

ELISA FRASNELLI

Curriculum Vitae

I am a physicist by training and a neuroethologist by research. I am interested in the study of animal behaviour and cognition, particularly in invertebrates, from a mechanistic and evolutionary perspective. A major focus of my research has been to examine the evolutionary basis of behavioural and brain lateralization using a comparative approach. For example, using different species of bees as model systems, I have investigated the relationship between lateralization and social interactions among individuals. I have also studied navigation in bees with a specific focus on the use of landmarks in navigation at nest and feeder locations. I have recently developed an interest and start working on sentience and consciousness in invertebrates, bees in particular.

I am also trying to push my research from pure to applied by investigating the effects of environmental stressors on pollinators cognition and health, with a specific focus on climate change. Another topic I am approaching is the link between microbiota, locomotion and cognitive abilities in bees.

PERSONAL INFORMATION

- **Family and First Name:** Frasnelli Elisa
- **Researcher unique identifier:** 0000-0003-0493-0048
- **Nationality:** Italian
- **Date of Birth:** 22.10.1982
- **Email:** elisa.frasnelli@unitn.it; elisa.frasnelli@gmail.com
- **Office Phone Number:** +39 0464-808744
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EDUCATION

2007-2010	PhD in Cognitive and Brain Sciences , University of Trento, IT
2004-2006	MSc in Physics and Biomedical Technologies , University of Trento, IT
2001-2004	BSc in Applied Physics , University of Trento, IT

CURRENT AND PREVIOUS RESEARCH POSITIONS

<i>Since 29/10/2021</i>	RTD-b (Assistant Professor) , Center for Mind/Brain Sciences (CIMEC), University of Trento, IT
<i>1/09/2019-12/11/2021</i>	Senior Lecturer , School of Life Sciences, University of Lincoln, UK
<i>16/10/2017-31/08/2019</i>	Lecturer (Lecturer A) , School of Life Sciences, University of Lincoln, UK
<i>26/03/2017-5/10/2017</i>	Assistant Professor , School for Advance Studies, The Graduate University for Advance Sciences SOKENDAI, JP
<i>1/02/2015-7/03/2017</i>	Research Fellow , Centre for Research in Animal Behaviour (CRAB), Department of Psychology, University of Exeter, UK
<i>1/02/2013-31/01/2015</i>	Research Fellow , Centre for Mind and Brain Sciences (CIMEC), University of Trento, IT
<i>24/01/2011-23/01/2013</i>	Postdoctoral Research Fellow , Konrad Lorenz Institute for Evolution and Cognition Research, Altenberg, AT

GRANTS

- 2023 PI of the project “LATERALITY DISTRIBUTION across the two SEXes (LADISEX): Comparative data for theoretical models”, **PRIN 2022** (€ 230,000), identification code 202222EJZE, CUP E53D23008620001
- PI of the project “IBC: Impollinatori, Biodiversità e Cambiamento climatico”, **5 x 1000 Università di Trento** (€ 20,000) (with Albrecht Haase as CO-I)

FELLOWSHIPS

- 26/03-5/10/2017 **Awarded JSPS (Japan Society for the Promotion of Science) London Short Term Fellowship 2016** (£ 28,500), School for Advance Studies, The Graduate University for Advance Sciences SOKENDAI, JP
- 24/01/2011-23/01/2013 **Awarded Postdoctoral Research Fellowship** (€ 79,200), Konrad Lorenz Institute for Evolution and Cognition Research, Altenberg, AT

SCHOLARSHIPS

- 2007-2010 **Doctoral Research Scholarship**, University of Trento, IT (€ 41,000)
- 2005-2006 **MSc Scholarship for excellence**, University of Trento, IT (€ 5,000)
- 2001-2004 **BSc Scholarship for excellence**, University of Trento, IT (€ 7,500)

AWARDS

- 2018 **Panel score 'A'** at the **ERC Starting grant call**
- 2016 **Travel & Accommodation Funding** for North Sea Laterality Conference, University of Groningen, NL (€ 500)
- 2016 **Above & Beyond Award**, University of Exeter, UK (£ 500)
- 2010 **Travel & Research Grant** for field work in Australia, University of Trento, IT (€ 2,000)
- 2009 **Travel & Research Grant** to work at the University of New England, Australia, University of Trento, IT (€ 2,500)
- 2007 **J-1 Exchange Visitor Program**, University of California, Irvine, US (\$ 8,400)
- 2006 **J-1 Exchange Visitor Program**, University of California, Irvine, US (\$ 11,200)
- 2006 **Travel & Research Grant** to work at the Laboratory of Fluorescence Dynamics, University of California in Irvine, USA, Trentino University Foundation, IT (€ 8,000)
- Since 2008 **Travel & Accommodation Funding** for international conferences and workshops

TEACHING ACTIVITIES

- Since 2022 **Assistant Professor**, *Invertebrate Neuroscience, Mathematical Basics for Cognitive Science, Research Design*, University of Trento, IT, MSc
- 2019 **Lecturer**, *Overseas Field Course in Ecuador*, University of Lincoln, UK. 3rd year undergraduates
- 2017-2021 **Lecturer**, *Introduction to Animal Behaviour and Welfare*, University of Lincoln, UK. 1st year undergraduates
- Lecturer and Module Leader**, *Animal Behaviour*, University of Lincoln, UK. 2nd year

undergraduates

Lecturer, *Vertebrate Physiology*, University of Lincoln, UK. 1st year undergraduates

