Curriculum Vitae: Thomas A. Richards

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Web: https://protists.co.uk

Qualifications

D. Phil.	University of Oxford and the Natural History Museum, London	
	(BBSRC Studentship)	Awarded: 2006
	Title: Horizontal Gene Transfer and the Evolution of Eukaryotes	
	Supervisors: Prof. T. Martin Embley FRS (University of Newcastle)	
	Prof. Tom Cavalier-Smith FRS (University of Oxford)	
M.Sc.	University of Oxford (BBSRC studentship)	Awarded: 2001
B.Sc.	University College, London	Awarded: 1999

Appointments

2020-	Professor of Evolutionary Genomics (University of Oxford)
2019-	Tutorial Fellow (Merton College Oxford)
2015-19	Professor of Evolutionary Genomics (University of Exeter)
2014-24	Royal Society University Research Fellow
2013-15	Senior Research Fellow (University of Exeter)
2010-13	Group Leader (Natural History Museum, London) 80% FTE
2010-13	Senior Research Fellow (University of Exeter) 20% FTE
2009-10	Senior Research Fellow (University of Exeter)
2007-9	Early Career Fellow, The Leverhulme Trust (University of Exeter)
2005-7	DEFRA Postdoctoral Fellow (University of Exeter) with Nicholas J. Talbot FRS

Personal Awards

2023-24	Wissenschaftskolleg Zu Berlin Fellowship, Germany
2018	Hutner Award (International Society of Protistology)
2016-17	Miller Visiting Professorship, University of California, Berkeley
2014	Philip Leverhulme Award, Biology
2014-24	Royal Society University Research Fellowship
2012-16	European Molecular Biology Organisation (EMBO), Young Investigator Award
2012-18	Canadian Institute for Advanced Research (CIFAR), Fellow of the Integrated Microbial Biodiversity program
2012	Berkeley Award, British Mycology Society
2009	President's Medal for Cell Biology, Society for Experimental Biology
2007-10	The Leverhulme Trust, Early Career Fellowship
2000	NASA Planetary Biology Internship, Rensselaer Polytechnic Institute, USA

Awards for People and Work under My Supervision

2021	EMBO Long Term Fellowship; Varsha Mathur (€125,000)
2020	Marie Curie Fellowship; Luis Javier Galindo (€213,000)
2019	Merton College, Oxford, Junior Research Fellowship; Nick Irwin
2017	Royal Society Newton Fellowship; Elisabet Alacid-Fernandez (£113,000)
2015	Marie Curie Fellowship; Estelle Kilas (€183,454)
2013	EMBO Long Term Fellowship; Jeremy Wideman (€100,000)
2012	Royal Society Newton Fellowship; Adam Monier (£82,875)

2012	EMBO Long Term Fellowship; Aurélie Chambouvet (€50,000 – 1 year)
2011	Marie Curie Fellowship; Aurélie Chambouvet (€209,033)

External Responsibilities and Commissions of Trust

2025	Faculty Evaluation for Okinawa Institute of Science and Technology (OIST), Japan
2024	Advisory Committee Moore foundation programme 'Evolution of Motion at the Microscale' (awarding $28,000,000)
2023-	Editorial advisory board member, Current Biology
2023-	Biodiversity Cell Atlas Project, Committee Member
2022-	Darwin Tree of Life, Steering Group Member
2022-24	Royal Society Secondment to Food Standard Agency, UK Government, to support legislation development for the '2023 Genetic Technology (Precision Breeding) Act' (~3 hours per week) Responsibilities: • Consultation on elements of primary legislation (passed into law March 2023) • Team member developing secondary legislation • General council and authors of briefs on a range novel technologies • Reviewer/Consultant 'Enabling Genetic Technologies for Food Security', Royal Society, Policy Brief
2021	Consultant for Tree of Life Redisplay, Diversity of Life Gallery, Central Aisle, Oxford Natural History Museum Oxford
2021	Cosignatory/Applicant Culture Collections Algae Protist (CCAP – National Scientific Infrastructure - funded by NERC) community needs statement for facility renewal
2020-25	Scientific Advisory Board, NERC Culture Collections Algae Protist (CCAP – National Scientific Infrastructure - funded by NERC)
2021-	Ad hoc reviewer and panel member for The Research Council of Norway
2020-	Ad hoc reviewer and panel member for Wellcome Trust grant review panel
2020-24	Board of Visitors (governing body and trustee) at the Oxford Natural History Museum Oxford
2019-	Governing Body Member and Trustee, Merton College Oxford
2019-23	Member of the Board of Trustee, BBSRC Earlham Institute
2017-20	Steering group member for the University of Exeter's Translational Research Exchange
2016-	Associate Editor, Environmental Microbiology
2012-2015	Elected as council member to The Linnean Society, London
2011-2015	Associate Editor, Ecology and Evolution
2010-2014	Associate Editor, BMC Evolutionary Biology
2009-2012	Chair of SynTax and administrator for UK Grant Review Panel
2008-11	Chair of The Linnean Society / Systematics Association Systematic Research Fund
2008-11	Elected as council member to the Society for General Microbiology
2007-11	Elected as council member of the Systematics Association and trustee of the associated Charitable Association (I was also Grants and Awards Officer)
2005-	Peer reviewer for: BBSRC, NERC, NSF, NSERC, ANR, ERC, NASA postdoctoral fellowship program, Trends in Genetics, Environmental Microbiology, Journal of Eukaryotic Microbiology, ISME Journal, Molecular Ecology, BMC Evolutionary Biology, BMC Genomics, Aquatic Biology, Molecular Biology and Evolution,

Eukaryotic Cell, PLoS Biology, PLoS Genetics, Heredity, PNAS, Current Biology, Science, Nature Microbiology, Nature Ecology and Evolution, and Nature

Memberships of Professional Bodies

2015-	Fellow of the American Academy of Microbiology
2012-	Fellow of the Linnean Society
2008-	Member of the British Mycology Society
2008-	Member of Society of General Microbiology
2005-	Member of the Systematics Association

Invited Presentations

> 50, selection highlighted here:

June 2024	JCS2024: Diversity and Evolution in Cell Biology. Company of Biologists Workshop, Spain
June 2024	Gordon Research Conference, Cellular & Molecular Fungal Biology, New Hampshire, USA
March 2024	Errato Symbiosis Network, Japan, Online.
Nov. 2022	Company of Biologists Workshop, Genotype to phenotype: bridging comparative genomics and cell biology. Sussex, UK.
Oct. 2022	Quest for Orthologues meeting, Sitges, Spain
Sept. 2022	Plenary Lecture, EMBO meeting of Comparative Genomics, San Feliu de Guixols (Costa Brava), Spain
Aug. 2018	Hutner Award Lecture, International Society of Protistology, UBC, Vancouver, Canada
Nov. 2017	2017 Sir Julian Huxley Lecturer, for The Systematics Association at the Linnean Society, London
March 2017	Joint Genome Institute, Users Meeting, California, USA
March 2017	Departmental Lecture, Plant & Microbial Biology, University of California Berkeley, California, USA
June 2016	Gordon Research Seminar, Marine Microbes, Girona, Spain
June 2016	Gordon Research Conference, Cellular & Molecular Fungal Biology, New Hampshire, USA
Dec. 2015	Public Bioscience Lecture, University of York, UK
Nov. 2014	Current Trends in Biomedicine Workshop: Comparative and Functional Genomics of fungal pathogens, Baeza, Spain
Oct. 2013	European Molecular Biology Organization (EMBO), Bangalore, India Ambassadorial trip
Oct. 2013	EMBO meeting of Comparative Genomics, San Feliu de Guixols (Costa Brava), Spain
Sep. 2013	Berkeley Award Lecture, British Society of Mycology, Cardiff, Wales, UK
July 2013	International Congress of Protistology, Vancouver, British Colombia, Canada
May 2013	Society of Molecular Biology and Evolution, University of California Davis, USA
July 2012	American Mycology Society Annual Meeting, Yale, Connecticut, USA
June 2012	American Society of Microbiology, 112th General Meeting, San Francisco, USA
Feb. 2012	Plenary Talk, Status workshop, Robert Koch Institute, Berlin
Oct. 2011	EMBO meeting of Comparative Genomics, San Feliu de Guixols (Costa Brava), Spain

