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**TARGETS AND DRUGS FOR INFECTIOUS  
DISEASES AND CANCER**



**UNIVERSITÉ DE NANTES**  
UFR DE SCIENCES PHARMACEUTIQUES  
ET BIOLOGIQUES

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## I- CAREER AND EDUCATION

Medicinal Chemistry department – Team EA1155 IICiMed (Targets and Drugs for Infectious Diseases and Cancer) – Faculty of Pharmacy – University of Nantes

**January 2017:** Deputy director of IICiMed research group and Head of Medicinal Chemistry department

**September 2013:** Professor of Organic Chemistry (1<sup>st</sup> class **September 2016**)

**June 2007:** Habilitation in Medicinal Chemistry – Design, synthesis and biological evaluation of azaheterocyclic compounds

**September 2001:** Assistant Professor in Organic Chemistry

**January 2000-August 2001:** Lecturer in Organic Chemistry

**November 1999:** PhD Thesis in Medicinal Chemistry – Synthesis and biological evaluation of indole derivatives as immunosuppressive and anti-cancer agents

**June 1996:** Master's degree in Pharmacochimistry

## II- TEACHING – Faculty of Pharmacy – Nantes

Organic Chemistry, Medicinal Chemistry, Spectroscopy (NMR, MS, IR) to Pharmacy students (Pharm. D.) of the first, second and fourth years of the cursus and to Master students (MSc).

## III- ADMINISTRATIVE RESPONSIBILITIES

- ✓ Management of the Master 1 "Drug Sciences" School of Pharmacy, Nantes.
- ✓ Coordinator of the "Drug Design" teaching - Master 1 "Drug Sciences".
- ✓ Jury member of Master 2 (MSc) "Molecular and Medicinal Chemistry" and Master 2 (MSc) "Polymers and Active Ingredients of Natural Origin".
- ✓ Member of the scientific board of the School of Medicine, Nantes.
- ✓ General Secretary of the Association of Teachers in Organic Chemistry belonging to Faculties of Pharmacy (AECOP).

### IV- RESEARCH SUPERVISION

**Research interests:** Design, synthesis and biological evaluation of heterocyclic compounds for therapeutic purposes (mycology, parasitology and cancer). Inhibitors of kinase signaling pathways. ADMET properties of molecules of biological interest. Microwave-assisted organic chemistry.

- ✓ PhD thesis supervisions (12): industry collaborations (Æterna Zentaris-Germany and Servier-France) and academic collaborations (Parasitology and Medical Mycology department of IICiMed team and international joint supervisions of a PhD thesis: Federal University of Pernambuco, Recife, Brazil and National Polytechnic Institute of Mexico City, Mexico.)
- ✓ Masters 2 (MSc) (13)
- ✓ Postdoctoral researchers (8)
- ✓ Bachelor's degrees (BSc) and Masters 1 (MSc) (16).
- ✓ Professional training courses (13).
- ✓ Training for research introduction, Faculty of Pharmacy (22).
- ✓ Foreign students (2): 1 MSc, University of Hamburg, Germany. 1 PhD student, University College Cork, Ireland.

### V- PUBLICATIONS, PATENTS and SCIENTIFIC PRODUCTION (see attached list)

- ✓ 42 international publications.
- ✓ 4 international patents.
- ✓ 49 posters.
- ✓ 13 invited presentations.
- ✓ 9 oral communications.

### VI- MISCELLANEOUS ACTIVITIES AND RESPONSIBILITIES

#### 1- International research collaborations

##### ✓ *PHC ULYSSES 2014 Programme - Ireland*

Campus France, responsible for the management of Hubert Curien Partnership (PHC) has selected the project ULYSSES 2014 filed jointly by the Department of Medicinal Chemistry of IICiMed team (Prof. Pascal Marchand, University of Nantes) and "Department of Chemistry and ABCRF "(Dr Florence McCarthy, University College Cork, Ireland). This collaboration, still in progress, is a work of Medicinal Chemistry in the field of oncology that led to the mobility of students and project managers between the two sites.