Lecturer, *Animal Cognition*, University of Lincoln, UK. 3rd year undergraduates

Academic Tutor, *Introduction to Research Methods*, University of Lincoln, UK. 1st, 2nd and 3rd year undergraduates

2016-2017 **Academic Tutor**, *Introduction to Research Methods*, University of Exeter, UK. 1st year undergraduates

2014 **Guest Lecturer**, *Foundations of Brain Imaging: MRI, EEG, MEG and TMS fundamentals*, University of Trento, IT. International Master in Cognitive Neuroscience

2013 **Lecturer**, *Principles of Neuroscience and Their Laboratory Applications*, University of Trento, IT. 3rd year undergraduates

2012 **Guest Lecturer**, *Neurobiology*, Vienna Summer Program, Wake Forest University, US. 3rd-year undergraduates

SUPERVISION

<i>Since 2022</i>	Supervision of a PhD Student (Elisa Pasquini) , <i>CIMeC</i> , University of Trento, IT
<i>Since 2021</i>	2nd Supervision of a PhD Student (Kelsey Felder) , University of Lincoln, UK
<i>2020-2023</i>	3rd Supervision of a PhD Student (Tim Simon) , University of Lincoln, UK
<i>2022-2023</i>	Supervision of a Master Thesis (Davide Liga) , <i>MSc in Evolution of Animal Behaviour</i> , University of Turin and Trento, IT
<i>2019-2023</i>	2nd Supervision of 1 MRes Student (Kerry Hill) , University of Lincoln, UK
<i>2019-2022</i>	2nd Supervision of 1 PhD Student (Jacqueline Braggs) , University of Lincoln, UK
<i>2020-2021</i>	Supervision of 2 Master Thesis (Amelia Duncan and Kimberley Charlton) , <i>MSc in Clinical Animal Behaviour</i> , University of Lincoln, UK Supervision of 7 Undergraduate Theses , <i>BSc in Animal Behaviour and Welfare</i> , University of Lincoln, UK
<i>2019-2020</i>	Supervision of a MBio Student (Lilly Statham) , <i>MBio in Zoology</i> , University of Lincoln, UK Supervision of 8 Undergraduate Theses , <i>BSc in Animal Behaviour and Welfare</i> , University of Lincoln, UK
<i>2018-2019</i>	Supervision of a Master Thesis (Lydia Waite) , <i>MSc in Clinical Animal Behaviour</i> , University of Lincoln, UK Supervision of 7 Undergraduate Theses , <i>BSc in Animal Behaviour and Welfare</i> , University of Lincoln, UK
<i>2017-2018</i>	Supervision of a Master Thesis (Maria Dimitriou) , <i>MSc in Clinical Animal Behaviour</i> , University of Lincoln, UK Supervision of 5 Undergraduate Theses , <i>BSc in Animal Behaviour and Welfare</i> , University of Lincoln, UK
<i>2015-2016</i>	Supervision of 2 Master Students (Ben Scales) , <i>MSc in Animal Behaviour</i> , University of Exeter, UK
<i>2014-2015</i>	Supervision of a Master Student (Daniela Tosoni) , <i>Master in Cognitive Science</i> , University of Trento, IT
<i>2013-2014</i>	Supervision of a Master Student (Andrea Vitale) , <i>International Master in Cognitive Neuroscience</i> , University of Trento, IT
<i>2009-2010</i>	Supervision of 3 Undergraduates , <i>BSc in Cognitive Psychology</i> , University of Trento, IT

ADMINISTRATION AND CONFERENCE ORGANISATION EXPERIENCE

2023	Scientific Organiser, 2023 ASAB Winter meeting , Edinburgh, UK Scientific Organiser, 2023 CogEvo workshop , University of Trento, IT
Since 2021	Delegate for Internationalisation , CIMeC, University of Trento, IT
2020	Scientific Organiser, 2020 Virtual ASAB Winter meeting , online
2019-2021	Deputy Program Lead , BSc (Hons) Animal Behaviour and Welfare, School of Life Sciences, University of Lincoln, UK
2018-2021	Schools Liaison Lead , School of Life Sciences, University of Lincoln, UK
2018-2019	Deputy Research Lead , Animal Behaviour, Cognition and Welfare Research Group, School of Life Sciences, University of Lincoln, UK
2017-2021	Student Engagement Lead , School of Life Sciences, University of Lincoln, UK
2016	Organiser of the Symposium “Cerebral and motor lateralization” , 16th congress of the International Society for Behavioural Ecology, University of Exeter, UK
2015-2016	Coordinator of Seminar Series , CRAB, University of Exeter, UK
2015-2016	Coordinator of Group Meetings , CRAB, University of Exeter, UK

GRANT REFEREEING

Horizon (EU), Eva Crane Trust (UK); ASAB (UK), BBSRC (UK); Fondation Maison des Sciences de l'Homme (FR); JSPS (JP); Polish Academy of Sciences (PL); Dutch Research Council NWO (NL); Alexander von Humboldt Foundation (GE); Israel Science Foundation (IL)

