

Dimitrios - Georgios Kontopoulos

WALTER BENJAMIN POSTDOCTORAL FELLOW (HE/HIM)

Department of Ecology and Evolutionary Biology, University of California, Los Angeles, CA, USA

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I am an integrative biologist. My research focuses on understanding **how diverse biological systems (from molecules to ecosystems) respond to environmental changes over various timescales**. I approach this goal using approaches from a wide range of fields, including ecoinformatics, phylogenetic comparative methods, comparative genomics, and behavioral experiments.

Research appointments and internships

- **Walter Benjamin Postdoctoral Fellow at Prof. Noa Pinter-Wollman's group**, University of California, Los Angeles, USA. June 2025 - Present
- **Postdoctoral researcher at Prof. Michael Hiller's group**, LOEWE Centre for Translational Bio-diversity Genomics & Senckenberg Research Institute, Frankfurt am Main, Germany. May 2021 - Dec. 2024
- **Visiting researcher**, Imperial College London, Silwood Park, Ascot, United Kingdom. Dec. 2019 - Apr. 2021
- **Research assistant at Prof. Samraat Pawar's group**, Imperial College London, Silwood Park, Ascot, United Kingdom. Oct. 2015 - Sep. 2016
- **Postgraduate intern at Dr. Sofia Kossida's group**, Bioinformatics and Medical Informatics Lab of the Biomedical Research Foundation of the Academy of Athens, Athens, Greece. Nov. 2014 - May 2015
- **Postgraduate intern at Dr. Sofia Kossida's group**, Bioinformatics and Medical Informatics Lab of the Biomedical Research Foundation of the Academy of Athens, Athens, Greece. Nov. 2012 - Sep. 2013
- **Summer intern at Prof. Marie-Paule Lefranc's group**, Laboratoire d'ImmunoGénétique Moléculaire of the Institut de Génétique Humaine, Montpellier, France. May - June 2013
- **Summer intern at Prof. Zisis Mamuris' group**, Laboratory of Genetics, Comparative and Evolutionary Biology of the Department of Biochemistry and Biotechnology of the University of Thessaly, Larissa, Greece. July 2011
- **Intern at Dr. George Skavdis' group**, Laboratory of Molecular Regulation of the Department of Molecular Biology and Genetics of the Democritus University of Thrace, Alexandroupolis, Greece. Mar. - May 2010

Education

- **Imperial College London**, Silwood Park, Ascot, United Kingdom Oct. 2015 - Dec. 2019
PhD: "Limits to thermal adaptation in ectotherms"
- **Imperial College London**, Silwood Park, Ascot, United Kingdom Sep. 2013 - Sep. 2014
MRes Biodiversity Informatics and Genomics, graduated with Distinction.
Thesis: "Phylogenetic constraints and environmental drivers of thermal adaptation among the phytoplankton"
- **Democritus University of Thrace**, Alexandroupolis, Greece Sep. 2008 - Oct. 2012
BSc Molecular Biology and Genetics, graduated with 7.46/10 ("Very Well").
Thesis: "Pinda: a gene duplication detection program"

Publications

Peer-reviewed papers († equal contribution; ☐ corresponding author)

- 19 Yi, X. ☐, **Kontopoulos, D.-G.**, & Hiller, M. ☐ (2025) **Comprehensive phylogenetic trait estimations support ancestral omnivory in the ecologically diverse bat family Phyllostomidae**. *Evolution*. 79(11):2406-2420.
- 18 **Kontopoulos, D.-G.** ☐, Patmanidis, I., Barraclough, T.G., & Pawar, S. (2025) **Changes in flexibility but not in compactness underlie the thermal adaptation of prokaryotic adenylate kinases**. *Evolution Letters*. 9(5):598-609.
- 17 Morales, A.E.†, Dong, Y.†, Brown, T., Baid, K., **Kontopoulos, D.-G.**, Gonzalez, V., Huang, Z., Ahmed, A.-W., Bhuinya, A., Hilgers, L.,