##### ✓ *CAPE-COFECUB 2015/2018 Programme - Brazil*

The French Committee for the Evaluation of Academic and Scientific Cooperation with Brazil (COFECUB) in partnership with the CAPES (Coordenação de Aperfeiçoamento do Pessoal de Nível Superior, the Federal Agency of Support and Evaluation of Postgraduate Education) has selected the project submitted jointly by the team IICiMed (Prof. Pascal Marchand, University of Nantes) and the Department of Antibiotics, Biological Sciences Center (Prof. Teresinha Silva, Federal University of Pernambuco, Recife, Brazil). The research program, with duration of 4 years, entitled "Discovery of novel thiazolinones, thiazolidinones and quinones for the treatment of infectious diseases and cancer" is achieved through the mobility of researchers, PhD students and postdoctoral researchers, chemists and biologists.

##### ✓ *Collaboration UPCH Lima - Peru*

The research work of IICiMed team dealing with imidazo[1,2-*a*]azine series as anti-infective agents allowed to develop a collaborative project with the International Joint Laboratory LAVI (Laboratorio de Quimica Amazonico Andino de la Vida) represented by Dr. Michel Sauvin (research

Director at IRD, Institute of Research for Development) and Prof. Rosario Rojas (Director IUPN, Natural Products Research Unit) at the Cayetano Heredia Peruvian University (UPCH) of Lima. Furthermore, Prof. Abraham Vaisberg (LID Director, Research and Development Laboratories, UPCH) is also involved in the project through the additional evaluation of molecules on different tumor cell lines.

### ✓ **Collaboration Dr Hector Salgado Zamora - Mexico**

The research work of IICiMed team dealing with imidazo[1,2-*a*]azine series as anti-infective agents helped to initiate a collaboration with Dr. H. Salgado Zamora of the National Polytechnic Institute (IPN) of Mexico City. This was realized by hosting a second year PhD student, Juan Emmanuel Reynoso Lara, who performed a six-month internship (January-June 2015) entitled "Synthesis, *in silico* studies of imidazo[1,2-*a*]pyridines and imidazo[1,2-*a*]pyrimidines substituted by an amide functional group and biological evaluation".

In addition, College of Graduate Studies and Research of ENCB (National School of Biological Sciences of IPN) has registered Dr Maria Elena Campos Aldrete (IPN) and Prof. Pascal Marchand as co-directors of the doctoral work of Juan Emmanuel Reynoso Lara.

This joint program between University of Nantes and National Polytechnic Institute has been approved by the CURI (University Council of International Relations) of Nantes and has been validated by the signature of an official partnership agreement.

## **2- National research networks**

### ✓ **Cancéropôle Grand Ouest**

IICiMed Laboratory collaborates with the teams of "Cancéropôle Grand Ouest" through its integration in the network "Seafood valorisation in cancer" and can access to the kinases evaluation platform KISSf of Roscoff, France (Dr S. Ruchaud, Dr S. Bach, CNRS USR3151).

### ✓ **Regional project PIRAMID**

Member of the committee of the regional project PIRAMID (€ 1.26 million), which includes 11 laboratories/research teams (duration 5 years from November 2015) on a theme consisting of a rational approach to the development of innovative molecules, for therapeutic purposes, targeting protein-protein interactions.

## **3- European research network**

- ✓ Member of "Groupement des Pharmacochimistes de l'Arc Atlantique (GP2A)" from **1997** and President from September **2017**.

## **4- Industrial research collaborations**

- ✓ Industrial collaborations for PhD and postdoctoral research projects (Æterna Zentaris-Germany from Oct. **2002** to Dec. **2009** and Servier-France from Oct. **2003** to Nov. **2011**).

