

Philip T. Leftwich

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I am a PhD research scientist and lecturer, with experience in genetics, data science and microbiome community analysis.

Education

PhD	Norwich
UNIVERSITY OF EAST ANGLIA	2009 - 2013
• Thesis: Male Reproductive Success and Population Control in the Mediterranean Fruit Fly.	
BSc (Hons) / Zoology	Durham
DURHAM UNIVERSITY	2004 - 2008

Employment

Lecturer	Norwich
BIOLOGICAL SCIENCES, UNIVERSITY OF EAST ANGLIA	2019 - Current
Postdoctoral Researcher/Project Manager	Pirbright
ARTHROPOD GENETICS GROUP, PIRBRIGHT INSTITUTE	2016 - 2019
Lecturer in Ecology and Biodiversity	Norwich
BIOLOGICAL SCIENCES, UNIVERSITY OF EAST ANGLIA	2015 - 2016
Postdoctoral Researcher	Norwich
BIOLOGICAL SCIENCES, UNIVERSITY OF EAST ANGLIA	2012 - 2015

Qualifications

HEA Fellow	York
HIGHER EDUCATION ACADEMY	2016

Teaching

Module organiser	Data Science for Biologists; Genetics
Lecturer	Genes, Genomes and Genomics; Science Communication; Skills for Biologists; Microbiology; Biodiversity; Evolution, Behaviour and Ecology; Medical Entomology (LSHTM)
Tutor	Field Ecology; Evolution, Health and Disease
Outreach	The Brilliant Club, Villier's Park Educational Trust, Royal Society Summer Science

Administrative Duties

Chair of Extenuating Circumstances Panel	University of East Anglia
SCHOOL OF BIOLOGICAL SCIENCES	2021-present
Statistician - Animal Welfare Ethical Review Body	University of East Anglia
FACULTY OF SCIENCE	2021-present
Student Partnership Officer	University of East Anglia
SCHOOL OF BIOLOGICAL SCIENCES	2019-present

Professional Service

Article reviews

Behavioural ecology and sociobiology; BMC biology; Insects; Journal of Evolutionary Biology; Phil. Transactions of the Royal Society; PLoS Genetics; Proceedings of the Royal Society; Molecular Ecology

Grant reviews

BBSRC Fellowships; GWIS National Fellowships

Professional memberships

Genetics Society; Vectorbite; Nationwide Network of BioScience Educators; Advance HE

Consultancy

OUP

AUTHOR

- Maths Skills for A-level Biology 2nd Edition: a practical handbook: <https://amzn.to/3xjUJIN>
- The Scientific Method and Experimental Design (In prep) - part of the Oxford Biology Primers book series

Oxford

2020-present

Benchling

CONSULTANT AND CONTENT DEVELOPER

- Consultancy and speaking
- Content developer: <https://www.benchling.com/educators/>

San Francisco

2020-present

Physalia Courses

INSTRUCTOR

- An Introduction to Population Genomics: covers and introduction to Linux OS, Python and R analysing NGS data and SNP calling

Online

2019

OCR

PROGRAMME DEVELOPER

- Maths for Biology: Online workshops for secondary school teachers

Oxford

2016-present

Presentations

EDUCATION

AMSCUE

SPEAKER

- "Online Molecular Biology Labs"

Online

2021

OCR Science Forum

SPEAKER

- The impact of COVID-19, present and future

Online

2021

HUBS Bio-Summit

SPEAKER

- "Using Electronic Lab Notebooks to improve reflective practises in learning"

Online

2020

Dry Labs Real Science

SPEAKER

- "Molecular Biology tools for Online teaching"

Online

2020

Higher Education Academy Talks

INVITED SPEAKER

- "Synchronous on-line teaching in the biomedical sciences - Discovering how coronavirus PCR testing works"

Online

2020

RESEARCH

UEA CEEC Rebellion

PLENARY

- "Genetic Pest Management: knocking out pest species with applied genetics"

Online

2021

Entomological Society of America

INVITED SPEAKER

- "Localised gene drives for insect population control"

Vancouver

2018

Society of Molecular Biology & Evolution

SPEAKER

- "The microbiome of the mediterranean fruit fly"

