, Germany.
- **Dr. Fabio Miazzi** (Oct 2018 - Dec 2018), visiting post doc from the group of Dr. Rowland, Max Planck Institute for Chemical Ecology, Jena, Germany.

Phd students:

- **Carlos Daniel Corrales Parada** (2021 - ongoing): 'Neural basis of social communication in Catfish (*Synadontis*)' (Co-Supervisor with Prof. Dr. Boris Chagnaud, University of Graz, Austria).
- **Francesca Protti Sanchez** (2020 - ongoing): 'A bird's eye view of warning signals' (Co-Supervisor with Dr. Hannah Rowland, Max Planck Institute for Chemical Ecology, Jena, Germany).
- **Dr. Anastasia Morandi-Raikova** (PhD 2021): 'Hippocampal lateralisation during processing of spatial and social information in domestic chicks (*Gallus gallus*)' (Supervisor, University of Trento, Italy).

- **Dr. Sarah Golücke** (PhD 2018): 'The perfume of zebra finches. The use of odours and the mechanism of kin recognition.', (Supervision of the neurobiological parts in a collaboration with Prof. Barbara Caspers, University of Bielefeld, Germany).
- **Dr. Rachel Bhushan** (PhD 2018): 'Spatial representation from birth to old age: Insights from comparative neurobiology and behavioural genomics.' (Supervision of the neurobiological parts in a collaboration with Dr. Sang Ah Lee, University of Trento, Italy).
- **Dr. Elena Lorenzi** (PhD 2017, cum laude): 'Social predispositions and underlying neural mechanisms in chicks (*Gallus gallus domesticus*)' (Supervision with Prof. Vallortigara, University of Trento, Italy)

Master thesis students:

- **Francesca Pia Sellitti** (Master thesis: ongoing): "Time-course of c-Fos expression in domestic chicks", University of Trento, Italy
- **Vlad Mardare** (Master thesis: ongoing): "Electrophysiological investigation of the basic visual responses of the visual Wulst in domestic chicks", University of Trento, Italy
- **Aleksandra Simdianova** (Master thesis 2021): 'Hippocampal activation during egocentric orientation in domestic chicks', University of Trento, Italy
- **Carlos Daniel Corrales Parada** (Master thesis 2019): 'Neural basis of individual recognition in domestic chicks', University of Trento, Italy
- **Lorenzo Grilli** (Master thesis 2018): 'Visual response properties in the telecephalon of domestic chicks: searching for face selective neurons' (Supervision with Prof. Vallortigara, University of Trento, Italy)
- **Sara Dorigatti** (Master thesis 2016): 'Activation of septal and amygdaloid nuclei in response to the first exposure to an alive conspecific in visually naive domestic chicks (*Gallus gallus*)' (Supervision with Prof. Vallortigara, University of Trento, Italy)
- **Francesca Morbioli** (Master thesis 2015): 'Brain activity in naïve chicks exposed to alive motion of a conspecific: an immediate early genes (IEG's) study' (Supervision with Prof. Vallortigara, University of Trento, Italy)
- **Eliana Boschetti** (Master Thesis 2015): 'Neuronal basis of numerical cognition in the domestic chick (*Gallus gallus*)' (Supervision with Prof. Chiandetti, University of Trieste, Italy)

Bachelor students:

- **Francesca Fabris** (Bachelor 2021): 'Neuroanatomical investigation of brain hemispheric lateralisation in domestic chicks', University of Trento, Italy
- **Elena Pedaci** (Bachelor 2020): 'Hippocampal activation of immediate early genes in domestic chicks', University of Trento, Italy.
- **Marlen Gironimi** (Bachelor 2019): 'Hippocampal activation of immediate early genes during novel environment exploration in domestic chicks', University of Trento, Italy
- **Krubeal Danieli** (Bachelor 2018): 'Neuroanatomical lateralisation of the visual system in domestic chicks (*Gallus gallus*)', University of Trento, Italy

Other internship students and research assistants:

- **Marta Rodriguez Aramendia** (Oct 2019 - Sept 2020, intern from University of Florenz): 'Hippocampal activation in domestic chicks during active and passive explorations of a novel environment', University of Trento, Italy
- **Sofija Perovic** (March-May 2020, intern from University of Padova): 'Neural basis of reversal learning in domestic chicks', University of Trento, Italy.
- **Giacomo Costalunga** (Sept 2018 - Aug 2019, Research Assistant): 'Light-incubation effects on lateralization of single unit responses in the visual Wulst of domestic chick', University of Trento, Italy
- **Leonard Valentin Böger** (March-June 2019, Erasmus intern from University of Bielefeld): 'Neural basis of individual recognition in domestic chicks', University of Trento, Italy