## **5- Scientific societies**

- ✓ Member of "Société de Chimie Thérapeutique" from **2002**.
- ✓ Member of "Association des Enseignants de Chimie Organique" from **2002**.
- ✓ Member of "Société Française de Chimie" from **2003**.

## **6- Expert reports**

- ✓ Manuscript reviewer for international scientific journals: *European Journal of Medicinal Chemistry*, *Bioorganic Medicinal Chemistry*, *Bioorganic Medicinal Chemistry Letters*, *ACS Medicinal Chemistry Letters*, *Bioorganic Chemistry*, *Current Medicinal Chemistry*, *MedChemComm*, *Journal of Enzyme Inhibition and Medicinal Chemistry*, *Tetrahedron*, *Synthesis*.

✓ Jury member for the recruitment of Assistant Professors at the University (**2007**: Rennes, **2008**: Nantes, **2009**: Angers, Caen, Rennes, **2010**: Nantes, **2012**: Nantes and **2014**: Tours).

✓ Examiner of PhD thesis and President of the jury

- A. Couhert – Design of dual melatonergic and serotonergic ligands with azaindole and furopyridine structures – 19<sup>th</sup> February **2015** – Medicinal Chemistry – University of Orléans.

- Y. Loidreau – Synthesis of heterocyclic compounds [6,5,6] polyheteroatomic, as potential kinases inhibitors – 5<sup>th</sup> September **2013** – Medicinal Chemistry – University of Rouen.

✓ Reviewer of PhD thesis.

- Y. Jr Esvan – Design and synthesis of new heteroaromatic compounds as potential kinases inhibitors – 27<sup>th</sup> October **2016** – Organic Chemistry & Biology – University Blaise Pascal of Clermont-Ferrand.

- K. Al Sabil – Semisynthesis in tocotrienol series - Development and valorisation of *ortho*-formylation – Biological evaluation – 14<sup>th</sup> September **2016** – Organic Chemistry – University of Angers.

- E. Moine – Design, synthesis and evaluation of new anti-apicomplexan imidazoazines for therapeutic purpose – 9<sup>th</sup> October **2015** – Antiparasitic Medicinal Chemistry – University of Tours.

- K. Greaney – Synthesis and evaluation of novel quinolines and quinazolinédiones as potential anti-cancer agents – 24<sup>th</sup> November **2014**. Medicinal Chemistry, University College Cork, Ireland (CV selection by the "College of Science, Engineering and Food Science").

- S. Le Corre – New cationic phospholipids for nucleic acids delivery – 22<sup>th</sup> September **2014** – Medicinal Chemistry – University of Brest.

✓ Reviewer of habilitation to direct researchs (HDR)

- Dr B. Pérès – Design, synthesis and biological evaluation of modulators of ABC transporters to circumvent multidrug resistances – 19<sup>th</sup> May **2017**. Department of "Pharmacochimie Moléculaire" UMR CNRS 5063 – University of Grenoble Alpes.

### 7- Organization of congress

✓ President of the local organising committee – 22<sup>th</sup> European Conference of the Group of Medicinal Chemists of the Atlantic Arc (GP2A), Nantes, August 28-29, **2014**.

✓ Project holder for the organisation of 55<sup>th</sup> International Conference on Medicinal Chemistry, Nantes, July **2019**.

### 8- Additional information

✓ Webmaster of IICiMed team (<http://www.iicimed.univ-nantes.fr>).

✓ Responsible for the UPLC-MS analytical platform of IICiMed team.

✓ Responsible for the control and management of "Central storage of chemicals" – Faculty of Medicine and Pharmacy, University of Nantes.

**I- LIST OF SUPERVISION OF PhD THESES and MASTERS (MSc)**

**1- PhD Theses (T)**

**T12.** Dartagnan DE SÁ PIRES FERREIRA (International joint supervision 50%) – Total synthesis and pharmacomodulation of cercosporamide, a natural product of promising biological interest – from April **2017**.

