

Anna Sartori-Rupp

47 years, Italian, married, two children
Fluent in Italian, English, French and German



RESEARCH INTERESTS

Development of novel workflows for high resolution 3D cryo-EM and for cryo-CLEM applied to the study of cellular systems and in particular of host-pathogen interaction and neurodegenerative diseases.

EDUCATION

- 1998 - 2001 **PhD in Mathematical Physics**, Imperial College, London, UK
- 1995 - 1996 **Erasmus student**, Imperial College, London, UK
- 1991 - 1997 **Master Degree in Physics**, University of Padua, Italy
Grade: 110/110 Cum Laude (1st class honours degree with distinction)
Master thesis: "*Adsorption of polymers on rough fractal surfaces*".

RESEARCH EXPERIENCE

- Since 09/2007 **Research Engineer**
Institut Pasteur, Ultrastructural Bioluming (UBI) Unit, Paris, France (Head - ad interim : *Dr. G. Dumenil*; 2015-2019, Head: *J. Krijnse-Locker*; 2007-2015, Head: *S. Shorte*)
- Development of an original cryo-CLEM approach for the structural study of Tunnelling Nanotubes in neuronal cells ([Sartori-Rupp et al, Nat. Comm. 2019](#))
 - Establishment of workflows for 3D cryo-CLEM, combining cryo-focused ion beam (cryo-FIB) volume imaging and cryo-lamellae with cryo-confocal imaging
 - Implementation of the Leica EM cryo CLEM with precise localisation accuracy
 - Development of a novel correlative light/scanning electron microscopy method with immuno-gold labelling ([Mostowy et al., Cell Host Microbe, 2010](#))
- 2014 - 2016 **Visiting scientist**
Université Paul Sabatier, Laboratoire de Biologie Moléculaire Eukaryote (LBME), Toulouse, France (*Prof. P.-E. Gleizes*)
- Training/Mission: Collaboration between IP and the LBME on template matching of pre-ribosomal particles in cells nuclei on CEMOVIS sections,
 - ANR (association nationale de la recherche) grant RIBOMAN obtained.
- 2004 - 2007 **Post-doctoral position** (German SFB563 grant)
MPI of Biochemistry, DepT. of Molecular Structural Biology, Munich, Germany (*Prof. W. Baumeister*)
- Research project: "*3D structural studies of macromolecules and cells on rigid substrates by the establishment of a correlation between fluorescence microscopy in cryo-conditions and cryo-electron tomography*"
- Establishment of a novel technique: the correlation between cryo-fluorescence microscopy and cryo-ET ([Sartori et al., J. Struct. Biol., 2007](#))
 - Designing the first prototype of a cryo-stage for cryo-fluorescence microscopy

- 2001 - 2003 **Post-doctoral position** (Marie Curie - EU - Individual fellowship)
Institut Curie, Macromolecules and Microsystems in Biology and Medicine Group, Paris, France (Dr. J.-L. Viovy)
 Research project: "*Non-linear modelling of electrophoresis in viscoelastic matrices. Applications to lab-on-chips*"
- Theoretical modelling and characterisation of DNA migration in polymer matrices by fluorescence video-microscopy (Sartori et al., *Macromolecules*, 2005).
- 1998 - 2001 **PhD student**
Imperial College, Department of Mathematical Physics, London, UK (Prof. A.O. Parry)
 PhD thesis: "*Wetting at non-planar surfaces: Unbending, Unbinding and Beyond*".
- Characterisation of the density and scaling laws describing wetting of a fluid film on geometrically structured surfaces (Sartori & Parry, *J. Phys. Cond. Matt.*, 2002).

