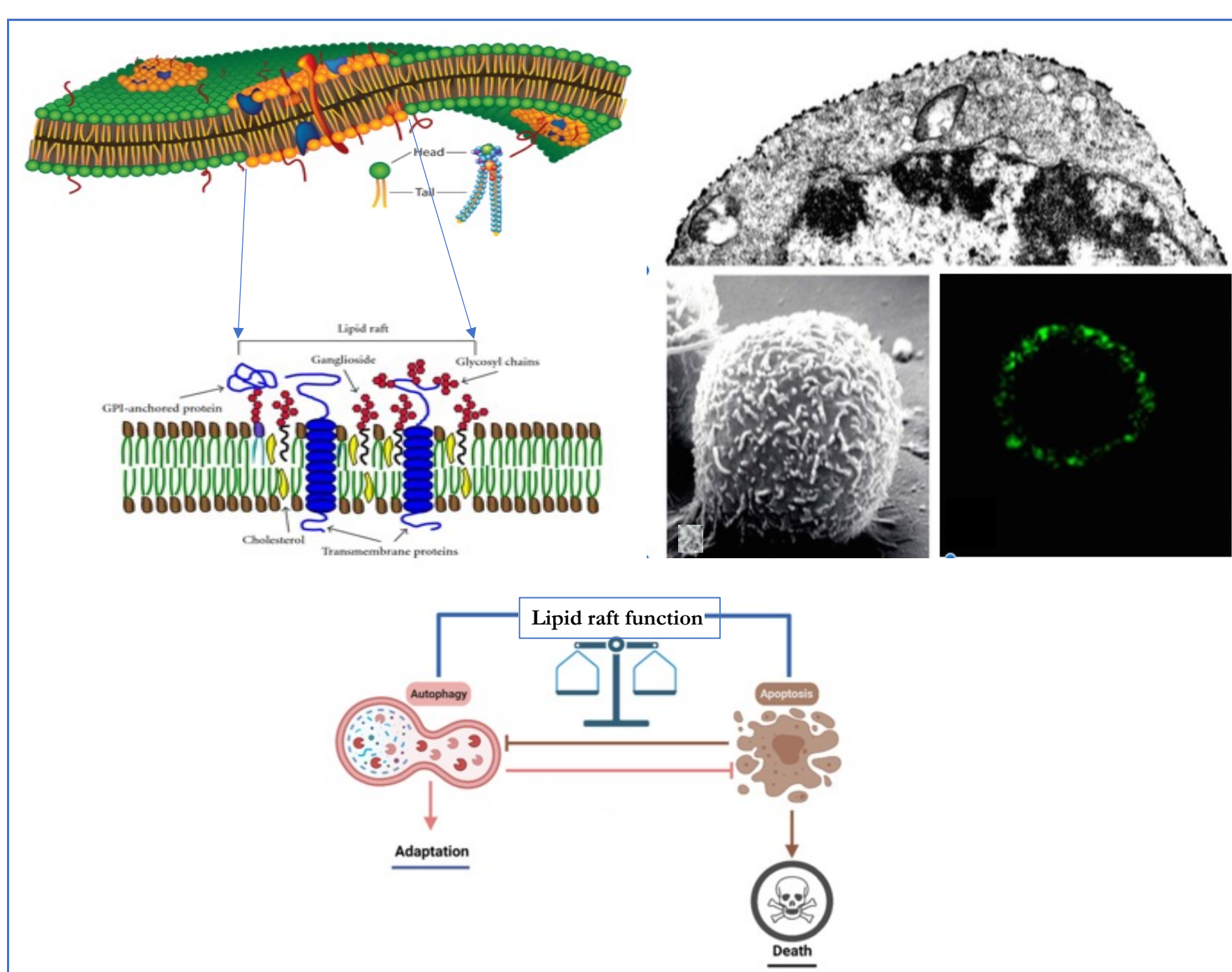


Lipid biochemistry and immunology



General description of the activities

Laboratory of Lipid Biochemistry and Immunology for the study of the role of lipid rafts in cell biology and cell fate

