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Decreto Rettore Università di Roma "La Sapienza" n. 2267/2021 del 09.08.2021

FRANCESCA GHIRGA
Curriculum Vitae

Place Rome

Date 20/09/2021

Part I – General Information

Full Name	FRANCESCA GHIRGA
Citizenship	ITALIAN
Spoken Languages	ITALIAN, ENGLISH

Part II – Education

IIA – Academic Education

Type	Year	Institution	Notes (Degree, Experience,...)
PhD	2014	Sapienza - University of Rome	Pharmaceutical Sciences (XXVI cycle)
University graduation	2010	Sapienza - University of Rome	Medicinal Chemistry (Laurea Specialistica a ciclo unico – classe 14S in Chimica e Tecnologia Farmaceutiche (CTF))

IIB – Other training course

10-12/05/2021	University of Milan	4rd Edition of the "International School of Process Chemistry – ISPROCHEM 2021". virtual
23-25/11/2015	Cost Action CM1106_Faculty of Pharmacy, Universidade de Lisboa, Lisbon (Portugal)	Chemical Approaches to Targeting Drug Resistance in Cancer Stem Cells - Training School of Cost Action CM1106.
15-19/06/2014	University of Milan, Gargnano (BS), Italy.	XXXIX International Summer School on Organic Synthesis. A. Corbella.
21-24/05/2013	Sapienza - University of Rome, Rome, Italy.	Epigenetic Rome Training School.
04/04-13/06/2013	Sapienza - University of Rome, Rome, Italy.	CORSOSSAS-Gestione, valorizzazione e trasferimento dei risultati della ricerca
03/2012-10/2012	Sapienza - University of Rome, Rome, Italy.	"Research Enhancement and Development" (RED course)
4-17/07/2010	University of Crete, Heraklion, Greece	Summer school SYNAPS, Synthesis and retrosynthesis in the Chemistry of Natural Products

Part III – Appointments

IIIA – Academic Appointments

Start	End	Institution	Position
01/03/2021	28/02/2022	Department of Chemistry and	Research Fellow_BE-FOR-ERC,

		Technology of Drugs, Sapienza - University of Rome	“Natural product chemistry as a useful tool to develop new drugs for the treatment of Hedgehog-dependent tumors”, SSD CHIM/06
01/01/2014	30/09/2014	Department of Chemistry and Technology of Drugs, Sapienza - University of Rome	Research Fellow, “Isolation, structure elucidation and synthesis of biologically active compounds from medicinal plants as candidate therapeutics against cancers”, SSD CHIM/06

IIIB – Other Appointments

Start	End	Institution	Position
01-10-2020	28-02-2021	LA FONDAZIONE ISTITUTO ITALIANO DI TECNOLOGIA, Center for Nanotechnologies for Neurosciences, Rome.	Postdoc_CONTRATTO DI COLLABORAZIONE. Main Topic: Ricerca e sperimentazione relativa a nuove sonde fluorescenti che presentano un’elevata selettività nell’identificazione dei grovigli neurofibrillari (NFTs) della proteina Tau, biomarker del Morbo di Alzheimer.
01-10-2019	30-09-2020	LA FONDAZIONE ISTITUTO ITALIANO DI TECNOLOGIA, Center for Nanotechnologies for Neurosciences, Rome.	Postdoc_CONTRATTO DI COLLABORAZIONE. Main Topic: Sviluppo di linker poliamminici che presentano una elevata potenzialità nella progettazione di bioconiugati come sistemi di drug delivery.
01-10-2017	30-09-2019	LA FONDAZIONE ISTITUTO ITALIANO DI TECNOLOGIA, Center for Life Nano Science, Rome.	Postdoc_CONTRATTO DI COLLABORAZIONE. Main Topic: Ricerca e sperimentazione relativa allo sviluppo di recettori artificiali.
01-10-2014	30-09-2017	LA FONDAZIONE ISTITUTO ITALIANO DI TECNOLOGIA, Center for Life Nano Science, Rome.	Postdoc_CONTRATTO DI COLLABORAZIONE A PROGETTO. Title: Synthesis of resorcurene macrocycles endowed with suitable chemical and physical properties which make them applicable in molecular recognition as artificial receptors.

Part IV – Teaching experience

Year	Institution	Lecture/Course
(30/06-02/07) 2021	Department of Chemistry and Technology of Drugs, Sapienza - University of Rome	<i>Trainer</i> at the Training School of the CM1407 COST Action STRATAGEM (1 hour).