PUBLICATIONS

Papers in Peer-reviewed Journals

- Staropoli, I., Dufloo, J., Ducher, A., Commere, P.H., **Sartori-Rupp, A.**, Novault, S., Bruel, T., Lorin, V., Mouquet, H., Schwartz, O. & N. Casartelli. 2019. *Flow-cytometry analysis of HIV-1 Env conformations at the surface of infected cells and virions: role of Nef, CD4 and SERINC5*. J Virol. pii: JVI.01783-19. doi: 10.1128/JVI.01783-19.
- Sartori-Rupp, A.**, Cordero Cervantes, D., Pepe, A., Gousset, K., Delage, E., Corroyer-Dulmont, S., Schmitt, C., Krijnse-Locker, J. & C. Zurzolo. 2019. *Correlative cryo-electron microscopy reveals the structure of TNTs in neuronal cells*. Nat. Comm. 10:342-58.
- Grassart, A., Malardé, V., Gobba, S., **Sartori-Rupp, A.**, Kerns, J., Karalis, K., Marteyn, B., Sansonetti, P. and N. Sauvonnnet. 2019. *Bioengineered Human Organ-on-Chip Reveals Intestinal Microenvironment and Mechanical Forces Impacting Shigella Infection*. Cell Host Microbe. 26:435-44.
- Kühn, S., Lopez-Montero, N., Chang, YY., A., **Sartori-Rupp, A.** and J. Enninga. 2017. *Imaging macropinosomes during Shigella infections*. Methods. 127:12-22.
- Bonazzi, M., Vasudevan, L., Mallet, A., Sachse, M., **Sartori, A.**, Prevost, M.C., Roberts, A., Taner, S.B., Wilbur, J.D., Brodsky, F.M. and P. Cossart. 2011. *Clathrin phosphorylation is required for actin recruitment at sites of bacterial adhesion and internalization*. J. Cell Biol. 195:525-36.
- Stavru, F., Bouillaud, F., **Sartori, A.**, Ricquier, D. and P. Cossart. 2011. *Listeria monocytogenes transiently alters mitochondrial dynamics during infection*. PNAS 108:3612-17.
- Mostowy, S., Bonazzi, M., Hamon, M.A., Tham, T.N., Mallet, A., Lelek, M., Guin, E., Demangel, C., Brosch, R., Zimmer, C., **Sartori, A.**, Kinoshita, M., Lecuit, M. and P. Cossart. 2010. *Entrapment of intracytosolic bacteria by septin cage-like structures*. Cell Host Microbe 8:433-44.
- Lepper, S., Merkel, M., **Sartori, A.**, Cyrklaff, M. and F. Frischknecht. 2010. *Rapid quantification of the effects of blotting for correlation of light and cryo-light microscopy images*. J Microsc. 238:21-6.
- Sartori, A.**, Gatz, R., Beck, F., Rigort, A., Baumeister, W. and J. M. Plitzko. 2007. *Correlative Microscopy: Bridging the Gap between Fluorescence Light Microscopy and Cryo-Electron Tomography*. J. Struct. Biol. 160:135-145.
- V. Lucic, A. H. Kossel, T. Yang, W. Baumeister, T. Bonhoeffer and **A. Sartori**. 2007. *Multiscale Imaging of Neurons Grown in Culture: from Light Microscopy to Cryo-Electron Tomography*. J. Struct. Biol. 160:146-156.

M. Cyrklaff, P. Chandla, **A. Sartori**, S. Lepper. 2007. *Cryo-electron Tomography of Whole Cells: Three-dimensional Mapping of Intact Cellular Architecture*. *Imaging and Microscopy* 9: 50-53.

Sartori, A., Johner, A., Viovy, J.-L. and J.-F. Joanny. 2005. *Theoretical Study of Comb-Polymers Adsorption on Solid Surfaces*. *Macromolecules* 38:3432-3441.

Sartori, A., Barbier, V. and J.-L. Viovy. 2003. *Sieving Mechanisms in Polymeric Matrices*. *Electrophoresis* 24:421-440.

Sartori, A. and A. O. Parry. 2002. *Critical Wetting in Power Law Wedge Geometries*. *Journal of Physics: Condensed Matter* 14:L678-L686.

Rascòn, C., Parry, A.O. and **A. Sartori**. 1999. *Wetting at non-Planar Substrates: Unbending and Unbinding*. *Physical Review E* 59:5697-5700.

