BOOK OF ABSTRACTS

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Synthesis of Photoswitchable Inhibitors for CNS Applications

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Recent advances in the field of photo pharmacology [1] enabled photo control over a variety of proteins (e.g. ion channels). Photo switchable molecules can be switched between two isomers by irradiation with light. Ideally, the biological activity of the two isomers is largely different.

Within this contribution we investigate the feasibility to apply this concept to key proteins of CNS networks. We present the synthesis of novel photo switchable analogs based on well-studied ligands. Photo switchable small molecules might alter the functionality of targeted proteins to be light dependent. These photo-sensitive proteins would allow to study them in greater detail and thereby provide a deeper understanding of their functionality.

Azobenzene and Hemithioindigo [2] based photo switches (Figure 1) were utilized as two potential substance classes to achieve our goals. These two compound classes exhibit a wide range of thermal half-life times and different activation wavelengths. In addition, we report on preliminary biological data obtained from cell based assays.

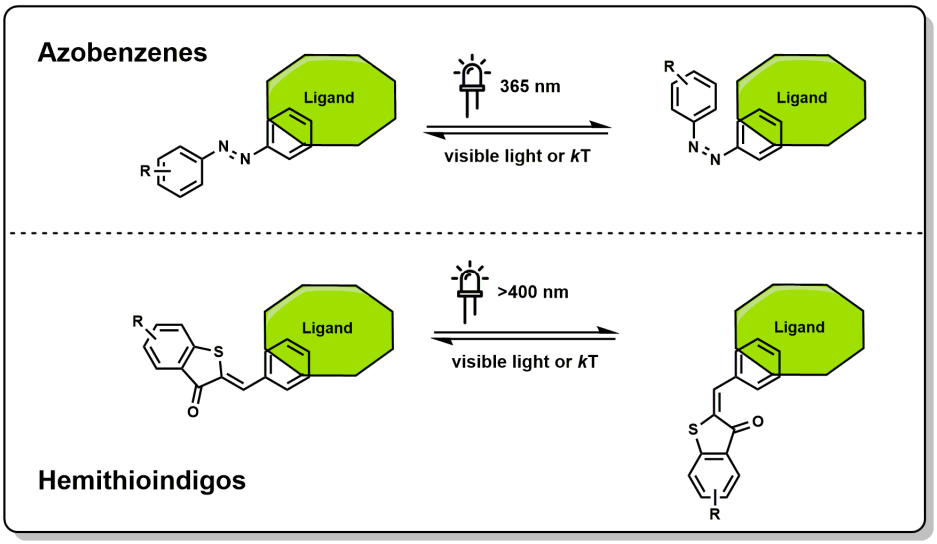

Figure 1: Application of Azobenzenes and Hemithioindigos in photopharmacology.

[1] J. Broichhagen, J. A. Frank, D. Trauner, *Acc. Chem. Res.* **2015**, *48*, 1947-1960.

[2] S. Wiedbrauk, H. Dube, *Tetrahedron Lett.* **2015**, *56*, 4266-4274.