Brief Bio

Dr. Virginia Spanò, PhD

Date of Birth: [redacted]

Nationality: Italian

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Current Employment:

Associate Professor - FULL TIME (L. 240/10) in Medicinal Chemistry, University of Palermo, Italy

Education and Training

Education

December 2021- to date: Associate Professor - FULL TIME (L. 240/10) in Medicinal Chemistry, University of Palermo, Italy

December 2018- December 2021: Researcher T.D. B - FULL TIME (ART. 24 C.3-B L. 240/10) in Medicinal Chemistry, University of Palermo, Italy

November 2014- December 2018: Researcher T.D. A - FULL TIME (ART. 24 C.3-A L. 240/10) in Medicinal Chemistry, University of Palermo, Italy

April 2009: degree of Doctor (Ph.D) in Molecular and Biomolecular Sciences at the University of Palermo, Italy

July 2005: degree in Pharmaceutical Chemistry and Technology (magna cum laude) at the University of Palermo, Italy

Employment and Research Experience

June 2011- June 2013: Research fellow at the Dep. Molecular and Biomolecular Sciences and Technologies (STEMBIO) University of Palermo (Italy)

June 2009- June 2011: Research fellow at the Dep. Molecular and Biomolecular Sciences and Technologies (STEMBIO) University of Palermo (Italy)

July 2008- November 2008: Research fellow at Prof. Moody' s laboratory, School of Chemistry, University of Nottingham, UK.

January 2006- January 2009: PhD Student in Medicinal Chemistry

Main activities and responsibilities:

1) Person in charge of the use of Lab Instruments (NMR, FT-IR, Microwave Reactor, Automatic Chromatography)

2) Author and Co-author of 66 publications on international peer-reviewed journals, 3 international patents and 5 italian patents

3) Participant in MIUR-funded projects either as a collaborator (PRIN 2010 'Sistemi naturali e sintetici ad attivita' antitumorale'; PON_02_00355_2964193 'Sviluppo di micro e nanotecnologie e sistemi avanzati per la salute dell'uomo'- HYPPOCRATES; PRIN 2015 'Targeting type-2 metabotropic glutamate

receptors in the experimental treatment of brain ischemia; PON02_00451_3361785 'Valorizzazione di prodotti tipici della dieta mediterranea e loro impiego a fini salutistici e nutraceutici' – DI.ME.SA; FFC#4/2018 'Towards the discovery of new correctors based on nitrogen heterocyclic systems'; FFC#3/2020 'Small nitrogen heterocycles as correctors of the mutant CFTR protein in cystic fibrosis') and as Principal Investigator (PRIN 2017 'Selective mGlu3 metabotropic glutamate receptor ligands as new potential therapeutic agents in experimental models of parkinsonism)

4) co-tutor of a PhD Student - XXXVI cycle of PhD programm in Scienze Molecolari e Biomolecolari – academic year 2020/2021

5) co-tutor of a PhD Student - XXXIII cycle of PhD programm in Scienze Molecolari e Biomolecolari – academic year 2017/2018

6) co-tutor of a PhD Student - XXXII cycle of PhD programm in Scienze Molecolari e Biomolecolari – academic year 2016/2017

7) Co-supervisor of 4 thesis-Master Degree in Pharmacy

8) Co-supervisor of 14 thesis-Master Degree in Pharmaceutical Chemistry and Technology

Teaching Activity

September 2015 onwards

Master Degree in Pharmaceutical Chemistry and Technology, University of Palermo

Position held: Aggregate Professor in Pharmaceutical Analysis of Drugs

Memberships of Scientific Societies

Member of:

-Società Chimica Italiana (SCI), Divisione di Chimica Farmaceutica

Peer-reviewing activity for the following Journals:

European Journal of Medicinal Chemistry (Elsevier); Arabian Journal of Chemistry (Elsevier); European Journal of Pharmacology (Elsevier); Bioorganic Chemistry (Elsevier); Journal of Scientific Research and Reports; Molecules (MDPI).

Scientific interests

Her current research interests include design, synthesis, identification, and biological evaluation of nitrogen heterocyclic compounds as antitumor agents and modulators in cystic fibrosis.

Patent

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

2. Italian Patent (2015), IT 2015-RM210 "Composti a struttura ossazolica, procedimenti per la loro produzione e loro impiego per la cura di patologie a carattere iperproliferativo" dal 01-01-2015 to date.