- **Rukiye Aydin** (Aug 2018 - Feb 2019, intern): 'Neuroanatomical investigation of brain hemispheric lateralisation in domestic chicks', University of Trento, Italy
- **Elena Eccher** (Jan-Aug 2018, intern): 'Investigation of the hippocampal functions in domestic chicks by using immediate early genes products to map neuronal activity', University of Trento, Italy

Bibliometrics

Google Scholar H index: 14, total citations: 689; Scopus H index: 13, total citations 485. Overall I have published 26 peer-reviewed articles (21 research articles, 4 literature reviews and 1 book chapter for Academic Press, Elsevier). Nine of these articles are as first author, 4 as a shared first author, 6 as a last (senior) author and 1 as a last (shared senior) author.

Publications (peer-reviewed journals)

26. Costalunga G, Kobylkov D, Rosa-Salva O, Vallortigara G, **Mayer U** (2021). Light-incubation effects on lateralization of single unit responses in the visual Wulst of domestic chicks. *Brain Structure and Function* DOI:10.1007/s00429-021-02259-y
25. Morandi-Raikova A, Danieli K, Lorenzi E, Rosa-Salva O, **Mayer U**[#] (2021). Anatomical asymmetries in the tectofugal pathway of dark-incubated domestic chicks: rightwards lateralization of parvalbumin neurons in the entopallium. *Laterality* 26:1-2, 163-185. DOI: 10.1080/1357650X.2021.1873357 ^{#Corresponding author}
24. Rosa-Salva O, **Mayer U**, Versace E, Hebert M, Lemaire BS, Vallortigara G (2021). Sensitive periods for social development: interactions between innate and learned mechanism (*Gallus gallus*). *Cognition*. DOI: 10.1016/j.cognition.2020.104552
23. Morandi-Raikova A, **Mayer U**[#] (2021). Selective response of the right hippocampus during navigation by spatial cues in domestic chicks (*Gallus gallus*). *Neurobiology of Learning and Memory* 177:107344: DOI: 10.1016/j.nlm.2020.107344 ^{#Corresponding author}
22. Corrales-Parada CD, Morandi-Raikova A, Rosa-Salva O, **Mayer U**[#] (2021). Neural basis of familiar conspecific recognition in domestic chicks (*Gallus gallus*). *Behavioural Brain Research* 397, 112927. DOI: 10.1016/j.bbr.2020.112927 ^{#Corresponding author}
21. Morandi-Raikova A, **Mayer U**[#] (2020). The effect of monocular occlusion on hippocampal c-Fos expression in domestic chicks (*Gallus gallus*). *Scientific Reports* 10:7205: DOI: 10.1038/s41598-020-64224-9 ^{#Corresponding author}
20. Morandi-Raikova A, Vallortigara G, **Mayer U**[#] (2020). The use of spatial and local cues for orientation in domestic chicks (*Gallus gallus*). *Animal Cognition* 23, 367-387. DOI:10.1007/s10071-019-01342-6 ^{#Corresponding author}
19. Rosa-Salva O*, **Mayer U**^{*}, Vallortigara G (2019). Inborn preference for the head region of different species in visually naive domestic chicks. *PLoS ONE* 14(9): e0222079 ^{*Equal contribution}
18. **Mayer U**[#], Rosa-Salva O, Loveland J, Vallortigara G (2019). Selective response of the nucleus taeniae of the amygdala to a naturalistic social stimulus in visually naive domestic chicks (*Gallus gallus*). *Scientific Reports* 9:9849: DOI: 10.1038/s41598-019-46322-5 ^{#Corresponding author}