Co-direction: Prof. Jefferson Luiz Princival, Recife – Federal University of Pernambuco, Brazil.

**T11.** Marlene SARAIVA DE ARAÚJO NETA (International joint supervision 50%) – Design, synthesis, physicochemical properties and molecular modeling study of novel heterocyclic thiosemicarbazones and thiazolidinones for the treatment of infectious diseases – from October **2016**.

Co-direction: Prof. Antônio Rodolfo de Faria, Recife – Federal University of Pernambuco, Brazil.

**T10.** Viet Hung DAO (Director, 50%) – Design, synthesis and biological evaluation of benzofuro[3,2-*d*]pyridines and dibenzo[*b,d*]furans, derived from cercosporamide natural product – 18<sup>th</sup> October **2018**.

Co-supervision: Dr I. Ourliac-Garnier.

**T9.** Anne Cecília NASCIMENTO DA CRUZ - Assessment of the cytotoxicity, mutagenicity and antitumor potential of new arylsemicarbazone and arylthiosemicarbazone derivatives – 27<sup>th</sup> July **2018**.

Co-direction : Prof. Gonçalves da Silva and Prof. Dalci José Brondani, Recife – Federal University of Pernambuco, Brazil.

**T8.** Arsênio RODRIGUES OLIVEIRA (International joint supervision 50%) – Design, synthesis and biological evaluation of new multi-target hybrid heterocyclic molecules – 10<sup>th</sup> July **2018**.

Co-direction: Prof. Ana Cristina L. Leite, Recife – Federal University of Pernambuco, Brazil.

**T7.** Juan Emmanuel REYNOSO LARA (International co-supervision 50%) – Design and synthesis of imidazo[1,2-*a*]pyridines and imidazo[1,2-*a*]pyrimidines substituted by an amide functional group as antimicrobial agents – 29<sup>th</sup> June **2018**.

Co-direction : Dr Maria Elena Campos Aldrete, Mexico City – Institut Polytechnique National, Mexico.

**T6.** Sophie MARHADOUR (Director, 60%) – Synthesis and biological evaluation of substituted imidazo[1,2-*a*]pyridines and imidazo[1,2-*a*]pyrazines – 25<sup>th</sup> October **2012**.

Co-supervision: Dr F. Pagniez.

**T5.** Julien DEFAUX (Director, 100%) – Synthesis and pharmacological evaluation of azaheterocyclic compounds with antitumor activity – 4<sup>th</sup> December **2009**.

**T4.** Céline REVERDY (Co-Director, 50%) – Synthesis of polysubstituted heterocycles as dopamine receptor antagonists D3>D2 and serotonin receptor antagonists 5-HT<sub>6</sub> with antipsychotic properties – 30<sup>th</sup> October **2009** – Director: Prof. M. Duflos.

**T3.** Vincent BABONNEAU (Co-supervision, 50%) – Synthesis and pharmacological evaluation of indole and quinoline derivatives with melatonergic and serotonergic properties – 20<sup>th</sup> October **2006** – Director: Prof. S. Piessard.

**T2.** Maud ANTOINE (Co-supervision, 70%) – Synthesis and pharmacological evaluation of indole and pyridopyrazine derivatives with antitumor activity – 18<sup>th</sup> October **2005** – Director: Prof. G. Le Baut.

**T1.** Alain PUGET (Co-supervision, 50%) – Synthesis and pharmacological evaluation of indole-based peptidomimetics potentially LHRH antagonists – 12<sup>th</sup> June **2003** – Director: Prof. G. Le Baut.

### 2- Master 2 (MSc) – Molecular and Medicinal Chemistry (M)

**M13.** Aurélie BESSON – Design and synthesis of analogues of a naturally occurring compound, cercosporamide, for antifungal purposes – 30<sup>th</sup> June **2017**.

