

**Contact**

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**Main Areas of Research**

My focus has been to understand **hybrid zones**: narrow regions in which distinct populations meet, mate and produce hybrids. I have worked on a variety of field systems, including grasshoppers (*Podisma pedestris*), toads (*Bombina bombina/variegata*), butterflies (*Heliconius erato* and *H. melpomene*), and snapdragons (*Antirrhinum majus*). This led naturally to development of **mathematical models** for how populations evolve when they extend through space, and when large numbers of genes interact. These models have been applied to a wide range of questions, and in particular, to **speciation**, and to the **quantitative genetics** of complex traits. Key components of my present work are: i) a long-term study of the *Antirrhinum* hybrid zone, and ii) development of methods for inferring population structure and selection from DNA sequence variation, from both natural and experimental populations.

**Academic Career**

- 2015 – present    **Dean of Graduate School**  
*Institute of Science and Technology Austria (IST), Austria*
- 2008 – present    **Professor**, *Institute of Science and Technology (IST), Austria*
- 2000 – 2010      **Personal Chair**, Institute of Evolutionary Biology  
*University of Edinburgh, UK*
- 1990 – 2000      **Darwin Trust Fellow**, Institute of Evolutionary Biology  
*University of Edinburgh, UK*
- 1982 – 1990      **Lecturer/Reader**, Department of Genetics, *University College London, UK*
- 1979 – 1982      **Research Fellowship**, *Girton College, UK*
- 1976 – 1979      **Ph.D. in Biology** (Supervised by Dr. G.M. Hewitt)  
*University of East Anglia, UK*  
 Thesis: A narrow hybrid zone in the alpine grasshopper *Podisma pedestris*
- 1973 – 1976      **B.A. (First Class) in Natural Sciences (Genetics)**  
*University of Cambridge, UK*

**Additional research achievements**

- Scientific awards:** Erwin Schrodinger Prize (2013), *Austrian Academy of Sciences*; Mendel Medal (2013), *Leopoldina*, Darwin-Wallace Medal (2009), *Linnean Society of London*; Darwin Medal (2006), *The Royal Society*; Zoological Society Scientific Medal (1992); American Society of Naturalists President's Award (joint with Mark Kirkpatrick) (1998); David Starr Jordan Prize (joint with S. Pacala), (1994); Linnean Society Bicentennial Medal (1985).
- Academic Memberships and community service:** Elected President, *Society for the Study of Evolution* (2001, on Council 2000-2002); Elected Vice-President, *Society for the Study of Evolution* (1989); Chair, *Human Frontiers Fellowship panel* (2013-2016); Chair, *ERC Starting Grants Panel LS8* (2013 – present); Elected President, *Royal Society, Biological Sciences Awards Committee* (2009-2011), Co-Chair, *Portuguese Foundation for Science and Technology (FCT)*, Chair, *Royal Society Research Grants Committee (Board H)* (2004 - 2006).
- Editorships:** Senior Editor, *Genetics* (2016 – present), Associate Editor, *Molecular Ecology* 013 – present], Associate Editor, *Genetics* (2013 – present), Editorial Board, *Philosophical Transactions of the Royal Society B* (2010 – 2015), Handling Editor, *Evolution* (2008-2011), Editorial Board, *PLoS Biology* (2004 - 2007), Editorial Board, *American Naturalist* (2003), Editorial Board, *Journal of Evolutionary Biology* (1997-2000).

4. **Recent Grants:** 2010-2015 – ERC Advanced Grant “Information and Evolution”, €1.9M, 2010-2014 – Natural Selection in Spatially Structured Populations, (EPSRC 1013091 €215K), with Alison Etheridge, 2014-2018 – FP7 FET grant SAGE “Speed of Adaptation in Population Genetics and Evolutionary Algorithms”, grant with T. Paixao (IST), Per Kristian Lehre (Nottingham), Tobias Friedrich (Jena), Dirk Sudholt (Sheffield). (€366K)

## Publications

### 10 Most Important Scientific Publications

1. Barton, N.H. 2017. How does epistasis influence the response to selection? *Heredity* 118.1 (2017): 96-109. doi:[10.1038/hdy.2016.109](https://doi.org/10.1038/hdy.2016.109)
2. Charlesworth, D., Barton, N.H., Charlesworth, B. 2017. The sources of adaptive evolution. *Proc. Roy. Soc. (Lond.) B* 284: 2016.2864. doi:[10.1098/rspb.2016.2864](https://doi.org/10.1098/rspb.2016.2864)
3. Ringbauer, H., Coop, G., Barton, N. H.. (2017). Inferring recent demography from isolation by distance of long shared sequence blocks. *Genetics* 205(3):1335-1351 doi:[10.1534/genetics.116.196220](https://doi.org/10.1534/genetics.116.196220)
4. Paixao, T., Barton, N.H. 2016. The effect of gene interactions on the long-term response to selection. *PNAS* 113: 4422-4427 doi:[10.1073/pnas.1518830113](https://doi.org/10.1073/pnas.1518830113)
5. Paixao, T., Badkobeh, G., Barton, N.H., Dolgan, C., Dang, D.C., Friedrich, T., Lehre, P.K., Sudholt, D., Trubenova, B. 2015. Towards a unifying framework for evolutionary processes. *J. Theor. Biol.* 383: 28-43. doi:[10.1016/j.jtbi.2015.07.011](https://doi.org/10.1016/j.jtbi.2015.07.011)
6. Barton, N.H. (2009) Why sex and recombination? *Cold Spring Harbor Symposia Quant. Biol.* 74 doi: [10.1101/sqb.2009.74.030](https://doi.org/10.1101/sqb.2009.74.030)
7. Barton, N.H., Briggs, D.E.G., Eisen, J.A., Goldstein, D.B., Patel, N.H. (2007) *Evolution*. Cold Spring Harbor Laboratory Press. ISBN-13: 9780879696849
8. Kirkpatrick, M., Johnson, T. Barton, N.H. (2002) General models of multilocus evolution. *Genetics* 161: 1727-1750 PMID: 12196414
9. Coyne, J.A., N.H. Barton, and M. Turelli. (1997) A critique of Wright’s shifting balance theory of evolution. *Evolution* 51: 643-671. doi:[10.1111/j.1558-5646.1997.tb03650.x](https://doi.org/10.1111/j.1558-5646.1997.tb03650.x)
10. Barton, N. H. (1995) Linkage and the limits to natural selection. *Genetics* 140: 821-841. PMID: 7498757