JOURNAL REFEREEING

Animal Behaviour; Animal Cognition; Austral Entomology; Behaviour; Behavioural Brain Research; Biology Letters; Biology Open; Brain and Cognition; Ecological Modelling; Ecology and Evolution; Ethology; European Journal of Neuroscience; Invertebrate Biology; In&Vertebrates, Journal of Comparative Psychology; Journal of Evolutionary Biology; Laterality; Learning & Behavior; Molecular Biology; Neuroscience; Neuroscience & Biobehavioral Reviews; PeerJ; Physiology & Behavior; PLOS ONE, Royal Society Open Science; Scientific Reports; Symmetry

EDITORIAL BOARD MEMBER

From 2024	<i>Animal Behaviour</i> (Consulting Editor)
2021-2023	<i>Frontiers in Psychology</i> (Review Editor on the Editorial Board of Cognition) <i>Symmetry</i> (Editorial Board of Biology and Symmetry) <i>Frontiers in Psychology</i> (Review Editor on the Editorial Board of Comparative Psychology)
From 2020	<i>Laterality: Asymmetries of Body, Brain, and Cognition</i> (Consulting Editor) <i>Frontiers in Behavioral Neuroscience</i> (Review Editor on the Editorial Board of Learning and Memory)
From 2016	<i>Scientific Reports – Nature</i> (Neuroscience Panel)

BOARD MEMBER

From 2021	Founding Member of the Supporting Outstanding Female Academics and Researchers (SOFAR) Network, UK
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2020-2022 Council Member of Association for the Study of Animal Behaviour (ASAB), UK

EXTERNAL AND INTERNAL EXAMINER

2022 **1 PhD candidate**, PhD in Neuroscience, University of Toulouse 3, FR
 2021 **1 MRes candidate**, International Master's Degree in Neuroscience, University of Trieste, IT
2 MPhil candidate, University of Lincoln, UK
 2020 **2 MPhil candidates**, University of Lincoln, UK
 2019 **1 MRes candidate**, University of Lincoln, UK
 2018 **2 PhD candidates**, PhD in Cognitive and Brain Sciences, University of Trento, IT

PUBLIC ENGAGEMENT

May 2023 Co-organiser of ‘Giovedì dell’etologia’ at Museo Civico di Rovereto, IT
 ‘I gatti lo sanno’, dialog with Giulia Bignami on her book published for Giunti and inspired by research on animal behaviour and cognition conducted at CIMeC, Museo Civico di Rovereto, IT

April 2022 ‘Tu chiamale se vuoi emozioni’, *Interview with RAI Radio3 Scienza* (<https://www.raiplaysound.it/audio/2022/04/Radio3-Scienza-del-01042022-8757834a-c013-4ff4-bb11-7cac5915befb.html>)

April 2021 ‘Dogs pawedness’, *Interviews with BBC radio Channels: BERKSHIRE Live; DEVON Live; HUMBERSIDE Live; WILTSHIRE Live; 3CR Live; TEES Live; LINCOLNSHIRE Live; YORK Live*
 ‘Dogs more likely than humans to be left-handed, study suggests’, featuring Laverack et al.’s study, *The Telegraph* (<https://www.telegraph.co.uk/news/2021/04/06/dogs-likely-humans-left-handed-study-suggests/>)
 ‘How dogs are more likely to be southpaws than we are: A third of pooches favour their left paw when reaching for food, study shows’, featuring Laverack et al.’s study, *Mail Online* (<https://www.dailymail.co.uk/news/article-9443247/A-pooches-favour-left-paw-reaching-food-study-shows.html>)
 ‘Dogs more likely to be right-handed, study finds’, featuring Laverack et al.’s study, *Interview with The Times* (<https://www.thetimes.co.uk/article/dogs-more-likely-to-be-right-handed-study-finds-f3h15lkl?shareToken=353941117c720240de9dd67705528985>)
 Interview with TV Asahi, Japan about Laverack et al.’s study (https://news.tv-asahi.co.jp/news_international/articles/000212672.html) and <https://www.youtube.com/watch?v=BFRnD-aw8oU>)

March 2021 ‘Climate change: The effect on bees and other species’, *Talk at the British Science Week*, University of Lincoln, UK

2020-21 ‘Bring Out the Bees’, *Online Photo Exhibition*

Nov 2019 ‘Climate change: The effect on bees and other species’, *Talk at the Climate Change Action Day*, University of Lincoln, UK

Oct 2019 ‘Bees on Campus’, *Talk at the Lincolnshire Beekeepers Association Autumn Event*, University of Lincoln, UK

Feb 2019 ‘Bees: Not simply pollinators’, *Interview with Estates*, University of Lincoln, UK

Oct 2014 ‘New research on the development of new-borns’ brain’, *Interview with Rai Radio 1* (regional radio station), *Rai 3* (regional TV station), and *L’Adige* (regional newspaper)

- June 2014* ‘Tocco, sento, parlo: la comunicazione sociale nelle api’ (Touch, feel, talk: Social communication in bees), *Science & Society Symposium*, Stazione Zoologica ‘Anton Dohrn’, Napoli, IT
- May 2011* ‘A fellow’s perspective’, *20th Anniversary of the Konrad Lorenz Institute for Evolution and Cognition Research*, Palais Daun-Kinsky, Vienna, AT

