

# Hollie Marshall

## Contact

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## Coding

R  
Bash  
Python  
L<sup>A</sup>T<sub>E</sub>X  
Markdown  
Snakemake

## Languages

English (Native)  
German (CEFR: A2)

## Societies

European Society for  
Evolutionary Biology

The Genetics Society

British Ecological  
Society

International Union for  
the Study of Social  
Insects

The Society for Open,  
Reliable, and  
Transparent Ecology  
and Evolutionary  
Biology

## Twitter

@MooHoll

I am an ecological epigeneticist interested in the role of epigenomic mechanisms in the evolution of non-model arthropod species. I am currently a postdoctoral research associate at the University of Edinburgh, UK. I also lead the "epigenomics task-force" for a large international project hosted by the University of Birmingham. I pride myself on my ethics as a researcher; I support open science, publishing pre-prints for all of my papers, I champion equality in academia through actively participating in University-wide policy change meetings and I jump at opportunities to engage the public with science.

## Academic Positions

15.11.19–Present

**Postdoctoral Research Associate**  
**University of Edinburgh, UK**

Insect epigenetics and reproduction.  
Supervisor: Dr. Laura Ross.

15.07.19–11.10.19

**Postdoctoral Research Assistant / Research Administrator**  
**University of Birmingham, UK**

Adaptive Epigenetics of *Daphnia magna*.  
Supervisors: Dr. Luisa Orsini and Prof. John Colbourne.

## Education

28.09.15–06.12.19

**PhD: University of Leicester, UK**

The Role of DNA Methylation in Arthropod Plasticity.  
Supervisor: Dr. Eamonn Mallon.

29.09.14–18.09.15

**MSc by Research: University of Birmingham, UK**

Temporal Genetic Stability and Fitness Responses to Human-Driven Eutrophication in *Daphnia magna*.  
Supervisor: Dr. Luisa Orsini.

28.09.09–15.07.12

**BSc (Hons): University of Worcester, UK**

Animal Biology [1st] Dissertation: Development of a Non-Invasive Method to Genotype Wild Owl Populations.  
Supervisor: Dr. Mike Wheeler.

## Research Career Breaks

01.01.10–30.09.17

**Manager / Live Presenter**

*Gala Bingo: five locations UK*

I worked part-time through out my undergraduate degree, masters degree and PhD. I also worked full-time in between education (15.07.2012 – 29.09.2014). **Having worked in a managerial role for six years I have excellent people management skills and the ability to work to strict financial targets.** I also worked as a stage presenter within the company earning 'platinum mic' recognition, which was the highest company standard of live public entertainment. **I left this job to take up the position of Biology Module Leader** for the International Foundation Year course at the University of Leicester.

## Industrial Roles

- 21.07.20–01.01.21 **Consultancy: Life science consultant** BankSearch Information Consultancy Ltd, UK  
Life science consultant on multiple international tenders for a financial software company.
- 13.02.16–24.02.16 **Consultancy: Epigenetic applications in bovine dairy breeding** Cogent Breeding Ltd, UK  
Produced a report to aid the integration of epigenetic research in the bovine dairy industry.

## Publications

Cuenca Cambroneró, M., Pantel, J., **Marshall, H.**, Nguyen, T., Tomero-Sanz, H. and Orsini, L. (2021) Evolutionary mechanisms underpinning fitness response to multiple stressors in *Daphnia*. Accepted. *Evolutionary Applications*. <https://doi.org/10.1111/eva.13258>.

Bain, S.\*, **Marshall, H.\***, de la Filia, A. G., Laetsch, D. R., Husnik, F. and Ross, L. (2021) Sex-specific expression and DNA methylation in a species with extreme sexual dimorphism and paternal genome elimination. *Molecular Ecology*. 2021(00), p1–17.

\* **Joint 1st authorship.**

**Marshall, H.**, van Zweden, J.S., Van Geystelen, A., Benaets, K., Wäckers, F., Mallon, E.B. and Wenseleers, T. (2020). Parent of origin gene expression in the bumblebee, *Bombus terrestris*, supports Haig's kinship theory for the evolution of genomic imprinting. *Evolution Letters*. 4 (6), p479-490.

