

Gavin Jonathan Taylor

Academic Curriculum Vitae

E-mail: gavin.taylor.01@gmail.com
Residence: Alfenas, Minas Gerais, Brazil
Personal phone: +55 1699 726 2001
Nationalities: Australia and United Kingdom



Current position

2018-19 **Scientific consultant**

Regular Discovery (Alfenas, Brazil)

I provide consulting services to Universities and private companies across a broad range of scientific areas, including: 3D imaging and analysis, computational optics, and sensory neuroscience modelling.

Previous positions

2014-18 **Postdoctoral fellow**

Lund University, Department of Biology, Functional Zoology (Lund, Sweden)

Project: Optical modelling of insect eyes using microtomography

Adviser: [Emily Baird](#)

Higher education

2009-15 Doctor of Philosophy (**PhD**) in Neuroethology

University of Queensland, Queensland Brain Institute (Brisbane, Australia)

Thesis: [‘Unravelling the sensory control of behaviour in honeybees using virtual-reality paradigms’](#)

Thesis Advisers: [Mandyam Srinivasan](#), [David Ball](#), and Tien Luu

2005-08 Bachelor of Engineering (**BE**) majoring in Mechatronics with Honours

University of Queensland, School of ITEE (Brisbane, Australia)

Thesis: [‘Development of a computational search tool for multidimensional optimization of a robotic arm trajectory’](#)

Thesis Adviser: [Gordon Wyeth](#)

Published articles

Please see my profile [Google Scholar](#) for more information on my publications and citations. ** denotes an equal contribution between myself and the indicated author.*

2019 **Taylor**, Hall, Gren & Baird. ‘Imaging the evolution of visual specializations in fungus gnats’ *eLife* (submitted). [Preprint at bioRxiv](#) - doi:10.1101/290841

2019 **Taylor**, Tichit, Schmidt, Bodey, Rau & Baird. ‘Bumblebee visual allometry results in locally improved resolution and globally improved sensitivity’ *eLife* (accepted). doi:10.7554/eLife.40613 [Preprint at bioRxiv](#) - doi:10.1101/380527

2019 Wilby, Aarts, Tichit, Bodey, Rau, **Taylor*** & Baird*. ‘Using micro-CT techniques to explore the role of sex and hair in the functional morphology of bumblebee (*Bombus terrestris*) ocelli’ *Vision Research* (in revision). [Preprint at bioRxiv](#) - doi:10.1101/433979

2017 Palmer*, **Taylor***, Brumfeld, Gur, Shemesh, Elad, Osherov, Oron, Weiner & Addadi. ‘The image-forming mirror in the eye of the scallop’ *Science* 358(6367), 1172-1175. doi:10.1126/science.aam9506

- 2017 Baird & **Taylor**. [‘X-ray microcomputed tomography’](#) *Current Biology* 27(8), 289-291. doi:10.1016/j.cub.2017.01.066
- 2016 Gren, Sjövall, Eriksson, Sylvestersen, Marone, Sigfridsson Clauss, **Taylor**, Carlson, Uvdal & Lindgren. [‘Molecular and microstructural inventory of an isolated fossil bird feather from the Eocene Fur Formation of Denmark’](#) *Palaeontology* 60(1) 73-90. doi:10.1111/pala.12271
- 2016 **Taylor***, Ribi*, Bech, Bodey, Rau, Steuwer, Warrant & Baird. [‘The dual function of orchid bee ocelli as revealed by x-ray microtomography’](#) *Current Biology* 26(10), 1319-1324. doi: 10.1016/j.cub .2016.03.038
- 2015 Taylor, Paulk, Pearson, Moore, Stacey, Ball, van Swinderen & Srinivasan. [‘Insects modify their behaviour depending on the feedback sensor used when walking on a trackball in virtual-reality’](#) *Journal of Experimental Biology* 218(19), 3118-27. doi: 10.1242/jeb.125617
- 2015 van de Poll, Zajackowski, **Taylor**, Srinivasan & van Swinderen. [‘Using an abstract geometry in virtual reality to explore choice behaviour: visual flicker preferences in honeybees’](#) *Journal of Experimental Biology* 218(21), 3448-60. doi: 10.1242/jeb.125138
- 2014 Moore, **Taylor**, Paulk, Pearson, van Swinderen & Srinivasan. [‘FicTrac: a visual method for tracking spherical motion and generating fictive animal paths’](#) *Journal of Neuroscience Methods* 225(0), 106-119. doi: 10.1016/j.jneumeth.2014.01.010
- 2014 Paulk, Stacey, Pearson, **Taylor**, Moore, Srinivasan & van Swinderen. [‘Selective attention in the honeybee optic lobes precedes behavioral choices’](#) *Proceedings of the National Academy of Sciences U.S.A.* 111(13), 5006-5011. doi: 10.1073/pnas.1323297111
- 2013 **Taylor**, Luu, Ball & Srinivasan. [‘Vision and airflow combine to streamline flying honeybees’](#) *Scientific Reports* 3(2614). doi: 10.1038/srep02614

