

# SINGER David

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## Biologist specialised in protistology

### Research interest

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My research areas are soil biodiversity, communities and ecosystems ecology. On-going projects focus on metabarcoding and phylogeny approach of microeukaryotes to understand ecological interactions, biogeography patterns on different ecosystems.

### Education

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2020-Now	<b>Postdoc</b> , UMR CNRS 6112 LPG-BIAF Bio-Indicateurs Actuels et Fossiles, University of Angers, France
2019-2020	<b>Postdoc</b> , Laboratory of Evolutionary Protistology, University of São Paulo, Brazil
2017-2019	<b>Postdoc</b> , Laboratory of Soil Biodiversity, University of Neuchâtel, Switzerland
2012-2017	<b>PhD degree</b> , Laboratory of Soil Biodiversity, University of Neuchâtel, Switzerland
2009-2011	<b>Master's degree</b> , Master in Biogeosciences, University of Neuchâtel, Switzerland
2005-2008	<b>Bachelor's degree</b> , Bachelor in Biology, University of Neuchâtel

### Skills and qualifications

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Languages	French: Native speaker, English: Professional working proficiency
Laboratory	DNA Extraction (mosses, Freshwater, soil, single cells...), PCR (NGS, 18S, COI...), Single cells ARN extraction, Cloning/sequencing technics, Soil/water chemical analyses
Informatics	Sequences analysis (Editing, Aligning, phylogenetic reconstruction), NGS Data Analysis metabarcoding and transcriptomic (Cleaning, clustering, assigning...), Unix Shell Scripting, R, Unix Shell scripting, Inkscape, Gimp, Latex
Reviewer for:	Land Degradation & Development, Metabarcoding and Metagenomics, Molecular Ecology, Environmental Microbiology, Science of the Total Environment, Microbial Ecology, Plos One, FEMS Microbiology Ecology, Protist, Eukaryotic Microbiology, Environmental Science and Pollution Research, Journal of Limnology

## Teaching experience

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### University of Neuchâtel: Period 2017-18

#### BSc courses

- Protists I, course (14h/yr, 1 ECTS) lectures
- Protists and Invertebrates practical course (28h/yr, 2 ECTS)
- Protists II, course (28h/yr, 2 ECTS) lectures
- Protists II, practical course (14h/yr, 1 ECTS)

#### MSc courses

- Seminar Biodiversity (42h/yr, 3 ECTS)

## Mentoring experience

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2015 **Clément Duckert**, M Sc. co-advisor (adv. Dr. Enrique Lara), UniNe. Title: Calibration of a molecular clock for genus *Euglypha* (Rhizaria, Cercozoa)

## Personal grants

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2018 From environmental metabarcoding/metatranscriptomic to a single-cell transcriptomics: evaluation of human impact on the microeukaryotic diversity of the Tietê River, Sao Paulo, Brazil, FNS Early Postdoc.Mobility, 18 months of Postdoctoral salary, **David Singer**, Funding: **87'666 CHF**

2015 Swiss Barcoding Of Life initiative “Morphologic and genetic description of new cryptic species in the *Nebela collaris* species complex (Hyalospheniidae, Arcellinida)”, **Singer David** Funding: **3'000 CHF**

## Organisation of meetings

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03.07.2019 Mini-Symposium: Microeukaryotes as tools to shed light on environmental questions, São Paulo, Brazil (organising committee)

23-26.02.2016 35th Annual Meeting of the German Society for Protozoology, Saignelegier, Switzerland, Organising committee.

## Contributions to international/national meetings

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2020

04-06.03.2020 39<sup>th</sup> Annual Meeting of the German Society for Protozoology, Kaiserslautern, Germany, Evaluation of parasitic diversity using environmental DNA approach. **Singer D**, Duckert C, Lara E, Mitchell EAD

2019

02-03.12.2019 Interuniversity Doctoral Program in Organismal Biology: Protists diversity and ecology in aquatic and terrestrial ecosystems - joint with CUSO EE, Neuchâtel, Switzerland, Environmental DNA to monitor protist diversity. **Singer D**

26.09.2019 OCGC Geoscience Seminars, Carleton University, Ottawa, Canada, Environmental DNA approaches to understand past, present and future ecosystems functioning. **Singer D**

