

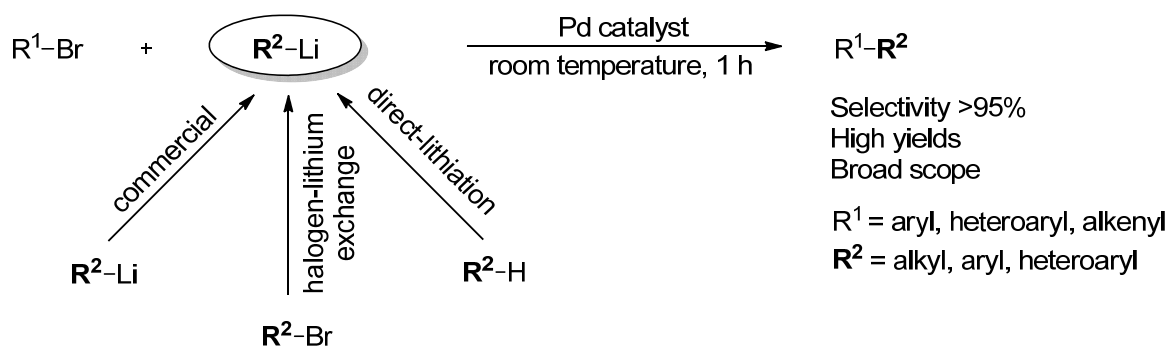
## Direct Catalytic Cross-Coupling of Organolithium Compounds

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Pd catalyzed cross-coupling reactions represent a cornerstone in the field of carbon-carbon bond forming reactions and are pivotal for the synthesis of materials, drugs and natural products.<sup>1-4</sup> A tremendous effort has been dedicated in the last 40 years to expand the scope of these methodologies, and many organometallic reagents were identified as suitable partners for these couplings. Grignard, zinc, boron, tin and silicon reagents have been extensively studied.<sup>5</sup> Organolithium reagents in contrast have been poorly considered due to the difficulty controlling their reactivity. Considering the importance of organolithium compounds and their unique features in terms of cost, reactivity and accessibility, and the fact that lithium reagents are often precursors in the preparation of other organometallic compound used in cross-couplings, a procedure to directly employ this reagents in coupling reactions is desirable. Herein we report a general methodology for the cross-coupling of aryl- and alkyl lithium compounds with aryl- and alkenyl halides that proceeds under mild conditions and in short times.<sup>6</sup>



1. E. Negishi, *Angew. Chem. Int. Ed.* **2011**, *50*, 6738.
2. K. C. Nicolau, P. G. Bulger, D. Sarlah, *Angew. Chem. Int. Ed.* **2005**, *44*, 4442.
3. J. Magano, J. R. Dunetz, *Chem. Rev.* **2011**, *111*, 2177.
4. A. Suzuki, *Angew. Chem. Int. Ed.* **2011**, *50*, 6722.
5. C. C. C. Johansson Seechurn, M. O. Kitching, T. J. Colacot, V. Snieckus, *Angew. Chem. Int. Ed.* **2012**, *51*, 5062.
6. M. Giannerini, M. Fañanás-Mastral, B. L. Feringa, *Nat. Chem.* DOI: 10.1038/NCHEM.1678.