Curriculum Vitae

INFORMAZIONI PERSONALI

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FORMAZIONE TITOLI

La Prof. Paola Barraja si è laureata il 26/3/92 con voti 110/110 e lode e con tale tesi è risultata vincitrice del II premio di laurea "Farmacia Donna Sicilia".

Dal 1/4/92 al 30/9/92 ha prestato servizio di volontariato a tempo pieno presso l'Istituto Farmacochimico della Facoltà di Farmacia di Palermo.

Dal 1° Ottobre 1992 al 30/9/1994 è stata titolare di una borsa di Studio CNR ai sensi della legge 1° Agosto 1988, n° 326, bando n. 224 03 4, codice n. 24 03 13 ed espletata presso l'ICTPN-CNR di Palermo occupandosi di eterocicli azotati policondensati analoghi sintetici di prodotti di origine naturale a potenziale interesse biologico.

Nei primi due mesi della borsa di studio CNR, (dal 30/10/92 al 20/12/92) ha svolto delle ricerche presso il Cancer Research Campaign (C.R.C. Laboratories), Università di Nottingham (UK), lavorando con il professore M.F.G. Stevens.

Dal 1/10/1994 al 15/04/1996 ha prestato servizio di volontariato a tempo pieno presso l'Istituto Farmacochimico della Facoltà di Farmacia di Palermo.

Il 16/04/1996 a è risultata vincitrice di concorso a ricercatore (gruppo CO7X-farmaceutico, oggi CHIM/08 Chimica Farmaceutica) presso la Facoltà di Farmacia dell'Università degli Studi di Palermo.

Dal 6/2/98 al 15/2/99, essendo risultata vincitrice di una borsa di studio Marie Curie, concessa dalla Comunità Europea, ha lavorato presso il "Department of Chemistry" dell'Università di Exeter (UK) sotto la direzione del Prof. C.J. Moody.

Nell' A.A., 98/99 ha svolto, per supplenza, il corso di Analisi dei Farmaci II per il Corso di Laurea in Chimica e Tecnologia Farmaceutiche (CTF).

Negli A.A., 99/00, 00/01 e 01/02 ha svolto, per supplenza, il corso di Analisi dei Medicinali per il Corso di Laurea in Chimica e Tecnologia Farmaceutiche (CTF).

Dal 23/12/02 è Professore associato per il SSD-CHIM/08 (Chimica Farmaceutica) presso la Facoltà di Farmacia dell'Università degli Studi di Palermo e a tutt'oggi svolge la sua attività presso il Dipartimento Dipartimento di Scienze e Tecnologie Molecolari e Biomolecolari (STEMBIO) Università degli Studi di Palermo, Via Archirafi 32, 90123 Palermo (Italy).

PUBBLICAZIONE

ELENCO PUBBLICAZIONI DELLA PROF. PAOLA BARRAJA

1. **P. Barraja**, V. Spanò, D. Giallombardo, P. Diana, A. Montalbano, A. Carbone, B. Parrino, G. Cirrincione "Synthesis of [1,2]oxazolo[5,4-e]indazoles as antitumour agents"*Tetrahedron* (**2013**), 69, 6474-6477.

2. A. Montalbano, B. Parrino, P. Diana, **P. Barraja**, A. Carbone, V. Spanò, G. Cirrincione. “Synthesis of the new oligopeptide pyrrole derivative isonetropsin and its one pyrrole unit analogue” *Tetrahedron* (**2013**), 69, 2550-2554.

3. A. Carbone, B. Parrino, **P. Barraja**, V. Spanò, G. Cirrincione, P. Diana, A. Maier, G. Kelter, H.-H. Fiebig “Synthesis and Antiproliferative Activity of 2,5-bis(3 -Indolyl)pyrroles, Analogues of the Marine Alkaloid Nortopsentin” *Mar. Drugs* (**2013**), 11, 643-654

4. **P. Barraja**, G. Cirrincione, F. Dall’Acqua, A. Salvador. “Pyrrolo[3,2-h]quinoline derivatives as photochemotherapeutic agents and their preparation and use for the treatment of proliferative diseases” *PCT Ital.* (**2012**), IT 1395194 B1 20120905

5. **P. Barraja**, L. Caracausi, P. Diana, V. Spanò, A. Montalbano, A. Carbone, B. Parrino, G. Cirrincione. “Synthesis and Antiproliferative Activity of the Ring System [1,2]Oxazolo[4,5-g]indole”*ChemMedChem* (**2012**), 7, 1901-1904.

