

Luca Federici – Brief CV

Luca Federici, Ph.D
Full Professor of Biochemistry
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Education and Qualification

22/05/1997: "Laurea" in Chemistry –University of Rome "La Sapienza", Italy.

05/04/2002: Ph.D. in Biochemistry – Department of Biochemistry – University of Rome "La Sapienza", Italy.

Honours and Positions

From 01/11/1997 to 31/10/1998: Post-Graduate Studentship from the "Fondazione Adriano Buzzati-Traverso", University of Rome "La Sapienza", Italy.

From 01/11/1998 to 31/10/2001: Post-Graduate Studentship from the Italian Minister for Scientific Research (MIUR), University of Rome "La Sapienza", Italy.

From 01/01/2002 to 05/05/2002: Wellcome Trust Post-Doctoral Fellowship at the Department of Biochemistry –University of Cambridge, U.K.

From 06/05/2002 to 05/05/2004: Marie Curie Post-Doctoral Fellowship at the Department of Biochemistry –University of Cambridge, U.K. Contract number: HPMF-CT-2002-01645.

From 01/07/2004 to 29/12/2004: Post-Doctoral Fellowship from the "Fondazione Guido Donegani - Accademia Nazionale dei Lincei", University of Rome "La Sapienza", Italy.

From 30/12/2004 to 31/05/2017: Associate Professorship in Biochemistry – Faculty of Medicine, University of Chieti "G. D'Annunzio"

From 01/06/2017 to present: Full Professorship in Biochemistry – Faculty of Medicine, University of Chieti "G. D'Annunzio"

From 01/11/2017: Coordinator of the Ph.D. Program in Biomolecular and Pharmaceutical Sciences – University of Chieti "G. d'Annunzio".

Academic Activities

Member of the Disciplinary Board of the University of Chieti (2020-2022)

Coordinator of the Biochemistry course – School of Medicine and Surgery

Coordinator of the Nutritional Biochemistry Course – School of Nutrition Sciences

Member of the Department Board for attribution of intramural funding.

Member of the PhD School of Biomolecular and Pharmaceutical Sciences of the University of Chieti of which is he the Coordinator since 2017.

Memberships in Scientific Societies

Member of SIB (Italian Society of Biochemistry and Molecular Biology) since 1997.
Since 2017 he is member of the Advisory Board (Consiglio Direttivo) of SIB.

Meeting Organisation

1999 - Biocrystallography for Medicine and Biotechnology, The Accademia Nazionale dei Lincei, December 16-18, 1999, Rome. (Organizing Committee)

2012 - Proteine 2012 - University of Chieti "G. D'Annunzio" September 25-26, 2012 Chieti (Organizing and Scientific Committee)

2012 56th Meeting of the Italian Society of Biochemistry and Molecular Biology - University of Chieti "G. D'Annunzio". September 26-29, 2012, Chieti (Organizing Committee).

2019 60th Meeting of the Italian Society of Biochemistry and Molecular Biology. Lecce 18-20 luglio 2019 (Scientific Committee).

2019 "Cryo-electron microscopy in structural biology: paving the way towards precision biomedicine and biotechnology". Roma, 10-11 Ottobre 2019. (Organizing and Scientific Committee)

Scopus Parameters (18/02/2020)

Peer-reviewed papers (since 1998): 71

First-Last-Corresponding: 28

Total citations: 2308

Average citations: 32,5

H-index: 26

Funded Projects

PRIN 2007: The apoplast and the integration of processes at the basis of development and innate immunity in plants (24 months) – Research Unit responsible.

PRIN 2009: Perception of danger in plants: PAMP and DAMP mediated signalling, redox regulation and innate immunity activation (24 months) – Research Unit responsible.

AIRC 2011: Associazione Italiana Ricerca sul Cancro. Investigator Grant IG2011-11712: "Nucleophosmin and Acute Myeloid Leukemia: a structural biology approach" (36 months) – Principal Investigator.

BioStruct-X (FP7) 2012: "Structural Biology for Biotechnology: in depth characterization of targets relevant in human cancers, pathogenic bacteria and tropical diseases" " (n° 1223). (12 mesi) – Research Unit responsible.

BioStruct-X (FP7) 2013: "Structure-function studies on different proteins related to diseases" (n° 3959) (12 mesi) – Research Unit responsible.

