Organocatalysis and Central Chirality Playing Together for the Control

of Axial and Helical Chiralities

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The presentation will be devoted to our recent efforts toward the development of new enantioselective organocatalyzed synthetic sequences involving the reactivity of functionalized pronucleophiles such as 1,2-dicarbonyl, 1,3-dicarbonyl and phenol derivatives. [[1]](#footnote-1)

A special focus will be given on covalent and non-covalent organocatalytic activation modes with various bifunctional organocatalyst triggering the stereocontrol of both centrally,[[2]](#footnote-2) axially[[3]](#footnote-3) and helically[[4]](#footnote-4) chiral polyfunctionalized systems.

***Organocatalytic Control of Molecular Chirality***



Stereocenters

Central Chirality

Helicenes

Helical Chirality

Atropisomers

Axial Chirality

1. # . a) For a concept article, see: D. Bonne, T. Constantieux, Y. Coquerel, J. Rodriguez, *Chem. Eur. J*., **2013**, *19*, 2218; b) for a recent monograph, see: *Stereoselective multiple bond-forming transformations in organic synthesis.* D. Bonne, J. Rodriguez Eds, Wiley-VCH, **2015**; c) A. Quintard,D. Cheshmedzhieva,M. del Mar Sanchez Duque,A. Gaudel-Siri, J.-V. Naubron, Y. Génisson, J.-C. Plaquevent, X. Bugaut, J. Rodriguez, T. Constantieux. *Chem. Eur. J.* **2015**, *21*, 778.

   [↑](#footnote-ref-1)
2. # . a) S. Goudedranche, X. Bugaut, T. Constantieux, D. Bonne, J. Rodriguez. *Chem. Eur. J.* **2014**, *20*, 410 ; b) C. Sasso D’Elia,S. Goudedranche,T. Constantieux,M. Bella, D. Bonne, J. Rodriguez *Adv. Synth. Cat.* **2017**, 359, 3638 ; c) Y.-L. Wei, Y. Ren, D. Mailhol, M. Rajzmann, J. Rodriguez, Y. Coquerel, *Adv. Synth. Cat.* **2019**, *361*, 2992 ; d) Y. Zhou, Y.-L. Wei, J. Rodriguez, Y. Coquerel *Angew. Chem. Int. Ed.* **2019**, *58*, 456 ; e) R. Beaud,B. Michelet, Y. Reviriot,A. Martin-Mingot, J. Rodriguez, D. Bonne,S. Thibaudeau, *Angew. Chem. Int. Ed.* **2020**, *59*, 1279.

   [↑](#footnote-ref-2)
3. # . a) O. Quinonero, M. Jean, N. Vanthuyne, C. Roussel, D. Bonne, T. Constantieux, C. Bressy, X. Bugaut, J. Rodriguez, *Angew. Chem. Int. Ed.* **2016**, *55*, 1401; b) [V. S. Raut](http://pubs.acs.org.lama.univ-amu.fr/author/Raut%2C+Vivek+S), [M. Jean](http://pubs.acs.org.lama.univ-amu.fr/author/Jean%2C+Marion), [N. Vanthuyne](http://pubs.acs.org.lama.univ-amu.fr/author/Vanthuyne%2C+Nicolas), [C. Roussel](http://pubs.acs.org.lama.univ-amu.fr/author/Roussel%2C+Christian), [T. Constantieux](http://pubs.acs.org.lama.univ-amu.fr/author/Constantieux%2C+Thierry), C. Bressy, X. Bugaut, D. Bonne, *J. Am. Chem. Soc.* **2017**, *139*, 2140 ; c) X. Bao, J. Rodriguez, D. Bonne, *Chem. Sci.* **2020**, *11*, 403. Y.-L. Wei, G. Dauvergne, J. Rodriguez, Y. Coquerel, *J. Am. Chem. Soc.* **2020**, *142*, 16921.

   [↑](#footnote-ref-3)
4. . P. Liu, X. Bao, J.-V. Naubron, S. Chentouf, S. Humbel, N. Vanthuyne, M. Jean, L. Giordano, J. Rodriguez, D. Bonne *J. Am. Chem. Soc.* **2020**, *142*, 16199. [↑](#footnote-ref-4)