- Winkler, S., Hughes, G., Li, X., Lu, P., Yang, Y., Kirilenko, B.M., Devanna, P., Lama, T.M., Nissan, Y., Pippel, M., Dávalos, L.M., Vernes, S.C., Puechmaille, S.J., Rossiter, S.J., Yovel, Y., Prescott, J.B., Kurth, A., Ray, D.A., Lim, B.K., Myers, E., Teeling, E.C., Banerjee, A., Irving, A.T.✉, & Hiller, M.✉ (2025) Bat genomes illuminate adaptations to viral tolerance and disease resistance. *Nature*. 638:449-458.
- 16 Kontopoulos, D.-G.**✉, Levesque, D.L., & Hiller, M.✉ (2025) Numerous independent gains of daily torpor and hibernation across endotherms, linked with adaptation to diverse environments. *Functional Ecology*. 39(3):824-839.
- 15 Kontopoulos, D.-G.**✉, Sentis, A., Daufresne, M., Glazman, N., Dell, A.I., & Pawar, S. (2024) No universal mathematical model for thermal performance curves across traits and taxonomic groups. *Nature Communications*. 15:8855. **[Co-second place winner of the 2025 Outstanding Paper Award from the Early Career Ecologists Section of the Ecological Society of America]**
- 14** Pawar, S.✉, Huxley, P.J.✉, Smallwood, T.R.C., Nesbit, M.L., Chan, A.H.H., Shocket, M.S., Johnson, L.R., **Kontopoulos, D.-G.**, & Cator, L.J.✉ (2024) Variation in temperature of peak trait performance constrains adaptation of arthropod populations to climatic warming. *Nature Ecology & Evolution*. 8:500-510.
- 13** Kirilenko, B.M., Munegowda, C., Osipova, E., Jebb, D., Sharma, V., Blumer, M., Morales, A.E., Ahmed, A.-W., **Kontopoulos, D.-G.**, Hilgers, L., Lindblad-Toh, K., Karlsson, E.K., Zoonomia Consortium, & Hiller, M.✉ (2023) Integrating gene annotation with orthology inference at scale. *Science*. 380(6643):eabn3107.
- 12** Smith, T.P.✉, Mombrikotb, S., Ransome, E., **Kontopoulos, D.-G.**, Pawar, S., & Bell, T. (2022) Latent functional diversity may accelerate microbial community responses to temperature fluctuations. *eLife*. 11:e80867.
- 11** Kordas, R.L., Pawar, S., **Kontopoulos, D.-G.**, Woodward, G., & O'Gorman, E.J.✉ (2022) Metabolic plasticity can amplify ecosystem responses to global warming. *Nature Communications*. 13:2161.
- 10 Kontopoulos, D.-G.**✉, Smith, T.P., Barracough, T.G., & Pawar, S. (2020) Adaptive evolution shapes the present-day distribution of the thermal sensitivity of population growth rate. *PLOS Biology*. 18(10):e3000894.
- 9 Kontopoulos, D.-G.**✉, van Sebille, E., Lange, M., Yvon-Durocher, G., Barracough, T.G., & Pawar, S. (2020) Phytoplankton thermal responses adapt in the absence of hard thermodynamic constraints. *Evolution*. 74(4):775-790. **[Top cited article 2020-2021 in Evolution]**
- 8** García-Carreras, B.✉, Sal, S., Padfield, D., **Kontopoulos, D.-G.**, Bestion, E., Schaum, C.-E., Yvon-Durocher, G., & Pawar, S.✉ (2018) Role of carbon allocation efficiency in the temperature dependence of autotroph growth rates. *Proceedings of the National Academy of Sciences*. 115(31):E7361-E7368.
- 7** Kumbhar, R., Vidal-Eychenié, S., **Kontopoulos, D.-G.**, Larroque, M., Larroque, C., Basbous, J., Kossida, S., Ribeyre, C., & Constantinou, A.✉ (2018) Recruitment of ubiquitin-activating enzyme UBA1 to DNA by poly(ADP-ribose) promotes ATR signalling. *Life Science Alliance*. 1(3):e201800096.
- 6 Kontopoulos, D.-G.**✉, García-Carreras, B., Sal, S., Smith, T.P., & Pawar, S. (2018) Use and misuse of temperature normalisation in meta-analyses of thermal responses of biological traits. *PeerJ*. 6:e4363.
- 5 Kontopoulos, D.-G.**✉, Kontopoulou, T., Ho, H.-C., & García-Carreras, B. (2017) Towards a theoretically informed policy against a rākghoul plague outbreak. *The Medical Journal of Australia*. 207(11):490-494. **[Third place in the 2017 Christmas Competition of the Medical Journal of Australia]**
- 4 Kontopoulos, D.-G.**✉, Vlachakis, D.✉, Tsiliki, G., & Kossida, S. (2016) Structuprint: a scalable and extensible tool for two-dimensional representation of protein surfaces. *BMC Structural Biology*. 16:4.
- 3** Kontopoulou, T.†✉, **Kontopoulos, D.-G.**†, Vaidakis, E., & Mousoulis, G.P. (2015) Adult Kawasaki disease in a European patient: a case report and review of the literature. *Journal of Medical Case Reports*. 9(1):75.
- 2** Vlachakis, D., **Kontopoulos, D.-G.**, & Kossida, S.✉ (2013) Space Constrained Homology Modelling: the paradigm of the RNA-dependent RNA polymerase of dengue (type II) virus. *Computational and Mathematical Methods in Medicine*. 2013:108910.
- 1 Kontopoulos, D.-G.** & Glykos, N.M.✉ (2013) Pinda: a web service for detection and analysis of intraspecies gene duplication events. *Computer Methods and Programs in Biomedicine*. 111(3):711-714.