AIRC 2014: Associazione Italiana Ricerca sul Cancro Investigator Grant IG15197: “Dissection of nucleophosmin interactions with protein partners and their targeting for acute myeloid leukemia treatment” (36 mesi) – Principal Investigator.

Patents

Dr. Federici is co-inventor of a patent entitled: Derivatives of 7-Nitro-2,1,3-Benzoxadiazole for cancer treatment”, based on his studies on Pi class glutathione transferase. (deposited on 24/04/2012 n° RM2012A000178).

Editorial Activity

Editor for the International peer-reviewed Journal: “Molecules” (MDPI), since September 2019

Ad hoc reviewer for the following international journals:

Nucleic Acids Research, Oncotarget, Plos One, FEBS Letters, Plant Cell, Biochimie, Cell Death and Disease, Bioorganic and medicinal chemistry
BBA General Subjects, Oxidative Medicine and Cellular Longevity
Leukemia, Biochemistry, BBA Molecular Cell Research, BMC Microbiology

Project reviewer for MIUR (SIR programme) and for ANVUR (VQR2011-2014).

Project reviewer for Stichting tegen Kanker (Fondation contre le Cancer - Belgium), 2016.

Scientific Achievements

Throughout his career, Dr. Federici has developed a strong interest in Structural Biology. He was initially trained as a protein crystallographer and crystallography is still a major asset of his laboratory. A variety of spectroscopic methods, molecular biology techniques and bioinformatics are also used in his lab to unravel the structure-function relationships in the systems of interest. Cell biology and proteomics techniques have been implemented to test the ideas emerging from structural studies in relevant cell lines. Major achievements can be schematized as follows:

1) In the initial steps of his career he worked on protein-protein recognition in plant innate immunity and how pathogen virulence factors and plant receptors coevolve in an arms-race scenario. He has made several contributions, by determining the crystal structures of two polygalacturonases and of the polygalacturonase-inhibiting protein (the first structure for a receptor in plant innate immunity) and the structural analysis of several polygalacturonase-PGIP complexes with a variety of techniques.

2) When in Cambridge, from January 2002 to June 2004, he worked on the molecular mechanisms underlying multidrug resistance in bacteria. He determined the crystal structure of VceC, an outer membrane protein from the pathogen *Vibrio cholerae*, and contributed with several other papers that coupled bioinformatics and functional assays to unravel the function of both primary and secondary transporters from gram negative and gram positive bacteria.

3) After establishing his own laboratory in Chieti, he started working on structural biology applied to cancer research. Initially he focussed on the design of inhibitors of glutathione S-

transferases (GST). He determined the structures of Pi class and Mu class GSTs in complex with NBDHEX, a suicide inhibitor. These data aided in the design of a whole class of new benzoxadiazole-based GST inhibitors with increased affinity for the Pi class enzyme, which is overexpressed in several cancers.

4) The main focus of his research in last ten years has been the role played by nucleophosmin in AML, a cancer where this protein is frequently mutated. He unraveled the structural requirements for nucleophosmin association to nucleoli and how these are modified by leukemia-associated mutations. He has i) discovered the nucleophosmin G-quadruplex DNA interaction, ii) characterized the structure of nucleophosmin C-terminal domain in complex with a prototypical G-quadruplex, iii) identified ribosomal DNA G-quadruplex regions that are bound in vivo by nucleophosmin and iv) characterized the activity and cellular toxicity of G-quadruplex ligands that are able to displace nucleophosmin from nucleoli.

5) More recently, he focussed his attention to the N-terminal domain of nucleophosmin and: i) discovered that nucleophosmin recognizes its binding partners through their nucleolar localization signal, ii) structurally characterized the interaction of nucleophosmin with two relevant tumor suppressors, i.e. p14arf and Fbw7 γ , iii) analyzed the effect of inhibiting these interactions in relevant AML cell lines with a pseudopeptide, called N6L, that specifically interacts with the nucleophosmin surface that recognizes protein partners.