Curriculum Vitae: Thomas A. Richards

July 2010	Gordon Conference, Marine Microbes, New Hampshire, USA
Feb. 2010	American Society of Limnology and Oceanography: Ocean Sciences Meeting, Portland, Oregon, USA
July 2009	Presidents' Medal Lecture, Society of Experimental Biology, Glasgow, UK
March 2009	Plenary talk, 25th Fungal Genetics Conference, Asilomar, USA

Meetings Organized

March 2023	Chair/Organizer: The Mechanics of Endosymbiosis, EMBO/EMBL Symposia, Heidelberg, Germany
Nov. 2018	Chair/Organizer: Single Cell Ecology. Royal Society Hooke Symposium, London/Buckinghamshire, UK
Feb. 2018	Chair/Organizer: Using genomic comparisons to understand cellular complexity in our ancestors, Royal Society International Scientific Seminar, Buckinghamshire, UK
Oct. 2018	Chair/Organizer: EMBO meeting of Comparative Genomics, San Feliu de Guixols (Costa Brava), Spain
Sep. 2016	Session Chair/Organizer: Fungal genome biology and evolution, British Mycology Society. Exeter, UK
2014-2018	Organizing committee: EMBO meeting of Comparative Genomics, San Feliu de Guixols (Costa Brava), Spain
Sept. 2011	Chair/Organizer: Horizontal gene flow & evolution, Society of General Microbiology, York, UK
March 2010	Chair/Organizer: Microbiology of Oceans, Society of General Microbiology, Edinburgh, UK
Dec. 2009	Chair/Organizer: Young Systematists' Forum, Systematics Association, Natural History Museum, London, UK
Sept. 2009	Chair/Organizer: Darwin's tree of life, Society of General Microbiology, Edinburgh, UK

Research Visits and Expeditions

October 2018	Sampling expedition to Panamanian Rain Forests Project: developing and testing new tools for disease assessment in captured and wild endangered frog populations (funded by Royal Society / GCRF challenge grant)
April 2015-19	Sampling expedition to Curaçao, Dutch Antilles Project: Sampling diseased soft corals (funded by CIFAR program grant and NERC OMICS grant)
Sept. 2011	Research visit to Dr A. Worden, Monterey Bay Aquarium Research Institute, USA Project: Molecular Adaptations in Deep Sea Fungi Expedition: deep-sea sampling using remote operated vehicles (funded by a Royal Society Small Grant).
Sept.-Oct. 2009	Research visit to Dr F. Not, Station Biologique de Roscoff, France Project: novel algae in European oceans (funded by the British Council).
July-Aug. 2005	Sample collection expedition to Peruvian: deserts, mountains and rainforest

Education, media and public outreach activities (examples)

June 2022	'Tadpole Doctor' stand at the Royal Society Sumer Science Exhibition
June 2021	'Tadpole Doctor' featured in the Guardian and BBC Radio 4 Inside Science. See http://tadpole-doctor.co.uk for relevant links

Curriculum Vitae: Thomas A. Richards

Sep. 2020	Tadpole-Doctor.co.uk, Royal Society Public Engagement Fund (£6,000), working with multiple stakeholders (e.g. Schools, Zoos, Aquaria, and NGOs) to understand the distribution of tadpole pathogens in the UK and imported aquarium animals
Aug. 2015	Tadpole infection work featured with quotes across several news outlets including New York Times and the Guardian
July 2015	Lecture to School forum 'Britain Needs Biosciences' on 'Microbial Eyes'
May 2011	Interview for BBC Radio 4 Material World, BBC Science news webpage, National Public Radio USA, Nature Pod Cast on our identification of 'Novel Fungi'
Sept. 2009	Feature on Horizontal Gene Transfer in plants for education outreach journal Scope
2009	I took part in the British Council's Science for Schools Initiative in Brittany, France
Annually	Our laboratory regularly hosts school-age and undergraduate work experience students
July 2008	Presentation to Sir David Attenborough as part of University of Exeter Honorary Graduands' reception on the tree of life

Supervisory Track Record

2007-	Supervision of twenty-one Postdoctoral Fellows/Scientists or Research Assistants
2007-	Supervision to completion of eight PhD students

Teaching

2020-	Co-ordinator, 'Evolution of Secretion' two-week intensive molecular cell biology and evolution course
2013-2020	Visiting Lecturer, University College, London
2006-	I teach a range of subjects/lectures across the University undergraduate syllabus in Cell Biology, Genomics, and Evolution
2003-06	University of Oxford M.Sc. Integrative Bioscience (Molecular Biology Course Co-director)

External Examination. PhD dissertations examined at the Universities of: Sheffield, University College London, Maynooth Ireland, Uppsala Sweden, Barcelona Spain (x 3), Dalhousie Canada, and Oslo Norway.

Institutional Responsibilities

- I have acted as departmental academic lead for evolutionary biology, line managing for many academic staff including fellowship application, "tenure" progression and promotion.
- I was the lead organiser for Exeter Campus' Bioscience UK Universities Research Excellence Framework UoA5 submission (the mechanism by which the UK government competitively assign research funding to universities).
- As associate Director of Research at Exeter I had formal mentorship for seven junior faculty members (i.e., conducting personal development reviews). I have sat on the Departmental Research Committee and the Living Systems Institute at Exeter management committee.

Mentorship. At Exeter I have mentored numerous ECRs to award of independent research fellowships (for example three Royal Society University Research Fellowships and one CNRS group leader fellowship position).

Grants Awarded

Grant type	Title (further information, PI status and direct funding to our lab)	End date
Wellcome Trust	**Transporter repertoire evolution in the Fungi: adaptation to vertebrate-derived niches** (PI, £2,239,857)	July 2031

Moore Foundation, program grant	**Understanding stereochemical selection across proto-cellular membranes** (Co-PI, funding = £287,286)	March. 2028
BBSRC, UKRI Responsive Mode Grant	**The architecture and evolution of host control in a microbial symbiosis.** In collaboration with Professors Brockhurst & Cameron at the University of Manchester. We will use reverse genetics and evolution experiments to understand how host control systems function in a stable endosymbiosis (Co-Pi, funding £583,868.70).	Sept. 2027
BBSRC 22ALERT Mid-Range Equipment initiative	**Establishing a cryogenic correlative light electron microscopy hub for Oxford** (Co-PI, led from Oxford Biochemistry)	Funded
Moore Foundation, program grant	**Cell Atlas Database and Tools for Aquatic Symbiosis** (Co-PI, funding £156,000).	Sept. 2027
Moore Foundation, program grant	**Understanding symbiotic interaction networks in the lab and the field**. Combining single cell transcriptome and sRNA sequencing with RNAi experiments to understand what drives long term symbiotic interactions (Pi, funding $2,075,625).	Aug 2027
Leverhulme Project Grant	**The evolutionary diversification of a sub-cellular fungal eye**. In collaboration with Prof Higgins in the Department of Biochemistry Oxford, we will study the structure of microbial eyes in single celled fungi (PI, funding = £263,885).	Sept. 2027
Wellcome Trust, Discretionary Award	**Darwin Tree of Life Project (phase 2)**. Large consortium grant led by the Sanger Institute with the aim of sequencing large representation of all eukaryotic species in the UK. I am responsible for the UK protist culture collection sequencing (Co/Associate-PI, funding = £178,235).	Nov. 2024
NERC Responsive Mode Grant	**Host-parasite coadaptation in a warming world. (Co -PI).**	Feb. 2026
Royal Society URF Enhancement award	**The role of PDS1 as membrane translocon component for RNA substrates**. (Personal fellowship enhancement funding = £169,000).	Dec. 2023
NSF center Grant	**NSF Center for Mechanisms of Evolution.** (Associate Investigator and exchange host, $12,500,000, no direct funding).	Sept. 2025
EMBO long-term Postdoctoral Fellowship Grant, awarded to Varsha Mathur	**The evolution of parasitism in the pseudofungi.** Using comparative genomics of diverse stramenopiles to understand the evolution of parasitic traits in the Pseudofungi (Supervisor of fellowship, €125,000).	Sept. 2023

