

Curriculum della attività scientifica della Prof. Paola Fossa

Istruzione

1988-1991: dottore di Ricerca in Scienze Farmaceutiche, Università degli Studi di Genova

1988: laurea in Farmacia, Università degli Studi di Genova

1987: abilitazione all'esercizio della Professione di Farmacista

1987: laurea in Chimica e Tecnologia Farmaceutiche, Università degli Studi di Genova

Attività professionale

31/12/2022- ad oggi: professore di I fascia nel settore concorsuale 03/D1 Chimica e Tecnologie Farmaceutiche, Tossicologiche e Nutraceutico-Alimentari, SSD CHIM08, Università degli Studi di Genova

01/11/2005- 30/12/2021: professore di II fascia nel settore concorsuale 03/D1 Chimica e Tecnologie Farmaceutiche, Tossicologiche e Nutraceutico-Alimentari, SSD CHIM08, Università degli Studi di Genova

01/11/1994: ricercatore nel settore concorsuale 03/D1 Chimica e Tecnologie Farmaceutiche, Tossicologiche e Nutraceutico-Alimentari, SSD CHIM08 (ex C07X- Farmaceutico), Università degli Studi di Genova.

02/11/1991-31/10/1994: chimico Dirigente di Primo Livello presso il Laboratorio Chimico del Presidio Multizonale di Prevenzione di Genova, ASL3, Genova.

02/05/1987-30/09/1988: contrattista di ricerca, Istituto Nazionale per la Ricerca sul Cancro (IST) di Genova, responsabile scientifico Prof. Ranieri Cancedda.

Attività scientifica

Publicazioni

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L'attività scientifica della Prof. Paola Fossa, documentata da 130 lavori pubblicati su riviste scientifiche a diffusione internazionale e da numerose comunicazioni a congressi nazionali ed internazionali, si è svolta prevalentemente presso il Dipartimento di Scienze Farmaceutiche dell'Università degli Studi di Genova ed è stata integrata da alcuni soggiorni di ricerca e studio presso laboratori italiani (Dipartimento Farmaco-Chimico, Università degli Studi di Bari) ed esteri (Dept. of Chemistry, Leiden University, Nederland e Institut fur Pharmazeutische Chemie, Dusseldorf University, Germany). La produzione scientifica di Paola Fossa, inizialmente rivolta alla sintesi di composti eterociclici con potenziale interesse farmaceutico, a partire dalla metà degli anni '90 si è orientata anche alla chimica computazionale, in particolare all'applicazione di strategie computazionali per la progettazione di sostanze farmacologicamente attive, allo studio delle interazioni a livello molecolare di ligandi con la loro controparte biologica, al calcolo di rapporti quantitativi struttura-attività (QSAR e 3D-QSAR) ed alla caratterizzazione di nuovi targets macromolecolari. Questo approccio di ricerca si è progressivamente consolidato portando all'acquisizione di specifiche competenze computazionali nell'ambito della drug discovery ed ha implicato una consistente interazione con ricercatori con competenze diverse dalla propria, accentuando quindi la capacità di lavorare all'interno di un team.

Nello sviluppo di queste ricerche, Paola Fossa ha stabilito fruttuose collaborazioni scientifiche con i seguenti gruppi di ricerca: Proff. A. Carotti e C. Altomare, Dipartimento di Farmacia- Scienze del Farmaco, Università degli Studi di Bari; Prof. L. Brasili e S. Franchini, Dipartimento Scienze della

Vita, Università degli Studi di Modena e Reggio Emilia; Dott. L. Milanese, Istituto di Tecnologie Biomediche ITB, CNR, Segrate (MI); Prof. M. Rusnati, Dipartimento di Medicina Molecolare e Traslazionale, Università degli Studi di Brescia; Dott. N. Pedemonte, UOC Genetica Medica, Istituto Giannina Gaslini, Genova; Prof. G. Murineddu, Dipartimento di Chimica e Farmacia, Università degli Studi di Sassari; Prof. S. Rapposelli, Dipartimento di Farmacia, Università degli Studi di Pisa; Prof. R. Gainetdinov, Institute of Translational Biomedicine, Università degli Studi di San Pietroburgo, Russia. Paola Fossa inoltre collabora attivamente con gruppi di ricerca all'interno dell'Università degli Studi di Genova, Proff. E. Millo, E. Zocchi, P. Mandich, M. Grandis.

