

Curriculum Vitae
ENZO TERRENO

1965: Born in Rome (Italy) – Nationality: Italian

Education

1991: Laurea Degree (*cum laude*) in Pharmaceutical Chemistry and Technology, Faculty of Pharmacy, at the University of Torino (Italy) discussing an experimental thesis on the NMR characterization of melanin and its interaction with metal ions.

1993: Laurea Degree (*cum laude*) in Pharmacy, Faculty of Pharmacy, at the University of Torino (Italy) discussing an experimental thesis on the binding between human serum albumin and paramagnetic MRI contrast agents.

Academic achievements

1994-95: Member of the research staff of the NMR laboratory at the Department of Inorganic, Physical, and Materials Chemistry, University of Torino (Italy)

1996: Research Fellow at the Interuniversity Research Consortium on the Metals Chemistry in Biological Systems, Research Unit of Torino (Italy).

1997: Research Fellow at the Department of Inorganic, Physical, and Materials Chemistry, University of Torino (Italy)

1999: Research Fellow of Inorganic and General Chemistry at the Faculty of Pharmacy, University of Torino (Italy)

2007-2013: Associate Professor of Inorganic and General Chemistry at the Faculty of Pharmacy, University of Torino (Italy)

2013-present: Associate Professor of Inorganic and General Chemistry at the Department of Molecular Biotechnology and Health Sciences, University of Torino (Italy)

Professional achievements

1991: winner of a research contract supported by the Italian Healthcare Service on the study of paramagnetic complexes as MRI contrast agents;

1992-1993: scientific consultant for Bracco Imaging SpA;

2000-present: member of the scientific staff of the Centre for Molecular Imaging, University of Torino (Italy);

2007-present: member of the scientific staff of the Molecular Biotechnology Centre, University of Torino (Italy);

2010-present: Scientific responsible of the Centre for Preclinical Imaging of the University of Torino (Italy);

2013-present: National qualification for Full Professor position

2014-present: Associate researcher at the Biostructure and Bioimaging Institute of CNR (IBB-CNR) of Napoli;

Project participation

- with coordination commitments

2004-2011: EU-FP6 Network of Excellence “DIMI: Diagnostics for Molecular Imaging” (45 partners, Local responsible of the Technological Training Platform on the “MR Imaging probes”);

2008-2010: Project “Protein Oligomers: Role in Neurodegeneration” funded by Compagnia San Paolo (3 research units, Unit coordinator);

2008-2012: Regional project on “Nanosized Systems for Imaging Guided Therapies” (13 partners, coordinator deputy);

2009-2011: Leader of the Working Group 6 (Responsive Probes) within the EU-COST Action D38 (Metal-based systems for Molecular Imaging Applications);

2011: Regional project “Stem Cell Labeling” (3 research units, Unit coordinator)

2012-2014: Project “Innovative Nanosized Theranostic Agents” funded by Compagnia San Paolo and University of Torino (3 research groups, coordinator);

2012-present: EU-FP7 Collaborative Project “INMiND: Imaging neuroinflammation in neurodegenerative diseases” (29 partners, Member of the Scientific and Management Board, Workpackage leader, Responsible for the training site at the University of Torino);

2014-2016: EU-FP7 IRSES Marie Curie project “DINaMIT: Dual-Imaging Nano/Micro-sized Theranostics (against cancer)” (6 partners, Workpackage leader);

2017-: Project “MRI-guided Therapy for combating Ovarian Cancer” funded by Compagnia San Paolo and University of Torino (coordinator)

2017- : Project “FLUOMED: Progettazione sintesi e caratterizzazione di sonde fluorescenti per applicazioni di diagnostica molecolare” grant reserved to companies affiliated to the Regional Innovation Biomedical network (5 partners, responsible research unit)

- without coordination commitments

2001-2002: National project (PRIN 2001) “NMR methodologies and computation for the characterization of the interaction with proteins of small molecules/potential drugs and the localization of the primary binding sites on the protein surface”;

2003-2004: National project (PRIN 2003) “Role of metal ions in metabolic processes”;

2003-2009: EU-FP6 Network of Excellence “EMIL: European Molecular Imaging Laboratories”

2006-2007: National project (PRIN 2005) “*In vitro* and *in vivo* validation of paramagnetic MRI probes for Molecular Imaging applications”;

2006-2011: EU-FP6 Integrated project “MediTrans: Targeted Delivery of Nanomedicine”

2008-2012: EU-FP7 Collaborative project “ENCITE: European Network for Cell Imaging and Tracking Expertise”;