Commentaries

- 1** Pawar, S.✉ & **Kontopoulos, D.-G.** (2025) Towards a general understanding of thermal performance curves in biology. *Proceedings of the National Academy of Sciences*. In press.

Invited book chapters

- 1 **Kontopoulos, D.-G.** ☒ Phylogenetic comparative approaches for the study of biological scaling. In: Synthesizing biological scaling: towards a universal theory. Santa Fe Institute Press. *In press*.

Preprints

- 1 **Kontopoulos, D.-G.** ☒ Ahmed, A.-W., Bein, B., Levesque, D.L., & Hiller, M. ☒ Comparative genomics indicate multiple genetic routes to the evolution of torpor in placental mammals. *bioRxiv*.

Fellowships, scholarships, and awards

Total funds secured: >€380,000

- 8 Outstanding Paper Award (co-second place winner) from the **Early Career Ecologists Section of the Ecological Society of America** for peer-reviewed paper #15 above. Aug. 2025
- 7 Walter Benjamin Postdoctoral Fellowship from the **German Research Foundation (DFG)**. June 2025 - May 2027
€132,371
- 6 EMBO Postdoctoral Fellowship. €168,000 Mar. 2022 - Apr. 2024
- 5 Top cited article award from **Evolution** for peer-reviewed paper #9 above. Mar. 2022
- 4 Third place in the Christmas Competition of the **Medical Journal of Australia** for peer-reviewed paper #5 above. Dec. 2017
- 3 Travel award from the **Department of Life Sciences, Imperial College London** for attending the 2017 Congress of the European Society for Evolutionary Biology in Groningen, the Netherlands. £500 May 2017
- 2 Science and Solutions for a Changing Planet Doctoral Training Partnership scholarship from the **Natural Environment Research Council**. £57,300 Oct. 2015 - Apr. 2019
- 1 Scholarship for 2013-2014 postgraduate education abroad (1st cycle) from the **Greek State Scholarships Foundation (IKY)**. €16,290 Dec. 2013

Presentations

Invited talks

- 4 **Evolution of ecophysiological responses to temperature changes.** Université Clermont Auvergne, France, 10th November 2023.
- 3 **Deep-time evolution of biological responses to temperature changes.** Ecology & Evolution Seminar Series, Imperial College London, Silwood Park Campus, United Kingdom, 10th October 2019.
- 2 **Deep-time evolution of physiological responses to temperature changes.** Stanford University, CA, United States of America, 13th September 2019.
- 1 **Trait correlations vs environmental drivers in the evolution of phytoplankton thermal responses.** National Taiwan University, Taiwan, 26th March 2018.

Contributed talks

- 8 **Kontopoulos, D.-G.**, Ahmed, A.-W., Bein, B., & Hiller, M. (2024) The impact of phylogenetic diversity on the strength of gene-trait associations. *18th Conference of the Hellenic Society for Computational Biology and Bioinformatics, Lamia, Greece, 17-19th October*.
- 7 **Kontopoulos, D.-G.**, Levesque, D.L., & Hiller, M. (2023) Physiological, ecological, and genomic underpinnings of daily torpor and hibernation across mammals and birds. *2023 Annual Meeting of the Ecological Society of America, Portland, OR, United States of America, 6th-11th August*.
- 6 **Kontopoulos, D.-G.**, van Sebille, E., Lange, M., Yvon-Durocher, G., Barraclough, T.G., & Pawar, S. (2018) Non-random adaptive evolution of the thermal sensitivity of growth rate among phytoplankton. *Gordon Research Seminar on Unifying Ecology Across Scales, Biddeford, ME, United States of America, 21st-22nd July*.

