

Curriculum vitae

Prof. Anna Barattucci

1993: Degree in Chemistry (Università di Messina, 110/110 cum laude);
1993: Qualification as a Chemist (Messina, 100/100);
1998: PhD in Chemical Sciences (Università di Messina);
1999: Post-doc (Università di Messina, biennial scholarship interrupted in June 2000);
2000: Researcher (CHIM/o6 Chimica Organica, Università di Messina);
2017: Achievement of National Scientific Qualification as Second Level Professor;
2018: Achievement of suitability as Second Level Professor for comparative evaluation announced by the University of Messina.
2018: Inclusion in the role of Associate Professor (CHIM/o6 Organic Chemistry, University of Messina).
2021: Achievement of National Scientific Qualification as Full Professor.

SCIENTIFIC ACTIVITY

The scientific production of Dr. Anna Barattucci is represented by 79 articles on international refereed journals, 1 patent, 2 book chapters and more than 50 communications at national and international conferences, 15 oral communications held in person (10 national and 5 international), and 10 conferences by invitation.

Prof. Barattucci's research was initially focused on the study of synthesis involving organosulfurated compounds; in particular 1) the study of the reactivity of transient sulfenic acids in the stereoselective synthesis of sulfoxides and non symmetrically substituted disulfides, also containing sugar and aminoacidic moieties and having potential biological activity, and 2) the generation and use of polysulfenic acids in the synthesis of polyfunctionalised sulfur compounds, e.g. cyclophanes and tripodal compounds.

In the recent years the previous line has been supplemented by the study of the synthesis of new biocompatible fluorescent probes as:

- Derivatives of glycosidic borondipyrromethenes (BoDiPy) with the nature of supramolecular antennas, biocompatible and therefore usable as dyes in the field of bioimaging;
- Non-saccharide BoDiPy, useful sensors of metals or proteins over-expressed by tumor cells;
- Oligophenyleneethynyls (OPEs) glycosides that have found application in bioimaging, surface photodynamic therapy and interaction with biopolymers.
- Curcumin derivatives with BoDiPy residues used as molecular antennas and bio-probes. The conjugation of curcumin derivatives with materials such as allosite has allowed their easy conveyance in biological fluids.

The sulfenic acid generation protocol has recently been applied to the synthesis of new amphiphilic systems and disulfides obtained from the reaction of a curcumin-sulfenic acid with cysteine or glutathione, with the aim of developing a luminescent probe prototype for the recognition of biothiols

During her research activity she undertook several scientific collaborations with Italian and foreign colleagues, including Prof. Patrick Rollin (Université d'Orléans, France), and Prof. M.C. Carreño and M. Ribagorda (Universidad Autónoma de Madrid, UAM, España). She

established a collaboration with the UAM group that still continues, started during her stay, as part of his PhD, in Madrid in 1996. Thanks to this consolidated collaboration, several joint publications have appeared in the literature. Furthermore, together with Prof. Carreño, she was the supervisor of a co-supervised doctoral thesis (XXVIII cycle, University of Messina). As part of joint research projects, she is a regular guest of the Departamento de Química Orgánica of the Universidad Autónoma of Madrid where she has carried out five research internships, lasting from one to six months (last stay in autumn 2017) and is teacher of the Master in Química Organica.

She's Topic Editor and co-guest Editor of three thematic issues for the journal 'Molecules'

- Synthesis of Photoactive Organic Molecules in the Biological Field
- Bio-conjugated Organic Chromophores for the Building-Up of Supramolecular Architectures and Sensors
- Synthesis and Applications of Fluorescent Probes

She's co-guest Editor of two thematic issues for 'International Journal of Molecular Science':

- Luminescent Dyes as Tools in Biomedicine
- Sulfur-Containing Compounds: Synthesis, Characterization and Antimicrobial or Anticancer Activity

She's Referee for several scientific journals, ISI and Scopus indexed.

She's member of the Board of the PhD in Chemical Sciences of the University of Messina and supervisor of three PhD theses.