INVITED TALKS

- June 2023* Invited Speaker, *PhD Summer School of Heidelberg University*, Molveno (IT)
- June 2022* Invited Speaker, *Symmetry Webinar*, Online
- June 2021* Invited Speaker, *Laterality Friday Seminar Series*, Online
- Jan 2021* Invited Speaker, *Doctoral Student Day 2021*, Online
- June 2020* Invited Speaker, *Animal Cognition Conference*, Online
- Dec 2019* Invited Speaker, *Queen Mary University of London*, London, UK
- Nov 2018* Invited Speaker, *Research Center on Animal Cognition*, CNRS, Toulouse, FR
- Nov 2015* Invited Speaker, *Workshop on Hemispheric Asymmetries*, HWK, Delmenhorst, DE
- Nov 2015* Invited Speaker, *Seminar series for the Evolution, Behaviour and Environment group (EBE)*, University of Sussex, UK
- June 2014* Invited Speaker for Public Engagement, *Science & Society Symposium*, Stazione Zoologica ‘Anton Dohrn’, Napoli, IT
- Aug 2013* Invited Speaker, *V Congress Italian Society for Evolutionary Biology*, Trento, IT
- May 2013* Invited Speaker, *Seminar*, Stazione Zoologica ‘Anton Dohrn’, Napoli, IT
- Sept 2012* Invited Speaker, *X East European Conference of the International Society for Invertebrate Neurobiology*, Moscow, RU
- Nov 2011* Invited Speaker, *Departmental Seminar*, Department of Biology, McGill University, Montreal, CA
- Oct 2011* Invited Speaker, *Departmental Seminar*, Department of Psychology, Brooklyn College, New York, US
- Apr 2009* Invited Speaker, *Mandyam Srinivasan Lab*, Queensland Brain Institute, Brisbane, AU
- Jan 2009* Invited Speaker, *Onur Güntürkün Lab*, Institute for Cognitive Neuroscience, Ruhr-University Bochum, DE

MEMBERSHIP OF PROFESSIONAL OR TECHNICAL ASSOCIATIONS

- 2020-2022* Council Member of Association for the Study of Animal Behaviour (ASAB), UK
- From 2016* International Society for Neuroethology (ISN)
- From 2015* Association for the Study of Animal Behaviour (ASAB), UK
- 2013-2015* NIDA (Non-Invasive tools for early Detection of Autism spectrum disorders), IT

COLLABORATIONS

- Since 2018* **Prof Tecumseh Fitch**, University of Vienna, AT and **Prof Barry C Smith**, University of London, UK
Topic: Olfactory discrimination of grape varieties by rats
- Since 2015* **Dr Natalie Hampel de Ibarra**, University of Exeter, UK and **Prof Thomas Collett**, University of Sussex, UK
Topic: Learning flights in bumblebees

2013-2019	Graziano Fiorito's Lab , Stazione Zoologica 'Anton Dohrn', Napoli, IT <i>Topic: Brain and behavioural lateralization in octopus <i>O. vulgaris</i></i>
2017-2018	Dr Finlay Stewart , The Graduate University for Advance Sciences SOKENDAI, Hayama, JP <i>Topic: Virtual reality to investigate visual cues in bees</i>
2011-2012	Wolf Science Center , Vienna, AT <i>Topic: Paw preference in wolves and dogs</i>
2011-2012	Prof Zhanna Reznikova , Institute of Systematics and Ecology of Animals, Siberian Branch RAS, Novosibirsk, RU <i>Topic: Lateralization in antennal communication in ants</i>
Since 2009	Prof Lesley J Rogers , Centre for Neuroscience and Animal Behaviour, University of New England, AU <i>Topic: Lateralized behaviour in several species of bees</i>