A.A. 2020/2021	Faculty of Medicine and Surgery, Università Cattolica del Sacro Cuore, Rome	<i>Contract professor</i> of Organic Chemistry course (80 hours, 10 CFU, SSD CHIM06), degree course in Pharmacy.
A.A. 2019/2020	Faculty of Medicine and Surgery, Università Cattolica del Sacro Cuore, Rome	<i>Contract professor</i> of Organic Chemistry course (80 hours, 10 CFU, SSD CHIM06), degree course in Pharmacy.
A.A. 2012/2013- 2018/2019	Department of Chemistry and Technology of Drugs, Sapienza - University of Rome	<i>Trainer</i> of “ <i>Chimica Organica</i> ”, in the course of Organic Chemistry, degree course in Pharmacy, Sapienza University of Rome (SSD CHIM06).
(7-8/02) 2019	Department of Chemistry and Technology of Drugs, Sapienza - University of Rome	<i>Tutoring activity</i> in Work-linked training of high school students (8 hours) – Project P0134– “Tecniche analitiche di riconoscimento e dosaggio di farmaci”.
(6-7,13/02) 2018	Department of Chemistry and Technology of Drugs, Sapienza - University of Rome	<i>Tutoring activity</i> in Work-linked training of high school students (12 hours) – Project P0134– “Tecniche analitiche di riconoscimento e dosaggio di farmaci”.
(3-10/04) (2-8/05) 2017	Department of Chemistry and Technology of Drugs, Sapienza - University of Rome	<i>Tutoring activity</i> in Work-linked training of high school students (40 hours) – Project P0045 – “Scrivere un lavoro scientifico: dalla ricerca bibliografica alla stesura finale dell’articolo”.
A.A. 2013/2014	Department of Chemistry and Technology of Drugs, Sapienza - University of Rome	<i>Lecture intitled</i> “ <i>La reazione di metatesi nella sintesi di prodotti naturali</i> ” (1h), Master course in “Sostanze Organiche Naturali”
A.A. 2011/2012	Department of Chemistry and Technology of Drugs, Sapienza - University of Rome	<i>Lecture intitled</i> “ <i>Applicazione della reazione di metatesi olefinica nella sintesi di macrociclici con scheletro resorc[4]arenico, studi di autoassociazione e studi di complessazione</i> ” (2h), Master course in “Sostanze Organiche Naturali”

Part V - Society memberships, Awards and Honors

Year	Title
2017-2021	Member of Società Chimica Italiana (SCI), division of organic chemistry
2016	Member of Gruppo Italiano Discussione Risonanze Magnetiche (GIDRM)

Part VI - Funding Information [grants as PI-principal investigator or I-investigator]

VIA – Funding Information [grants as PI-principal investigator]

Year	Title	Program	Grant value
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03/2021-02/2022	Natural product chemistry as a useful tool to develop new drugs for the treatment of Hedgehog-dependent tumours	BE-FOR-ERC_SAPIExcellence Sapienza University of Rome	50.000,00€
2018-2021	Rational Design of Tau Tangle-Selective Near-Infrared Fluorescent probes	Joint Lab CLNS (IIT)-CrestOptics Project 2b 2018 – 2021	150.000,00€
2012	Prodotti naturali come inibitori nella via di trasduzione del segnale Hedgehog	Sapienza - University Research Project 2012	2.000,00€

VIB – Funding Information [grants as I- investigator, participant]

Year	Title	Program	Grant value
09/2021-08/2023	Pharmacological inhibition of colistin resistance in gram-negative cystic fibrosis pathogens.	FFC Project (FFC#12/2021). Extension of previous FFC project (FFC#15/2019). Internal Collaborator of Partner 1	84.040,00€
2021-2023	LOCALSCENT_Localizzazione assistita dallo scattering degli aggregati fluorescenti dell' alzheimer. Numero A0375-2020-36549	POR FESR LAZIO 2014-2020 group component	150.000,00€
09/2019-08/2021	Pharmacological inhibition of colistin resistance in gram-negative cystic fibrosis pathogens.	FFC Project (FFC#15/2019). External Collaborator of Partner 2	65.000,00€
01/2018-12/2019	Functional characterization and pharmacological inhibition of colistin resistance in Pseudomonas aeruginosa	Call 2018 – Under 45_Pasteur Institute - Cenci Bolognetti Foundation group component	50.000,00€
2017	Studio multi-metodologico dei prodotti della filiera agroalimentare della canapa industrial. N. PROT. RM11715C77E550EB	Sapienza - University Research Project 2017	34.750,00€

Part VII – Research Activities

Keywords	Brief Description
Natural products	In the field of natural products chemistry, Dr. Ghirga research interest aims at developing chemical libraries of novel natural products, mostly identified from extracts of medicinal plants, and at designing and synthesizing small bioactive molecules and their derivatives. In this regard, the international network launched by COST Action CM1407 (Challenging Organic Syntheses Inspired by Nature: from Natural Products Chemistry to Drug Discovery) represented an important and useful experience. The applicant expertise consists in developing chemical libraries of novel bioactive compounds, many identified from natural extracts obtained from medicinal plants. She collaborated in the construction and optimization of a unique in-house library of about one thousand of bioactive natural compounds. In particular, she isolated and elucidated the structure of several natural products by NMR and High-Resolution Mass Spectrometry (HRMS) and provided the incorporation of all components of the library into a virtual library. Their chemical and

physicochemical features were analyzed by means of cheminformatics tools, showing a satisfactory chemical diversity. This *in-house* library offers a unique chance to identify unexpected new scaffolds for the development of therapeutically-relevant molecules. Furthermore, it was successfully screened *in silico* and *in vitro* for the identification of hit and lead compounds in previous early-stage drug discovery projects in which she was involved. In addition, her expertise in organic synthesis allowed the optimization of active Hits up to Lead compounds or, at least, Lead candidates by improving potency, stability, physicochemical features, chemical properties, and metabolic/pharmacokinetics parameters. Among the challenging projects on the identification of bioactive natural products, she was involved in the field of target therapy against cancer and antibiotic resistance and most of the discovered compounds are currently patent protected. In particular, Dr. Ghirga contributed, as inventor, to the discovery of a natural compound (Glabrescione B) as inhibitor of the Hedgehog (HH) pathway which has been patented and successfully completed the preclinical phase for the treatment of specific types of brain, pancreatic and skin cancers. In addition, Dr. Ghirga was involved in Sapienza - University Research Project 2017 on the characterization of the industrial hemp production chain products, including both raw materials (inflorescences, seeds) and transformation products (hemp seed oil, flour and essential oils), through the application of a multidisciplinary analytical protocol, involving targeted and untargeted techniques, in order to assess the quality and to define both cultivars and cultivation conditions more suitable for Lazio region. **Main skills: Design, synthesis, isolation, purification and structural elucidation of natural products by HPLC-UV, LC-MS, NMR.**