6. **P. Barraja**, P. Diana, V. Spanò, A. Montalbano, A. Carbone, B. Parrino, G. Cirrincione. “An efficient synthesis of pyrrolo[3',2':4,5]thiopyrano[3,2-b]pyridin-2-one: a new ring system of pharmaceutical interest”. *Tetrahedron* (**2012**), 68(25), 5087-5094.

7. P. Diana, A. Stagno, **P. Barraja**, A. Carbone, B. Parrino, F. Dall’Acqua, D. Vedaldi, A. Salvador, P. Brun, I. Castagliuolo, O.G. Issinger, G. Cirrincione. “Synthesis of triazenoazaindoles: a new class of triazenes with antitumor activity”. *ChemMedChem* (**2011**), 6(7), 1291-1299.

8. P. Diana, A. Carbone, **P. Barraja**, A. Montalbano, B. Parrino, A. Lopergolo, M. Pennati, N. Zaffaroni, G. Cirrincione. “Synthesis and antitumor activity of 3-(2-phenyl-1,3-thiazol-4-yl)-1H-indoles and 3-(2-phenyl-1,3-thiazol-4-yl)-1H-7-azaindoles”. *ChemMedChem* (**2011**), 6(7), 1300-1309.

9. **P. Barraja**, L. Caracausi, P. Diana, A. Montalbano, A. Carbone, A. Salvador, P. Brun, I. Castagliuolo, S. Tisi, F. Dall’Acqua, D. Vedaldi, G. Cirrincione. “Pyrrolo[3,2-h]quinazolines as photochemotherapeutic agents”. *ChemMedChem* (**2011**), 6(7), 1238-1248.

10. P. Diana, A. Stagno, **P. Barraja**, A. Montalbano, A. Carbone, B. Parrino, G. Cirrincione. “Synthesis of the new ring system pyrrolizino[2,3-b]indol-4(5H)-one”. *Tetrahedron* (**2011**), 67(19), 3374-3379.

11. **P. Barraja**, P. Diana, A. Montalbano, A. Carbone, G. Viola, G. Basso, A. Salvador, D. Vedaldi, F. Dall’Acqua, G. Cirrincione. “Pyrrolo[3,4-h]quinolinones a new class of photochemotherapeutic agents”. *Bioorg. Med. Chem.* (**2011**), 19(7), 2326-2341.

12. P. Diana, A. Martorana, **P. Barraja**, A. Montalbano, A. Carbone, G. Cirrincione. “Nucleophilic substitutions in the isoindole series as a valuable tool to synthesize derivatives with antitumor activity”. *Tetrahedron* (**2011**), 67(11), 2072-2080.

13. F. Dall'acqua, G. Cirrincione, **P. Barraja**, A. Salvador. “Pyrrolo[3,2-h]quinoline derivatives as photochemotherapeutic agents and their preparation and use for the treatment of proliferative diseases” PCT Int. Appl. (**2011**), WO 2011013159.

14. **P. Barraja**, L. Caracausi, P. Diana, A. Carbone, A. Montalbano, G. Cirrincione, P. Brun, G. Palù, I. Castagliuolo, F. Dall’Acqua, D. Vedaldi, A. Salvador. “Synthesis of pyrrolo[3,2-h]quinolinones with good photochemotherapeutic activity and no DNA damage”. *Bioorg. Med. Chem.* (**2010**), 18(13), 4830-4843.

15. P. Diana, A. Carbone, **P. Barraja**, G. Kelter, H.-H. Fiebig, G. Cirrincione. “Synthesis and antitumor activity of 2,5-bis(3’-indolyl)-furans and 3,5-bis(3’-indolyl)-isoxazoles, nortopsentin analogues”. *Bioorg. Med. Chem.* (**2010**), 18(12), 4524-4529.

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polymerization inhibition." *Cancer Chemotherapy and Pharmacology* (**2009**), 64(6), 1235-1251.