PEER-REVIEWED PUBLICATIONS

Journal Articles and Book Chapters

1. **Elisa Frasnelli**, & Giorgio Vallortigara. Other Species. In: *Cerebral Asymmetries* in Corballis and Papagno Eds. "Cerebral Asymmetries", Elsevier. *Under review*.
2. Davide Liga, Gionata Stancher, & **Elisa Frasnelli** (2024). Visuo-motor lateralization in *Apis mellifera*: flight speed differences in foraging choices. *Scientific Reports* 14: 660 (<https://doi.org/10.1038/s41598-023-51141-w>)
3. Tom S Collett, Théo Robert, **Elisa Frasnelli**, et al. (2023). How bumblebees coordinate path integration and body orientation at the start of their first learning flight. *Journal of Experimental Biology*, 226 (8): jeb245271 (<https://doi.org/10.1242/jeb.245271>)
4. Tim Simon, Kun Guo, **Elisa Frasnelli**, et al. (2022). Testing of behavioural asymmetries as markers for brain lateralization of emotional states in pet dogs: A critical review. *Neuroscience and Biobehavioral Reviews* 143: 104950 (<https://doi.org/10.1016/j.neubiorev.2022.104950>)
5. Kimberley Charlton, & **Elisa Frasnelli** (2022). Does owner handedness influence paw preference in dogs? *Animal Cognition* (<https://doi.org/10.1007/s10071-022-01673-x>)
6. Amelia Duncan, Tim Simon, & **Elisa Frasnelli** (2022). Investigating the influence of neuter status on paw preference in dogs and cats. *Laterality* (<https://doi.org/10.1080/1357650X.2022.2086563>)
7. Tim Simon, **Elisa Frasnelli**, et al. (2022). Is There an Association between Paw Preference and Emotionality in Pet Dogs? *Animals* 12: 1153. (<https://doi.org/10.3390/ani12091153>)
8. **Elisa Frasnelli** (2021). Evolution and function of neurocognitive systems in non-human animals. *Scientific Reports* 11: 23487 (<https://doi.org/10.1038/s41598-021-02736-8>)
9. Elisa Di Giorgio, Orsola Rosa-Salva, **Elisa Frasnelli**, et al. (2021). Abnormal visual attention to simple social stimuli in 4-month-old infants at high risk for Autism. *Scientific Reports* 11: 15785 (<https://doi.org/10.1038/s41598-021-95418-4>)
10. Kirsty Laverack, Thomas Pike, Jonathan Cooper, & **Elisa Frasnelli** (2021). The effect of sex and age on paw use within a large sample of dogs (*Canis familiaris*). *Applied Animal Behaviour Science* 238: 105298 (<https://doi.org/10.1016/j.applanim.2021.105298>)
11. **Elisa Frasnelli** (2021). Looking at lateralization as a dynamic and plastic feature of nervous systems. *Laterality* 26 (3): 323-326 (doi:10.1080/1357650X.2021.1876083)
12. **Elisa Frasnelli**, et al. (2021). Small and large bumblebees invest differently when learning about flowers. *Current Biology* 31 (5): 1058-1064 (<https://doi.org/10.1016/j.cub.2020.11.062>)
13. Lydia Waite, & **Elisa Frasnelli** (2021). Visuo-motor biases in buff-tailed bumblebees (*Bombus terrestris*). *Laterality* 26: 1-2, 55-70 (doi:10.1080/1357650X.2020.1826503)

