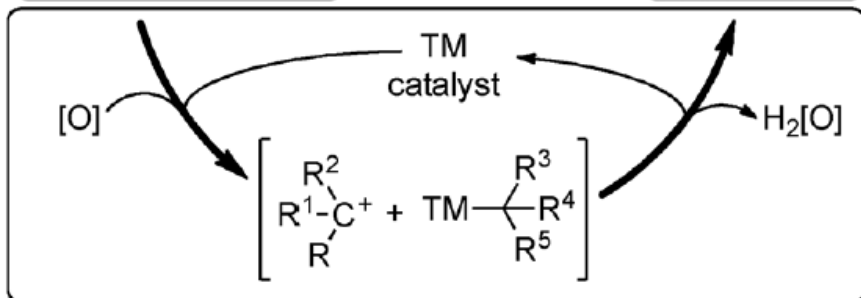
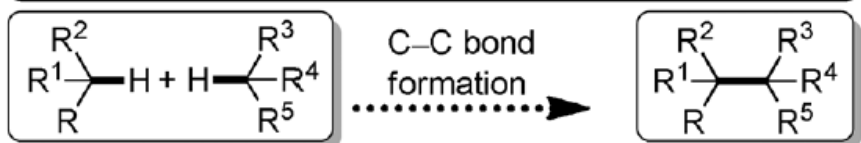
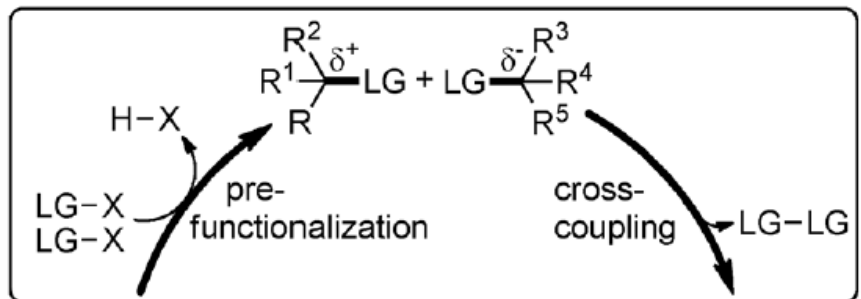


Li-Coupling

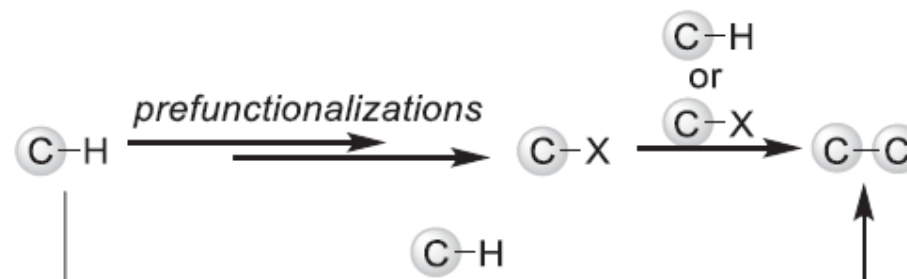
李朝军偶联反应

Cross Dehydrogenative Coupling (CDC)

classic cross-coupling



cross-dehydrogenative coupling (CDC)



CDC (step economic, atom economic, late-stage functionalization)



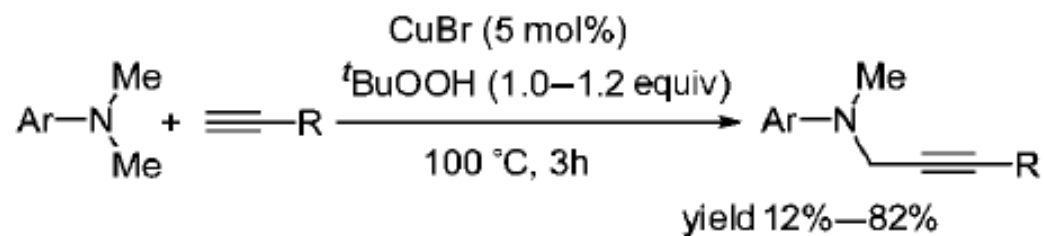
Publications (> 470) Books (7) Patents (14)

