LILIANA D'ALBA ALTAMIRANO, PH.D.

Department of Biology, EON-Group, Universiteit Gent, 9000 Gent, Belgium
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EDUCATION

- 2007 **UNIVERSITY OF GLASGOW.** Ph.D. Evolutionary Biology. Division of Environmental and Evolutionary Biology.
  Dissertation title: Micro and macroclimate effects on reproductive performance of Common Eiders. Advisors: Prof. Pat Monaghan and Dr. Ruedi Nager

- 2003 **UNIVERSITY OF GLASGOW.** M.Res. Ecology and Environmental Biology, Division of Environmental and Evolutionary Biology University of Glasgow, Glasgow, UK.
  Thesis: Maternal and environmental effects on nestling growth in lesser black-backed gulls (Larus fuscus). Advisors: Prof. Robert Furness, Prof. Pat Monaghan

- 2000 **UNIVERSIDAD AUTONOMA ESTADO DE MEXICO**. B.Sc.(Hons) Biology. Facultad de Ciencias, Universidad Autonoma Estado de Mexico

ACADEMIC AND PROFESSIONAL APPOINTMENTS

2016 - present **Postdoctoral Research Scientist,** Department of Biology, Evolution and Optics of Nanostructures (EON) Ghent University, Belgium.

2013-2015 **Visiting Assistant Professor,** (course developed and taught: Introduction to Biomimicry), The University of Akron, Ohio USA.

2012-2014 **Visiting Assistant Professor**, (courses taught: Comparative Animal Physiology, Biostatistics, Foundations of Biology, Natural History of Vertebrates, Animal Behavior) The College of Wooster, Ohio USA.

2011 spring **Natural Science Instructor**, University of Akron, Ohio USA.

2009 - 2011 **Postdoctoral research fellow**. Antimicrobial effects of avian incubation. Evolution of color patterns and novel structural colors in birds (Collaborators: Dr. Matt Shawkey). University of Akron, OH, USA.

2007-2008 **Postdoctoral research assistant**. Long-term effects of elevated stress hormone levels in early development (Collaborators: Prof. Pat Monaghan, Prof. Neil Evans, Dr. Karen Spencer and Dr. Britt Heidinger). Glasgow University, UK.

2004-2007 **Teaching assistant.** Topics: Biology First-year level, Invertebrates Third-year level, Animal Physiology First-year level. Statistics First-year Level (University of Glasgow, UK)

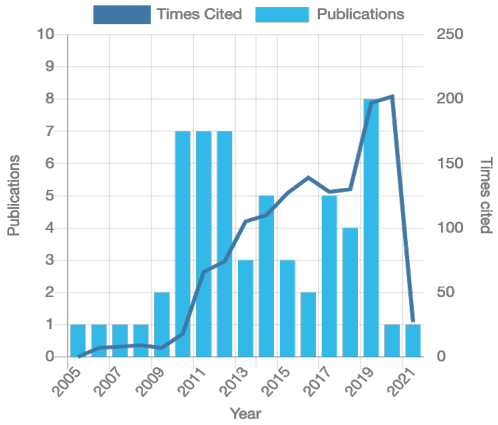
2002 **Instructor (K-12)**. Topics: Ecology and Biology, Estado de Mexico, Mexico.

2003 **Research assistant**. Maternal resource allocation and growth of Lesser Black-backed gull chicks (*Larus fuscus*). (Advisor: Prof.Pat Monaghan). University of Glasgow, UK.

2002 **Field assistant**. Testosterone, colour and reproductive success of Vermilion Flycatcher (*Pyrocephalus rubinus*) males. (Advisors: Dr. Constantino Macias Garcia and Dr. Roxana Torres). Instituto de Ecologia, UNAM.

