Nicoletta di Leo
Nationality:
Phone:
Date of birth:
Email address:

RESEARCH EXPERIENCE

[05/2025-Present] Postdoctoral fellow
National Council of Research (CNR) - Nanosciences Institute @NEST (National Enterprise for nanoScience and nanoTechnology)
Piazza San Silvestro, 12, 56127 Pisa, Italy

Research activity on the project "Stabilized Reversed Micelles for Brain Delivery of Hydrophilic Drugs (REMEDY)"

- Development of Stabilized Reversed Micelles for brain delivery of galactosyceramidase (GALC) for the treatment of Krabbe disease. Synthesis, loading, and characterization.

[06/2024-05/25] Postdoctoral fellow
National Council of Research (CNR) - Nanosciences Institute @NEST (National Enterprise for nanoScience and nanoTechnology)
Piazza San Silvestro, 12, 56127 Pisa, Italy

Research activity on the project "Touch on a chip (ToaC)"

- Development of micropatterned substrate
- Cell culture and transfection
- Immunocytochemistry
- Data analysis.

[03/2024-05/2024] Postdoctoral fellow
Italian Institute of Technology - Center for Materials Interfaces, Smart Bio-Interfaces
Viale Rinaldo Piaggio, 34, 56025 Pontedera (Pisa), Italy

Research activity on the project "Blood-brain barrier in Space (BBBinSpace)"

- Development of an *in vitro* model to study the effects of simulated microgravity on the blood-brain barrier, cell culture and experimental set up for the random positioning machine (RPM).

[12/23-02/2024] Experimental campaign at NASA, IIT science team member, Axiom Mission 3
Italian Institute of Technology - Center for Materials Interfaces, Smart Bio-Interfaces
Viale Rinaldo Piaggio, 34, 56025 Pontedera (Pisa), Italy
John F. Kennedy Space Center, Cape Canaveral (Florida), USA

Research activity on the project "Protection mediated by antioxidant nanotechnology against neuronal damage in space 2 (PROMETEO 2)"

- Cell culture, optical microscopy, methodological procedures for the assembly of the experimental units developed by Kayser Italia for use aboard the International Space Station (ISS) during the Axiom Mission 3.

[12/2022-11/2023] Postdoctoral fellow
Italian Institute of Technology - Center for Materials Interfaces, Smart Bio-Interfaces
Viale Rinaldo Piaggio, 34, 56025 Pontedera (Pisa), Italy

Research activity on the project "Protection mediated by antioxidant nanotechnology against neuronal damage in space 2 (PROMETEO 2)"

- On ground preliminary experiments and simulation.

[06/2022-11/2022] Postdoctoral fellow
Italian Institute of Technology - Center for Materials Interfaces, Smart Bio-Interfaces
Viale Rinaldo Piaggio, 34, 56025 Pontedera (Pisa), Italy

Research activity on the project "Deep characterization of a nanotechnological antioxidant for space using simple invertebrates (NanOxSpace)"

- Sample preparation for proteomics and analysis
- Biodistribution studies of nanoparticles *in vivo* in planarians.

[01/2022-05/2022] Research fellow
Italian Institute of Technology - Center for Materials Interfaces, Smart Bio-Interfaces
Viale Rinaldo Piaggio, 34, 56025 Pontedera (Pisa), Italy

Research activity on the project "Deep characterization of a nanotechnological antioxidant for space using simple invertebrates (NanOxSpace)"

- Planarians as invertebrate model: colonies maintenance and propagation
- Toxicological study of antioxidant compounds and nanoformulations
- Evaluation of simulated microgravity effects on invertebrates, with and without antioxidants administration.

