

PERSONAL INFORMATION

Caterina Alfano, PhD

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Sex F | Date of birth 25/05/1976 | Nationality Italian

WORK EXPERIENCE

Sep 2016 – To Date

Group Leader Structural Biology and Biophysics

Fondazione Ri.MED – Via Bandiera, 11 – 90100 Palermo – ITALY

- Carry out and manage research projects in the field of Structural Biology and Biophysics applied to Cancer and Neurodegenerative diseases.
- Manager of the Structural Biology Platform (<http://www.fondazionerimed.eu/Content/piattaforme-tecnologiche.aspx>)

Business or sector R&D

Sep 2014 – To Date

Visiting Scientist

Francis Crick Institute – London – UK

- Access to the Institute facilities to carry out research projects in the field of Structural Biology and Biophysics.

Business or sector R&D

Oct 2012 – Aug 2016

Senior Postdoctoral Research Associate

Randall Division of Cellular and Molecular Biophysics – Guy's Campus - King's College London – P.I. Prof Sasi Conte.

Department of Chemistry – Britannia House - King's College London – P.I. Dr Rivka Isaacson.

Department of Basic and Clinical Neuroscience – King's College London – P.I. Prof Annalisa Pastore.

- Carry out research projects in the field of Structural Biology and Biophysics applied to Basic Research, Cancer and Neurodegenerative Diseases.

Business or sector R&D

Jan 2009 – Nov 2011

Chemist Manager

Profineco SpA – Zona Industriale Termini Imerese – 90018 Termini Imerese (PA) – ITALY

- Manager of the process for the treatment of leachate and industrial liquid waste and manager of the lab for the quality control of the process.

Business or sector R&D

Jun 2008 – Jan 2009

Postdoctoral Research Scientist

Structural Biology Dept – CIC BioGUNE – Science and Technology Park – 48160 Derio – SPAIN

- Carry out research projects in the field of Structural Biology applied to cancer research.

Business or sector R&D

Oct 2005 – May 2008

Staff Scientist

Biotechnology Functional Area – IRBM "P. Angeletti" – Merck Research Laboratories – Pomezia (Rome) – ITALY

- Carry out research projects in the field of Biotechnology applied to cancer research.

Business or sector R&D

EDUCATION AND TRAINING

Jun 2013

NATO International School of Structural Biology and Magnetic Resonance

12th Course of the NATO International School of Structural Biology and Magnetic Resonance – Ettore Mayorana Institute, Erice (Italy).

- Course Theme: "Future of biophysics".

Jun 2008 NATO International School of Crystallography

40th Course of the NATO International School of Crystallography – Ettore Mayorana Institute, Erice (Italy).

- Course Theme: "From molecules to medicines: integrating crystallography in drug discovery".

Jun 2004 NATO International School of Crystallography

30th Course of the NATO International School of Crystallography – Ettore Mayorana Institute, Erice (Italy).

- Course Theme: "Novel Approaches for structure determination of nanosized materials".

Jul 2003 NATO International School of Structural Biology and Magnetic Resonance

6th Course of the NATO International School of Structural Biology and Magnetic Resonance – Ettore Mayorana Institute, Erice (Italy).

- Course Theme: " Structure, Dynamics and Function of Biological Macromolecules and Assemblies".

Oct 2002 – Dec 2006 PhD in Biochemistry and Structural Biology

Joint PhD Program between (i) Biophysics Laboratories – University of Portsmouth (UK); (ii) Randall Division of Cell and Molecular Biophysics – King's College of London (UK); (iii) Chemistry Department – University Federico II of Naples (Italy).

- Studies of protein/nucleic acids interactions by Nuclear Magnetic Resonance.

Oct 1996 – Jul 2002 Laurea in Biological Chemistry (equivalent to Master's Degree)

University of Naples "Federico II" (Italy).

Graduation with full marks and honours (110/110 *summa cum laude*).

Thesis: "Structural studies in solution of pancreatic-like monomeric ribonucleases".

- Chemical, biochemical and biophysical disciplines.

Sep 1990 – Jul 1995 Diploma Secondary School (equivalent to A-level)

Perito Chimico Industriale – I.T.I.S. Ettore Mayorana – Palermo (Italy).

Graduation 60/60.

- Inorganic chemistry, organic chemistry, industrial chemistry, physical chemistry, analytical chemistry.

PERSONAL SKILLS

Mother tongue(s) Italian

Other language(s)

	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken interaction	Spoken production	
English	C2	C2	C1	C1	C1
Spanish	C1	C1	C1	B2	B2

Communication skills

- Active listening skills;
- Good oral and written communication skills also in international and multicultural context;
- Experience in communicating with people at all levels in the organisation, in interacting with external collaborators and referees and local governments.
- Experience in delivering presentations on my projects findings.