03.07.2019 Mini-Symposium: Microeukaryotes as tools to shed light on environmental questions, São Paulo, Brazil, “Sphagnosphere”: A unique component of earth’s Biosphere to assess microeukaryotes diversity, ecology and biogeography. **Singer D**

20-22.02.2019 38<sup>th</sup> Annual Meeting of the German Society for Protozoology, Vienna, Austria, Contrasted effects of cadavers, blood, urine and faeces on soil micro-eukaryotic communities – implications for biodiversity exploration and forensic application. **Singer D**, Heděnek P, Jauslin R, Heger T, Szelecz I, Lara E, Duckert C, Mitchell EAD

2018

10-14.09.2018 International Symposium on Testate Amoebae (ISTA9), Belfast, Ireland, Testate amoeba taxonomy from morphology to metatranscriptomics. **Singer D**, Lara E, Mitchell EAD, Lahr DJG

27.02-02.03.2018 37<sup>th</sup> Annual Meeting of the German Society for Protozoology, Cologne, Germany, A molecular approach to microeukaryotic diversity, ecology and biogeography associated with *Sphagnum* mosses. **Singer D**.

27.02-02.03.2018 37<sup>th</sup> Annual Meeting of the German Society for Protozoology, Cologne, Germany, Temporal patterns of soil micro-eukaryotic diversity beneath pig cadavers decomposing on the ground or suspended, **Singer D**, Seppey CVW, Szelecz I, Lara E, Mitchell EAD

2017

30.07-04.08.2017 15<sup>th</sup> International Congress of Protistology (ICOP15), Prague, Czech Republic, Temporal patterns of soil micro-eukaryotic diversity beneath decomposing pig cadavers as assessed by high throughput sequencing. Reczuga MK, Seppey CVW, Szelecz I, Fournier B, **Singer D**, Lara E, Mulot M, Mitchell EAD.

21-24.02.2017 36<sup>th</sup> Annual Meeting of the German Society for Protozoology, Meissen, Germany, Born in the USA: a molecular phylogeography of *Hyalosphenia papilio*. **Singer D**, Fernandez LD, Blandenier Q, Mitchell EAD, Lara E.

2016

12-15.09.2016 International Symposium on Testate Amoebae (ISTA8), Ilhabela, Brazil, Born in the USA: a molecular phylogeography of *Hyalosphenia papilio*. **Singer D**, Fernandez LD, Blandenier Q, Mitchell EAD, Lara E.

23-26.02.2016 35<sup>th</sup> Annual Meeting of the German Society for Protozoology, Saignelegier, Switzerland, Environmental diversity of cryptic species from the *Nebela collaris* complex is strongly correlated with environmental filters. **Singer D**, Kosakyan A, Fernandez LD, Seppey CVW, Mitchell EAD, Lara E.

2015

05-10.11.2015 European Congress of Protistology (ECOP 7), Seville, Spain, Environmental diversity of cryptic species from the *Nebela collaris* complex is strongly correlated with environmental filters. **Singer D**, Kosakyan A, Fernandez L, Seppey CVW, Mitchell EAD, Lara E.

2014

14.11.2014 Swiss Systematics Society, Geneva, Switzerland, Strong niche separation among species of the *Nebela collaris* complex: a tool for bioindication? **Singer D**, Kosakyan A, Seppey CVW, Mitchell EAD, Lara E.

31.10.2014 SwissBOL Conference, Bern, Switzerland, Earthworm diversity in Switzerland: focus on potential cryptic species. **Singer D**, Luiz L, Al-Dourobi A, Lara E, Le Bayon C.

08-12.09.2014 International Symposium on Testate Amoebae (ISTA7), Poznan, Poland, Strong niche separation among species of the *Nebela collaris* complex: a tool for bioindication? **Singer D**, Kosakyan A, Seppey CVW, Mitchell EAD, Lara E.

15-16.04.2014 Fundamental and applied protistology, Neuchâtel, Switzerland, Cryptic testate amoeba species occupy different niches in a peatland: the case of the *Nebela collaris* complex. **Singer D**, Kosakyan A, Mulot M, Mitchell EAD, Lara E.