Macrocycles

In the field of supramolecular chemistry, Dr. Ghirga research interest aims at developing resorcarene systems endowed with suitable chemical and physical properties which make them applicable in supramolecular recognition and drug delivery. Resorc[4]arenes are cyclic tetramers and, among the organic host molecules in supramolecular chemistry, they are the most ubiquitous, being defined as the chemistry “beyond the molecule”. The reason of such definition is that it aims at developing highly complex chemical systems from simple components interacting by non-covalent intermolecular forces. Dr. Ghirga expertise consists in the design and synthesis of resorc[4]arenes variously substituted that are able to form a complex with cations, to recognize chiral amino acids, to entrap nitrosonium (NO⁺) cations, and to interact with protein surfaces. As an extension of the complexation studies, the design of resorc[4]arene derivatives have been proposed as an alternative tool to immobilize proteins as biological component of ligand-based biosensor. Accordingly, she designed, synthesized and characterized new resorc[4]arene-based systems as artificial linkers for enzymes and antibodies immobilization. **Main skills: Design, synthesis, purification and structural elucidation of macrocyclic compounds by HPLC-UV, LC-MS, NMR, for different applications.**

Bioconjugates and probes

In the nanomedicine and diagnostic field, Dr. Ghirga was involved in the design and synthesis of positively charged linkers for bioconjugate-drug development. Since 2018, she was the task leader of the Joint Lab CLNS (IIT)-CrestOptics Project 2b 2018 – 2021 for the Rational Design of Tau Tangle-Selective Near-Infrared Fluorescent probes. In this regard, although several fluorescent probes for the identification of Alzheimer's disease (AD) biomarkers have been described in the literature and / or have been patented, only a limited number of them are highly selective *in vivo* to target aggregates of the Tau protein and to date, Tau-specific fluorophores are not commercially available. A novel near-infrared BODIPY- based probe for selective imaging of Tau Tangle in human iPSCs derived cortical neurons has been developed and, recently, patent protected. **Main skills: Design, synthesis and structural**

elucidation of linkers for bioconjugate-drug development and fluorescent probes by HPLC-UV, LC-MS, NMR, with potential application in nanomedicine and diagnostic field.

Organometallic reaction

In the field of organometallic reaction, the applicant focused her research activities on the development of new synthetic methods for the construction of polyfunctionalized molecules of biological interest taking advantage of palladium, gold and ruthenium catalysis. During the Phd thesis she was involved in the synthesis of resorc[4]arenes featuring eleven carbon side chains ending with a vinylidene group and, looking at the terminal double bonds of the four alkyl chains, the above-mentioned resorc[4]arenes were submitted to a metathesis reaction, in order to incorporate the macrocycles into polymeric architectures with intriguing mechanical properties. A thoroughly investigation of the resorc[4]arene oligomers formation via methathesis reaction by Nuclear Magnetic Resonance (NMR) technique was further performed. The detection of a ruthenium-carbene-resorc[4]arene complex, produced during a metathesis reaction of a resorc[4]arene bicyclic olefin, previously synthesized, with the Grubbs first-generation (G1ST) catalyst, was reported for the first time. Interestingly, this study demonstrated that macrocycles themselves could be appropriate substrates for “macrocyclization” reactions, according to a Ring Opening Methathesis-Cross Methathesis (ROM-CM) mechanism, and the size of the macrocycles can be modulated by using appropriate substrate/catalyst ratios. Such structures would have the advantage of sharing supramolecular properties (e.g., molecular recognition of appropriate guests, propensity to self-assembly) with the intrinsic ability to yield suitable materials for biomedical applications (namely drug delivery, tissue engineering and regenerative medicine). **Main skills: Methodological investigation of organometallic reaction mechanism by HPLC-UV, LC-MS, NMR.**

Part VIII – Organization of conferences, workshops and scientific meetings

Dates	Institution/place	Description
30/06-02/07/2021	COST, Rome, Italy	STRATAGEM Training School of the COST Action CM1407 - Targeting MDR Tumours: from natural product chemistry to nanocarrier-based formulation
18–19/02/2019	COST, Brussels, Belgium	Meeting dedicated to Early Career Investigators of the CM1407 COST Action “Challenging organic syntheses inspired by nature - from natural products chemistry to drug discovery”
13–14/12/2018	COST, Tenerife, Spain	Final Meeting of the COST Action CM1407 “Challenging organic syntheses inspired by nature - from natural products chemistry to drug discovery”
08/06/2018	Società Chimica Italiana (SCI), Rome, Italy	CHIMICAPISCE. Workshop di presentazione del Gruppo Interdivisionale di Diffusione della Cultura Chimica.
07/06/2018	Società Chimica Italiana (SCI), Rome, Italy	Y-RICH 2018 (Young Research Ideas in Chemistry) workshop focalizzato sui progetti europei individuali per giovani ricercatori nel campo delle Scienze Chimiche.

