

Daniel T. Grimes D.Phil.

Assistant Professor, Department of Biology
Member, Institute of Molecular Biology
Associate Member, Knight Campus for Accelerating Scientific Impact
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Pronouns: he/him/his

EDUCATION, TRAINING & EMPLOYMENT

University of Oxford, UK, 2004-2008

M.Biochem. Molecular and Cellular Biochemistry (Hons.)

The Queen's College & Department of Biochemistry

University of Oxford, UK, 2008-2012

D.Phil. Developmental Genetics

Medical Research Council Harwell Institute

Princeton University, USA, 2013-2018

Postdoctoral Fellow

Molecular Biology Department

University of Oregon, USA, 2019-present

Assistant Professor, Department of Biology, 2019-present

Member, Institute of Molecular Biology, 2019-present

Associate Member, Knight Campus for Accelerating Scientific Impact, 2020-present

HONORS & AWARDS

- 2021 NIH (NIGMS) MIRA Outstanding Research Award
- 2021 HHMI Gilliam Fellowship for Advanced Study, Howard Hughes Medical Institute
- 2021 Faculty Excellence in Universal Design Award, University of Oregon (Finalist)
- 2020 Oregon Health and Sciences University Medical Research Foundation New Investigator Award
- 2019 NIH (NIAMS) R00 Pathway to Independence Award
- 2019 Donald E. And Delia B. Baxter Foundation Faculty Scholar
- 2017 NIH (NIAMS) K99 Pathway to Independence Award
- 2017 DeLill Nasser Award of the Genetics Society of America
- 2017 Travel Award, American Society of Cell Biology
- 2016 American Heart Association Postdoctoral Fellowship
- 2016 New Jersey Commission on Spinal Cord Injury Research Training Award
- 2013 Marine Biological Laboratories Scholarship to attend Zebrafish Course
- 2013 Travel Award, British Society of Developmental Biology
- 2012 Award for Outstanding Oral Presentation, Mammalian Genetics & Development Workshop
- 2012 Award for Outstanding Oral Presentation, Young Embryologists Meeting, UCL London
- 2011 Award for Outstanding Oral Presentation, Annual Student Symposium, University of Oxford
- 2010 European Molecular Biology Laboratories (EMBL) Award to attend Protein Dynamics Course
- 2009 Award for Outstanding Oral Presentation, Mammalian Genetics & Development Workshop
- 2009 Award for Outstanding Poster Presentation, Annual Student Symposium, University of Oxford
- 2008 Medical Research Council D.Phil. Studentship
- 2007 Wellcome Trust Summer Vacation Fellowship

PUBLICATIONS (in reverse chronological order)

- 18 Bearce EA[†] & Grimes DT[†]. (2021). On being the right shape: roles for cilia and cerebrospinal fluid flow in body and spine morphology. *Seminars in Cell and Developmental Biology* 19:30173-9. †co-corresponding authors.

