CRISTINA A. NADALUTTI Ph.D.

EDUCATION

Ph.D.	*Summa Cum Laude*, Tampere University, Finland, Immunology and Molecular Biology	2013
M.S.	University of Trieste, Italy, Biochemistry and Molecular Biology	2006
B.S.	University of Trieste, Italy, Immunology and Molecular Biology	2005

RESEARCH EXPERIENCE

Sr. Scientist 2023-2025
Section of Human Iron Metabolism
Eunice Kennedy Shriver, National Institute of Child Health and Disease (NICHD), MD, USA
Principal Investigator: Tracey A. Rouault, MD
Investigating the role of iron homeostasis in mitochondria and mitochondrial DNA maintenance in neurodegenerative disesases.

Research Associate 2021-2023
Mechanistic Toxicology Branch
National Institute of Environmental Health Sciences (NIEHS), NC, USA
Advisors: Brian R. Berridge, D.V.M., Ph.D, D.A.C.V.P.
Investigating the prenatal and long-term effects of HIV drugs in the heart.

Postdoctoral Researcher
DNA Repair and Nucleic Acid Enzymology group, NIEHS, NC, USA 2018-2021
Advisor: Samuel H. Wilson, M.D. (Deceased)
Investigating the effects and the mechanism associated with formaldehyde-induced mitochondrial dysfunction and DNA damage in human primary fibroblasts.

Biochemistry and Biophysics Department 2014-2018
UNC Lineberger Cancer Center, NC, USA
Advisor: Jack D. Griffith, Ph.D.
Understanding mitochondrial DNA structural rearrangements, decatenation and segregation in chronic progressive external ophthalmoplegia plus syndrome patients.

Center of Excellence in Research on Mitochondrial Disease and Aging (9 months) 2014
University of Tampere, TAU, FI
Advisor: Laurie S. Kaguni, Ph.D.
Developing miniSOG to study the effects of elevated levels of Twinkle in Drosophila melanogaster.

Graduate Student Researcher 2013
School of Medicine of the University of Tampere, TAU, FI
Advisor: Markku Maki, M.D., Ph.D.
Understanding the molecular effects of transglutaminase 2 modulation on endothelial cell biology focusing on autoimmune diseases

Undergraduate Student Researcher 2006
University of Trieste, TS, IT
Advisor: Guidalberto Manfioletti, Ph.D.
Characterization of ERp57 interaction with APE/Ref-1 in the activation of the transcriptional factor, BSAP/Pax5.

HONORS and AWARDS

NICHD Annual Green Reseracher Award (Gold Award) 2023

NIEHS Annual Green Reseracher Award (Gold Award) 2022

NIEHS Annual Green Reseracher Award (Gold Award) 2021

ESPGHAN Annual Meeting Young Investigator Award 2014
(European Society for Pediatric, Gastroenterology, Hepatology and Nutrition)

Finnish Celiac Disease Award for Research Excellence 2013

Finnish Celiac Disease Award for Research Excellence 2011

Faculty of 1000 Prime, Outstanding Publication "*Extracellular transglutaminase 2 has a role in cell adhesion, whereas intracellular transglutaminase 2 is involved in regulation of endothelial cell proliferation and apoptosis"* 2011

Best Poster Presentation, Kauppi Science Day, University of Tampere 2010

Finnish Celiac Disease Award for Research Excellence 2009

PUBLICATIONS

UNDER PREPARATION

Nadalutti C.A., Zhao D., Maio T., Rouault T. Absence of iron-responsive element binding protein 2 causes BER imbalance and neuronal dysfunction in mice.

PEER-REVIEWED

Mori M., Lozoya O., Brooks A.M., **Nadalutti C.A.**, Ryback B., Huang K.T., Hasan P., Hajnoczky G., Santos J.H. Mitochondrial membrane potential regulates nuclear DNA methylation and gene expression through phospholipid remodeling, *Cell Metabolism*, Preprint, 2024.

Nadalutti C.A., Ayala-Pena S. and Santos J.H. Mitochondrial DNA damage as driver of cellular outcomes. *American Journal of Physiology-Cell Physiology*, 2022, DOI: 10.1152/ajpcell.00389.2021.