10 Most Significant Publications

De Cola A, Franceschini M, Di Matteo A, Colotti G, Celani R, Clemente E, Ippoliti R, Cimini AM, Dhez AC, Vallè B, Raineri F, Cascone I, Destouches D, De Laurenzi V, Courty J, **Federici L** (2018) N6L pseudopeptide interferes with nucleophosmin protein-protein interactions and sensitizes leukemic cells to chemotherapy. *Cancer Lett* 412: 272-282

Di Matteo A, Franceschini M, Paiardini A, Grottesi A, Chiarella S, Rocchio S, Di Natale C, Marasco D, Vitagliano L, Travaglini-Allocatelli C, **Federici L** (2017) Structural investigation of nucleophosmin interaction with the tumor suppressor Fbw7 γ . *Oncogenesis*. 6(9):e379. doi: 10.1038/oncsis.2017.78.

Arcovito A, Chiarella S, Della Longa S, Di Matteo A, Lo Sterzo C, Scaglione GL, **Federici L** (2014) Synergic role of nucleophosmin three-helix bundle and a flanking unstructured tail in the interaction with G-quadruplex DNA. *J. Biol. Chem.* **289**(31): 21230-21241.

Chiarella S, De Cola A, Scaglione GL, Carletti E, Graziano V, Barcaroli D, Lo Sterzo C, Di Matteo A, DI Ilio C, Falini B, Arcovito A, De Laurenzi V, **Federici L** (2013) Nucleophosmin mutations alter its nucleolar localization by impairing G-quadruplex binding at ribosomal DNA. *Nucleic Acids Res.*, 41(5): 3328-3339.

Gallo A., Lo Sterzo C., Mori M., Di Matteo A., Bertini I., Banci L., Brunori M., **Federici L.** (2012) Structure of nucleophosmin DNA-binding domain and analysis of its complex with a G-quadruplex sequence from the *c-MYC* promoter. *J. Biol. Chem.*, **287**(32):26539-48.

Federici L.*, Arcovito A., Scaglione G. L., Scaloni F., Lo Sterzo C., Di Matteo A., Falini B., Giardina B. and Brunori M. (2010) Nucleophosmin C-terminal leukaemia-associated domain

interacts with G-rich quadruplex forming DNA. *J. Biol. Chem.*, **285**(48): 37138-37149.
(*corresponding author)

Federici L*, Lo Sterzo C, Pezzola S, Di Matteo A, Scaloni F, Federici G, Caccuri AM. (2009) Structural basis for the binding of the anticancer compound 6-(7-nitro-2,1,3-benzoxadiazol-4-ylthio)hexanol to human glutathione S-transferases. *Cancer Res.* **69**(20):8025-34.
(*corresponding author)

Sicilia F, Fernandez-Recio J, Caprari C, De Lorenzo G, Tsernoglou D, Cervone F, **Federici L.** (2005). The polygalacturonase-inhibiting protein PGIP2 of *Phaseolus vulgaris* has evolved a mixed mode of inhibition of endopolygalacturonase PG1 of *Botrytis cinerea*. *Plant Physiol.* **139**:1380-8.

Federici L., Dijun D., Walas F., Matsumura H., Borges-Walmsley I., Luisi B. and Walmsley A.R. (2005). Crystal structure of the bacterial outer membrane protein VceC from the pathogenic bacterium *Vibrio cholerae* at 1.8 Å resolution. *J. Biol. Chem.* **280**: 15307-14.

Federici, L., Caprari, C., Mattei, B., Savino, C., Di Matteo, A., De Lorenzo, G., Cervone, F., Tsernoglou, D. (2001). Structural requirements of a fungal endopolygalacturonase for the interaction with PGIP (Polygalacturonase-Inhibiting Protein). *Proc. Nat. Acad. Sci. U.S.A.*, **98**, 13425-13430.

Publications (full list)