Total citations (> 43,000)

<u>Education</u>	
1992 - 1994	NSERC POST-DOCTORAL FELLOW (Organic Synthesis, Stanford University), Advisor: Professor B. M. Trost
1989 - 1992	Ph.D. (Organic Chemistry, McGill University), Advisors: Professors T. H. Chan and D. N. Harpp
1985 - 1988	M.S. (Organic Synthesis, Chinese Academy of Science), Advisor: Professor T. H. Chan (McGill University)
1979 - 1983	B.S. (Chemistry, Zhengzhou University, China)

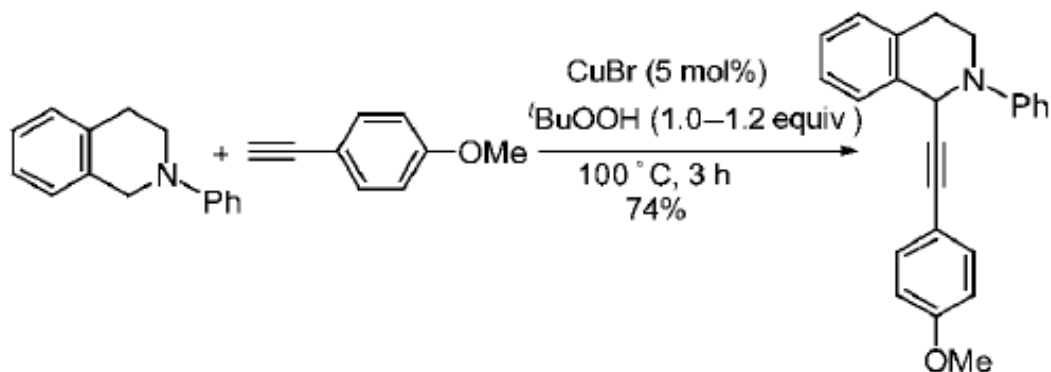
<u>Career</u>	
2012 - present	DIRECTOR , NSERC CREATE CENTER FOR GREEN CHEMISTRY TRAINING
2009 - present	E. B. EDDY CHAIR PROFESSOR OF CHEMISTRY AND CANADA RESEARCH CHAIR (Tier I) (in GREEN/ORGANIC CHEMISTRY) Department of Chemistry, McGill University, Canada
2003 - present	PROFESSOR OF CHEMISTRY AND CANADA RESEARCH CHAIR (Tier I) (in GREEN/ORGANIC CHEMISTRY) Department of Chemistry, McGill University, Canada
2008 - 2016	Co-CHAIR , CANADIAN GREEN CHEMISTRY AND ENGINEERING NETWORK
2009 - present	DIRECTOR , CFI INFRASTRUCTURE FOR GREEN CHEMISTRY AND GREEN CHEMICALS
2009 - present	CO-DIRECTOR , FQRNT CENTER FOR GREEN CHEMISTRY AND CATALYSIS
2005 - 2008	COORDINATOR , CANADIAN GREEN CHEMISTRY NETWORK
2000 - 2003	PROFESSOR OF CHEMISTRY Department of Chemistry, Tulane University, USA
2002 (Fall)	VISITING PROFESSOR Department of Chemistry, University of California, Berkeley, USA
1998 - 2000	ASSOCIATE PROFESSOR Department of Chemistry, Tulane University, New Orleans, USA
1994 - 1998	ASSISTANT PROFESSOR Department of Chemistry, Tulane University, New Orleans, USA