Paola Fossa ha partecipato all'organizzazione di alcuni meeting nell'ambito della chimica farmaceutica e della bioinformatica, è referee per numerose riviste scientifiche del settore chimico-farmaceutico (Journal of Medicinal Chemistry, European Journal Medicinal Chemistry, Bioorganic and Medicinal Chemistry, Molecules, Biomolecules, International Journal of Molecular Sciences per citare le principali).

Elenco delle pubblicazioni

- 1) Descalzi Cancedda F., Manduca P., Tacchetti C., **Fossa P.**, Quarto R., Cancedda R. Developmentally regulated synthesis of a low molecular weight protein (Ch 21) by differentiating chondrocytes. *J. Cell Biol.* 1988, 107, 2455-2463.
- 2) Manduca P., Descalzi Cancedda F., Tacchetti C., Quarto R., **Fossa P.**, Cancedda R. Synthesis and Secretion of Ch 21 Protein in embryonic chick skeletal tissues. *Eur. J. Cell Biol.* 1989, 50, 154-161.
- 3) Schenone P., **Fossa P.**, Menozzi G. Reaction of 2-Dimethylaminomethylene-1,3-diones with Dinucleophiles. X. Synthesis of 5-Substituted Ethyl or Methyl 4-Isoxazolecarboxylates and Methyl 4-(2,2-Dimethyl-1-oxopropyl)-5-isoxazolecarboxylate. *J. Heterocyclic Chem.* 1991, 28, 453-457.
- 4) **Fossa P.**, Menozzi G., Schenone P., Filippelli W., Russo S., Lucarelli C., Marmo E. 5-Substituted 4-Isoxazolecarboxamides with platelet antiaggregating and other activities. *Il Farmaco* 1991, 46, 789-802.
- 5) Mosti L., Sansebastiano L., **Fossa P.**, Schenone P., Mattioli F. 1-Phenyl-1H-indazole derivatives with analgesic and antiinflammatory activities. *Il Farmaco* 1992, 47, 357-365.
- 6) Mosti L., Menozzi G., **Fossa P.**, Schenone P., Lampa E., Parrillo C., D'Amico M., Rossi F. 4-Substituted 1-methyl-1H-indazoles with analgesic, antiinflammatory and antipyretic activities. *Il Farmaco* 1992, 47, 567-84.
- 7) **Fossa P.**, Menozzi G., Schenone P., Mattioli F. 5-Substituted 4-Isoxazoleacetic acids with analgesic activity. *Il Farmaco* 1994, 49, 41-44.
- 8) Iester M., **Fossa P.**, Menozzi G., Mosti L., Baccicchetti F., Marzano C., Simonato M. Synthesis and photobiological properties of 3-acylangelicins, 3-alkoxycarbonyl-angelicins and related derivatives. *Farmaco* 1995, 50, 669-678.
- 9) Dorigo P., Fraccarollo D., Santostasi G., Maragno I., Floreani M., Borea P. A., Mosti L., Sansebastiano L., **Fossa P.**, Orsini F., Benetollo F., Bombieri G. Synthesis and Cardiotoxic Activity of Novel Pyrimidine Derivatives. *Crystallographic and Quantum Chemical Studies. J. Med. Chem.* 1996, 39, 3671-83.
- 10) Marzano C., Caffieri S., **Fossa P.**, Bordin F. Activity of 3-Carboxyangelicin Photolysis Products. *J. Photochem. Photobiol. B: Biology* 1997, 38, 189-195.
- 11) Boggia R., Forina M., **Fossa P.**, Mosti L. Chemometric Study and Validation Strategies in the Structure-Activity Relationships of New Cardiotoxic Agents. *Quant. Struct.-Act. Relat.* 1997, 16, 201-213.
- 12) Mosti L., Boggia R., **Fossa P.** 2-Pyridone Derivatives as Inotropic Agents: Synthesis, Pharmacology and Molecular Modeling Study. *Farmaco* 1997, 52, 331-337.