RESEARCH PROJECTS PARTECIPATION:

- "Progetto Giovani Ricercatori 1999: Steroidi modificati quali molecole target da cicloaddotti Diels-Alder ottenuti con l'uso di alchilsolfindieni enantiopuri" (University of Messina, CONG99QW34, 03 Area, 12 months period). Principal Investigator
- "Programma di Ricerca PRA 2008-2009: Sintesi di Leganti Solforati Tripodali e Studi di Coordinazione di Centri Metallici" (University of Messina, ORME09CSHF, 03 Area, 24 months period). Principal Investigator.
- "PRIN 2005: 2005038048_004: Cicloaddizioni con Ridotto Impatto Ambientale per la Sintesi di Sostanze di Interesse Biologico"; Principal Investigator Prof. Francesco De Sarlo (University of Florence), Local Principal Investigator Prof. Maria Chiara Aversa (University of Messina). Participant.
- "PRIN 2008: 200859234J_001: Sintesi di Piccole Molecole che Incorporano Strutture Privilegiate"; Principal Investigator Prof. Maria Chiara Aversa (University of Messina), Local Principal Investigator Prof. Maria Chiara Aversa (University of Messina). Participant.
- "PRIN 2010-2011: 20109Z2XRJ_010: Progettazione e Sintesi Stereoselettiva di Composti Attivi verso Bersagli Proteici Coinvolti in Patologie Virali e Tumoriali"; Principal Investigator Prof. Alberto Brandi (University of Florence), Local Principal Investigator Prof. Franz H. Kohnke (University of Messina). Participant.
- "Research & Mobility 2016: R&M2016 Sciortino: "Signalosome Complex Activation by New Nanotherapeutic Agents in Viral and Cancer Treatment"; Principal Investigator Prof. M.T. Sciortino (University of Messina, , Area ERC LS7_3). Participant.

- POC (Proof of Concept): “Ingegnerizzazione e prototipazione di un dispositivo a rivelazione ottica per l'identificazione degli stati conformazionali delle proteine e loro quantificazione (ProMorphosTech)” (Prot. 0098049, 24/07/2023 University of Messina, Ministero dello Sviluppo Economico). Principal Investigator Prof. Davide Barreca (University of Messina). Participant.
- “PRIN 2022: Adaptive photochemistry” (Prot. 20225NSHZ5). Principal Investigator Prof. Sebastiano Campagna (University of Messina). Participant.

AWARDS

- June 2023: Senior C.I.R.P. Award from the Interuniversity Center on "Pericyclic reactions and synthesis of hetero- and carbocyclic systems", in the occasion of the “XIX Convegno Nazionale sulle Reazioni Pericicliche e Sintesi di Etero e Carbocicli”.

INVITED LECTURES, CONFERENCES AND LESSONS:

- July 2004: "Sulfenic Acids as Useful Tools in Stereoselective Syntheses", Institut de Chimie Organique et Analytique, Université d'Orléans, France. Conference
- June 2011: "Critical Surveys Covering Year 2010: Introduction and Transformation of Functional Groups", XXXVI A. Corbella Summer School "Seminars in Organic Synthesis", Gargnano (BS), Italy, Lesson
- December 2015: “Nuovi Dye Luminescenti Biocompatibili”, "Convegno Congiunto SCICASI", Catanzaro, Italy. Plenary Conference.
- June 2016: “Synthesis of Carbohydrate-Based Chromophores and Their Destiny in the Cellular Uptake” "Convegno - Scuola sulla Chimica dei Carboidrati", Certosa di Pontignano (SI), Italy. Plenary
- September 2016: “New Biocompatible Glyco-Opes: Synthesis, Luminescence and Biological Destiny” "XXXVII Convegno Nazionale della Divisione di Chimica Organica", Venezia, Italy. Keynote Lecture.
- July 2017: “The Glucose Contribution in the Cellular Imaging”, International Summer School on Natural Products (ISSNP), Napoli, Italy. Plenary Conference.
- November 2017: “When Dyes Meet Glucose”, Departamento de Química Orgánica, Universidad Autónoma de Madrid, Spain. Conference.
- July 2018: “An Overview on Carbohydrate-functionalized Amino OPE Probes”, Spanish-Italian Symposium on Organic Chemistry (SISOC-XII), Ferrara, Italy. Invited Lecture.
- June 2023: “Sulfoxides and Disulfides from Sulfenic Acids: Past, Present and Future”, "XIX Convegno Nazionale sulle Reazioni Pericicliche e Sintesi di Etero e Carbocicli", Reggio Calabria, Italy. Invited Lecture.
- May 2024: "Glycosyl OligoPhenyleneEthylenes: A TRIP THROUGH THEIR WIRES", 5th edition of the China-Italy Bilateral Symposium of Organic Chemistry (V-CISOC), Hangzhou, China, Invited Lecture.

ORAL COMMUNICATIONS AT INTERNATIONAL CONFERENCES (speaker):

- Aversa, M.C.; Barattucci, A.; Bonaccorsi, P.; Giannetto, P. “TMSI: a Reactant for Converting Vinyl Sulfoxides into Carbonyl Compounds” 20th International Symposium on the Organic Chemistry of Sulfur, Flagstaff, Arizona, USA, July 14-19 2002, OC4.

