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## Personal information

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**Name:** Daniele Tedesco

**Date and place of birth:** 1984-06-09, Formigine (Italy)

**Work address:** National Research Council (CNR) – Institute for Organic Synthesis and Photoreactivity (ISOF) – via Piero Gobetti 101 – 40129 Bologna (Italy)

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## Education

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**Ph.D. in Chemistry, Pharmaceutical Sciences curriculum** (cycle XXVI) at the University of Bologna (Italy), Department of Pharmacy and Biotechnology (awarded **2014-04-14**).

**Master's Degree in Pharmaceutical Chemistry and Technology** (A.Y. 2008/09) at the University of Bologna (Italy), Faculty of Pharmacy (awarded **2009-07-14**).

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## Working/training experiences

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2019-11-28 to present:

**Researcher** at the National Research Council (CNR) – Institute for Organic Synthesis and Photoreactivity (ISOF) – Bologna (Italy).

2014-01-01 to 2019-11-27:

**Post-doctoral fellow** at the University of Bologna (Italy), Department of Pharmacy and Biotechnology.

2016-07-24 to 31; 2017-05-06 to 06-04; 2018-05-22 to 31; 2019-06-30 to 07-14; 2019-10-01 to 10:

**Visiting scientist** at the Medical University of Lublin (Poland), Department of Biopharmacy.

2011-01-01 to 2013-12-31:

**Ph.D. student in Chemistry** at the University of Bologna (Italy), Department of Pharmacy and Biotechnology.

2012-10-01 to 2013-03-20:

**Visiting Ph.D. student** at the University of Leipzig (Germany), Institute of Physical and Theoretical Chemistry.

2009-09-14 to 2010-01-13; 2010-05-01 to 12-31:

**Research fellow** at the University of Bologna (Italy), Department of Pharmaceutical Sciences.

2007-10-01 to 2008-04-20:

**Visiting student** at King's College London (UK), School of Biomedical and Health Sciences.

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## Scientific expertise

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- Structural and stereochemical characterization of chiral molecules endowed with biological activity.
- Studies on molecular recognition phenomena (drug-protein, drug-DNA and protein-protein interactions).
- Development of advanced analytical systems for biomedical applications.
- Conformational analysis on biological macromolecules (proteins, DNA).
- Qualitative and quantitative analysis of drugs from synthetic and biological sources.

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## Technical skills

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- **Spectroscopy/spectrometry:** Expertise in circular dichroism (CD) spectroscopy. Knowledge of polarimetry, UV-visible absorption and fluorescence spectroscopies, dynamic light scattering (DLS) and surface plasmon resonance (SPR). Basic knowledge of nuclear magnetic resonance (NMR) spectroscopy and mass spectrometry (MS).



- **Chromatography:** Advanced knowledge of high-performance liquid chromatography (HPLC) at the analytical and semi-preparative scale, on chiral and non-chiral stationary phases, coupled to UV-visible and CD detection. Knowledge of biochromatography, affinity and immunoaffinity chromatography (IAC), monolith chromatography and size exclusion chromatography (SEC).
- **Computational chemistry:** Expertise in quantum chemical methods for the calculation of chiroptical properties (DFT, TD-DFT). Knowledge of classical and *ab initio* molecular dynamics (MD) methods.
- **Computing:** Advanced knowledge of the Unix, Linux and Windows operating systems. Knowledge of the shell scripting, HTML and CSS languages. Basic knowledge of the C and PHP languages. Expert user of scientific programs (Gaussian, Spartan, GROMACS, CP2K, VMD, Gnuplot, ChemSketch, Origin, GraphPad), productivity suites and graphics software (LaTeX, LibreOffice, Microsoft Office, GIMP, Blender). Webmaster for the RDPA 2017 international conference website.

## Research project management/participation

### **Nanomnia** (research contract between ISOF-CNR and Nanomnia Srl, Italy)

**Role:** principal investigator (PI).

**Period:** 2022-01-17 to 2023-01-16.

**Funding:** € 25000.

**Activities:** Development, validation and application of HPLC analytical methods for the quantification of fungicides and insecticides in agropharmaceuticals and environmental matrices.