I always worked in international and multicultural environments.
 In all projects, I participated, I was responsible for preparing reports for internal and external referees and give oral presentations.
 I always actively contributed to writing all my scientific papers and participated in writing several grant applications.

Organisational / managerial skills

- Excellent independent thinking and leadership qualities;
- Excellent organisation skills;
- Capable to acquire quickly new knowledge and skills;
- High problem solving attitude.
- Capable to work as part of a team and interdisciplinary and in international work environment;
- Multitasking attitude.

I developed high professional independence being responsible for planning and interpreting my own experiments and preparing reports for internal and external meetings.
 Since the beginning of my career I showed capabilities to, and I did, supervise and train younger researchers and collaborators and showed a full commitment to my work.
 I have always shown a consistent record of strong initiative, independent thinking and leadership qualities by identifying the needs of multidisciplinary projects and proposing new approaches on the basis of my expertise.

Job-related skills

- Cloning: subcloning, deletion mutants, point mutations, chimeras;
- Preparation of DNA Oligonucleotides by PCR-based ESRA technique;
- Mammalian cell culture;
- Cell metabolites extraction and their characterisation by NMR;
- Recombinant protein expression from E. Coli cells;
- Purification of recombinant proteins, both tagged and untagged;
- Refolding of insoluble recombinant protein;
- Protein characterization by UV, CD, NMR, AFM, HPLC, MALDI Mass Spectrometry, Electrophoretic techniques, Expassy Tools, Thermofluor assay;
- Protein crystallization;
- Binding studies: EMSA, ITC, NMR, MST;
- Protein Structure determination by NMR;
- Signaling pathway studies by Western blotting and Reverse Protein MicroArrays;
- High-throughput platforms for cloning, protein expression and protein purification.

Digital competence

SELF-ASSESSMENT

Information processing	Communication	Content creation	Safety	Problem solving
Proficient user	Proficient user	Basic user	Independent user	Basic user

Operating Systems: Windows, Unix, Linux, MacOS X.
Specific technical software: TopSpin, NMRview, CcpNMR, nmrPipe, nmrDraw, XEASY, Xplor, Aqua, MolMol, Pymol, Insight II, UNICORN, BioOdyssey Calligrapher, QuantArray, Bioanalyzer Agilent.
General software: Corel Draw, Microsoft Office suite, KaleidaGraph, SigmaPlot, Origin, EndNote.

ADDITIONAL INFORMATION

Publications

[P1] Avitabile F., Alfano C., Spadaccini R., Crescenzi O., D'Ursi A.M., D'Alessio G., Tancredi T. and Picone D. (2003) The swapping of terminal arms in ribonucleases: comparison of the solution structure of monomeric bovine seminal and pancreatic ribonucleases. *Biochemistry*, **42**, 8704-8711.
 [P2] Alfano C., Babon J., Kelly G., Curry S. and Conte M.R. (2003) Resonance assignment and secondary structure of an N-terminal fragment of the human La protein. *J Biomol. NMR*, **27**, 93-94.