Royal Society Partnership Grant	**Bringing microscopy and the study of pond ecology to St Patricks School Liverpool.** (Supporting academic, funding = £3,000 to the school).	Sept. 2026
Royal Society Public Engagement Fund Grant 2020	**Tadpole Doctor**. Using public engagement to identify the spread of protist pathogens of tadpoles in the UK (PI, funding = £6,100).	Sept. 2023
Moore & Simons Foundation, Origin of the Eukaryotic Cell program.	**Resolving archaeal contributions to the first eukaryotic common ancestor**: Developing tools for accessing the genomes of uncultivated archaea (Co -PI, funding = $41,000).	Oct. 2024
Moore Foundation, Aquatic Symbiosis Sequencing Initiative	**Ciliate and symbiont genome sequencing initiative**. Large-scale genome sequencing initiative to sequence ciliate protist genomes and their endosymbionts (partner lab, no funding).	Aug. 2023
Marie Curie Fellowship Grant, awarded to Luis Javier Galindo	**FungEye**. Characterization of the architecture, composition and evolution of a novel light perception organelle in an emerging model fungus (Supervisor of fellowship, €213,000).	Aug. 2023
Moore Foundation, Aquatic Systems Symbiosis Initiative	**Develop new genetic manipulations systems in endosymbiotic algae to track interaction dynamics in host ciliates.** (PI, funding = $290,000).	May 2023
Wellcome Trust, Discretionary Award I	**Darwin Tree of Life Project (phase 1)**. Large consortium grant led by the Sanger Institute with the aim of sequencing large representation of all eukaryotic species in the UK. I am responsible protist sequencing (Co/Associate-PI, funding = £480,000).	July 2022
Royal Society University Research Fellowship Renewal	**Dissecting a nascent phototrophic endosymbiotic interaction.** (£494,500 personal salary and research award for 3 years).	Jan. 2024
ERC Consolidator Grant	**CELL-in-CELL**. Understanding host cellular systems that drive an endosymbiotic interaction. Developing systems biology approaches for understanding the cellular systems that control and allow endosymbiotic interactions (PI, funding = €2,600,000).	June 2025
NERC & STFC ‘omics workshop grant	**Workshop for 'omics methodology development: use of secretome enriched meta-transcriptome sequencing for understanding interactions in diseased corals**. (PI, funding = £57,593).	Dec. 2019
Royal Society / GCRF challenge grant	**Assessing protist pathogen threats to endangered ecological keystone frog species of Panama**. Developing field diagnostics for tracking protists infections of frogs (PI, funding = £82,100).	July 2019

Newton Fellowship Grant, awarded to Elisabet Alacid-Fernandez	**'Omics' and environmental approaches to study host-parasite interactions in dinoflagellate blooms.** Using multiple 'omics tools to understand complex heterotrophic interactions in the ocean. (Supervisor of fellowship, £113,000).	Mar. 2019
Moore Foundation, Marine Microbe initiative, program grant	**Transporter function and kinetics in uncultivated marine microbes.** Developing protein functional analysis methods for studying nutrient transporters of uncultivated microbes (PI, Funding = $1,015,000).	June 2022
NERC grant	**Calibrating eDNA tools for biodiversity monitoring in the ocean.** Developing eDNA techniques to understand ecosystem function and community diversity (Co-PI, Funding = £ 238,948).	Jan.2020
Marie Curie International Training Network Grant	**SINGEK: Promoting SINgle cell genomics to explore the ecology and evolution of hidden microEuKaryotes.** Developing cross European expertise to study microbial eukaryotes directly from the environment using single cell sequencing (Co-PI, Funding = €546,575).	Jan. 2020
Marie Curie Fellowship Grant, awarded to Estelle Kilias	**Significant or trivial: Fungi in Polar ecosystems (F-POLE).** Using environmental 'omic'-based approaches to investigate the diversity, abundance and role of fungi in the marine environment (Supervisor of fellowship, €183,454.80).	Sep. 2018
Royal Society University Research Fellowship	**Dissecting a nascent phototrophic endosymbiotic interaction.** Using transcriptomics, proteomics and reverse genetics to investigate cellular functions interactions in the Paramecium bursaria photosynthetic endosymbiosis (personal fellowship funding = £448,000).	Dec. 2023
Department of Energy (DOE) Joint Genome Institute Community Sequencing Program	**CSP: Revealing the ecological function of uncultured fungal dark matter in freshwater ecosystems using single cell genomics.** (Co-PI).	Oct. 2018
EMBO Long Term Fellowship, awarded to Jeremy Wideman	**Comparative genomics of diatoms and Bolidophyceae: insight into the evolution of one of Earth's most productive phototrophs.** (Supervisor of fellowship, funding = €100,000).	Feb. 2017
Department of Energy (DOE) Joint Genome Institute, Technology Development Program	**TDP: Life on the Darkside. Technology Development Program partnership to develop methods for targeted isolation and sequencing of eukaryotic single cell isolates from the marine environment** (Co-PI).	June 2017
Leverhulme Project Grant	**Ancestral gene repertoires at the dawn & diversification of the Eukaryotes.** Using ancestral gene compliment reconstruction, we will identify the gene complement of the Last Eukaryotic Common Ancestor (PI, funding = £212,986).	Nov. 2017

Newton Fellowship, awarded to Adam Monier	**Did horizontal gene transfer 'rewire' ocean microbial metabolic networks?** (Supervisor of fellowship, funding = £82,875).	Mar. 2016
Moore Foundation, , program grant	**Life on the dark side: complex trophic interactions of marine microbial eukaryotes.** (Co-PI, funding = $422,909).	Apr. 2016
EMBO Long Term Fellowship, awarded to Aurelie Chambouvet	**Emerging Protist Parasites of Frogs: Genome and cellular biology of a previously unrecognized parasitic group.** (Supervisor of fellowship, funding = €50,000).	Aug. 2015
Marie Curie Fellowship, awarded to Aurelie Chambouvet	**"PARAFROGS" Emerging Protist Parasites of Frogs: Global Prevalence and Host/Parasite Interaction.** Using molecular methods to identify the global prevalence and host range of this parasite group (Supervisor of fellowship, funding = € 209,033.40).	Aug. 2014
SynTax (NERC/BBSRC/DEFRA)	**Global evolutionary complexity of freshwater alveolates: a new threat to frogs?** Using environmental DNA methods to explore the diversity and host specificity of novel group of alveolates that infect frogs (PI, funding = £26,500).	Jan. 2012
Royal Society Small Grant	**Investigating active eukaryotic microbial communities in deep-sea environments.** (PI, funding = £14,780).	Jan. 2012
FP6 Biodiversa ERA-net	**Biodiversity of Marine EuKaryotes (BioMarKs).** European collaboration using 454 diversity tag sequencing to investigate the complexity of marine protist and fungal communities (Co-I, funding = €265,000).	Jan. 2013
BBSRC New Investigator Grant	**The diversity and phylogeny of molecular motor proteins and fungal cell evolution.** (PI, funding = £402,281).	Oct. 2012
British Academy Franco-British research alliance grant:	**Tracking the diversity and abundance of phototrophic life in the oceans**. Collaboration with Fabrice Not to investigate the evolutionary diversity of marine algae using next generation sequencing methodology (PI, funding = £4,000 & €5,000).	Dec. 2010
NERC Grant	**Diversity, identity and ecological role of a novel fungal super clade.** (PI, funding = £143,846).	Nov. 2010
BBSRC/NERC CoSyst grant	**Molecular diversity of microbial eukaryotes using a large-scale parallel tag sequencing strategy.** This project developed the 454-tag sequencing for investigating the diversity of microbial eukaryotes (PI, funding = £19,608).	Dec. 2010
Leverhulme Early Career Fellowship	**Comparative genomics and eukaryote cell evolution.** (PI, funding = £60,000).	Dec.-2009

Publications

Peer reviewed primary research papers led from the Richards' group

1. **Leonard. G., Jenkins, B. H., Savory, F. R., Kilias, E. S., Maguire, F., Varma, V., Milner, D. S., Richards,**

T. A.*, *De novo* genome sequence assembly of the RNAi-tractable *Paramecium bursaria* 186b an endosymbiotic model system. *Gen Biol. Evol;* 2025; evaf183, https://doi.org/10.1093/gbe/evaf183.