PUBLICATIONS

Citation metrics from ISI Web of Science
55 - A1 publications
Total times cited: 1354
Average Citations/Item: 23
Papers cited >100 times: 3
H-index: 24 (24 papers cited 24 or more times)



In review

Peteya J., K. Gao; Q. Li; J. Clarke; L. D'Alba; M. Shawkey. *Diversification of melanosome shape in vertebrate taxa*. PLos One

Published

1. Rogalla S., Patil A., Dhinojwala A., Shawkey M.D. **D'Alba L.** Enhanced photothermal absorption in iridescent feathers. *Journal of the Royal Society Interface. 18(181), p.20210252*
2. **D'Alba L.** Meadows M. Maia M. Yeo J.S., Manceau M. and Shawkey M.D. Morphogenesis of iridescent feathers in Anna's hummingbird *Calypte anna. Integrative and Comparative Biology. icab123, https://doi.org/10.1093/icb/icab123*
3. Vanthournout B., Rousaki A., Parmentier T., Janssens F., Mertens J. Vandenabeele P., **D'Alba L.** 2021. Springtail coloration at a finer scale: mechanisms behind vibrant Collembolan metallic colours. *Journal of the Royal Society Interface. 18(180), p.20210188*
4. Rogalla S., Nicolaï M.P.J, Shawkey M.D. **D'Alba L**. 2021. The evolution of darker wings in seabirds in relation to temperature dependent flight efficiency. *Journal of the Royal Society Interface. 18(180), p.20210236*
5. Zhou, X., Gong, X., Cao, W., Forman, C.J., Oktawiec, J., D'Alba, L., Sun, H., Thompson, M.P., Hu, Z., Kapoor, U. and McCallum, N.C., 2021. Anisotropic Synthetic Allomelanin Materials via Solid State Polymerization of Self-Assembled 1, 8-Dihydroxynaphthalene Dimers. *Angewandte Chemie International Edition*. https://doi.org/10.1002/anie.202103447
6. Nicolaï M.P.J., **D'Alba L.,** Goldenberg J., Gansemans Y., Van Nieuwerburgh F., Clusella-Trullas S., Shawkey M.D. 2021. Untangling the structural and molecular mechanisms underlying colour and rapid colour change in a lizard, *Agama atra*. *Molecular Ecology*. https://doi.org/10.1111/mec.15901