- [P3] [Alfano C.](#), Sanfelice D., Babon J., Kelly G., Jacks A., Curry S. and Conte M.R. (2004) Structural analysis of cooperative RNA binding by the La motif and central RRM domain of human La protein. *Nature Structural and Molecular Biology*, **11**, 323-329.
- [P4] Ercole C., Spadaccini R., [Alfano C.](#), Tancredi T. and Picone D. (2006). A new mutant of bovine seminal ribonuclease with a reversed swapping propensity. *Biochemistry*, **46**, 2227-2232.
- [P5] Darby J.F., Krysztofinska E.M., Simpson P.J., Simon A.C., Leznicki P., Sriskandarajah N, Bishop D.S., Hale L.R., [Alfano C.](#), Conte M.R., Martínez-Lumbreras S., Thapaliya A., High S. and Isaacson R.L. (2014). Solution structure of the SGTA dimerisation domain and investigation of its interactions with the ubiquitin-like domains of BAG6 and UBL4A. *PLoS One* **9(11):e113281**.
- [P6] Martino L., Pennell S., Kelly G., Busi B., Brown P., Atkinson R.A., Salisbury N.J., Ooi Z.H., See K.W., Smerdon S.J., [Alfano C.](#), Bui T.T. and Conte M.R. (2015). Synergic interplay of the La motif, RRM1 and the interdomain linker of LARP6 in the recognition of collagen mRNA expands the RNA binding repertoire of the La module. *Nucleic Acids Res.*, **43(1)**, 645-660.
- [P7] Faggiano S., [Alfano C.](#) and Pastore A. (2016). The missing links to link ubiquitin: Methods for the enzymatic production of polyubiquitin chains. *Anal Biochem.*, **1(492)**, 82-90.
- [P8] [Alfano C.](#), Faggiano S. and Pastore A. (2016) The ball and chain of polyubiquitin structural studies. *Trends Biochem Sci.*, **41**, 371-385.
- [P9] Melazzini F., De Rocco D., Marconi C., Di Buduo C., Noris P., Falaschini M., Pippucci T., Balduini A., Pecci A., Gnan C., Palombo F., Barozzi S., [Alfano C.](#), Bozzi V., Civaschi E., Cigalini E., Savoia A., Serim., Doubek M., Loffredo G. and Balduini C.L. (2016) Clinical and pathogenetic features of ETV6 related thrombocytopenia with predisposition to acute lymphoblastic leukemia. *Haematologica*, **101(11)**, 1333-1342.
- [P10] Bottega R., Nicchia E., [Alfano C.](#), Glembotsky A.C., Pastore A., Bertaglia-Calderara D., Bisig B., Duchosal M.A., Arbesú G., Alberio L., Heller P.G. and Savoia A. (2017) Gray platelet syndrome: Novel mutations of the NBEAL2 gene. *Am J Hematol*. doi: **92(2)**, E20-E22. doi: 10.1002/ajh.24610.
- [P11] Watts N., Zhuang X., Kaufman J., Palmer I., Dearborn A., Coscia S., Blech-Hermoni Y., [Alfano C.](#), Pastore A. Mankodi A. and Wingfield P. (2017) The Expression and Purification of ZASP Subdomains and Clinically Important Isoforms: High-affinity Binding to G-actin. *Biochemistry*, **56(14)**, 2061-2070.
- [P12] [Alfano C.](#), Sanfelice D., Martin S., Pastore A. and Temussi P. (2017) An optimized strategy to measure protein stability highlights differences between cold and hot unfolded states. *Nature Comm*, **8**:15428.
- [P13] Wang A.F., Deighan P., Chen S., Barrasso K., Garcia C., Martínez-Lumbreras S., [Alfano C.](#), Krysztofinska E.M., Thapaliya A., Camp A.H., Isaacson R.L., Hochschild A. and Losick R. (2017) A Novel RNA Polymerase-binding Protein that interacts with a Sigma-Factor Docking Site. *Molecular Microbiology*, **105(4)**, 652-662.
- [P14] Pecci A., Ragab I., Bozzi V., De Rocco D., Barozzi S., Giangregorio T., Ali H., Melazzini F., Sallam M., [Alfano C.](#), Pastore A., Balduini C. and Savoia A. (2018) Thrombopoietin mutation in congenital amegakaryocytic thrombocytopenia treatable with romiplostim. *EMBO Molecular Medicine*, **10**,63-75.
- [P15] Martínez-Lumbreras S.*, [Alfano C.*](#), Kelly G., Atkinson R.A., Krysztofinska E.M., Flanagan K.A., Camp A.H. and Isaacson R.L. (2018) Solution structure of B. subtilis Sigma G inhibitor CsfB reveals a new fold. *Structure*, **26(4)**,640-648.
- [P16] Zacco E., Graña-Montes R., Martin S.R., de Groot N.S., Alfano C., Tartaglia G.G., Pastore A. (2019) RNA as a key factor in driving or preventing self-assembly of the TAR DNA-binding protein 43. *J Mol Biol*. **431(8)**,1671-1688.
- [P17] Santonocito R., Venturella F., Dal Piaz F., Morando M.A., Provenzano A., Rao E., Costa M., Bulone D., San Biagio P.L., Giacomazza D., Sicorello A., [Alfano C.*](#), Passantino R.*, Pastore A. (2019) Recombinant mussel protein Pvf β -5 β : a potential tissue bioadhesive. *J Biol Chem*. **294(34)**,12826-12835. *Co-corresponding authors.
- [P18] Fricano A., Librizzi F., Rao E., [Alfano C.](#), Vetri V. (2019) Blue autofluorescence in protein aggregates "lighted on" by UV induced oxidation. *BBA - Proteins and Proteomics* **1867(11)**,140258.

PDBs [1QWQ](#): Solution structure of the monomeric N67D mutant of Bovine Seminal Ribonuclease
[1S7A](#): NMR structure of the La motif of human La protein
[1S79](#): Solution structure of the central RRM of human La protein
[5N7Y](#): Solution structure of B. subtilis sigma factor inhibitor, CsfB

- Teaching**
- 2015 and 2016. Lecturer of the Chemistry in Cells module - Department of Chemistry – King's College London – London (UK).
Topics: Introduction to metabolism and Glycolysis.
 - 2016. Tutor of the Biochemistry module of the School of Biomedical Science and of the School of Medicine – King's College London – London (UK).
Topics: Lipids and membranes protein structure; Enzymes; Integration of metabolism; Cell structure and organelles; DNA/RNA protein synthesis; pH and Buffers; Metabolism 1; Integration of metabolism; Membranes and Transport; Signalling systems.
 - 2016. Workshop on Energetics for the Biochemistry module – School of Biomedical Science – King's College London – London (UK).