17/03/2017	Department of Chemistry and Technology of Drugs, Sapienza - University of Rome, Rome, Italy	La canapa Industriale
18-19/05/2014	Department of Chemistry and Technology of Drugs, Sapienza - University of Rome, Rome, Italy	Quo Vadis Synthesis? Can the chemistry replace mother Nature in the creation of molecules life?

Part IX – Participation to conferences, workshops and scientific meetings

Dates	Institution/place	Description
14-23/09/2021	Congresso Nazionale della Società Chimica Italiana (SCI), Virtual	XXVII CONGRESSO NAZIONALE SCI
05-06/07/2021	International Virtual Mini Symposium	ESOC 2021 - European Symposium on Organic Chemistry
14-15/06/2021	International Virtual Congress	ADVANCED CHEMISTRY 2021_2nd Advanced Chemistry World Congress
23/04/2021	Virtual Conference	BIOHYDROGELS 2021_Virtual Conference from basic science to applications of hydrogels in drug delivery and regenerative medicine.
22-24/02/2021	International Virtual Conference	PHARMA R&D-2021 - 3rd International Conference on PharmScience Research & Development
14-20/10/2020	International Virtual Conference	NANOMACH - International Conference on Nanomaterials, Nanofabrication and Nanocharacterization
02-06/06/2019	Lecce, Italy	The 14th International Symposium On Macrocyclic And Supramolecular Chemistry (ISMSC2019)
13-14/12/2018	La Laguna Tenerife, Spain	COST ACTION CM1407 - Challenging organic syntheses inspired by nature from natural products chemistry to drug discovery Final Meeting
11-13/06/2018	University Campus Bio-Medico, Rome, Italy	EURO CHEMISTRY CONFERENCE
01-02/03/2018	COST, Malta.	COST ACTION CM1407 - Challenging organic syntheses inspired by nature from natural products chemistry to drug discovery Fifth Meeting.
10-14/09/2017	Società Chimica Italiana (SCI), Paestum (SA), Italy	XXVI Congresso Nazionale della Società Chimica Italiana
18-21/06/2017	Società Chimica Italiana (SCI), Santa Margherita di Pula (CA), Italy	XIII Congresso Nazionale di Chimica Supramolecolare
02-03/03/2017	COST, Krakow, Poland	COST Action CM1407 3rd Meeting- Challenging organic syntheses inspired by nature: from natural products chemistry to drug discovery
02/12/2016	Sapienza - University of Rome, Rome, Italy	Workshop: “A light touch on biomedical applications of nanomedicines”
26-29/09/2016	National Institute of Nuclear Physics (INFN), Frascati, Italy	International Conference: NANOSCIENCE & NANOTECHNOLOGY

16/09/2016	Sapienza - University of Rome, Tolfa (Rome), Italy	Workshop: La canapa industriale: stato attuale e prospettive
15/06/2016	Gruppo Italiano Discussioni Risonanze Magnetiche (GIDRM), University of Florence, Florence, Italy	Workshop: Industrial Applications of Proteins: What Role for NMR?
26-27/05/2016	Gruppo Italiano Discussioni Risonanze Magnetiche (GIDRM), Rome, Italy	V Workshop Applicazioni della Risonanza Magnetica nella Scienza degli Alimenti
05-06/10/2015	COST, Sapienza - University of Rome, Rome, Italy	COST Action CM1407 1 st meeting – Challenging Organic Syntheses Inspired by Nature: From Natural Products Chemistry to Drug Discovery.
08-10/09/2015	Società Chimica Italiana (SCI), Sapienza - University of Rome, Rome, Italy	ChirItaly Conference
12-16/07/2015	ISOM, Graz, Austria	ISOM XXI, International Symposium on Olefin Metathesis and Related Chemistry
23/01/2015	Sapienza - University of Rome, Rome, Italy	BeMM (Biology and Molecular Medicine) PhD Symposium 2015
19-20/01/2015	COST, Barcellona, Spain	Focused Joint-meeting for Early Stage Researchers “Targeting Hedgehog Signaling in Cancer Stem Cells”. COST Action CM1106 - Chemical Approaches to Targeting Drug Resistance in Cancer Stem Cells
14-15/10/2014	COST, Puerto de la Cruz, Tenerife, Spain	COST Action CM1106 2nd Workshop - Chemical Approaches to Targeting Drug Resistance in Cancer Stem Cells
19-20/05/2014	Sapienza - University of Rome, Rome, Italy	Conference: Quo Vadis Synthesis? Can the Chemist Replace Mother Nature in the Creation of Molecules of Life?™
05/03/2014	ALFATEST, University of Tor Vergata, Rome, Italy	Workshop: Immagini ad alta risoluzione e microanalisi con SEM da BANCO "all-in-one": accuratezza, semplicità, velocità
20/09/2013	ITER, Sapienza - University of Rome, Roma	Workshop: Nanoforum
10-13/09/2013	Sapienza - University of Rome, Rome, Italy	XXII National Meeting on Medicinal Chemistry
14-17/07/2013	Memorial University, St. John's, Newfoundland and Labrador (Canada)	12th International Conference on Calixarenes (Calix 2013)
19/02/2013	ALFATEST, Sapienza - University of Rome, Rome, Italy	Workshop: ROADSHOW Particle Characterization
23-27/05/2010	University of Siena, Siena, Italy.	III European Workshop in Drug Synthesis