1. Di Natale C, Florio D, Di Somma S, Di Matteo A, **Federici L**, Netti PA, Morelli G, Malfitano AM, Marasco D (2020) Proteostasis unbalance of nucleophosmin 1 in acute myeloid leukemia: an aggregomic perspective. *Int. J. Biol. Macromol.*, in press. DOI: 10.1016/j.ijbiomac.2020.08.248
2. Rossi C, Cicalini I, Verrocchio S, Di Dalmazi G, **Federici L**, Bucci I (2020) The potential of steoid profiling by mass spectrometry in the management of adrenocortical carcinoma. *Biomedicines* **8**, 314. doi: 10.3390/biomedicines8090314.
3. Cela I, Di Matteo A, **Federici L** (2020) Nucleophosmin in Its Interaction with Ligands. *Int J Mol Sci.*;21(14):E4885. doi: 10.3390/ijms21144885.
4. Scala R, Di Matteo A, Coluccia A, Lo Sciuto A, **Federici L**, Travaglini-Allocatelli C, Visca P, Silvestri R, Imperi F (2020) Mutational analysis of the essential lipopolysaccharide-transport protein LptH of *Pseudomonas aeruginosa* to uncover critical oligomerization sites. *Sci. Rep.* **10**(1):11276. doi: 10.1038/s41598-020-68054-7.
5. Rocchio S, Santorelli D, Rinaldo S, Franceschini M, Malatesta F, Imperi F, **Federici L**, Travaglini-Allocatelli C, Di Matteo A (2019) Structural and functional investigation of the Small Ribosomal Subunit biogenesis GTPase A (RsgA) from *P. Aeruginosa*. *FEBS J.*, **286**(21):4245-4260. doi: 10.1111/febs.14959.
6. Cufaro MC, Pieragostino D, Lanuti P, Rossi C, Cicalini I, **Federici L**, De Laurenzi V, Del Boccio P (2019) Extracellular vesicles and their potential use in monitoring cancer progression and therapy: the contribution of proteomics. *J. Oncol.*, 2019:1639854. Doi: 10.1155/2019/1639854.

7. Cicalini I, Rossi C, Pieragostino D, Agnifili L, Mastropasqua L, di Ioia M, De Luca G, Onofri M, **Federici L**, Del Boccio P (2019) Integrated Lipidomics and Metabolomics analysis of tears in Multiple Sclerosis: an insight into diagnostic potential of lacrimal fluid. *Int J Mol Sci.*, 20(6); pii: E1265; doi: 10.3390/ijms20061265
8. Di Matteo A*, **Federici L***, Masulli M, Carletti E, Santorelli D, Cassidy J, Paradisi F, Di Ilio C, Allocati N (2019) Structural characterization of the Xi class glutathione transferase from the haloalkaliphilic archaeon *Natrialba magadii*. *Front. Microbiol.* 10:9. Doi: 10.3389/fmicb.2019.00009.
9. Rossi C, Cicalini I, Zucchelli M, di Ioia M, Onofri M, **Federici L**, Del Boccio P, Pieragostino D (2018) Metabolomic signature in sera of multiple sclerosis patients during pregnancy. *Int J Mol Sci.* 19(11). DOI: 10.3390/ijms19113589.
10. De Santis A, La Manna S Russo Krauss I, Malfitano AM, Novellino E, **Federici L**, De Cola A, Di Matteo A; D'Errico G, Marasco D (2018) Nucleophosmin-1 regions associated with Acute Myeloid Leukemia interact differently with lipid membranes. *BBA. Biochim Biophys Acta*, pii: S0304-4165(18)30005-9. doi: 10.1016/j.bbagen.2018.01.005.
11. Allocati N, Masulli M, Di Ilio C, **Federici L** (2018) Glutathione transferases: substrates, inhibitors and pro-drugs in cancer and neurodegenerative diseases. *Oncogenesis*, 7(1):8. doi: 10.1038/s41389-017-0025-3.
12. De Cola A, Franceschini M, Di Matteo A, Colotti G, Celani R, Clemente E, Ippoliti R, Cimini AM, Dhez AC, Vallè B, Raineri F, Cascone I, Destouches D, De Laurenzi V, Courty J, **Federici L** (2018) N6L pseudopeptide interferes with nucleophosmin protein-protein interactions and sensitizes leukemic cells to chemotherapy. *Cancer Lett* 412: 272-282.
13. Luchinat E, Chiarella S, Franceschini M, Di Matteo A, Brunori M, Banci L, **Federici L** (2018) Identification of a novel nucleophosmin-interaction motif in the tumor suppressor p14arf. *FEBS J.*, 285(5):832-847
14. Dhez AC, Benedetti E, Antonosante A, Panella G, Ranieri B, Florio TM, Cristiano L, Angelucci F, Giansanti F, Di Leandro L, d'Angelo M, Melone M, De Cola A, **Federici L**, Galzio R, Cascone I, Raineri F, Cimini A, Courty J, Giordano A and Ippoliti R (2018) Targeted therapy of human glioblastoma *via* delivery of a toxin through a peptide directed to cell surface nucleolin. *J. Cell Physiol.*, 235:4091-4105.
15. Di Matteo A, Franceschini M, Paiardini A, Grottesi A, Chiarella S, Rocchio S, Di Natale C, Marasco D, Vitagliano L, Travaglini-Allocatelli C, **Federici L** (2017) Structural investigation of nucleophosmin interaction with the tumor suppressor Fbw7 γ . *Oncogenesis*. 6(9):e379. doi: 10.1038/oncsis.2017.78.
16. Damiani V, Falvo E, Fracasso G, **Federici L**, Pitea M, De Laurenzi V, Sala G, Ceci P (2017) Therapeutic Efficacy of the Novel Stimuli-Sensitive Nano-Ferritins Containing Doxorubicin in a Head and Neck Cancer Model. *Int J Mol Sci.* 2017 18(7). pii: E1555. doi: 10.3390/ijms18071555.
17. Lanzolla G, Vancieri G, Lanciotti S, Sangiuolo F, Menegatti E, **Federici L**, Moretti C, Brancati F (2017) The Glu331del mutation in the CYP17A1 gene causes atypical congenital