### **Worldwide Cancer Research Grant 2020** (Worldwide Cancer Research, United Kingdom)

**Role:** participant.

**Period:** 2021-03-01 to 2023-02-28.

**Title:** *Biomimetic nanocarriers for boosting chemotherapy by restoring breast cancer immunosurveillance.*

### **Alma Idea 2017 Grant Junior program** (University of Bologna, Italy)

**Role:** principal investigator (PI).

**Period:** 2018-01-29 to 2019-11-27.

**Funding:** € 20000.

**Title:** *GA-RAGE – Effects of glycated albumin in plasma on the stimulation of RAGE in type-2 diabetes mellitus with renal complications.*

### **Executive program for the scientific and technological cooperation between Italy and Poland 2019–2020**

(Ministry of Foreign Affairs and International Cooperation, Italy)

**Role:** participant.

**Period:** 2019-01-01 to 2020-12-31.

**Title:** *GPR55: innovative approaches to study the molecular interactions of a novel drug target (PO19MO09).*

### **Executive program for the scientific and technological cooperation between Italy and Poland 2016–2018**

(Ministry of Foreign Affairs and International Cooperation, Italy)

**Role:** participant.

**Period:** 2016-01-01 to 2018-12-31.

**Title:** *Binding studies on  $\beta_2$ -adrenergic receptors embedded in lipid bilayer nanodiscs (PO16MO02).*

### **IS CRA Class C08 and C10 programs** (CINECA, Italy)

**Role:** participant.

**Period:** 2012-03-21 to 2013-04-21, 2013-04-08 to 2014-01-08.

**Titles:** SCCFPM – *Stereochemical characterization of flexible pharmacological molecules (HP10CU0YHL);*  
CSSECP – *Case study on solvation effects and chiroptical properties (HP10CRFD44).*

### **PRIN 2008 program** (Ministry of Education, University and Research, Italy)

**Role:** participant.

**Period:** 2010-05-01 to 2012-09-22.

**Title:** *Absolute configuration of drugs and conformation of target proteins by circular dichroism (2008LYSEBR\_005).*



## Scientific awards

**G.P. Spada Medal 2014** for the best Ph.D. thesis in Organic and Medicinal Chemistry – Ph.D. School in Chemistry, University of Bologna, Italy (2014-02-12).

**Best Poster Awards** at the MSS 2018 (Portorož, Slovenia; 2018-06-20) and RDP A 2015 (Perugia, Italy; 2015-07-01) international conferences.

## Scientific and teaching activity

**Author of 35 articles** on international peer-reviewed journals (1 as corresponding author, 10 as first author, 1 preface), resulting in 548 citations (*h*-index: 11; source: Scopus).

**National Scientific Qualification (ASN)** to the role of Associate Professor in Medicinal Chemistry (SSD: CHIM/08) awarded by the Ministry of University and Research (Italy); eligibility: 2021-04-19 to 2030-04-19.

**Special Issue Guest Editor** for the *Journal of Pharmaceutical and Biomedical Analysis* (volume 144, 2017-09-10); **Organizing Secretary** for the RDP A 2017 international conference (Rimini, Italy – 2017-09-20 to 2017-09-23).

**Invited speaker** for 1 lecture at international summer schools and **speaker** for 4 seminars at universities and pharmaceutical industries; **main author** of 9 oral communications and 13 poster presentations at national and international conferences.

**Teaching assistant** for 22 laboratory courses in pharmaceutical analysis (625 hours of teaching from A.Y. 2011/12 to A.Y. 2020/21) and **co-supervisor** for 7 theses in Pharmaceutical Chemistry and Technology (University of Bologna, Italy).

## Language skills (CEFR level, self assessment)

	Listening		Reading		Spoken interaction		Spoken production		Writing	
<b>Italian</b>	*	Mother tongue	*	Mother tongue	*	Mother tongue	*	Mother tongue	*	Mother tongue
<b>English</b>	C2	Proficiency	C2	Proficiency	C1	Proficiency	C1	Proficiency	C2	Proficiency
<b>German</b>	A2	Basic	A2	Basic	A1	Basic	A1	Basic	A2	Basic

