

IRB BARCELONA 2010 ANNUAL REPORT

SCIENCE AT IRB BARCELONA

Research Programmes

Chemistry and Molecular Pharmacology

Antoni Riera: Asymmetric synthesis



Group Members

Group Leader

Antoni Riera.
*Professor (Organic
Chemistry Dept. - UB)*

Research Associate

Xavier Verdaguer

Postdoctoral Fellow

Agustí Lledó

PhD Students

Núria Aiguabella
Edgar Cristobal
Àlex De La Fuente
Sean Doran
Thierry Leon
Pablo Antonio Martín
Yi Ning Ji
Marc Revés
Ana María Vázquez

Lab Technician

Daniel Byrom

Highlights

- We have designed and synthesized new P-stereogenic aminophosphines, which are key components of chiral catalysts. These catalysts are highly efficient in the preparation of unnatural amino acids.
- We have studied regioselectivity in the intermolecular Pauson-Khand reaction of fluorinated alkynes.
- We have provided new insights into the mechanism of the Pauson-Khand reaction using phosphine-alkene ligands.

Publications

- Brun S, Parera M, Pla-Quintana A, Roglans A, Leon T, Achard T, Sola J, Verdaguer X, and Riera, A. Chiral N-phosphino sulfinamide ligands in rhodium(I)-catalyzed [2+2+2] cycloaddition reactions. *Tetrahedron*, 66, 9032-9040 (2010)
- Ferrer C, Benet-Buchholz J, Riera A and Verdaguer X. Phosphine-alkene ligands as mechanistic probes in the Pauson-Khand reaction. *Chemistry*, 16 (28), 8340-6 (2010)
- Kizirian JC, Aiguabella N, Pesquer A, Fustero S, Bello P, Verdaguer X and Riera A. Regioselectivity in intermolecular Pauson-Khand reactions of dissymmetric fluorinated alkynes. *Org Lett*, 12 (24), 5620-3 (2010)
- Revés M, Ferrer C, León T, Doran S, Etayo P, Vidal-Ferran A, Riera A and Verdaguer X. Primary and secondary aminophosphines as novel P-stereogenic building blocks for ligand synthesis. *Angew Chem Int Edit*, 49 (49), 9452-5 (2010)
- Riera A and Moreno M. Synthetic applications of chiral unsaturated epoxy alcohols prepared by sharpless asymmetric epoxidation. *Molecules*, 15 (2), 1041-73 (2010)
- Sola J, Riera A and Verdaguer X. Synthesis of a new camphor derived P,S(O) ligand. The importance of C-H...O bonding in the ligand exchange reactions with Co₂(micro-alkyne)(CO)₆ complexes. *J Organomet Chem*, 695, 2377-2380 (2010)

Collaborations

- NMR studies of peptide structures. Maria Macias, IRB Barcelona (Barcelona, Spain)
- Synthesis of pharmaceutically active compounds. Llorenç Rafecas, Alex Comely and Nicolas Tesson, Enantia SL (Barcelona, Spain)
- Synthesis of Somatostatin analogues. Berta Ponsatí, Jimena Fernández-Carneado and Marc Gómez, BCN Peptides SL (Barcelona, Spain)

Research projects

- Unitat de recerca en síntesi asimètrica. Grups de Recerca reconeguts per la Generalitat de Catalunya 2009-2013 (2009 SGR 901). Agency for Administration of University and Research Grants (AGAUR). Principal investigator: Antoni Riera
- Síntesis enantioselectiva de compuestos biológicamente activos y desarrollo de nueva metodología sintética. Proyectos de investigación fundamental (CTQ2008-00763). Spanish Ministry of Science and Innovation (MICINN). 2009-2011. Principal investigator: Antoni Riera
- Enantia, S.L (2010). Principal investigator: Antoni Riera
- Enantia, S.L (2010). Principal investigator: Xavier Verdaguer



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Parc Científic de Barcelona. C/ Baldori Reixac 10. 08028 Barcelona - Spain

Tel: +34 93 402 02 50 | Fax: +34 93 403 71 14

info@irbbarcelona.org