

Professional experience

- 2022- **Postdoctoral researcher**, Institute of Physics, EPFL, Lausanne, CH
Laboratory of Experimental Biophysics (Prof. Suliana Manley)
Fundamental mechanisms of mitochondrial genome organization and quality-control using advanced and super-resolution microscopy.
- 2019-22 **Doctoral researcher**, Stem Cells and Metabolism, University of Helsinki, FI
Mitochondrial Medicine laboratory (Prof. Anu Suomalainen-Wartiovaara)
Mitochondrial DNA maintenance disorders, metabolism, cardiac development, aging.
- 2014-19 **Undergraduate researcher**, Molecular Neurology, University of Helsinki, FI
Mitochondrial Medicine laboratory (Prof. Anu Suomalainen-Wartiovaara)
Pathomechanisms of human genetic diseases affecting mitochondria and metabolism.

Education

- 2019-22 **Doctor of Philosophy (Ph.D.) in Biomedicine / Integrative Life Sciences**, Faculty of Medicine, University of Helsinki, FI. Dissertation: Mitochondrial DNA replication defects: consequences for neonatal heart disease & premature aging
- 2017-19 **Master of Science (M.Sc.) in Translational Medicine**, Faculty of Medicine, University of Helsinki, FI. Thesis: Structural Insights into Creatine Transport from Novel Disease Mutation
- 2014-17 **Bachelor of Science (B.Sc.), Chemistry** Faculty of Science, University of Helsinki, FI. Thesis: Development of a New Method for Quantitative dNTP Pool Measurement from Biological Samples

Languages

Spanish (Native) English (Fluent, C2) French (Fluent, C1-C2)

Five most significant publications

☑ co-corresponding authorship, *equal contributions

1. **Landoni, J. C.**[☑], Lycas, M., Macuada, J., Jaccard, R., Obara, C., Moore, A., ... Manley, S.[☑] (2025). *Pearling Drives Mitochondrial DNA Nucleoid Distribution*. **bioRxiv**. <https://doi.org/10.1101/2024.12.21.629917>
2. Winter, J.*^{*}, **Landoni, J. C.***, Holt, K., Ben Nejma, S., Durmus, B., Kleele, T., Koslover, E.F., Manley, S. (2025) *Asymmetric mitochondrial trafficking maintains network morphology by balancing perinuclear biogenesis*. **BioRxiv**. <https://doi.org/10.64898/2025.12.08.692722>
3. **Landoni, J. C.**[☑], Erkul, S., Laalo, T., Goffart, S., Kivelä, R., Skube, K., ... Suomalainen, A.[☑] (2024). *Overactive mitochondrial DNA replication disrupts perinatal cardiac maturation*. **Nature Communications**, 15(1), 8066. <https://doi.org/10.1038/s41467-024-52164-1>
4. Kuukasjärvi, A.*^{*}, **Landoni, J. C.***, Kaukonen, J., Juhakoski, M., Auranen, M., ... Suomalainen, A. (2021). *IMPDH2: A new gene associated with dominant juvenile-onset dystonia-tremor disorder*. **European Journal of Human Genetics**, 29(12), 1833–1837. <https://doi.org/10.1038/s41431-021-00939-1>
5. Hämäläinen, R. H., **Landoni, J. C.***, Ahlqvist, K. J.*^{*}, Goffart, S., Ryytty, S., ... Suomalainen, A. (2019). *Defects in mtDNA replication challenge nuclear genome stability through nucleotide depletion and provide a unifying mechanism for mouse progerias*. **Nature Metabolism**, 1(10), 958–965. <https://doi.org/10.1038/s42255-019-0120-1>