adrenal hyperplasia in a 46,XX female. *Gynecol Endocrinol.* 2017 Jun 13:1-5. doi: 10.1080/09513590.2017.1337097.

18. Micaroni M, Giacchetti G, Plebani R, Xiao G , **Federici L** (2016) ATP2C1 gene mutations in Hailey-Hailey disease and possible roles of SPCA1 isoforms in membrane trafficking. *Cell Death Dis.* 7: e2259.
19. Di Matteo A, Franceschini M, Chiarella S, Rocchio S, Travaglini-Allocatelli C, **Federici L** (2016) Molecules that target nucleophosmin for cancer treatment: an update. *Oncotarget* 7(28):44821-44840. DOI: 10.18632/oncotarget.8599.
20. Bizzarri C, Massimi A, **Federici L**, Cualbu A, Loche S, Bernardini S, Cappa M, Porzio O (2016) A new homozygous frameshift mutation in HSD3B2 gene in an apparently nonconsanguineous Italian family. *Hormone Research in Pediatrics* 86(1):53-61.
21. Ruggieri A, Brancati F, Zanotti S, Maggi L, Pasanisi MB, Saredi S, Terracciano C, Antozzi C, D Apice MR, Sangiuolo F, Novelli G, Marshall CR, Scherer SW, Morandi L, **Federici L**, Massa R, Mora M, Minassian BA. (2015) Complete loss of the DNAJB6 G/F domain and novel missense mutations cause distal-onset DNAJB6 myopathy. *Acta Neuropathol Commun.* 3(1):44
22. Di Natale C, Scognamiglio PL, Cascella R, Cecchi C, Russo A, Leone M, Penco A, Relini A, **Federici L**, Di Matteo A, Chiti F, Vitagliano L, Marasco D. (2015) Nucleophosmin contains amyloidogenic regions that are able to form toxic aggregates under physiological conditions. *FASEB J.* 29(9):3689-701.
23. De Cola A, Pietrangelo L, Forli F, Barcaroli D, Budani MC, Graziano V, Protasi F, Di Ilio C, De Laurenzi V, **Federici L** (2014) AML cells carrying *NPM1* mutation are resistant to nucleophosmin displacement from nucleoli caused by the G-quadruplex ligand TmPyP4. *Cell Death Dis.*, 5: e1427.
24. Arcovito A, Chiarella S, Della Longa S, Di Matteo A, Lo Sterzo C, Scaglione GL, **Federici L** (2014) Synergic role of nucleophosmin three-helix bundle and a flanking unstructured tail in the interaction with G-quadruplex DNA. *J. Biol. Chem.* 289(31): 21230-21241.
25. Massimi A, Malaponti M, **Federici L**, Vinciguerra D, Manca Bitti ML, Vottero A, Ghizzoni L, Maccarrone M, Cappa M, Bernardini S, Porzio O. (2014) Functional and Structural Analysis of Four Novel Mutations of CYP21A2 Gene in Italian Patients with 21-Hydroxylase Deficiency. *Horm. Metab. Res.* 46(7):515-520.
26. De Luca A, Mei G, Rosato N, Nicolai E, **Federici L**, Palumbo C, Pastore A, Serra M, Caccuri AM (2014) The fine-tuning of TRAF2-GSTP1-1 interaction: effect of ligand binding and in situ detection of the complex. *Cell Death Dis.* 5: e1015.
27. Benedetti M, Andreani F, Leggio C, Galantini L, Di Matteo A, Pavel NV, De Lorenzo G, Cervone F, **Federici L***, Sicilia F (2013) A single amino-acid substitution allows endopolygalacturonase of *Fusarium verticillioides* to acquire recognition by PGIP2 from *Phaseolus vulgaris*. *Plos One* 8(11): e80610. (*corresponding author)