Part X – Oral communications

14-23/09/2021	XXVII CONGRESSO NAZIONALE SCI. Congresso Nazionale della Società Chimica Italiana (SCI), Virtual	Title: Development of ArnT-mediated colistin resistance diterpene-based inhibitors.
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05-06/07/2021	ESOC 2021 - European Symposium on Organic Chemistry. International Virtual Mini Symposium	Title: Natural Products as A Unique Source to Develop New Drugs for the Treatment of Hedgehog-Dependent Tumors.
14-15/06/2021	ADVANCED CHEMISTRY 2021_2nd Advanced Chemistry World Congress. International Virtual Conference	Title: Resorc[4]arene-based site directed immobilization of antibodies for immunosensors development. Invited speaker
22-24/02/2021	PHARMA R&D-2021 - 3rd International Conference on PharmScience Research & Development. International Virtual Conference	Title: Development of ArnT-Mediated Colistin Resistance Diterpene-Based Inhibitors
14-20/10/2020	NANOMACH - International Conference on Nanomaterials, Nanofabrication and Nanocharacterization. International Virtual Conference	Title: Resorc[4]arene-based site directed immobilization of antibodies for immunosensors development.
13-14/12/2018	COST ACTION CM1407 - Challenging organic syntheses inspired by nature from natural products chemistry to drug discovery Final Meeting. La Laguna Tenerife, Spain	Title: Synergistic inhibition of the Hedgehog pathway by newly designed Smo and Gli antagonists bearing the isoflavone scaffold
10-14/09/2017	XXVI Congresso Nazionale della Società Chimica Italiana. SCI, Paestum (SA), Italy	Title: Snapshot of Ruthenium–Carbene–Resorc[4]arene Complex in an Olefin Metathesis Reaction.
26-29/09/2016	International Conference: NANOSCIENCE & NANOTECHNOLOGY. National Institute of Nuclear Physics (INFN), Frascati, Italy	Title: A new anticancer agent for Hedgehog - dependent tumors: from drug discovery to drug delivery. Invited speaker
19-20/01/2015	Focused Joint-meeting for Early Stage Researchers “Targeting Hedgehog Signaling in Cancer Stem Cells”. COST Action CM1106 - Chemical Approaches to Targeting Drug Resistance in Cancer Stem Cells. Barcellona, Spain	Title: Resorc[4]arene Macrocycles as Preorganized Synthons for Drug Delivery. Invited speaker
15-19/06/2014	XXXIX International Summer School on Organic Synthesis. A. Corbella. University of Milan, Gargnano (BS), Italy.	Title: The olefin metathesis reaction in the synthesis of resorc[4]arenes with intriguing architectures
14-17/07/2013	12th International Conference on Calixarenes (Calix 2013). Memorial University, St. John’s, Newfoundland and Labrador (Canada)	Title: Synthesis of a basket-resorc[4]arene via metathesis reaction and encapsulation studies of fullerenes C60 and C70.

Part XI – Poster Presentation

02-06/06/2019	The 14th International Symposium On Macrocyclic And Supramolecular Chemistry (ISMSC2019). Lecce, Italy	Title: Resorc[4]arene-based site directed immobilization of antibodies for immunosensors development.
11-13/06/2018	EURO CHEMISTRY CONFERENCE. University Campus Bio-Medico, Rome, Italy	Title: Synthesis of a new artificial linker resorc[4]arene-based system for protein immobilization.
18-21/06/2017	XIII Congresso Nazionale di Chimica Supramolecolare. Società Chimica Italiana (SCI), Santa Margherita di Pula (CA), Italy	Title: Synthesis of a new artificial linker resorc[4]arene-based system for protein immobilization.
02-03/03/2017	COST Action CM1407 3rd Meeting- Challenging organic syntheses inspired by nature: from natural products chemistry to drug discovery. Krakow, Poland	Title: Inhibition of Hedgehog-dependent tumors and cancer stem cells by a newly identified naturally occurring chemotype.
14-15/10/2014	COST Action CM1106 2nd Workshop - Chemical Approaches to Targeting Drug Resistance in Cancer Stem Cells. Puerto de la Cruz, Tenerife, Spagna.	Title: Natural Polyphenols and Derivatives as Inhibitors of the Hedgehog Signalling Pathway.
15-19/06/2014	XXXIX International Summer School on Organic Synthesis. A. Corbella. University of Milan, Gargnano (BS), Italy.	Title: The olefin metathesis reaction in the synthesis of resorc[4]arenes with intriguing architectures.