7. **D'Alba L.,** Goldenberg J., Nallapaneni A., Parkinson D., Zhu C., Vanthournout B. and Shawkey M.D. 2021. Evolution of eggshell structure in relation to nesting ecology in non-avian reptiles. *Journal of Morphology*. https://doi.org/10.1002/jmor.21347
8. Rogalla, S., Shawkey, M.D., Vanthournout, B. and **D'Alba, L.**, 2021. Thermoregulation and heat exchange in ospreys (*Pandion haliaetus*). *Journal of Thermal Biology*, p.102857.
9. Goldenberg, J., **D'Alba, L.**, Bisschop, K., Vanthournout, B. and Shawkey, M.D., 2021. Substrate thermal properties influence ventral brightness evolution in ectotherms. *Communications biology*, *4*(1), pp.1-10.
10. Nicolai M., Shawkey, M.D., Porchetta S. and **D'Alba, L.** 2020. Exposure to irradiance as a predictor of repeated evolution of concealed black skin color in birds. Nature Communications 11:2414.
11. **D'Alba, L.**, Wang B. Vanthournout B. Shawkey M.D. 2019. The golden age of arthropods: ancient mechanisms of color production on body scales. Journal of the Royal Society Interface. *16*(159), p.20190366.
12. Fan M., **D'Alba, L.**, Shawkey M.D., Peters A. and Delhey K. 2019. Multiple components of feather microstructure contribute to structural plumage colour diversity in fairy-wrens. Biological Journal of the Linnean Society. 128(3):550–568
13. Rogalla S., **D'Alba, L.**, Verdoodt A. L. Shawkey M.D. Hot wings: Thermal impacts of wing colouration on surface temperature during bird flight. Journal of the Royal Society Interface, 16(156), p.20190032.
14. Shawkey, M.D. and **D'Alba, L.**, 2019. Egg pigmentation probably has an early Archosaurian origin. Nature, 570(7761), p.E43.
15. **D'Alba L**. 2019 Palaeontology: pterosaur plumage. Nature Ecology and Evolution 3, pages12–13
16. Stuart-Fox, D., Newton, E., Mulder, R.A., **D'Alba, L**., Shawkey, M.D. and Igic, B., 2018. The microstructure of white feathers predicts their visible and near-infrared reflectance properties. PloS one, 13(7), p.e0199129.
17. **D'Alba L.,** M.D. Shawkey. 2018. Melanosomes: Biogenesis, properties, and evolution of an ancient organelle. Physiological Reviews (invited review): 99(1), pp.1-19.
18. Kulp F. B., **D'Alba L**., Shawkey M.D., and Clarke J.A.. 2018. Keratin nanofiber distribution and feather microstructure in penguins. The Auk, 135(3), pp.777-787
19. Igic B., **D'Alba L.**, Shawkey MD. 2018. Fifty shades of white: how white feather brightness differs among species. Naturwissenschaften. 14;105(3-4).
20. D. Hu, J. A. Clarke, C.M. Eliason, R. Qiu, Q. Li, M.D. Shawkey, C. Zhao, **L. D'Alba**, J. Jiang, and X. Xing. 2018. A bony-crested Jurassic dinosaur with iridescent plumage highlights complexity in early paravian evolution. Nature Communications doi:10.1038/s41467-017-02515-y
21. Shawkey M.D. Igic B., Rogalla S., Goldenberg J., Clusella-Trullas S., **D'Alba L.** 2017 Beyond colour: consistent variation in near infrared and solar reflectivity in sunbirds (Nectariniidae). Naturwissenschaften 4:9-10:78. doi: 10.1007/s00114-017-1499-8
22. Shawkey M.D. and **D'Alba L.**, 2017. Interactions between colour-producing mechanisms and their effects on the integumentary colour palette. Philosophical Transactions of the Royal Society B 2017 372 20160536; DOI: 10.1098/rstb.2016.0536.