**Marshall, H.**, Jones, A., Lonsdale, Z.N. and Mallon, E.B. (2020). Bumblebee worker castes show differences in allele-specific DNA methylation and allele-specific expression. *Genome Biology and Evolution*. 12 (8), p1471-1481.

**Marshall, H.**, Lonsdale, Z.N. and Mallon, E.B. (2019). Methylation and gene expression differences between bumblebee reproductive castes. *Evolution Letters*. 3 (5), p485-499.

Bebane, P., Hunt, B., Pegoraro, M., Jones, A.R.C., **Marshall, H.**, Rosato, E. and Mallon, E.B. (2019). The effects of the neonicotinoid imidacloprid on gene expression and DNA methylation in the buff-tailed bumblebee *Bombus terrestris*. *Proc. Roy. Soc. B*. 286: 20190718.

Cambroneró, M., **Marshall, H.**, De Meester, L., Davidson, T.A., Beckerman, A.P. and Orsini, L. (2018). Predictability of the impact of multiple stressors on the keystone species *Daphnia*. *Scientific Reports*. 8 (1), p17572.

Pegoraro, M., **Marshall, H.**, Lonsdale, Z.N. and Mallon, E.B. (2017). Do social insects support Haig's kin theory for the evolution of genomic imprinting? *Epigenetics*. 12 (9), p725-742.

Orsini, L., **Marshall, H.**, Cuenca-Cambroneró, M., Chaturvedi, A., Thomas, K. W., Pfrender, M.E., Spanier, K.I. and De Meester, L. (2016) Temporal genetics stability in natural populations of the waterflea *Daphnia magna* in response to strong selection pressure. *Molecular Ecology*. 25 (24), p6009–6267.

## Conference Organisation

- 16.05.17–14.09.18 **Genomics Special Interest Group** Royal Society of Entomology, UK  
Lead organiser and chair of the annual one day meeting. Secured additional funding of **£250**.
- 29.01.16–16.09.16 **CENTA Student Conference** CENTA, NERC, UK  
Joint lead organiser and chair of a one-day student conference. Secured sponsorship from numerous organisations, totalling: **£658**. Attracted industry participation from the international Cheeky Scientist company and attracted a British TV presenter/palaeontologist as keynote speaker for public engagement with science

## Professional Services

- 30.11.20–Present **Equality, Diversity and Inclusion Officer & ECR Development Coordinator**  
Member of the early career researcher committee for the Centre for Adapting to Changing Environments at the University of Edinburgh.
- 04.09.17–Present **Peer Review**  
Currently a reviewer for: *Genome Biology and Evolution*; *Apidology*; *Proceedings of the Royal Society B*. I also jointly reviewed for *Scientific Reports* with Dr. Eamonn Mallon during my PhD.

## International Collaborations

|                  |  |   |
|------------------|--|---|
| 01.07.20–Present | <b>Asian psyllid epigenetics.</b><br>Invited by Dr. Xiudao Yu to collaborate on the bioinformatic analyses of sex-specific Asian psyllid DNA methylation and gene expression data.   | Gannan Normal University, China                           |
| 01.10.18–Present | <b>Epigenetic response to stress in <i>Daphnia</i>.</b><br>Collaboration with Dr. Luisa Orsini and Prof. John Colbourne, involving sample collection, lab work, analysis and student supervision. I remotely head the "epigenetics task-force" for this grant, which includes leading an international team of PIs, postdocs and students. | University of Birmingham, UK                              |
| 01.08.18–Present | <b>Molecular mechanisms of social evolution.</b><br>Collaborated on four recent grant applications with Prof. Trine Bilde and Dr. Karen Kapheim to explore molecular mechanisms of social evolution in arthropods. Included multiple visits to Aarhus University.  | Aarhus University, Denmark and Utah State University, USA |
| 12.02.16–Present | <b>Bumblebee parent-of-origin expression.</b><br>Collaboration with Prof. Tom Wenseleers on parent-of-origin gene expression and methylation in <i>Bombus terrestris</i> as a test for Haig's Kinship theory. Project included a week long visit to Leuven for data analysis.  | KU Leuven, Belgium  |