14. Mark A. Whiteside, Mackenzie M. Bess, **Elisa Frasnelli**, et al. (2020). No evidence that footedness in pheasants influences cognitive performance in tasks assessing colour discrimination and spatial ability. *Learning & Behavior* 1-12 (<https://doi.org/10.3758/s13420-019-00402-8>)
15. **Elisa Frasnelli**, et al. (2019). Visual lateralization in the cephalopod mollusk *Octopus vulgaris*. *Symmetry* 11 (9): 1121 ([doi:10.3390/sym11091121](https://doi.org/10.3390/sym11091121)) – highlighted as front page
16. **Elisa Frasnelli** (2019). Lateralità cerebrale: anche le api possono essere destrimani. *Sapere* 2: 34-38 ([doi:10.12919/sapere.2019.02.5](https://doi.org/10.12919/sapere.2019.02.5))
17. **Elisa Frasnelli**, & Giorgio Vallortigara (2018). Individual-level and population-level lateralization: Two sides of the same coin. *Symmetry* 10: 739 ([doi:10.3390/sym10120739](https://doi.org/10.3390/sym10120739))
18. Mark A. Whiteside, Mackenzie M. Bess, **Elisa Frasnelli**, et al. (2018). Low survival of strongly footed pheasants may explain constraints on lateralization. *Scientific Reports* 8: 13791, 1-5 ([doi:10.1038/s41598-018-32066-1](https://doi.org/10.1038/s41598-018-32066-1))
19. Jeremy Niven, & **Elisa Frasnelli** (2018). Insights into the evolution of lateralization from the insects. In: *Cerebral Lateralization and Cognition: Evolutionary and Developmental Investigations of Motor Biases*. Elsevier, Progress in Brain Research, 238: 3-31 ([doi:10.1016/bs.pbr.2018.06.001](https://doi.org/10.1016/bs.pbr.2018.06.001))
20. **Elisa Frasnelli**, Natalie Hempel de Ibarra, & Finlay J. Stewart (2018). The dominant role of visual motion cues in bumblebee flight control revealed through virtual reality. *Frontiers in Physiology* 9: 1038 ([doi:10.3389/fphys.2018.01038](https://doi.org/10.3389/fphys.2018.01038))
21. Davide Serpico, & **Elisa Frasnelli** (2018). Where the Standard Approach in Comparative Neuroscience Fails and Where It Works: General Intelligence and Brain Asymmetries. *Comparative Cognition & Behavior Reviews* 13: 95-98 ([doi:10.3819/CCBR.2018.130010](https://doi.org/10.3819/CCBR.2018.130010))
22. Théo Robert, **Elisa Frasnelli**, et al. (2018). Variations on a theme: bumblebee learning flights from the nest and from flowers. *Journal of Experimental Biology* 221: jeb-172601 ([doi:10.1242/jeb.172601](https://doi.org/10.1242/jeb.172601))
23. **Elisa Frasnelli**, & Giorgio Vallortigara (2017). Distribution of antennal olfactory and non-olfactory sensilla in different species of bees. *Symmetry* 9: 35 ([doi:10.3390/sym9080135](https://doi.org/10.3390/sym9080135))
24. Théo Robert, **Elisa Frasnelli**, et al. (2017). Male bumblebees perform learning flights on leaving a flower but not when leaving their nest. *Journal of Experimental Biology* 220: 930-937 ([doi:10.1242/jeb.151126](https://doi.org/10.1242/jeb.151126))
25. **Elisa Frasnelli** (2017). Methods to Study Behavioural Lateralization in Invertebrates, In *Lateralized brain functions: methods in human and non-human species*. Springer, Neuromethods, 122: 153-208 ([doi:10.1007/978-1-4939-6725-4_6](https://doi.org/10.1007/978-1-4939-6725-4_6))
26. Lesley J. Rogers, & **Elisa Frasnelli** (2016). Antennal asymmetry in social behavior of the Australian stingless bee, *Tetragonula carbonaria*. *Journal of Insect Behavior* 29 (5): 491-499 ([doi:10.1007/s10905-016-9575-z](https://doi.org/10.1007/s10905-016-9575-z))
27. Lesley J. Rogers, **Elisa Frasnelli**, & Elisabetta Versace (2016). Lateralized antennal control of aggression and sex differences in red mason bees, *Osmia bicornis*. *Scientific Reports* 6: 29411, 1-9 ([doi:10.1038/srep29411](https://doi.org/10.1038/srep29411))
28. Elisa Di Giorgio, **Elisa Frasnelli**, et al. (2016). Difference in Visual Social Predispositions Between Newborns at Low- and High-risk for Autism. *Scientific Reports* 6: 26395, 1-8 ([doi:10.1038/srep26395](https://doi.org/10.1038/srep26395))
29. **Elisa Frasnelli**, et al. (2014). The bee as a model to investigate brain and behavioural asymmetries. *Insects* 5: 120-138 ([doi:10.3390/insects5010120](https://doi.org/10.3390/insects5010120))
30. **Elisa Frasnelli** (2013). Brain and behavioral lateralization in invertebrates. *Frontiers in Psychology* 4 (939): 1-10 ([doi:10.3389/fpsyg.2013.00939](https://doi.org/10.3389/fpsyg.2013.00939))
31. Lesley J. Rogers, Elisa Rigosi, **Elisa Frasnelli**, & Giorgio Vallortigara (2013). A right antenna for social behaviour in honeybees. *Scientific Reports* 3: 2045, 1-4 ([doi:10.1038/srep02045](https://doi.org/10.1038/srep02045))
32. **Elisa Frasnelli**, Ivan Iakovlev, & Zhanna Reznikova (2012). Asymmetry in antennal contacts during trophallaxis in ants. *Behavioural Brain Research* 232 (1): 7-12 ([doi:10.1016/j.bbr.2012.03.014](https://doi.org/10.1016/j.bbr.2012.03.014))
33. **Elisa Frasnelli**, Giorgio Vallortigara, & Lesley J. Rogers (2012). Left-right asymmetries in behaviour and nervous system among invertebrates. *Neuroscience and Biobehavioral Reviews* 36: 1273-1291 ([doi:10.1016/j.neubiorev.2012.02.006](https://doi.org/10.1016/j.neubiorev.2012.02.006))

34. Albrecht Haase, Elisa Rigosi, **Elisa Frasnelli**, et al. (2011). A multimodal approach for tracing lateralization along the olfactory pathway in the honeybee through electrophysiological recordings, morpho-functional imaging, and behavioural studies. *European Biophysics Journal* 40 (11): 1247-1258 (doi:10.1007/s00249-011-0748-6)
35. **Elisa Frasnelli**, Giorgio Vallortigara, & Lesley J. Rogers (2011). Origins of brain asymmetry: Lateralization of odour memory recall in primitive Australian stingless bees. *Behavioural Brain Research* 224 (1): 121-127 (doi:10.1016/j.bbr.2011.05.026)
36. Elisa Rigosi, **Elisa Frasnelli**, et al. (2011). Searching for anatomical correlates of olfactory lateralization in the honeybee antennal lobes: a morphological and behavioural study. *Behavioural Brain Research* 221 (1): 290-294 (doi:10.1016/j.bbr.2011.03.015)
37. Gianfranco Anfora, Elisa Rigosi, **Elisa Frasnelli**, et al. (2011). Lateralization in the invertebrate brain: Left-right asymmetry of olfaction in bumble bee, *Bombus terrestris*. *PlosOne* 6 (4): e18903 (doi:10.1371/journal.pone.0018903)
38. **Elisa Frasnelli**, et al. (2010). Morpho-functional asymmetry of the olfactory receptors of the honeybee (*Apis mellifera*). *Behavioural Brain Research* 209 (2): 221-225 (doi:10.1016/j.bbr.2010.01.046)
39. **Elisa Frasnelli**, Giorgio Vallortigara, & Lesley J. Rogers (2010). Response competition associated with right-left antennal asymmetries of new and old olfactory memory traces in honeybees. *Behavioural Brain Research* 209 (1): 36-41 (doi:10.1016/j.bbr.2010.01.014)
40. Gianfranco Anfora, **Elisa Frasnelli**, et al. (2010). Behavioural and electrophysiological lateralization in a social (*Apis mellifera*) but not in a non-social (*Osmia cornuta*) species of bee. *Behavioural Brain Research* 206 (2): 236-239 (doi:10.1016/j.bbr.2009.09.023)
41. Stefano Ghirlanda, **Elisa Frasnelli**, & Giorgio Vallortigara (2009). Intraspecific competition and coordination in the evolution of lateralization. *Philosophical Transactions of the Royal Society B* 364: 861-866 (doi:10.1098/rstb.2008.0227)
42. Gianfranco Anfora, **Elisa Frasnelli**, et al. (2009). Asimmetria morfo-funzionale dei recettori olfattivi di *Apis mellifera* L. e lateralizzazione della percezione. *APOidea* 6: 104-109

