



**Francesco Pallotti**

 UNIVERSITY OF INSUBRIA



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## Contact data

### Assistant Professor

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## Biography

### Degree and PhD

1992 Degree in Medicine and Surgery, cum laude, Università degli Studi di Bologna.  
1997 PhD in Cytomorphology, Università degli Studi di Bologna

### Academic Appointments

1990-1992 Graduate Student, Dept. of Biochemistry, Bioenergetics Laboratory, Università degli Studi di Bologna.  
1994-1995 Graduate fellow, Dept. of Neurology, Columbia University, New York.  
1995-1997 Graduate fellow, Institute of Histology and general Embryology, Università degli Studi di Bologna.  
1998-2002 Postdoctoral Research Scientist, Dept of Neurology, Columbia University, New York.  
2002- present Assistant Professor in Clinical Biochemistry and Clinical Molecular Biology, University of Insubria, Varese

## Qualifications and awards

1992 AIPaC award for the communication "Methodological observations in the mitochondrial NADH coenzyme Q reductase assay" XLIII AIPaC National Conference, Bologna..

1993 Award from SIB (Società Italiana di Biochimica)..

1997 One year grant within the Telethon Project "Possible Autoimmune Pathogenesis for Leber's Hereditary Optic Neuropathy: Molecular Mimicry Involving Mitochondrial Autoantigens". P.I.: Prof. Giorgio Lenaz, 1997.

1998-2001 MDA (Muscular Dystrophy Association) Development Grant on "RNA-based gene therapy for mitochondrial myopathies".

2005 University funds for Research (FAR) on "Design of a new real-time PCR approach for quantifying heteroplasmy of the mtDNA mutation 3460G →A responsible for LHON".

## Research interests

Mitochondrial bioenergetics in aging and in neuromuscular pathology; mitochondrial genetics and pathophysiology of mitochondrial encephalomyopathies; gene therapy approach for mitochondrial

disorders in cellula models; real-time based diagnosis and heteroplasmy quantification in Leber's Hereditary Optic Neuropathy (LHON); mitochondrial segregation in families affected by mitochondrial disorders. Proteomics in neurodegenerative disorders.

## Teaching experience and appointments

Assistant professor in clinical biochemistry and clinical molecular biology since December 2002;

Official Teaching Courses : Clinical Biochemistry 1; Molecular Biology Techniques , for the Degree Course in Biomedical Laboratory Techniques. Laboratory Methodologies, for the Degree Course in Obstetrics

## Representative publications

1. E.Estornell, R.Fato, F.Pallotti, G.Lenaz. Assay conditions for the mitochondrial NADH:Coenzyme Q oxidoreductase. FEBS Lett. 332, 127-131 (1993)
2. C.Castelluccio, A.Baracca, R.Fato, F.Pallotti, M.Maranesi, V.Barzanti, A.Gorini, R.F.Villa, G.Parenti Castelli, M.Marchetti, G.Lenaz. Mitochondrial activities of rat heart during ageing. Mech. Ageing Dev. 76, 73-88 (1994).
3. G.Lenaz, C.Bovina, C.Castelluccio, M.Cavazzoni, E.Estornell, R.Fato, J.R.Huertas, M. Merlo Pich, F.Pallotti, G.Parenti Castelli, H.Rauchova. Modes of Coenzyme Q Functions in Electron Transfer. Protoplasma 184, 50-62 (1995).
4. R.Fato, E.Estornell, S.DiBernardo, F.Pallotti, G.Parenti Castelli, G.Lenaz. Steady-state kinetics of the reduction of Coenzyme Q analogs by Complex I (NADH: ubiquinone oxidoreductase) in bovine heart mitochondria and submitochondrial particles. Biochemistry-US 35, 2705-2716 (1996).
5. F.Pallotti, X.Chen, E.Bonilla, E.A.Schon. Evidence that specific mtDNA point mutations may not accumulate in skeletal muscle during normal human aging. Am. J. Hum. Genet. 59, 591-602 (1996).
6. M.L.Genova, C.Bovina, M.Marchetti, F.Pallotti, C.Tietz, G.Biagini, A.Pugnaloni, C.Viticchi, A. Gorini, R.F.Villa, G.Lenaz. Decrease of rotenone inhibition is a sensitive parameter of Complex I damage in brain nonsynaptic mitochondria of aged rats. FEBS Lett 410, 467-469 (1997).
7. G.Lenaz, C.Bovina, C.Castelluccio, R.Fato, G.Formiggini, M.L.Genova, M.Marchetti, M.Merlo Pich, F.Pallotti, G.Parenti Castelli, G.Biagini. Mitochondrial Complex I defects in aging. Mol. Cell. Biochem. 174, 329-333 (1997).
8. G.Manfredi, D.Thyagarajan, L.C.Papadopoulou, F.Pallotti, E.A.Schon. The fate of human sperm-derived mtDNA in somatic cells. Am. J. Hum. Genet. 61, 953-960 (1997).
9. F.Pallotti, M.L.Genova, M.Merlo Pich, C.Zucchini, S.Carraro, M.Tesei, C.Bovina, G.Lenaz. Mitochondrial dysfunction and brain disorders. Arch. Gerontol. Geriat., Suppl. 6, 385-392 (1998).