## Awards/Grants/Prizes

|          |  |                                      |
|----------|--|--------------------------------------|
| 24.05.21 | <b>NEOF Pilot Projects Grant Competition</b><br>Co-awarded £8215.95 with Dr. Kamil Jaron. NEOF1345 – Single-individual RNA and DNA methylation sequencing: enabling studies of epigenetic mechanisms in wild-caught mesofauna. | NERC                                 |
| 10.04.21 | <b>2nd Place Talk Prize</b><br>Won second place for best oral presentation.  | Programming for Evolutionary Biology |
| 09.02.21 | <b>Marie Skłodowska-Curie Actions: Seal of Excellence Award</b><br>Scored 93.4% on an independent fellowship application, cut-off for 2020 in the life sciences was 94.4%.   | Horizon2020 European Commission      |
| 11.12.20 | <b>Training Grant</b><br>Received a training grant to attend the Physalia course: NGS analysis for gene regulation and epigenomics. £432.  | The Genetics Society, UK             |
| 15.09.20 | <b>Doctoral Inaugural Lecture (presenting on: 28/04/2021)</b><br>Invited to give a doctoral inaugural lecture based on my PhD work. This is considered a highly prestigious honour by the University.                          | University of Leicester, UK          |
| 15.09.20 | <b>College of Life Sciences, PhD Prize</b><br>For exceptional merit in the conduct and outcome of research for a PhD thesis. £150.   | University of Leicester, UK          |
| 04.02.20 | <b>Marie Skłodowska-Curie Actions: Seal of Excellence Award</b><br>Scored 92.2% on an independent fellowship application, cut-off for 2019 in the life sciences was 92.6%.   | Horizon2020 European Commission      |
| 16.12.19 | <b>Runner-Up Poster Award</b><br>Won a runner-up prize in the poster competition. £30.   | IUSSI Winter Meeting, UK             |
| 05.12.19 | <b>Fisher Memorial Trust Bursary</b><br>Received a bursary to attend and present at PopGroup53 in Leicester, UK. £250.   | Fisher Memorial Trust                |
| 15.11.19 | <b>Gold Poster Award</b><br>Won the prize for the best poster in the Epigenetics session at the 'Centenary of Genetics' conference. £380.  | The Genetics Society, UK             |
| 27.06.18 | <b>Junior Scientist Conference Grant</b><br>Received funding to aid travel costs to the ESEB conference in Montpellier, France. £350   | The Genetics Society, UK             |
| 10.05.18 | <b>Annette Cashmore Award</b><br>Winner of the Annette Cashmore postgraduate researcher award for the best student talk in 2018. £200.   | University of Leicester, UK          |
| 15.09.17 | <b>1st Place Poster Award</b><br>Won first prize in the poster competition in the annual CENTA student conference. £100.   | Loughborough University, UK          |
| 21.10.16 | <b>Innovation Placement Award</b><br>Received funding for an industrial placement. Spent two weeks applying epigenetics to the dairy bovine genetics industry through COGENT UK. £960.   | CENTA, NERC, UK                      |

|          |   |   |
|----------|---|---|
| 05.01.16 | <b>Travel Grant</b><br>Received funding to aid travel costs for a bioinformatics training course in Leipzig, Germany. 600€.   | Programming for Evolutionary Biology, Germany |
| 20.03.15 | <b>PhD Scholarship: ~£75,000</b><br>Awarded a competitively funded scholarship for PhD study, this includes a stipend for 3.5 years, all tuition fees and £8000 in research funding. NERC ref: 1645174. | CENTA, NERC, UK                               |

