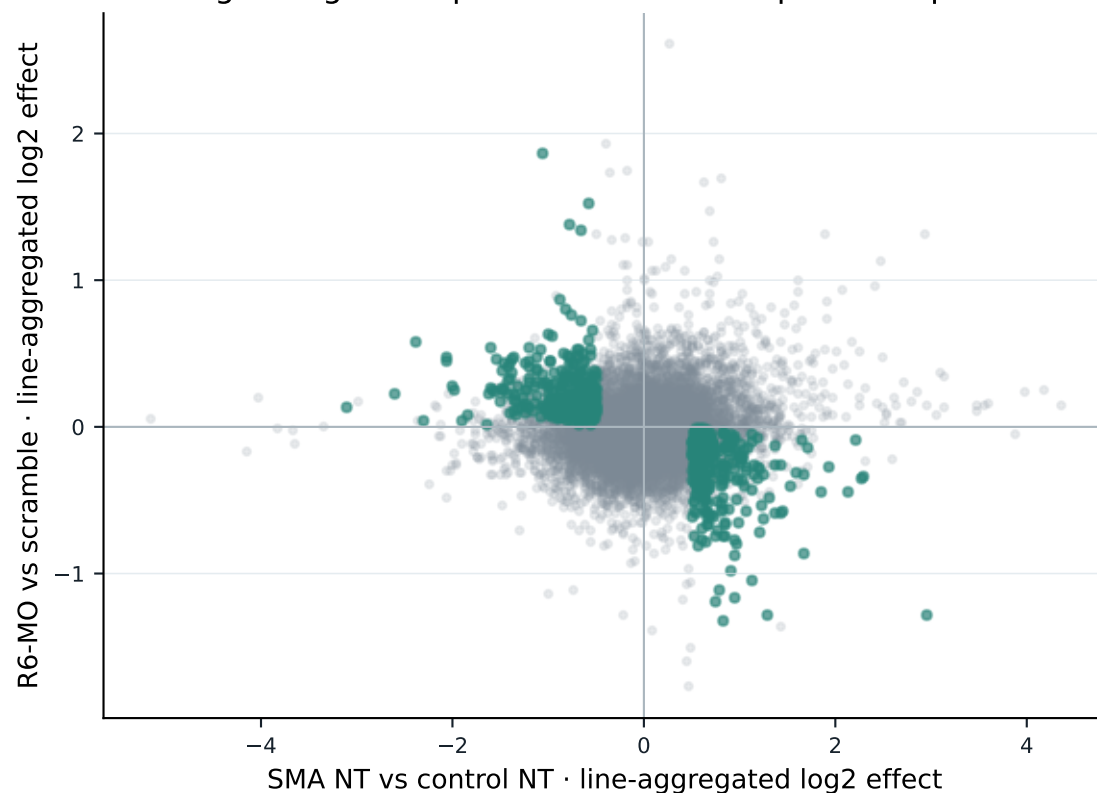


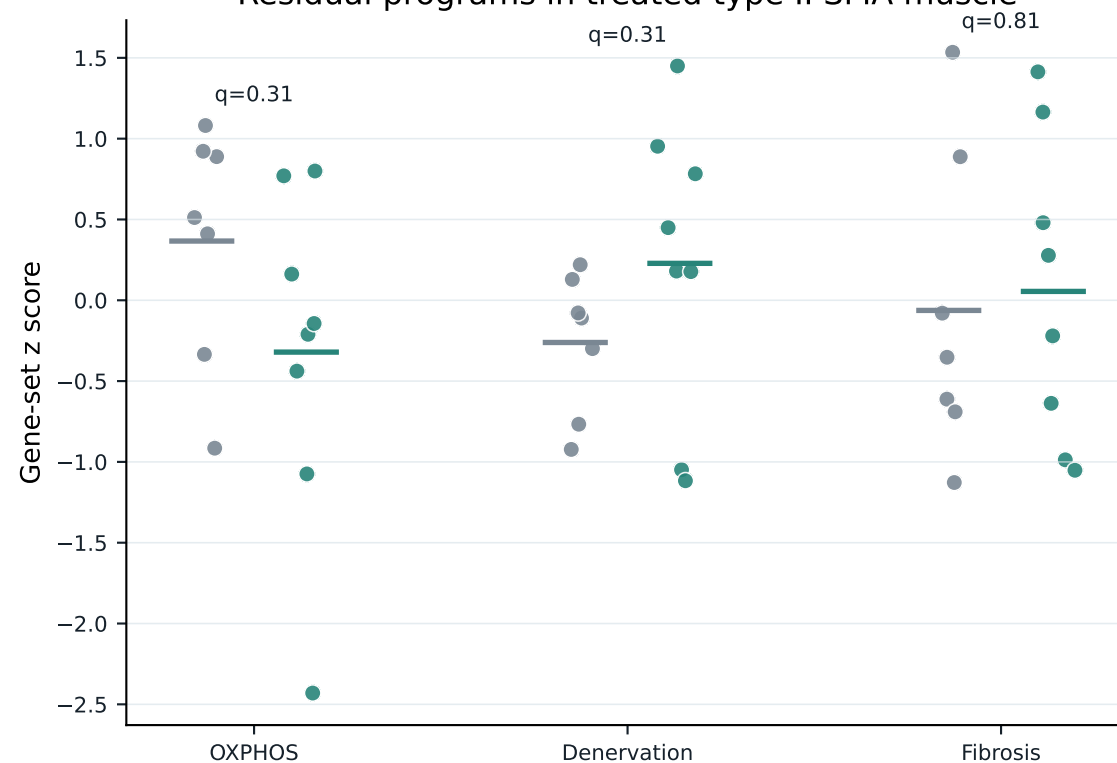
SMA module · neural intervention axis and residual treated-muscle pathology