Conferences and Presentations

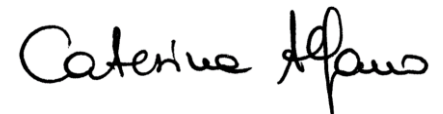
- Sep 2019: Resonance in Biology, September, 2019, Pavia (Italy).
Oral presentation: "Development of nontoxic bio-adhesives for wet environments".
- Sep 2019: XLVIII National Congress on Magnetic Resonance, September, 2019, L'Aquila (Italy).
Poster presentation: "NMR base-screening platform: from molecular recognition to drug design"
Poster presentation: "Recombinant mussel protein Pvfp-5β: a potential tissue bioadhesive"
- Mar 2018: UK-Israel Synergy Symposium - Protein misfolding in ageing and neurodegeneration: from basic biology to drug development - London (UK).
Poster presentation: "UV induced oxidation of tyrosine in Ubiquitin: effects on the fluorescence properties of proteins and aggregates".
- Dec 2016: Memory Mechanisms in Health and Disease Conference 2016 – Tampa (US).
- Oct 2016: Advances in Biophysical Methods for Protein Characterisation Conference – Palermo (Italy).
- Oct 2015: King's College London Ambassador in Brazil under the umbrella of the SARCOSI EU grant scheme.
- Mar 2015: International Ataxia Research Conference 2015 - Windsor (UK).
Poster presentation: "Understanding the relationship between normal function and aberrant aggregation: the case of ataxin-3".
- Jul 2014: London Structural Biology Club Meeting – Birkbeck University (UK).
Oral presentation: "Biophysical studies of regulators in a gene expression switch".
- Jul 2014: Metallo-protein NMR scoping workshop - Durham University (UK)
Oral presentation: "In-cell NMR and metals in proteins".
- Mar 2014: Medicinal Chemistry-Chemical Biology Seminars 2014 – Chemistry Department – King's College London (UK).
Oral presentation: "Biophysical exploration of RNA Polymerase regulators in a gene expression switch".
- Dec 2013: Britannia House Symposium – Chemistry Department - King's College London (UK).
Oral presentation: "NMR and Gene Switches".
- Jun 2013: 12th Course of the International School of Structural Biology and Magnetic Resonance – "Future of biophysics" – E. Mayorana Institute, Erice (Italy).
Poster presentation: "Structural and biophysical studies of tail-anchored membrane protein insertion".
- Oct 2012: South Coast RNA Meeting – University of Kent – Canterbury (UK).
- Jun 2012: International conference on Molecular Crowding 2012: Chemistry and Physics meet Biology – Ascona (Switzerland).
- Sep 2008: IV Bienal del GERMN – I Reunión Ibérica de RMN – Sevilla (Spain).
- Jun 2008: 40th Course of the International School of Crystallography – "From molecules to medicines: integrating crystallography in drug discovery" - E. Mayorana Institute, Erice (Italy).
Awarded with participation and part of the organising committee.
- Sep 2006: XXXVI GIDRM Congress – Salerno (Italy).
Oral presentation: "Structural studies of PRL-3: a phosphatase involved in colorectal cancer progression"
Poster presentation: "Ontogenesis of pancreatic beta-cells from pancreatic duct cells".
- Nov 2004: Annual Congress of the "Divisione di Chimica dei Sistemi Biologici della Società Chimica Italiana" - "From Chemistry to Technology" - Caserta (Italy).
Oral presentation: "The microscopic cost to bend the DNA".
- Jun 2004: 30th Course of the International School of Crystallography – "Novel Approaches for structure determination of nanosized materials" - E. Mayorana Institute, Erice (Italy).
Awarded with participation grant and part of the organising committee.
- Jun 2003: 6th Course of the International School of Structural Biology and Magnetic Resonance – "Structure, Dynamics and Function of Biological Macromolecules and Assemblies" - E. Mayorana Institute, Erice (Italy).

*Poster presentation: "The microscopic cost to bend the DNA".
Awarded with a participation grant.*

References and ANNEX Available upon request

In compliance with the Italian DL n. 196/2003, I hereby authorise the use of my personal data for recruitment purposes.

Palermo, 08 May 2020

A handwritten signature in black ink that reads "Caterina Alfano". The script is cursive and fluid.