Vienna

2015

Department of Genetics

Cambridge

INVITED SPEAKER

2014

- “An introduction to genetic pest management”

Evolution

Ottawa

SPEAKER

2012

- “What makes a successful male? Strategies for improved insect pest management”

Grants

BBSRC

University of East Anglia

GIFTS THAT KEEP ON GIVING: MATERNAL EFFECTS AND INSECT PEST CONTROL

2020

- PhD studentship
- Co-supervisor
- Funding amount 100,000 GBP

BBSRC

University of East Anglia

CRISPR CAS9 BASED SEX-CONVERSION GENE DRIVES FOR PEST INSECT MANAGEMENT

2019

- PhD studentship
- Co-supervisor
- Funding amount 100,000 GBP

Entomological Society of America

Pirbright Institute

ENTOMOLOGY PROGRAM ENHANCEMENT

2018

- Travel
- Funding amount 1000 GBP

Infravec

Pirbright Institute

INTRODUCTION TO BIOINFORMATICS RESOURCES FOR VECTOR GENOMICS STUDIES

2018

- Training
- Funding amount 460 GBP

BBSRC

University of East Anglia

COLONIZATION, DOMESTICATION AND POPULATION CONTROL IN PEST INSECTS

2012

- Research grant
- Researcher Co-I
- Funding amount 376,000 GBP

Google Scholar metrics: h-index: 10

REFEREED JOURNAL PAPERS

Harvey-Samuel, T., Xu, X., Lovett, E., Dafa'alla, T., Walker, A., Norman, V., Carter, R., Teal, J., Akilan, L., **Leftwich**, P., & Alphey, L. (2021). Engineered expression of the invertebrate-specific scorpion toxin AaHIT reduces adult longevity and female fecundity in the diamondback moth *Plutella xylostella*. *Pest Management Science*, 77(7), 3154–3164.

Leftwich, P., Spurgin, L., Harvey-Samuel, T., Thomas, C., Paladino, L., Edgington, M., & Alphey, L. (2021). Genetic pest management and the background genetics of release strains. *Philosophical Transactions of the Royal Society B*, 376(1818).

Anderson, M., Purcell, J., Verkuijl, S., Norman, V., **Leftwich**, P., Harvey-Samuel, T., & Alphey, L. (2020). Expanding the CRISPR toolbox in Culicine mosquitoes: In vitro validation of pol III promoters. *ACS Synthetic Biology*, 9(3), 678–681.

Leftwich, P., Edgington, M., & Chapman, T. (2020). Transmission efficiency drives host–microbe associations. *Proceedings of the Royal Society B*, 287(1934).

Tng, P., Paladino, L., Verkuijl, S., Purcell, J., Merits, A., **Leftwich**, P., Fragkoudis, R., Noad, R., & Alphey, L. (2020). Cas13b-dependent and Cas13b-independent RNA knockdown of viral sequences in mosquito cells following guide RNA expression. *Communications Biology*, 3(1), 1–9.

Leftwich, P., Nash, W., Friend, L., & Chapman, T. (2019). Contribution of maternal effects to dietary selection in Mediterranean fruit flies. *Evolution*, 73(2), 278–292.

Redford, K., Brooks, T., Macfarlane, N., Adams, J., Alphey, L., Bennet, E., Delborne, J., Eggermont, H., Esvelt, K., Kingirl, A., Kokotovich, A., Kolodziejczyk, B., Kuiken, T., Mead, A., Oliva, M., Perello, E., Slobodian, L., Thizy, D., Tompkins, D., Winter, G., Campbell, K., Elsensohn, J., Holmes, N., Farmer, C., Keitt, B., **Leftwich**, P., Maloney, T., Masiga, D., Newhouse, A., Novak, B., ... Oppen, M. (2019). *Genetic frontiers for conservation: An assessment of synthetic biology and biodiversity conservation*.

Leftwich, P., & Chapman, T. (2018). Testing for assortative mating by diet in *Drosophila melanogaster*. *Bio-Protocol*, 8(20).

Leftwich, P., Clarke, N., Hutchings, M., & Chapman, T. (2018). Gut microbiomes and reproductive isolation in *drosophila* (vol 114, pg 12767, 2017). *Proceedings of the National Academy of Sciences*, 115(10).

