# Curriculum vitae

**Personal information**

Researcher unique identifier: 0000-0003-1234-935X (ORCID)

Nationality: Swiss

Homepage: <https://simoneimmler.com/>

Languages: Swiss German (Mother tongue), English (fluent), German (fluent), French (fluent), Italian (fluent), Spanish (fluent), Swedish (fluent)

**Degrees**

2013 Docent in Evolutionary Genetics, Uppsala University, Sweden

2006 PhD, Evolutionary Biology, University of Sheffield, UK

2001 MSc (Diploma, 1st grade), Evolutionary Biology, University of Basel, Switzerland

**Research interests**

The causes and consequences of sexual reproduction are at the heart of my research. Given the fundamental role of sexual reproduction for life it is surprising how little we know about the why and how. In my lab, we are addressing questions around sexual reproduction using comparative, theoretical, experimental and genomic tools, often in combination, using a multitude of organisms from fish to fungi. An important earlier finding was the demonstration of the long thought after trade-off between sperm size and number and how it may vary across taxonomic groups. Major past and current research projects addressed the following topics:

* Testing for the role and importance of haploid selection in animal gametes: We overthrew a long-standing believe that the sperm genome plays no role in determining sperm phenotype and demonstrated for the first time that haploid genomes in sperm are actually under selection, and that this selection contributes significantly to offspring fitness
* Understanding the adaptive significance and underlying mechanisms of paternal non-genetic inheritance: We found that even short periods of stress in adult males may substantially affect the performance of the offspring and describe the genes and mechanisms (sRNAs) involved in the non-genetic inheritance
* The evolution of sperm morphometry and the role of postcopulatory sexual selection: We provided the first evidence for the long-thought after trade-off between sperm size and sperm number across species, and showed that the trade-off depends on the mode of sperm competition

**Present position**

2017 – present Associate Professor (Reader), University of East Anglia, UK

2014 – 2018 Associate Professor (Senior Lecturer), Uppsala University, Sweden

**Previous positions**

2014 – 2015 6 months maternity leave (December 2014 - June 2015)

2011 – 2014 Assistant Professor, VR, Uppsala University, Sweden

2010 – 2011 6 months maternity leave (October 2010 – March 2011)

2009 – 2010 Postdoctoral Research Fellow, Uppsala University, Sweden

2006 – 2008 Postdoctoral Research Associate, University of Sheffield, UK

2003 – 2005 PhD, University of Sheffield, UK

2001 – 2003 Research Assistant, University of Bern, Switzerland

**Competitive grants (> £4000)**

2019 NERC Standard Grant (£ 611,514)

2015 Human Frontier Science Program Research Grant, PI: Simone Immler, Co-PIs: Ferenc Mueller, Brad Cairns (USD 1,050,000 = £ 695,671 for three years)

2015 Wallenberg Academy Fellowship (SEK 7,500,000 = £ 439,200 for five years)

2013 Starting Grant from the European Research Council (€ 1,440,248 = £ 1,010,528 for five years)

2013 Gender equality grant Uppsala University for 4-year PhD position (SEK 450,434 = £ 43,920 per year)

2013 Grant from the Department of Ecology and Genetics, Uppsala University (SEK 300,000 = £ 22,938)

2013 Grant from Carl Tryggers Stiftelse for postdoctoral salary (SEK 240,000\*2 = £ 36,322)

2013 Research grant from the Swedish Research Council (VR), PI: Hanna Johannesson, Co-PI: Simone Immler (SEK 1,800,000 = £ 136,212)

