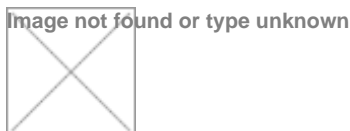


Deagostino Annamaria and Renzi Polyssena



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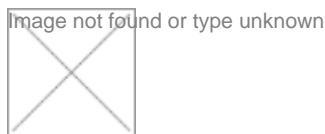
Jacopo Scarfiello

Marco Rusconi

Davide Cerrina

Martina Salmi

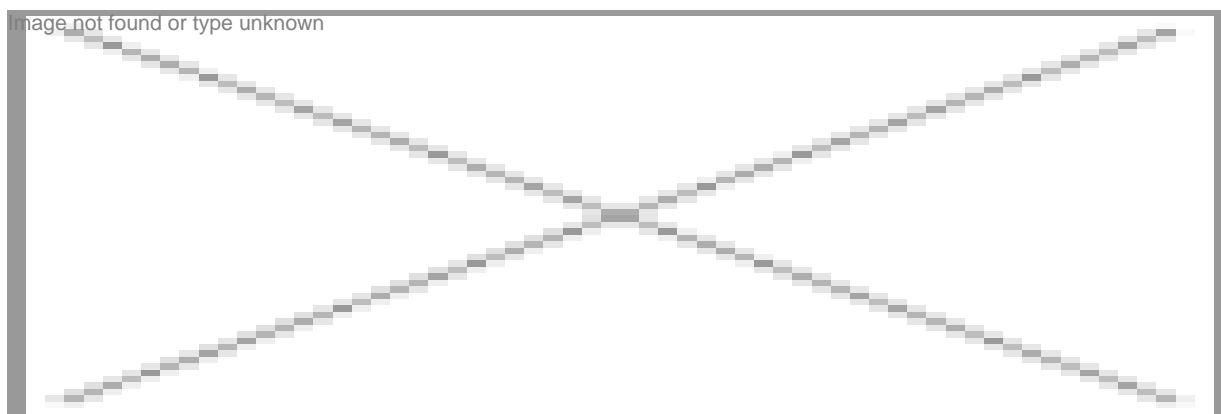
Synthesis of theranostic antitumoral agents for BNCT/MRI applications. This research line has been developed in strict collaboration with prof. S. Geninatti-Crich. In the last nine years dr Deagostino group optimised the synthesis of several lipophilic GdMRI/BNCT agents. BNCT is a binary radiation therapy used for the treatment of tumours. The molecules synthesised can be classified as “theranostic agents” since contain a carborane cage for BNCT applications and a Gd-DOTA complex which is an MRI probe and a GdNCT agent and allows the analysis of agent biodistribution essential for a precise design of the therapy. All these agents have been tested *in vitro* and one *in vivo* showing a good efficacy for the treatment of several tumours, e. g. lung tumour and mesothelioma. More recently, the research has been focused on boronated curcumine derivatives for the treatment of Alzheimer’s disease (in collaboration with prof. Simonetta Geninatti Crich).



Selected Publications

- *J. Contr. Rel.* 2018, 280, 31-38.
- *Chemmedchem* 2017, 12, 502-509.
- *Future Med. Chem.* 2016, 8, 899-917.
- *Org. Biomol. Chem.* 2015, 13, 3288-3297.
- *Nanomedicine* 2015, 11, 741-750. 3.
- *Org. Biomol. Chem.* 2014, 12, 2457.
- *Chem. Eur. J.* 2013, 19, 720. 6. I.F. = 5.731
- *Anti-Cancer Agents Med. Chemistry* 2012, 12, 543. 9. I.F. = 2.273
- *Chem. Eur. J.* 2011, 17, 8479-8486. 6. I.F. = 5.731
- *Org. Biomol. Chem.* 2008, 6, 4460. I.F = 3.562