Horton J.K, Janoshazi A.K., **Nadalutti C.A.**, Zhao M.L., Stefanick D.F., and Wilson S.H. Monitoring DNA polymerase β mitochondrial localization and dynamics. *DNA Repair*, 2022, DOI: 10.1016/j.dnarep.2022.103357.

Nadalutti C.A., Prasad R. and Wilson S.H. Perspectives on formaldehyde dysregulation: Mitochondrial DNA damage and repair in mammalian cells. *DNA Repair*, 2021, DOI: 10.1016/j.dnarep.2021.103134.

Nadalutti C.A. and Wilson S.H. Using human primary foreskin fibroblasts to study mitochondrial dysfunction and DNA damage. *Current Protocols in Toxicology*, 2021, DOI: 10.1002/cptx.99.

Nadalutti C.A., Stefanick D.F., Zhao M.L., Horton J.K., Prasad R., Griffith J.D. and Wilson S.H. Mitochondrial dysfunction and DNA damage accompany enhanced levels of formaldehyde in cultured primary human fibroblasts. *Scientific Reports*, 2020, DOI: 10.1038/s41598-020-61477-2.

Nadalutti C.A.*, Ciesielski G.L.*, Oliveira M.T., Jacobs H.T., Griffith J.D., and Kaguni L.S. Structural rearrangements in the mitochondrial genome of *Drosophila melanogaster* induced by elevated levels of the replicative DNA helicase. *Nucleic Acids Research*, 2018, DOI: 10.1093/nar/gky094. (* first co-authors).

Prasad R., Cagayan M., Dai P., **Nadalutti C.A.**, Zhao M.L., Gassman N.R., Stefanick D.F., Horton J.K., Krasich R., Longley M.J., Copeland W.C., Griffith J.D., Wilson S.H. DNA polymerase β: a missing link of the base excision repair machinery in mammalian mitochondria. *DNA Repair*, 2017, DOI: 10.1016/j.dnarep.2017.10.011.

Nicholls T.J., **Nadalutti C.A.**, Motori E., Sommerville E.W., Gorman G.S., Basu S., Hoberg E., Chinnery P.F., Larsson N.G., Falkenberg M., Taylor R.W., Griffith J.D., Gustafsson C.M. Topoisomerase 3α is required for segregation of human mitochondrial DNA. *Molecular Cell*, 2017, DOI: 10.1016/j.molcel.2017.11.033.

Nadalutti C.A., Korponay-Szabo I.R., Kaukinen K., Griffin M., Mäki M., Lindfors K. Celiac disease patient IgA mediates endothelial adhesion and cell polarization defects via extracellular transglutaminase 2. *Cellular and Molecular Life Sciences*, 2014, DOI: 10.1007/s00018-013-1455-5.

Nadalutti C.A., Korponay-Szabo I.R., Kaukinen K., Wang Z., Griffin M., Mäki M., Lindfors K. Thioredoxin is involved in endothelial cell extracellular transglutaminase 2 activation mediated by celiac disease patient IgA. *PLOS One*, 2013, DOI: 10.1371/journal.pone.0077277.

Martucciello S., Lavric M., Korponay-Szabo I.R., **Nadalutti C.A**., Myrsky E., Rauhavirta T., Esposito C., Sulic A., Sblattero D., Marzari R., Mäki M., Kaukinen K., Lindfors K., Caja S., Overexpression of RhoB is associated with the anti-angiogenic effects of celiac patient transglutaminase 2-targeted autoantibodies *Journal of Cellular and Molecular Medicine*, 2012, DOI: 10.1007/s00109-011-0853-0.

Caja S., Myrsky E., Korponay Szabo I.R., **Nadalutti C.A.**, Sulic A., Lavric M., Sblattero D., Marzari R., Collighan R., Mongeot A., Griffin M., Mäki M., Kaukinen K., Lindfors K. Inhibition of transglutaminase 2 enzymatic activity ameliorates the anti-angiogenic effects of celiac disease IgA. *Scandinavian Journal of Gastroenterology*, 2010, DOI: 10.1007/s00018-013-1455-5.