3. 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" dal 01-01-2016 to date.

4. 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" dal 01-01-2016 to date.

5. Italian Patent (2018), Fondazione Telethon-UniPa- IT 102018000010466 - Rif. A 137726 " Sistemi eterociclici azotati e loro uso medico" dal 01-01-2018 to date.

6. Italian Patent (2019), P021153IT-01 “Nuovi agenti terapeutici per il trattamento di patologie ematologiche” dal 08-2019 to date.

7. PCT Int. Appl. (2020), WO 2020104558 A1 20200528 “Preparation of heterocyclic compounds for medical use” dal 01-01-2020 to date.

8. PCT Int. Appl. (2021), WO2021/038452 ”New therapeutic agents for the treatment of haematological pathologies” dal 04-03-2021 to date.

Publications:

1. R. Bivacqua, M. Barreca, V. Spanò, M. V. Raimondi, I. Romeo, S. Alcaro, G. Andrei, P. Barraja, A. Montalbano. Insight into non-nucleoside triazole-based systems as viral polymerases inhibitors. Eur. J. Med. Chem. 2023, 249, 115136.
2. Renda, M.; Barreca, M.; Borrelli, A.; Spanò, V.; Montalbano, A.; Raimondi, M. V.; Bivacqua, R.; Musante, I.; Scudieri, P.; Guidone, D.; Buccirossi, M.; Genovese, M.; Venturini, A.; Bandiera, T.; Barraja, P.; Galietta, L. J. V. Novel tricyclic pyrrolo-quinolines as pharmacological correctors of the mutant CFTR chloride channel. Scientific Reports, (2023), 13, 7604.
3. Barreca, M.; Spanò, V.; Rocca, R.; Bivacqua, R.; Gualtieri, G.; Raimondi, M. V.; Gaudio, E.; Bortolozzi, R.; Manfreda, L.; Bai, R.; Montalbano, A.; Alcaro, S.; Hamel, E.; Bertoni, F.; Viola, G.; Barraja, P. Identification of pyrrolo[3′,4′:3,4]cyclohepta[1,2-*d*][1,2]oxazoles as promising new candidates for the treatment of lymphoma. European Journal of Medicinal Chemistry (2023), 254, 115372.
4. Li Petri, G.; Holl, R.; Spanò, V.; Barreca, M.; Sardo, I.; Raimondi, M. V. Editorial: Emerging heterocycles as bioactive compounds. Frontiers in Chemistry, 2023, 11, 1202192.
5. Barreca, M.; Buttacavoli, M.; Di Cara, G.; D'Amico, C.; Peri, E.; Spanò, V.; Li Petri, G.; Barraja, P.; Raimondi, M. V. ; Cancemi, P.; Montalbano, A. Exploring the anticancer activity and the

mechanism of action of pyrrolomycins F obtained by microwave-assisted total synthesis. European Journal of Medicinal Chemistry (2023), 253, 115339.