C(sp³) – C(sp¹) Coupling

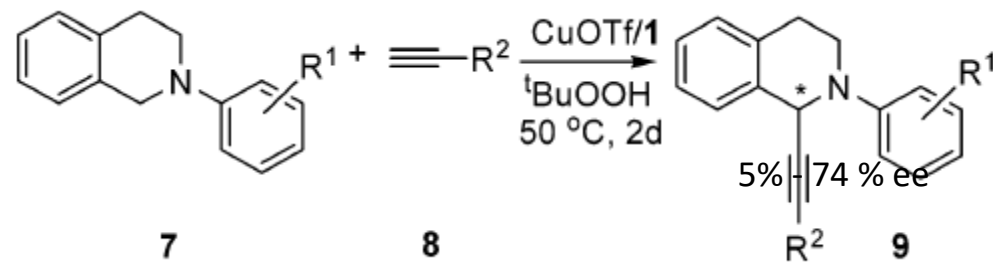


Ar= Ph, 4-MeC₆H₄, 2-MeC₆H₄, 4-BrC₆H₄

R= Ph, 4-MeC₆H₄, 4-MeOC₆H₄, 4-BrC₆H₄, 4-PhC₆H₄, 2-Py,
HOCH₂, EtCO₂CH₂, CH₃OCO, Bu



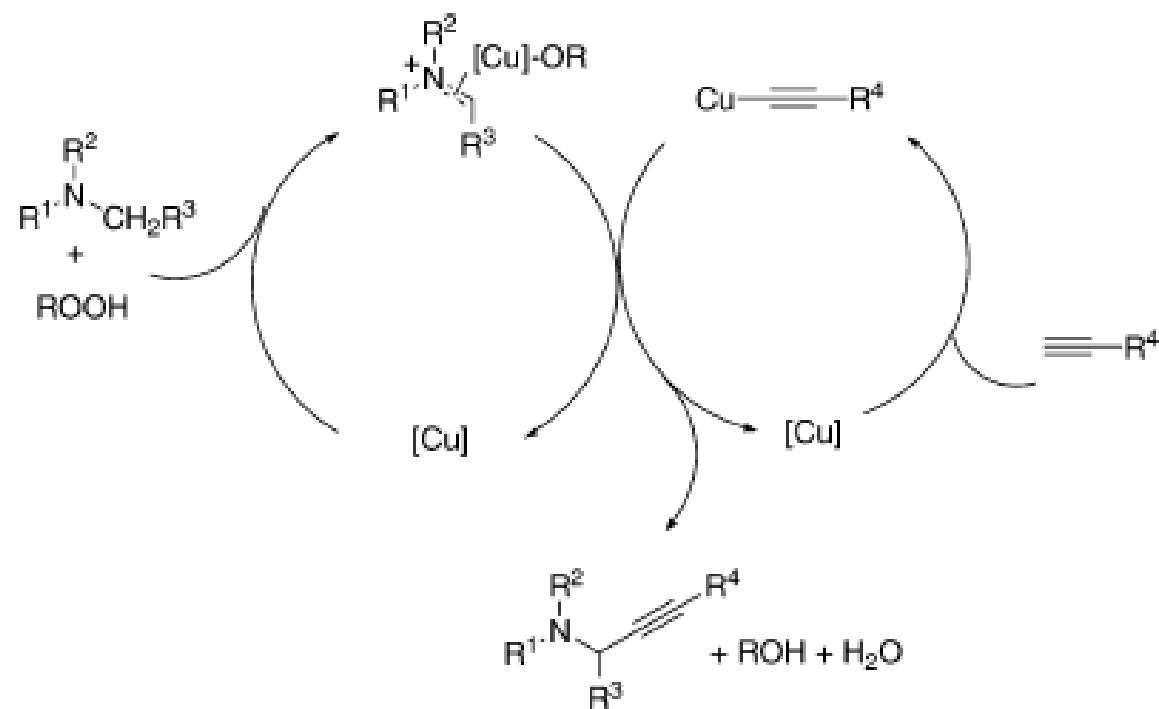
J. Am. Chem. Soc. 2004, 126, 11810-11811