17. **P. Barraja**, V. Spanò, P. Diana, A. Carbone, G. Cirrincione. "Synthesis of the new ring system 6,8-dihydro-5H-pyrrolo[3,4-h]quinazoline, heteroanalogue of Angelicin". *Tet. Lett.* (**2009**), 50(38), 5389-5391.

18. **P. Barraja**, P. Diana, A. Montalbano, A. Martorana, A. Carbone, G. Cirrincione. "Synthesis of the new ring system 2-oxo-[1,4]oxazino[3,2-e]indole heteroanalogue of angelicin". *Tet. Lett.* (**2009**), 50(28), 4182-4184.

19. P. Diana, A. Stagno, **P. Barraja**, A. Carbone, A. Montalbano, A. Martorana, , G. Dattolo, Cirrincione. "Pyrido[4,3': 4,5]pyrrolo[2,1-d][1,2,3,5]tetrazine-4(3H)-ones, a new class of temozolomide heteroanalogues". *ARKIVOC* (**2009**), (10), 1-11.

20. **P. Barraja**, V. Spanò, P. Diana, A. Carbone, G. Cirrincione, D. Vedaldi, A. Salvador, G. Viola, F. Dall'Acqua. "Pyrano[2,3-e]isoindol-2-ones, a new angelicin heteroanalogues." *Bioorg. Med. Chem. Lett.* (**2009**), 19(6), 1711-1714.

21. P. Diana, A. Stagno, **P. Barraja**, A. Montalbano, A. Martorana, A. Carbone, G. Dattolo, Cirrincione. "Pyrido[2'-3': 4,5]pyrrolo[2,1-d][1,2,3,5]tetrazine-4(3H)-ones, a new class of temozolomide heteroanalogues". *ARKIVOC* (**2008**), (8), 177-186.

22. **P. Barraja**, P. Diana, A. Carbone, G. Cirrincione. "Nucleophilic reactions in the indole series: displacement of bromine under phase transfer catalysis". *Tetrahedron* (**2008**), 64(51), 11625-11631.

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and Topoisomerase I". *J. Med. Chem.* (**2008**), 51(8), 2387-2399.

25. P. Diana, A. Carbone, **P. Barraja**, A. Martorana, O. Gia, L. DallaVia, G. Cirrincione. "3,5-Bis(3'-indolyl)pyrazoles, analogues of marine alkaloid nortopsentin: Synthesis and antitumor properties". *Bioorg. Med. Chem. Lett.* (**2007**), 17(22), 6134-6137.

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28. P. Diana, A. Martorana, **P. Barraja**, A. Lauria, A. Montalbano, A. M. Almerico, G. Dattolo, G. Cirrincione. "Isoindolo[2,1-c]benzo[1,2,4]triazines: A new ring system with antiproliferative activity". *Bioorg. Med. Chem.* (**2007**), 15(1), 343-349.

29. **P. Barraja**, P. Diana, A. Montalbano, G. Dattolo, G. Cirrincione, G. Viola, D. Vedaldi, F. Dall'Acqua. "Pyrrolo[2,3-h]quinolinones: A new ring system with potent photoantiproliferative activity". *Bioorg. Med. Chem.* (**2006**), 14(24), 8712-8728

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to molecular modelling studies on a series of DNA minor groove binders". *QSAR & Combinatorial Science* (**2006**), 25(3), 252-262.

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36. **P. Barraja**, P. Diana, A. Lauria, A. Montalbano, A.M. Almerico, G. Dattolo, G. Cirrincione: "Synthesis and Antiproliferative Activity of [1,2,3,5]tetrazino[5,4-a]indoles, a New Class of Azolo-tetrazinones". *Bioorg. Med. Chem*., **2004**, 13, 295-300.

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42. A. Lauria, C. Patella, P. Diana, **P. Barraja**, A. Montalbano, G. Cirrincione, G. Dattolo, A. M. Almerico. " New tetracyclic ring System of Biological Interest. Indolo[3,2e][1,2,3]triazolo [1,5-a]pyrimidines through domino reaction of 2-azidoindole". *Heterocycles*, **2003**, 60, 2669-2675.

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1. A. M. Almerico, F. Mingoia, P. Diana, **P. Barraja**, A. Montalbano, A. Lauria, R. Loddo, L. Sanna, D. Delpiano, M. G. Setzu, C. Musiu. "Pyrrolo[1,2-*f*]phenanthridines and Related Non-rigid Analogues as Antiviral Agents." *Eur. J. Med. Chem.,* **2002**, 37, 3-10.

