Sensitivity and Specificity: A Refresher

SENSITIVITY: the ability of a test to correctly identify the presence of a feature

$$\frac{\text{True positives}}{\text{True positives+False negatives}} = \frac{\text{True Positives}}{\text{Everyone who } \textit{actually} \text{ has the feature}}$$

SPECIFICITY: the ability of a test to correctly identify the absence of a feature

$$\frac{\text{True negatives}}{\text{True negatives+False positives}} = \frac{\text{True negatives}}{\text{Everyone who } \textit{doesn't} \text{ have the feature}}$$

For sensitivity and specificity calculations, it's important to know what the feature is being tested for. In the case of diagnostic biomarkers, it's a diagnosis which calls into question what is the "gold standard" in making that diagnosis, and whether it can account for the heterogeneity in patients who carry that diagnosis. For a predictive biomarker the feature is usually a biochemical or genetic measure, which is usually much easier to detect (you either have it or you don't), but then the question becomes how good is this measure in predicting outcomes?