In press and published peer-reviewed papers

2020

1. **Singer D**, Duckert C, Heděnc P, Lara E, Hiltbrunner E, Mitchell EAD. High-throughput sequencing of litter and moss eDNA reveals a positive correlation between the diversity of Apicomplexa and their invertebrate hosts across alpine habitats. *Soil Biology and Biochemistry*, Accepted
2. Bengtsson F, Rydin H, Baltzer JL, Bragazza L, Bu Z-J, Caporn SJM, Dorrepaal E, Flatberg KI, Galanina O, Gałka M, Ganeva A, Goia I, Goncharova N, Hájek M, Haraguch A, Harris LI, Humphreys E, Jiroušek M, Kajukalo K, Karofeld E, Koronátova NG, Kosykh NP, Laine AM, Lamentowicz M, Lapshina E, Limpens J, Linkosalmi M, Ma J-Z, Mauritz M, Mitchell EAD, Munir TM, Natali SM, Natcheva R, Payne RJ, Philippov DA, Rice SK, Robinson S, Robroek BJM, Rochefort L, **Singer D**, Stenøien HK, Tuittila E-S, Vellak K, Waddington JM, Granath G. Environmental drivers of *Sphagnum* growth in peatlands across the Holarctic region. *Journal of Ecology* <https://doi.org/10.1111/1365-2745.13499>
3. Seppéy CVW, Broennimann O, Buri A, Yashiro E, Pinto-Figueroa E, **Singer D**, Blandenier Q, Mitchell EAD, Niculita-Hirzel H, Guisan A, Lara E. 2020. Soil protist diversity in the Swiss western Alps is better predicted by topo-climatic than by edaphic variables. *Journal of Biogeography* DOI: 10.1111/jbi.13755

2019

4. **Singer D**, Mitchell EAD, Payne RJ, Blandenier Q, Duckert C, Fernández LD, Fournier B, Hernández CE, Granath G, Rydin H, Bragazza L, Koronátova NG, Goia I, Harris LI, Kajukalo K, Kosakyan A, Lamentowicz M, Kosykh NP, Vellak K, Lara E. 2019. Dispersal limitations and historical factors determine the biogeography of specialized terrestrial protists. *Molecular Ecology* DOI:10.1111/mec.15117
5. **Singer D**, Metz S, Unrein F, Shimano S, Mazei Y, Mitchell EAD, Lara E. 2019. Contrasted Micro-Eukaryotic Diversity Associated with *Sphagnum* Mosses in Tropical, Subtropical and Temperate Climatic Zones *Microbial Ecology* DOI: 10.1007/s00248-019-01325-7
6. Metz S, **Singer D**, Domaizon I, Unrein F, & Lara E 2019.. Global distribution of Trebouxiophyceae diversity explored by high-throughput sequencing and phylogenetic approaches. *Environmental Microbiology* DOI: <https://doi.org/10.1111/1462-2920.14738>
7. Velasco-González I, Sanchez-Jimenez A, **Singer D**, Murciano A, Díez-Hernando S, Lara E, Martín-Cereceda M. 2019. Rain-fed granite rock basins accumulate a high diversity of dormant microbial eukaryotes. *Microbial Ecology* DOI: <https://doi.org/10.1007/s00248-019-01463-y>