- Aversa, M.C.; Barattucci, A.; Bonaccorsi, P.; Giannetto, P. "Sulfenic Acids from L-cysteine Involved in the Synthesis of Alliin Analogues" 21st International Symposium on the Organic Chemistry of Sulfur, Madrid, Spain, July 4-9 2004, OA2.
- Aversa, M.C.; Barattucci, A.; Bonaccorsi, P.; Giannetto, P. "Disulfenic Acids in the Synthesis of Heterocyclophanes" The 10th RSC-SCI Joint Meeting on Heterocyclic Chemistry, Harrogate, UK, June 9-12 giugno, C1.
- Barattucci, A.; Bonaccorsi, P.; Aversa, M.C.; Papalia, T.; Giannetto, P. "Transient Polysulfenic Acids in Organic Synthesis" 22nd International Symposium on the Organic Chemistry of Sulfur, Saitama, Japan, August 20-25 2006, OA10.
- Aversa, M.C.; Barattucci, A.; Bonaccorsi, P.; Plutino, M.R. "New Tripodal Metal Ligands via Sulfenic Acid Intermediates" The 12th RSC-SCI Joint Meeting on Heterocyclic Chemistry, Brighton, UK, June 3-6 2010, OC3.

BOOK CHAPTERS:

- Aversa M.C., Barattucci A, Bonaccorsi P, Giannetto P. "Enantiopure Sulfinyl-1,3-dienes as Powerful Partners in Stereoselective Diels-Alder Cycloadditions" Recent Research Developments in Organic Chemistry 2002, 6, 87-101, TRIVANDRUM, S.G. Pandalai, ISBN: 9788178950419.
- Barattucci, A. "Critical Surveys Covering the Year 2010: Introduction and Transformation of Functional Groups" Seminars in Organic Synthesis, XXXIV "A. Corbella" Summer School 2011, 306- 328. CAMERINO, E. Marcantoni, G. Renzi ISBN: 9788886208680.

PATENTS

- "Method for the identification of conformational states of proteins using UV-visible spectroscopy and fluorescence microscopy" Grant number 102020000009232; grant date 06/13/2022 - publication date 07/28/2020.

MEMBER IN COMMISSIONS

- July 2007: Member of the judging commission for a Comparative Evaluation Procedure to fill 1 Researcher position, SSD Chim/06, at the Faculty of Medicine and Surgery of the Magna Graecia University of Catanzaro.
- October 2008, July 2011, December 2012, May and December 2014, June 2015: Member of six final evaluation commissions for the awarding of the title of "Doctor en Ciencias Químicas" (PhD in Chemical Sciences) at the Universidad Autonomy of Madrid, Spain.
- March 2016: Member of the final evaluation commission of the PhD in Chemical Sciences of the University of Messina (XXVIII cycle).
- February 2018: Member of the final evaluation commission of the PhD in Molecular and Biomolecular Sciences of the University of Palermo (XXX cycle).
- November 2019: Member of the Commission for the selective comparative evaluation procedure through qualifications and exams for the award of n. 1 Type A Research Grants (Chem/06 sector).
- March 2022: Member of the final evaluation commission of the PhD in Chemical Sciences of the University of Messina (XXXIV cycle).

- November 2022: Member of the Commission for the selective comparative evaluation procedure through qualifications and exams for the award of n. 1 type B Research Grants (Chem/o6 sector).
- April 2023: Member of the judging commission for the final exam of the PhD course in Chemistry, University of Milan.
- September 2023: Member of the Selection Committee for the selection of the PhD in Molecular and Biomolecular Sciences of the University of Palermo (XXXIX cycle).
- October 2023: Member of the Commission for the selective comparative evaluation procedure for qualifications and exams for the award of n. 1 type B Research Grants (Chem/o6 sector).
- External referee for Italian and foreign doctoral theses.

AFFILIATIONS AND POSITIONS

- Member of SCI (Italian Chemical Society, Division of Organic Chemistry).
- Secretary-Treasurer of the Sicilian Section of SCI from december 2015 until december 2018.
- Vice-president of the Sicilian Section of SCI from january 2019 to december 202 .
- Pertainance to the Interuniversity Research Center on Pericyclic Reactions and Synthesis of Hetero- and Carbocyclic Systems (CIRP).
- Representative for Messina University in CIRP in the three-year period 2018-2021.
- Pertainance to the National Interuniversity Consortium for Research in Innovative Synthesis Methodologies and Processes (CINMPIS).