2008-2009: National project (PRIN 2007) “Stabilization and release of Mn(II) complexes in particles and liposomes for new diagnostic MRI protocols”;

2008-2012: Regional project “Innovative Procedures of Molecular Imaging for Diagnosis and Therapeutic Monitoring”;

2011-2013: National project (PRIN 2009) “Development of theranostic (diagnosis + therapy) MRI protocols by means of nanocarrier”

2012-2014: Project “Validation of VHH- and aptamers-like molecules for the release of tumour-specific drugs and concomitant therapeutic monitoring by functional imaging” funded by Compagnia San Paolo;

2014-present: Project “Dual MRI-Optical imaging agents in prostatectomy” funded by the National Association for Cancer Research (AIRC);

2015-present: Project “Validation of Citron kinase as a therapeutic target for medulloblastoma” funded by the National Association for Cancer Research (AIRC);

Scientific organization

2008-present: Member of the Organizing Committee of the National School on Nuclear Magnetic Resonance;

2008-2013: Member of the Board of the Italian Discussion Group on Magnetic Resonance (GIDRM);

2011-2015: Member of the Management Committee of the EU-COST Action TD1004 (Theranostics Imaging and Therapy: An Action to Develop Novel Nanosized Systems for Imaging-Guided Drug Delivery);

2012-present: Co-founder of the Study Group on “Image-Guided Drug Delivery” of the European Society for Molecular Imaging (ESMI);

2016-present: Member of the Board of the Interuniversity Research Consortium on the Metals Chemistry in Biological Systems as representative of the University of Torino;

Journals

2007-2011: Associate editor of *Metal-Based Drugs*;

2012-present: Member of the Editorial Board of *Current Molecular Imaging*;

2014-present: Associate Editor of *BioMed Research International*;

Bibliometric data (font: Scopus, ID 6701583943)

Total publications on peer-reviewed journals: **126**

Total citations: **6640**

h-index: **44**

Patents: **8**

Book Chapters: **7**

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Research activity in brief

Research interests are mainly focused on the design, synthesis, and *in vitro/in vivo* characterization and preclinical validation of contrast agents for diagnostic and theranostic applications of molecular imaging. After working on the design of innovative and improved Gd-complexes as MRI agents, he was one of the pioneers in the development of the class of paramagnetic CEST (Chemical Exchange Saturation Transfer) MRI agents, especially in the design of the LipoCEST probes. More recently, he started working in the field of theranosis, developing new nanosystems aimed at the MRI visualization of drug delivery and drug release. Particular attention was devoted to system whose contrast was activated by the the stimulated release of the drug from the nanocarrier. Besides classical nanoparticles like liposomes, he also contributed to the development of MRI probes based on novel nanovesicular systems like polymersomes and dendrimersomes. Another important application area he covered was the development of improved procedures for cellular imaging. To this regard, it is worth citing the studies on Glucan particles as multimodal microplatform for *in vivo* cell tracking. Though most of his work dealt with MRI agents, focus has been recently moved to probes for a NIRF, US, PET, and photoacoustic imaging.

Five selected publications in the last 10 years (2008-2017)

- 1) Rizzitelli S., Giustetto P., Faletto D., Delli Castelli D., Aime S., Terreno E., The release of Doxorubicin from liposomes monitored by MRI and triggered by a combination of US stimuli led to a complete tumor regression in a breast cancer mouse model. *J Control. Rel.* **2016**, 230: 57-63.
- 2) Rizzitelli S., Giustetto P., Cutrin J.C., Delli Castelli D., Boffa C., Ruzza M., Menchise V., Molinari F., Aime S., Terreno E. Sonosensitive theranostic liposomes for preclinical in vivo MRI-guided visualization of doxorubicin release stimulated by pulsed low intensity non-focused ultrasound. *J Control. Rel.* **2015**, 202: 21-30
- 3) Filippi M., Patrucco D., Martinelli J., Botta M., Castro-Hartmann P., Tei L., Terreno E. Novel stable dendrimersome formulation for safe bioimaging applications. *Nanoscale* **2015**, 7:12943-12954.
- 4) Terreno E., Uggeri F., Aime S. Image guided therapy: The advent of theranostic agents. *J Control. Rel.* **2012**, 161:328-337.
- 5) Terreno E., Castelli D.D., Viale A., Aime S. Challenges for molecular magnetic resonance imaging. *Chem. Rev.* **2010**, 110:3019-3042.