

Chiara Ardiccioni, PhD

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Summary of Qualifications

Biophysicist with 11 years of research experience in academia and about 1 year in a startup. Background in soluble and membrane proteins; experienced with a wide variety of biophysical and biochemical methods and characterized recombinant proteins. Track record of successfully assisting with experiment design, data generation, analysis, and interpretation. Excellent communication skills and a strong record of collaborating across scientific disciplines.

Work Experience

Visiting Scientist 2019
Yale University, Department of Molecular Biophysics and Biochemistry NH, US
(Prof. Dieter Soll)

- *One month spent learning how to express and purify a selenoprotein: the human Glutathione Peroxidase 1 (hGPx1), an antioxidant enzyme with the capacity to scavenge free radicals.*

University Lecturer in Physics 2018-present
Postdoctoral Research Scientist 2018-present
Polytechnic University of Marche, Department of Life and Environmental Sciences, New York-Marche Structural Biology Center (NY-MaSBiC), Ancona, IT

- *Expression and purification of novel isoforms of human stromal cell-derived factor 1 (CXCL12) in *E. coli*.*
- *Expression and purification of the human Glutathione peroxidase 1 (hGPx1) protein encoded by the gene belongs to the glutathione peroxidase family, members of which catalyze the reduction of organic hydroperoxides and hydrogen peroxide (H_2O_2) by glutathione, and thereby protect cells against oxidative damage.*
- *Working on the realization of the biosensor “Virusensing”, based on a graphene field-effect transistor, able to detect SARS-CoV-2 in a rapid, sensitive and specific way.*
- *Manage and supervised five master students.*

Senior Scientist 2016-2017
ACM Biolabs Pte Ltd. SG

- *Expressed in cell-free system, mammalian cell culture and insect cell culture using baculovirus-based expression.*
- *Purified and characterized membrane proteins reconstituted in engineered polymer membranes.*

- *Characterization of the protein folding using enzyme-linked immunosorbent assay.*

Postdoctoral Research Fellow 2012-2016
Postdoctoral Research Scientist 2011-2012
Columbia University, Department of Physiology and Cellular Biophysics NY, US
 (Prof. Filippo Mancia)

- *Expressed, purified, characterized, crystallized, solved the structure of a bacterial membrane-bound enzyme (GtrB) involved in glucosylation of the bacterial cell wall, a process that bacteria utilize to evade the immune system.*
- *Independently set up an enzyme assay to identify a potential pathway for translocation of the lipid substrate from the membrane to the soluble active site.*
- *Expressed, purified and characterized an eukaryotic membrane protein (5 α -reductase) using mammalian cell culture, fluorescence-detection size exclusion chromatography and western blot characterization.*
- *Manage and supervised three undergraduate students.*

Postdoctoral Research Fellow 2010-2011
'Sapienza' University of Rome, Department of Biochemical Sciences Rome, IT
 (Prof. Beatrice Vallone)

- *Characterized the photolytic intermediate Neuroglobin*CO at low temperature using UV-Vis absorption microspectrophotometry, breaking the Fe-iron bond by visible illumination.*
- *Solved the structure of the photolytic intermediate, carrying out X-ray crystallographic data collection at low temperature, under illumination.*

Education

'Sapienza' University of Rome, Department of Physics	Rome, IT
Ph.D., Biophysics	2007-2010
M.S., Physics, 110/110 <i>cum laude</i>	2005-2007
B.S., Physics, 110/110 <i>cum laude</i>	2002-2005

Technical Skills

Protein Biochemistry: molecular biology, protein expression in bacteria, cell free system, mammalian cell culture, insect cell culture using baculovirus-based expression, purification of soluble and membrane proteins, electrophoretic separation and visualization of proteins on polyacrylamide gels, western blot characterization of recombinant proteins, enzyme-linked immunosorbent assay (ELISA), fluorescence-detection size exclusion chromatography, protein purification with chromatographic separation based on affinity, ion-exchange and size exclusion, high throughput screening, production of liposomes, reconstitution of protein into liposomes and engineered polymer membranes, enzyme assays.