**M12.** Marine GARNIER – Design of oxygen-containing aminopyrimidine derivatives of ellipticine as antitumor agents – 30<sup>th</sup> June **2015**.

**M11.** Adrien COLAISSEAU – Design of methotrexate analogues with antitumor activity – 26<sup>th</sup> June **2014**.

**M10.** Mathilde PANTIN – Toward the total synthesis of cercosporamide, a natural product with therapeutic properties – 27<sup>th</sup> June **2013**.

**M9.** Marie BETOU – Synthesis of functionalized oxygen- and nitrogen-containing heterocycles with potential antipsychotic properties – 27<sup>th</sup> June **2009**.

**M8.** Nicolas ZIMMERMANN – Synthesis of polysubstituted 1,5-naphthyridines as kinases inhibitors – 20<sup>th</sup> June **2008**.

**M7.** Rémi GUILLON – Synthesis and pharmacological evaluation of 2-arylindoles with potential immunosuppressive properties – 26<sup>th</sup> June **2007**.

**M6.** Hélène STAUB – Design of pyridopyrazines with antitumor activity – 23<sup>th</sup> June **2006**.

**M5.** Grégory LANDELLE – Synthesis of quinoline analogues of agomelatine with melatonergic and serotonergic properties – 23<sup>th</sup> June **2006**.

**M4.** Romain EL SAIR – Synthesis of pyrido[3,4-*b*]pyrazines as potential kinases inhibitors – 30<sup>th</sup> June **2005**.

**M3.** Cédric VERGER – Synthesis of *N*-(pyridin-4-yl)-2-[1-(4-chlorobenzyl)indol-3-yl]glyoxamide (D-24851) analogues with antitumor activity – 26<sup>th</sup> June **2003**.

**M2.** Alain PUGET (Co-supervision 50% with Prof. G. Le Baut) – Synthesis indole derivatives with antitumor activity – 22<sup>th</sup> June **2000**.

**M1.** Cédric PRAUD (Co-supervision 50% with Prof. G. Le Baut) – Synthesis indole derivatives with potential therapeutic properties – 30<sup>th</sup> September **1999**.

## II- LIST OF PUBLICATIONS AND SCIENTIFIC PRODUCTIONS

### 1- Publications (P)

**P.42.** Winfield, H. J.; Cahill, M. M.; O'Shea, K. D.; Pierce, L. T.; Robert, T.; Ruchaud, S.; Bach, S.; Marchand, P.; McCarthy, F. O. Synthesis and anticancer activity of novel bisindolylhydroxymaleimide derivatives with potent GSK-3 kinase inhibition. *Bioorg. Med. Chem.* **2018**. doi: 10.1016/j.bmc.2018.07.012.

**P.41.** Dao, V. H.; Ourliac-Garnier, I.; Bazin, M.-A.; Jacquot, C.; Baratte, B.; Ruchaud, S.; Bach, S.; Grovel, O.; Le Pape, P.; Marchand, P. Benzofuro[3,2-*d*]pyrimidines inspired from cercosporamide *CaPkc1* inhibitor: synthesis and evaluation of fluconazole susceptibility restoration. *Bioorg. Med. Chem. Lett.* **2018**, 28, 2250-2255.