Role	Name	Position	E-mail	Publications	Keywords
Lab head	Prof. Roberta Misasi	Associate Professor	roberta.misasi@uniroma1.it	https://pubmed.ncbi.nlm.nih.gov/?term=misasi+r&sort=date	Lipid rafts; Gangliosides; Neuroglobin; Prosaposin; Chronic Stress; Neurodegeneration; Autophagy
Lab members	Prof. Agostina Longo	Researcher	agostina.longo@uniroma1.it	https://pubmed.ncbi.nlm.nih.gov/?term=longo+agostina	Lipid rafts; Antiphospholipid antibodies; Autophagy; Rheumatoid arthritis, Microvesicles
	Dr. Antonella Capozzi	RTD/A	antonella.capozzi@uniroma1.it	https://pubmed.ncbi.nlm.nih.gov/?term=capozzi+antonella	Antiphospholipid Syndrome; Beta2-Glycoprotein I; Post-translational modifications; Novel diagnostic markers
	Dr. Serena Recalchi	RTD/A	serena.recalchi@uniroma1.it	https://pubmed.ncbi.nlm.nih.gov/?term=recalchi+serena	Lipid Rafts; thin-layer chromatography; Autoimmunity; Autophagy; Lycopene
	Dr. Emiliano Montalesi	Post-doc	emiliano.montalesi@uniroma1.it	https://pubmed.ncbi.nlm.nih.gov/?term=montalesi+emiliano	Neuroglobin; Phytochemicals; Nanoparticles; Estrogen Signaling; Cancer; Neurodegeneration; Proteinopathies
	Dr. Daniela Caissutti	PhD student	daniela.caissutti@uniroma1.it	https://pubmed.ncbi.nlm.nih.gov/?term=caissutti+daniela	Cannabinoid Receptor 2; Neuroglobin; 3D cell culture; Flow cytometry
	Dr. Camilla Moliterni	PhD student	c.moliterni@uniroma1.it	https://pubmed.ncbi.nlm.nih.gov/?term=moliterni+camilla	Neuroinflammation; Lipid rafts; Monocyte derived dendritic cells (MODC);

Previous and current research

The Laboratory of Lipid Biochemistry and Immunology was created to study the role of microdomains (or "rafts") enriched in sphingolipids and proteins involved in cellular biology. Since rafts and associated proteins are peculiar components of the plasma membrane mainly involved in signal transduction, they play a key role in cellular mechanisms of differentiation, development and cellular aging. Particular attention is also paid in this area to the study of cellular signaling in neurodegeneration, opening up activities on many other aspects of cell fate, with the study of the mechanisms of apoptosis and autophagy.

Research guidelines:

- studies on the functional role of plasma membrane lipids: role of "rafts" on the biochemical, biophysical and immunological properties of the cellular plasma membrane;
- studies on protein aggregation mechanism(s) in neurodegeneration during different stress paradigms;
- Triggering neuroprotective pathways to prevent neurodegeneration:
- ✓ studies on Neuroglobin (Ngb), on its cerebral distribution and on its active role as a sensor of oxidative stress and a cytoprotective factor against redox imbalances, which lead to considering Ngb as part of the endogenous neuroprotective pathways, opening a new scenario in the possibility of discover new therapies approaches.
- ✓ role of prosaposin in the regulation of lipid messengers in the cellular proliferative-differentiation pathway.

Selected Publications

Different Chronic Stress Paradigms Converge on Endogenous TDP43 Cleavage and Aggregation. Candelise N, Caissutti D, Zenuni H, Nesci V, Scaricamazza S, Salvatori I, Spinello Z, Mattei V, Garofalo T, Ferri A, Valle C, Misasi R. *Mol Neurobiol*. 2023 Nov;60(11):6346-6361. doi: 10.1007/s12035-023-03455-z.