2. McGowan J.*, **Kilias E. S.**, Lipscombe J., **Alacid E.**, Barker T., Catchpole L., McTaggart S., Warring S. D., Gharbi K., **Richards T. A.**, Hall N., Swarbreck D., Comparative single-cell genomics of two uncultivated *Naegleria* species harboring *Legionella* cobionts. *mSphere10;* 2025; e00352-25.
3. **Goode, O.**, Łapińska, U., Morimoto, J., Glover, G., **Milner, D. S.**, Santoro, A. E, Pagliara, S.*, **Richards, T. A.***, Permeability selection of biologically relevant membranes matches the stereochemistry of life on Earth. *PLoS Biology;* 2025; **23**(5): e3003155
    - Feature in New Scientist (August 10th, Page 9, Title: 'Do we finally understand the mystery of life's 'handedness').
4. **Galindo, L. J., Mathur, V.,** Frost, H., **Torruella, G., Richards, T. A.**, **Irwin, N. A. T.,** Transcriptomics of Diphyllatea (CRuMs) from South Pacific crater lakes confirm new cryptic clades. *J. Euk. Micro.* 2024; **71**(6): e13060
5. **Galindo, L. J.*, Richards, T. A.**, & Nirody, J. A.*, Evolutionarily diverse fungal zoospores show contrasting swimming patterns specific to ultrastructure. *Curr. Biol.;* 2024; **34**(19): 4567-4576
6. **Attah, V.***, **Milner, D. S.**, Fang, Y., Yan, X., **Leonard, G.**, Heitman, J., Talbot, N. J., **Richards, T. A.***, Duplication and neofunctionalization of a horizontally transferred xyloglucanase as a facet of the Red Queen coevolutionary dynamic. *Proc. Natl. Acad. Sci. USA*.; 2024; **121**(24): e2218927121.
7. **Irwin, N. A.***, **Richards, T. A.**, Self-assembling viral histones are evolutionary intermediates between archaeal and eukaryotic nucleosomes. *Nature Micro.*; 2024; 1-12.
8. Łapińska U., Glover, G., Kahveci, Z., **Irwin, N. A.**, **Milner, D. S.**, Santoro, A. E., **Richards. T. A*.** Pagliara, S*. Systematic comparison of unilamellar vesicles reveals that archaeal core lipid membranes are more permeable than bacterial membranes. *PLoS Biol.*; 2023; doi.org/10.1371/journal.pbio.3002048.
9. **Leonard, G., Galindo, L. J., Milner, D. S,**, Avelar, G. M,, Gomes-Vieira, A. L., Gomes, S. L., **Richards, T. A.***, A genome sequence assembly of the phototactic and optogenetic model fungus *Blastocladiella emersonii* reveals a diversified nucleotide-cyclase repertoire. *Genome Biology and Evolution;* 2022; **14**(12): evac157.
10. **Alacid, E.*, Irwin, N. A., Smilansky, V., Milner, D. S., Kilias, E. S., Leonard, G., Richards, T. A.*,** A diversified and segregated mRNA spliced-leader system in the parasitic Perkinsozoa. *Open Biology*; 2022; **12**(8): 220126.
11. **Irwin, N. A.***, Pittis, A. A., **Richards, T. A.**, Keeling, P. J., Systematic evaluation of horizontal gene transfer between eukaryotes and viruses. *Nature Micro*.; 2022; **7**(2): 327-36.
12. **Galindo, L. J.*, Milner, D. S.,** Gomes, S. L., **Richards, T. A.***, A light-sensing system in the common ancestor of the fungi. *Curr. Biol.;* 2022; **32**(14): 3146-53. e3
13. **Jenkins B. H.*, Maguire F., Leonard G.**, Eaton J. D., West S., Housden B. E., **Milner, D. S**., **Richards. T. A.***, Emergent RNA–RNA interactions can promote stability in a facultative phototrophic endosymbiosis. *Proc. Natl. Acad. Sci. USA*.; 2021; **118**(38): e2108874118.
14. **Milner, D. S., Wideman, J. G.***, Stairs, C. W., Dunn, C. D., **Richards. T. A.***, A functional bacterial-derived restriction modification system in the mitochondria of a heterotrophic protist. *PLoS Biol.;* 2021; **19**(4): e3001126.
15. **Smilansky, V.**, Jirku, M., **Milner, D. S.**, Ibáñez, R., Gratwicke, B., Nicholls, A., Lukeš, J**., Chambouvet, A.**, **Richards. T. A.***, Expanded geographic and host tadpole associations of the Severe Perkinsea Infection group*., Roy. Soc. Biology Letters.;* 2021; **17**(6): 20210166.
    - Featured in The Guardian and BBC Radio 4 Inside Science. See http://tadpole-doctor.co.uk for relevant links.
16. **Jenkins, B. H.*, Maguire, F., Leonard, G**., Eaton, J. D., West, S., Housden, B. E., **Milner, D. S., Richards.**

T. A.*, Characterisation of the RNA-interference pathway as a tool for genetics in the nascent phototrophic endosymbiosis, *Paramecium bursaria*, *Roy. Soc. Open Science.;* 2021; **8**(4): 202140.

- Included in the 'New Talent in Life Sciences' *Roy. Soc. Open Science* supplement.

17. **Smilansky, V.*, Chambouvet, A.**, Reeves, M., **Richards. T. A., Milner, D. S.***, A novel duplex qPCR assay for stepwise detection of multiple *Perkinsea* protistan infections of amphibian tissues. *Roy. Soc. Open Science.;* 2021; **8**(3): 202150.
18. **Kilias, E. S.***, Junges, L. Supraha, L., **Leonard, G.** Metfies, K., **Richards. T. A.**, Chytrid fungi distribution and co-occurrence with diatoms in the Arctic Ocean is correlated with sea ice melt. *Com. Biol.;* 2020; **3**(1): 1-13.
19. **Rodríguez-Martínez, R*, Leonard, G., Milner D. S.**, Sudek S., Conway, M., Moore, K., Hudson, T., Mahé, F., Keeling, P. J., Santoro, A. E., Worden, A. Z., **Richards, T. A.***, Controlled sampling of ribosomally active protistan diversity in sediment-surface layers identifies putative players in the marine carbon sink. *ISME J.;* 2020; **14**(4): 984-998.
20. **Wideman, J. G.*, Monier, A., Rodríguez-Martínez, R., Leonard, G.**, Cook, E., Poirier, C., **Maguire, F., Milner, D., Irwin, N. A.**, Moore, K., Santoro, A. E., Keeling, P. J., Worden, A. Z., **Richards, T. A.***, Unexpected mitochondrial genome diversity revealed by targeted single-cell genomics of heterotrophic flagellated protists. *Nature Micro.;* 2020; **5**(1): 154-165.
21. **Chambouvet, A.*, Monier, A. Maguire, F**., Itoïz, S., del Campo, J., Elies, P., Edvardsen, B., Wenche, E., **Richards, T. A.***, Intracellular infection of diverse diatoms by an evolutionary distinct relative of the Fungi. *Curr. Biol.;* 2019; **29**(23): 4093-4101 doi.org/10.1016/j.cub.2019.09.074.
22. **Wideman, J. G.***, Lax, G., **Leonard, G., Milner, D. S.**, Rodríguez-Matinez, R., Simpson, G. B. Simpson, **Richards, T. A.**, A single-cell genome reveals diplonemid-like ancestry of kinetoplastid mitochondria gene structure. *Phil. Trans. Roy. Soc. B.;* 2019; **374**(1786): doi/10.1098/rstb.2019.0100.
23. **Milner, D. S.***, **Attah, V.**, Cook, E., **Maguire, F., Savory, F., Morrison, M.**, Müller, C. A., Foster, P. G., Talbot, N. J., **Leonard, G., & Richards, T. A.***, Environment-dependent fitness gains can be driven by horizontal gene transfer of transporter-encoding genes in fungi. *Proc. Natl. Acad. Sci. USA.;* 2019; **116**(12): 5613-5622.
24. **Savory, F. R., Milner, D. S., Miles, D. C.,** & **Richards, T. A.***, Ancestral function and diversification of a horizontally acquired oomycete carboxylic acid transporter. *Mol. Biol. and Evol.;* 2018; **35**(8): 1887-1900.
25. **Wideman, J. R**.*, Balacco, D. L., Fieblinger, T., **Richards, T. A.** PDZD8 is not the 'functional ortholog' of Mmm1, it is a paralog. *F1000 Research*; 2018; **7**: 1088.
26. **Leonard, G., Labarre, A., Milner, D. S., Monier, A.**, Soanes, D., **Wideman, J. G., Maguire, F.**, Stevens, S., Sain, D., Grau-Bové, X., Sebé-Pedrós, A., Stajich. J. E., Paszkiewicz, K., Brown, M. W., Hall, N., Wickstead, B., **Richards, T.A.***, Comparative genomic analysis of the 'pseudofungus' *Hyphochytrium catenoides*. *Royal Society Open Biology;* 2018; **8**(1): 170184.
27. **Monier A.*, Chambouvet A., Milner D. S., Attah V.,** Terrado R., Lovejoy C., Moreau H., Santoro A. E., Derelle É., & **Richards T. A.*** Host-derived viral transporter protein for nitrogen uptake in infected marine phytoplankton. *Proc. Natl. Acad. Sci. USA;* 2017; **114**(36): E7489-E7498.
28. **Monier A.***, Worden, A. Z., **Richards T. A**. Phylogenetic diversity and biogeography of the Mamiellophyceae lineage of eukaryotic phytoplankton across the oceans *Envi. Micro. Rep.;* 2016; **8**(4): 461-469.
29. **Chambouvet, A.***, Valigurová, A., Mesquita, L., **Richards, T. A.**, Jirků, M.*****, *Nematopsis temporariae* (Gregarinasina, Apicomplexa, Alveolata) is an intracellular infectious agent of tadpole livers. *Envir. Micro. Rep.;* 2016; **8**(5): 675-679.
30. **Richards, T.A***, **Leonard, G.**, Mahé, F., del Campo, J., Romac, S., Jones, M.D.M., **Maguire, F**., Dunthorn, M., De Vargas, C., Massana, R., **Chambouvet, A.***, Molecular diversity and distribution of marine fungi

across 130 European environmental samples. *Proc. Roy. Soc. B.;* 2015; **282**: (1819) 20152243. doi: 10.1098/rspb.2015.2243.