Grants, Awards & Honors

- 2026** *Selected finalist*, LS² PI's of Tomorrow 2026, University of Zürich, CH
2025 *Shortlisted for interview*, Tenure-track Assistant Professor position, Department of Biomedical Sciences, University of Lausanne (UNIL), CH
2024 *Best poster prize*, Cell Symposia in Multifaceted Mitochondria, Sitges, ES
2023 *Best poster prize*, EMBO Inter-organelle Contacts Biology, Fiuggi, IT
2023 *Video Competition Winner*, Global Young Scientist Summit (GYSS), Singapore National Research Foundation, SG
2022 *Ph.D. dissertation distinction* (pioneering theses of exceptional quality, top 10%), Faculty of Medicine, University of Helsinki, FI
2022 *Best poster prize*, Faculty of Medicine Research Programs Unit Science Day 2022, FI
2022 *Stipend*, Orion Science Foundation [5 000 €]¹
2022 *Materials grant*, Päivikki ja Sakari Sohlberg Foundation [8 000 €]¹
2021 *Stipend*, Maud Kuistila Foundation [5 000 €]¹
2021 *Selection*, Global Young Scientist Summit, Singapore National Research Foundation, SG
2020 *Grant for research visit*, Alfred Kordelin Foundation [12 000 €], UC Davis, USA²
2020 *Top-10 Ph.D. application salary position (best 10 proposals across the university)*, University of Helsinki Funds [~175 000 €]
2020 *Salary position*, Doctoral Programme in Integrative Life Sciences [~175 000 €]^d
2020 *Salary position*, Doctoral Programme in Biomedicine [~175 000 €]^d
2020 *Materials grant*, Päivikki ja Sakari Sohlberg Foundation [8 000 €]²
2020 *Stipend*, Orion Science Foundation [5 000 €]²
2020 *Stipend*, Maud Kuistila Foundation [5 000 €]²
2018 *Best poster prize*, Faculty of Medicine Research Programs Unit Science Day 2018
2017 *Best poster prize*, Faculty of Medicine Research Programs Unit Science Day 2017
2016 *Best poster prize*, FASEB Folate, B12 and One-carbon Metabolism Conference, Steamboat Springs CO, USA³
2014 *Direct Admission Offer*, Faculty of Science, University of Helsinki, FI.
2013 *Selection*, Millennium Youth Camp (competitive global selection of promising young students), Technology Academy Finland & Aalto University, Helsinki.

^d *granted & declined*,

¹ *“Enhanced mtDNA replication as a mechanism underlying neonatal heart failure”*,

² *“Dynamics of mtDNA Synthesis - Relevance for Infantile Muscle Diseases”*,

³ *“Mitochondrial DNA replication disorders remodel one-carbon metabolism”*

Teaching & Mentoring [Language of instruction]

2023- **Faculty-appointed Ph.D. co-supervisor** *Semin Erkul MSc*, University of Helsinki, FIN

2018-25 Supervision of students

Théodore Francelle, M.Sc. internship, EPFL, CH
Sheda Ben Nejma, Ph.D. thesis work, EPFL, CH
Roméo Jaccard, M.Sc. internship, EPFL, CH
Dafni Roumba, M.Sc. internship, EPFL, CH
Aurelia Ahokas, M.D. internship, University of Helsinki, FI
Tuomas Laalo, M.D. Ph.D. thesis work, University of Helsinki, FI
Anna Kuukasjärvi, M.D. Ph.D. thesis work, University of Helsinki, FI
Paulína Nemcová, M.Sc. internship, University of Helsinki, FI
Miroslav Kučera, M.D. internship, University of Helsinki, FI

- 2023-25** **Instructor – Molecular Biology, Cell Biology** [*French*]
Swiss Biology Olympiad IBO|Suisse, CH
- 2024** **Research facilitator** [*English*]
Physiology: Modern Cell Biology Using Microscopic, Biochemical and Computational Approaches, University of Chicago Marine Biology Laboratory, Woods Hole, US
- 2024-25** **Instructor – Cell Biology, Methods in Molecular Biology** [*Spanish*]
Olimpiada Argentina de Biología, ARG
- 2019-21** **Organizer/presenter** [*English*]
Stem Cells and Metabolism Seminar Series (Dpbm-158, scientific seminars and career skills and development workshops), University of Helsinki, FI
- 2017** **Mentor** [*English, Portuguese*]
Iberoamerican Biology Olympiad, Azores, PT
- 2014** **Mentor/expert – genome editing team** [*English*]
Millennium Youth Camp, Technology Academy Finland & Aalto University, FI
- 2013** **Mentor** [*Spanish*]
Iberoamerican Biology Olympiad, Rio Cuarto, AR
- 2011-18** **Intercultural education mentor/facilitator** [*English & Spanish*]
AFS Intercultural Programs, AR & FI

