Axially Chiral Biaryl Compounds via Dynamic Kinetic Resolution

Significance: Axially chiral biaryl motifs are privileged structures as ligands for transition-metal catalysis. The authors present a dynamic kinetic resolution of racemic biaryls with a palladium catalyst using point chirality of a sulfoxide directing group.

Comment: Although some substrates were slow to react (up to 7 days), good yields and stereoselectivities were observed. Treatment of the products with t-BuLi at –90 °C led to an axially stable aryllithium species, which was trapped with CO₂.

**Proposed mechanism:**

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Pd(OAc)₂ (10 mol%)  + (NH₄)₂S₂O₈ (2 equiv)  + H₂O (2 equiv) or NIS (1.3 equiv)  \nAcOH-HFIP (1:1, 0.1–0.2 M), 25 °C, 12 h to 7 d \n
Selected acetoxylated examples:

- R = H, AcO \n  96% yield, dr > 98:2
- R = F, AcO \n  89% yield, dr = 98:2

Selected iodinated examples:

- R = H, I \n  97% yield, dr = 81:19
- R = MeO \n  48% yield, dr > 98:2
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