2011 Assistant professorship, Swedish Research Council (VR) (SEK 5,488,000 = £ 415,365)

2011 Marie Curie Intra-European Fellowship (€ 172,329 = £ 120,932 – I declined due to overlap with VR grant)

2010 Wenner-Gren Postdoctoral Fellowship, Sweden (SEK 240,000 = £ 18,161)

2009 Swiss National Foundation Fellowship for Advanced Researchers (£ 45,000)

2007 Research Grant, Association for the Study of Animal Behaviour, UK (£ 4,500)

2003 Janggen-Pöhn Foundation, St. Gallen, Switzerland (2x CHF 20,000 = £25,812)

2003 Theodor-Engelmann Stiftung, Basel, Switzerland (CHF 10,000 = £ 6,453)

2003 Roche Research Foundation, Switzerland (£ 20,000)

**Awards**

2015 Wallenberg Academy Fellowship

2008 Award for Outstanding Contribution, University of Sheffield, UK

**Invited seminars and talks (49 done Sep 2019, 21 since 2014)**

May 2021 Invited speaker, Epigenetics and Anticipation, Hanse-Wissenschaftskolleg Institute for Advanced Study, Germany

December 2021 Keynote, ‘Genetic Landscape of Male Reproductive Health’, Satellite Symposium of Andrology 2020, Münster, Germany

July 2021 Keynote, ‘Evolution of Reproduction’, SMBE Satellite Symposium, Oeiras, Portugal

May 2021 Keynote, 21st European Testis Workshop, Sant Feliu de Guixols, Spain

April 2021 Keynote, Genomics in Aquaculture Symposium, Granada, Spain

22-26 March 2021 Invited speaker, Workshop Evolution and Diversity of Meiosis, Les Treilles, France

7-8 Jan 2020 Symposium opener, 10th EVENET meeting, Kortrijk, Belgium

6 Jun 2019 University of Exeter, Cornwall Campus, UK

28 May 2019 E3B seminar, ETH/University of Zurich, Switzerland

5 March 2019 University of Bath, UK

11 February 2019 University of Oxford, UK

1 Oct 2018 University of Sheffield, UK

9-13 May 2018 Keynote, XIIIth International Symposium on Spermatology, Stockholm, Sweden

4-8 Sep 2017 Keynote, 14th Biology of Sperm meeting, Hassop Hall, UK

12-15 Sep 2017 Keynote, 110th Meeting of the German Zoological Society, Bielefeld, Germany

June 2017 Keynote, ASN Vice-Chancellor Symposium, Evolution meeting, Portland, Oregon, US