23. Justyn N.M., Peteya J.M., **D'Alba L.**, M.D. Shawkey. 2017. Preferential attachment and colonization of the keratinolytic bacterium Bacillus licheniformis on black and white striped feathers. Auk 134(2):466-473. 2017
24. **D'Alba L.**, R. Torres, G.I.N. Waterhouse, C.M. Eliason, M.E. Hauber and M.D. Shawkey. 2017. What does the eggshell cuticle do? A functional comparison of avian eggshell cuticles. Physiological and Biochemical Zoology. 90:588-599
25. **D'Alba L.**, Holm Carlsen T., Ásgeirsson Á., Shawkey M.D., Jónsson J.E. 2017. A microscopic view of eider down insulation properties. Journal of Avian Biology. 48:001-008, doi: 10.1111/jav.01294
26. **D'Alba L.**, Maia R., Shawkey M.D. 2016 Evolution of avian eggshell structure in relation to nesting ecology. Proceedings of the Royal Society B. doi: 10.1098/rspb.2016.0687
27. Igic B, D'Alba L., Shawkey MD 2016. Manakins produce iridescent and bright feather colours without melanosomes. Journal of Experimental Biology 219: 1851-1859
28. Fecheyr-Lippens DC, Igic B, **D'Alba, L.**, Hanley D, Waterhouse GIN, Grim T, Hauber ME, Shawkey MD 2015.. The cuticle modulates ultraviolet reflectance of avian eggshells. Biology Open. doi: 10.1242/bio.012211
29. **D'Alba L.** and Shawkey MD 2015 Mechanisms of antimicrobial defense in avian eggs: A review. Journal of Ornithology. doi: 10.1007/s10336-015-1226-1
30. Shawkey M.D., **D'Alba, L.**, Xiao M., Schutte M.* and R. Buchholz. 2014. Ontogeny of an iridescent nanostructure composed of hollow melanosomes. Journal of Morphology
31. **D'Alba, L.**, Van Hemert C, Spencer K.A., Heidinger B.J., Gill L., Evans N.P., Monaghan P., Handel C.M., and Shawkey M.D. 2014. Melanin-Based Color of Plumage: Role of Condition and of Feathers' Microstructure. Integr. Comp. Biol doi:10.1093/icb/icu094Q.
32. Li, Q., J. A. Clarke, K. Gao, C. Zhou, Q. Meng, D. Li, **L. D'Alba** and M.D. Shawkey. 2014 Melanosome evolution indicates a key physiological shift within feathered dinosaurs. Nature. doi:10.1038/nature12973
33. **D'Alba, L.**, Jones D.N., Badawy H.T., Eliason C.M., Shawkey M.D. 2014. Antimicrobial properties of a nanostructured eggshell in a bird with a high risk of infection. Journal of Experimental Biology 217:1116-1121
34. Field D., **D'Alba, L**., Vinther J. and Shawkey M.D. 2013. Melanin concentration gradients in extant and fossil feathers. PloS ONE . 8(3):e59451
35. Quintana E.*, Manjarrez J.,Martínez-Gómez M., **D'Alba, L.**, Rodríguez-Antolín J., Fajardo V. 2013. Sexual dimorphism in histological characteristics and contractility of the iliofibularis muscle in the lizard Sceloporus torquatus. Acta Zoologica. doi: 10.1111/azo.12021
36. Li Q., Gao K., Meng Q., Clarke J.A., Shawkey M.D., **D'Alba, L.**, Pei M., Ellison M., A. Norell M., Vinther J. 2012 Reconstruction of Microraptor and the Evolution of Iridescent Plumage. Science. 335 (6073): 1215-1219
37. **D'Alba, L.**, Briggs, L.*, Shawkey, M.D. 2012 Relative contributions of pigments and biophotonic nanostructures to natural color production: a case study in Budgerigar (*Melopsittacus undulatus*) feathers. Journal of Experimental Biology. 215: 1272-1277.
38. Snyder H. K.*, Rafael Maia R., **D'Alba, L.**, Shultz A.J, Rowe K.M.C., Rowe K.C. Shawkey, M.D. 2012 Iridescent colour production in hairs of blind golden moles (Chrysochloridae). Biology Letters. doi: 10.1098/rsbl.2011.1168