Leftwich, P., Clarke, N., Hutchings, M., & Chapman, T. (2018). Reply to obadia et al.: Effect of methyl paraben on host–microbiota interactions in *Drosophila melanogaster*. *Proceedings of the National Academy of Sciences*, 201805499.

Leftwich, P., Edgington, M., Harvey-Samuel, T., Paladino, L., Norman, V., & Alphey, L. (2018). Recent advances in threshold-dependent gene drives for mosquitoes. *Biochemical Society Transactions*, 46(5), 1203–1212.

Leftwich, P., Hutchings, M., & Chapman, T. (2018). Diet, gut microbes and host mate choice: Understanding the significance of microbiome effects on host mate choice requires a case by case evaluation. *Bioessays*, 40(12).

Leftwich, PT., Clarke, NV. E., Hutchings, MI., & Chapman, T. (2018). Reply to rosenberg et al.: Diet, gut bacteria, and assortative mating in *Drosophila melanogaster*. *Proceedings of the National Academy of Sciences*, <https://doi.org/10.1073/pnas.1805499115>.

Leftwich, P., Nash, W., Friend, L., & Chapman, T. (2017). Adaptation to divergent larval diets in the medfly, *Ceratitis capitata*. *Evolution*, 71(2), 289–303.

Longdon, B., Day, J., Schulz, N., **Leftwich**, P., Jong, Ma., Breuker, C., Gibbs, M., Obbard, D., Wilfert, L., Smith, S., McGonigle, J., Houslay, T., Wright, L., Livraghi, L., Evans, L., Friend, L., Chapman, T., Vontas, J., Kambouraki, N., & Jiggins, F. (2017). Vertically transmitted rhabdoviruses are found across three insect families and have dynamic interactions with their hosts. *Proceedings of the Royal Society B: Biological Sciences*, 284(1847).

Leftwich, P., Bolton, M., & Chapman, T. (2016). Evolutionary biology and genetic techniques for insect control. *Evolutionary Applications*, 9(1), 212–230.

Leftwich, P., Koukidou, M., Rempoulakis, P., Gong, H.-F., Zacharopoulou, A., Fu, G., Chapman, T., Economopoulos, A., Vontas, J., & Alphey, L. (2014). Genetic elimination of field-cage populations of Mediterranean fruit flies. *Proceedings of the Royal Society B: Biological Sciences*, 281(1792).

Alphey, L., Ant, T., Koukidou, M., **Leftwich**, P., Rempoulakis, P., Vontas, J., Economopoulos, A., & Chapman, T. (2012). Genetic improvements to sterile-male control of tephritid fruit flies. *Tephritid Workers of Europe and Middle East (TEAM)*, <https://Nucleus.iaea.org> ..., 201, 2.

Leftwich, P., Edward, D., Alphey, L., Gage, M., & Chapman, T. (2012). Variation in adult sex ratio alters the association between courtship, mating frequency and paternity in the lek-forming fruitfly *Ceratitis capitata*. *Journal of Evolutionary Biology*, 25(9), 1732–1740.

WORKING PAPERS UNDER REVISION OR REVIEW

Darrington, M., **Leftwich**, P., Holmes, N., Friend, L., Clarke, N., Worsley, S., Margaritopolous, J., Hogenhout, S., Hutchings, M., & Chapman, T. (2021). Characterisation of the symbionts in the Mediterranean fruitfly gut. *bioRxiv*.

Tully, B., Buongiorno, J., Cohen, A., Cram, J., Garber, A., Hu, S., Krinos, A., **Leftwich**, P., Marshall, A., Sieradzki, E., Speth, D., Suter, E., Trivedi, C., Valentin-Alvarado, L., Weissman, J., Lee, M., Alexander, H., Collins, R., Pachiadaki, M., Rhodes, A., & Decatur, W. (2021). The Bioinformatics Virtual Coordination Network: An open-source and interactive learning environment. *Frontiers in Education - In Review*.

BOOKS

Penny, J., & **Leftwich**, P. (2018). *Maths skills for A-level biology* [Book]. OUP (Oxford).

Notes

- This CV is a reproducible project; all the source code behind this CV is available on this GitHub repo.