## Undergraduate Teaching and Supervision

|                   |   |   |
|-------------------|---|---|
| 23.08.19          | <b>Fellow of the Higher Education Academy</b><br>Awarded full fellowship to the HEA in recognition of higher education teaching excellence.   | AdvanceHE, UK   |
| 14.11.18          | <b>Invited Speaker: GTAs/PGRs who teach event</b><br>Invited to give a short presentation on challenges, experiences and advice regarding teaching whilst completing a PhD.   | University of Leicester, UK                           |
| 24.09.17-30.06.19 | <b>International Foundation Year Tutor</b><br>Module leader for biology on the Science International Foundation Year. This involves full module design and delivery, including practical sessions, all assessments and 5hrs teaching time per week each semester.                         | University of Leicester, UK                           |
| 01.07.15-15.11.19 | <b>Student Supervision</b><br>Supervised two undergraduate students (Lucy Day, 2019 and Marine Bochsler, 2019) and one undergraduate Erasmus student through successful research projects (Henar Tomero, 2018). Co-supervised three other undergraduate students and one masters student. | University of Birmingham, UK                          |
| 01.02.15-31.03.19 | <b>Demonstrating/Marking</b><br>Demonstrated on various undergraduate biology modules, including: wet lab, computer based practicals and small tutorial groups. Additionally helped teach a PhD beginner level course on the programming language R.                                      | University of Leicester, University of Birmingham, UK |

## Conference Presentations

|                     |   |                     |
|---------------------|---|---------------------|
| 07.04.21 – 10.04.21 | <b>Programming for Evolutionary Biology</b><br>Talk for a specialist audience.                                | Online              |
| 16.12.20 – 18.12.20 | <b>IUSSI North-Western European Section</b><br>Poster for a specialist audience.                              | Online              |
| 21.07.20 – 23.07.20 | <b>Arthropod Genomics Symposium 2020</b><br>Poster for a specialist audience.                                 | Online              |
| 05.01.20 – 08.01.20 | <b>53rd Population Genetics Group</b><br>Oral presentation for a specialist audience.                         | Leicester, UK       |
| 16.12.19            | <b>IUSSI North-Western European Section</b><br>Poster for a specialist audience.                              | London, UK          |
| 13.11.19 – 15.11.19 | <b>A Centenary of Genetics, The Genetics Society</b><br>Lightening talk and poster for a specialist audience. | Edinburgh, UK       |
| 14.09.18            | <b>Genomics Special Interest Group, Royal Entomological Society</b><br>Poster for specialist audience.        | Leicester, UK       |
| 19.08.18-22.08.18   | <b>Evolution</b><br>Poster for specialist audience.   | Montpellier, France |
| 18.12.17-19.12.17   | <b>IUSSI North-Western European Section</b><br>Received an 'honourable mention' for an oral presentation.     | York, UK            |
| 15.09.17            | <b>CENTA Student Conference</b><br>Won first prize in the poster competition.                                 | Loughborough, UK    |
| 16.09.17-20.09.17   | <b>Programming for Evolutionary Biology</b><br>Oral presentation with a focus on bioinformatics.              | Bialowieza, Poland  |

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|-------------------|--|------------------------------------|
| 16.05.17          | <b>Genomics Special Interest Group, Royal Entomology Society</b><br>Poster for specialist audience.  | Rothamsted Research, Harpenden, UK |
| 02.05.17          | <b>Royal Society of Biology: Festival of iology</b><br>Poster for a scientific but non-specialist audience, with a focus on public engagement. | Lincoln, UK                        |
| 16.09.16          | <b>CENTA Student Conference</b><br>3 minute 'flash talk' for a scientific but non-specialist audience.   | Leicester, UK                      |
| 08.09.16–11.09.16 | <b>Programming for Evolutionary Biology</b><br>Oral presentation with a focus on bioinformatics.   | Belgrade, Serbia                   |
| 15.06.15          | <b>Molecular and Genome Evolution Symposium</b><br>Poster for specialist audience.   | Manchester, UK                     |