6. Barreca, M.; Ingarra, A. M.; Raimondi, M. V.; Spanò, V.; Palumbo Piccionello, A.; De Franco, M.; Menilli, L.; Gandin, V.; Miolo, G.; Barraja, P.; Montalbano; A. New tricyclic systems as photosensitizers towards triple negative breast cancer cells. Arch. Pharm. Res. 2022, 45, 806.
7. M. Barreca, V. Spanò, R. Rocca, R. Bivacqua, A.-C. Abel, A. Maruca, A. Montalbano, M. V. Raimondi, C. Tarantelli, E. Gaudio, L. Cascione, A. Rinaldi, R. Bai, M. O. Steinmetz, A. E. Prota, S. Alcaro, E. Hamel, F. Bertoni, P. Barraja. Development of [1,2]oxazoloisoindoles tubulin polymerization inhibitors: Further chemical modifications and potential therapeutic effects against lymphomas. Eur. J. Med. Chem. 2022, 243, 114744.
8. Barreca M.; Spanò V.; Rocca R.; Bivacqua R.; Maruca A.; Montalbano A.; Raimondi M.V.; Tarantelli C.; Gaudio E.; Cascione L.; Rinaldi A.; Bai R.; Prota A.; Abel A.C.; Steinmetz M.; Alcaro S.; Hamel E.; Bertoni F.; Barraja P. Transcriptome and computational analysis assess the anti-tubulin activity of [1,2]oxazole derivatives in lymphoma. Eur. J. Canc. 2022,174, S65-S66.
9. K. Grillone, C. Riillo, R. Rocca, S. Ascrizzi, V. Spanò, F. Scionti, N. Polerà, A. Maruca, M. Barreca, G. Juli, M. Arbitrio, M. T. Di Martino, D. Caracciolo, P. Tagliaferri, S. Alcaro, A. Montalbano, P. Barraja, P. Tassone. The new microtubule-targeting agent SIX2G induces immunogenic cell death in multiple myeloma. Int. J. Mol. Sci. 2022, 23, 10222.
10. M. Labbozzetta, M. Barreca, V. Spanò, M. V. Raimondi, P. Poma, M. Notarbartolo, P. Barraja, A. Montalbano. Novel insights on [1,2]oxazolo[5,4-*e*]isoindoles on multidrug resistant acute myeloid leukemia cell line. Drug Dev Res. 2022, 1–11.
11. M. Barreca, A. M. Ingarra, M. V. Raimondi, V. Spanò, M. De Franco, L. Menilli, V. Gandin, G. Miolo, P. Barraja, A. Montalbano. Insight on pyrimido[5,4-*g*]indolizine and pyrimido[4,5-*c*]pyrrolo[1,2-*a*]azepine systems as promising photosensitizers on malignant cells. Eur. J. Med. Chem. 2022, 237, 114399.
12. V. Cilibrasi, V. Spanò, R. Bortolozzi, M. Barreca, M. V. Raimondi, R. Rocca, A. Maruca, A. Montalbano, S. Alcaro, R. Ronca, G. Viola, P. Barraja. Synthesis of 2*H*-Imidazo[2′,1':2,3][1,3]thiazolo[4,5- *e*]isoindol-8-yl-phenylureas with promising therapeutic features for the treatment of acute myeloid leukemia (AML) with FLT3/ITD mutations. Eur. J. Med. Chem. 2022, 235, 114292.
13. M. Barreca, V. Spanò, M. V Raimondi, R. Bivacqua, S. Giuffrida, A. Montalbano, A. Cavalli, F. Bertoni, P. Barraja. GPCR Inhibition in Treating Lymphoma. ACS Med. Chem. Lett. 2022, 13, 358.
14. V. Spanò, M. Barreca, R. Rocca, R. Bortolozzi, R. Bai, A. Carbone, M.V. Raimondi, A. Palumbo Piccionello, A. Montalbano, S. Alcaro, E. Hamel, G. Viola, P. Barraja. Insight on [1,3]thiazolo[4,5-*e*]isoindoles as tubulin polymerization inhibitors. Eur. J. Med. Chem. 2021, 212, 113122.
15. V. Spanò, M. Barreca, V. Cilibrasi, M. Genovese, M. Renda, A. Montalbano, L. J. V. Galietta, P. Barraja. Evaluation of Fused Pyrrolothiazole Systems as Correctors of Mutant CFTR Protein. Molecules 2021, 26, 1275.