Outreach & Volunteering Activities

- 2025-26** *Pint of Science Switzerland Festival*, Lausanne City Coordinator
- 2025** *Virtual pub*, Euro-BioImaging
- 2024** *MITOchat*, MITO Talks
- 2022** *EPFL Scientastic Festival*, Laboratory of Experimental Biophysics stand
- 2021** *“Pintó Colaborar (biología y evolución de la mitocondria)”*, Dato Encerrado podcast
- 2021** *“Mitochondrial Musical”*, Video for the Global Young Scientist Summit, Singapore National Research Foundation
- 2019** *“Itrio-39”*, 118. *El universo en una tabla (1st ed.)*, 72. ABRE & El Gato y La Caja. ISBN 978-987-46963-8-0
- 2018** *“Did you know about MITO? - w/ Juan Landoni”*, The Science Basement Podcast
- 2017** *“Ctrl+Z” (Induced Pluripotent Stem Cells)*, El Gato y La Caja, published online
- 2016** *“Ctrl+F” (advent of CRISPR technologies)*
El Gato y La Caja Anuario III (1st ed.), 126-129. El Gato y La Caja. ISBN 978-987-45866-7-4
- 2014-19** *MyScience Magazine*, editor in chief & author
- 2014** *Translation of transcripts for mito-disease patient meeting*, EuroMIT 2014, Tampere, FI

Academic Responsibilities & Membership

- Peer-reviewer** – Science, Nature Cell Biology, Cell Death Discovery, Scientific Reports, Molecular Biology Reports, Nature Communications.
- 2026** **Active Member**, European Society for Mitochondrial Research and Medicine (E-Mit).
- 2025** **Member**, Life Sciences Switzerland (LS²)
- 2024** **Organizer**, Mitochondrial Mini-Symposium @EPFL, EPFL, CH
- 2023-** **Faculty Council member**, School of Basic Sciences, EPFL, CH
- 2023** **Expert Examiner** (Lilit Petrosyan M.Sc.), DIB UNIL, CH
- 2027** **Delegate at the ENMC International Workshop on Treatment of mtDNA Maintenance Disorders** (15-person clinician, scientist, patient relative and pharma consensus meeting), NL
- 2016-17** **Board member**, Helsingin Yliopiston Kemistit ry, FIN
- 2015-17** **International tutoring coordinator**, Helsingin Yliopiston Kemistit ry, FIN

- ***Talks at International Conferences***
- 2025** **EMBO|EMBL Seeing is believing: imaging the molecular processes of life**, Heidelberg, DE
“Pearling drives mitochondrial genome homeostasis”.
- 2025** **LIMNA Integrative Metabolism and Nutrition Alliance Symposium**, Lausanne, CH
“Pearling mediates mitochondrial DNA and microdomain distribution”.
- 2024** **Cell Symposia in Multifaceted Mitochondria**, Sitges, ES
“Pearling mediates mitochondrial DNA and microdomain distribution”.
- 2024** **Keystone Symposia on Mitochondria Signaling and Disease**, Banff, CA.
“Mitochondrial Pearling as a Putative Content Management Mechanism”.
- 2021** **Keystone eSymposia – Metabolic Decisions in Development and Disease**, USA
“The Consequences of Increased mtDNA Replication: From Premature Ageing to Neonatal Disease”
- 2017** **EMBO|FEBS Lecture Course Mitochondria in life, death and disease**, Bari, IT
“A Genomic Non-Coding Complex Regulates Mitochondrial DNA Maintenance in CNS”.
- 2017** **FINMIT Mitochondria, Metabolism and Disease meeting**, Tampere, FI
“New Insights into Creatine Transport and Metabolism”
- 2016** **FASEB conference on folate, vitamin B12 and one-carbon Metabolism**, CO, USA.
“Mitochondrial DNA replication disorders remodel one-carbon metabolism”.

