Marco Spinazzi

Laboratory for the Research of Neurodegenerative Diseases
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Education
MD, School of Medicine, University of Padova, 2003
Specialist in Neurology, University of Padova, 2009
PhD Neurosciences, University of Padova, 2012

Current Position
Post-doctoral scientist at the Laboratory for the Research of Neurodegenerative Diseases

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Keywords
PARL – mitochondria – neurodegeneration - rhomboid proteases - cell death

Science
PARL is a protease of the inner mitochondrial membrane belonging to the rhomboid family, whose fundamental role in the mitochondrion is still elusive. Parl -/- mice show a multisystem disorder with generalized cachexia and early death. Apoptosis is increased in the immune system, and cells are more vulnerable to release cytochrome c after challenge with apoptotic inducers. Several substrates of Parl have been proposed, including Opa1, Htra2, PGAM5, and PINK1, but the results are controversial and the functional implications of Parl processing are unknown. Moreover, the cause of the lethality of the Parl -/- mice is not understood. PINK1 is a mitochondrial kinase mutated in Parkinson's disease (PD) and PARL gene mutations were described in two PD cases, suggesting a role of PARL in PD. The aim of my project is to investigate the role of PARL in the central nervous system, and its possible relevance in the pathophysiology of Parkinson's Disease.

Recent Fellowships
European Molecular Biology Organization (EMBO) Long term fellowship
Period 21.10.2013-21.10.2015
Title:"Unraveling the role of PARL in the nervous system"

Selected Publications
Spinazzi M, Sghirlanzoni A, Salviati L, Angelini C. Impaired copper and iron metabolism in blood cells and muscles of patients affected by copper deficiency myeloneuropathy. N*europathology Applied Neurobiology*. (In press). DOI: 10.1111/nan.12111

Spinazzi M, Casarin A, Pertegato V, Salviati L, Angelini C. Assesment of mitochondrial respiratory chain enzymatic activities on tissues and cultured cells. *Nature Protocols*. 2012; 7:1235-1246.

Spinazzi M, Casarin A, Pertegato V, Ermani M, Salviati L, Angelini C. Optimization of respiratory chain enzymatic assays in muscle for the diagnosis of mitochondrial diseases. *Mitochondrion*. 2011;11:893-904.

Spinazzi M, Angelini C, Patrini C. Subacute sensory ataxia and optic neuropathy with thiamine deficiency. *Nature Reviews Neurology*. 2010;6:288-93.

Spinazzi M, Cazzola S, Bortolozzi M, Baracca A, Loro E, Casarin A, Solaini G, Sgarbi G, Casalena G, Cenacchi G, Malena A, Frezza C, Carrara F, Angelini C, Scorrano L, Salviati L, Vergani L. A novel deletion in the GTPase domain of OPA1 causes defects in mitochondrial

morphology and distribution, but not in function. *Human Molecular Genetics*. 2008;17:3291-302

Spinazzi M, De Lazzari F, Tavolato B, Angelini C, Manara R, Armani M. Myelo-optico-neuropathy in copper deficiency occurring after partial gastrectomy : Do small bowel bacterial overgrowth syndrome and occult zinc ingestion tip the balance? *Journal of Neurology*. 2007;254:1012-7.

All publications

Spinazzi M, Sghirlanzoni A, Salviati L, Angelini C. Impaired copper and iron metabolism in blood cells and muscles of patients affected by copper deficiency myeloneuropathy. N*europathology Applied Neurobiology*. In press

Mancuso M, Orsucci D, Angelini C, Bertini E, Carelli V, Comi GP, Minetti C, Moggio M, Mongini T, Servidei S, Tonin P, Toscano A, Uziel G, Bruno C, Caldarazzo Ienco E, Filosto M, Lamperti C, Martinelli D, Moroni I, Musumeci O, Pegoraro E, Ronchi D, Santorelli FM, Sauchelli D, Scarpelli M, Sciacco M, **Spinazzi M**, Valentino ML, Vercelli L, Zeviani M, Siciliano G. Phenotypic heterogeneity of the 8344A>G mtDNA "MERRF" mutation. *Neurology*. 2013;80:2049-2054

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Spinazzi M, Armani M. Denture cream: an unusual source of excess zinc, leading to hypocupremia and neurologic disease. *Neurology*. 2009;73:76.

Angelini C, Bello L, **Spinazzi M**, Ferrati C. Mitochondrial disorders of the nuclear genome. *Acta Myologica*. 2009;28:16-23.

Spinazzi M, Argentiero V, Zuliani L, Palmieri A, Tavolato B, Vincent A. Immunotherapy-reversed neuropsychiatric disorder with subcortical, monoaminergic, circadian rhythm dysregulation. *Neurology*. 2008;71: 2008-10.

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Journal of Neurological Sciences. 2007;263:187-90.

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Correlations between clinical severity, genotype and muscle pathology in limb girdle muscular dystrophy type 2A. *Journal of Medical Genetics*. 2007;44:609-14..

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Fanin M, Nascimbeni AC, Fulizio L, **Spinazzi M**, Melacini P, Angelini C. Generalized lysosome-associated membrane protein-2 defect explains multisystem clinical involvement and allows leukocyte diagnostic screening in Danon disease. *American Journal of Pathology*. 2006;168:1309-20.

Fanin M, Fulizio L, Nascimbeni AC, **Spinazzi M**, Piluso G, Ventriglia VM, Ruzza G, Siciliano G, Trevisan CP, Politano L, Nigro V, Angelini C. Molecular Diagnosis in LGM2A: mutation analysis or protein testing? *Human Mutation*. 2004; 24:52-62.

Books

1) Fanin M, Nascimbeni AC, **Spinazzi M**, Nardetto L, Angelini C. Recent findings in Danon Disease, a rare x-linked dominant disorder with multi system involvement. Genetic inheritance patterns. *Nova Science Publisher*. 2008

2) **Spinazzi M**. Patologie Neurologiche carenziali. In: Neurologia Clinica. *Esculapio Editore*. 2010.

3) **Spinazzi M**. Spinazzi, M. Chapter 36: Optic Neuropathies Caused by Micronutrient Deficiencies and Toxins. Handbook of Nutrition Diet and the Eye, *Academic Press*, Oxford.2004.