31 May 2017 DEE, University of Lausanne, Switzerland

February 2017 University of Linköping, Sweden

12 January 2017 BIRC, Aarhus University, Denmark

1 November 2016 University of Bern, Switzerland

10 June 2016 University of East Anglia, Norwich, UK

2 February 2016 University of Cambridge, UK

29 January 2016 Silwood Park, Imperial College London, UK

5 October 2015 Invited speaker, SciLifeLab Day 2015, Uppsala, Sweden

24 July 2015 Invited speaker at Gordon Conference ‘Fertilization and Activation of Development’, Holderness, NH, USA

28 April 2015 University of Cambridge, UK

11 September 2014 Keynote ‘Campus Career Day’, Max Planck Institute for Developmental Biology, Tübingen, Germany

22 April 2014 Invited speaker, ‘Merav Ziv Symposium’, Ben Gurion University, Israel

11 December 2013 University of Edinburgh, UK

8 November 2013 University of Aberdeen, UK

11 April 2013 University of Toronto, Canada

22 October 2012 University of Stockholm, Sweden

17 October 2012 University of Padova, Italy

5 October 2012 University of Basel, Switzerland

4 October 2012 University of Zürich, Switzerland

3 October 2012 ETH Zürich, Switzerland

26 April 2012 University College London, UK

24 February 2012 University of Lund, Sweden

21 February 2012 University of Oxford, UK

25 September 2009 Keynote ‘Darwin Symposium’, KLIVV, Vienna

19 March 2009 University of Lyon, France

6 February 2009 University of Copenhagen, Denmark

19 November 2008 University of Sheffield, UK

6 June 2008 Imperial College London, Silwood Park, UK

18 March 2008 University of Bern, Switzerland

10 February 2008 Macquarie University, Australia

7 December 2007 Tel Aviv University, Israel

11 October 2007 Max Planck Institute for Ornithology, Seewiesen, Germany

24-29 August 2007 Invited symposium speaker at EOU conference in Vienna, Austria

21 June 2007 Queen’s University Biological Station, Elgin, Ontario

17-20 May 2007 Invited symposium speaker at CSEE Conference in Toronto, Ontario

5 February 2007 University of Aberystwyth, UK

29 January 2007 Zoological Institute, London, UK

24 January 2007 KLIVV, Vienna, Austria

30 November 2006 Charles University Prague, Czech Republic

19 November 2006 University of Oxford, UK

**Supervision**

**Primary supervisor**

2019-present Dr Andreas Sutter (NERC funded postdoc)

2018-present Dr Ghazal Alavioon (Wallenberg funded postdoc)

2018-2019 Dr Ding He (ERC funded postdoc)

2015-2018 Dr Hwei-yen Chen (Wallenberg funded postdoc)

2015-2017 Dr Constance Nebendahl (DFG funded postdoc)

2014-2017 Dr Cécile Jolly (ERC funded research engineer)

2014-2017 Dr Khriezhanuo Nakhro (ERC funded postdoc)

2014-2018 Dr Roy Francis (ERC funded postdoc)

2013-2016 Dr Marta Burri (ERC funded postdoc)

2013-2017 Dr Bart Nieuwenhuis (Carl Tryggers Stiftelse/ERC funded postdoc)

2011-2013 Dr Susanne Zajitschek (Sven and Lilly Lawski postdoc)

2019-present Mabel Sydney (ARIES DTP)

2019-present Daniel Marcu (NRP DTP)

2014-2018 Ghazal Alavioon (ERC funded PhD student)

2014-2018 Willian Silva (Sven and Lilly Lawski PhD student)

2013-present Berrit Kiehl (Uppsala University funded PhD student)

2011-2017 Cosima Hotzy (Uppsala University funded PhD student)

**Co-supervisor**

2015-present Paula Vasconcelos (PhD student with Claus Rüffler, Uppsala University)

2015-2019 Sergio Tusso (PhD student with Jochen Wolf, Uppsala University)

2014-present Mattias Siljestam (PhD student with Claus Rüffler, Uppsala University)

2013-2017 Jesper Svedberg (PhD student with Hanna Johannesson, Uppsala University)

2011-2017 Murielle Åhlund (PhD student with Anna Qvarnström, Uppsala University)

2015-2016 Yuki Ieiri (exchange PhD student from Kyushu University, Japan)

**Examination responsibilities**

2018 External examiner, PhD thesis, Martina Magris, University of Padova, Italy

2018 PhD Thesis evaluation committee, John Waller, Lund University, Sweden

2016 PhD Thesis evaluation committee, Sarah Voisin, Uppsala University, Sweden

2015-2019 External examiner, PhD thesis, David Nusbaumer, University of Lausanne, Switzerland

2016 External examiner, PhD thesis Marie Rescan, CNRS Station de Recherche, Roscoff, France

2015 PhD Thesis evaluation committee, Judith Habicher, Uppsala University

2012-2014 External examiner, PhD thesis, Federica Poli, University of Padova, Italy

2013 PhD Thesis evaluation committee, Mirjam Amcoff, Uppsala University

**Administrative responsibilities**

2018-present Head of the Athena Swan Steering Group of the Faculty of Life Sciences (ASSG SCI)

2017-present Director of Equality and Diversity, School of Biological Sciences, University of East Anglia

2015-2019 Council Member of ESEB (European Society for Evolutionary Biology)

2013-2017 Board member at the Department of Ecology and Genetics, Uppsala University

2012-2017 Member of the The Svedberg seminar series committee, SciLifeLab, Uppsala University