28. Chiarella S, **Federici L**, Di Matteo A, Brunori M, Gianni S. (2013) The folding pathway of a functionally competent C-terminal domain of nucleophosmin: Protein stability and denatured state residual structure. *Biochem Biophys Res Commun* **435**: 64-68
29. **Federici L***, Falini B. (2013) Nucleophosmin mutations in acute myeloid leukemia: a tale of protein unfolding and mislocalization. *Protein Sci.*, **22**(5):545-566. (*corresponding author)
30. Chiarella S, De Cola A, Scaglione GL, Carletti E, Graziano V, Barcaroli D, Lo Sterzo C, Di Matteo A, Di Ilio C, Falini B, Arcovito A, De Laurenzi V, **Federici L** (2013) Nucleophosmin mutations alter its nucleolar localization by impairing G-quadruplex binding at ribosomal DNA. *Nucleic Acids Res.*, **41**(5): 3328-3339.
31. De Luca A., **Federici L.**, De Canio M., Stella L., Caccuri A.M. (2012) New Insights into the mechanism of JNK1 inhibition by glutathione transferase P1-1. *Biochemistry*, **51**(37): 7304-7312.
32. Gallo A., Lo Sterzo C., Mori M., Di Matteo A., Bertini I., Banci L., Brunori M., **Federici L.** (2012) Structure of nucleophosmin DNA-binding domain and analysis of its complex with a G- quadruplex sequence from the *c-MYC* promoter. *J. Biol. Chem.*, **287**(32):26539-48.
33. Allocati N., **Federici L.**, Masulli M., Di Ilio C. (2012) Distribution of glutathione transferases in Gram-positive bacteria and Archaea. *Biochimie* **94**:588-596
34. Benedetti M., Leggio C., **Federici L.**, De Lorenzo G., Pavel N.V., Cervone F. (2011). Structural Resolution of the Complex between a Fungal Polygalacturonase and a Plant Polygalacturonase-Inhibiting Protein by Small-Angle X-Ray Scattering. *Plant Physiol.* **157**(2):599-607
35. Helft L, Reddy V, Chen X, Koller T, **Federici L**, Fernández-Recio J, Gupta R, Bent A. (2011) LRR Conservation Mapping to Predict Functional Sites within Protein Leucine-Rich Repeat Domains. *Plos One* **6**(7): e21614.
36. **Federici L***, Arcovito A., Scaglione G. L., Scaloni F., Lo Sterzo C., Di Matteo A., Falini B., Giardina B. and Brunori M. (2010) Nucleophosmin C-terminal leukaemia-associated domain interacts with G-rich quadruplex forming DNA. *J. Biol. Chem.*, **285**(48): 37138-37149. (*corresponding author)
37. **Federici L**, Masulli M, Di Ilio C and Allocati N (2010) Characterization of the hydrophobic substrate-binding site of the bacterial beta class glutathione transferase from *Proteus mirabilis*. *Prot. Eng. Des. Sel.* **23**: 743-750.
38. Scaloni F, **Federici L**, Brunori M and Gianni S (2010) Deciphering the folding transition state structure and denatured state properties of Nucleophosmin C-terminal domain. *Proc. Natl. Acad. Sci. U S A.* **107**: 5447-5452.
39. **Federici L***, Lo Sterzo C, Pezzola S, Di Matteo A, Scaloni F, Federici G, Caccuri AM. (2009) Structural basis for the binding of the anticancer compound 6-(7-nitro-2,1,3-benzoxadiazol-4-ylthio)hexanol to human glutathione s-transferases. *Cancer Res.* **69**(20):8025-34. (*corresponding author)
40. Casasoli M, **Federici L**, Spinelli F, Di Matteo A, Vella N, Scaloni F,

