Atroposelective construction of indole-fused diazocines via gold(I)-catalysed 8-endo-dig cyclisation

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Atropisomeric (hetero)biaryls are an important class of chiral compounds with broad applications in asymmetric catalysis, medicinal chemistry, and functional materials.[1] In particular, bridged biaryls present two ortho-substituted aryl units linked by a medium-size ring. Owing the interesting properties of this class of compounds, such as high configurational stability and well-defined 3D architectures,[2] we have developed a gold(I)-catalysed atroposelective cyclisation reaction that enables direct access to indole-fused diazocines featuring a rigid and configurationally stable C–N chiral axis from indole-derived aryl propiolamides.[3] Computational studies reveal that stereocontrol originates from a network of non-covalent interactions in key cyclisation intermediates. Moreover, the synthetic utility of the diazocine derivatives was further demonstrated through versatile downstream functionalisation of the products, as well as preliminary spectroscopic and DNA-interaction studies.

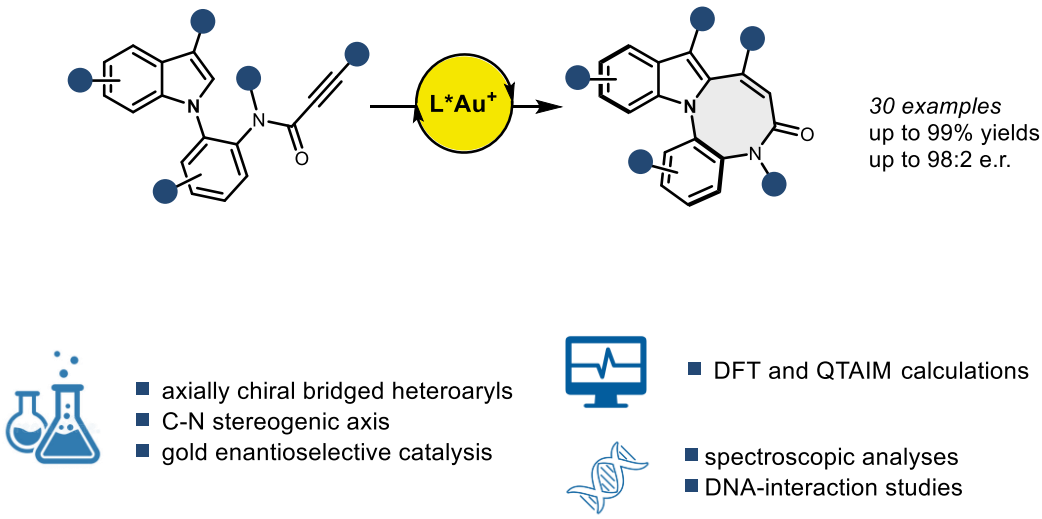

Figure 1. Enantioselective synthesis of indole-fused bridged biaryles through gold-catalysed cyclization reaction.

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