- P40.** Reynoso, J. E.; Salgado-Zamora, H.; Bazin, M.-A.; Campos-Aldrete, M. E.; Marchand, P. Design and synthesis of imidazo[1,2-*a*]pyridines with carboxamide group substitution and *in silico* evaluation of their interaction with a LuxR-type quorum sensing receptor. *J. Heterocycl. Chem.* **2018**, *55*, 1101-1111.
- P39.** Arruda Lima, S.; Gonçalves Melo, J.; Gadelha Militão, G. C.; Souza Lima, G. M.; Alves Lima, M. C.; Santos Aguiar, J.; Mendonça Araújo, J.; Braz-Filho, R.; **Marchand, P.**; Araújo, J. M.; Gonçalves Silva, T. Characterization of the biochemical, physiological, and medicinal properties of *Streptomyces hygroscopicus* ACTMS-9H isolated from the Amazon (Brazil). *Appl. Microbiol. Biotechnol.* **2017**, *101*, 711-723.
- P38.** Bazin, M.-A.; Rousseau, B.; Marhadour, S.; Tomasoni, C.; Evenou, P.; Piessard, S.; Vaisberg, A. J.; Ruchaud, S.; Bach, S.; Roussakis, C.; **Marchand, P.** Discovery of (imidazo[1,2-*a*]pyrazin-6-yl)ureas as antiproliferative agents targeting P53 in non-small cell lung cancer cell lines. *Anticancer Res.* **2016**, *36*, 1621-1630.
- P37.** Antoine, M.; Schuster, T.; Seipelt, I.; Aicher, B.; Teifel, M.; Günther, E.; Gerlach, M.; **Marchand, P.** Efficient synthesis of novel disubstituted pyrido[3,4-*b*]pyrazines for the design of protein kinase inhibitors. *Med. Chem. Commun.* **2016**, *7*, 224-229.
- P36.** **Marchand, P.**; Bazin, M.-A.; Pagniez, F.; Rivière, G.; Boderio, L.; Marhadour, S.; Nourrisson, M.-R.; Picot, C.; Ruchaud, S.; Bach, S.; Baratte, B.; Sauvain, M.; Castillo Pareja, D.; Vaisberg, A. J.; Le Pape, P. Synthesis, antileishmanial activity and cytotoxicity of 2,3-diaryl- and 2,3,8-trisubstituted imidazo[1,2-*a*]pyrazines. *Eur. J. Med. Chem.* **2015**, *103*, 381-395.
- P35.** Loidreau, Y.; Deau, E.; **Marchand, P.**; Nourrisson, M.-R.; Logé, C.; Coadou, G.; Loaëc, N.; Meijer, L.; Besson, T. Synthesis and molecular modelling studies of 8-arylpyrido[3',2':4,5]thieno[3,2-*d*]pyrimidin-4-amines as multitarget Ser/Thr kinases inhibitors. *Eur. J. Med. Chem.* **2015**, *92*, 124-134.
- P34.** Defaux, J.; Antoine, M.; Logé, C.; Le Borgne, M.; Schuster, T.; Seipelt, I.; Aicher, B.; Teifel, M.; Günther, E.; Gerlach, M.; **Marchand, P.** Discovery of (7-aryl-1,5-naphthyridin-2-yl)ureas as dual inhibitors of ERK2 and Aurora B kinases with antiproliferative activity against cancer cells. *Bioorg. Med. Chem. Lett.* **2014**, *24*, 3748-3752.
- P33.** Defaux, J.; Antoine, M.; Le Borgne, M.; Schuster, T.; Seipelt, I.; Aicher, B.; Teifel, M.; Günther, E.; Gerlach, M.; **Marchand, P.** Discovery of 7-aryl-substituted (1,5-naphthyridin-4-yl)ureas as Aurora kinase inhibitors. *ChemMedChem* **2014**, *9*, 217-232.
- P32.** Deau, E.; Loidreau, Y.; **Marchand, P.**; Nourrisson, M.-R.; Loaëc, N.; Meijer, L.; Levacher, V.; Besson, T. Synthesis of novel 7-substituted pyrido[2',3':4,5]furo[3,2-*d*]pyrimidin-4-amines and their *N*-aryl analogues and evaluation of their inhibitory activity against Ser/Thr Kinases. *Bioorg. Med. Chem. Lett.* **2013**, *23*, 6784-6788.
- P31.** Bazin, M.-A.; Boderio, L.; Tomasoni, C.; Rousseau, B.; Roussakis, C.; **Marchand, P.** Synthesis and antiproliferative activity of benzofuran-based analogs of cercosporamide against non-small cell lung cancer cell lines. *Eur. J. Med. Chem.* **2013**, *69*, 823-832.
- P30.** Bazin, M.-A.; Marhadour, S.; Tonnerre, A.; **Marchand, P.** Exploration of versatile reactions on 2-chloro-3-nitroimidazo[1,2-*a*]pyridine: expanding structural diversity of C2- and C3-functionalized imidazo[1,2-*a*]pyridines. *Tetrahedron Lett.* **2013**, *54*, 5378-5382.