31. **Chambouvet, A.**, Gower, D.J., Jirků, M., Yabsley, M.J., Davis, A.K., **Leonard, G., Maguire, F**., Doherty-Bone, T.M., Bittencourt-Silva, G.B, Wilkinson, W., **Richards, T.A***, Cryptic infection of a broad taxonomic and geographic diversity of tadpoles by Perkinsea protists, *Proc. Natl. Acad. Sci. USA;* 2015; **112**(34): E4743-E4751.
    - Tadpole infection work featured with quotes across several news outlets including New York Times and the Guardian.
32. **Maguire, F.**, Henriquez, F.L., **Leonard, G.,** Dacks, J.B., Brown, M.W., **Richards, T.A.***, Complex patterns of gene fission in the eukaryotic folate biosynthesis pathway. *Genome Biol. Evol.;* 2014; **23**(10): 2709-2720.
33. Avelar, G. A., Schumacher, R. I., Zaini, P. A., **Leonard, G.**, **Richards, T. A. ***, Gomes, S. L*. A rhodopsin-guanylyl cyclase gene fusion functions in visual perception in a fungus. *Curr. Biol.;* 2014; **24**(11): 1232-1240.
34. **Chambouvet, A.***, Berney, C., Romac, S., Audic, S., **Maguire, F.**, De Vargas, C., **Richards, T.A.**, Diverse molecular signatures for ribosomally 'active' Perkinsea in marine sediments. *BMC Microbiology;* 2014; **14**(1): 110.
35. **Leonard, G., Richards, T.A.***, Genome-scale comparative analysis of gene fusions, gene fissions and the fungal tree of life. *Proc. Natl. Acad. Sci. USA;* 2012; **109**(52): 21402-21407.
36. **Jones, M.D.M.**, **Richards, T.A.**, Hawksworth, D., Bass, D.* Validation and justification of the phylum name *Cryptomycota* phyl. nov. *IMA Fungus;* 2011; **2**(2): 173-175**.**
37. **Richards, T.A.***, Soanes, D., **Jones, M.D.M.**, Vasieva, O., **Leonard, G.**, Paszkiewicz, K., Foster, P., Hall, N., Talbot, N., Horizontal gene transfer facilitated the evolution of plant parasitic mechanisms in the oomycetes. *Proc. Natl. Acad. Sci. USA;* 2011; **108**(37): 15258-15263.
38. **Jones, M.D.M.**, Forn, I., Gadelha, C., Bass, D., Massana, R., & **Richards, T.A.*** Discovery of novel intermediate forms redefines the fungal tree of life. *Nature;* 2011; **474**(7350): 200-203.
    - Interview for BBC Radio 4 *Material World,* BBC Science webpage, National Public Radio USA, Nature Pod.
39. Kim, E., **Harrison, J.W.**, Sudek, S., **Jones, M.D.M,** Wilcox, H.M., **Richards, T.A.*,** Worden, A.Z.*, Archibald, J.M.***,** Newly identified and diverse plastid-bearing branch on the eukaryotic tree of life. *Proc. Natl. Acad. Sci. USA.;* 2011; **108**(4): 1496-1500.
40. Wickstead, B.*, Gull, K. & **Richards, T. A.***, Patterns of kinesin evolution reveal a complex ancestral eukaryote with a multifunctional cytoskeleton, *BMC Evol. Biol.;* 2010; **10**(1): 110.
41. Stoeck, T., Bass, D., Nebel, M., Christen, R., **Jones, M.D.M.,** Hans-Werner Breiner & **Richards, T. A.***, Parallel tag environmental DNA sequencing reveals a highly complex eukaryote community. *Mol. Ecol.;* 2010; **19**: 21-31, Speicial Edition: Next Generation Ecology.
42. **Richards, T.A.***, Soanes, D. M., Foster, P. G., **Leonard, G.**, Thornton, C. R., & Talbot, N. J., Phylogenomic analysis demonstrates a pattern of rare and ancient horizontal gene transfer between plants and fungi. *The Plant Cell.;* 2009; **21**(7): 1897-1911.
43. **Leonard, G.**, Stevens, J. R., & **Richards, T. A.*,** REFGEN and TREENAMER: Automated sequence data handling for phylogenetic analysis in the genomic era. *Evolutionary Bioinformatics;* 2009; **5**: 1-4.
44. Bass, D., Brown, N., Mackenzie-Dodds, J., Dyal, P., Nierzwicki-Bauer, S. A., Vepritskiy, A. A., & **Richards, T.A.***, A molecular perspective on ecological differentiation and biogeography of cyclotrichiid ciliates. *J. Euk. Micro.;* 2009; **56**(6): 559-567.
45. Hofmann, W.A., **Richards, T.A.***, & de Lanerolle, P.*, Ancient animal ancestry for nuclear myosin. *J. Cell Sci.;* 2009; **122**(Pt 5): 636-643.

46. Bass, D., Howe, A., Barton, H., Brown, N., Demidova, M., Michelle, H., Li, L., Sanders, H., Watkinson, S., Willcock, S., **Richards, T.A.***, Yeast forms dominate fungal diversity in the deep oceans. *Proc. Roy. Soc. B.;* 2007; **274**(1629): 3069-3077.
47. **Richards, T.A.**, Dacks, J.B., Jenkinson, J.M., Thornton, C.R., Talbot, N.J.*, Evolution of filamentous plant pathogens: gene exchange across eukaryotic kingdoms. *Curr. Biol*.; 2006; **16**(8): 1857-1864.
48. **Richards, T.A.**, Dacks, J.B., Campbell, S.A., Blanchard, J.L., Foster, P.G., McLeod, R., Roberts, C.W.*, Evolutionary origins of the eukaryotic shikimate pathway: gene fusions, horizontal gene transfer, and endosymbiotic replacements. *Eukaryot. Cell.;* 2006; **5**(9): 1517-1531 [cover art].
49. **Richards, T.A.**, van der Giezen, M*. Evolution of the Isd11-IscS complex reveals a single alpha-proteobacterial endosymbiosis for all eukaryotes. *Mol. Biol. Evol.;* 2006; **23**(7): 1341-1344.
50. **Richards, T.A.***, Cavalier-Smith, T., Myosin domain evolution and the primary divergence of eukaryotes. *Nature*.; 2005; **436**(7054): 1113-1118.
51. **Richards, T.A.**, Vepritskiy, A.A., Gouliamova, D.E., Nierzwicki-Bauer, S.A.*, The molecular diversity of freshwater picoeukaryotes from an oligotrophic lake reveals diverse, distinctive and globally dispersed lineages. *Environ. Microbiol.;* 2005; **7**(9): 1413-1425.