[10/2018-07/2022] PhD in BioRobotics and Research trainee for PhD program
Italian Institute of Technology - Center for Materials Interfaces, Smart Bio-Interfaces
Sant' Anna School of Advanced Studies, The BioRobotics Institute
Thesis: *Innovative drugs against degenerative disease: Applications for Earth and space biomedicine*

- Cell culture
- Cancer cells
- Immunocytochemistry
- 3D cell culture models
- In vitro models for the blood-brain barrier
- In vivo: zebrafish and planarians as model organisms for toxicology, oxidative stress, and studies in simulated microgravity

[03/2018-09/2018] Post-graduate internship
Department of Clinical and Experimental Biology - Histology and Embryology, University of Pisa
Via Savi, 10, 56126 Pisa, Italy

Research activity on the study of expression levels of connexins in mammalian cardiomyocytes

- Cell culture
- Optical microscopy
- Immunocytochemistry/immunohistochemistry
- Western blot.

EDUCATION

[06/2022] PhD in BioRobotics and Research trainee for PhD program
Italian Institute of Technology - Center for Materials Interfaces, Smart Bio-Interfaces
Sant' Anna School of Advanced Studies, The BioRobotics Institute
Final grade: PhD *cum laude*
Thesis: *Innovative drugs against degenerative disease: Applications for Earth and space biomedicine*

[07/2016] MSc in molecular and cellular biology and research trainee
University of Pisa, Pisa, Italy
Final grade: 110/110 *cum laude*
Thesis: *Study of anti-tumor activity on human melanoma cells of a catechin nano formulation*

[07/2013] BSc in molecular biology and research trainee
University of Pisa, Pisa, Italy
National Council of Research (CNR) - Istituto di Fisiologia Clinica (IFC)
Final grade: 96/110
Thesis: *Study of the expression levels of C-type natriuretic peptide (CNP) in patients with heart failure*

PROFESSIONAL COURSES AND QUALIFICATIONS

[07/2020] Licensing, required by Italian law for admission to practice

[08/2019-09/2019] Certificate of attendance
European School on Nanosciences and Nanotechnologies, Grenoble, France

LANGUAGE SKILLS

Mother tongue: Italian **Other language:** English, **Level:** B2

SCIENTIFIC PUBLICATIONS

di Leo N[†], Demontis G[†], De Sarlo M, Ciubotaru CD, De Cesari C, Heppenstal P, Lazzarino M, Cecchini M, Andolfi L, Tonazzini I.
Decoding PIEZO2 intracellular distribution: effects of cell polarization
Submitted

Carmignani A, Marino A, Battaglini M, **di Leo N**, Carrubba E, Balsamo M, Valentini G, Mascetti G, Perilli, S, De Boni F, Marras S, Prato M, Genchi GG, Ciofani, G.
Neuroprotective Effects of Cerium Oxide Nanoparticles During Spaceflight
doi: doi.org/10.1002/smsc.70271

Degl'Innocenti A[†], Braccia C[†], Genchi GG[‡], **di Leo N**[‡], Leoncino L, Catalano F, Armirotti A, Ciofani G.
Proteome Alterations and Nucleosome Activation in Rat Myoblasts Treated with Cerium Oxide Nanoparticles
doi: 10.1021/acsomega.3c09715

Pucci C, Martinelli C, De Pasquale D, Battaglini M, **di Leo N**, Degl'Innocenti A, Belenli Gümüs M, Drago F, Ciofani G.
Tannic Acid−Iron Complex-Based Nanoparticles as a Novel Tool against Oxidative Stress
doi: 10.1021/acsami.1c24576

Pucci C, Marino A, Sen O, De Pasquale D, Bartolucci M, Iturrìoz-Rodriguez N, **di Leo N**, De Vito G, Debellis D, Petretto A, Ciofani G.
Ultrasound-responsive nutlin-loaded nanoparticles for combined chemotherapy and piezoelectric treatment of glioblastoma cells
doi: 10.1016/j.actbio.2021.04.005

di Leo N, Moscato S, Borsò M, Sestito S, Polini B, Bandini B, Grillone A, Battaglini M, Saba A, Mattii L, Ciofani G, Chiellini G.
Delivery of Thyronamines (TAMs) to the brain: a preliminary study
doi: 10.3390/molecules26061616