Part XII – Scientific Qualification

Date	Brief Description
From 01/06/2021 to 01/06/2030	National Qualification (Abilitazione Scientifica Nazionale) 2021 as associate professor in Organic Chemistry, sector 03/C1 (CHIMICA ORGANICA)
11/2011	Qualified Pharmacist at Sapienza - University of Rome
11/2010	Qualified Chemist at Sapienza - University of Rome

Part XIII – Patents

Issue Date	Description
Priorities: ITRM20130366A · 2013-06-25; EP2014063449W · 2014-06-25.	Co-author of the family patent: B. Botta, A. Gulino, M. Botta, M. Mori, L. Di Marcotullio, P. Infante, F. Ghirga, S. Toscano, C. Ingallina, R. Alfonsi. Multitarget hedgehog pathway inhibitors and uses thereof. Published as: ITRM20130366A1·2014-12-26 (Patent granted 30-09-2015); WO2014207069A1·2014- 12-31; CA2914794A1· 2014-12-31; EP3013331A1 · 2016-05-04; US2016368886A1·2016-12-22; US10093642B2· 09-10-2018 (Patent granted)
Priorities: IT201600132360A · 2016-12-29; IB2017058204W·2017- 12-20	Co-author of the family patent: B. Botta, I. Screpanti, L. Tottone, N. Zhadanoskaya, C. Ingallina, F. Giulimondi, D. Quaglio, R. Palermo, M. Mori, F. Ghirga. NOTCH inhibitors for use in the treatment of T- cell acute lymphoblastic leukemia. Published as: IT201600132360A1 ·2018-06-29 (Patent granted 23-05-2019); WO2018122689A1·2018- 07-05;

Priorities: IT201800002402A 2018-02-05.	EP3562803A1·2019-11-06; US2019337916A1·2019-11-07; US11104657B2·18-08-2021 (Patent granted)
Priorities: IT102019000012888 2019-09-25.	Co-author of the family patent: C. Limatola, G. D'Alessandro, L. Di Marcotullio, P. Infante, B. Botta, M. Mori, F. Ghirga, C. Ingallina e S. Berardozzi. Compounds for use in the treatment of brain diseases. Published as: IT201800002402A1·2019-08-05; WO2019149962A1·2019-08-08; CN112004534A·2020-11-27; EP3749300A1·2020-12-16; US2021030714A1·2021-02-04
Priorities: IT102021000010382 2021-04-23	Co-author of the patent: A. Boffi, F. Ghirga, A. Soloperto, S. Di Angelanonio. Nuovi marcatori fluorescenti per grovigli neurofibrillari e loro usi.

Part XIV – Summary of Scientific Achievements

Product type	Number	Data Base	Start	End
Papers [international]	53	SCOPUS	2011	2021
Papers [national]				
Books [scientific]	6	SCOPUS	2012	2021
Books [teaching]				
Editorial	1	SCOPUS	2021	2021
Posters	6		2014	2021
Conference oral communications	10		2013	2021

Total Impact factor	234.468
Total Citations	627
Average Citations per Product	10.45
Hirsch (H) index	15
Normalized H index*	1.36

*H index divided by the academic seniority.

Part XV– Selected Publications

List of the 15 publications selected for the evaluation (2011-2021).

For each publication, authors, title, reference data, journal IF (InCites JCR) and number of citations (Scopus) are reported. IF is relative to the year of publication or, if not available, to the year closest to the year of publication. The role of the candidate as corresponding author is highlighted by reporting the symbol * after the name. The role of the candidate as first or co-first author is highlighted by reporting the symbol † after the name.

(†) First name: n. 4 papers

(*) Corresponding author: n. 5 paper
Last name: 2 papers

1	2021	<p>Articolo in rivista Pediconi, Natalia, Ghirga[†], Francesca, Del Plato, Cristina, Peruzzi, Giovanna, Athanassopoulos, Constantinos M., Mori, Mattia, Crestoni, Maria Elisa, Corinti, Davide, Ugozzoli, Franco, Massera, Chiara, Arcovito, Alessandro, Botta, Bruno, Boffi, Alberto, Quaglio, Deborah, Baiocco, Paola. Design and Synthesis of Piperazine-Based Compounds Conjugated to Humanized Ferritin as Delivery System of siRNA in Cancer Cells. BIOCONJUGATE CHEMISTRY, 32, 1105–1116. ISSN: 1043-1802, doi:10.1021/acs.bioconjchem.1c00137 IF (2021)=4.774 Q1 Organic Chemistry; Citation (Scopus): 1 Filename (pdf): Pediconi et al., Bioconjugate Chemistry_2021</p>
2	2021	<p>Spano, Mattia, Di Matteo, Giacomo, Ingallina, Cinzia, Botta, Bruno, Quaglio, Deborah, Ghirga, Francesca, Balducci, Silvia, Cammarone, Silvia, Campiglia, Enio, Giusti, Anna Maria, Vinci, Giuliana, Rapa, Mattia, Ciano, Salvatore, Mannina, Luisa, Sobolev, Anatoly P. A Multimethodological Characterization of Cannabis sativa L. Inflorescences from Seven Dioecious Cultivars Grown in Italy: The Effect of Different Harvesting Stages. MOLECULES, 26(10), 2912. ISSN: 1420-3049, doi:10.3390/molecules26102912 IF (2021)= 4.411; Q2 Organic Chemistry; Citation (Scopus):1 Filename (pdf): Spano et al., Molecules_2021</p>
3	2020	<p>Articolo in rivista Quaglio, Deborah, Mangiardi, Laura, Venditti, Giulia, Del Plato, Cristina, Polli, Francesca, Ghirga[*], Francesca, Favero, Gabriele, Pierini, Marco, Botta, Bruno, Mazzei, Franco. Site-directed antibodies immobilization by resorc[4]arene-based immunosensors. CHEMISTRY-A EUROPEAN JOURNAL, 2020, 26(38), 8400–8406. ISSN: 0947-6539, doi: 10.1002/chem.202000989 IF (2020)= 5.236; Q1 Organic Chemistry; Citation (Scopus):1 Filename (pdf): Quaglio et al., Chemistry-A European Journal_2020</p>
4	2020	<p>Articolo in rivista Quaglio, Deborah, Corradi, Silvia, Erazo, Silvia, Vergine, Valeria, Berardozi, Simone, Sciubba, Fabio, Cappiello, Floriana, Crestoni, Maria Elisa, Ascenzioni, Fiorentina, Imperi, Francesco, Delle Monache, Franco, Mori, Mattia, Loffredo, Maria Rosa, Ghirga[*], Francesca, Casciaro, Bruno, Botta, Bruno, Mangoni, Maria Luisa. Structural elucidation and antimicrobial characterization of novel diterpenoids from fabiana densa var. ramulosa. ACS MEDICINAL CHEMISTRY LETTERS, 11(5), 760-765. ISSN: 1948-5875, doi: 10.1021/acsmchemlett.9b00605 IF (2020)= 4.345; Q1 Organic Chemistry; Citation (Scopus):7 Filename (pdf): Quaglio et al., ACS Medicinal Chemistry Letters_2020</p>
5	2020	<p>Articolo in rivista Quaglio, Deborah, Mangoni, Maria Luisa, Stefanelli, Roberta, Corradi, Silvia, Casciaro, Bruno, Vergine, Valeria, Lucantoni, Federica, Cavinato, Luca, Cammarone, Silvia, Loffredo, Maria Rosa, Cappiello, Floriana, Calcaterra, Andrea, Erazo, Silvia, Ghirga[*], Francesca, Mori, Mattia, Imperi, Francesco, Ascenzioni, Fiorentina, Botta, Bruno. Ent-Beyerane Diterpenes as a Key Platform for the Development of ArnT-Mediated Colistin Resistance Inhibitors. JOURNAL OF ORGANIC CHEMISTRY, 85(16), 10891-10901. ISSN: 0022-3263, doi: 10.1021/acs.joc.0c01459 IF (2020)= 4,354; Q1 Organic Chemistry; Citation (Scopus):2</p>