Preprint papers

- Warring, S.D., McGowan, J.; **Kilias, E. S.**, Lipscombe, J., **Alacid, E.**, Barker, T., Catchpole, L., Gharbi, K., McTaggart, S., **Richards, T. A.**, Single-cell sequencing reveals unexpected genetic diversity among Bodo spp. flagellates and their bacterial endosymbionts, **Preprint:** *bioRxiv*, **doi:** 2025.10. 03.678719 (2025).
- **Leonard, G.**, Vitonytė, I., **Savory, F.R.**, Hansson, E.M., Cameron, D.D., Brockhurst, M.A., **Richards T.A.**, De novo genome sequence assembly of the model algal endosymbiont Micractinium conductrix derived from its host Paramecium bursaria 186b, **Preprint:** *bioRxiv*, **doi:** 2025.12. 15.694297 (2025).
- **Mathur, V.*, Irwin, N. A. T., Galindo, L. J., Alacid, E.,** Cunliffe, M., Kim, S., Technau, U., **Richards, T. A.**, Phagocytosis repurposed: infection strategies in a global marine diatom-parasite interaction. **Preprint:** *bioRxiv*, **doi:** https://doi.org/10.1101/2025.07.29.667418; (2025).
- **Jenkins B. H.*, Kilias, E. S., Savory, F. R.,** Soerensen, M. E. S.**, Poirer, C., Attah, V.,** Drew, G. C., **Blagrave, J., Galindo, L. J., Leonards, G.,** Cameron D. D., Brockhurst, M. A., **Richards. T. A.***, Immune-like glycan-sensing and horizontally-acquired glycan-processing orchestrate host control in a microbial endosymbiosis. **Preprint:** *bioRxiv*, doi: 10.1101/2024.09.14.613017 (2024).

Peer reviewed research papers in which the Richards' group has played a collaborative role

1. Votýpka, J., Jirků, M., Spodareva, V., Režnarová, J., Poloprutská, K., Pajer, P., **Milner, D.**, **Richards, T. A.**, Yurchenko, V., Ibáñez, R. Trypanosomes in Neotropical frogs: unveiling hidden megadiversity and complex host–parasite patterns, *Open Biology*; 2025;**15**,11
2. McGowan, J., **Kilias, E. S.**, Lipscombe, J., **Alacid, E.**, Baker, T., Catchpole, L., McTaggart, S., Warring, S. D., Gharbi, K., **Richards, T. A.**, Hall, N., Swarbreck, D., Comparative single-cell genomics of two uncultivated *Naegleria* species harboring *Legionella* cobionts. *mSphere;* 2025; e00352-25
3. McGowan, J.*, **Richards, T. A.**, Hall, N. & Swarbreck, D. Multiple independent genetic code reassignments of the UAG stop codon in phyllopharyngean ciliates. *PLOS Genetics;* 2024; e1011512.
4. McGowan, J., **Kilias, E. S.**, **Alacid, E.**, Lipscombe, J., Jenkins, B.H., Gharbi, K., Kaithakottil, G. G., McTaggart, S., Warring, S. D., **Richards, T. A.**, Hall, N., Swarbreck, D., Identification of a non-canonical ciliate nuclear genetic code where UAA and UAG code for different amino acids. *PLoS. Genetics.* 2023; **19**(10): 1-12 e1010913.
5. Picchianti, L., Sánchez de Medina Hernández, V., Zhan, N., **Irwin, N. A.**, Groh, R., Stephani, M., Beveridge, R., Sawa-Makarska, J., Lendl, T., Grujic., Martens, S., **Richards, T. A.,** Clausen, T., Ramundo, S., Karagöz, G. E., Dagdas, Y.*, Shuffled ATG8 interacting motifs form an ancestral bridge between UFMylation and autophagy. *The EMBO Journal;* 2023; e112053.

6. Glover, G., Voliotis, M., Łapińska, U., Invergo, B. M., Soanes, D., O'Neill, P., Moore, K., Nikolic, N., Petrov, P. G., **Milner, D. S.**, Roy. S., Hessom, K., **Richards, T. A.,** Tsaneva-Atanasova, K., Pagliara, S.* Nutrient and salt depletion synergistically boosts glucose metabolism in individual *Escherichia coli* cells. *Com. Biol.*; 2022; **5**(1): 385.
7. Lawniczak, M. K.*, Davey, R. P., Rajan J., Pereira-da-Conceicoa, L. L., **Kilias, E.**, Hollingsworth, P. M., Barnes, I., Allwn, H., Blaxter, M. Burgin, J., Broad, G. R., Crowley, L. M., Gaya, E., Holroyd, N., Lewis, O. T., McTaggart, S., Mieszkowska, N., Minotto, A., Shaw, F., **Richards, T. A.**, Sivess, A. A. S., Darwin Tree of Life Consortium. Specimen and sample metadata standards for biodiversity genomics: a proposal from the Darwin Tree of Life project. *Wellcome Open Research*; 2022; **7**(187): 187.
8. Kellom, M.*, Pagliara, S., **Richards, T. A.,** Santoro, A. E., Exaggerated trans-membrane charge of ammonium transporters in nutrient-poor marine environments. *Open Biology*. 2022; **12**(7): 220041.
9. Zahonovam, K., Lax, G., Sinha, S. D., **Leonard, G.**, **Richards. T. A.**, Lukeš, J., **Wideman, J. G.***, Single-cell genomics unveils a canonical origin of diverse mitochondrial genomes of euglenozoans. *BMC Biology.*; 2021*;* **19**(1): 1-14.
10. Needham, D. M., Yoshizawa, S., Hosaka, T., Poirier, C., Choi, C. J., Hehenberger, E., **Irwin, N. A.**, Wilken, S., Yung, C-M., Bachy, C., Kurihara, R., Nakajima, Y., Kojima, K., Kimura-Someya, T., **Leonard, G.**, Malmstrom, R. R., Mende, D. R., Olson, D. K., Sudo, Y., Sudek, S., **Richards, T. A.**, DeLong, E. F., Keeling, P. J., Santoro, A. E., Shirouzu, M., Iwasaki, W., Worden, A. Z., A distinct lineage of giant viruses brings a rhodopsin photosystem to unicellular marine predators. *Proc. Natl. Acad. Sci. USA.;* 2019; **116**(41): 20574-20583.
11. Del Campo, J., Heger, T., **Rodríguez-Martínez, R.**, Worden, A. Z., **Richards, T. A.**, Massana, R., Keeling, P. J., Assessing the diversity and distribution of apicomplexans in host and free-living environments using high-throughput amplicon data and a phylogenetically informed reference framework. *Front. Microbiol.;* 2019; **10:** 2373 doi:10.3389/fmicb.2019.02373.
12. Strassert, J. F., Hehenberger, E., del Campo, J., Okamoto, N., Kolisko, M., **Richards, T. A.**, Worden, A. Z., Santoro, A. E., & Keeling, P. J.* Phylogeny, evidence for a cryptic plastid, and distribution of *Chytriodinium* parasites (Dinophyceae) infecting copepods. *J. Euk. Micro.;* 2018; **66**(3): 574-581.
13. Orsi, W. D., Wilken, S., del Campo, J., Heger, T., James, E., **Richards, T. A.**, Keeling, P. J., Worden, A. Z., & Santoro, A. E.*, Identifying protist consumers of photosynthetic picoeukaryotes in the surface ocean using stable isotope probing. *Environ. Microbiol.;* 2018; **20**(2): 815-827.
14. Orsi, W. D.*, **Richards, T. A.**, & Francis W. R., Predicted microbial secretomes and their target substrates in marine sediment. *Nature Micro.;* 2018; **3**(1): 32.
15. Okamoto, N., Gawryluk, R. M., del Campo, J., Strassert, J. F., Lukeš, J., **Richards, T. A.**, Worden, A. Z., Santoro, A. E., & Keeling, P. J.*. A revised taxonomy of diplonemids including the eupelagonemidae n. fam. and a type species, *Eupelagonema oceanica* n. gen. & sp. *J. Euk. Micro.*; 2018; doi.org/10.1111/jeu.12679.
16. Guo, J., Wilken, S., Jimenez, V., Choi, C. J., Ansong, C., Dannebaum, R., Sudek, L., **Milner, D. S.**, Bachy, C., Reistetter, E. N., Elrod, V. A., Klimov, D., Purvine, S. O., Wei, C. L., Kunde-Ramamoorthy, G., **Richards, T. A.**, Goodenough, U., Smit, R. D., Callister, S. J., Worden, A. Z.*, Specialized proteomic responses and an ancient photoprotection mechanism sustain marine green algal growth during phosphate limitation. *Nature Micro.;* 2018; **3**(7): 781.
17. Gomes-Vieira, A. L., **Wideman, J. G.**, Paes-Vieira, L., Gomes, S. L., **Richards, T. A.**, & Meyer-Fernandes, J. R.*, Evolutionary conservation of a core fungal phosphate homeostasis pathway coupled to development in *Blastocladiella emersonii*. *Fungal Genetics and Biology;* 2018; **115**: 20-32.
18. Strasser, J. F., Karnkowska, A., Hehenberger, E., del Campo, J., Kolisko, M., Okamoto, N., Burki, F., Janouškovec, J., Poirier, C., **Leonard, G.**, Hallam, S. J., **Richards, T. A.,** Worden, A. Z., Santoro, A. E., Keeling, P. J.*. Single cell genomics of uncultured marine alveolates shows paraphyly of basal dinoflagellates. *The ISME journal;* 2017; **12**(1): 304.