Degl'Innocenti A, **di Leo N**, Ciofani G.
Genetic hallmarks and heterogeneity of glioblastoma in the single-cell omics era
doi: 10.1002/adtp.201900152

di Leo N, Battaglini M, Berger L, Giannaccini M, Dente L, Hampel S, Vittorio O, Cirillo G, Raffa V.
A catechin nanoformulation inhibits WM266 melanoma cell proliferation, migration and associated neo-angiogenesis
doi: 10.1016/j.ejpb.2016.12.024

CONFERENCE PARTICIPATIONS

di Leo N, De Sarlo M, De Cesari C, Scaccini L, Demontis G, Andolfi L, Cecchini M, Tonazzini I.
Micro patterned substrates to study peripheral nervous system pathological models
CellMech, Leuven (BE), 2025 (Poster presentation)

di Leo N, Moscato S, Borsò M, Sestito S, Polini B, Bandini L, Battaglini M, Saba A, Ciofani G, Chiellini G.
***In vitro* evaluation of 3-iodothyronamine (T1AM) and 3-iodothyroacetic (TA1) blood brain barrier (BBB) permeability**
43rd Annual Meeting of the European Thyroid Association (ETA), 2021 (Poster presentation)

Chiarugi S, Gagliardi M, De Cesari C, **di Leo N**, Baroncelli L, Tonazzini I.
Nanoparticles for nose-to-brain delivery of antisense oligonucleotides in Angelman Syndrome
ASA Conference, Coventry (UK), 2024 (Poster session)

Degl'Innocenti A, **di Leo N**, Pucci C, Battaglini M, Martinelli C, Gambino G, Stocchino GA, Manconi R, Rossi L, Salvetti A, Ciofani G.
Studying nanotechnological solutions against space-elicited stress with a space- tailored organism
International Space Station Research & Development Conference 2021 (Poster session)

AWARDS

Selection for financing the experimental campaign "Localization of lipid-tannic acid-iron nanoparticles in planarians as an *in vivo* model for oxidative stress studies" at Elettra Synchrotron in Trieste.

SCIENTIFIC DISSEMINATION

[09/2023] Salotto della Scienza – Nanomedicina: dalla terra allo spazio
Bientina (PI), Italy

[05/2024] Scienza in biblioteca
Bientina (PI), Italy

TECHNICAL AND SCIENTIFIC SKILLS

In vivo - planarians: management and maintenance of planarian colonies, toxicological experiments.
In vivo - zebrafish: xenografts of cancer cell lines, angiogenesis assay, migration assay, toxicological experiments.
Cell biology: eukaryotic cell cultures (primary and immortalized cell lines), handling under sterile conditions. Functional assays: cytotoxicity assays, cell migration assay, wound-healing assay, primary cultures from biological samples, three-dimensional cell cultures: spheroids production. Development and characterization of *in vitro* biomimetic systems to study the crossing of biological barriers. Primary and immortalized cells cultures on micropatterned substrates of different materials. Immunocytochemistry/Immunohistochemistry.
Molecular biology: cell transfection, DNA and RNA extraction, reverse transcription, genotyping, PCR, qRT-PCR, electrophoresis, Western blot. Whole-mount *in situ* hybridization.
Materials: development of lipid magnetic nanovectors (LMNVs) and stabilized polymeric reverse micelles (SRMs) for drug brain delivery, production of substrates for the culture, polarization and physical/mechanical stimulation of peripheral nervous system neurons and transfected/immortalized cells. **Characterization:** Dynamic Light Scattering (DLS), Ultraviolet-visible (UV-Vis) spectroscopy, fluorescence spectroscopy.
Microscopy: optical and fluorescence microscopy.
Digital skills: Windows and Mac usage, web research, Microsoft office (Excel, Word, PowerPoint), ImageJ/Fiji software, Graphpad Prism, basic R scripting skills.

Pisa, 20/04/2026