## Public Engagement and Outreach

|                                   |  |                                |
|-----------------------------------|--|--------------------------------|
| 28.10.20                          | <b>Women in Ecology and Evolution Podcast</b><br>Invited for interview to discuss the bumblebee imprinting paper published in Evolution Letters. Episode: New Year New W.E.E.  | Online                         |
| 08.06.20                          | <b>Evolution Letters Seminar Series</b><br>Pre-recorded oral presentation: <a href="https://youtu.be/D0ZQMqgx2Dw">https://youtu.be/D0ZQMqgx2Dw</a> .   | Online                         |
| 26.10.19                          | <b>British Entomological Natural History Society: Student meeting</b><br>Invited speaker for entomological career options.   | Reading, UK                    |
| 01.07.19                          | <b>Frontier Magazine</b><br>Produced an article for the postgraduate magazine at the University of Leicester, currently awaiting publication. Titled: "Evolutionary theory: bumblebees may hold the answer."                     | University of Leicester, UK    |
| 01.06.19                          | <b>Soapbox Science</b><br>Selected for the Leicester Soapbox Science event. Talk title: "Time-travelling water fleas and all girl bees!"   | Leicester, UK                  |
| 20.07.18                          | <b>PhDetails Interview</b><br>Interviewed about life as a PhD student for a blog called 'PhDetails'.   | Online                         |
| 13.09.18 and<br>13.09.17–14.09.17 | <b>Genetics Education Networking for Innovation and Excellence Volunteer</b><br>Activity leader for banana DNA extraction for around 600 students aged 13-14 years.  | Leicester, UK                  |
| 08.11.17                          | <b>HOPE Against Cancer Charity Evening</b><br>Ran public engagement activities around cancer research.   | Leicester, UK                  |
| 16.08.17                          | <b>Biomedical Research CPD: Public Engagement Training</b><br>Aided the GENIE department in delivering public engagement training during the Chinese Biomedical Science Continuing Professional Development course.              | Leicester, UK                  |
| 17.03.17–18.03.17                 | <b>Big Bang Fair Volunteer</b><br>Volunteered for two days representing ecological genetics as a career path at a national STEM conference for school children.  | Birmingham, UK                 |
| 07.02.17                          | <b>Cafe Research</b><br>Gave a 10 minute public talk to members of the University of Leicester's research community.   | Leicester, UK                  |
| 27.01.17                          | <b>Public Engagement Training</b><br>Obtained a place on a competitive training course for public engagement. It focused on science communication using techniques other than the a standard lecture/talk. E.g. science busking. | British Ecological Society, UK |
| 01.02.17                          | <b>PodhD Podcast</b><br>Invited for an interview about my research which was broadcast as a podcast online (episode 5). Part of the PubhD brand.   | Online                         |
| 14.06.16                          | <b>PubhD Talk</b><br>Gave a 20 minute talk to the general public in a pub using only a whiteboard to explain my research.  | Leicester, UK                  |
| 29.10.15–31.12.19                 | <b>STEM Ambassador</b><br>Regularly give educational/career talks to students from ages 13-18.   | UK                             |

## Relevant Training

|                   |  |                                |
|-------------------|--|--------------------------------|
| 11.01.21–15.01.21 | <b>NGS Analysis for gene regulation and epigenomics.</b><br>Pysalia training course covering the analysis of Hi-C, ChIP-Seq and ATAC-Seq along with Snakemake and the integration of multi-omics data.   | Online                         |
| 04.04.19          | <b>Continuing Professional Development: Inspiring young people in STEM</b><br>Two week course, self-paced.   | STEM Ambassadors, UK           |
| 04.05.18          | <b>Continuing Professional Development: Assessment for learning</b><br>Tutoring Continuing Professional Development course: how to use formative assessment and feedback effectively.  | University of Sheffield, UK    |
| 16.01.17–18.01.17 | <b>Population Genomics Workshop</b><br>Secured a place on a competitive week long training course analysing whole genome population data using BASH.   | University of Sheffield, UK    |
| 09.02.16–27.02.16 | <b>Programming for Evolutionary Biology</b><br>Won a place on a prestigious three week long training course covering many aspects of bioinformatics within the fields of evolution and ecology. Including coding courses on: R, BASH (Linux) and Python. | University of Leipzig, Germany |
| 22.03.15–27.03.15 | <b>NERC-MDIBL Evolutionary Genomics</b><br>Attended a week long course on RNA-Seq data analysis.   | University of Birmingham, UK   |
| 24.05.11–27.05.11 | <b>Molecular Ecology Techniques</b><br>Secured a place as the only undergraduate student (that year) to attend a week long course on DNA extraction, microsatellite amplification and population genetic analysis.                                       | University of Sheffield, UK    |