## Publications on peer-reviewed scientific journals

- Martella E, Dozza B, Ferroni C, Obeyok CO, Guerrini A, Tedesco D, Manet I, Sotgiu G, Columbaro M, Ballestri M, Martini L, Fini M, Lucarelli E, Varchi G\*, Duchi S\*. Two beats one: Osteosarcoma therapy with light-activated and chemo-releasing keratin nanoformulation in a preclinical mouse model. *Pharmaceutics* **2022**, *14* (3), 677. DOI: 10.3390/pharmaceutics14030677
- Rapozzi V, Moret F, Menilli L, Guerrini A, Tedesco D, Naldi M, Bartolini M, Gani M, Zorzet S, Columbaro M, Milani C, Martini C, Ferroni C\*, Varchi G\*. HSA-binding prodrugs-based nanoparticles endowed with chemo and photo-toxicity against breast cancer. *Cancers* **2022**, *14* (4), 877. DOI: 10.3390/cancers14040877
- Moret F, Menilli L, Battan M, Tedesco D, Columbaro M, Guerrini A, Avancini G, Ferroni C\*, Varchi G\*. Pheophorbide A and paclitaxel bioresponsive nanoparticles as double-punch platform for cancer therapy. *Pharmaceutics* **2021**, *13* (8), 1130. DOI: 10.3390/pharmaceutics13081130
- Campiani G\*, Cavella C, Osko JD, Brindisi M, Relitti N, Brogi S, Saraswati AP, Federico S, Chemi G, Maramai S, Carullo G, Jaeger B, Carleo A, Benedetti R, Sarno F, Lamponi S, Rottoli P, Bargagli E, Bertucci C, Tedesco D, Herp D, Senger J, Ruberti G, Saccoccia F, Saponara S, Gorelli B, Valoti M, Kennedy B, Sundaramurthi H, Butini S\*, Jung M, Roach KM, Altucci L, Bradding P, Christianson DW, Gemma S, Prasse A. Harnessing the role of HDAC6 in idiopathic pulmonary fibrosis: Design, synthesis, structural analysis, and biological evaluation of potent inhibitors. *J. Med. Chem.* **2021**, *64* (14), 9960–9988. DOI: 10.1021/acs.jmedchem.1c00184



