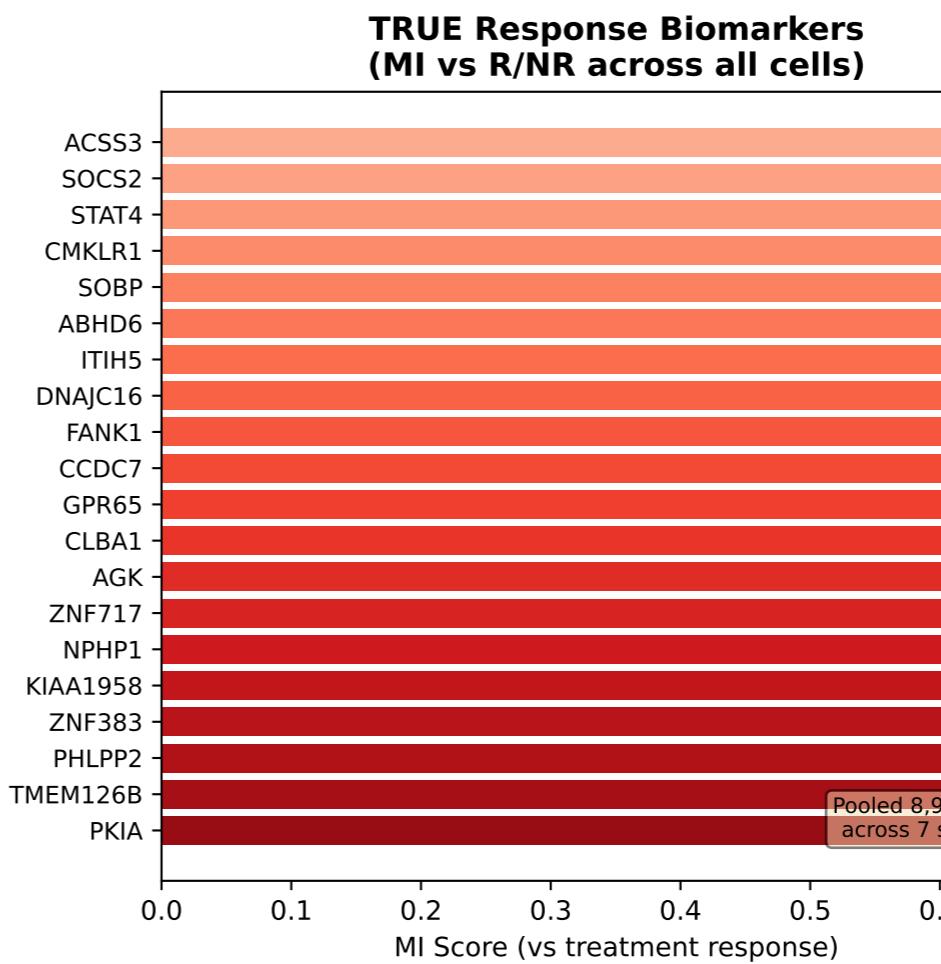
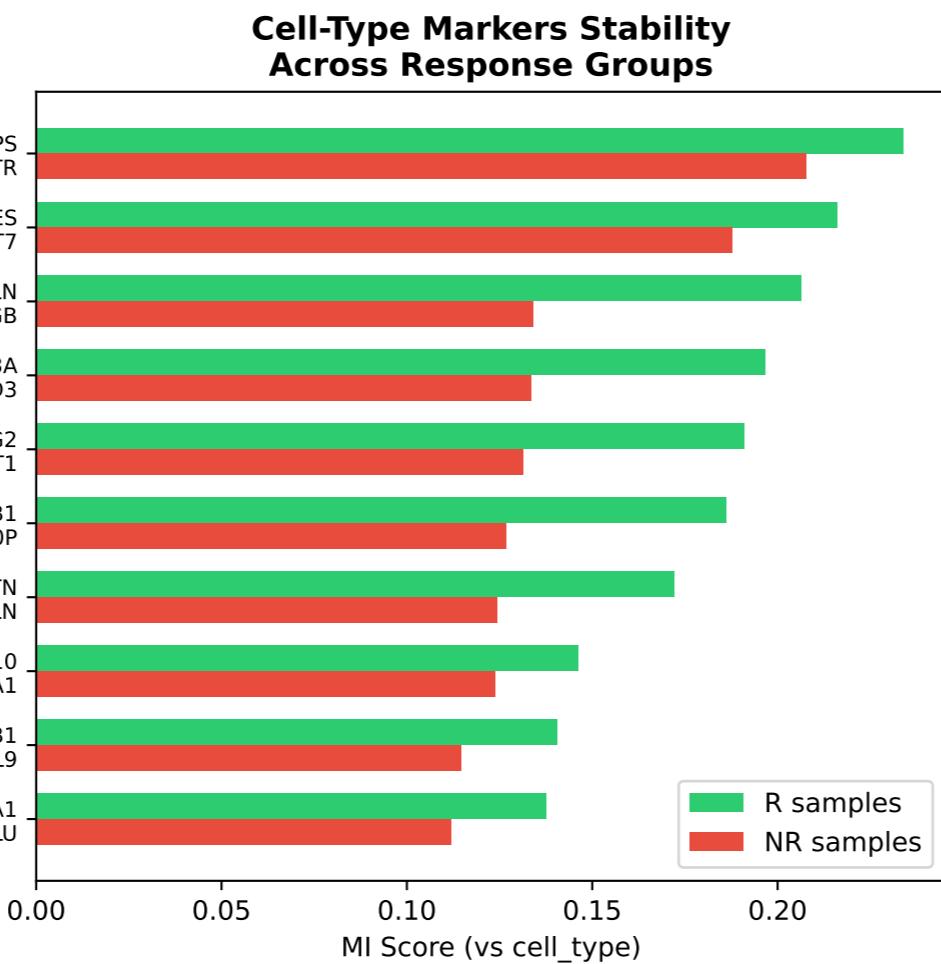
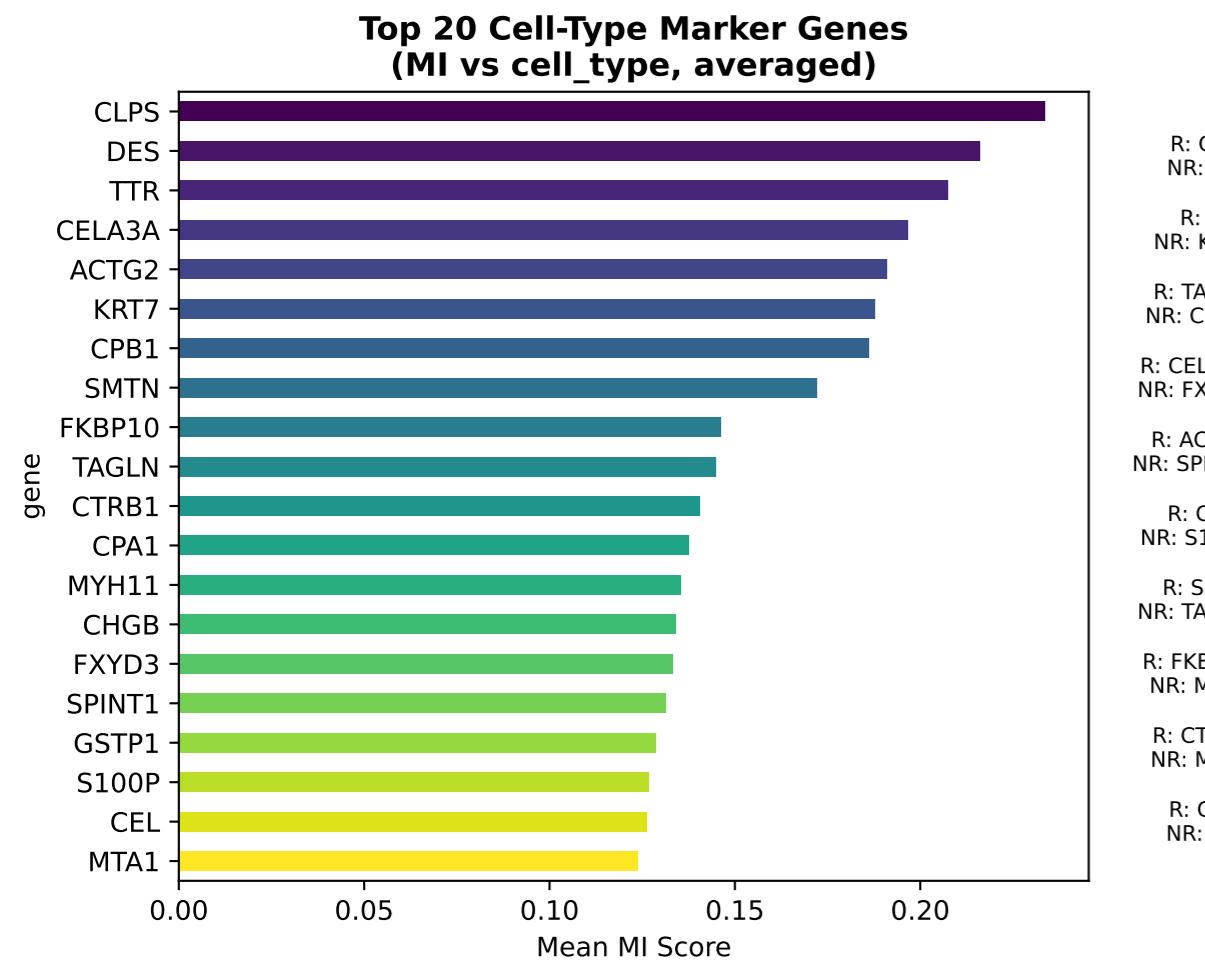


Information-Theoretic Analysis: Cell-Type Markers vs Treatment Response Biomarkers



Understanding MI Analysis

WHAT IS MUTUAL INFORMATION?
MI measures how much knowing one variable reduces uncertainty about another.

- MI = 0: Variables are independent
- MI > 0: Variables share information
- Higher MI = Stronger association

TWO TYPES OF MI ANALYSIS:

1. MI vs CELL TYPE (Panels 1-2):
"Which genes best distinguish cell types?"
→ Useful for marker identification
→ Applied per-sample
2. MI vs RESPONSE (Panel 3):
"Which genes predict R vs NR?"
→ TRUE treatment biomarkers
→ Computed across all samples pooled

KEY DIFFERENCE:

Panel 1-2: Same gene can be "top marker" in both R and NR - it just identifies cell types well regardless of response.

Panel 3: These genes specifically differ between responders and non-responders.

TOP BIOMARKER CANDIDATES:

- ACSS3: MI=0.668
- SOCS2: MI=0.665
- STAT4: MI=0.664
- CMKLR1: MI=0.662
- SOBP: MI=0.662