**Teaching experience**

2018-present Lectures/workshop in Evolutionary Biology, University of East Anglia, UK

2017-present Maths seminars for Undergraduate Students, University of East Anglia, UK

2014-2016 Course Coordinator: Evolutionary Genetics (15hp), Uppsala University, Sweden

14th February 2013 award of Docent in Evolutionary Genetics, Uppsala University, Sweden

2011 - present Organiser and leader of the inter-departmental journal club ‘Evolutionary Classics’ at Evolutionary Biology Centre, Uppsala University, Sweden

2009/2012 Lecture: The causes and consequences of sperm evolution, M.Sc. course: Post-copulatory sexual selection, University of Stockholm, Sweden

2012 Lectures: ‘Sexual selection’, ‘Speciation’, Course: Evolutionary Genetics, Uppsala University, Sweden

2012 Lecture: ‘Evolution of sex and sex chromosomes’, Course: Genome Biology, Uppsala University, Sweden

2012 Lecture: ‘Morphological evolution’, M.Sc. course: Organismal Biology, Uppsala University, Sweden

2009 Lecture: ‘Population ecology’, Course: Insect Biology, Uppsala University, Sweden

2007/2008 Lecture: ‘Women in science’, Course: Philosophy of Science, University of Sheffield, UK

Ph.D. Supervisor Course, Uppsala University, Sweden, 2012 (5hp)

Teacher Training Course (15 weeks), Uppsala University, Sweden, 2011 (7.5hp)

**Committees of Trust**

Reviewing Editor eLife (2020-present)

Associate Editor for Evolution (2017-2020)

Reviewing editor for Journal of Evolutionary Biology (2014 - 2018)

Academic editor for PLoS ONE (2012 - 2014)

Reviewer for *New England Medical Journal*, *Science, Current Biology, Trends in Ecology and Evolution, Ecology Letters, Proceedings of the National Academy of Sciences, PLoS Genetics, Proceedings of the Royal Society London B, American Naturalist, Evolution, Molecular Ecology, Global Ecology and Biogeography, Functional Ecology, Biological Reviews, BMC Biology, BMC Genomics, Genetics, BMC Evolutionary Biology, Journal of Evolutionary Biology, PLoS ONE, Evolutionary Ecology, Biology Letters, Biological Journal of the Linnean Society, Molecular Development and Reproduction, Ideas in Ecology and Evolution, Naturwissenschaften, Reproduction, Integrative and Comparative Biology, Animal Behaviour, Behavioral Ecology, Behavioral Ecology and Sociobiology, Ethology, Journal of Avian Biology, Ibis, Emu, Condor, The Auk, Wilson’s Journal of Ornithology, Colorado Birds, Herpetological Journal.*

Reviewer of grant proposals for Royal Society, Leverhulme Trust (UK), BBSRC (UK), NERC (UK), European Research Council (ERC), Deutsche Forschungsgesellschaft (DFG),National Research Foundation (NRF) South Africa, Sigma Delta Epsilon/Graduate Women in Science (SDE/GWIS), the Comision Nacional de Investigacion Cientifica y Tecnologica (CONICYT) in Chile and Marsden Fund, New Zealand, . Reviewer of abstracts for attendance of ISBE 2012 in Lund.

**Professional membership**

Society for the Study of Evolution (SSE)

European Society of Evolutionary Biology (ESEB)

Association for the Study of Animal Behaviour (ASAB)

Society for Molecular Biology and Evolution (SMBE)

Genetics Society UK (2018)

## **Publication list**

## **Bibliographic summary (April 12, 2016)**

* 45 peer reviewed articles of which
* 3 peer-reviewed book chapters
* 32 first, joint first or last author peer-reviewed articles/book chapters
* *h*-index: 22 (1697 citations, Google Scholar)
1. **Refereed Full Papers**