10. G.Biagini, F.Pallotti, S.Carraro, G.Sgarbi, M.Merlo Pich, G.Lenaz, F.Anzivino, G.Gualandi, D.Xin. Mitochondrial DNA in platelets from aged subjects. *Mech. Ageing Dev.*, 101, 269-275 (1998).
11. A.Pugnali, F.Pallotti, M.L.Genova, C.Zucchini, S.Amati, M.Tesei, G.Biagini, G.Lenaz. Histomorphometric studies in rat cerebral cortex: normal aging and cell loss. *Cell. Mol. Biol.* 44, 597-604 (1998).
12. G.Lenaz, M.Cavazzoni, M.L.Genova, M.D'Aurelio, M.Merlo Pich, F.Pallotti, G.Formiggini, M.Marchetti, G.Parenti Castelli, C Bovina. Oxidative stress, antioxidant defences and aging. *Biofactors* 8, 195-204 (1998).
13. C.Bruno, A.Martinuzzi, Y.Tang, A.L.Andreu, F.Pallotti, E.Bonilla, S.Shanske, J.Fu, C.M.Sue, C.Angelini, S.DiMauro, G.Manfredi. A stop-codon mutation in the human mtDNA cytochrome c oxidase gene disrupt the functional structure of complex IV. *Am. J. Hum. Genet.* 65, 611-620 (1999).
14. A.L.Andreu, M.G.Hanna, H.Reichmann, C.Bruno, A.S.Penn, K.Tanji, F.Pallotti, S.Iwata, E.Bonilla, B.Lach, J.Morgan-Hughes, S.DiMauro. Exercise intolerance due to mutations in the cytochrome b gene of mitochondrial DNA. *N. Engl. J. Med.* 341, 1037-1044 (1999).
15. T.H.Vu, K.Tanji, F.Pallotti, V.Golzi, M.Hirano, S.DiMauro, E.Bonilla. Analysis of mtDNA deletions in muscle by in situ hybridization. *Muscle Nerve* 23, 80-85 (2000).
16. C.M.Sue, C.Karadimas, N.Checcarelli, K.Tanji, L.C.Papadopoulou, F.Pallotti, F.L.Guo, S.Shanske, M.Hirano, D.C.De Vivo, R.Van Coster, P.Kaplan, E.Bonilla, S.DiMauro. Differential features of patients with mutations in two COX assembly genes, SURF-1 and SCO2. *Ann. Neurol.* 47, 589-595 (2000).
17. F.Pallotti, G.Lenaz. Isolation and subfractionation of mitochondria from animal cells and tissue culture lines. *Methods Cell Biol.* 65, 1-35 (2001).
18. M.D'Aurelio, F.Pallotti, A.Barrientos, C.D.Gajevski, J.Q.Kwong, C.Bruno, M.Flint Beal, G.Manfredi. In vivo regulation of oxidative phosphorylation in cells harboring a stop-codon mutation in mitochondrial DNA-encoded cytochrome c oxidase subunit I. *J. Biol. Chem.* 276, 46925-46932 (2001).
19. E.A.Schon, S.Santra, F.Pallotti, M.E.Girvin. Pathogenesis of primary defects in mitochondrial ATP synthesis. *Semin. Cell Dev Biol.* 12, 441-448 (2001).
20. V.Carelli, A.Baracca, S.Barogi, F.Pallotti, M.L.Valentino, P.Montagna, M.Zeviani, A.Pini, G.Lenaz, A.Baruzzi, G.Solaini. Biochemical-clinical correlation in patients with different loads of the mitochondrial DNA T8993G mutation. *Arch Neurol.* 59, 264-270 (2002).