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AMBITI DI RICERCA

Education and Training

Born in Palermo on 7.11.1969. Graduated in Pharmacy at the University of Palermo on 26.03.1992 (110/110 magna cum laude). C.N.R. fellow from 10-1992 to 10-1994. The first two months of this period were spent at the Cancer Research Campaign (C.R.C. Laboratories), Nottingham University (UK), director Prof. M.F.G. Stevens. Research fellow at the faculty of Pharmacy of Palermo from 1.10.1994 to 14.04.1996. Researcher SSD-CHIM/08 University of Palermo, from 16.04.1996 to 22.12.2002. Marie Curie fellow 6.02.1998 - 15.02.1999 Department of Chemistry of the University of Exeter working with Prof. C. J. Moody. Associate professor SSD-CHIM/08 (Medicinal Chemistry) from 23.12.2002 to date.

Editorial activity: ASSOCIATE EDITOR for Eur. J. Med. Chem. (Editor in Chief Prof. Hervè Galons) from 01-10-2017 to date. GUEST EDITOR of the special issue entitled "Current advances in cancer research: Therapeutics, Targets, and Chemical Biology" for Eur. J. Med. Chem. from 14-01-2017. Member of the Editorial Board of the journal "Arkivoc" from 01-01-2008 to date. Referee of international journals with IF: J. Med. Chem., Eur. J. Med. Chem., BMC, Tetrahedron, Marine Drugs, BMCL, Molecules.

Invited Speaker: XXIV National Meeting in Med. Chem. 09-2016, Perugia; 21st National Meeting on Med. Chem. 07-2012, Palermo; European Organization for Research and Treatment of Cancer (EORTC) Bruxelles - "Pharmacology and Molecular Mechanisms" (PAMM) 03-2009; Regional meeting on Medicinal Chemistry 12-2005, Catania; XVI National meeting on Medicinal Chemistry 09-2002; IX Meeting on Heterocyclic Structures 05-2000, Palermo.

Organizing committee: Regional meeting of the Italian Chemical Society 1,2-12-2003, Palermo; 20th International Congress of Heterocyclic Chemistry Palermo 1–5-08, 2005; Regional meeting of the Italian Chemical Society 4,5-12-2006, Palermo; 21st National Meeting In Medicinal Chemistry 17-20-07-2012, Palermo; Regional meeting of the Italian Chemical Society 1,2-12-2014; Italian-Spanish-Portuguese Joint Meeting in Medicinal Chemistry 17-20-07-2018, Palermo

Research fundings: National Research projects: PRIN 1997 (prot. 9703028183021); PRIN 2002 (prot. 2002033121008); PRIN 2004 (prot. 2004030405003); PRIN 2006 (prot. 2006030430005); PRIN 2008 (prot. 20082L3NFT001); International Cooperation for research CORI 2012; PON02004513361785– DI.ME.SA – CUPB61C12000870005; PRIN 2011; PRIN 2015 Prot. 20158PATWC; MIUR research fundings “CIPE 2” D.M. 46965 del 31-12-2008 (Laboratorio di Tecnologie Oncologiche HSRGIGLIO); MIUR research fundings 2017.

International collaborations: School of Chemistry, University of Nottingham (UK) Prof. Christopher J. Moody, Head of Organic Chemistry, Faculty of Science; Prof. Andrew D. Westwell Cardiff University School of Pharmacy and Pharmaceutical Sciences- Cardiff University; Prof. H. Galons Full Professor of Organic chemistry, central University Paris Descartes and Co-founder of Manros Therapeutics (Roscoff).

Employment and Research Experience

Employment Experience. Vice coordinator of "Farmacy and Industrial Farmacy " LM-13 council, University of Palermo; Member of managing board of the Italian Chemical Society-Sicily from 2010-2014; Coordinator of the Educational monitoring unit (OPD) of the Faculty of Farmacy, University of Palermo; member of specialist hospital pharmacy school from 2010 to date, University of Palermo; Member of reviewers board - European Research Council LS73 (Pharmacology, pharmacogenomics, drug discovery and design, drug therapy) from 01-01-2010 to date; Member of committee (Area 03) research fundings of University of Palermo from 2011-2013; Member of PhD council in Medicinal chemistry from 2012 to date, University of Palermo; Supervisor of 6 PhD fellowships and of one PhD fellowship in the program SICILIA 2020 (FSE-European Social funding- 5-2016) ongoing.