CONFERENCES SCIENTIFIC AND ORGANIZING COMMITTEES

- Messina, september 8-9 2005: "XII Convegno sulle Reazioni Pericicliche e Sintesi di Etero e Carbocicli" Member of the organizing Committee.
- Milano, June 28- 30 2017: "4th International Workshop on pericyclic reactions and synthesis of hetero-/carbocyclic systems" Member of the Scientific Committee.
- Messina, february 9-10 2017: "Workshop Congiunto delle Sezioni Sicilia e Calabria della SCI 2016-2017", Member of the Scientific and Organizing Committees.
- Catania, february 9-10 2018: "Congresso Congiunto delle Sezioni Sicilia e Calabria SCI 2018" Member of the Scientific Committee.
- Palermo, march 1-2 2019: "Congresso Congiunto delle Sezioni Sicilia e Calabria SCI 2019" Member of the Scientific Committee.
- December 3 2020 (Microsoft teams) "Workshop della Sezione Sicilia-SCI 2020" (Microsoft teams), Member of the Scientific and Organizing Committees.
- December 2 2021 (Microsoft teams) "Congresso della Sezione Sicilia SCI 2021" Member of the Scientific Committee.
- Reggio Calabria, june 29-30 2023 "XIX Convegno sulle Reazioni Pericicliche e Sintesi di Etero e Carbocicli". Member of the Organizing Committee.

TEACHING AND INSTITUTIONAL ACTIVITY

- A.A: 2001-2002 - 2002-2003 Organic Chemistry Module of the course "Chimica generale, inorganica e organica", degree in "Gestione Tecnica e Amministrativa in

Agricoltura, Produzione Animale e Produzione Vegetale", Faculty of Agriculture, Reggio Calabria University.

- A.A.2003-2004 - A.A.2008-2009 "Laboratorio di Chimica Organica" degree in "Scienze Naturali", Faculty of Mathematical, Physical and Natural Sciences, Messina University.
 - A.A.2005-2006 - A.A.2008-2009 "Chimica Organica (L-Z)", degree in Biological Sciences, Faculty of Mathematical, Physical and Natural Sciences, Messina University.
 - A.A.2004-2005 - A.A.2009-2010, A.A.2011-2012 - A.A.2014-2015 "Laboratorio di Chimica Organica II" degree in Chemistry, Faculty of Mathematical, Physical and Natural Sciences, Messina University.
 - A.A. 2015-2016 - A.A. 2020-2021 "Chimica degli Eterocicli", degree in Chemistry, ChiBioFarAm Department, Messina University.
 - A.A. 2018-2019 "Chimica Organica Superiore" (4CFU), and from A.A. 2020-2021 - 2022-2023 "Chimica Organica Superiore" (6CFU) degree in Chemistry and Pharmaceutical technology, ChiBioFarAm Department, Messina University.
 - A.A.2020-2021 to date "Strategie Sintetiche in Chimica Organica", degree in Chemistry, ChiBioFarAm Department, Messina University.
 - A.A. 2023-2024 to date "Chimica Organica II", degree in Chemistry and Pharmaceutical technology, ChiBioFarAm Department, Messina University.
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- Erasmus contact person for the CL3 in Chemistry (2018 to date) and the CLM in Chemistry (2018-2022).
 - Member of the Chemistry CL3 Teaching Commission from 2010 to 2013.
 - Member of the Chemistry CL3 Joint Commission from 2013 to 2015.
 - Member of the 'Quality Assurance' group of CL3 and CLM in Chemistry from 2017 to 2020.
 - Member of the ChiBioFarAm Department Joint Commission, Messina University from september 2023 to date.
 - Supervisor of 22 three-year thesis in Chemistry and 15 Magisterial thesis in Chemistry and Pharmaceutical technology.
 - Supervisor of three PhD thesis (XXIX, XXXII, XXVII ciclo) one of which in co-tutelle with the Universidad Autónoma de Madrid.
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- Teacher within the course 'Sintesis organica Avanzada', in the 'Master en quimica organica', Universidad Autonoma de Madrid, Spain, A.A. 2019-2020 -2021-2022-2023-2024.

MISCELLANEOUS

- Winner of four Mobility tenders "Erasmus+ KA103 - Staff Mobility for Teaching and Training", for teaching and training at the Universidad Autónoma de Madrid.
- English at an upper intermediate level, both written and spoken.
- Spanish at an upper intermediate level, both written and spoken.