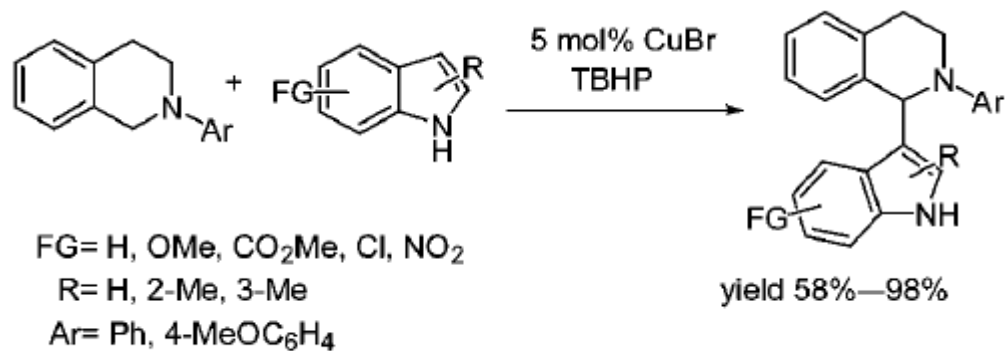
Pure & Appl. Chem. 2006, 78, 935-945

Org Lett. 2004, 6, 4997-4999

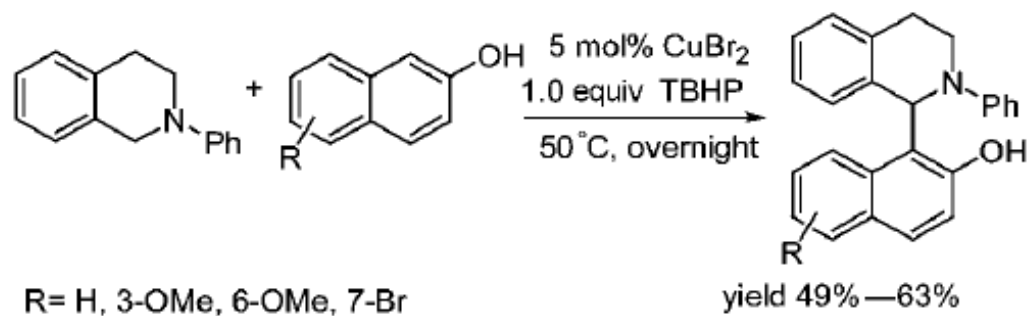
Tentative mechanism



C(sp³) – C(sp²) Coupling

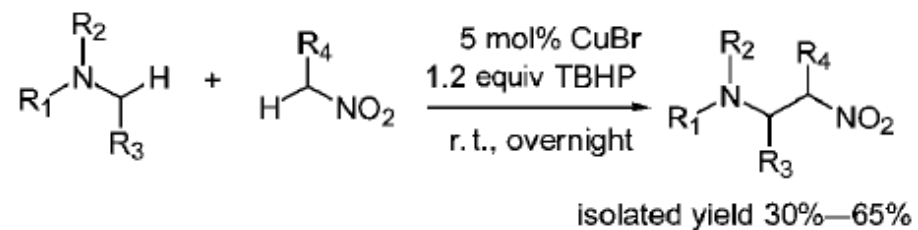


J. Am. Chem. Soc. 2005, 127, 3672-3673

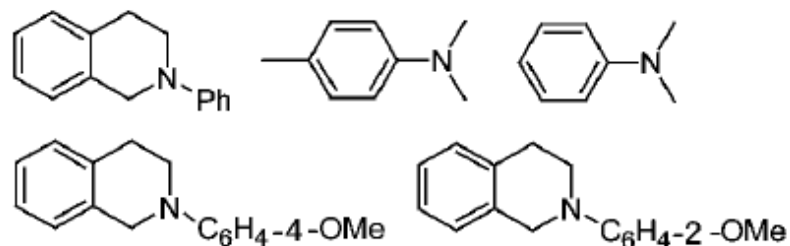


Proc. Natl. Acad. Sci. (USA) 2006, 103, 8928-8933

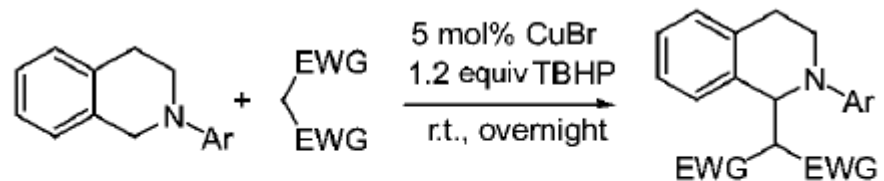
C(sp³) – C(sp³) Coupling



amine



J. Am. Chem. Soc. 2005, 127, 6968-6969



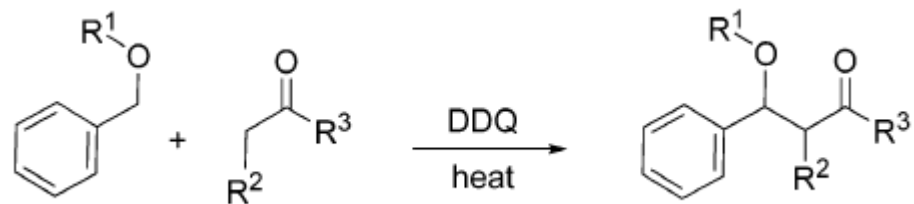
Ar = Ph, 2-MeO-C₆H₄, 4-MeOC₆H₄

yield 46%–82%