Overexpression of Neuroglobin Promotes Energy Metabolism and Autophagy Induction in Human Neuroblastoma SH-SY5Y Cells. Manganelli V, Salvatori I, Costanzo M, Capozzi A, Caissutti D, Caterino M, Valle C, Ferri A, Sorice M, Ruoppolo M, Garofalo T, Misasi R. *Cells*. 2021 Dec 2;10(12):3394. doi: 10.3390/cells10123394. PMID: 34943907

Role of ERLINs in the Control of Cell Fate through Lipid Rafts. Manganelli V, Longo A, Mattei V, Recalchi S, Riitano G, Caissutti D, Capozzi A, Sorice M, Misasi R, Garofalo T. *Cells*. 2021 Sep 13;10(9):2408. doi: 10.3390/cells10092408. PMID: 34572057

Protein Aggregation Landscape in Neurodegenerative Diseases: Clinical Relevance and Future Applications. Candelise N, Scaricamazza S, Salvatori I, Ferri A, Valle C, Manganelli V, Garofalo T, Sorice M, Misasi R. *Int J Mol Sci*. 2021 Jun 2;22(11):6016. doi: 10.3390/ijms22116016. PMID: 34199513

Targeting Lipid Rafts as a Strategy Against Coronavirus. Sorice M, Misasi R, Riitano G, Manganelli V, Martellucci S, Longo A, Garofalo T, Mattei V. *Front Cell Dev Biol*. 2021 Feb 4;8:618296. doi: 10.3389/fcell.2020.618296. eCollection 2020. PMID: 33614627

Raft-like lipid microdomains drive autophagy initiation via AMBRA1-ERLIN1 molecular association within MAMs. Manganelli V, Matarrese P, Antonioli M, Gambardella L, Vescovo T, Gretzmeier C, Longo A, Capozzi A, Recalchi S, Riitano G, Misasi R, Dengjel J, Malorni W, Fimia GM, Sorice M, Garofalo T. *Autophagy*. 2021 Sep;17(9):2528-2548. doi: 10.1080/15548627.2020.1834207. Epub 2020 Oct 23. PMID: 33034545

A multimolecular signaling complex including PrPC and LRP1 is strictly dependent on lipid rafts and is essential for the function of tissue plasminogen activator. Mattei V, Manganelli V, Martellucci S, Capozzi A, Mantuano E, Longo A, Ferri A, Garofalo T, Sorice M, Misasi R. *J Neurochem*. 2020 Feb;152(4):468-481. doi: 10.1111/jnc.14891. Epub 2019 Oct 25. PMID: 31602645

Neuroglobin overexpression plays a pivotal role in neuroprotection through mitochondrial raft-like microdomains in neuroblastoma SK-N-BE2 cells. Garofalo T, Ferri A, Sorice M, Azmoon P, Grasso M, Mattei V, Capozzi A, Manganelli V, Misasi R. *Mol Cell Neurosci*. 2018 Apr;88:167-176. doi: 10.1016/j.mcn.2018.01.007. Epub 2018 Jan 31. PMID: 29378245

Grants/Projects/Open Positions/Conferences

1996: "Consiglio nazionale delle Ricerche" Italy ;

2000-2006: Finanziamenti di Ateneo;

2007-2009: "Ateneo Federato";

2002, 2004, 2010-2011, 2017, 2022: PRIN;

2021: Fondazione giovani@ricerca CaRiPT Finanziamento per Assegni di Ricerca nell'ambito del Bando "Giovani in Ricerca";

Active grants:

- PRIN 2022: Neuroglobin high levels: an inducible mechanism to prevent the mitochondrial dysfunctionality of neurodegenerative diseases

- "Effect of chronic stress on in vitro and ex vivo models of amyotrophic lateral sclerosis" Fondazione Cassa di Risparmio di Pistoia, bando Giovani@RicercaScientifica per il Finanziamento di Assegni di Ricerca a progetto Bando 2021-2022

Links

Description - link

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