Publications in preparation

43. Tim Simon, **Elisa Frasnelli**, Kun Guo, Anna Wilkinson, & Daniel S Mills. Lateralized behaviour in dogs during positive anticipation when awaiting a reward. *Under review in Animal Behaviour*
44. **Elisa Frasnelli**, Benedict Chivers, Berry Smith, & W Tecumseh Fitch. Rats can distinguish grape varieties in wine.
45. Elisa Pasquini, David Baracchi, & **Elisa Frasnelli**. The role of GABA-ergic neurotransmission in the modulation of nocifensive behaviours in *Bombus terrestris*. *Draft in preparation*.

PUBLISHED CONFERENCE CONTRIBUTIONS

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1. **Elisa Frasnelli** (2010). Behavioural and electrophysiological lateralization in a social *A. mellifera* but not in a non-social *O. cornuta* species of bee. In E. Cosentino, & M.G. Rossi (eds), *Mente, Linguaggio, Evoluzione. Atti del 4° Convegno 2010 del CODISCO*, Coordinamento dei Dottorati di Ricerca in Scienze Cognitive (Roma: CORISCO; Messina: EDAS) (ISBN: 978-88-78203-57-0) (paper)
 2. **Elisa Frasnelli**, et al. (2009). Morfo-functional asymmetry of the olfactory receptors of the honeybee *Apis mellifera* L. *European Biophysics Journal* 38 (S1): S74 (doi:10.1007/s00249-009-0478-1) (abstract)
 3. Giulia Ossato, **Elisa Frasnelli**, et al. (2008). 'Imaging HTT protein aggregation in cells by fluctuation analysis' *Biophysical Journal* 94 (1 Meeting Abstracts): 233-Pos/B65 (abstract)
 4. Enrico D'Amico, **Elisa Frasnelli**, et al. (2007). 'Development of a non-contact optical scanning system for frequency domain and broadband spectroscopy of breast tissue' In A. Wax & V. Backman (eds.), *Biomedical Applications of Light Scattering (Proceedings of SPIE, Vol. 6446)*, 6434-44 (San Jose, California: SPIE Photonics West) (ISBN: 978-08-19465-59-7) (paper)

CONFERENCE AND SEMINAR PRESENTATIONS

- April 2023* ‘Rats can distinguish white grape varieties in wine’, *Comparative Cognition Conference*, Melbourne Beach, USA
- Dec 2022* ‘Rats can distinguish Riesling and Sauvignon Blanc varieties in wine’, *AISC*, Rovereto, IT
- June 2022* ‘The Evolution of Laterality: Brain and Behavioural Asymmetries in Bees’, *Symmetry Webinar*, Online
- June 2021* ‘Visuo-motor biases in bees’, *Laterality Friday Seminar Series*, Online
- Jan 2021* ‘From Now to Your Professional Future: Controlling Variables for Creating Opportunities.’, *Doctoral Student Day 2021*, Online
- June 2020* ‘Bees’ Cognition’, *Animal Cognition Conference*, Online
- Dec 2019* ‘Neurocognitive and behavioural aspects in bees’, *Psychology Seminar Series*, Queen Mary University of London, London, UK
- Nov 2018* ‘Virtual reality as a new tool to investigate motion Control in bees’, *Research Center on Animal Cognition*, CNRS, Toulouse, FR
- Apr 2017* ‘Neurocognitive and behavioural aspects in bees’, *Behavioral Biology research group*, Department of Evolutionary Studies of Biosystems, The Graduate University for Advanced Studies (SOKENDAI), Hayama, JP
- Sept 2016* ‘The evolution of population-level lateralization: evidence from insects.’ *5th North Sea Laterality Meeting*, Groningen, NL
- Aug 2016* ‘The evolution of population-level lateralization: insights from bees.’ *Symposium on “Cerebral and motor lateralization”*, *16th congress of the International Society for Behavioral Ecology*, Exeter, UK
- Oct 2014* ‘Discovering the social world: Insights from chicks, typical newborns and newborns at high-risk for autism’, *Non-invasive tools for early detection of Autism Spectrum Disorders*, Rome, IT
- July 2013* ‘Making sense of brain and behavioural lateralization’, *Congress of the International Society for the History, Philosophy and Social Studies of Biology*, Montpellier, FR
- Nov 2011* ‘Understanding lateralisation through game theory and genetic models’, *Vienna Cognitive Science Lab Meeting*, Konrad Lorenz Institute for Evolution and Cognition Research, Altenberg, AT
- May 2011* ‘Lateralisation in insects: Theoretical and experimental approaches’, *2nd ToK conference of Comparative Cognition*, Prague, CZ
- Oct 2010* ‘Lateralisation in insects: Theoretical and experimental approaches’, *Brown Bag Talk*, Konrad Lorenz Institute for Evolution and Cognition Research, Altenberg, AT
- June 2010* ‘Behavioural and electrophysiological lateralisation in a social (*Apis mellifera*) but not in a non-social (*Osmia cornuta*) species of bee’, *4° Convegno Nazionale dei Dottorati di Ricerca in Scienze Cognitive*, Roma, IT
- Mar 2009* ‘Lateralisation in Hymenoptera: Theoretical and experimental approaches’, *Lesley Rogers Lab*, Centre for Neuroscience and Animal Behaviour, University of New England, Armidale, AU
- Oct 2008* ‘Lateralisation in invertebrates’, *Deutscher Akademischer Austausch Dienst (German Academic Exchange Service)*, *Neurocognition: Foundations and Clinical Processes*, *1st Autumn School*, Montegrotto, IT