- 13) Menozzi G., Mosti L., **Fossa P.**, Mattioli F., Ghia M. ω -Dialkylaminoalkyl Ethers of Phenyl-(5-substituted 1-phenyl-1H-pyrazol-4-yl)methanols with Analgesic and Anti-inflammatory Activity. *J. Heterocyclic Chem.* 1997, 34, 963-968.
- 14) Floreani M., Borea P. A., Gessi S., Mosti L., **Fossa P.**, Dorigo P. A New Milrinone analog: Role of Binding to A₁ Adenosine Receptor in its Positive Inotropic Effect on Isolated Guinea Pig and Rat Atria. *J Pharm. & Exp. Ther.* 1997, 283, 541-547.
- 15) Forina M., Boggia R., Mosti L., **Fossa P.** Zupan's Descriptors in QSAR Applied to the Study of a New Class of Cardiotonic Agents. *Farmaco* 1997, 52, 411-419.
- 16) **Fossa P.**, Boggia R., Lo Presti E., Mosti L., Dorigo P., Floreani M. Inotropic Agents. Synthesis and Structure-Activity Relationships of New Milrinone Related cAMP PDE III Inhibitors. *Farmaco* 1997, 52, 523-30.
- 17) **Fossa P.**, Boggia R., Mosti L. Toward the identification of the cardiac cGMP inhibited-phosphodiesterase catalytic site. *J. Comput.-Aided Mol. Des.* 1998, 9, 361-72.
- 18) Altomare C., Cellamare S., Summo L., **Fossa P.**, Mosti L., Carotti A. Ionization Behaviour and Tautomeric-Dependent Lipophilicity of Pyridine-2 (1H)-one Cardiotonic Agents. *Bioorg. Med. Chem.* 2000, 8, 909-916.
- 19) Mosti L., Menozzi G., **Fossa P.**, Filippelli W., Gessi S., Rinaldi B., Falcone G. Synthesis and Preliminary Biological Evaluation of Novel N-Substituted 1-Amino-3-[1-methyl(phenyl)-1H-indazol-4-yloxy]-propan-2-ols Interesting as potential Antiarrhythmic, Local Anaesthetic and Analgesic Agents. *Arzneim.-Forsch./Drug. Res.* 2000, 50, 963-972.
- 20) **Fossa P.**, Menozzi G., Mosti L. An updated topographical model for phosphodiesterase 4 (PDE4) catalytic site. *Quant. Struct.-Activity Rel.* 2001, 20, 17-22.
- 21) Menozzi G., Mosti L., **Fossa P.**, Musiu C., Murgioni C., La Colla P. Synthesis and biological evaluation of azole derivatives, analogues of bifonazole, with a phenylisoxazol or phenylpyrimidinyl moiety. *Farmaco* 2001, 56, 633-640.
- 22) Schenone S., Bruno O., **Fossa P.**, Ranise A., Menozzi G., Mosti L., Bondavalli F., Martini C., Trincavelli L. Synthesis and Biological Data of 4-Amino-1-(2-chloro-2-phenylethyl)-1H-pyrazolo[3,4-b]pyridine-5-carboxylic Acid Ethyl Esters, a New Series of A₁-Adenosine Receptor (A₁AR) Ligands. *Bioorg. Med. Chem. Lett.* 2001, 11, 2529-2531.
- 23) Betti L., Botta M., Corelli F., Floridi M., **Fossa P.**, Giannaccini G., Manetti F., Strappaghetti G., Corsano S. α 1-Adrenoceptor Antagonists. Rational Design, Synthesis and Biological Evaluation of New Trazodone-like Compounds. *Bioorg. Med. Chem. Lett.* 2002, 12, 437-440.
- 24) **Fossa P.**, Mosti L., Menozzi G., Marzano C., Baccichetti F., Bordin F. Novel Angular Furo and Thieno-quinolinones: Synthesis and Preliminary Photobiological Studies. *Bioorg. Med. Chem.* 2002, 10, 743-751.
- 25) **Fossa P.**, Mosti L., Menozzi G., Manetti F., Dorigo P., Floreani M. 2-Substituted 5-acetyl-1,6-dihydro-6-oxo-3-pyridinecarboxylates: synthesis and cardiotonic activity. *Med. Chem. Res.* 2002, 11, 137-152.
- 26) **Fossa P.**, Giordanetto F., Menozzi G., Mosti L. Structural basis for selective PDE 3 inhibition: a docking study. *Quant. Struct.-Act. Rel.* 2002, 21, 267-675.
- 27) Bondavalli F., Botta M., Bruno O., Ciacci A., Corelli F., **Fossa P.**, Lucacchini A., Manetti F., Martini C., Menozzi G., Mosti L., Ranise A., Schenone S., Tafi A., Trincavelli M. L. Synthesis, Molecular Modeling Studies and Pharmacological Activity of Selective A₁ Receptor Antagonists. *J. Med. Chem.* 2002, 45, 4875-4887.
- 28) Floreani M., **Fossa P.**, Gessi S., Mosti L., Borea P. A., Dorigo P. New milrinone analogues: in vitro study of structure-activity relationships for positive inotropic effect, antagonism towards endogenous adenosine, and inhibition of cardiac type III phosphodiesterase. *Naunyn-Schmiedebergs Arch. Pharmacol.* 2003, 367, 109-118.
- 29) Giordanetto F., **Fossa P.**, Menozzi G., Schenone S., Bondavalli F., Ranise A., Mosti L. Exploring the molecular basis of selectivity in A₁ adenosine receptors agonists: a case study. *J. Comput.-Aided Mol. Design* 2003, 17, 39-51.