- 5 Kontopoulos, D.-G.**, van Sebille, E., Lange, M., Yvon-Durocher, G., & Pawar, S. (2018) Trait correlations vs environmental drivers in the evolution of phytoplankton thermal responses. *65th Annual Meeting of the Ecological Society of Japan, Sapporo, Japan, 14th-18th March.*
- 4 Kontopoulos, D.-G.**, Yvon-Durocher G., & Pawar, S. (2017) Niche convergence in the macroevolution of the thermal sensitivity of phytoplankton growth rate. *2017 Congress of the European Society for Evolutionary Biology, Groningen, the Netherlands, 20th-25th August.*
- 3 Kontopoulos, D.-G.**, Yvon-Durocher, G., & Pawar, S. (2016) Deep-time macroevolution of thermal sensitivity of growth rate among phytoplankton. *Annual Meeting of the British Ecological Society, Liverpool, United Kingdom, 11th-14th December.*
- 2 Kontopoulos, D.-G.**, Yvon-Durocher, G., Chen, B., Thomas, M. K. & Pawar S. (2014) Γενικά μοτίβα θερμικής προσαρμογής μεταξύ των ειδών του φυτοπλαγκτού [General patterns of thermal adaptation among phytoplankton]. *7th National Congress of the Hellenic Ecological Society, Mytilene, Greece, 9th-12th October.*
- 1 Kontopoulos, D.-G.** & Glykos, N.M. (2012) Pinda: a web service for detection and analysis of intraspecies gene duplications. *7th Conference of the Hellenic Society for Computational Biology and Bioinformatics, Heraklion, Greece, 4th-6th October.*

Contributed posters

- 3 Kontopoulos, D.-G.**, Patmanidis, I., Barraclough, T.G., & Pawar, S. (2018) Nonsynonymous mutations are more detrimental at high temperatures; a prokaryote-wide study of adenylate kinases. *Gordon Research Conference on Unifying Ecology Across Scales, Biddeford, ME, United States of America, 22nd-27th July.*
- 2 Kontopoulos, D.-G.**, Yvon-Durocher, G., & Pawar, S. (2016) Deep-time macroevolution of thermal sensitivity of growth rate among phytoplankton. *Gordon Research Conference on Unifying Ecology Across Scales, Biddeford, ME, United States of America, 24th-29th July.*
- 1 Kontopoulos, D.-G.**, Yvon-Durocher, G., Allen, A.P., Chen, B., Thomas, M.K., & Pawar, S. (2014) Phylogenetic constraints and environmental drivers of thermal adaptation among the phytoplankton. *Annual London Evolutionary Research Network Conference, London, United Kingdom, 5th November.*

Research skills

Thermal biology

- quantifying the shape of thermal performance curves for physiological, ecological, or other biological traits through diverse (80+) nonlinear mathematical models.
- identifying trait-trait and trait-environment associations through phylogenetic generalised linear mixed models with numerous (up to 22 so far) covarying response variables.
- sampling of *Linepithema humile* ants from natural colonies, conducting behavioral experiments at multiple temperatures and humidity levels, and analysing the data using Artificial Intelligence software.

Statistics & data science

- Bayesian statistics.
- phylogenetic comparative methods.
- likelihood-based model selection.
- dimensionality reduction and clustering.
- machine learning.

Bioinformatics

- genome alignment and annotation.
- Gene Ontology term enrichment.
- genome-wide screening for signatures of selection, gene losses, or evolutionary rate shifts, associated with a trait of interest.
- analysis of sequence or physicochemical conservation.
- protein structure modelling and comparison.
- molecular dynamics simulations.

Phylogenetics

- likelihood-based reconstruction of gene and species trees.
- timetree inference.

Ecological modelling

- modelling predator-prey population dynamics using ordinary differential equations.
- agent-based modelling with NetLogo.

Scientific programming

- extensive experience in Perl and R.
- good experience in Python and SQL.
- basic experience in Common Lisp, C, and Shell.
- version control using Git.
- some experience in web development.