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- 17 **Grimes DT**, Patterson VL, Luna-Arvizu G, Schottenfeld-Roames J, Irons ZH & Burdine RD. (2020). Left-right asymmetric heart jogging increases the robustness of dextral heart looping in zebrafish. *Developmental Biology* 459(2):79-86.
- 16 Walker RV, Keynton JL, **Grimes DT**, Sreekumar V, Williams DJ, Esapa C, Wu D, Knight MM & Norris DP. (2019). Ciliary exclusion of Polycystin-2 promotes kidney cystogenesis in an autosomal dominant polycystic kidney disease model. *Nature Communications* 10(1):4072.
- 15 Lakhina V, McReynolds M, **Grimes DT**, Rabinowitz JD, Burdine RD & Murphy CT. (2019). ZIP-5/bZIP transcriptional factor regulation of folate metabolism is critical for aging axon regeneration. *BioRxiv* doi.org/10.1101/727719.
- 14 **Grimes DT**. (2019). Making and breaking symmetry in development, growth, and disease. *Development* 146(16):pii:dev170985.
- 13 **Grimes DT**. (2019). Developmental biology: Go with the flow to keep the spine straight. *Current Biology* 29(3):PR101-PR103.
- 12 Harris A, Siggers P, Corrochano S, Warr N, Sagar D, **Grimes DT**, Suzuki M, Burdine RD, Cong F, Koo B-K, Clevers H, Stevant I, Nef S, Wells S, Brauner R, Rhouma BB, Belguith N, Eozenu C, Bignon-Topalovic J, Bashamboo A, McElreavey K & Greenfield A. (2018). Znr3 functions in mammalian sex determination by inhibiting canonical Wnt signaling. *Proceedings of the National Academy of Sciences* 115(21):5474-9.
- 11 **Grimes DT**[†] & Burdine RD[†]. (2017). Left-right asymmetry: breaking symmetry to asymmetric morphogenesis. *Trends in Genetics* 33(9):616-28. [†]co-corresponding authors.
- 10 Grant MG*, Patterson VL*, **Grimes DT** & Burdine RD. (2017). Modeling syndromic congenital heart defects in zebrafish. *Current Topics in Developmental Biology* 124:1-40. *co-first authors.
- 9 Burdine RD & **Grimes DT**. (2016). Antagonistic interactions in the zebrafish midline prior to the emergence of asymmetric gene expression are important for left-right patterning. *Philosophical Transactions of the Royal Society B* 371(1710):pii:2015402.
- 8 **Grimes DT***, Boswell CW*, Morante NF*, Henkelman RM, Burdine RD & Ciruna B. (2016). Zebrafish models of idiopathic scoliosis link cerebrospinal fluid flow defects to spine curvature. *Science* 352(6291):1341-44. *co-first authors.
- 7 **Grimes DT**, Keynton JL, Buenavista MT, Jin X, Patel SH, Shinohara K, Vibert J, Williams DJ, Hamada H, Hussain R, Nauli SM & Norris DP. (2016). Genetic analysis reveals a hierarchy of interactions between Polycystin-encoding genes and genes controlling cilia function during left-right determination. *PLoS Genetics* 12(6):e1006070.
- 6 Jaffe KM*, **Grimes DT***, Schottenfeld-Roames J*, Werner ME, Ku T, Kim SK, Pelliccia JL, Morante NF, Mitchell BJ[†], & Burdine RD[†]. (2016). c21orf59/kurly controls both cilia motility and polarization. *Cell Reports* 14(8):1841-9. *co-first authors. [†]co-corresponding authors.
- 5 Goggolidou P*, Stevens JL*, Agueci F, Keynton JL, Wheway G, **Grimes DT**, Patel SH, Hilton H, Morthorst SK, DiPaolo A, Williams DJ, Sanderson J, Khoronenkova S, Powles-Glover N, Ermakov A, Esapa C, Romero R, Dianov GL, Briscoe J, Johnson C, Pedersen LB & Norris DP. (2014). ATMIN is a transcriptional regulator of both lung morphogenesis and ciliogenesis. *Development* 141(20):2966-77. *co-first authors.
- 4 Norris DP & **Grimes DT**. (2012). Cilia discern left from right. *Science* 338(6104):206-7.
- 3 Norris DP & **Grimes DT**. (2012). Mouse models of ciliopathies: the state of the art. *Disease Models and Mechanisms* 5(3):299-312.

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- 2 Field S*, Riley KL*, **Grimes DT***, Hilton H, Simon M, Powles-Glover N, Siggers P, Bogani D, Greenfield A & Norris DP. (2011). Pkd111 establishes left-right asymmetry and physically interacts with Pkd2. *Development* 138(6):1131-42. *co-first authors.
- 1 Patterson VL, Damrau C, Paudyal A, Reeve B, **Grimes DT**, Stewart ME, Williams DJ, Siggers P, Greenfield A & Murdoch JN. (2009). Mouse hitchhiker mutants have spina bifida, dorso-ventral patterning defects and polydactyly: identification of Tulp3 as a novel negative regulator of the Sonic hedgehog signaling pathway. *Human Molecular Genetics* 18(10):1719-39.