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- 32) Ranise A., Spallarossa A., Bruno O., Schenone S., **Fossa P.**, Menozzi G., Bondavalli F., Mosti L., Capuano A., Mazzeo F., Falcone G., Filippelli W. Synthesis of N-substituted-N-acylthioureas of 4-substituted piperazines endowed with local anaesthetic, antihyperlipidemic, antiproliferative activities and antiarrhythmic, analgesic, antiaggregating actions. *Farmaco* 2003, 58, 765-780.
- 33) **Fossa P.**, Menozzi G., Dorigo P., Floreani M., Mosti L. Synthesis and Pharmacological Characterisation of Functionalized 2-Pyridones Structurally Related to the Cardiotonic Agent Milrinone. *Bioorg. Med. Chem.* 2003, 11, 4749-4759.
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- 35) Carraro F., Pucci A., Naldini A., Schenone S., Bruno O., Ranise A., Bondavalli F., Brullo C., **Fossa P.**, Menozzi G., Mosti L., Manetti F., Botta M. Pyrazolo[3,4-d]pyrimidines Endowed with Antiproliferative Activity on Ductal Infiltrating Carcinoma Cells. *J. Med. Chem.* 2004, 47, 1595-1598.
- 36) Schenone S., Bruno O., Ranise A., Bondavalli F., Brullo C., **Fossa P.**, Mosti L., Menozzi G., Carraro F., Naldini A., Bernini C., Manetti F., Botta M. New pyrazolo[3,4-d]pyrimidines endowed with A431 antiproliferative activity and inhibitory properties of Src phosphorylation. *Bioorg. Med. Chem. Lett.* 2004, 14, 2511-2517.
- 37) Menozzi G., Merello L., **Fossa P.**, Schenone S., Ranise A., Mosti L., Bondavalli F., Loddo R., Murgioni C., Mascia V., La Colla P., Tamburini E. Synthesis, antimicrobial activity and molecular modeling studies of halogenated 4-[1H-imidazol-1-yl(phenyl)methyl]-1,5-diphenyl-1H-pyrazoles. *Bioorg Med. Chem.* 2004, 12, 5465-5483.
- 38) Schenone S., Bruno O., Bondavalli F., Ranise A., Mosti L., Menozzi G., **Fossa P.**, Donnini S., Santoro A., Ziche M., Manetti F., Botta M. Antiproliferative activity of new 1-aryl-4-amino-1H-pyrazolo[3,4-d]pyrimidine derivatives toward the human epidermoid carcinoma A431 cell line. *Eur. J. Med. Chem.* 2004, 39, 939-946.
- 39) Tait A., Luppi A., Hatzelmann A., **Fossa P.**, Mosti L. Synthesis, Biological Evaluation and Molecular Modeling Studies on Benzothiadiazine Derivatives as PDE4 Selective Inhibitors. *Bioorg. Med. Chem.* 2005, 13, 1393-1402.
- 40) Ranise A., Spallarossa A., Cesarini S., Bondavalli F., Schenone S., Bruno O., Menozzi G., **Fossa P.**, Mosti L., La Colla M., Sanna G., Murreddu M., Collu G., Busonera B., Marongiu M. E., Pani A., La Colla P., Loddo R. Structure-Based Design, Parallel Synthesis, Structure-Activity Relationship, and Molecular Modeling Studies of Thiocarbamates, New Potent Non-Nucleoside HIV-1 Reverse Transcriptase Inhibitor Isosteres of Phenethylthiazolylthiourea Derivatives. *J. Med. Chem.* 2005, 48, 3858-3873.
- 41) **Fossa P.**, Pestarino M., Menozzi G., Mosti L., Schenone S., Ranise A., Bondavalli F., Trincavelli M. L., Lucacchini A., Martini C. New pyrazolo[3,4-b]pyridones as selective A₁ adenosine receptor antagonists: synthesis, biological evaluation and molecular modeling studies. *Org. Biomol. Chem.* 2005, 3, 2262-2270.
- 42) de Candia M., **Fossa P.**, Cellamare S., Mosti L., Carotti A., Altomare C. Insights into Structure-Activity Relationships from Lipophilicity Profiles of Pyridin-2(1H)-one Analogs of the Cardiotonic Agent Milrinone. *Eur. J. Pharm. Sci.* 2005, 26, 78-86.
- 43) Manetti F., Schenone S., Bondavalli F., Brullo C., Bruno O., Ranise A., Mosti L., Menozzi G., **Fossa P.**, Trincavelli M. L., Martini C., Martinelli A., Tintori C., Botta M. Synthesis and 3D QSAR