39. Carney R.M., Vinther J., Shawkey M.D., **D'Alba, L.**, Ackermann J. 2012. New evidence on the colour, ultrastructure, and nature of the isolated Archaeopteryx feather. Nature Communications. 24:633:637
40. Monaghan P., Heidinger, B.J., **D'Alba, L.**, Spencer, K.A., Evans, N. P. 2012. For better or worse: reduced adult lifespan following early-life stress is transmitted to breeding partners. Proceedings of the Royal Society B. 279(1729):709-14
41. **D'Alba, L.,** Van Hemert, C., Handel, C.M., Shawkey, M.D. 2011. A natural experiment on the condition-dependence of achromatic plumage reflectance in black-capped chickadees. PloS ONE 6(10): e25877
42. Shawkey M.D., Maia R., **D'Alba L.**, 2011. Proximate bases of silver color in Anhinga (Anhinga anhinga) feathers" Journal of Morphology. 272, 1399–1407
43. **D'Alba, L.**, Spencer, K.A., Nager R.G. and Monaghan P. 2011 State dependent effects of elevated stress hormones: nest-site quality, corticosterone levels and reproductive performance in the common eider. General and Comparative Endocrinology. 172: 218-224
44. **D'Alba, L.**, Saranathan V. Clarke, J.A. Vinther, J.A. Prum, R.O. Shawkey, M.D. 2011 "Colour producing β-keratin nanofibres in blue penguin feathers". Biology Letters. 7: 543-6
45. Shawkey M.D., **D'Alba L.**, Wozny J., Eliason C., Koop J. and Jia L. 2011 Structural color change following hydration and dehydration of iridescent mourning dove (Zenaida macroura) feathers. Zoology. 114: 59-68
46. Maia R., **D'Alba L.**, Shawkey M.D. 2011 What makes a feather shine? A nanostructural basis for glossy black colors in feathers. Proceedings of the Royal Society B. 278: 1973-1980 doi: 10.1098/rspb.2010.1637
47. **D'Alba L.**, Oborn A.*, Shawkey M.D. 2010. Experimental evidence that keeping eggs dry is a mechanism for the antimicrobial effects of avian incubation. Naturwissenschaften. 97: 1089-95
48. Clarke J.A., Ksepka D., Salas-Gismondi R., Altamirano A.J., Shawkey M.D., **D'Alba L.**, Vinther J., DeVries J. Baby P. 2010. Fossil evidence for evolution of the shape and color of penguin feathers. Science 330: 954-957
49. Spencer, K.A., Heidinger, B.J., **D'Alba, L.**, Evans, N. P. & Monaghan, P. 2010. Then versus now: effect of developmental and current environmental conditions on incubation effort in birds. Behavioral Ecology. 21: 999-1004
50. Osorno J.L., Núñez-de la-Mora A., **D'Alba L.** and Wingfield J.C. 2010. Hormonal correlates of breeding behavior in the Magnificent Frigatebird, Fregata magnificens. General and Comparative Endocrinology. 169: 18-22
51. **D'Alba L.**, Shawkey M.D., Korsten P., Komdeur J. Beissinger S.R. et al. 2010. Differential deposition of antimicrobial proteins in blue tit (Cyanistes caeruleus) clutches by laying order and male attractiveness. Behavioural Ecology and Sociobiology. 64:1037-1045.
52. Li, Q., Keqin, G., Vinther, J., Shawkey, M.D., Clarke J.A., **D'Alba L.**, Meng, Q., Briggs D.E.G., Prum, R.O. 2010. Plumage color patterns of an extinct non-avian dinosaur. Science. 327: 1369-1372
53. **D'Alba L.**, Monaghan P. and Nager R.G. 2010. Local climate change is associated with positive population level effects in an Arctic-nesting duck. IBIS. 152: 19-28

54. **D'Alba L.** Monaghan P. and Nager R.G. 2009. Thermal benefits of nest shelter for incubating female eiders. Journal of Thermal Biology 34:93-99
55. Bugoni, L., **D'Alba L.**, Furness R.W. 2009 Marine habitat use of wintering spectacled petrels Procellaria conspicillata and overlap with longline fishery. Marine Ecology Progress Series 374: 273-285
56. Rios-Chelen A., Graves, JA. Torres, R., Serrano-Pinto M., **D'Alba L.**, and Macias-Garcia C. 2008. Intra-specific brood parasitism revealed by DNA micro-satellite analyses in a suboscine bird, the vermilion flycatcher. Revista Chilena de Historia Natural 81(1): 21-31
57. **D' Alba L.**, Torres R. 2007. Seasonal egg mass variation and laying sequence in a bird with facultative brood reduction. The Auk 124(2): 643–652
58. Verboven N., Evans N.P., **D'Alba L.**, Nager R.G., Blount J.D., Surai P.F., Monaghan P. 2005. Intra-specific interactions influence egg composition in the lesser black-backed gull (Larus fuscus). Behavioural Ecology and Sociobiology 57 (4): 357-365