Research Experience.

- From 01-10-1992 to 30-09-1994 CNR research fellowship Palermo,
- From 01-10-1992 to 30-09-1994 Research fellowship at the Research Campaign (C.R.C. Laboratories), Nottingham University (UK), in collaboration with Prof. M. F. G. Stevens,

- From 6.02.1998 to 15.02.1999 Marie Curie Training grants (Training and Mobility of Researchers) Marie Curie fellowship European Community Framework Programm for research and development at the Department of Chemistry University of Exeter (UK). During this international collaboration 3 peer-reviewed publications with high I.F. were produced with Prof. Christopher Moody: 1. J. L.Whatmore, E.Swann, P.Barraja, J. J.Newsome, M.Bunderson, H. D.Beall, J. E.Tooke, C. J. Moody. **Angiogenesis**, 2002, 5, 45-51. 2. S. A. Everett, M. A. Naylor, P. Barraja, E. Swann, K. B. Patel, M. R. L. Stratford, A. H. R. Hundnott, B. Vojnovic, R. J. Loche, P. Wardman and C. J. Moody. J**. Chem. Soc., Perkin Trans. 2**, 2001, 843-860. 3. E. Swann, P. Barraja, A. M. Oberlander, W. T. Gardipee, A. R. Hudnott, H. D. Beall, and C. J. Moody. **J. Med. Chem**., 2001, 44, 3311-3319. Researcher in the medicinal chemistry area at the University of Palermo,
- From 16.04.1996 to 22.12.2002. Invited member of the European Organization for Research and Treatment of Cancer (EORTC) di Bruxelles - "Pharmacology and Molecular Mechanisms" (PAMM) section from 02-2014 to date.

Discovery Partnerships with Academia (DPAC) GlaxoSmithKline (GSK), Research & Development: selected UNIPA Principal Investigator for the project “New therapeutic agents for the treatment of AML in FLT3/ITD hemizygous patients resistant to conventional therapy”, 23-11-2016.

Ongoing project on Diffuse Malignant Peritoneal Mesothelioma (DMPM) in collaboration with Molecular Pharmacology Unit, Department of Experimental Oncology and Molecular Medicine, Fondazione IRCCS Istituto Nazionale Tumori, Milano, Italy (see references 8,9).

Personal bibliography *(list of relevant references peer-reviewed, last five years)*

Today the scientific production consists of 103 peer-reviewed publications; 3 International patents; 4 Italian patents; Total IF 2002-2017: 287.316; Mean IF 2002-2017: 3.88 H-index: 27, total citations 1940 (Scopus 12/02/2018).