Book Chapters: U. Fascio & A. Sartori, "*A correlative Microscopy: a combination of light and electron microscopy*", in "*Optical Fluorescence Microscopy: From the Spectral to the Nano Dimension*", Springer

Conference Papers: 9

CONFERENCES

- **19 Invited Talks in National & International Conferences** (e.g. MC, Berlin, DE; M&M, Richmond, USA)
- **9 Talks in Research Institutes** (e.g. by H. Stark at the MPI of Biophysical Chemistry, Goettingen, DE)
- **8 Talks selected from Abstracts** (e.g. "The 16th International Microscopy Congress", Sapporo, Japan)

GRANTS

2019 **PTR** (Transveral Research Projects) grant: "*InSCeMiX: Inhibitor Screening, Cryo-Electron Microscopy, X-ray studies of CyaA*", **participant**. Coordinator: Alexandre Chenal, Institut Pasteur, Paris, France.

2016 **ANR** (Association Nationale de la Recherche) grant: "*RIBOMAN: an integrative approach of ribosome biogenesis in human cells*" grant, **participant**. Coordinator: Pierre-Emmanuel Gleizes, LBME, Toulouse.

2008 **IBISA** (Infrastructures en Biologie Santé et Agronomie) grant. Coordinator: **Anna Sartori-Rupp**; 500k obtained as funds for the Tecnai F20 cryo-EM at the UBI.

2007 **SESAME** grant, **participant**, 150k obtained for a Gatan Ultrascan 4k camera for the Tecnai F20 cryo-EM at the UBI. Coordinator: Spencer Shorte, Institut Pasteur, Paris.

REVIEWER ACTIVITY

Since 2008 Reviewer for J. Structural Biology

SEMINAR ORGANISATION

2018 Scientific committee member for the "*Yeast Imaging Symposium*", Toulouse, France

2017 **2nd FBI CLEM course**: "*Correlative Microscopies: theory and applications*", with Institut Curie & Institut Jacques Monod, Paris, France.

2013 **FBI course "CLEM workshop"** at Institut Pasteur, with Institut Curie, Paris, France

2010 Scientific session at the **Microscopy and Microanalysis** conference, Richmond, USA

2009 Scientific session at the **Sfmu** conference, Jussieu campus, Paris, France

PARTICIPATION IN NATIONAL AND INTERNATIONAL NETWORKS

- **COST COMULIS** (Correlated Multimodal Imaging in Life Science) EU action: co-chair of **CLEM workgroup WG1** & deputy member of the **Management Committee**
- **FBI** (France BioImaging) representative for the UBI
- Member of: **Sfmu** (French EM society) and **CTLS** (Core Technology for Life Science)

TEACHING ACTIVITY

2017 & 2019 **EMBO Course: "High- Accuracy CLEM: applications at RT and in Cryo"**, EMBL, DE
2019 **EMBO CLEM course** Bristol, UK
2013 & 2017 **FBI CLEM courses**, IP, FR
2008 **CLEM Course** at the International School of Biophysics "Antonio Borsellino", Erice, IT
2016-2019 **Master 2 "Ingenierie de plateforme"**, Paris 5 Descartes University, Paris, FR

STUDENTS SUPERVISION

- 2006 - 2019 Supervision of 2 master student and of a PostDoc

EQUIPMENT RESPONSIBILITIES & TRAINING ACTIVITIES

Since 2007 Training users of the EM platform in: (cryo-)EM and (cryo-)tomography, (cryo-)CLEM, SerialEM automated acquisitions, IMOD, Amira, Image analysis, fluorescent microscopy
Since 2012 In charge of the maintenance of: a Tecnai F20 cryo-EM, a Leica EMGP cryo-plunger, a Leica EM cryo-CLEM system, a Zeiss Axiovision fluorescent microscope

INDUSTRIAL PARTNERSHIP

- **Carl Zeiss**: establish cryo-CLEM with cryo-FIB volume imaging
- **Leica Microsystems**: design new cryo-grid holders for the Leica EM cryo-CLEM system
- **Thermo Fisher**: automated segmentation and quantification in tomograms with Amira

IT SKILLS

Languages: Fortran 77, MatLab, Mathematica; *Operational Systems:* Linux, Unix, Windows;
Application Software: SerialEM, IMOD, Thermo Fisher tomography software, EPU, Amira, ImageJ, Photoshop, Latex, Excel, Word, PowerPoint, Xfig