New methodologies for the preparation of highly functionalised molecules catalysed by Pd(0) starting from allenes and conjugated dienes, also in a domino fashion. 1,2-Dienes and 1,3-dienes are interesting substrates because of their high reactivity. In fact, when they undergo a carbopalladation process a π -allyl palladium intermediate is formed and at least two reactive pathways have to be considered. If a nucleophile is present in the reaction medium the addition product is obtained, otherwise a β -H elimination occurs. The reactivity of 1-alkoxy- π -allylpalladium complexes, obtained from the corresponding alkoxydienes, was explored, and the dramatic effect of the alkoxy group on the regioselectivity of the Pd(0) catalysed coupling reactions was demonstrated. New methodologies for preparing π -arylated π,π -unsaturated aldehydes, substituted 3-alkenylindoles, 2-alkoxy-3-alkylidene-2,3-dihydrobenzofuranes and -indolidines were reported. More recently, *N*-Tosylhydrazone addition to Pd(II)- π -allyl complexes has been studied for the regio- and stereoselective synthesis of conjugated and skipped dienes.

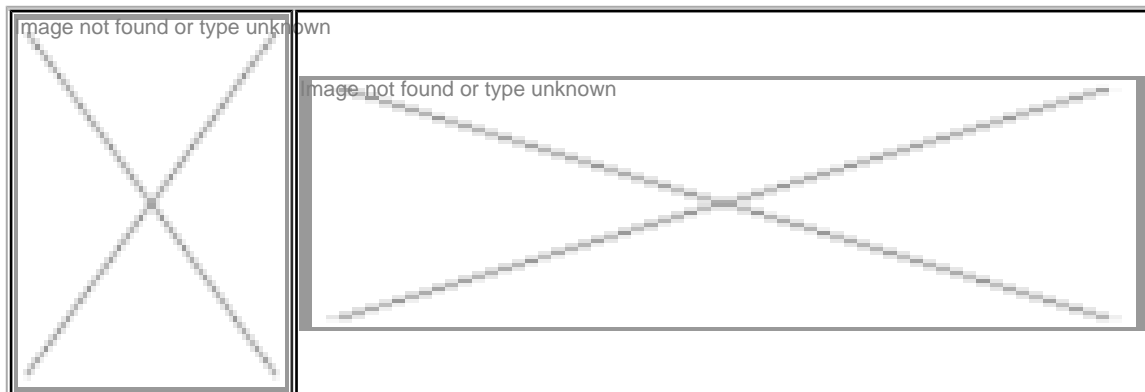


Selected Publications

- *Org. Lett.* 2018, 20, 6891-6895.
- *Chem. Eur. J.*, 2018, 24, 5484-5488.
- *Tetrahedron Lett.* 2015, 56, 5791-5794.
- *Eur. J. Org. Chem.* 2013, 2013, 6990.
- *Curr. Org. Chem.* 2011, 2390-2412.
- *Curr. Org. Chem.* 2010, 14, 230.
- *Molecules* 2010, 15, 2667.
- *Org. Biomol. Chem.* 2010, 8, 2020.
- *Tetrahedron* 2008, 64, 10344.
- *Org. Lett.* 2003, 5, 3815.

Visible light driven transformation of π,π -unsaturated sulfonylhydrazones catalyzed by metal complexes. Very recently, dr Deagostino began to collaborate with prof. Maurino in the field of visible-light photocatalysis which has recently emerged as powerful reaction manifold for chemical synthesis. This activation mode enables the transformation of visible light energy into chemical potential. Thereby, it

represents a greener and more sustainable route toward solar energy driven synthetic processes. Moreover, light activation is a convenient and selective switch for controlling chemical processes. The behaviour of α,β -unsaturated tosylhydrazones in visible light photocatalysed reactions was studied providing a novel route to access allylic sulfones in very mild conditions (in collaboration with prof. Valter Maurino).



Chemphotochem 2017, 1, 56-59.

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