Protein Crystallography: setting up of crystallization trials by LCP and by vapor diffusion with hanging and sitting drops, screening crystals and optimization of crystallization conditions with the use of commercial and handmade screens, with the aid of a robotic imaging station, X-ray data collection at synchrotron radiation facilities and data processing with the Mosflm suite and CCP4 program suite or XDS and Phenix suite.

Biophysical techniques: X-ray crystallography of macromolecules, X-ray absorption spectroscopy, Wide Angle X-ray Scattering, Small Angle X-ray Scattering. The experiments took place at the synchrotron sources of ESRF (Grenoble, FR), ELETTRA (Trieste, IT), APS (Chicago, IL, US), BNL (Upton, NY, US).

Awards & Fellowships

Postdoctoral Fellowship, "Marche Foundation/Italian Scientists and Scholars in North America Foundation (ISSNAF)"	2012-2016
Special Award for Distinction in Research, "Pio Sodalizio dei Piceni"	2012
Postdoctoral Fellowship, "Institute Pasteur - Cenci Bolognetti Foundation"	2010-2011

Independent Coursework

"*Educational days 2018 SISN*" (Neutron Spectroscopy Italian Society) September 2018
Two weeks course focused on fundamentals of neutron spectroscopy, principles of data analysis and an experimental session at the Institut Laue Langevin (ILL), Grenoble

Brookhaven National Laboratory – "*RapiData 2014*" April-May 2014
One week course in rapid data collection and structure solving, BNL

"CCP4 Study Weekend: Experimental Phasing and Radiation Damage" January 2009
Course focused on phasing and radiation damage, University of Nottingham

Languages

Fluent in Italian and English

Oral Presentations

Annual Physiology & Cellular Biophysics Retreat	New York, NY
"The crystal structure of Gtrb, a membrane-bound glycosyltransferase"	2013
New York Consortium On Membrane Protein Structure Annual Meeting	New York, NY
"Structure determination of a membrane-bound glycosyltransferase"	2012

Posters

The New York Structural Biology Discussion Group 10th Winter Meeting	New York, NY
Ardiccioni C. , Clarke O.B., Tomasek D., Shapiro L. and Mancina F.	2015
"The crystal structure of Gtrb, a membrane-bound Glycosyltransferase"	

Publications

1. **Ardiccioni, C.** *et al.* *JUCrJ* 2019; 6: 832-842
<https://doi.org/10.1107/S2052252519008157>.
2. **Ardiccioni, C.** *et al.* *Nat. Commun.* 2016; 7: 10175; DOI: 10.1038/ncomms10175.
3. Avella G., **Ardiccioni C.**, Scaglione A., Moschetti T., Rondinelli C., Montemiglio L.C., Savino C., Giuffrè A., Brunori M. and Vallone B. *Acta Crystallographica Section D.* 2014; 70:1640-8.
4. Montemiglio L.C., Macone A., **Ardiccioni C.**, Avella G., Vallone B., Savino C. *Biochemistry* 2013; 52: 3678-87.
5. Van Der Linden, P., Vitoux, H., Steinmann, R., Vallone, B., **Ardiccioni, C.** *Journal of Physics: Conference Series*; 2013; 425: 012015.
6. Levantino M., Spilotros A., Cammarata M., Schirò M., **Ardiccioni C.**, Vallone B., Brunori M., Cupane A. *Proc. Natl. Acad. Sci.* 2012; 109:14894-9.
7. Arcovito A., **Ardiccioni C.**, Cianci M., D'Angelo P., Vallone B., Della Longa S. *J. Phys. Chem. B.* 2010; 114:13223-31.
8. Moschetti T., Giuffrè A., **Ardiccioni C.**, Vallone B., Modjtahedi N., Kroemer G., Brunori M. *Biochem. Biophys. Res. Commun.* 2009; 390:121-4.

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