GRANTS AND AWARDS

2021-2024	FWO G0A7921N "Biomechanics and Biomimicry of Reptile Eggs: Insights into their functions and evolution" Co-PI with Dr. Matthew Shawkey and Pro. Karen de Clerck €448.000**.**
2017-2020	FWO GOG2217N: "Thermal properties of colored integument: mechanisms and evolution." Co-PI with Dr. Matthew Shawkey Dr. Susana Clusella-Trullas (Stellenbosch University, South Africa) €400.000 total (€232.000 to U.Gent).
2013-2015	National Science Foundation EAR-1146815. "Collaborative Research: Paleocolor-Mechanisms and evolution of plumage color in birds and other dinosaurs" Co-PI with Julia Clarke (U. Texas-Austin) and Matthew Shawkey (U. Akron). $340,000.
2012-2013	National Geographic Waitts Grant . A colorful window to the Tertiary explosion of mammals. Co-PI with Jakob Vinther (University of Bristol, UK) and Matthew Shawkey (U. Akron). $14,975
2011	Jurassic Foundation research grant. Building a comprehensive database for reconstruction of non-avian dinosaur color from fossilized melanosomes. $3,000
2010	AOU post-doctoral travel grant
2007	Glasgow Natural History Society Small project grant
2005	ASAB travel grant
2003	The European commission – ARI program visiting fellowship
2003-2005	ORS Universities UK Student Scholarship
2002-2006	Conacyt-Mexico Postgraduate scholarship

COMMUNICATIONS PRESENTED AT CONFERENCES

Invited talks

2021 - *Melanosome development into highly iridescence structures in feathers.* Belgian Photonics Online Meetup (www.bepom.org).

- *Eggshell mineralization in relation to nesting ecology in reptiles*; Le Studium France. Virtual Meeting: Innate immunity in a biomineralized context.

- *Optics and development of highly iridescence feathers, the case of hummingbird melanosomes*; Society for Integrative & Comparative Biology - The biology of pigment cells Symposium. Virtual Meeting.

2019 -*Animal coloration: evolution and mechanisms*; University College Cork, Ireland

2017 -*Vertebrate eggs as model for biomimetic multifunctional structures*. Biomimicry International Symposium, National Institute of Ecology, South Korea.

2017 -*An Introduction to Biomimicry*. IASA lecture series. University of Ghent, Belgium

2017 -*Sensory Ecology*. Ecophysiology Symposium, Tlaxcala Mexico.

2015 -*A microscopic view of animal coloration*. St. Mary's College, Moraga, California

2014 -*Antimicrobial properties of eggshells in an ecological context*. 26th IOC International Ornithological Conference. Tokyo, Japan

2014 -*Mechanisms of condition-dependent variation in melanin-based plumage color*. Society for Integrative & Comparative Biology. Austin, Texas.

2013 -*Antimicrobial defenses in birds*. Ohio State University, Columbus, Ohio

2012 -*A Microscopic Perspective to Extant and Dinosaur Color*. 56th American Chemical Society Annual Meeting. Columbus Ohio.

Recent Regular meetings (20 Total)

2018 -*Complex structural color in a Cretaceous moth*; Living Light conference. Cambridge, UK.

2017 -*How the world's most precious feathers get their warmth*. 42nd Meeting of the Waterbird Society. Reykjavik, Iceland.

2016 -*Self-defense in lizard eggs*. 16th Congress of the International Society for Behavioral Ecology.. Exeter, UK.

2016 -*A feather with iridescent barbs and barbules*. Living Light Conference. UC San Diego, USA.

2015 -*Nesting Ecology and Eggshell Structure*. Nest Construction and Function Conference. ". Lincoln, UK.

2015 -*Antimicrobial properties of eggshells in an ecological context*; 52nd Meeting of the Animal Behavior Society. Anchorage, USA.

2014 -*Antimicrobial properties of eggshells in an ecological context*; 15th ISBE International Behavioral Ecology Congress. New York, USA.

2013 -*Antimicrobial egg defense in Australian Brush Turkeys*; Society for Integrative & Comparative Biology. San Francisco, USA

2012 -*Mechanisms of egg defense in megapodes: avoiding infection in a compost heap*. 14th International Behavioral Ecology Congress. Lund, Sweden.