		Filename (pdf): Quaglio et al., Journal of Organic Chemistry_2020
6	2020	<p>Articolo in rivista</p> <p>Ingallina, Cinzia, Sobolev, Anatoly P, Circi, Simone, Spano, Mattia, Fraschetti, Caterina, Filippi, Antonello, Di Sotto, Antonella, Di Giacomo, Silvia, Mazzocanti, Giulia, Gasparrini, Francesco, Quaglio, Deborah, Campiglia, Enio, Carradori, Simone, Locatelli, Marcello, Vinci, Giuliana, Rapa, Mattia Ciano, Salvatore, Giusti, Anna Maria, Botta, Bruno, Ghirga, Francesca, Capitani, Donatella, Mannina, Luisa.</p> <p>Cannabis sativa L. Inflorescences from Monoecious Cultivars Grown in Central Italy: An Untargeted Chemical Characterization from Early Flowering to Ripening.</p> <p>MOLECULES, 25(8), 1908.</p> <p>ISSN: 1420-3049, doi: 10.3390/molecules25081908</p> <p>IF (2020)= 4.411; Q2 Organic Chemistry; Citation (Scopus):13</p> <p>Filename (pdf): Ingallina et al., Molecules_2020</p>
7	2019	<p>Articolo in rivista</p> <p>Quaglio, Deborah, Zhdanovskaya, Nadezda, Tobajas, Gloria, Cuartas, Viviana, Balducci, Silvia, Christodoulou, Michael S., Fabrizi, Giancarlo, Gargantilla, Marta, Priego, Eva-María, Pestaña, Álvaro Carmona, Passarella, Daniele, Screpanti, Isabella, Botta, Bruno, Palermo, Rocco, Mori, Mattia, Ghirga*, Francesca, Pérez-Pérez, María-Jesús.</p> <p>Chalcones and Chalcone-mimetic Derivatives as Notch Inhibitors in a Model of T-cell Acute Lymphoblastic Leukemia.</p> <p>ACS MEDICINAL CHEMISTRY LETTERS, 10(4), 639-643.</p> <p>ISSN: 1948-5875, doi: 10.1021/acsmedchemlett.8b00608</p> <p>IF (2019)=3.975; Q1 Organic Chemistry; Citation (Scopus):15</p> <p>Filename (pdf): Quaglio et al., ACS Medicinal Chemistry Letters_2019</p>
8	2019	<p>Articolo in rivista</p> <p>Cacchi, Sandro, Fabrizi, Giancarlo, Fochetti, Andrea, Ghirga, Francesca, Goggiamani, Antonella, Iazzetti, Antonia.</p> <p>Stereo- and regioselective gold(i)-catalyzed hydroamination of 2-(arylethynyl)pyridines with anilines.</p> <p>ORGANIC & BIOMOLECULAR CHEMISTRY, 17(3), 527-532.</p> <p>ISSN: 1477-0520, doi: 10.1039/c8ob02356e</p> <p>IF (2019)=3.412; Q1 Organic Chemistry; Citation (Scopus):4</p> <p>Filename (pdf): Cacchi et al., Organic & Biomolecular Chemistry_2019</p>
9	2018	<p>Articolo in rivista</p> <p>Berardozi, Simone, Bernardi, Flavia, Infante, Paola, Ingallina, Cinzia, Toscano, Sara, De Paolis, Elisa, Alfonsi, Romina, Caimano, Miriam, Botta, Bruno, Mori, Mattia, Di Marcotullio, Lucia, Ghirga, Francesca.</p> <p>Synergistic inhibition of the Hedgehog pathway by newly designed Smo and Gli antagonists bearing the isoflavone scaffold.</p> <p>EUROPEAN JOURNAL OF MEDICINAL CHEMISTRY, 156, 554-562.</p> <p>ISSN: 0223-5234, doi: 10.1016/j.ejmech.2018.07.017</p> <p>IF (2018)=4.833; Q1 Organic Chemistry; Citation (Scopus):17</p> <p>Filename (pdf): Berardozi et al., European Journal of Medicinal Chemistry_2018</p>
10	2018	<p>Articolo in rivista</p> <p>Quaglio, Deborah, Zappia, Giovanni, De Paolis, Elisa, Balducci, Silvia, Botta, Bruno, Ghirga*, Francesca.</p> <p>Olefin metathesis reaction as a locking tool for macrocycle and mechanomolecule construction.</p> <p>ORGANIC CHEMISTRY FRONTIERS, 5(20), 3022-3055.</p> <p>ISSN: 2052-4110, doi: 10.1039/c8qo00728d</p> <p>IF (2018)=5.076; Q1 Organic Chemistry; Citation (Scopus):16</p> <p>Filename (pdf): Quaglio et al., Organic Chemistry Frontiers_2018</p>
11	2018	<p>Articolo in rivista</p> <p>Corradi, Silvia, Mazzocanti, Giulia, Ghirga, Francesca, Quaglio, Deborah, Nevola, Laura, Massera, Chiara, Ugozzoli, Franco, Giannini, Giuseppe, Ciogli, Alessia,</p>

