

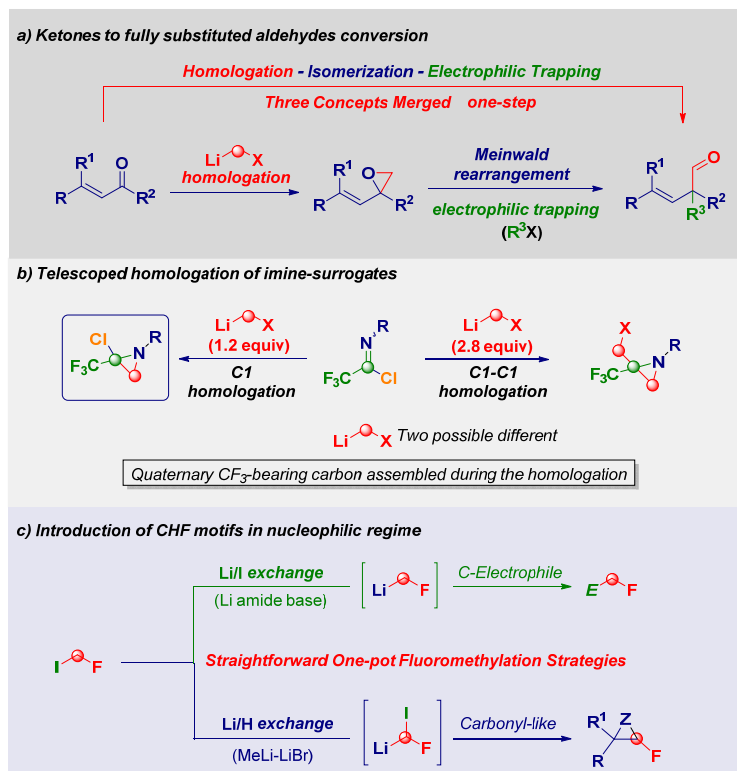
DESIGNING NEW SYNTHETIC CONCEPTS FOR IMPARTING MOLECULAR COMPLEXITY WITH C-1 SOURCES

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The direct transfer of a reactive nucleophilic CH_2X unit into an existing linkage enables the formal introduction of the moiety with the precisely defined degree of functionalization.¹ Upon the fine tuning of the reaction conditions governing the transformation, the initial homologation event can serve as the manifold for triggering unusual rearrangement sequences leading to complex architectures through a unique synthetic operation. The direct – full chemoselective - conversion of a ketone into the homologated all-carbon quaternary aldehyde (*via a*)² and, the telescoped homologation of imine-surrogates to quaternary aziridines (*via b*)³ will illustrate these unprecedented concepts. Additionally, the one-step mono-fluoromethylation of carbon electrophiles with extremely labile fluoromethyl lithium reagents will provide a novel entry to valuable fluorinated building-blocks without the needing of using protecting elements for fluoro-containing carbanions (*via c*).⁴



(1) For an overview, see: (a) Castoldi, L.; Monticelli, S.; Senatore, R.; Ielo, L.; Pace, V. *Chem. Commun.* 2018, 54, 6692-6704. (b) Senatore, R.; Castoldi, L.; Ielo, L.; Holzer, W.; Pace, V. *Org. Lett.* 2018, 20, 2685-2688.

(2) Pace, V.; Castoldi, L.; Mazzeo, E.; Rui, M.; Langer, T.; Holzer, W. *Angew. Chem. Int. Ed.* 2017, 56, 12677-12682.

(3) Ielo, L.; Touqeer, S.; Roller, A.; Langer, T.; Holzer, W.; Pace, V. *Angew. Chem. Int. Ed.* 2019, 58, 2479-2484.

(4) (a) Parisi, G.; Colella, M.; Monticelli, S.; Romanazzi, G.; Holzer, W.; Langer, T.; Degennaro, L.; Pace, V.; Luisi, R. *J. Am. Chem. Soc.* 2017, 139, 13648-13651. (b) Monticelli, S.; Colella, M.; Pillari, V.; Tota, A.; Langer, T.; Holzer, W.; Degennaro, L.; Luisi, R.; Pace, V. *Org. Lett.* 2019, 21, 584-588.