2018

8. **Singer D**, Kosakyan A, Seppéy CVW, Pillonel A, Fernández LD, Fontaneto D, Mitchell EAD, Lara E. 2018. Environmental filtering and phylogenetic clustering correlate with the distribution patterns of cryptic microeukaryotic species in peatlands. *Ecology* DOI: 10.1002/ecy.2161
9. Duckert C, Blandenier Q, Kupferschmid FAL, Kosakyan A, Mitchell EAD, Lara E, **Singer D**. 2018. En garde! Redefinition of *Nebela militaris* (Arcellinida, Hyalospheniidae) and erection of *Alabasta* gen. nov. *European Journal of Protistology* DOI: 10.1016/j.ejop.2018.08.005
10. Stefan G, Mitchell EAD, Adl S, Bonkowski M, Dunthorn M, Ekelund F, Fernández L, Jousset A, Krashevskaya V, **Singer D**, Spiegel F, Walochnik J, Lara E. 2018. Soil protists: a fertile frontier in soil biology research. *FEMS Microbiology Reviews* DOI: <https://doi.org/10.1093/femsre/fuy006>
11. Granath G, Rydin H, Baltzer JL, Bengtsson F, Boncek N, Bragazza L, Bu ZJ, Caporn SJM, Dorrepaal E, Galanina O, Gałka M, Ganeva A, Gillikin DP, Goia I, Goncharova N, Hájek M, Haraguchi A, Harris LI, Humphreys E, Jiroušek M, Kajukalo K, Karofeld E, Koronátova NG, Kosykh NP, Lamentowicz M, Lapshina E, Limpens J, Linkosalmi M, Ma JZ, Mauritz M, Munir TM, Natali S, Natcheva R, Noskova M, Payne RJ, Pilkington K, Robinson S, Robroek BJM, Rochefort L, **Singer D**, Stenøien HK, Tuittila ES, Vellak K, Verheyden A, Waddington JM, Rice SK. 2018. Environmental and taxonomic controls of carbon and oxygen stable isotope composition in *Sphagnum* across broad climatic and geographic ranges. *Biogeosciences* DOI: 10.5194/bg-15-5189-2018

12. Hedenec P, **Singer D**, Li J, Yao M, Lin Q, Li H, Kukla J, Cajthaml T, Frouz J, Rui J, Li X. 2018. Effect of dry-rewetting stress on response pattern of soil prokaryotic communities in alpine meadow soil. *Applied Soil Ecology* DOI: <https://doi.org/10.1016/j.apsoil.2018.02.015>
  13. Szelecz I, Lösch S, Seppely CVW, Lara E, **Singer D**, Sorge F, Tschui J, Perotti MA, Mitchell EAD. 2018. Comparative analysis of bones, mites, soil chemistry, nematodes and soil micro-eukaryotic communities of a suspected homicide to estimate a long post-mortem interval. *Scientific Reports* DOI: 10.1038/s41598-017-18179-z
- 2017
14. Geisen S, Mitchell EAD, Wilkinson DM, Adl S, Bonkowski M, Brown MW, Fiore-Donno AM, Heger TJ, Jassey VEJ, Krashevskaya V, Lahr DJG, Marcisz K, Mulot M, Payne R, **Singer D**, Anderson OR, Charman DJ, Ekelund F, Griffiths BS, Rønn R, Smirnov A, Bass D, Belbahri L, Berney C, Blandenier Q, Chatzinotas A, Clarholm M, Dunthorn M, Feest A, Fernandez-Parra LD, Foissner W, Fournier B, Gentekaki E, Hajek M, Helder J, Jousset A, Koller R, Kumar S, La Terza A, Lamentowicz M, Mazei Y, Santos SS, Seppely CVW, Spiegel FW, Walochnik J, Winding A, Lara E. 2017. Soil protistology rebooted: 30 fundamental questions to start with. *Soil Biology and Biochemistry* DOI: 10.1016/j.soilbio.2017.04.001
  15. Seppely C, **Singer D**, Dumack K, Belbahri L, Mitchell EAD, Lara E. 2017. Distribution patterns of soil microbial eukaryotes suggests widespread algivory by phagotrophic protists as an alternative pathway for nutrient cycling. *Soil Biology and Biochemistry* DOI: 10.1016/j.soilbio.2017.05.002
  16. Mahé F, de Vargas C, Bass D, Czech L, Stamatakis A, Lara E, **Singer D**, Mayor J, Bunge J, Sernaker S, Siemensmeyer T, Trautmann I, Romac S, Berney C, Kozlov A, Mitchell EAD, Seppely CVW, Egge E, Lentendu G, Wirth R, Trueba G, Dunthorn M. 2017. Soil Protists in Three Neotropical Rainforests are Hyperdiverse and Dominated by Parasites. *Nature Ecology & Evolution* DOI: 10.1038/s41559-017-0091
- 2016
17. **Singer D**, Lara E, Steciow MM, Seppely CVW, Paredes N, Pillonel A, Oszako T, Belbahri L. 2016. High-throughput sequencing reveals diverse oomycete communities in oligotrophic peat bog micro-habitat. *Fungal Ecology* DOI: 10.1016/j.funeco.2016.05.009
  18. Schiaffino MR, Lara E, Fernández LD, Balagué V, **Singer D**, Seppely CVW, Massana R, Izaguirre I. 2016. Microbial eukaryote communities from Patagonian-Antarctic gradient of lakes evidence of a biogeographical pattern. *Environmental microbiology* DOI: 10.1111/1462-2920.13566
  19. Blandenier Q, Seppely CVW, **Singer D**, Vlimant M, Simon A, Duckert C, Lara E. 2016. *Mycamoeba gemmipara* nov. gen., nov. sp., the First Cultured Member of the Environmental Dermamoebidae Clade LKM74 and its Unusual Life Cycle. *Journal of Eukaryotic Microbiology* DOI: 10.1111/jeu.12357
- 2015
20. **Singer D**, Kosakyan A, Pillonel A, Mitchell EAD, Lara E. 2015. Eight species in the *Nebela collaris* complex: *Nebela gimlii* (Arcellinida, Hyalospheniidae), a new species described from a Swiss raised bog. *European Journal of Protistology*, DOI:10.1016/j.ejop.2014.11.004
  21. Lara E, Seppely CVW, Garraza GG, **Singer D**, Quiroga MV, Mataloni G. 2015. Planktonic eukaryote molecular diversity: discrimination of minerotrophic and ombrotrophic peatland pools in Tierra del Fuego (Argentina). *Journal of Plankton Research* DOI: 10.1093/plankt/fbv016
  22. Seppely CVW, Fournier B, Szelecz I, **Singer D**, Mitchell EAD, Lara E. 2015. Response of forest soil euglyphid testate amoebae (Rhizaria: Cercozoa) to pig cadavers assessed by high-throughput sequencing. *International journal of legal medicine* DOI: 10.1007/s00414-015-1149-7