EWG = CN, CO₂Me, CO₂Et, CO₂Bn, CO₂^tPr, CO₂^tBu

Eur. J. Org. Chem. 2005, 15, 3173-3176

C(sp³) – C(sp³) Coupling



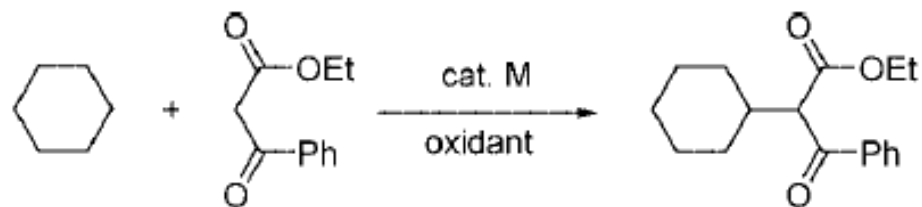
J. Am. Chem. Soc. 2006, 128, 4242-4243

Angew. Chem. Int. Ed. Engl. 2006, 45, 1949-1952

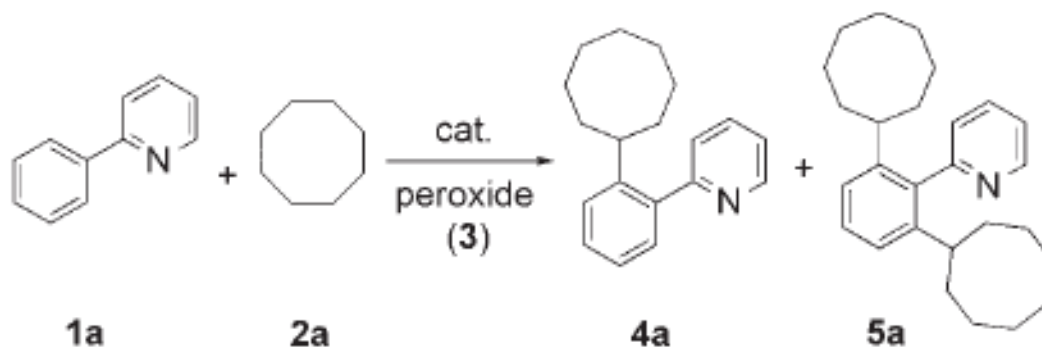


J. Am. Chem. Soc. 2006, 128, 56-57

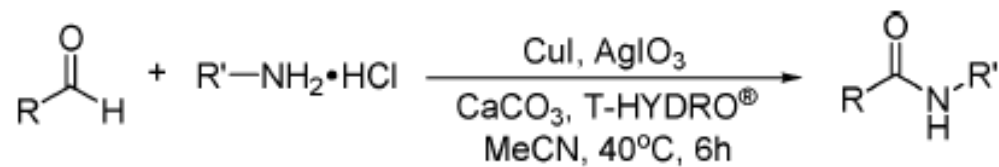
C(sp³) – C(sp³) Coupling



Eur. J. Org. Chem. 2007, 28, 4654-4657



Angew. Chem. Int. Ed. Engl. 2008, 47, 6278-6280



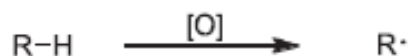
J. Am. Chem. Soc. 2006, 128, 13064-13065

En Route to Intermolecular Cross-Dehydrogenative Coupling Reactions