a

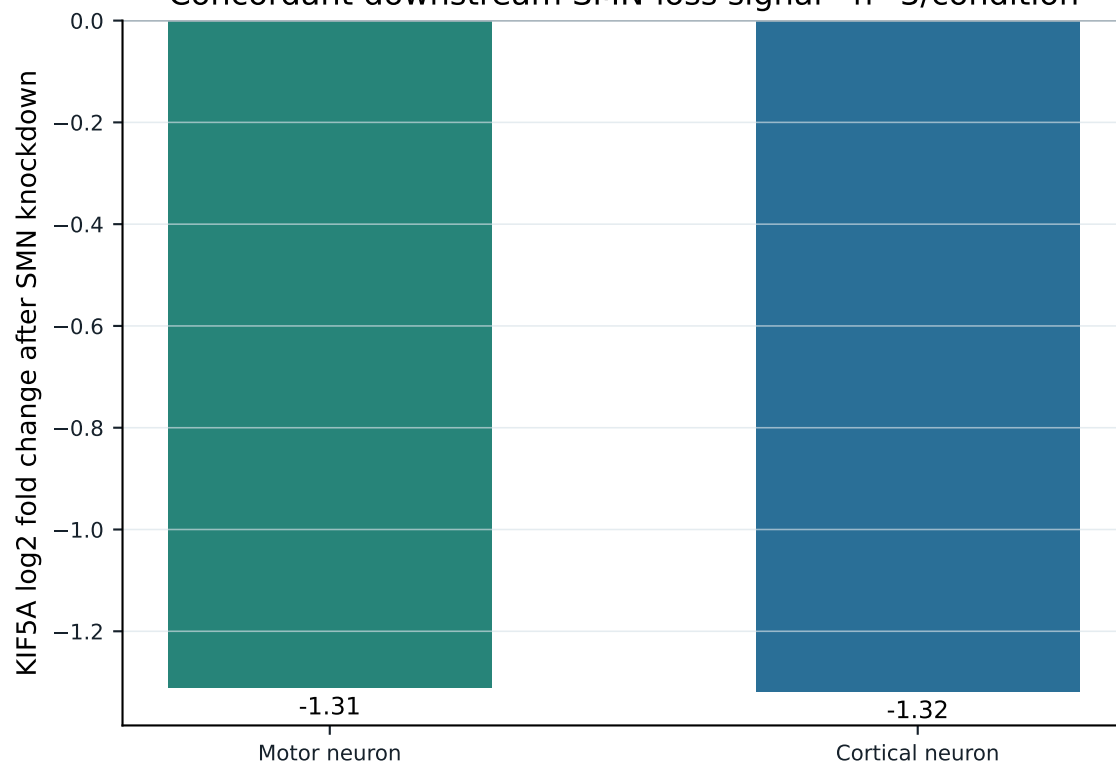
No global gene-expression reversal · Spearman $\rho=0.10$

**b**

Residual programs in treated type II SMA muscle

**c**

Concordant downstream SMN-loss signal · n=3/condition

**d**

MEASURED

Human neural disease state

3 control lines and 2 SMA type I lines in spinal organoids

SOURCE CORRECTED

SMN2 ASO axis

Source-reported splicing and functional rescue;
bulk gene expression does not globally reverse

RESIDUAL

Treated patient muscle

8 treated SMA II vs 7 controls; module directions retained, all $q>0.30$ here

CEILING

No motor-outcome predictor

Mechanistic and residual-disease evidence; no patient simulation