Publication List – Landoni J.C.

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✉ co-corresponding author, * equal contributions

Peer-reviewed publications & preprints

1. **Landoni, J. C.**[✉], Lycas, M., Macuada, J., Jaccard, R., Obara, C., Moore, A., ... Manley, S.[✉] (2025). *Pearling Drives Mitochondrial DNA Nucleoid Distribution*. **bioRxiv**. <https://doi.org/10.1101/2024.12.21.629917>
2. Winter, J.*[✉], **Landoni, J. C.***, Holt, K., Ben Nejma, S., Durmus, B., Kleele, T., Koslover, E.F., Manley, S. *Asymmetric mitochondrial trafficking maintains network morphology by balancing perinuclear biogenesis*. **BioRxiv**. <https://doi.org/10.64898/2025.12.08.692722>
3. Khan, N.A., Ahlqvist, K., Pradhan, S., **Landoni, J. C.**, Jackson, C., Zhaivoron, A., Kivelä, R., Euro, L., Suomalainen, A. *NAD⁺ precursor treatment prevents cardiomyopathy but disrupts erythroid maturation in mitochondrial progeria*. **BioRxiv**. <https://doi.org/10.1101/2025.10.02.678456>
4. Harhai, M., Foged, M., Zarges, C., **Landoni, J. C.**, Chollet, S., ... Jourdain, A.A., (2025). *An updated inventory of genes essential for oxidative phosphorylation identifies a mitochondrial origin in familial Ménière's disease*. **Cell Reports**, 44(8), 116069. <https://doi.org/10.1016/j.celrep.2025.116069>
5. Stepp, W., Tortarolo, G., **Landoni, J. C.**, Durmus, B., Rodriguez, S., Douglass, K. M., Weigert, M., & Manley, S. (2025). *Smart hybrid microscopy for cell-friendly detection of rare events*. *Accepted (Nature Communications)*. <https://doi.org/10.1101/2025.04.04.647219>
6. Sturm, G., Hake, K., Lefebvre, A. E. Y. T., Rux, C. J., ... **Landoni, J. C.**, & Marshall, W. F. (2025). *The biophysical mechanism of mitochondrial pearling*. **Molecular Biology of the Cell** 36.11: ar142. <https://doi.org/10.1101/2024.12.21.629509>
7. **Landoni, J. C.**[✉], Erkul, S., Laalo, T., Goffart, S., Kivelä, R., Skube, K., ... Suomalainen, A.[✉] (2024). *Overactive mitochondrial DNA replication disrupts perinatal cardiac maturation*. **Nature Communications**, 15(1), 8066. <https://doi.org/10.1038/s41467-024-52164-1>
8. Fry, M. Y., Navarro, P. P., Hakim, P., Ananda, V. Y., Qin, X., **Landoni, J. C.**, ... Chao, L. H. (2024). *In situ architecture of Opa1-dependent mitochondrial cristae remodeling*. **The EMBO Journal**, 1–23. <https://doi.org/10.1038/s44318-024-00027-2>
9. Kuukasjärvi, A.*[✉], **Landoni, J. C.***, Kaukonen, J., Juhakoski, M.,... Suomalainen, A. (2021). *IMPDH2: A new gene associated with dominant juvenile-onset dystonia-tremor disorder*. **European Journal of Human Genetics**, 29(12), 1833–1837. <https://doi.org/10.1038/s41431-021-00939-1>
10. Hämäläinen, R. H., **Landoni, J. C.***, Ahlqvist, K. J.*[✉], Goffart, S., Ryytty, S., ... Suomalainen, A. (2019). *Defects in mtDNA replication challenge nuclear genome stability through nucleotide depletion and provide a unifying mechanism for mouse progerias*. **Nature Metabolism**, 1(10), 958–965. <https://doi.org/10.1038/s42255-019-0120-1>
11. **Landoni, J. C.**, Wang, L., & Suomalainen, A. (2018). *Quantitative solid-phase assay to measure deoxynucleoside triphosphate pools*. **Biology Methods and Protocols**, 3(1). <https://doi.org/10.1093/biomethods/bpy011>
12. Nikkanen, J., **Landoni, J. C.**, Balboa, D., Haugas, M., ... Suomalainen, A. (2017). *A complex genomic locus drives mt DNA replicase POLG expression to its disease-related nervous system regions*. **EMBO Molecular Medicine**, 10(1), 13–21. <https://doi.org/10.15252/emmm.201707993>

