Diastereoselective α-Alkylation of α-Epoxy N-Sulfonyl Hydrazones

**Significance:** Coltart and co-workers report the diastereoselective addition of Grignard reagents to α-epoxy N-sulfonyl hydrazones to give various β-hydroxy N-sulfonyl hydrazones with quaternary α-stereocenters in very high yields.

**Comment:** The alkoxide, which is generated in situ through base-induced ring-opening of the epoxide, selectively directs the addition syn in a 1,4-manner.

**Proposed mechanism:**

$$
\text{TsNH}_2 \text{N} \text{O} \text{H} \text{R}^1 \text{R}^2 \xrightarrow{\text{R}^3 \text{MgX} (2.1 \text{equiv})} \text{THF, –78°C or 0°C} \xrightarrow{\text{52–95% yield syn/anti up to >25:1}} \text{TsNH}_2 \text{N} \text{O} \text{H} \text{R}^1 \text{R}^2
$$

**Selected examples:**

- 63% yield (X = Br) syn/anti > 25:1
- 62% yield (X = Br) syn/anti > 25:1
- 88% yield (X = Br) syn/anti > 25:1
- 70% yield (X = Br) syn/anti > 25:1
- 52% yield (X = Cl) syn/anti > 25:1
- 95% yield (X = Br) syn/anti > 25:1
- 89% yield (X = Br) syn/anti > 25:1
- 38% yield (X = Br) syn/anti > 25:1