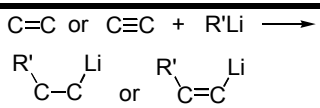
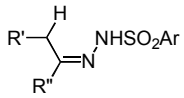
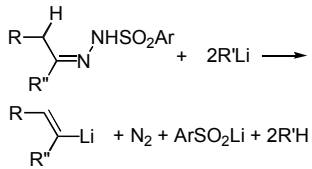
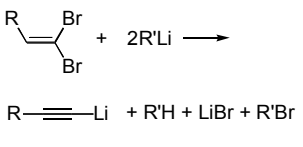
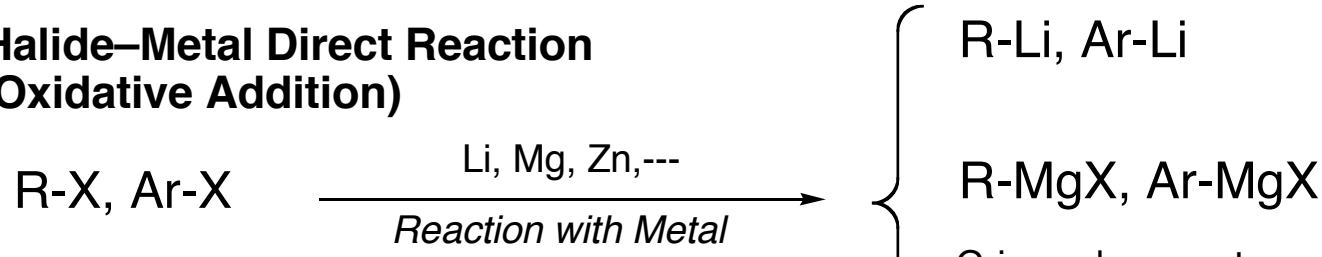
有機リチウム化合物の合成法

有機基質	L i反応剤	反応式	反応形式
RX (ArX)	Li	RX + 2Li → RLi + LiX	有機ハロゲン化物と金属リチウムの直接反応
	$Ar^{-}Li^{+}$ (lithium arenide)	RX + 2 $Ar^{-}Li^{+}$ → RLi + LiX + 2 Ar	有機ハロゲン化物とリチウムアレーニドの反応
	R'Li	RX + R'Li → RLi + R'X	ハロゲンとリチウムの交換反応
RH (ArH)	Li	RH + Li → RLi + 1/2 H_2	炭化水素と金属リチウムの直接反応
	R'Li (R'_2NLi etc.)	RH + R'Li → RLi + R'H	水素とリチウムの交換反応
C=C, C≡ C	R'Li		カルボリチオ化反応
RY, Y=Met (Sn, Hg)	Li, R'Li	RY+ 2Li → RLi + LiY RY+ R'Li → RLi + R'Y	他の金属とリチウムの交換反応
RY,Y=chalcogen (O, S, Se, Te)	Li, $Ar^{-}Li^{+}$ (lithium arenide)	RY + 2 $Ar^{-}Li^{+}$ → RLi + LiY + 2 Ar	有機カルコゲン化物とリチウムアレーニドの反応
	R'Li		Shapiro反応
			Fritsh–Buttenberg –Wiechell型転位
その他			

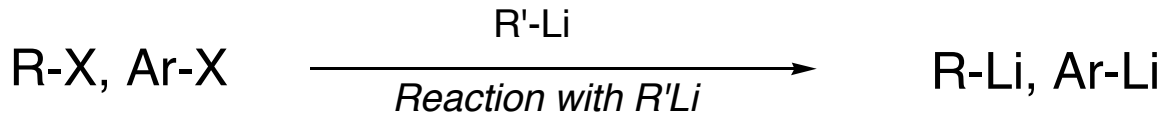
Preparation of R-Li, R-MgX, RZnX, etc. (1)

From R-X, Ar-X

- **Halide–Metal Direct Reaction (Oxidative Addition)**

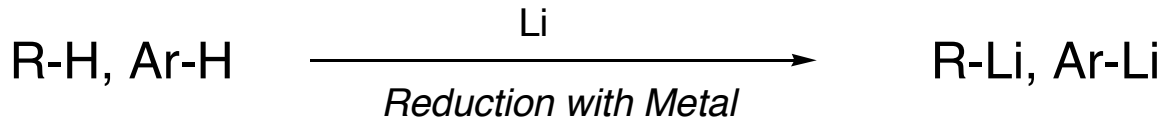


- **Halogen-Metal Exchange**

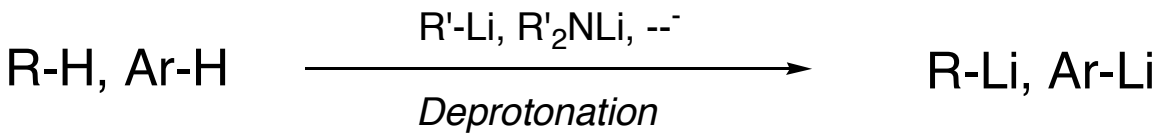


From R-H, Ar-H

- **Hydrocarbon–Metal Direct Reaction**



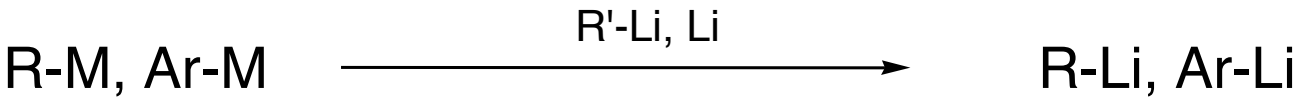
- **Hydrogen–Metal Exchange**



Preparation of R-Li, R-MgX, RZnX, etc. (2)

From R-Met., Ar-Met.

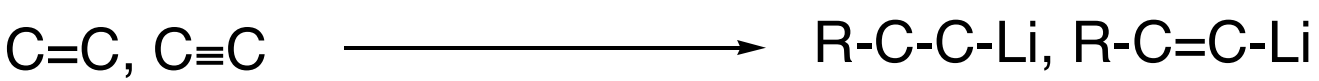
- **Metal-Metal Exchange**

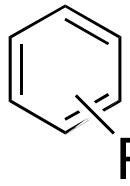


M = Sn, Hg, Se, --

From C=C, C≡C

- **Insertion (Hydrometalation, Carbometalation, ---)**



From 

, Ar–C≡C–Ar

- **Unsaturated Hydrocarbon–Metal Direct Reaction**

RLiの安定性（化学的，熱的）

主としてエーテル系溶媒と反応することで分解

$$RLi + THF \rightarrow ?$$

RLi	solvent	temp.	$t_{1/2}$
MeLi	Et_2O	rt	several month
EtLi	Et_2O	rt	54 h
n-BuLi	Et_2O	rt	153 h
n-BuLi	THF	rt	2 h
s-BuLi	THF	0 °C	0.5 h
t-BuLi	Et_2O	rt	vigorously react.
t-BuLi	THF	0 °C	vigorously react.
PhLi	Et_2O	reflux	12 h
vinyl Li	Et_2O	rt	<7 h