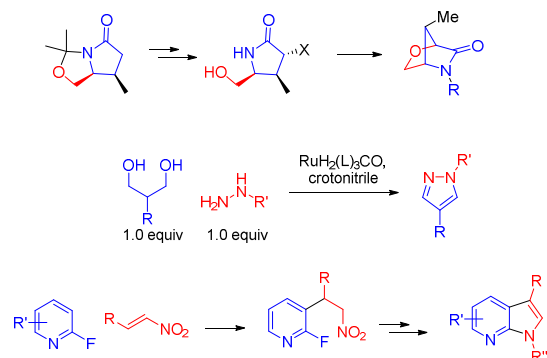


Novel Strategies for the Preparation of Functionalizable Heterocyclic Motifs

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The preparation of heterocyclic motifs provides an exciting platform from which to conduct fundamental research, particularly that which supports the study of the interaction of small molecules with therapeutically-relevant biological targets. Densely packed arrangements of heteroatoms and stereogenic centers constituting these polycyclic subunit challenge the limits of current technology, prompting the need for new strategies for the synthesis of these systems. Novel approaches which have demonstrated our access to these challenging molecular architectures will be presented-- a ruthenium-catalyzed hydrogen transfer of 1,3-diols in the presence of alkyl hydrazines to furnish 1,4-disubstituted pyrazoles and an intramolecular displacement of an α -carbonyl fluoride by a tethered alkoxide to furnish [2.2.1] azabicyclics with excellent stereocontrol will be disseminated. Furthermore, a versatile approach to 5,6-fused heteroaromatics will be described which involves the conjugate addition of a metallated 2-fluoropyridine to substituted nitroolefins followed by a tractable 3-step sequence capable of furnishing these highly important bicyclic arrays.