

## Curriculum vitae

### PERSONAL INFORMATION

Family name, First name: Del Favero Elena

ORCID: 0000-0002-6584-1869

Date of birth: 11/08/1968

Nationality: italian

### • EDUCATION

1999            Phd in Biochemistry (tutor Prof. S. Sonnino)

1993            Master in Physics, University of Milan

### • CURRENT POSITION

2008 –            Associated Professor of Applied Physics, Faculty of Medicine, Dept. of Medical Biotechnologies and Translational Medicine, University of Milan

### • CARRER

2002 – 2008      Researcher, Faculty of Medicine, Dept. of Chemistry, Biochemistry and Medical Biotechnologies, University of Milan

1999 – 2002      Post-doc research fellowship (Area 2), Dept. of Chemistry, Biochemistry and Medical Biotechnologies, University of Milan

### • FELLOWSHIPS AND AWARDS

1994            Fellowship: Fondazione Hoechst

2011            Award received from the American Association of Neuropathologists, USA, for the best paper (G.Di Fede et al. (2009) A Recessive Mutation in the APP Gene with Dominant-Negative Effect on Amyloidogenesis. Science 323, 1473-1477)

### • TEACHING ACTIVITIES

2008 –            Medical physics, to 1<sup>st</sup> year master students - Medicine and surgery

2002 –            Applied physics, to 1<sup>st</sup> year bachelor students - Imaging and Radiotherapy Techniques

2002 –            Radiation physics, to 1<sup>st</sup> year bachelor students - Imaging and Radiotherapy Techniques

2004 –            Applied physics to specialisation school students – Nuclear Medicine

2004 –            Radiation physics to specialisation school students – Medical physics

### • MEMBERSHIPS OF SCIENTIFIC SOCIETIES

2005 –            Italian Neutron Spectroscopy Society (SISN)

2007 –            Italian Society of Pure and Applied Biophysics (SIBPA)

2007 –            European Biophysical Societies' Association (EBSA)

### • GRANTS

FIRB strategico Nuova Ingegneria Medica (RBNE01XPYH)

European grant HCM (ERBCHRXCT920019) "Solubilization and Interfacial Properties of Surfactant Solutions".

PRIN (2003059780\_001) Reazioni dell'emoglobina con il polietilenglicole: identificazione dei siti di reazione e proprietà funzionali dei prodotti. (team member)

PRIN (2004024358\_003) Transizioni di fase alla superficie saccaridica di micelle di gangliosidi: ruolo dell'acqua solvente (team member)

2008 – PUR giovani (Area 2) (PI)

2010 – 2015 FIRB (RBFR08TLPO\_003) Comprensione delle Interazioni tra Cellule e Nanoparticelle Lipidiche per il Trasporto Genico (team member)

2017– BioMeTra Department Grant "Nanomedicine development in Cystic Fibrosis lung disease: in vitro model for siRNA delivery through the airway barrier"

## • CURRENT RESEARCH

Research on the physico-chemical properties of autoaggregating complex systems of biological macromolecules: structural, dynamic, thermotropic, lyotropic and interaction properties.

- structural organization and dynamics of complex lipid systems (biomimetic membranes)
- mesoscale characterization of aggregates of Abeta and Tau peptides
- structure of nanoparticles for drug delivery and controlled release
- interaction of model membranes with small peptides and ion channels

Physical techniques: laser light scattering (visible, UV), calorimetry, Neutron and X-ray techniques at the European Large Scale Facilities.