☯ denotes equal authorship

1. Jiménez-Ortega, D, Kolm, N Immler, S, Maklakov, A, Gonzalez-Voyer, A. 2020 Long life evolves in large brained bird lineages. *Evolution* In press.
2. Sutter, A & Immler, S. 2020.Within ejaculate sperm competition. *Phil Trans R Soc Lond B* In Press.
3. Chen, H-y, Jolly, C, Bublys, K, Marcu, D, Immler, S. 2020. Trade-off between somatic and germline repair in a vertebrate supports the “expensive germ line” hypothesis. *Proc Nat Acad Sci USA*117: 233-238.
4. Hotzy, C, Xuhui, B, Larva, L, Immler, S. 2020. Intrinsic Post-Ejaculation Sperm Ageing Does Not Affect Offspring Fitness in Atlantic salmon. *J Evol Biol* 33: 576-583.
5. Immler,S. 2019. Haploid selection in “diploid” organisms. *Annu Rev Ecol Evol Syst* 50:219-236.
6. Poli, F., Immler, S., Gasparini, C. 2019. Effects of ovarian fluid on sperm traits and its implications for cryptic female choice. *Behav Ecol* 30 1298-1305.
7. Silva, WTAF, Sáez-Espinosa, P, Torijo-Boix, S, Romero, A, Devaux, C, Durieux, M, Gómez-Torres, MJ, Immler, S. 2019. The effects of male social environment on sperm phenotype and genome integrity. *J Evol Biol* 32: 535-544.
8. Alavioon, G, Cabrera Garcia, A, LeChatelier, M, Maklakov, AA & Immler, S. 2019. Selection for longer-lived sperm within ejaculate reduces reproductive ageing in offspring. *Evolution Letters* 3: 198-206.
9. Immler, S. 2018. The sperm factor: paternal impact beyond genes. *Heredity* 121: 239-247.
10. Immler, S & Otto, SP. 2018. The evolutionary consequences of selection at the haploid gametic stage. *Am Nat* 192: 241-249.
11. Nieuwenhuis, BPS, Tusso, S, Bjerling, P, Stångberg, J, Wolf, JB & Immler, S. 2018. Repeated evolution of self-compatibility for reproductive assurance. *Nature Comms* 9: 1639.
12. Alavioon, A, Hotzy, C, Nakhro, K, Rudolf, S, Scofield, D, Zajitschek, S, Maklakov, M, Immler, S. Haploid selection within a single ejaculate increases offspring fitness. *PNAS* 114: 8053-8058.
13. Zajitschek, S, Herbert-Read, J, Abbasi, N, Zajitschek, F, Immler, S. Paternal personality and social status influence offspring activity. *BMC Evol Biol* 17: 157.
14. Maklakov, AA, Carlsson, H, Denbaum, P, Lind, MI, Mautz, B, Hinas, A, Immler, S. 2017. Antagonistically pleiotropic allele increases lifespan and late-life reproduction at the cost of early-life reproduction and individual fitness. *Proc R Soc Lond B* 284: 20170376.
15. Promerova, M, Alavioon, G, Tusso, S, Burri, R & Immler, S. 2017. No evidence for MHC class II-based non-random mating at the gametic haplotype in Atlantic salmon. *Heredity* 118: 563-567.
16. Nieuwenhuis, B & Immler, S. 2016. The evolution of mating-type switching for reproduction assurance. *BioEssays* 38: 1141-1149.
17. Maklakov, AA & Immler, S. 2016. The expensive germline and the evolution of ageing. *Curr Biol* in press.
18. Otto, SP, Scott, M & Immler, S. 2015. Evolution of haploid selection in predominantly diploid organisms. *Proc Nat Acad Sci USA* 112: 15952-15957.
19. Kotrschal, A, Corral Lopez, A, Zajitschek, S, Immler, S, Maklakov, AA & Kolm,N. 2015. Positive genetic correlation between brain size and sexual traits in male guppies artificially selected for brain size. *J Evol Biol* 28: 841-850.