Teaching experience

As a course demonstrator

| | |
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| • Further Topics in Statistics | 2015-18 |
| MSc/MRes “Ecology, Evolution and Conservation”, Imperial College London | |
| • Intro to UNIX and Linux | 2017 |
| MSc/MRes “Computational Methods in Ecology and Evolution” and “Quantitative and Modelling Skills in Ecology and Evolution” Centre for Doctoral Training, Imperial College London | |
| • Statistics | 2014-15 |
| BSc “Biological Sciences”, year 1, Imperial College London | |
| • Biological Computing in Python II | 2014 |
| MSc/MRes “Computational Methods in Ecology and Evolution”, Imperial College London | |
| • Computational Biostatistics | 2014 |
| BSc “Biological Sciences”, year 2, Imperial College London | |

As a course tutor

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| • MSc/MRes “Computational Methods in Ecology and Evolution”, Imperial College London | 2014-15 |
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As a workshop presenter

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| • “How to generate topological constraints using the Open Tree of Life” | Silwood Computer Skillz Workshop, Imperial College London | 30th March 2017 |
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Mentoring

Undergraduate interns

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| • Catherine Tran - BS “Ecology and Evolutionary Biology”, University of California, Los Angeles. | 2025 |
| Duties: determining ant counts from images using ImageJ. | |

Master's students

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| • Georgios Kalogiannis - MRes “Computational Methods in Ecology and Evolution”, Imperial College London. | 2024 |
| Thesis: “Gene loss is an important signature of insect size evolution” | |
| Primary supervisor: Samraat Pawar | |
| • Aditi Madkaikar - MRes “Computational Methods in Ecology and Evolution”, Imperial College London. | 2023 |
| Thesis: “Predicting the thermal niche of a ubiquitous bacterium using whole genome sequence” | |
| Primary supervisor: Samraat Pawar | |
| Other supervisors: Arianna Basile | |
| • Kate Griffin - MSc “Computational Methods in Ecology and Evolution”, Imperial College London. | 2022 |
| Thesis: “Can't stand the heat? An analysis of the thermal sensitivity of arthropods, how it has evolved & factors influencing it” | |
| Primary supervisor: Samraat Pawar | |
| Other supervisors: Paul Huxley, Lauren Cator | |

Outreach / public engagement

- Exhibitor at the **Great Exhibition Road Festival**, London, UK 7th-8th May 2016
- Co-organiser of the “**Drawing Climate Change**” activity at the **Science Museum Lates**, London, UK 30th March 2016

Service

Manuscript reviewer for 13 Journals / peer review platforms: **Communications Biology**, **Communications Earth & Environment**, **Ecology Letters**, **Frontiers in Microbiology**, **Functional Ecology**, **Journal of Plankton Research**, **Journal of Thermal Biology**, **Limnology and Oceanography**, **Physiological and Biochemical Zoology**, **Proceedings of the Royal Society B: Biological Sciences**, **Review Commons**, **Scientific Reports**, and **Systematic Biology**.

Scientific workshops and courses attended

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| 6 CIRTL@UCLA Introduction to Evidence-Based Undergraduate Teaching course , University of California, Los Angeles, CA, USA. | Sep. 2025 - Dec. 2025 |
| 5 CIMER/NRMN Postdoc Research Mentoring Workshop , University of California, Los Angeles, CA, USA. | 28th Aug. 2025 |
| 4 An Introduction to Mechanistic Niche Modelling with NicheMapR and TrenchR , 2023 Annual Meeting of the Ecological Society of America, Portland, OR, United States of America. | 6th Aug. 2023 |
| 3 EMBO Laboratory Leadership course , EMBO Solutions, Heidelberg, Germany. | 5th-7th July 2023 |
| 2 “Introduction to Agent-Based Modelling” Massive Open Online Course , Santa Fe Institute, held online. | June 2022 - Aug. 2022 |
| 1 Evolutionary Quantitative Genetics workshop , Friday Harbor Laboratories, University of Washington, held online. | 11th-15th July 2022 |

Language skills

Native proficiency in **Greek**, full proficiency in **English**, sufficient proficiency in **French**, basic proficiency in **German**.

References

Prof. Samraat Pawar

Title: Professor of Theoretical Ecology
Affiliation: Department of Life Sciences, Imperial College London, Silwood Park
Email address: s.pawar@imperial.ac.uk

Prof. Michael Hiller

Title: Professor of Comparative Genomics
Affiliation: Senckenberg Research Institute, Frankfurt and Goethe University
Email address: michael.hiller@senckenberg.de

Prof. Noa Pinter-Wollman

Title: Professor
Affiliation: Department of Ecology and Evolutionary Biology, University of California, Los Angeles
Email address: nmpinter@ucla.edu

Prof. Timothy G. Barraclough

Title: Professor of Evolutionary Biology
Affiliation: Department of Biology, University of Oxford
Email address: tim.barraclough@biology.ox.ac.uk

Additional information

Member of Scientific Societies: Society for the Study of Evolution, Ecological Society of America, Panhellenic Association of Biologists.

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