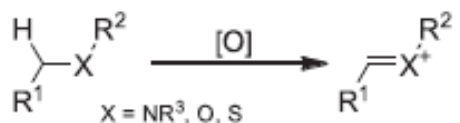
Chia-Yu Huang,[‡] Hyotaik Kang,[‡] Jianbin Li,[‡] and Chao-Jun Li^{*†}

Department of Chemistry and FRQNT Centre for Green Chemistry and Catalysis, McGill University, 801 Sherbrooke Street W, Montreal, Quebec H3A 0B8, Canada

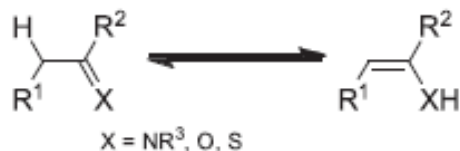
(a) hydrogen atom abstraction



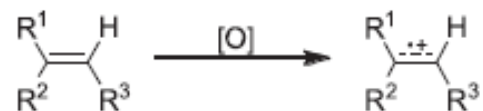
(b) α -heteroatom-driven hydride removal



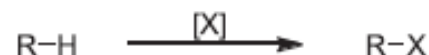
(c) tautomerization



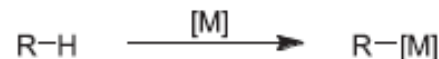
(d) single-electron alkene/arene oxidation