16. M. Barreca, V. Spanò, M. V. Raimondi, C. Tarantelli, F. Spriano, F. Bertoni, P. Barraja, A. Montalbano. Recurrence of the oxazole motif in tubulin colchicine site inhibitors with anti-tumor activity. Eur. J. Med. Chem. Rep. 2021, 1, 100004.
17. G. Li Petri, M. V. Raimondi, V. Spanò, R. Holl, P. Barraja, A. Montalbano. Pyrrolidine in Drug Discovery: A Versatile Scaffold for Novel Biologically Active Compounds. Top. Curr. Chem. (2021), 379, 34.
18. M. Barreca, G. Lo Forte, G. Li Petri, P. Marrone, P. Amari, L. Blasi, V. Spanò, M. V. Raimondi. The key role of the clinical pharmacist in the management of anticancer therapies: a pilot study in the treatment of patients with non-small cell lung cancer. Pharmacologyonline 2021, 3, 170.
19. M. Barreca, V. Spanò, A. Montalbano, M. Cueto, A.R. Díaz Marrero, I. Deniz, A. Erdogan, L. Lukic Bilela, C. Moulin, E. Taffin-de-Givenchy, F. Spriano, G. Perale, M. Mehiri, A. Rotter, O.P. Thomas, P. Barraja, S.P. Gaudêncio, F. Bertoni. Marine Anticancer Agents: An Overview with a Particular Focus on Their Chemical Classes. Mar. Drugs 2020, 18, 619.
20. V. Spanò, R. Rocca, M.; Barreca, D. Giallombardo, A. Montalbano, A. Carbone, M.V. Raimondi, E. Gaudio, R. Bortolozzi, R. Bai, P. Tassone, S. Alcaro, E. Hamel, G. Viola, F. Bertoni, P. Barraja. Pyrrolo[2',3':3,4]cyclohepta[1,2-*d*][1,2]oxazoles, a New Class of Antimitotic Agents Active against Multiple Malignant Cell Types. J. Med. Chem. 2020, 63, 12023.
21. V. Spanò, A. Venturini, M. Genovese, M. Barreca, M.V. Raimondi, A. Montalbano, L.J.V. Galietta, P Barraja. Current development of CFTR potentiators in the last decade. Eur. J. Med. Chem. 2020, 180, 112631.
22. G. Li Petri, V. Spanò, R. Spatola, R. Holl, M.V. Raimondi, P. Barraja, A. Montalbano. Bioactive pyrrole-based compounds with target selectivity. Eur. J. Med. Chem. 2020, 180, 112783.
23. M. Barreca, V. Spanò, M.V. Raimondi, A. Montalbano, R. Bai, E. Gaudio, S. Alcaro, E. Hamel, F. Bertoni, P. Barraja. Evaluation of [1,2]oxazolo[5,4-*e*]isoindoles in lymphoma cells. Eur. J. Cancer, 2020, 138, S35-S36.
24. F. Pojero, P. Poma, V. Spanò, A. Montalbano, P. Barraja, M Notarbartolo. Targeting multiple myeloma with natural polyphenols. Eur. J. Med. Chem. 2019, 180, 465.
25. V. Spanò, A. Montalbano, A. Carbone, P. Scudieri, L.J.V. Galietta, P. Barraja. An overview on chemical structures as ΔF508-CFTR correctors. Eur. J. Med. Chem. 2019, 180, 430.
26. A. Carbone, A. Montalbano, V. Spanò, I. Musante, L.J.V. Galietta, P. Barraja. Furocoumarins as multi-target agents in the treatment of cystic fibrosis. Eur. J. Med. Chem. 2019, 180, 283.
27. A. Attanzio, P. Diana, P. Barraja, A. Carbone, V. Spanò, B. Parrino, S.M. Cascioferro, M. Allegra, G. Cirrincione, L. Tesoriere, A. Montalbano. Quality, functional and sensory evaluation of pasta fortified with extracts from Opuntia ficus-indica cladodes. Journal of the Science of Food and Agriculture 2019, 99, 4242.
28. I. Frasson, V. Spanò, S. Di Martino, M. Nadai, F. Doria, B. Parrino, A. Carbone, S.M. Cascioferro, P. Diana, G. Cirrincione, M. Freccero, P. Barraja, S.N. Richter, A. Montalbano. Synthesis and photocytotoxic activity of [1,2,3]triazolo[4,5-*h*][1,6]naphthyridines and [1,3]oxazolo[5,4-*h*][1,6]naphthyridines. Eur. J. Med. Chem. 2019, 162, 176.