		<p>D'Acquarica, Ilaria. Synthesis of bromoundecyl resorc[4]arenes and applications of the cone stereoisomer as selector for liquid chromatography. JOURNAL OF ORGANIC CHEMISTRY, 83(15), 7683-7693. ISSN: 0022-3263, doi: 10.1021/acs.joc.8b00488 IF (2018)=4,745; Q1 Organic Chemistry; Citation (Scopus):3 Filename (pdf): Corradi et al., Journal of Organic Chemistry_2018</p>
12	2017	<p>Articolo in rivista Aiello, Federica, Balzano, Federica, Ghirga, Francesca, D'Acquarica, Ilaria, Botta, Bruno, Uccello Barretta, Gloria, Quaglio, Deborah. First Detection of a Ruthenium-Carbene-Resorc[4]arene Complex During the Progress of a Metathesis Reaction. EUROPEAN JOURNAL OF ORGANIC CHEMISTRY, 2017(17), 2407-2415. ISSN: 1434-193X, doi: 10.1002/ejoc.201601502 IF (2017)=2.882; Q1 Organic Chemistry; Citation (Scopus):3 Filename (pdf): Aiello et al., European Journal of Organic Chemistry_2017</p>
13	2014	<p>Articolo in rivista Ghirga[†], Francesca, Quaglio, Deborah, Iovine, Valentina, Botta, Bruno, Pierini, Marco, Mannina, Luisa, Sobolev, Anatoly P., Ugozzoli, Franco, D'Acquarica, Ilaria. Synthesis of a Double-Spanned-Resorc[4]arene via Ring- Closing Metathesis and Calculation of Aggregation Propensity. JOURNAL OF ORGANIC CHEMISTRY, 79(22), 11051-11060. ISSN: 0022-3263, doi: 10.1021/jo502056v IF (2014)=4,721; Q1 Organic Chemistry; Citation (Scopus):6 Filename (pdf): Ghirga et al., Journal of Organic Chemistry_2014</p>
14	2013	<p>Articolo in rivista Ghirga[†], Francesca, D'Acquarica, Ilaria, Delle Monache, Giuliano, Mannina, Luisa, Molinaro, Carmela, Nevola, Laura, Sobolev, Anatoly P., Pierini, Marco, Botta, Bruno. Reaction of Nitrosonium Cation with Resorc[4]arenes Activated by Supramolecular Control: Covalent Bond Formation. JOURNAL OF ORGANIC CHEMISTRY, 78(14), 6935-6946. ISSN: 0022-3263, doi: 10.1021/jo400489m IF (2013)=4.638; Q1 Organic Chemistry; Citation (Scopus):5 Filename (pdf): Ghirga et al., Journal of Organic Chemistry_2013</p>
15	2013	<p>Articolo in rivista Ghirga[†], Francesca, D'Acquarica, Ilaria, Delle Monache, Giuliano, Toscano, Sara, Mannina, Luisa, Sobolev, Anatoly P, Ugozzoli, Franco, Crocco, Domenico, Antiochia Riccarda, Botta Bruno. Undecenyl resorc[4]arene in the chair conformation as preorganized synthon for olefin metathesis. RSC ADVANCES, 3(38), 17567-17576 ISSN: 2046-2069, doi: 10.1039/c3ra42943a IF (2013)=3,708; Q1 Organic Chemistry; Citation (Scopus):5 Filename (pdf): Ghirga et al., RSC Advances_2013</p>