- P29.** Loidreau, Y.; **Marchand, P.**; Dubouilh-Benard, C.; Nourrisson, M.-R.; Duflos, M.; Loaëc, N.; Meijer, L.; Besson, T. Synthesis and biological evaluation of *N*-aryl-7-methoxybenzo[*b*]furo[3,2-*d*]pyrimidin-4-amines and their *N*-arylbenzo[*b*]thieno[3,2-*d*]pyrimidin-4-amine analogues as dual inhibitors of CLK1 and DYRK1A kinases. *Eur. J. Med. Chem.* **2013**, *59*, 283-295.
- P28.** Loidreau, Y.; Dubouilh-Benard, C.; **Marchand, P.**; Nourrisson, M.-R.; Duflos, M.; Buquet, C.; Corbière, C.; Besson, T. Efficient new synthesis of *N*-arylbenzo[*b*]furo[3,2-*d*]pyrimidin-4-amines and their benzo[*b*]thieno[3,2-*d*]pyrimidin-4-amine analogues *via* a microwave assisted Dimroth rearrangement. *J. Heterocyclic Chem.* **2013**, *50*, 1187-1197.
- P27.** Marhadour, S.; **Marchand, P.**; Pagniez, F.; Bazin, M.-A.; Picot, C.; Lozach, O.; Ruchaud, S.; Antoine, M.; Meijer, L.; Rachidi, N.; Le Pape, P. Synthesis and biological evaluation of 2,3-diarylimidazo[1,2-*a*]pyridines as antileishmanial agents. *Eur. J. Med. Chem.* **2012**, *58*, 543-556.
- P26.** Loidreau, Y.; **Marchand, P.**; Dubouilh-Benard, C.; Nourrisson, M.-R.; Duflos, M.; Lozach, O.; Loaëc, N.; Meijer, L.; Besson, T. Synthesis and biological evaluation of *N*-arylbenzo[*b*]thieno[3,2-*d*]pyrimidin-4-amines and their pyrido and pyrazino analogues as Ser/Thr kinase inhibitors. *Eur. J. Med. Chem.* **2012**, *58*, 171-183.
- P25.** Loidreau, Y.; **Marchand, P.**; Dubouilh-Benard, C.; Nourrisson, M.-R.; Duflos, M.; Besson, T. First synthesis of 4-aminopyrido[2',3':4,5]furo[3,2-*d*]pyrimidines. *Tetrahedron Lett.* **2012**, *53*, 944-947.
- P24.** Marhadour, S.; Bazin, M.-A.; **Marchand, P.** An efficient access to 2,3-diarylimidazo[1,2-*a*]pyridines *via* imidazo[1,2-*a*]pyridine-2-yltriflate through a Suzuki cross-coupling reaction-direct arylation sequence. *Tetrahedron Lett.* **2012**, *53*, 297-300.
- P23.** Antoine, M.; Gerlach, M.; Günther, E.; Schuster, T.; Czech, M.; Seipelt, I.; **Marchand, P.** A convenient synthesis of novel 2,8-disubstituted pyrido[3,4-*b*]pyrazines possessing biological activity. *Synthesis* **2012**, *44*, 69-82.
- P22.** Bretéché, A.; **Marchand, P.**; Nourrisson, M.-R.; Hauteffaye, P.; De Nanteuil, G.; Duflos, M. A convenient route to functionalized 3-amino-*N*-methylfuro[3,2-*b*]pyridine-2-carboxamides. *Tetrahedron* **2011**, *67*, 4767-4773.
- P21.** Antoine, M.; Czech, M.; Gerlach, M.; Günther, E.; Schuster, T.; **Marchand, P.** Preparation of novel 2,3,8-trisubstituted pyrido[3,4-*b*]pyrazines and pyrido[2,3-*b*]pyrazines. *Synthesis* **2011**, *5*, 794-806.
- P20.** Giraud, F.; **Marchand, P.**; Carbonnelle, D.; Sartor, M.; Lang, F.; Duflos, M. Synthesis of *N*-aryl-3-(indol-3-yl)propanamides and their immunosuppressive activities. *Bioorg. Med. Chem. Lett.* **2010**, *20*, 5203-5206.
- P19.** Bretéché, A.; **Marchand, P.**; Nourrisson, M.-R.; De Nanteuil, G.; Duflos, M. A convenient route to functionalized 3-amino-6-bromofuro[3,2-*b*]pyridine-2-carboxamides. *Tetrahedron* **2010**, *66*, 4490-4494.
- P18.** **Marchand, P.**; Antoine, M.; Le Baut, G.; Czech, M.; Baasner, S.; Günther, E. Synthesis and structure-activity relationships of *N*-aryl(indol-3-yl)glyoxamides as antitumor agents. *Bioorg. Med. Chem.* **2009**, *17*, 6715-6727.
- P17.** Carbonnelle, D.; Duflos, M.; **Marchand, P.**; Chauvet, C.; Petit, J.-Y.; Lang, F. A novel indole-3-propanamide exerts its immunosuppressive activity by inhibiting JAK3 in T cells. *J. Pharmacol. Exp. Ther.* **2009**, *331*, 710-716.