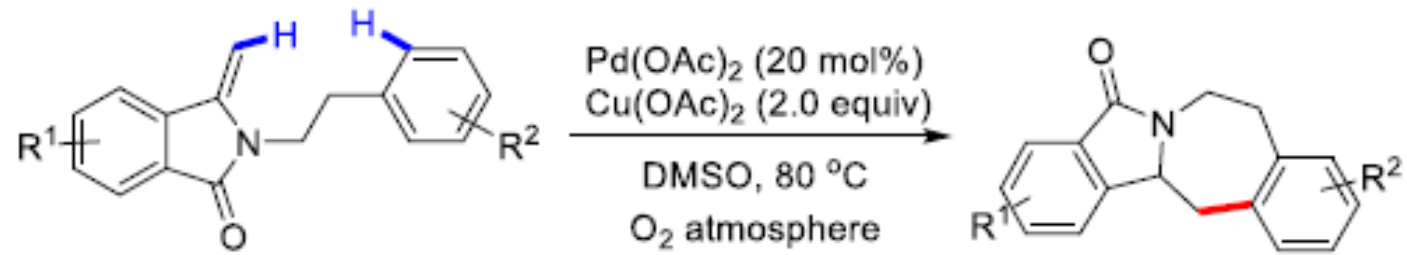
(e) in situ C-H functionalization



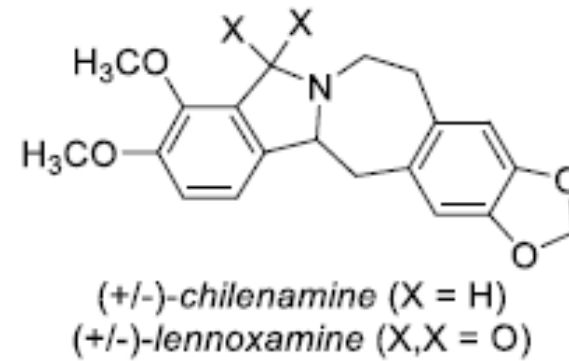
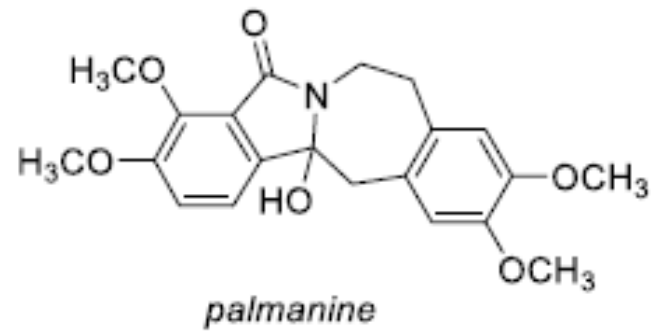
(f) metal-catalyzed C-H activation



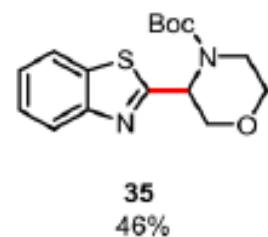
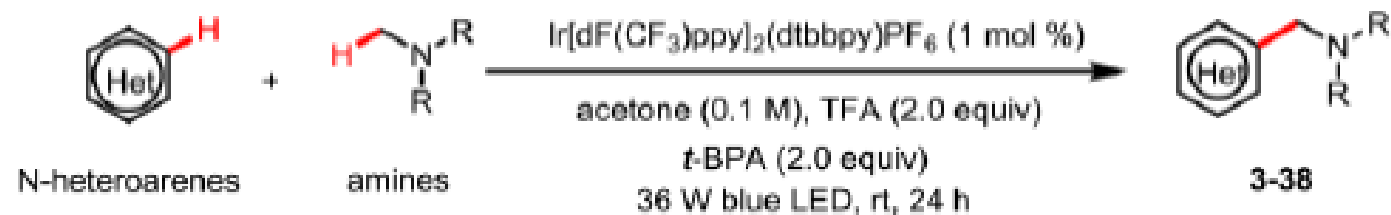
Application



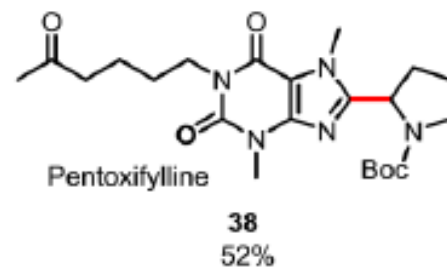
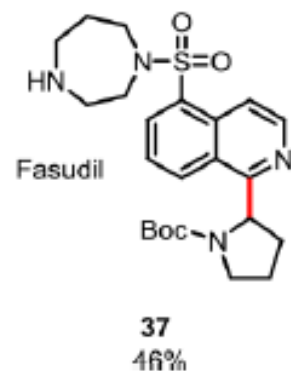
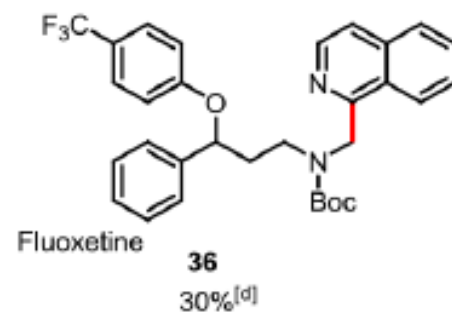
tertiary enamides