Conference presentations

- 2016 **Taylor** & Baird. [‘Insect vision: Segmentation to simulations’](#) 3rd *International Conference on Tomography of Material and Structure (talk)*.
- 2016 **Taylor**, Hall, Gren & Baird. ‘Imaging (with) the last impression of an ancient eye’ *Tomography for the Advancement of Science Symposium (talk)*.
- 2016 **Taylor**, Bodey, Bech, Schmidt, Rau & Baird. ‘Virtually dissecting insect eyes’ *X-ray Microscopy 2016 (talk)*.
- 2015 **Taylor**, Beck & Baird. ‘Using microCT to see through an insect’s eyes’ *Tomography for the Advancement of Science Symposium (talk)*.
- 2014 **Taylor**, Moore, Paulk, Pearson, van Swinderen & Srinivasan. [‘Using FicTrac to accurately measure the motion of animals walking in virtual reality’](#) 11th *International Congress of Neuroethology* (poster).
- 2013 **Taylor** & Srinivasan. ‘Virtual reality: Bees stay a step ahead of mice on the ball’ *Australasian Society for the Study of Animal Behaviour Annual Conference (talk)*.

2012 **Taylor**, Ball, Luu & Srinivasan. '[Honeybees steer a course through virtual reality](#)' *Applied Vision Association - Animal Vision Conference* (poster).

2012 **Taylor**, Luu, Ball & Srinivasan. '[Combining the senses: Looking at the interaction of wind and vision on the honeybees](#)' streamlining response' *10th International Congress of Neuroethology* (poster).

2012 **Taylor**, Luu, Ball & Srinivasan. 'The response of honeybees to multimodal stimuli in a virtual reality flight arena' *Australian Neuroscience Society 32nd Annual Meeting* (**talk**).

2011 **Taylor**, Luu, Ball & Srinivasan. 'Keeping up the pace: Honeybee flight speed regulation in a tethered flight arena' *Australasian Society for the Study of Animal Behaviour Annual Conference* (**talk**).

I have been personally **invited** to present five *Departmental Seminars* at the following institutions:

- University of São Paulo (2018)
- University of Bristol (2016)
- Brazilian Synchrotron Light Laboratory (2016)
- University of Lund (2015)
- University of Queensland (2012)

I have also **presented** six talks and seven posters at smaller events, including workshops, symposia, summer schools, retreats, and user meetings.

Additionally, I **organized and chaired** conference sessions on 'Invertebrate Vision' at the Young Researcher Vision Camp in 2016 & 2017.

Competitive funding received

2016 **Small equipment grant** from the Royal Physiographic Society of Lund
~11,000 USD (99,000 SEK)

2016 **Travel grant** from the Royal Physiographic Society of Lund
~2,000 USD (16,500 SEK)

2014 **Postdoctoral stipend** from Carl Tryggers Stiftelse
~32,000 USD (290,000 SEK) per annum for 2 years

2012 **International Travel Award** from the University of Queensland Graduate School
~3,500 USD (5,000 AUD)

2011 **Research Assistance Scholarship** from the ARC Centre of Excellence in Vision Science
~5,000 USD (7,000 AUD) per annum for 2 years

2009 **Research Assistance Scholarship** the Queensland Brain Institute
~3,500 USD (5,000 AUD) per annum for 2 years

2009 **Graduate Research Scholarship** from the University of Queensland
~17,000 USD (23,500 AUD) per annum for 3.5 years

Awards received

2018 [Image featured](#) in the Royal Microscopical Society calendar

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2017	Two images <i>shortlisted</i> (first and second) in the Royal Photographic Society's Images of Science competition
2016	<i>5th place</i> image in the European Vision Research Image Competition
2015	<i>Swedish finalist</i> with two images (first and second) in the Wikipedia European Science Photo Competition
2015	<i>2nd place</i> image in the Tomography CT Image Competition at the ToScA Symposium
2015	<i>Travel award</i> from Zeiss to attend the ToScA Symposium
2015	<i>2nd place</i> poster at the CINEMAX International Graduate School
2013	<i>Winning</i> publication at the Queensland Brain Institute Student Publication Prize

Public engagement

I have prepared **press-releases** for several of my publications - two gained significant media attention:

- [Palmer and Taylor et al., 2017](#): This was covered by international press (including the [New York Times](#)) and translated into Swedish, French, and Portuguese.
- [Taylor et al., 2016](#): This was covered in Australian and international press and I was interviewed by four Australian radio stations.

I was also **invited** to write a [popular science article](#) for the Atlas of Science in 2015, and have prepared [attractive images](#) to communicate of my research findings to scientific and public audiences (six have **won** awards, see above).

Additionally, I have been a member of [Toastmasters](#) groups in Australia and Sweden, where I presented numerous talks on both academic and popular topics to diverse audiences. As a Toastmaster, I also gained experience in event organization and team management.

Teaching experience

2014-16	<i>Lecturer</i> and discussion leader for the 'Foundations of Neurobiology' postgraduate course Department of Biology, Lund University
2015	<i>Lecturer</i> in the 'Sensory Biology' undergraduate course Department of Biology, Lund University

At Lund University I **supervised** eight undergraduate student projects (ranging in length from 1 to 6 months) and co-supervised the projects of one masters and one PhD student.

Reviewing experience

I have been invited to **review** eleven manuscripts for the following journals:

- Proceedings of the Royal Society B
- Biology Letters
- Scientific Reports
- The Journal of Experimental Biology
- Animal Behaviour
- Micron
- Journal of Comparative Physiology A
- Plos One

I have also **assessed** two master's students theses (at Lund University and the University of São Paulo).