21. R.Lodi, V.Carelli, P.Cortelli, S.Iotti, M.L.Valentino, P.Barboni, F.Pallotti, P.Montagna, B.Barbiroli. Phosphorus MR spectroscopy shows a tissue specific in vivo distribution of biochemical expression of the G3460A mutation in Leber's hereditary optic neuropathy. *J Neurol Neurosurg Psychiatry*, 72, 85-87 (2002).
22. A.Naini, O.Musumeci, L.Hayes, F.Pallotti, M.Del Bene, H.Mitsumoto. Identification of a novel mutation in Cu/Zn superoxide dismutase gene associated with familial amyotrophic lateral sclerosis. *J Neurol Sci*, 198, 17-19 (2002).
23. C.Giordano, F.Pallotti, W.F.Walker, N.Checcarelli, O.Musumeci, F.Santorelli, G.d'Amati, E.A.Schon, S.DiMauro, M.Hirano, M.M.Davidson. Pathogenesis of the deafness-associated A1555G mitochondrial DNA mutation. *Biochem Biophys Res Commun*, 293, 521-529 (2002).
24. M.L.Valentino, P.Avoni, P.Barboni, F.Pallotti, C.Rengo, A.Torrioni, M.Bellan, A.Baruzzi, V.Carelli. Mitochondrial DNA nucleotide changes C14482G and C14482A in the ND6 gene are pathogenic for Leber's hereditary optic neuropathy. *Ann Neurol*, 51, 774-778 (2002).
25. J.Guy, X.Qi, F.Pallotti, E.A.Schon, G.Manfredi, V.Carelli, A.Martinuzzi, W.W.Hauswirth, A.S.Levin. Rescue of a mitochondrial deficiency causing Leber hereditary optic neuropathy. *Ann Neurol*, 52, 534-542 (2002).
26. S.DiMauro, K.Tanji, E.Bonilla, F.Pallotti, E.A.Schon. Mitochondrial abnormalities in muscle and other aging cells: Classification, causes, and effects. *Muscle Nerve*, 26, 597-607 (2002).
27. A.Barassi, F.Pallotti, G.V.Melzi d'Eril. Biological Variation of Procalcitonin in Healthy Individuals. *Clin Chem* 50, 1878 (2004).
28. F.Pallotti, A.Baracca, E.Hernandez-Rosa, W.F.Walker, G.Solaini, G.Lenaz, G.V.Melzi d'Eril, S.DiMauro, E.A.Schon, M.M.Davidson. Biochemical analysis of respiratory function in cybrid cell lines harboring mtDNA mutations. *Biochem J* 384, 287-293 (2004).
29. A. Barassi, G. Merlini, S.Finazzi, F.Pallotti, V.Mantovani, A.Sala, G.V.Melzi d'Eril. Comparison of three strategies for myocardial protection during coronary artery bypass graft surgery based on markers of cardiac damage. *Clin Biochem* 38, 503-507 (2005).

## Clinical interests

Mitochondrial DNA mutational load assessment by real time PCR; Mutational analysis in hereditary thrombophilia (Factor V, Factor II and MTHFR mutations) and in Hereditary Hemochromatosis