FUNDING AWARDS

Active

- 2021-2026 NIH (NIGMS) Maximizing Investigators' Research Award (Grimes, PI)
2019-2022 NIH (NIAMS) R00 Pathway to Independence Award (Grimes, PI)

Completed

- 2020-2022 OHSU Medical Research Foundation New Investigator Grant (Grimes, PI)
2019-2020 Baxter Foundation Faculty Scholar Award (Grimes, PI)
2017-2019 NIH (NIAMS) K99 Pathway to Independence Award (Grimes, PI)
2016-2017 American Heart Association Postdoctoral Fellowship (Grimes, PI)
2016-2017 New Jersey Commission on Spinal Cord Injury Research Training Award (Grimes, PI)

SELECTED PRESENTATIONS

- Upcoming BSCB GenSoc UK Cilia Network e-Symposium. Virtual. ([Invited](#))
2021 54th Northwest Society for Developmental Biology. Virtual. ([Invited Plenary Talk](#))
2020 Kavli Institute for Theoretical Physics, Symmetries in Morphogenesis: From Mechanisms to Principles. Virtual. ([Invited](#))
2019 Zebrafish Disease Models 12, Boston, MA
2018 Columbia University, New York, NY ([Invited](#))
2017 University of Oregon, Eugene, OR ([Invited](#))
2017 ASCB-EMBO 2017 Meeting, Philadelphia, PA
2017 Mid-Atlantic Society for Developmental Biology Meeting, University of Maryland, MD
2016 Imperial College London, Institute of Medical Sciences, London, UK ([Invited](#))
2016 MRC Harwell Institute, Oxford, UK ([Invited](#))
2016 The Allied Genetics Conference, Orlando, FL
2015 Mid-Atlantic Regional Zebrafish Meeting, John's Hopkins University, MD
2015 Mid-Atlantic Society for Developmental Biology Meeting, Princeton University, NJ
2013 British Society for Developmental Biology Meeting, Warwick University, UK
2012 Annual Developmental Biology Symposium, University of Oxford, Oxford, UK ([Invited](#))
2012 23rd Mammalian Genetics and Development Workshop, University College London, UK ([Outstanding talk award](#))
2012 4th Young Embryologists Meeting, University College London, UK ([Outstanding talk award](#))
2011 Yale University, New Haven, CT ([Invited](#))
2011 Princeton University, Princeton, NJ ([Invited](#))
2009 20th Mammalian Genetics and Development Workshop, University College London, UK ([Outstanding talk award](#))
2007 18th Mammalian Genetics and Development Workshop, University College London, UK

MENTORING

Postdoctoral Fellows

Dr. Elizabeth A. Bearce, PhD, 2019-present NIH F32 Fellowship

Ph.D. Students

Zoe H. Irons, 2019-present NIH F31 Fellowship
Gabriel Luna-Arvizu, 2019-present HHMI Gilliam Fellowship
Katie H. Fisher, 2020-present NSF Graduate Research Fellowship, NIH F31 & American Heart Association Fellowships

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John O'Hara-Smith, 2022-present

Undergraduate Researchers

Colin J. Kuhns, 2019-present

Cynthia Sabazali, summer 2019

Sam B. Craig, 2019-present

Sophie Fisher, 2021-present

Maisey Schering, 2021-present

OURS, Mini-Grant and Knight Campus Scholarship

SPUR award

OURS and Knight Campus Scholarship

OURS

Knight Campus & Rod Capaldi Scholarships

Other Lab Members

Judy Peirce, Research Assistant, 2019-present

Bryson Tyler Ricamona, Research Assistant, 2021-present

Rotation Students

Zoe H. Irons, winter 2019

Gabriel Luna-Arvizu, spring 2019

Rachel Hopton, spring 2019

Sophia Frantz, spring 2019

Hannah Markovic, winter 2020

Katie H. Fisher, winter 2020

Hope Healey, spring 2020

Kayla Ladd, fall 2020

John O'Hara-Smith, winter 2021

William Crow, fall 2021

Jordan Brown, spring 2022

Student Advisory Committees

Zoe H. Irons, Dissertation Advisory Committee (Adviser), 2019-present

Gabriel Luna-Arvizu, Dissertation Advisory Committee (Adviser), 2019-present

Hannah Markovic, Interim Advisory Committee (Member), 2019-2020

Heather Foote, Interim Advisory Committee (Member), 2019-2020

Acadia DiNardo, Interim Advisory Committee (Member), 2019-2020

Julia Ngo, Guillemain & Parthasarathy labs, Qualifying Exam Committee (Chair), 2020