## • SELECTED PUBLICATIONS

1. Rinaldi F., Seguella L., Gigli S., Hanieh PN., Del Favero E., Cantù L., Pesce M., Sarnelli G., Marianecchi C., Esposito G., Carafa M., in *Pentosomes: an innovative nose-to-brain pentamidine delivery blunts MPTP parkinsonism in mice*, *J.Controlled Release* (2019) 294 17–26.
2. M.Barattin, A.Mattarei, A.Balasso, C.Paradisi, L.Cantù, E.Del Favero, T.Viitala, F.Mastrotto, P.Caliceti, S.Salmaso, pH-controlled liposome cell penetration for site-selective tumor targeting. *ACS Applied Materials & Interfaces* (2018) DOI: 10.1021/acsami.8b03469.
3. V.Rondelli, E.Del Favero, P.Brocca, G.Fragneto, M.Trapp, L.Mauri, M.G.Ciampa, G.Romani, C.J.Braun, L.Winterstein, I.Schroeder, G.Thiel, A. Moroni, L. Cantu', Directional K<sup>+</sup> channel insertion in a single phospholipid bilayer: Neutron reflectometry and electrophysiology in the joint exploration of a model membrane functional platform. *BBA - General Subjects* 1862 (2018) 1742–1750.
4. E.Del Favero, P.Brocca, L.Cantù, Scattering techniques and ganglioside aggregates: laser light, neutron and X-ray scattering. *Methods in Molecular Biology*, (Clifton, N.J.). In book: *Gangliosides*, (June 2018) 1804:57-82 DOI:10.1007/978-1-4939-8552-4\_3
5. L.Cantu', L.Colombo, T.Stoilova, B.Demé, H.Inouye, R.Booth, V.Rondelli, G.Di Fede, F.Tagliavini, E.Del Favero, D.A. Kirschner, and M.Salmona. The A2V mutation as a new tool for hindering A $\beta$  aggregation: A neutron and x-ray diffraction study. *Scientific Reports* (2017) 7 5510.
6. I.Telò, E.Del Favero, L.Cantù, N.Frattini, S.Pescina, C.Padula, P.Santi, F.Sonvico, S.Nicoli, Gel-like TPGS-based microemulsions for imiquimod dermal delivery: role of mesostructure on the uptake and distribution into the skin. *Mol. Pharmaceutics*, 2017, 14 (10), 3281–3289. doi: 10.1021/acs.molpharmaceut.7b00348.
7. V. Rondelli, P. Brocca, G. Fragneto, J. Dailant, C. Tringali, L. Cantù, E. Del Favero (2017) Membrane restructuring following in situ sialidase digestion of gangliosides : complex model bilayers by synchrotron radiation reflectivity *BIOCHIMICA ET BIOPHYSICA ACTA-BIOMEMBRANES* 1859(5), 845-851.
8. G. Sandri, S. Motta, M.C. Bonferoni, P. Brocca, S. Rossi, F. Ferrari, V. Rondelli, L. Cantù, C. Caramella, E. Del Favero (2017) Chitosan-coupled Solid Lipid Nanoparticles : tuning nanostructure and mucoadhesion *European journal of pharmaceutics and biopharmaceutics* 110, 13-18.
9. L. Colombo, A. Gamba, L. Cantù, M. Salmona, F. Tagliavini, V. Rondelli, E.Del Favero, P. Brocca (2017) Pathogenic A $\beta$  A2V versus protective A $\beta$  A2T mutation: Early stage aggregation and membrane interaction *BIOPHYSICAL CHEMISTRY* 229, 11-18.
10. L. Cantu, L. Colombo, T. Stoilova, B. Demé, H. Inouye, R. Booth, V. Rondelli, G. Di Fede, F. Tagliavini, E. Del Favero, D.A. Kirschner, M. Salmona (2017) The A2V mutation as a new tool for hindering A $\beta$  aggregation: A neutron and x-ray diffraction study *SCIENTIFIC REPORTS* 7, 5510.
11. V. Rondelli, P. Brocca, S. Motta, M. Messa, L. Colombo, M. Salmona, G. Fragneto, L. Cantu, E. Del Favero (2016) Amyloid $\beta$  Peptides in interaction with raft-mime model membranes : a neutron reflectivity insight *SCIENTIFIC REPORTS* 6, 1-11.
12. De Luigi, A. Mariani, M. De Paola, A. Re Depaolini, L. Colombo, L. Russo, V. Rondelli, P. Brocca, L. Adler-Abramovich, E. Gazit, E. Del Favero, L. Cantù, M. Salmona (2015) Doxycycline hinders phenylalanine fibril assemblies revealing a potential novel therapeutic approach in phenylketonuria *SCIENTIFIC REPORTS* 5, DOI: 10.1038/srep15902.