Peer-reviewed review article

13. **Landoni, J. C.***, Kleele, T.*[✉], Winter, J., Stepp, W., & Manley, S.[✉] (2024). *Mitochondrial Structure, Dynamics, and Physiology: Light Microscopy to Disentangle the Network*. **Annual Review of Cell and Developmental Biology**, 40(1), 219–240. <https://doi.org/10.1146/annurev-cellbio-111822-114733>

Conference proceedings

14. López-Gómez, C., Cámara, Y., Hirano, M., & Martí, R., on behalf of the **232nd ENMC Workshop Participants** (2022). *232nd ENMC international workshop: Recommendations for treatment of mitochondrial DNA maintenance disorders. 16–18 June 2017, Heemskerk, The Netherlands. Neuromuscular Disorders*, 32(7), 609–620. <https://doi.org/10.1016/j.nmd.2022.05.008>
15. Cable, J., Pourquié, O., Wellen, K. E., Finley, L. W. S., ... Rutter J., Locasale J. W., **Landoni J. C.**, Christofk, H. (2021). *Metabolic decisions in development and disease—A Keystone Symposia report. Annals of the New York Academy of Sciences*, 1506(1), 55–73. <https://doi.org/10.1111/nyas.14678>

Manuscripts in preparation and other scientific articles

16. Lycas, M.D., **Landoni, J.C.**, Noferi, B., Zimmerli, C.E., Douglass, K.M., Manley, S. *Quantitative Expansion Microscopy for In Situ Estimation of Endogenous Target Abundance. In preparation.*
17. Ben Nejma, S.*, Cheramangalam, R.N.*, **Landoni, J.C.**, Lycas, M.D., Das, M., Manley, S. *Biophysical principles of Mitochondrial Branch Formation. Manuscript in preparation.*
18. **Landoni, J. C.**, Nikkanen, J., Euro, L. & Suomalainen, A. *Structural Insights into Creatine Transport from Novel Disease Mutation. Manuscript in preparation.*
19. Hämäläinen, R. H., **Landoni, J. C.***, Ahlqvist, K. J.*, Goffart, S., ... Suomalainen, A. (2020). *Reply to: Proofreading deficiency in mitochondrial DNA polymerase does not affect total dNTP pools in mouse embryos. Nature Metabolism*, 2(8), 676–677. <https://doi.org/10.1038/s42255-019-0120-1>

Contributions to books

20. **Landoni, J. C.**, Wang, L., & Suomalainen, A. (2021). *Whole-Cell and Mitochondrial dNTP Pool Quantification from Cells and Tissues. Mitochondrial Medicine Vol. 2: Assessing Mitochondria* 143–151. https://doi.org/10.1007/978-1-0716-1266-8_10
21. **Landoni, J. C.**, (2019). *Itrio-39. 118. El Universo en una Tabla (1st ed.)*, 72. ABRE & El Gato y La Caja. ISBN 978-987-46963-8-0.
22. **Landoni, J. C.**, (2017). *CTRL-F. El Gato y La Caja Anuario III (1st ed.)*, 126–129. El Gato y La Caja. ISBN 978-987-45866-7-4