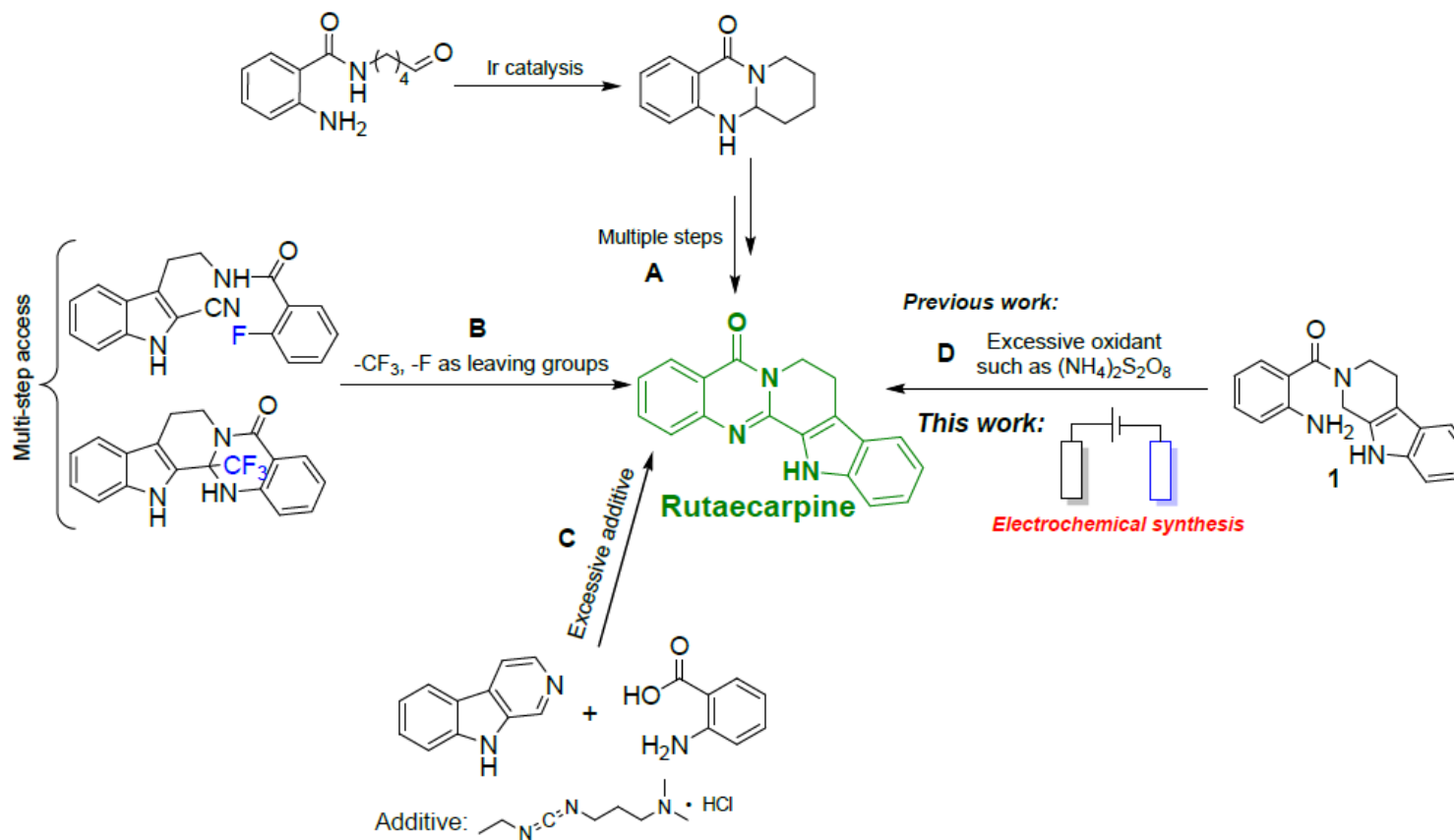
Application



• drug molecules



Application



Thanks