13. M. Messa, L. Colombo, E. Del Favero, L. Cantù, T. Stoilova, A. Cagnotto, A. Rossi, M. Morbin, G. Di Fede, F. Tagliavini, M. Salmona (2014) The Peculiar role of the A2V mutation in amyloid- $\beta$  (A $\beta$ ) 1-42 molecular assembly THE JOURNAL OF BIOLOGICAL CHEMISTRY 289(35), 24143-24152.
14. E. Del Favero, P. Brocca, V. Rondelli, S. Motta, A. Raudino, L. Cantu' (2014) Optimizing the crowding strategy: Sugar-based ionic micelles in the dilute-to-condensed regime LANGMUIR 30(30), 9157-9164.
15. L. Diomedede, P. Rognoni, F. Lavatelli, M. Romeo, E. Del Favero, L. Cantù, E. Ghibaudi, A. Di Fonzo, A. Corbelli, F. Fiordaliso, G. Palladini, V. Valentini, V. Perfetti, M. Salmona, G. Merlini (2014) A Caenorhabditis elegans-based assay recognizes immunoglobulin light chains causing heart amyloidosis BLOOD 123(23), 3543-3552.
16. V. Rondelli, G. Fragneto, S. Motta, E. Del Favero, P. Brocca, S. Sonnino, L. Cantù (2012) Ganglioside GM1 forces the redistribution of cholesterol in a biomimetic membrane BIOCHIMICA ET BIOPHYSICA ACTA-BIOMEMBRANES 1818(11), 2860-2867.
17. M. Stravalaci, A. Bastone, M. Beeg, A. Cagnotto, L. Colombo, G. Di Fede, F. Tagliavini, L. Cantu', E. Del Favero, M. Mazzanti, R. Chiesa, M. Salmona, L. Diomedede, M. Gobbi (2012) Specific recognition of biologically active amyloid- $\beta$  oligomers by a new Surface Plasmon Resonance-based immunoassay and an in vivo assay in Caenorhabditis elegans THE JOURNAL OF BIOLOGICAL CHEMISTRY 287(33) 27796-27805.
18. L.F. Cantù, E. Del Favero, S. Sonnino, A.E.G. Prinetti (2011) Gangliosides and multiscale modulation of membrane structure CHEMISTRY AND PHYSICS OF LIPIDS 164(8) 796-810
19. L. Cantu', M. Corti, P. Brocca, E. Del Favero (2009) Structural aspects of ganglioside-containing membranes BIOCHIMICA ET BIOPHYSICA ACTA-BIOMEMBRANES 1788(1), 202-208.
20. G. Di Fede, M. Catania, M. Morbin, G. Rossi, S. Suardi, G. Mazzoleni, M. Merlin, A.R. Giovagnoli, S. Prioni, A. Erbetta, C. Falcone, M. Gobbi, L. Colombo, A. Bastone, M. Beeg, C. Manzoni, B. Francescucci, A. Spagnoli, L.F. Cantu', E. Del Favero, E. Levy, M. Salmona, F. Tagliavini (2009) A Recessive Mutation in the APP Gene with Dominant-Negative Effect on Amyloidogenesis SCIENCE 323(5920),1473-1477.
21. M. Corti, L. Cantù, P. Brocca, E. Del Favero (2007) Self-assembly in glycolipids CURRENT OPINION IN COLLOID & INTERFACE SCIENCE 12(3), 148-154.
22. M. Gobbi, L. Colombo, M. Morbin, G. Mazzoleni, E. Accardo, M. Vanoni, E. Del Favero, L.F. Cantù, D.A. Kirschner, C. Manzoni, M. Beeg, P. Ceci, P. Ubezio, G. Forloni, F. Tagliavini, M. Salmona (2006) Gerstmann-Sträussler-Scheinker disease amyloid protein polymerizes according to the "dock-and-lock" model THE JOURNAL OF BIOLOGICAL CHEMISTRY 281(2) 843-849.
23. P. Brocca, L. Cantù, M. Corti, E. Del Favero, S. Motta (2004) Shape Fluctuations of Large Unilamellar Vesicles Observed by Laser Light Scattering : Influence of the Small-Scale Structure LANGMUIR 20(6), 2141-2148.
24. L. Cantù, M. Corti, E. Del Favero, M. Dubois, T. Zemb (1998) Combined small-angle X-ray and neutron scattering experiments for thickness characterization of ganglioside bilayers JOURNAL OF PHYSICAL CHEMISTRY. B, CONDENSED MATTER, MATERIALS, SURFACES, INTERFACES & BIOPHYSICAL 102(30), 5737-5743.
25. M. Boretta, L.Cantù, M. Corti and E. Del Favero (1997) Cubic phases of gangliosides in water: possible role of the conformational bistability of the headgroup PHYSICA A 236(1-2) 162-176.
26. L. Cantù, M. Corti, E. Del Favero, E. Digirolamo, S. Sonnino, G. Tettamanti (1996) Experimental evidence of a temperature-related conformational change of the hydrophilic portion of gangliosides CHEMISTRY AND PHYSICS OF LIPIDS 79(2), 137-145.