- Fernandez-Recio J, Cervone F, De Lorenzo G. (2009) Integration of evolutionary and desolvation energy analysis identifies functional sites in a plant immunity protein. *Proc Natl Acad Sci U S A*. **106**(18):7666-71.
41. Scaloni F, Gianni S, **Federici L**, Falini B, Brunori M. (2009) Folding mechanism of the C-terminal domain of nucleophosmin: residual structure in the denatured state and its pathophysiological significance. *FASEB J*. **23**(8):2360-5.
 42. **Federici L**, Masulli M, Gianni S, Di Ilio C, Allocati N. (2009) A conserved hydrogen-bond network stabilizes the structure of Beta class glutathione S-transferases. *Biochem Biophys Res Commun*. **382**(3):525-9.
 43. Allocati N, **Federici L**, Masulli M, Di Ilio C. (2009) Glutathione transferases in bacteria. *FEBS J*. **276**(1):58-75.
 44. Carletti E, Sulpizio M, Bucciarelli T, Del Boccio P, **Federici L**, Di Ilio C. (2008) Glutathione transferases from Anguilla anguilla liver: identification, cloning and functional characterization. *Aquat Toxicol*. **90**(1): 48-57.
 45. Woebking B, Velamakanni S, **Federici L**, Seeger MA, Murakami S, van Veen HW. (2008) Functional role of transmembrane helix 6 in drug binding and transport by the ABC transporter MsbA. *Biochemistry* **47**(41):10904-14.
 46. Colombo C, Porzio O, Liu M, Massa O, Vasta M, Salardi S, Beccaria L, Monciotti C, Toni S, Pedersen O, Hansen T, **Federici L**, Pesavento R, Cadario F, Federici G, Ghirri P, Arvan P, Iafusco D, Barbetti F; Early Onset Diabetes Study Group of the Italian Society of Pediatric Endocrinology and Diabetes (SIEDP). (2008) Seven mutations in the human insulin gene linked to permanent neonatal/infancy-onset diabetes mellitus. *J Clin Invest*. **118**(6):2148-56.
 47. Allocati N*, **Federici L***, Masulli M, Favaloro B, Di Ilio C. (2008) Cysteine 10 is critical for the activity of Ochrobactrum anthropi glutathione transferase and its mutation to alanine causes the preferential binding of glutathione to the H-site. *Proteins*. **71**(1):16-23. (*equal contribution)
 48. Bonivento D, Pontiggia D, Matteo AD, Fernandez-Recio J, Salvi G, Tsernoglou D, Cervone F, De Lorenzo G, **Federici L** (2008) Crystal structure of the endopolygalacturonase from the phytopathogenic fungus Colletotrichum lupini and its interaction with polygalacturonase-inhibiting proteins. *Proteins* **70**(1):294-9.
 49. **Federici L**, Woebking B, Velamakanni S, Shilling RA, Luisi B, van Veen HW (2007) New structure model for the ATP-binding cassette multidrug transporter LmrA. *Biochem. Pharmacol.* **74**(5):672-8.
 50. Bapna K., **Federici L**., Venter H., Velamakanni S., Luisi B.F., Tai-Ping F. and van Veen H.W. (2007) Two proton translocation pathways in a secondary-active multidrug transporter. *J. Mol. Microbiol. Biotech.*, 12; 197-209.
 51. **Federici L**., Masulli M., Bonivento D., Di Matteo A., Gianni S, Favaloro B., Di Ilio C and Allocati N. (2007) Role of Ser11 in the stabilization of the structure of *Ochrobactrum anthropi* glutathione transferase. *Biochem. J*. 403:267-274.

52. Casal E, **Federici L**, Zhang W, Fernandez-Recio J, Priego EM, Miguel RN, DuHadaway JB, Prendergast GC, Luisi BF, Laue ED. (2006) The crystal structure of the BAR domain from human Bin1/amphiphysin II and its implications for molecular recognition. *Biochemistry* 45:12917-28.
53. Di Matteo A, Bonivento D, Tsernoglou D, **Federici L**, Cervone F. (2006) Polygalacturonase-inhibiting protein (PGIP) in plant defence: a structural view. *Phytochemistry* 67:528-33.
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