19. Grau-Bove, X., Torruella, G., Donachie, S., Suga, H., **Leonard, G., Richards, T. A.**, & Ruiz-Trillo, I.*. Dynamics of genomic innovation in the unicellular ancestry of animals. *Elife;* 2017; **6**: e26036.
20. Orsi, W. D., Smith, J. M., Liu, S., Liu, Z., Sakamoto, C. M., Wilken, S., Poirier, C., **Richards, T. A.,** Keeling, P. J., Worden, A. Z., Santoro, A.E. Diverse, uncultivated bacteria and archaea underlying the cycling of dissolved protein in the ocean. *The ISME J.;* 2016; **10**(9): 2158-2173.
21. Gawryluk, R. M. R., del Campo, J., Okamoto, N., Strassert, J. F. H., Lukeš, J., **Richards, T. A.,** Worden, A. Z., Santoro, A. E., Keeling, P. J.*. Morphological identification and single-cell genomics of marine diplonemids. *Curr. Biol.;* 2016; **26**(22): 3053-3059.
22. Forster, D., Dunthorn, M., Mahé, F., Dolan, J. R., Audic, S., Bass, D., Bittner, L., Boutte, C., Christen, R., Claverie, J. M., Decelle, J., Edvardsen, B., Egge, E., Eikrem, W., Gobet, A., Kooistra, W. H., Logares, R., Massana, R., Montresor, M., Not, F., Ogata, H., Pawlowski, J., Pernice, M. C., Romac, S., Shalchian-Tabrizi, K., Simon, N., **Richards, T. A.**, Santini, S., Sarno, D., Siano, R., Vaulot, D., Wincker, P., Zingone, A., de Vargas, C., Stoeck, T*. Benthic protists: the under-charted majority. *FEMS Microbiology Ecology*; 2016; **92**(8): fiw120.
23. Masachis, S., Segorbe, D., Turrà, D., Leon-Ruiz, M., Fürst, U., El Ghalid, M., **Leonard, G.**, López-Berges, M. S., **Richards, T.A.**, Felix, G., Di Pietro*, A. A, Fungal pathogen secretes plant alkalinizing peptides to increase infection*. Nature Micro.;* 2016; **1**(6): 1-9.
24. Avelar, G. M., Glaser, T., **Leonard, G.**, **Richards, T.A.**, Ulrich, H., Gomes, S.L.*****. A cyclic GMP-dependent K+ channel in the blastocladiomycete fungus *Blastocladiella emersonii*. *Eukaryotic Cell;* 2015; **14**(9): 958-963.
25. Orsi, W.D.*, **Richards, T.A.,** Santoro, A.E., Cellular maintenance processes that potentially underpin the survival of subseafloor fungi over geological timescales, *Estuarine, Coastal and Shelf Science;* 2015; **164:** A1-A9.
26. Misner, I., Blouin, N., **Leonard, G.**, **Richards, T.A.**, Lane, C.E.*, The secreted proteins of *Achlya hypogyna* and *Thraustotheca clavata* identify the ancestral oomycete secretome and reveal gene acquisitions by horizontal gene transfer. *Genome Biol. Evol.;* 2015; **7**(1): 120-135.
27. del Campo, J.*, Mallo, D., Massana, R., Vargas, C., **Richards, T.A.,** Ruiz-Trillo, I., Diversity and distribution of unicellular opisthokonts along the European coast analysed using high-throughput sequencing, *Env. Micro.;* 2015; **17**(9): 3195-3207. doi: 10.1111/1462-2920.12759.
28. Logares, R.*,… 25 authors… … **Richards, T.A.**, de Vargas, C., Massana, R., Patterns of rare and abundant marine microbial eukaryotes. *Curr. Biol.;* 2014; **24**(8): 813-821 [Cover].
29. Sebé-Pedrós, A., Grau-Bové, X., **Richards, T.A.,** Ruiz-Trillo, I.*, Evolution and classification of myosins, a paneukaryotic whole-genome approach. *Genome Biol. Evol.;* 2014; **6**(2): 290-305.
30. Read, B. A… …33 authors… …**Richards, T.A.***… …2 authors… …Grigoriev, I. V., Pan genome of the phytoplankton *Emiliania* underpins its global distribution. *Nature;* 2013; **499**(7457): 209-213.
31. Curtis, B.A… …47 authors… *Liu, Y.*, **Richards, T. A.** …25 authors… …Archibald, J.M.*, Cryptophyte and chlorarachniophyte nuclear genomes reveal evolutionary mosaicism and fate of nucleomorphs. *Nature;* 2012; **492**(742): 59-65.
32. Liu. L., **Richards, T.A.**, & Aves, S. J.*, Ancient diversification of eukaryotic MCM DNA replication proteins. *BMC Evolutionary Biology;* 2009; **9**(1): 60.
33. Bass, D.*, **Richards, T.A.,** Matthai, L., Marsh, V., Cavalier-Smith, T., Globally dispersed and endemic genotypes in microbial eukaryotes. *BMC Evol. Biol.;* 2007; **7**(1)**:** 162.
34. Ferguson, D.J.P.*, Campbell, S.A., Henriquez, F.L., Phan, L., Mui, E., **Richards, T.A.**, Muench, S.P., Allary, M., Lu, J.Z., Prigge, S.T., Tomley, F., Shirley, M.W., Rice, D.W., McLeod, R., Roberts, C.W., Enzymes of type II fatty acid synthesis and apicoplast differentation and division in *Eimeria tenella. Int. J. Parasitol.;* 2007; **37**(1): 33-51.

35. Campbell S.A., **Richards T.A.**, Mui E.J., Samuel B.U., Coggins J.R., McLeod R., Roberts C.W.*, 2004. A complete shikimate pathway in *Toxoplasma gondii*: an ancient eukaryotic innovation. *Int. J. Parasitol.;* **34**(1): 5-13.

36. Baker R.H., Ashwell R.I.S., **Richards T.A**., Fowler K., Chapman T., Pomiankowski A.*, Effects of multiple mating and male eye span on female reproductive output in the stalk-eyed fly, *Cyrtodiopsis dalmanni*. *Behav. Ecol.;* 2001; **12**(6): 2001732-739.

Peer Reviewed Reviews, Opinions and Commentaries.