20. Immler, S & Otto, SP. 2015. The evolution of sex chromosomes in organisms with separate haploid sexes. *Evolution* 69: 694-708.
21. Zajitschek, S, Hotzy, C, Zajitschek, F & Immler, S. 2014. Short term variation in sperm competition causes sperm mediated epigenetic effects on early offspring performance in the zebrafish. *Proc R Soc Lond Ser B* 281: 20140422.
22. Immler, S, Hotzy, C, Alavioon, G, Petersson, E & Arnqvist, G. 2014. Sperm variation within a single ejaculate affects offspring development in Atlantic salmon. *Biol Lett* 10:20131040.
23. Immler, S & Otto, SP. 2014. Driven apart: the evolution of ploidy differences between the sexes under antagonistic selection. *Am Nat* 183: 96-107.
24. Maklakov, AA, Immler, S, Gonzalez-Voyer, A, Rönn, J & Kolm, N. 2013. Brains and the city in passerine birds: re-analysis and confirmation of the original result. *Biol Lett* 9: 20130859.
25. Kotrschal, A, Rogell, B, Bundsen, A, Svensson, B, Zajitschek, S, Brännström, I, Immler, S, Maklakov, A & Kolm, N. 2013. The benefit of evolving a larger brain: big-brained guppies perform better in a cognitive task. *Anim Behav* 86: e4-e6.
26. Ålund, M, Immler, S, Rice, A & Qvarnström, A. 2013. Low fertility of wild hybrid male flycatchers despite recent divergence. *Biol Lett* 9: 20130160.
27. Hough, J, Immler, S, Barrett, SCH & Otto, SP. 2013. Evolutionarily stable sex ratios and mutation load. *Evolution* 67: 1915-1925.
28. Kotrschal, A, Rogell, B, Bundsen, A, Svensson, B, Zajitschek, S, Brannström, B, Immler, S, Maklakov, AA, Kolm, N. 2013. Artificial selection on relative brain size in the guppy reveals costs and benefits of evolving a larger brain. *Curr Biol* 23: 168-171. (Recommended by F1000)
29. Maklakov, AA, **Immler, S**, Lovlie, H, Flis, I & Friberg, U. 2013. The effect of sexual harassment on DNA repair in female *Drosophila melanogaster*. *Proc R Soc Lond Ser B* 280: 20121874.
30. **Immler, S**, Gonzalez-Voyer, A & Birkhead, TR. 2012. Distinct evolutionary patterns of morphometric sperm traits in passerine birds. Proc R Soc Lond B 279: 4174-4182.
31. Immler, S, Griffith, SC, Zann, R & Birkhead, TR. 2012. Intra-specific variance in sperm morphometry: a comparison between wild and domesticated zebra finches. *Ibis* 154:480-487.
32. Immler, S, Arnqvist, G & Otto SP. 2012. Ploidally antagonistic selection maintains stable genetic polymorphism. *Evolution* 66: 55-65.
33. Maklakov, AA☯, Immler, S☯, Gonzalez-Voyer, A, Rönn, J & Kolm, N. 2011. Brains and the city: big-brained passerine birds succeed in urban environments. *Biol Lett* 7: 730-732. (Recommended by F1000)
34. Immler, S, Pitnick, S, Parker, GA, Durrant, K, Lüpold, S, Calhim, S & Birkhead, TR. 2011. Resolving variation in the reproductive trade-off between sperm size and number. *Proc Nat Acad Sci USA* 108: 5325-5330.
35. Immler, S, Hamilton, MB, Poslusny, NJ, Birkhead, TR& Epifanio,JM. 2011. Postmating reproductive barriers in two unidirectionally hybridising sunfish (Centrarchidae: *Lepomis*). *J Evol Biol* 24: 111-120.
36. Parker, GA, Immler, S, Pitnick, S & Birkhead, TR. 2010. Sperm competition games: sperm size (mass) and number in a sperm displacement model. *J Theor Biol* 264: 1003-1023.