Kayla Ladd, Interim Advisory Committee (Chair), 2020-2021

Katie Fisher, Dissertation Advisory Committee (Adviser), 2020-present

Heather Foote, Doe lab, Dissertation Advisory Committee (Member), 2020-present

Sam B. Craig, Clark Honors College Thesis Committee (Adviser), 2020-present

Sam Horst, Stankunas lab, Dissertation Advisory Committee (Chair), 2021-present

Erin Jezuit, von Dassow lab, Qualifying Exam Committee, 2022

External Thesis Committee Member

Pedro Sampaio, Susana Lopes Lab, Universidade Nova di Lisboa, Portugal, 2021

PROFESSIONAL SERVICE

Editing

Editor, Special Issue of Frontiers in Cell and Developmental Biology, 2021-2022

Grant Peer Review

HHMI Gilliam Fellowship reviewer, 2022

NIH-NIGMS K99 Review Panel, 2021

French National Research Agency, *ad hoc* reviewer, 2021

NIH DEV2 Study Section Member, 2021

NSF Panelist, 2020-2021

Fondation per la Recherche Médicale, *ad hoc* reviewer, 2020-2021

UK Research and Innovation-BBSRC, *ad hoc* reviewer, 2020

Oregon Health and Sciences University, Medical Research Foundation, panelist, 2020

Manuscript Peer Review

BMC Biology, BMC Developmental Biology, Circulation: Genomic and Precision Medicine, Current Biology, Development, Disease Models and Mechanisms, eLife, Faculty of 1000, iScience, Journal of Anatomy, Journal of Cardiovascular Development and Disease, Nature, Nature Communications, Plos

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Genetics, Proceedings of the National Academy of Sciences USA, Science Advances, Scientific Reports, Symmetry

Conference Organization

Co-organizer, Biology and Physics of Left-Right Patterning Workshop, Company of Biologists, 2022

Organizer of Career Development Sessions, FASEB Cilia and Flagella, 2019

Co-organizer, ENCODE Symposium, MRC Harwell, 2013

Co-organizer, Medical Sciences Annual Symposium, University of Oxford, 2010

Societies

Prepublication Highlighter, PreLights, The Company of Biologists, 2018

International Zebrafish Society, Newsletter Associate Editor, 2017-2020

Associate Faculty Member, Faculty of 1000, 2013-2019

Editor, Phenotype, Oxford University Biochemical Society, 2010-2011

Guest Editor, The Biochemist, 2010

Committee Member, Oxford University Biochemical Society, 2009-2012

UNIVERSITY SERVICE

- AY21/22 Hui Scholarship Selection Committee
Undergraduate Affairs Committee, Department of Biology
HHMI Gilliam Fellowship, Internal Selection Committee
Aquatics Animal Care Services, Faculty Advisory Committee
X-Ray Core, Faculty Advisory Committee
Institute of Molecular Biology Advisory Committee (elected position)
- AY20/21 Graduate Recruitment and Admissions Committee, Department of Biology
Institute of Molecular Biology Retreat Organizing Committee
Institute of Molecular Biology Advisory Committee (elected position)
X-Ray Core, Faculty Advisory Committee
- AY19/20 Graduate Recruitment and Admissions Committee, Department of Biology
Institute of Molecular Biology Retreat Organizing Committee
X-Ray Core, Faculty Advisory Committee

TEACHING

University of Oregon

- AY21/22 400/500-level Evolutionary Developmental Biology
Bio607 Cell and Developmental Biology Journal Club (with Bruce Bowerman)
Early Arrival for Graduate Education and Research Workshop (Guest Lecturer)
Summer Program for Undergraduate Research (Guest Lecturer)
- AY20/21 242HC Mutants and the Making of Us, Clark Honors College - 19 classes
Summer Program for Undergraduate Research (Guest Lecturer)
Bio610 Ethics in the Life Sciences (Guest Lecturer)
- AY19/20 Institute of Molecular Biology, Graduate Quarterly Exam
Summer Program for Undergraduate Research (Guest Lecturer)
Bio610 Ethics in the Life Sciences (Guest Lecturer)

Princeton University

- AY15/16 MOL/CHM345 Biochemistry (Lecturer and Head Teaching Assistant) - 13 lectures
Neurotechnologies Course (Guest Lecturer)
- AY14/15 MOL/CHM345 Biochemistry (Lecturer and Head Teaching Assistant) - 13 lectures
- AY13/14 MOL348 Cell and Development (Lecturer and Teaching Assistant) - 10 classes

University of Oxford

- 2009-2012 Molecular Medicine (Tutor) - 12 tutorials