of New Pyrazolo[3,4-*b*]pyridines: Potent and Selective Inhibitors of A₁ Adenosine Receptors. *J. Med. Chem.* 2005, 48, 7172-7185.

44) D'Ursi P., Salvi E., **Fossa P.**, Milanese L., Rovida E. Modelling the interaction of steroid receptors with endocrine disrupting chemicals. *BMC Bioinformatics* 2005, 6(Suppl 4):S10. DOI: 10.1186/1471-2105-6-S4-S10.

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46) Carraro F., Naldini A., Pucci A., Locatelli G. A., Maga, G., Schenone S., Bruno O., Ranise A., Bondavalli F., Brullo C., **Fossa P.**, Menozzi G., Mosti L., Modugno M., Tintori C., Manetti F., Botta M. Pyrazolo[3,4-*d*]pyrimidines as Potent Antiproliferative and Proapoptotic Agents toward A431 and 8701-BC Cells in Culture via Inhibition of c-Src Phosphorylation, *J. Med. Chem.* 2006, 49, 1549-1561.

47) Roma G., Di Braccio M., Grossi G., Piras D., Leoncini G., Bruzzese D., Signorello M. G., **Fossa P.**, Mosti L. Synthesis and in Vitro Antiplatelet Activity of New 4-(1-Piperazinyl)coumarin Derivatives. Human Platelet Phosphodiesterase 3 Inhibitory Properties of the Two Most Effective Compounds Described and Molecular Modelling Study on Their Interactions with Phosphodiesterase 3A Catalytic Site. *J. Med. Chem.* 2007, 50, 2886-2895.

48) Ranise A., Cesarini S., Spallarossa A., Sancassan F., Bondavalli F., Schenone S., Bruno O., Menozzi G., **Fossa P.**, Mosti L., Unprecedented One-pot Stereoselective Synthesis of Knoevenagel-type Derivatives of Potential Biological Interest Via in Situ Condensation of N-Methyleniminium Salts of Ethylenethiourea and Ethyleneurea with Active Methylene Reagents. *Synthesis* 2007, 16, 2495-2502.

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- 63) Cichero E., Buffa L., **Fossa P.** 3,4,5-Trisubstituted-1,2,4-4H-triazoles as WT and Y188L mutant HIV-1 non-nucleoside reverse transcriptase inhibitors: docking-based CoMFA and CoMSIA analyses. *J. Mol. Model.* 2011, 17, 1537-1550.
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