1. V. Spanò, D. Giallombardo, V. Cilibrasi, B. Parrino, A. Carbone, A. Montalbano, I. Frasson, A. Salvador, S. N. Richter, F. Doria, M. Freccero, S. Cascioferro, P. Diana, G. Cirrincione, **P. Barraja**. Pyrrolo[3’,2’:6,7]cyclohepta[1,2-*b*]pyridines with potent photo-antiproliferative activity. Eur. J. Med. Chem. 2017, 128, 300. (2-s2.0-85012894226; WOS: 000397180600027) ISSN: 0223-5234; eISSN: 1768-3254 DOI: 10.1016/j.ejmech.2017.02.008
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3. D. Schillaci, V. Spanò, B. Parrino, A. Carbone, A. Montalbano, **P. Barraja**, P. Diana, G. Cirrincione, S. Cascioferro. Pharmaceutical Approaches to Target Antibiotic Resistance Mechanisms. J. Med. Chem. 2017, 60, 8268-8297, ISSN: 0022-2623, doi:10.1021/acs.jmedchem.7b00215.
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6. S. Cascioferro, B. Parrino, V. Spanò, A. Carbone, A. Montalbano, **P. Barraja**, P. Diana, G. Cirrincione. 1,3,5-Triazines: A promising scaffold for anticancer drugs development. Eur. J. Med. Chem. 2017, 142, 523-549, ISSN: 0223-5234, doi: 10.1016/j.ejmech.2017.09.035.
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8. V. Spanò, M. Pennati, B. Parrino, A. Carbone, A. Montalbano, V. Cilibrasi, V. Zuco, A. Lopergolo, D. Cominetti, P. Diana, G. Cirrincione, **P. Barraja**, N. Zaffaroni. Preclinical Activity of New [1,2]Oxazolo[5,4 *e*]isoindole Derivatives in Diffuse Malignant Peritoneal Mesothelioma. J. Med. Chem. (2016), 59, 7223. 2-s2.0-84982144079; WOS:000381452600017
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10. V. Spanò, I. Frasson, D. Giallombardo, F. Doria, B. Parrino, A. Carbone, A. Montalbano, M. Nadai, P. Diana, G. Cirrincione, M. Freccero, S. N. Richter, **P. Barraja**. Synthesis and antiproliferative mechanism of action of pyrrolo[3, 2 : 6,7]cyclohepta[1,2-*d*]pyrimidin-2-amines as singlet oxygen photosensitizers. Eur. J. Med. Chem. (2016), 123, 447. WOS: 000385319000036; 2-s2.0-84979944506
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13. B. Parrino, A. Carbone, C. Ciancimino, V. Spanò, A. Montalbano, **P. Barraja**, G. Cirrincione, P. Diana, C. Sissi, M. Palumbo, O. Pinato, M. Pennati, G. Beretta, M. Folini, P. Matyus, B. Balogh, N. Zaffaroni. Water-soluble isoindolo[2,1-*a*]quinoxalin-6-imines: In vitro antiproliferative activity and molecular mechanism(s) of action. Eur. J. Med. Chem., (2015), 94, 149-162. 2-s2.0-84924423190; WOS:000353730900015
14. B. Parrino, A. Carbone, V. Spanò, A. Montalbano, D. Giallombardo, **P. Barraja**, A. Attanzio, L. Tesoriere, M. Palumbo, G. Cirrincione, P. Diana. Aza-indolo and isoindolo-azaquinoxaline derivatives with antiproliferative activity. Eur. J. Med. Chem., (2015), 94, 367-377. 2-s2.0-84924608884; WOS:000353730900032
15. B. Parrino, A. Carbone, G. Di Vita, C. Ciancimino, A. Attanzio, V. Spanò, A. Montalbano, **P. Barraja**, L. Tesoriere, M. A. Livrea, P. Diana, G. Cirrincione. 3-[4-(1H-Indol-3-yl)-1,3-thiazol-2-yl]-1H-pyrrolo[2,3-b]pyridines, Nortopsentin Analogues with Antiproliferative Activity. Marine Drugs (2015), 13, 1901-1924. 2-s2.0-84928501009; WOS:000353715900017
16. B. Parrino, C. Ciancimino, A. Carbone, V. Spano, A. Montalbano, **P. Barraja**, G. Cirrincione, P. Diana. Synthesis of isoindolo[1,4]benzoxazinone and isoindolo[1,5] benzoxazepine: two new ring systems of pharmaceutical interest. Tetrahedron (2015), 71, 7332-7338. 2-s2.0-84939264164; WOS:000360511000028
17. A. Carbone, M. Pennati, **P. Barraja**, A. Montalbano, B. Parrino, V. Spanò, A. Lopergolo, S. Sbarra, V. Doldi, N. Zaffaroni, G. Cirrincione, P. Diana. Synthesis and antiproliferative activity of substituted 3[2-(1H-indol-3-yl)-1,3-thiazol-4-yl]-1H-pyrrolo[3,2-b]piridine, marine alkaloid nortopsentin analogues. Curr. Med. Chem. (2014), 21, 1654-1666. 2-s2.0-84899857869; WOS:000333426700009
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19. B. Parrino, V. Spanò, A. Carbone, **P. Barraja**, P. Diana, G. Cirrincione, A. Montalbano. Synthesis of the new ring system bispyrido[4',3':4,5]pyrrolo[1,2-a:1',2'-d]pyrazine and its deaza analogue. Molecules (2014), 19, 13342-13357. 2-s2.0-84908146953; WOS:000343093100029
20. B. Parrino, V. Spanò, A. Carbone, P. Barraja, P. Màtyus, G. Cirrincione, P. Diana 'Interrupted' diazotization of 3-aminoindoles and 3-aminopyrroles. Tetrahedron (2014), 70, 7318-7321. 2-s2.0-84936988157; WOS:000342249900025
21. V. Spanò, A. Montalbano, A. Carbone, B. Parrino, P. Diana, G. Cirrincione, I. Castagliuolo, P. Brun, O-G. Issinger, S. Tisi, I. Primac, D. Vedaldi, A. Salvador, **P. Barraja**. Synthesis of a new class of pyrrolo[3,4-h]quinazolines with antimitotic activity. Eur. J. Med. Chem., (2014), 74, 340-357. 2-s2.0-84893428486; WOS:000333780800031
22. A. Carbone, M. Pennati, B. Parrino, A. Lopergolo, **P. Barraja**, A. Montalbano, V. Spano, S. Sbarra, V. Doldi, M. De Cesare, G. Cirrincione, P. Diana, N. Zaffaroni. Novel 1H Pyrrolo[2,3 b]pyridine Derivative Nortopsentin Analogues: Synthesis and Antitumor Activity in Peritoneal Mesothelioma Experimental Models. J. Med. Chem. (2013), 56, 7060-7072. 2-s2.0-84884252001; WOS:000330097400041
23. V. Spanò, A. Montalbano, A. Carbone, B. Parrino, P. Diana, G. Cirrincione, **P. Barraja**. Convenient synthesis of pyrrolo[3,4-g]indazole. Tetrahedron (2013), 69, 9839-9847. 2-s2.0-84885180946; WOS:000326768800038
24. **P. Barraja**, V. Spanò, D. Giallombardo, P. Diana, A. Montalbano, A. Carbone, B. Parrino, G. Cirrincione. Synthesis of [1,2]oxazolo[5,4-e]indazoles as antitumour agents. Tetrahedron (2013), 69, 6474-6477. 2-s2.0-84879201292; WOS: 000321231700017
25. A. Montalbano, B. Parrino, P. Diana, **P. Barraja**, A. Carbone, V. Spanò, G. Cirrincione. Synthesis of the new oligopeptide pyrrole derivative isonetropsin and its one pyrrole unit analogue. Tetrahedron (2013), 69, 2550-2554. 2-s2.0-84874116673; WOS:000315610400005
26. A. Carbone, B. Parrino, **P. Barraja**, V. Spanò, G. Cirrincione, P. Diana, A. Maier, G. Kelter, H.-H. Fiebig. Synthesis and Antiproliferative Activity of 2,5-bis(3 -Indolyl)pyrroles, Analogues of the Marine Alkaloid Nortopsentin. Marine Drugs (2013), 11, 643-654. 2-s2.0-84875613244; WOS:000316607800006