POSTER PRESENTATIONS

- July 2018* ‘The dominant role of visual motion cues in bumblebee flight control revealed through virtual reality’ *International Congress of Neuroethology*, Brisbane, AU
- Dec 2016* ‘Sucrose concentration influences the duration of bumblebee learning flights on their departure from an artificial flower’ *Winter meeting of the Association for the Study of Animal Behaviour*, London, UK
- Aug 2016* ‘Learning flights of bumblebee workers at feeder and nest sites’ *16th congress of the International Society for Behavioral Ecology*, Exeter, UK
- Apr 2016* ‘Comparing the learning flights of bumblebee works (*Bombus terrestris*) leaving a feeding site with those when leaving the nest’ *International Congress of Neuroethology*, Montevideo, UY
- Nov 2014* ‘Shedding light on the workings of the social brain: A fNIRS study on newborns’ *Physics & Medicine: Toward a future of integration*, Trento, IT
- July 2014* ‘Investigating lateralization in octopuses: First evidence of asymmetry in the optic lobes’ *4th Workshop on Cognition and Evolution*, Rovereto, Italy
- July 2013* ‘A right antenna for social behaviour in honeybees’ *3rd ToK conference of Comparative Cognition*, Vienna, AT
- July 2012* ‘Understanding lateralization through game theory and genetic models’, *4th meeting of the European Society for Evolutionary Developmental Biology*, Lisbon, PT
- June 2012* ‘Asymmetry in antennal contacts during trophallaxis in ants’, *3rd Workshop on Cognition and Evolution*, Rovereto, IT
- June 2012* ‘Left-right asymmetry of olfaction in Apoidea species’, *International Symposium on Olfaction and Taste*, Stockholm, SE
- Sept 2011* ‘Lateralization in the invertebrate brain: left-right asymmetry of olfaction in Apoidea species’ *43rd European Brain and Behaviour Society Meeting*, Seville, SP
- June 2010* ‘Behavioural and electrophysiological left-right asymmetries in the primitively eusocial bumble bees, *Bombus spp*’, *2nd Workshop on Cognition and Evolution*, Rovereto, Italy, IT
- Aug 2009* ‘Left-right antennal responses to volatile compounds in a social (*Apis mellifera* L.) and a non-social species of bees (*Osmia rufa* L.)’, *XXXI International Ethological Conference*, Rennes, FR
- June 2009* ‘Asymmetry of the olfactory receptors of the honeybee *Apis mellifera* L.’, *1st Workshop on Cognition and Evolution*, Rovereto, IT
- June 2009* ‘Left-right antennal responses to odorants in a social (*Apis mellifera* L.) and a non-social species of bees (*Osmia rufa* L.)’, *3° Convegno Nazionale dei Dottorati di Ricerca in Scienze Cognitive*, Noto, IT
- Oct 2008* ‘Antennal asymmetries in the honeybee *Apis mellifera*’, *Deutscher Akademischer Austausch Dienst (German Academic Exchange Service), Neurocognition: Foundations and Clinical Processes, 1st Autumn School*, Montegrotto, IT

PROFESSIONAL DEVELOPMENT

- Since July 2020* National Italian Habilitation to Associate Professor (ASN) in Psychobiology (11/E1), IT
- Since Nov 2018* Fellow of the Higher Education Academy, UK
- Since Dec 2017* National Italian Habilitation to Associate Professor (ASN) in Zoology (05/B1), IT
- June 2014* ‘The new frontiers of research in cognitive neurosciences: From neuromodulation to NIRS’, two-day course at the IRCCS, Brescia, IT

- Feb 2009* 'Insect neurobiology', two-week course at the Sveriges Lantbruks Universitet, Swedish University of Agriculture Sciences, Alnarp, SE
- Apr 2008* 'Multidimensional optical fluorescence microscopy towards nanoscopy', two-week course at the International School of Biophysics 'Antonio Borsellino', Erice, IT

LANGUAGES

<i>Italian</i>	Mother tongue
<i>English</i>	Proficient
<i>Spanish</i>	Proficient
<i>German</i>	Basic comprehension skills