17. Lorenzi E, **Mayer U**, Rosa-Salva O, Morandi-Raikova A, Vallortigara G (2019). Spontaneous and light-induced lateralization of immediate early genes expression in domestic chicks. *Behavioural Brain Research* 368 DOI: 10.1016/j.bbr.2019.111905
16. Golücke S, Bischof HJ, Engelmann J, Caspers BA*, **Mayer U***# (2019). Social odour activates the hippocampal formation in zebra finches (*Taeniopygia guttata*). *Behavioural Brain Research*. 364: 41-49. *Shared senior authorship; #Corresponding author
15. Krause ET*, Bischof HJ*, Engel K*, Golücke S*, Maraci Ö*, **Mayer U***, Sauer J*, Caspers BA* (2018). Olfaction in the Zebra Finch (*Taeniopygia guttata*): What is known and further perspectives. In *Advances of the Study of Behavior* Volume 50. (ed. Naguib M, Barrett L, Healy SD, Podos J, Simmons LW, Zuk M), pp 37-85, Academic Press. *Equal contribution
14. **Mayer U**#, Bhushan R, Vallortigara G, Lee SA (2018). Representation of environmental shape in the hippocampal formation of domestic chicks (*Gallus gallus*). *Brain Structure and Function* Brain Structure and Function. 223: 941-953. #Corresponding author
13. Lorenzi E, **Mayer U**, Rosa Salva O, Vallortigara G (2017). Dynamic features of animate motion activate septal and preoptic areas in visually naïve chicks (*Gallus gallus*). *Neuroscience* 354:54-68.
12. Di Giorgio E*, Loveland JL*, **Mayer U***, Rosa-Salva O*, Versace E*, Vallortigara G (2017). Filial responses as predisposed and learned preferences: Early attachment in chicks and babies. *Behavioural Brain Research* 325:90-104. *Equal contribution
11. **Mayer U**#, Rosa Salva O, Morbioli F, Vallortigara G (2017). The motion of a living conspecific activates septal and preoptic areas in naive domestic chicks (*Gallus gallus*). *European Journal of Neuroscience* 45(3):423-432. #Corresponding author
10. **Mayer U**#, Rosa Salva O, Vallortigara G (2017). First exposure to an alive conspecific activates septal and amygdaloid nuclei in visually-naïve domestic chicks (*Gallus gallus*). *Behavioural Brain Research* 317:71-81. #Corresponding author
09. **Mayer U**#, Rosa Salva O, Lorenzi E, Vallortigara G (2016). Social predisposition dependent neuronal activity in the intermediate medial mesopallium of domestic chicks (*Gallus gallus domesticus*). *Behavioural Brain Research* 310: 93-102. #Corresponding author
08. Bischof HJ*, Eckmeier D*, Keary N*, Löwel S*, **Mayer U***, Michael N* (2016). Multiple Visual Field Representations in the Visual Wulst of a Laterally Eyed Bird, the Zebra Finch (*Taeniopygia guttata*). *PLoS ONE* 11(5): e0154927. *Equal contribution
07. **Mayer U**#, Pecchia T, Bingman VP, Flore M, Vallortigara G (2016). Hippocampus and medial striatum dissociation during goal navigation by geometry or features in the domestic chick: an immediate early gene study. *Hippocampus* 26(1):27-40. #Corresponding author
06. Rosa Salva O, **Mayer U**, Vallortigara G (2015). Roots of a social brain: developmental models of emerging animacy-detection mechanisms. *Neuroscience & Biobehavioral Reviews* 50:150-68.
05. **Mayer U**#, Watanabe S, Bischof HJ (2013). Spatial memory and the avian hippocampus: research in zebra finches. *Journal of Physiology - Paris* 107 (1-2): 2-12. #Corresponding author

04. **Mayer U**[#], Bischof HJ (2012). Brain activation pattern depends on the strategy chosen by zebra finches to solve an orientation task. *The Journal of Experimental Biology* 215: 426-434. [#Corresponding author](#)

03. Watanabe S, **Mayer U**, Bischof HJ (2011). Visual wulst analyses "where" and entopallium analyses "what" in zebra finch visual system. *Behavioural Brain Research* 222(1):51-56.

02. **Mayer U**[#], Watanabe S, Bischof HJ (2010). Hippocampal activation of immediate early genes Zenk and c-Fos in zebra finches (*Taeniopygia guttata*) during learning and recall of a spatial memory task. *Neurobiology of Learning and Memory* 93(3):322-9. [#Corresponding author](#)

01. Watanabe S, **Mayer U**, Bischof HJ (2008). Pattern discrimination is affected by entopallial but not by hippocampal lesions in zebra finches. *Behavioural Brain Research* 190: 201-205.

Poster presentations at international conferences

Poster prizes:

- 2020: Morandi Raikova A, **Mayer U**. (2020) "Selective activation of the right hippocampus during navigation by spatial cues in domestic chicks (*Gallus gallus*).", **Prize for the best poster** at the DS DAY 2020, Rovereto, Italy.
- 2019: Morandi Raikova A, **Mayer U**. (2019) 'The effect of eye occlusion on the hippocampal representation of environmental novelty in domestic chicks (*Gallus gallus*).', **Prize for the best poster** at the DS DAY 2019, Rovereto, Italy.
- 2012: **Mayer U**, Bischof (2012). 'Brain Activation Pattern Depending on the Strategy Chosen by Zebra Finches to Solve an Orientation Task' **Prize for the best poster** in the division of neurobiology at the 104th annual meeting of the German Zoological Society (DZG), Saarbrücken 2011.

More than **30** poster presentations at scientific conferences in **Italy, Germany, United Kingdom, Austria, Netherlands, Japan, Turkey, Uruguay**. To see the full list click [here](#)