- [Tedesco D<sup>‡</sup>](#), Maj M<sup>‡</sup>, Malarczyk P, Cingolani A, Zaffagnini M, Wnorowski A, Czapiński J, Benelli T, Mazzoni R, Bartolini M\*, Jóźwiak K\*. Application of the SMALP technology to the isolation of GPCRs from low-yielding cell lines. *Biochim. Biophys. Acta – Biomembranes* **2021**, 1863 (9), 183641. DOI: 10.1016/j.bbmem.2021.183641
- Avancini G, Guerrini A, Ferroni C, [Tedesco D](#), Ballestri M, Columbaro M, Menilli L, Reddi E, Costa R, Leanza L, Varchi G\*, Moret F\*. Keratin nanoparticles and photodynamic therapy enhance the anticancer stem cells activity of salinomycin. *Mater. Sci. Eng. C – Mater. Biol. Appl.* **2021**, 122, 111899. DOI: 10.1016/j.msec.2021.111899
- Talibov VO, Fabini E, FitzGerald E, [Tedesco D](#), Eriksson D, Talu MJ, Rachman MM, Mihalic F, Manoni E, Naldi M, Sanese P, Forte G, Lepore Signorile M, Barril X, Simone C, Bartolini M, Dobritzsch D, Del Rio A\*, Danielson UH\*. Discovery of an allosteric ligand binding site in SMYD3 lysine methyltransferase. *ChemBioChem* **2021**, 22 (9), 1597–1608. DOI: 10.1002/cbic.202000736
- Tagliani A, Rossi J, Marchand CH, De Mia M, [Tedesco D](#), Gurrieri L, Meloni M, Falini G, Trost P, Lemaire SD\*, Fermani S\*, Zaffagnini M\*. Structural and functional insights into nitrosogluthathione reductase from *Chlamydomonas reinhardtii*. *Redox Biol.* **2021**, 38, 101806. DOI: 10.1016/j.redox.2020.101806
- Bua G<sup>‡</sup>, [Tedesco D<sup>‡</sup>](#), Conti I, Reggiani A, Bartolini M, Gallinella G\*. No G-quadruplex structures in the DNA of parvovirus B19: Experimental evidence versus bioinformatic predictions. *Viruses* **2020**, 12, 935. DOI: 10.3390/v12090935
- Bertoni S, [Tedesco D](#), Bartolini M, Prata C, Passerini N, Albertini B\*. Solid lipid microparticles for oral delivery of catalase: Focus on the protein structural integrity and gastric protection. *Mol. Pharmaceutics* **2020**, 17 (9), 3609–3621. DOI: 10.1021/acs.molpharmaceut.0c00666
- De Simone A, Naldi M, [Tedesco D](#), Bartolini M, Davani L, Andrisano V\*. Advanced analytical methodologies in Alzheimer's disease drug discovery. *J. Pharm. Biomed. Anal.* **2020**, 178, 112899. DOI: 10.1016/j.jpba.2019.112899
- De Simone A, Naldi M, [Tedesco D](#), Milelli A, Bartolini M, Davani L, Widera D, Dallas ML, Andrisano V\*. Investigating in vitro amyloid peptide 1–42 aggregation: Impact of higher molecular weight stable adducts. *ACS Omega* **2019**, 4 (7), 12308–12318. DOI: 10.1021/acsomega.9b01531
- Marchand CH, Fermani S\*, Rossi J, Gurrieri L, [Tedesco D](#), Henri J, Sparla F, Trost P, Lemaire SD, Zaffagnini M\*. Structural and biochemical insights into the reactivity of thioredoxin h1 from *Chlamydomonas reinhardtii*. *Antioxidants* **2019**, 8 (1), 10. DOI: 10.3390/antiox8010010
- Lemaire SD, [Tedesco D](#), Crozet P, Michelet L, Fermani S, Zaffagnini M\*, Henri J\*. Crystal structure of chloroplastic thioredoxin f2 from *Chlamydomonas reinhardtii* reveals distinct surface properties. *Antioxidants* **2018**, 7 (12), 171. DOI: 10.3390/antiox7120171
- Tramarin A<sup>‡</sup>, [Tedesco D<sup>‡</sup>](#), Naldi M, Baldassarre M, Bertucci C, Bartolini M\*. New insights into the altered binding capacity of pharmaceutical-grade human serum albumin: Site-specific binding studies by induced CD spectroscopy. *J. Pharm. Biomed. Anal.* **2019**, 162, 171–178. DOI: 10.1016/j.jpba.2018.09.022
- Gandini A, Bartolini M, [Tedesco D](#), Martínez-González L, Roca C, Campillo NE, Zaldivar-Diez J, Perez C, Zuccheri G, Miti A, Feoli A, Castellano S, Petralla S, Monti B, Rossi M, Moda F, Legname G, Martínez A, Bolognesi ML\*. Tau-centric multi-target approach for Alzheimer's disease: development of first-in-class glycogen synthase kinase 3β and tau-aggregation inhibitors. *J. Med. Chem.* **2018**, 61 (17), 7640–7656. DOI: 10.1021/acs.jmedchem.8b00610
- Andrisano V, Bartolini M, [Tedesco D](#), Wainer IW\*. Special Issue in honor of the retirement of Prof. Carlo Bertucci – Preface. *J. Pharm. Biomed. Anal.* **2017**, 144, VI. DOI: 10.1016/S0731-7085(17)31895-2
- Pasquini M, Fermani S\*, [Tedesco D](#), Sciabolini C, Crozet P, Naldi M, Henri J, Vothknecht U, Bertucci C, Lemaire SD, Zaffagnini M\*, Francia F. Structural basis for the magnesium-dependent activation of transketolase from *Chlamydomonas reinhardtii*. *BBA – Gen. Subjects* **2017**, 1861 (8), 2132–2145. DOI: 10.1016/j.bbagen.2017.05.021
- Concilio G, Talotta C, Gaeta C, Neri P\*, Monaco G\*, Zanasi R, [Tedesco D\\*](#), Bertucci C. Absolute configuration assignment of chiral resorcin[4]arenes from ECD spectra. *J. Org. Chem.* **2017**, 82 (1), 202–210. DOI: 10.1021/acs.joc.6b02349
- Bertucci C\*, [Tedesco D](#). Human serum albumin as chiral selector in enantioselective high-performance liquid chromatography. *Curr. Med. Chem.* **2017**, 24 (8), 743–757. DOI: 10.2174/0929867324666161118115711
- Brindisi M, Maramai S, Gemma S, Brogi S, Grillo A, Di Cesare Mannelli L, Gabellieri E, Lamponi S, Saponara S, Gorelli B, [Tedesco D](#), Bonfiglio T, Landry C, Jung KM, Armirotti A, Luongo L, Ligresti A, Piscitelli F, Bertucci C, Dehouck MP, Campiani G\*, Maione S, Ghelardini C, Pittaluga A, Piomelli D, Di Marzo V, Butini S. Development and pharmacological characterization of selective blockers of 2-arachidonoyl glycerol degradation with efficacy in rodent models of multiple sclerosis and pain. *J. Med. Chem.* **2016**, 59 (6), 2612–2632. DOI: 10.1021/acs.jmedchem.5b01812
- Fabini E, Fiori GML, [Tedesco D](#), Lopes NP, Bertucci C\*. Surface plasmon resonance and circular dichroism characterization of cucurbitacins binding to serum albumins for early pharmacokinetic profiling. *J. Pharm. Biomed. Anal.* **2016**, 122, 166–172. DOI: 10.1016/j.jpba.2016.01.051