29. A. Carbone, B. Parrino, M.G. Cusimano, V. Spanò, A. Montalbano, P. Barraja, D. Schillaci, G. Cirrincione, P. Diana, S. Cascioferro. New thiazole nortopsentin analogues inhibit bacterial biofilm formation. Marine Drugs 2018, 16, 274/1.
30. B. Parrino, S. Ullo, A. Attanzio, S. Cascioferro, V. Spanò, A. Carbone, A. Montalbano, P. Barraja, G. Cirrincione, L. Tesoriere, P. Diana. Synthesis of 5*H*-pyrido[3,2-*b*]pyrrolizin-5-one tripentone analogs with antitumor activity. Eur. J. Med. Chem. 2018, 158, 236.
31. 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.
32. B. Parrino, S. Ullo, A. Attanzio, V. Spanò, S. Cascioferro, A. Montalbano, P. Barraja, L. Tesoriere, G. Cirrincione, P. Diana. New tripentone analogs with antiproliferative activity. Molecules 2017, 22, 2005.
33. S. Cascioferro, B. Parrino, V. Spanò, A. Carbone, A. Montalbano, P. Barraja, P. Diana, G. Cirrincione. An overview on the recent developments of 1,2,4-triazine derivatives as anticancer compounds. Eur. J. Med. Chem. 2017, 142, 328.
34. 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.
35. 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.
36. S. Cascioferro, B. Parrino, V. Spanò, A. Carbone, A. Montalbano, P. Barraja, P. Diana, G. Cirrincione. Synthesis and antitumor activities of 1,2,3-triazines and their benzo- and heterofused derivatives. Eur. J. Med. Chem. 2017, 142, 74.
37. B. Balogh, A. Carbone, V. Spanò, A. Montalbano, P. Barraja, S. Cascioferro, P. Diana, B. Parrino. Investigation of Isoindolo[2,1- *a*]quinoxaline-6-imines as Topoisomerase I Inhibitors with Molecular Modeling Methods. Curr Comput Aided Drug Des. 2017, 13, 208.
38. B. Parrino, A. Attanzio, V. Spanò, S. Cascioferro, A. Montalbano, P. Barraja, L. Tesoriere, P. Diana, G. Cirrincione, A. Carbone. Synthesis, antitumor activity and CDK1 inhibiton of new thiazole nortopsentin analogues. Eur. J. Med. Chem. 2017, 128, 371.
39. 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.
40. V. Spanò, M. Pennati, B. Parrino, A. Carbone, A. Montalbano, A. Lopergolo, V. Zuco, D. Cominetti, P. Diana, G. Cirrincione, N. Zaffaroni, P. Barraja. [1,2]Oxazolo[5,4-*e*]isoindoles as promising tubulin polymerization inhibitors. Eur. J. Med. Chem., 2016, 124, 840.

41. V. Spanò, A. Attanzio, S. Cascioferro, A. Carbone, A. Montalbano, P. Barraja, L. Tesoriere, G. Cirrincione, P. Diana, B. Parrino. Synthesis and Antitumor Activity of New Thiazole Nortopsentin Analogs. Mar. Drugs, 2016, 14, 226.
42. A. Montalbano, L. Tesoriere, P. Diana, P. Barraja, A. Carbone, V. Spanò, B. Parrino, A. Attanzio, M. A. Livrea, S. Cascioferro, G. Cirrincione. Quality characteristics and in vitro digestibility study of barley flour enriched ditalini pasta. LWT - Food Science and Technology 2016, 72, 223.
43. 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.
44. A. Carbone, B. Parrino, G. Di Vita, A. Attanzio, V. Spanò, A. Montalbano, P. Barraja, L. Tesoriere, M. A. Livrea, P. Diana, G. Cirrincione. Synthesis and antiproliferative activity of thiazolyl-bis-pyrrolo[2,3-*b*]pyridines and indolyl-thiazolyl-pyrrolo[2,3-*c*]pyridines, nortopsentin analogues. Marine Drugs 2015, 13, 460.
45. 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.
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49. B. Parrino, C. Ciancimino, A. Carbone, V. Spanò, 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.
50. 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.
51. 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-(1*H*-indol-3-yl)-1,3-thiazol-4-yl]-1*H*-pyrrolo[3,2- b]piridine, marine alkaloid nortopsentin analogues. Curr. Med. Chem., 2014, 21, 1654.

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54. B. Parrino, V. Spanò, A. Carbone, P. Barraja, P. Matyus, G. Cirrincione, P. Diana. 'Interrupted' diazotization of 3-aminoindoles and 3-aminopyrroles. Tetrahedron, 2014, 70, 7318.
55. B. Parrino, A. Carbone, M. Muscarella, V. Spanò, A. Montalbano, P. Barraja, A. Salvador, D. Vedaldi, G. Cirrincione, P. Diana. 11*H*-Pyrido[3',2':4,5]pyrrolo[3,2-*c*]cinnolines and pyrido[3',2':4,5]pyrrolo[1,2-*c*][1,2,3]benzotriazine: two new ring systems with antitumor activity. J. Med. Chem., 2014, 57, 9495.
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