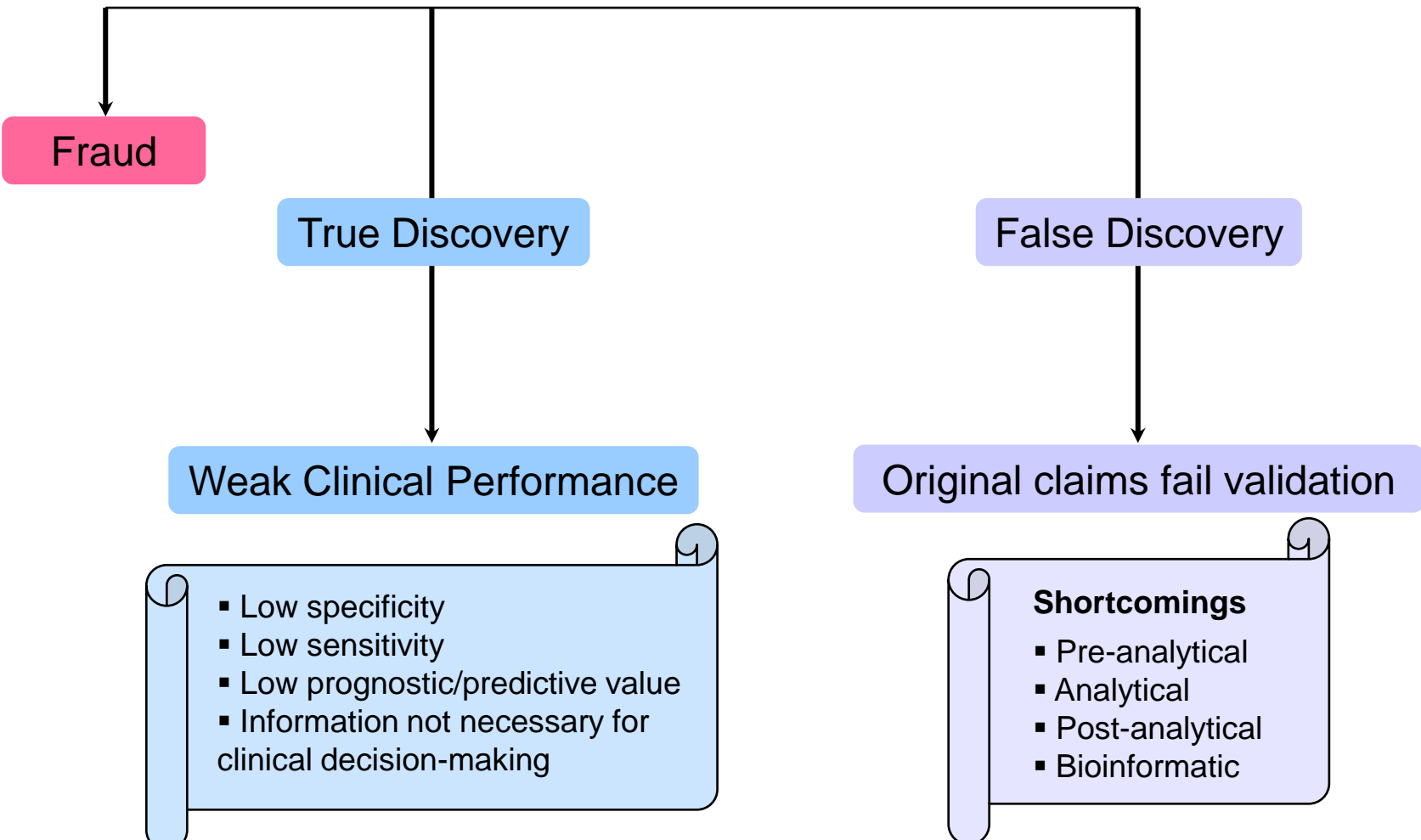
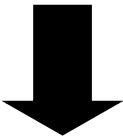


Why Biomarkers Fail to Reach the Clinic



Fraud

True Discovery

False Discovery

Weak Clinical Performance

- Low specificity
- Low sensitivity
- Low prognostic/predictive value
- Information not necessary for clinical decision-making

Original claims fail validation

- Shortcomings**
- Pre-analytical
 - Analytical
 - Post-analytical
 - Bioinformatic