- Raas, M. W. D., Van Hooff, J. J. E., Lukeš, J., **Richards, T. A.**, Roger, A. J., Wickstead, B., Kops, G, J, P, L., Snel, B., Tromer, E. C., The LECA had a conventional kinetochore and the kinetoplastid kinetochore is a derived feature–a critical evaluation of Akiyoshi. *J. Cell Science* 2025; **139**(3): jcs264452.
- Sebé-Pedrós A., Tanay A., Lawniczak M. K. N., Arendt D., Aerts S., Archibald J., Arnone M. I., Blaxter M., Cleves P., Coelho S. M., Dias M., Dunn C., Anamaria E., Jonathan F., Gabaldón T., Gillis J., Grau-Bové X., Guigó R., Hobert O., Huerta-Cepas J., Irimia M., Klein A., Lewin H., Lowe C. J., Marlow H., Musser J. M., Nagy L. G., Najle S. R., Pachter L., Paez S., Papatheodorou I., Passalacqua M. J., Rajewsky N., Rhee Seung Y., **Richards T. A.**, Sauka-Spengler T., Saunders L. M., Seuntjens E., Solana J., Song, Y., Technau U., Wang Bo., Biodiversity Cell Atlas meeting participants, The biodiversity cell atlas: mapping the tree of life at cellular resolution. *Nature* 2025; **645**(8082): 877-885.
- **Richards, T. A.***, Eme, L.*, Archibald, J. M.*, **Leonard, G.,** Coelho, S., de Mendoza, A., Dessimoz, C., Doležal, P., Fritz-Laylin, L. K., Gabaldón, T., Hampl, V., Kops, G. J., Leger, M. M., Lopez-Garcia, P., McInerney, J. O., Moreira, D. , Muñoz-Gómez, S. A., Richter, D. J., Ruiz-Trillo, I., Santoro, A. E., Sebé-Pedrós, A., Snel, B., Stairs, C. W., Tromer, E., van Hooff, J. J., Wickstead, B., Williams, T. A., Roger, A. J.*, Dacks, J. B.*, and Wideman J., G.*, Consensus view: reconstructing the last common ancestor of all eukaryotes. *PLoS Biology* 2024; **22**(11): e3002917.
- Felix Langschied, F., Bordin N., Cosentino, S., Fuentes-Palacios, D., Glover, N., Michael Hiller, Hu, Y., Huerta-Cepas, J., Pedro Coelho, L., Iwasaki, W., Majidian, S., Manzano-Morales, S., Persson, E., **Richards, T. A.**, Gabaldón, T., Sonnhammer, E., Thomas, P.D., Dessimoz, C., Ebersberger, I, Quest for orthologs in the age of biodiversity genomics. *Genome Biol. Evol.;* 2024; **16**(10): evae224.
- **Milner, D. S., Galindo, L. J., Irwin, N. A., Richards, T. A.,** Transporter proteins as ecological assets and features of microbial eukaryotic pangenomes. *Annu. Rev. Microbiol.;* 2023; **77**: 45-66.
- **Alacid, E.*** & **Richards, T. A*.** A cell-cell atlas approach for understanding symbiotic interactions between microbes. *Curr. Opin. Microbiol.;* 2021; **64**: 47-59.
- **Chambouvet, A.***, **Smilansky, V.**, Jirků, M., Isidoro-Ayza, M., Itoïz. S., Derelle, E., **Monier, A.**, Gower, D. J., Wilkinson, M., Yabsley, M. J., Lukeš, J., **Richards, T. A.***, Diverse alveolate infections of tadpoles, a new threat to frogs, *PLoS Pathogens;* 2020; **16**(2): e1008107.
- Brockhurst, M. A., Harrison, E., Hall, J. P. J., **Richards, T. A.,** McNally, A., MacLean, C., The ecology and evolution of pangenomes. *Curr. Biol.;* 2019; **29**(20): R1094-R1103.
- **Richards, T. A.***, **Leonard G., & Wideman J. G.**, What defines the "Kingdom" Fungi? *Microbiology Spectrum;* 2017; **5**(3).
- **Savory, F., Leonard, G. & Richards, T.A.***, The role of horizontal gene transfer in the evolution of the oomycetes. *PLoS Pathogens;* 2015; **5**: e1004805.
- Soanes, D., & **Richards, T.A.***, Horizontal gene transfer in eukaryotic plant pathogens. *Annu. Rev. Phytopath.;* 2014; **52**: 583-614.
- **Richards, T.A.*** & Talbot N. J. Horizontal gene transfer in osmotrophs: playing with public goods. *Nature Reviews Microbiology;* 2013; **11**(20): 720–727.
- **Richards, T.A.***, **Jones, M.D.M., Leonard, G.**, Bass, D. Marine Fungi: their ecology and molecular diversity. *Annual Review of Marine Science;* 2012; **4**: 495-522.

Curriculum Vitae: Thomas A. Richards

- Bass, D.*, **Richards, T.A.** Three reasons to re-evaluate fungal diversity 'on Earth and in the ocean' *Fungal Biology Reviews;* 2011; **25**(4): 159-164.
- **Richards, T.A.***, **Leonard, G.**, Soanes, D., & Talbot, N. J. Gene transfer into the fungi. *Fungal Biology Reviews;* 2011; **21**(4): 98-110 (includes meta-analysis).
- Soanes, D.M., **Richards, T.A.,** Talbot, N.J.*, Insights from sequencing fungal and oomycete genomes: what can we learn about plant disease and the evolution of pathogenicity? *Plant Cell*.; 2007; **19**(11): 3318-3326.
- **Richards, T.A.** & Bass, D.*****, Molecular screening of free-living microbial eukaryotes: diversity and distribution using a meta-analysis. *Curr. Opin. Microbiol.;* 2005; **8**(3): 240-252 (includes meta-analysis)**.**
- Henriquez, F.L., **Richards, T.A.**, Roberts, F., McLeod, R., Roberts, C.W.*, The unusual mitochondrial compartment of *Cryptosporidium parvum*. *Trends Parasitol.*; 2005; **21**(2): 68-74 (cover).
- **Richards T.A.**, Hirt R.P., Williams B.A., Embley T.M.*, Horizontal gene transfer and the evolution of parasitic protozoa. *Protist;* 2003; **154**(1): 17-32.

Book chapters (peer reviewed)

- **Chambouvet, A.***, **Richards, T.A.**, Bass, D., & Neuhauser, S., Revealing microparasite diversity in aquatic environments using brute force molecular techniques and subtle microscopy. *Chapter 6: Parasite diversity and diversification: evolutionary ecology meets phylogenetics*; 2015; 93-116.
- Aves, S. J.*, **Liu, Y.**, **Richards, T. A.,** The eukaryotic replisome: a guide to protein structure and function. *Chapter 2: Evolutionary diversification of eukaryotic DNA replication machinery;* 2012; 19-35.
- **Jones, M.D.M.**, **Richards, T.A.*** Environmental DNA analysis and the expansion of the fungal tree of life. *Chapter 3: The Mycota;* 2011; **14:** 37-57.

Contribution to Symposia and associated Editorials

- **Richards, T. A.,** Roberts, R., Moran, N.**,** Symbiosis across the tree of life. *Special Collection, PLoS Biology;* 2024.
  - Editorial: **Richards, T. A.**, Moran N. A., Symbiosis: In search of a deeper understanding. *PLoS Biology;* 2024; p. e3002595.
- **Richards, T. A.,** Massana, R. Hall, N., Single Cell Ecology, *Special Issue, Phil. Trans. Roy. Soc. B.;* 2019.
  - Editorial: **Richards, T. A.*,** Massana, R. Pagliara, S., Hall, N., Single cell Ecology, *Phil. Trans. Roy. Soc. B.;* 2019; **374**(1786).
- Wideman, J. G., **Richards, T. A.,** *Curr. Op. in Gen. & Dev.: Evolutionary Genetics;* 2019; Vol. 58-59.
  - Editorial: Wideman, J. G., **Richards, T. A.**, Investigating phenotype evolution in the post-genomic era. *Curr Opin Genet Dev.;* 2019; 58-59(iii-v).

Commentaries (not all peer reviewed)

- **Smilansky, V., & Richards, T. A.***. Amphibian Perkinsea. *Curr. Biol.*; 2023; **33**(1): R8-10.
- **Richards, T. A.***, & McCutcheon, J. P., Coral symbiosis is a three-player game. *Nature*; 2019; 568(7750): 41-42.
- **Jenkins, B., & Richards, T. A.***, Symbiosis: wolf lichens harbour a choir of fungi. *Curr. Biol.*; 2019; **29**(3): R88-90.
- **Richards, T. A.*,** & Talbot, N. J., Osmotrophy. *Curr. Biol.*; 2018; **28**(20): R1179-80.
- **Richards, T. A.* & Monier A.**, Tale of two taridgrades. *Proc. Natl. Acad. Sci. USA*; 2016; **113**(18): 4892-4
- **Richards, T. A.* & Gomes, S. L.***, How to build a microbial eye. *Nature*; 2015; **523**(7559): 166-167

Curriculum Vitae: Thomas A. Richards

- **Maguire, F., & Richards, T. A.***, Organelle evolution: a mosaic of 'mitochondrial' functions. *Curr. Biol.*; 2014; **24**(11): R518-20
- **Richards, T. A.*, Leonard, G.,** Soanes, D., & Talbot, N. J., Gene transfer into the fungi. *Fungal Biology Reviews*; 2011; **21**(4): 98-110 (includes meta-analysis)
- **Richards, T. A.***, Genome evolution: horizontal movements in the fungi. *Curr. Biol.*; 2011 **21**(4): R166-8.
- Archibald, J. M.* & **Richards, T. A.**, Gene transfer: anything goes in plant mitochondria. BMC Biol.; 2011; 8(1): 147
- **Richards, T. A.*** & Archibald, J. M., Cell evolution: gene transfer agents and the origin of mitochondria. *Curr. Biol*. 2011; **21**(3): R112-4
- **Richards, T. A.** & Talbot, N. J.*, Plant parasitic oomycetes such as *Phytophthora* species contain genes derived from three eukaryotic lineages. *Plant Sig. & Beh.*; 2007; **2**(2): 112-4.