37. Immler, S, Pryke, SR, Birkhead, TR & Griffith, SC. 2010. Pronounced within-individual plasticity in sperm morphometry across social environments. *Evolution* 64: 1634-1643.
38. Immler, S, & Taborsky, M. 2009. Sequential polyandry affords post-mating sexual selection in the mouths of cichlid females. *Behav Ecol Sociobiol* 63:1219-1230.
39. Griffith, SC & Immler, S. 2009. Female infidelity and genetic compatibility in birds: the role of the genetically loaded raffle in understanding the function of extrapair paternity. *J Avian Biol* 40:97-101.
40. Lüpold, S, Calhim, S, Immler, S Birkhead, TR. 2009. Sperm morphology and sperm velocity in passerine birds. *Proc R Soc Lond B* 276:1175-1181.
41. Immler, S.  2008. Sperm competition and sperm cooperation: the potential role of diploid and haploid expression. *Reproduction*. (Invited review) 135: 275-283.
42. Immler, S, Calhim, S & Birkhead, TR. 2008. Incrased postcopulatory sexual selection results in reduced intra-male variation of sperm design. *Evolution* 62:1538-1543.
43. Pierotti, MER, Knight, ME, Immler, S, Barson, N, Turner GF, Seehausen O. 2008. Individual variation in male mating preferences for female colouration in a colour polymorphic cichlid fish from Lake Malawi. *Behav Ecol* 19:483-48.
44. Calhim, S, Immler, S & Birkhead, TR. 2007. Postcopulatory sexual selection is associated with reduced variation in sperm morphology *PLoS ONE* 2(5): e413
45. Immler, S, Saint-Jalme, M, Lesobre, L, Sorci, G, Roman, Y & Birkhead, TR. 2007. The evolution of sperm morphometry in pheasants. *J Evol Biol* 20: 1008-1014.
46. Birkhead, TR, Jamieson, BGM, Immler, S, & Giusti, F. 2007. Ultrastructure of the unusual spermatozoon of the Northern bullfinch (*Pyrrhula pyrrhula*). *Acta Zool* 88: 119-128.
47. Immler, S, Moore, HDM, Breed, WG & Birkhead, TR. 2007. By hook or by crook? Morphometry, competition and cooperation in rodent sperm. *PLoS ONE* 2(1): e170.
48. Immler, S & Birkhead, TR. 2007. Sperm competition and sperm midpiece size: no consistent pattern in passerines. *Proc R Soc Lond Ser B* 274: 561-568.
49. Birkhead, TR, Immler, S, Pellatt, AJ & Freckleton, R. 2005. Unusual sperm morphology in the Northern bullfinch (*Pyrrhula pyrrhula*). *The Auk* 123: 383-392.
50. Immler, S & Birkhead, TR. 2005. A non-invasive method for obtaining spermatozoa from birds. *Ibis* 147: 827-830.
51. Immler, S, Mazzoldi, C & Rasotto, MB. 2004. From sneaker to parental male: change of reproductive traits in the black goby, *Gobius niger* (Teleostei, Gobiidae). *J Exp Zool* 301A: 177-185.
52. **Book Chapters**

1. Immler, S. 2019. Next-Gen and the Study of Behaviour. In: Hosken, D, Wedell, N & Hunt, J. *Genes and Behaviour: Beyond Nature Nurture*. Oxford: Wiley Press.

2. Immler, S. Sperm competition. 2013. In: *Oxford Bibliographies in Evolutionary Biology*. Ed. Jonathan Losos. New York: Oxford University Press. DOI: 10.1093/OBO/9780199941728-0016

2. Birkhead, TR & Immler, S. 2006. Making sperm: design, quality control and sperm competition. In: *Spermatology*, SRF Supplement 65, (Ed. By Roldan, E & Gomendio, M.), pp. 175-181. Nottingham: Nottingham University Press.