



## Chemoselective and biocompatible reactions, new tools for heterocyclic chemistry and chemical biology

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The development of chemical reactions that can be performed in living systems (i.e. cells, model organisms) has long held unique fascination in the field of chemical biology. A bio-orthogonal reaction is characterized by the reaction of two functionalities, which will react under mild physiological conditions and are inert towards the biological environment. On the other hand, the discovery of chemical reactions fulfilling the criteria of the click chemistry concept continue to have a huge impact in many research fields including heterocyclic chemistry. Quintessential example is the copper-catalyzed azide-alkyne cycloadditions (CuAAC). Our laboratory is involved in the discovery and use of such reactions. Recent work from our team identified several mesoionic compounds as new efficient dipoles for click reactions with terminal alkynes<sup>1</sup> and for bioorthogonal reactions with cyclic alkynes.<sup>2</sup> These reactions were used both for biological and synthetic applications.

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<sup>1</sup> a) S. Kolodych, E. Rasolofonjatovo, M. Chaumontet, M-C. Nevers, C. Créminon, F. Taran. *Angew. Chem. Int. Ed.*, **2013**, *52*, 12056; b) V. Bevilacqua, M. King, M. Chaumontet, M. Nothisen, S. Gabillet, D. Buisson, C. Puente, A. Wagner, F. Taran. *Angew. Chem. Int. Ed.*, **2014**, *53*, 5872; c) E. Decuypere, S. Specklin, S. Gabillet, D. Audisio, H. Liu, L. Plougastel, S. Kolodych, F. Taran *Org. Lett.*, **2015**, *17*, 362.

<sup>2</sup> a) L. Plougastel, O. Koniev, S. Specklin, E. Decuypere, C. Créminon, D-A. Buisson, A. Wagner, S. Kolodych and F. Taran. *ChemComm*, **2014**, *50*, 9376; b) H. Liu, D. Audisio, L. Plougastel, E. Decuypere, D-A. Buisson, O. Koniev, S. Kolodych, A. Wagner, M. Elhabiri, A. Krzyczmonik, S. Forsback, O. Solin, V. Gouverneur and F. Taran. *Angew. Chem. Int. Ed.* **2016**, *55*, 12073.