- P16.** Antoine, M.; **Marchand, P.**; Le Baut, G.; Czech, M.; Baasner, S.; Günther, E. Side chain modifications of (indol-3-yl)glyoxamides as antitumor agents. *J. Enzym. Inhib. Med. Chem.* **2008**, *23*, 686-695.
- P15.** Le Borgne, M.; **Marchand, P.**; Nourrisson, M-R.; Loquet, D.; Palzer, M.; Le Baut, G.; Hartmann, R.W. Synthesis and biological evaluation of 3-(azolylmethyl)-1*H*-indoles and 3-( $\alpha$ -azolylbenzyl)-1*H*-indoles as selective aromatase inhibitors. *J. Enzym. Inhib. Med. Chem.* **2007**, *22*, 667-676.
- P14.** Pagniez, F.; Abdala, H.; **Marchand, P.**; Le Borgne, M.; Robert-Piessard, S.; Le Pape, P. 3-( $\alpha$ -Azolylbenzyl)indoles: *in vitro* and *in vivo* anti-*Leishmania* activity and mechanism of action. *J. Enzym. Inhib. Med. Chem.* **2006**, *21*, 277-283.
- P13.** Lebouvier, N.; Giraud, F.; Corbin, T.; Na, Y.M.; Le Baut, G.; **Marchand, P.**; Le Borgne, M. Efficient microwave-assisted synthesis of 2-phenyl-1-(1*H*-indol-1-yl)-3-(1*H*-1,2,4-triazol-1-yl)propan-2-ol derivatives with potential antifungal activity. *Tetrahedron Lett.* **2006**, *47*, 6479-6483.
- P12.** **Marchand, P.**; Puget, A.; Le Baut, G.; Emig, P.; Czech, M.; Günther, E. Palladium(II)-catalyzed heterocyclisation of 8-arylethynyl-1,2,3,4-tetrahydroquinolines: a facile route to 2-aryl-5,6-dihydro-4*H*-pyrrolo[3,2,1-*ij*]quinoline derivatives. *Tetrahedron* **2005**, *61*, 4035-4041.
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