Title:	Expanding the Utility of Inexpensive Pyridine-N-oxide Directing Group for the Site-selective sp2/sp3 γ-C−H and sp2 δ-C−H Functionalization of Carboxamides
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Abstract:	We have shown our efforts toward expanding the utility of the relatively inexpensive pyridine-N-oxide directing group in the Pd(II)-catalyzed site-selective γ-C(sp2)−H, γ-C(sp3)−H and δ-C(sp2)−H functionalization. The functionalization β−C−H bonds using bidentate directing group (DG) pyridine-N-oxide which operates through the N,O-coordination mode has been well documented in the literature. However, there exist rare reports dealing with the functionalization of remote sp2/sp3 γ- and δ-C−H bonds of carboxamides assisted by the bidentate directing groups operating via the N,O-coordination. In this paper, the scope of pyridine-N-oxide DG was examined for accomplishing the site-selective (mono) γ-C(sp2)−H arylation in substrates containing competitive C(sp3)−H and C(sp2)−H bonds. The investigation has enabled to assemble a library of pyridine-N-oxide-based biarylacetamides, heteroaryl-based biaryl carboxamides, tricyclic quinolones, arylheteroarylmethanes, biaryl-based aliphatic carboxamides and mono (ortho) arylated phenylglycine derivatives. In general, biaryl derivatives and in particular, arylacetamide, arylacetic acid derivatives and pyridine-N-oxide (2-aminopyridyl) motifs are medicinally relevant classes of compounds. This work enabled the assembling of a library of the above-mentioned types of compounds through the pyridine-N-oxide directing group-aided site-selective sp2/sp3 γ-C−H and sp2 δ-C−H functionalization of carboxamides.
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