- [Tedesco D<sup>†</sup>](#), Fabini E<sup>†</sup>, Barbakadze V, Merlani M, Zanasi R, Chankvetadze B, Bertucci C\*. Stopped-flow enantioselective HPLC-CD analysis and TD-DFT stereochemical characterization of methyl *trans*-3-(3,4-dimethoxyphenyl)glycidate. *Chirality* **2015**, 27 (12), 914–918. DOI: 10.1002/chir.22539
- [Tedesco D](#), Bertucci C\*. Induced circular dichroism as a tool to characterize the binding of drugs to carrier proteins: classic approaches and new trends. *J. Pharm. Biomed. Anal.* **2015**, 113, 34–42. DOI: 10.1016/j.jpba.2015.02.024
- [Tedesco D](#), Zanasi R, Kirchner B, Bertucci C\*. Short-range solvation effects on chiroptical properties: a TD-DFT and *ab initio* MD computational case study on austdiol. *J. Phys. Chem. A* **2014**, 118 (50), 11751–11757. DOI: 10.1021/jp511428v
- [Tedesco D](#), Pistolozzi M, Zanasi R, Bertucci C\*. Characterization of the species-dependent ketoprofen/albumin binding modes by induced CD spectroscopy and TD-DFT calculations. *J. Pharm. Biomed. Anal.* **2015**, 112, 176–180. DOI: 10.1016/j.jpba.2014.11.029
- Bertucci C\*, [Tedesco D](#), Fabini E, Di Pietra AM, Rossi F, Garagnani M, Del Borrello E, Andrisano V. Determination of levamisole and tetramisole in seized cocaine samples by enantioselective high-performance liquid chromatography and circular dichroism detection. *J. Chromatogr. A* **2014**, 1363, 150–154. DOI: 10.1016/j.chroma.2014.07.069
- Sardella R, Carotti A, Manfroni G, [Tedesco D](#), Martelli A, Bertucci C, Cecchetti V, Natalini B\*. Enantioresolution, stereochemical characterization and biological activity of a chiral large-conductance calcium-activated potassium channel opener. *J. Chromatogr. A* **2014**, 1363, 162–168. DOI: 10.1016/j.chroma.2014.06.020
- Andrioli WJ, Conti R, Araújo MJ, Zanasi R, Cavalcanti BC, Manfrim V, Toledo JS, [Tedesco D](#), de Moraes MO, Pessoa C, Cruz AK, Bertucci C, Sabino J, Nanayakkara NPD, Pupo MT, Bastos JK\*. Mycoleptones A–C and polyketides from the endophyte *Mycoleptodiscus indicus*. *J. Nat. Prod.* **2014**, 77, 70–78. DOI: 10.1021/np4006822
- [Tedesco D](#), Zanasi R, Wainer IW, Bertucci C\*. Stereochemical and conformational study on fenoterol by electronic circular dichroism and TD-DFT calculations. *J. Pharm. Biomed. Anal.* **2014**, 91, 92–96. DOI: 10.1016/j.jpba.2013.12.018
- [Tedesco D](#), Di Pietra AM, Rossi F, Garagnani M, Del Borrello E, Bertucci C\*, Andrisano V\*. Determination of dextromethorphan and levomethorphan in seized heroin samples by enantioselective HPLC and electronic CD. *J. Pharm. Biomed. Anal.* **2013**, 81–82, 76–79. DOI: 10.1016/j.jpba.2013.03.024
- Dong F, Li J, Chankvetadze B, Cheng Y, Xu J, Liu X, Li Y, Chen X, Bertucci C, [Tedesco D](#), Zanasi R, Zheng Y\*. The chiral triazole fungicide difenoconazole: absolute stereochemistry, stereoselective bioactivity, aquatic toxicity and environmental behavior in vegetables and soil. *Environ. Sci. Technol.* **2013**, 47 (7), 3386–3394. DOI: 10.1021/es304982m
- Bertucci C\*, [Tedesco D](#). Advantages of electronic circular dichroism detection for the stereochemical analysis and characterization of drugs and natural products by liquid chromatography. *J. Chromatogr. A* **2012**, 1269, 69–81. DOI: 10.1016/j.chroma.2012.09.046
- [Tedesco D](#), Zanasi R, Guerrini A, Bertucci C\*. Conformational flexibility and absolute stereochemistry of (3*R*)-3-hydroxy-4-aryl- $\beta$ -lactams investigated by chiroptical properties and TD-DFT calculations. *Chirality* **2012**, 24 (9), 741–750. DOI: 10.1002/chir.22043
- Bertucci C\*, Pistolozzi M, [Tedesco D](#), Zanasi R, Ruzziconi R, Di Pietra AM. Stereochemical characterization of fluorinated 2-(phenanthren-1-yl)propionic acids by enantioselective high performance liquid chromatography analysis and electronic circular dichroism detection. *J. Chromatogr. A* **2012**, 1232, 128–133. DOI: 10.1016/j.chroma.2011.10.090