Patents

- Italian Patent (2009), IT 1395194 (PD2009A000224) "Sintesi chimica di nuovi agenti fotochemioterapici eterociclici, con atticità antiproliferativa compresa quella di natura neoplastica"

- PCT Int. Appl. (2011), WO 2011013159 "Pyrrolo[3,2-h]quinoline derivatives as photochemotherapeutic heterocyclic having antiproliferative and antineoplastic activity"

- US2012129884A1 (2012) "Pyrrolo[3,2-h]quinoline derivatives as photochemotherapeutic heterocyclic having antiproliferative and antineoplastic activity"

- Italian Patent (2014), IT 13318PTIT (FI2014A000305 del 24/12/2014) "Nuovi composti pirazolo[3,4-h]chinolinici, loro preparazione ed uso medico"

• Italian Patent (2015), IT 2015-RM210 "Composti a struttura ossazolica, procedimenti per la loro produzione e loro impiego per la cura di patologie caratterizzate da iperproliferazione"

• Italian Patent (2015), IT 2015-RM212 "4,5,6,9-Tetraidropirrolo[2',3':3,4] cicloepta[1,2-d]isossazoli, procedimento per la loro preparazione e loro uso come agenti antitumorali"

• PCT Int. Appl. (2016), WO 2016185348 (PCTIB2016052788) "4,5,6,9-tetrahydropyrrolo[2',3': 3,4]cyclohepta[1,2-d]isoxazole, process for their preparation production and their uses as antitumor agents"