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Chiral Brønsted Acid Catalyzed Allylboration of Aldehydes

### Allylboration of Aldehydes

**Significance:** A highly enantioselective allylboration of aldehydes catalyzed by the chiral Brønsted acid (R)-TRIP is reported by the authors. This transformation shows a broad substrate scope: aryl, heteroaryl, α,β-unsaturated and aliphatic aldehydes can all be efficiently allylated. Furthermore, the crotyleboration of benzaldehyde also proceeded smoothly with high diastereo- and enantioselectivity in the presence of this acid catalyst.

**Comment:** Simple starting materials and a commercially available catalyst make this protocol a useful and efficient method for the synthesis of enantioenriched homoallylic alcohols. A transition state where the boronate is activated by protonation of the boronate oxygen with a chiral phosphoric acid is proposed by the authors. To confirm this activation model, further mechanistic investigation may be required.

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**Selected examples:**

- **PhOH**
  - 99% yield, *er* = 99:1

- **PhCH=CHPh**
  - 94% yield, *er* = 98:2

- **PhCH=CHPh**
  - 98% yield, *er* = 55:3

- With (E)-boronate: 96% yield (anti), *er* = 98:2
- With (Z)-boronate: 95% yield (syn), *er* = 97:3

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