## Awards

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12.09.2018 Laureate of the "**Helen Tappan, Early Career Researcher Award 2018**" of the International Society of Testate Amoeba Reseachers - ISTAR in recognition of a contribution to fundamental advances in understanding the taxonomy, community structure, and functional ecology of testate amoeba.

01.03.2018 Laureate of the "**Karl Gottlieb Grell Award 2018**" of the German Society of Protozoology in recognition of an outstanding contribution in the field of protistological research.

16.11.2017 Laureate of the "**Prix Jean-Luc Cr  lerot 2018**" of the University of Neuch  tel, in recognition of a PhD in the "evolution of the organisms" field of research.

## Activities and Interests

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Biology Youtube Chanel: <https://www.youtube.com/channel/UCIqQQ7bSplXuHE6Amc1Tmew>

Volunteering: INSIEME, Responsible of a summer camp with persons with intellectual disabilities

Music: Guitar (in a band for 10 years)

## References

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**Dr. Enrique Lara** Researcher for the Spanish National Research Council Real Jard  n Bot  nico de Madrid (Spain) Email: [enrique.lara@rjb.csic.es](mailto:enrique.lara@rjb.csic.es)

**Prof. Edward Mitchell** Director of the Soil Biodiversity laboratory of the University of Neuch  tel (Switzerland) Email: [edward.mitchell@unine.ch](mailto:edward.mitchell@unine.ch)

**Prof. Micah Dunthorn** Independent Junior Research Group Leader, University of Kaiserslautern, (Germany) Email: [dunthorn@rhrk.uni-kl.de](mailto:dunthorn@rhrk.uni-kl.de)

**Dr. Diego Fontaneto** Permanent researcher, National research council, Verbania (Italy) Email: [d.fontaneto@ise.cnr.it](mailto:d.fontaneto@ise.cnr.it)

**Prof. Thomas Posch** Groupleader department of Plant and Microbial Biology, University of Z  rich (Switzerland) Email: [posch@limnol.uzh.ch](mailto:posch@limnol.uzh.ch)

**Prof. Daniel Lahr**, Director of the Laboratory of Evolutionary Protistology of the University of S  o Paulo (Brazil) Email: [dlahr@ib.usp.br](mailto:dlahr@ib.usp.br)