Nadalutti C.A., Viiri K.M., Kaukinen K., Mäki M., Lindfors K. Extracellular transglutaminase 2 has a role in cell adhesion, whereas intracellular transglutaminase 2 is involved in the regulation of endothelial cell proliferation and apoptosis. *Cell Proliferation*, 2010, DOI: 10.1111/j.1365-2184.2010.00716.x.

Myrsky E., Caja S., Vecsei Z.S., Korponay Szabo I.R., **Nadalutti C.A.**, Collighan R., Mongeot A., Griffin M., Mäki M., Kaukinen K., Lindfors K. Celiac Disease IgA modulates vascular permeability in vitro through the activity of transglutaminase 2 and RhoA. *Cellular and Molecular Life Sciences*, 2009, DOI: 10.1007/s00018-009-0116-1.

ORAL PRESENTATIONS AND INVITED LECTURES

Eunice Kennedy Shriver, NICHD 12 December, 2024
Invited Lecture, MD, USA
Loss of IRP2 induces DNA double strand breaks and affects mitochondrial DNA maintenance

National Institute of Environmental Health Sciences 10 May, 2022
Invited Lecture, NC, USA
The effects of HIV antiretroviral drugs in the heart of prenatal mice

National Institute of Environmental Health Sciences 10 June, 2021
Invited Lecture, NC, USA
Increased intracellular formaldehyde is associated with mitochondrial dysfunction and DNA damage

Lineberger Cancer Center 5 June, 2017
Invited Lecture, University of North Carolina, Chapel Hill, USA
Structural rearrangements in the mitochondrial genome of Drosophila melanogaster induced by elevated levels of the replicative DNA helicase, Twinkle

Lake Como School of Advanced Studies 4 July, 2017
Invited Lecture, Como, Italy
Topoisomerase 3α is required for segregation of human mitochondrial DNA

Lineberger Cancer Center 24 August, 2016
Invited Lecture, University of North Carolina, Chapel Hill, USA
Introduction to Electron Microscopy

Lineberger Cancer Center 15 July, 2015
Invited Seminar, University of North Carolina, Chapel Hill, USA
Mitochondria in health and disease

Lineberger Cancer Center 15 October, 2014
Invited Seminar, University of North Carolina, Chapel Hill, USA
The effects of transglutaminase 2 modulation on endothelial cell biology: focus on celiac disease

Centre of Excellence in Research on Mitochondrial Disease and Aging, 13 February, 2014
Invited Seminar, University of Tampere, Finland
Twinkle overexpression and mitochondrial DNA stability

Science Day (talk selected from abstract) 18 December, 2012
University of Tampere, Finland
Celiac disease patient IgA modulates endothelial cell adhesion and polarization via extracellular transglutaminase 2

Science Day (talk selected from abstract) 10 February, 2011
University of Tampere, Finland
Celiac disease patient IgA and vascular biology: the central role of transglutaminase 2

Science Day (talk selected from abstract) 22 January, 2010
University of Tampere, Finland
Different roles of transglutaminase 2 in cell adhesion, proliferation and apoptosis

Immunological Techniques 28 August, 2009
Invited Lecture, University of Tampere, Finland
Celiac disease and transglutaminase 2

Marie Curie Tracks Meeting 8-9 February, 2009
Invited Lecture, University of Tor Vergata, Italy
Transglutaminase 2 and autoimmunity

POSTER PRESENTATIONS

Gordon Research Conference 10-15 February, 2019
"Genome Maintenance: Mechanism of Repair, Consequences of Failure for Human Disease and Opportunities for Therapeutic Interventions"
Ventura, USA

Cold Spring Harbor Meeting 18-21 October, 2018
"The Evolving Concept of Mitochondria: from symbiotic origins to therapeutic opportunities"
Ventura, USA

16th International Coeliac Disease Symposium 21-24 June, 2015
Prague, Czech Republic

47th Annual meeting ESPGHAN 9-12 June, 2014
European Society for Pediatric, Gastroenterology, Hepatology and Nutrition
Jerusalem, Israel

15th International Celiac Disease Symposium 22-25 September, 2013
Chicago, USA

46th Annual meeting ESPGHAN 8-11 May, 2013
European Society for Pediatric, Gastroenterology, Hepatology and Nutrition
London, United Kingdom

