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Einladung zum Vortrag von

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„The tale of two enantiomers – organic synthesis of inhibitors of enzymes and protein-protein-interactions“

In my presentation, I will present three case studies, how we used organic synthesis to develop inhibitors and mechanistic probes to investigate protein function. In the first part, I will present our collaborative effort with the group of Prof. Blankenfeldt (HZI Braunschweig, Germany) to investigate the biosynthesis of phenazines. Along these studies we have observed the first case that both enantiomers of a racemic ligand bind simultaneously to a protein.[1] In the second part of my talk I will describe our efforts to develop a comprehensive library of teraryl-based alpha-helix mimetics to address protein-protein interactions. Our synthesis relies on the use of Knochel-Turbo-Grignard reagents for the preparation of 5-substituted 3-pyridine boronic acids as building blocks and on a modular teraryl assembly using sequential Pd-catalyzed cross-coupling reactions.[2] Finally, I report about our journey to identify the first inhibitor of the physiologically relevant protein ATGL (adipose triglyzeride lipase). Atglistatin proved to be a useful tool compound to study ATGL function in vivo.[3]

References

[1] M. Mentel, W. Blankenfeldt, R. Breinbauer, Angew. Chem. Int. Ed. 2009, 48, 9084-9087.
[2] a) M. Peters, M. Trobe, H. Tan, R. Kleineweischede, R. Breinbauer, Chem. Eur. J. 2013, 19, 2442-2449. b) M. Peters, M. Trobe, R. Breinbauer, Chem. Eur. J. 2013, 19, 2450-2456. c) M. Trobe, M. Peters, S. H. Grimm, R. Breinbauer, Synlett 2014, 25, 1202-1214.
[3] N. Mayer, M. Schweiger, M. Romauch, G. F. Grabner, T. O. Eichmann, E. Fuchs, J. Ivkovic, C. Heier, I. Mrak, A. Lass, G. Höfler, C. Fledelius, R. Zechner, R. Zimmermann, R. Breinbauer, Nat. Chem. Biol. 2013, 9, 785-787.

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