2011 **-***Relative contribution of pigments and structure to color production in budgerigar (Melopsittacus undulatus) feathers*. 1st International Symposium on Natural Photonic Structures. Shanghai, China.

STUDENT MENTORING

2016 – present: *1 master student, 3 PhD students and 1 postdoctoral fellow*

Biology Department, University of Ghent, Ghent, Belgium

***2010 – 2016**: 13 bachelor, 2 master students and 1 PhD student*
College of Arts and Sciences, Biology Department, University of Akron, Akron, United States of America

***2012 – 2014:** 5 bachelor*
Biology Department, The College of Wooster, Wooster, United States of America

ACADEMIC SERVICE & PUBLIC OUTREACH

- Member of the Diversity Team of the Faculty of Sciences, University of Ghent, 2020-present
- Postdoc Community Steering Group, Faculty of Sciences Representative, University of Ghent, 2016-2018.
- Manuscript reviewer for Nature, Nature Ecology and Evolution, Proceedings of the Royal Society B., Proceedings of the Royal Society Interface, Biology Letters, Functional Ecology, Journal of Animal Ecology, The Journal of Avian Biology, Micron, Behavioral Ecology and Sociobiology, AUK, PLoS ONE, Waterbirds, IBIS, OIKOS, General and Comparative Endocrinology, Naturwissenschaften.
- Expositor at the Wooow Science Festival, Gent Belgium: "Can colours keep us cool?" 2018-2019
- Speaker at the 200-year celebration at the University of Ghent, "Understanding animal coloration: mechanisms and potential applications"
- Expositor at the photography exhibit "Science as art", Oct 2017, University of Ghent.
- Membership in Professional Societies**:** Society for Comparative and Integrative Biology, British Ecological Society; International Society for Behavioral Ecology, The American Ornithologist Union.
- Contributor to Today's Science: Science News Written Especially for Students, 2014
- Biology and zoology project evaluator at Akron Public Schools science fair 2012 and 2013
- Festival of Science, University of Glasgow zoology booth, York UK, 2007

TECHNICAL SKILLS

- Proficiency in Course management systems: Moodle and Desire2Learn
- Certification in online course development (Instructional Services, UAkron 2014)
- Software: R, Optical Modeling FDTD – Lumerical, ArcView (GIS), SPSS, Microsoft Office, SigmaPlot, Adobe Photoshop
- Statistical methods: Phylogenetic Comparative Methods, generalized linear models, model selection, mixed models, non-parametric statistics, basic spatial statistics (using ArcView).
- Field skills: bird banding, mist-netting, blood sampling, vertebrate surveying methods.
- Lab skills: Extensive training in scanning (JEOL JSM-7301F) and transmission (JEOL JEM-1011) electron microscopy, histological preparation of samples, basic molecular techniques, endocrinology and microbiology.

LANGUAGES

Spanish: Native language
English: Fluent in reading, writing and speaking.
French: Some reading and writing ability (CEFR level B1.2)
Dutch: Some reading and writing ability (ERK level B1-Threshold 2.4)

PROFESSIONAL REFERENCES

- **Prof. Luc Lens.** Department Head. Department of Biology, University of Ghent. K.L. Ledeganckstraat 35, 9000 Gent, Gent Belgium. Phone: +32 (0)9 264 52 54. Email: Luc.Lens@UGent.be

- **Prof. Pat Monaghan:** Regius Chair of Zoology, Graham Kerr Building, University of Glasgow, G12 8QQ, tel: 0141 330 6640 fax: 0141 330 5971, email: P.Monaghan@bio.gla.ac.uk

- **Prof. Karen Spencer:** School of Psychology, University of St. Andrews, Fife KY16 9JP, United Kingdom, tel: +44 (0)1334 46 2096, e-mail: kas21@st-andrews.ac.uk