Kauppi Science Day 14 February, 2013
Tampere, Finland

BioMediTech Research Day 18 December, 2012
Tampere, Finland

Better Life for Celiac Disease 6-8 September, 2012
Helsinki, Finland

Gordon Conference
"Transglutaminases in Human Disease Processes" 15-20 July, 2012
Davidson College, North Carolina, USA

Kauppi Science Day 9 February, 2012
Tampere, Finland

BioMediTech Research Day 15 December, 2011

Tampere, Finland

FinMIT Summer School — 3-10 September 2011
Keurusselkä, Finland

14th International Coeliac Disease Symposium — 20-22 June, 2011
Oslo, Norway

Celiac Disease Symposium — 19 January, 2011
Stockholm, Norway

BioMediTech Research Day — 10 December, 2010
Tampere, Finland

Gordon Conference, — 18-23 July, 2010
"Transglutaminases in Human Disease Processes"
Davidson College, North Carolina, USA

Palmse Mois Summer School — 11-18 June, 2010
Tampere, Finland

BioMediTech Research Day — 18 December, 2009
Tampere, Finland

13th International Coeliac Disease Symposium — 6-8 April, 2009
Amsterdam, the Netherlands

BioMediTech Research Day — 12 December, 2008
Tampere, Finland

5th International EDHF Symposium — 24-27 June, 2008
"Endothelium, Vasoactive Factors and Inflammation"
Tampere, Finland

BioMediTech Research Day — 14 December, 2007
Tampere, Finland

RESEARCH MENTORING EXPERIENCE

NIEHS Summer Graduate Research Co-Mentor — 2021
(Ethan Brown)

NIEHS Summer Graduate Research Co-Mentor — 2019
(Nikita Lanka)

NIEHS Summer Graduate Research Co-Mentor — 2019
(Saha Liton and Salma Akter, Kyoto University)

UNC Summer Undergraduate Research Co-Mentor — 2017
(Ayanna Edwards, Claflin University)

School of Medicine, Tampere University 2012
Summer Graduate Research Co-Mentor
(Emily McKinney, Michigan State University)

School of Medicine, Tampere University 2011
Summer Undergraduate Research Mentor
(Muhammad Asif Rasheed, University of Tampere)

School of Medicine, Tampere University 2010
Graduate Research Co-Supervisor
(Minna Hietikko, University of Tampere)

School of Medicine, Tampere University 2010
Summer Undergraduate Research Mentor
(Jennifer Culligan, National University of Ireland)

School of Medicine, Tampere University 2009
Summer Undergraduate Research Mentor
(Boglarka Toth, Debrecen University)

TEACHING EXPERIENCE

Summer School Instructor, Mitochondria and Metabolism Course 2017
School of Advanced Studies, Como, Italy

Teaching Assistant, Electron Microscopy Course 2017
Lineberger Cancer Center, North Carolina, USA

Lead Teacher, Molecular Biology and Genetics Course 2012-2013
University of Tampere and University of Turku, Finland

Teaching Assistant, Molecular Biology Course 2011-2012
University of Tampere and University of Turku, Finland

Teaching Assistant, Histology Course 2009
University of Tampere, Finland

PROFESSIONAL SERVICE

Invited Reviewer

Biomedicines	2023-present
Cancers	2023-present
Biology	2022-present
Journal of Personalized Medicine	2021-present
Diagnostics	2021-present
International Journal of Molecular Sciences	2021-present
Frontiers in Cell and Developmental Biology	2021-present
DNA Repair	2018-present
Scientific Reports	2017-present
Cell Proliferation	2014-present

Editorial appointments

Frontiers in Cell and Developmental Biology – Mitochondria and Immunity	2022-present

Professional Societies

Finnish Proteomics Society, Board Member	2008-present
Italian Cancer League, Board Member	2002-present
Red Cross, Board Member	2000-present

Institutional Service

NIEHS Graduate Student Research Symposium Judge	2021
Representative, NIEHS DNA Repair and Nucleic Acid Enzymology Group, Trainee Action Committee	2019-2021
Poster Judge, NIEHS Summer Internship Program	2018-2024
NIEHS Environmental Awareness Advisory Committee member	2022-2025