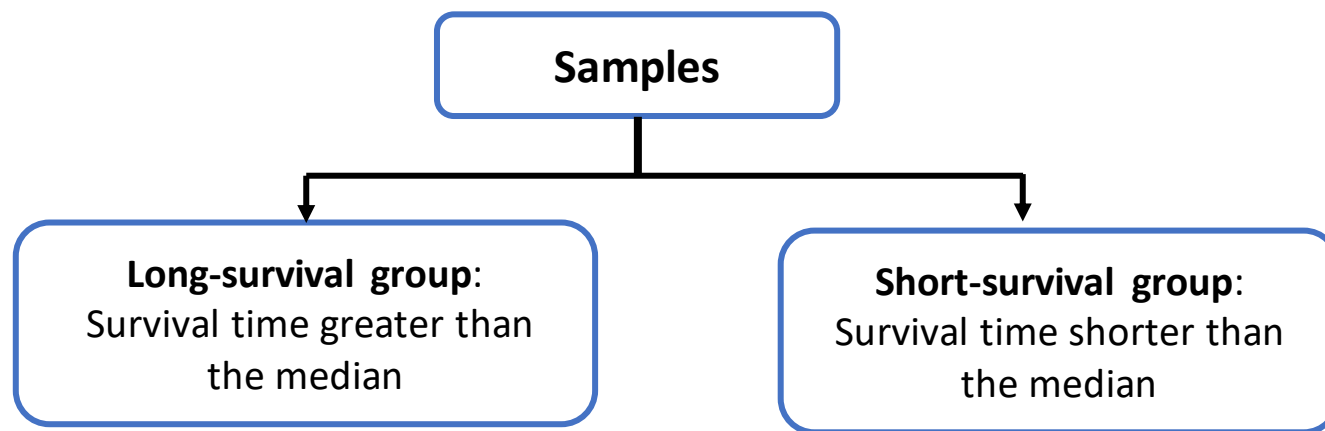
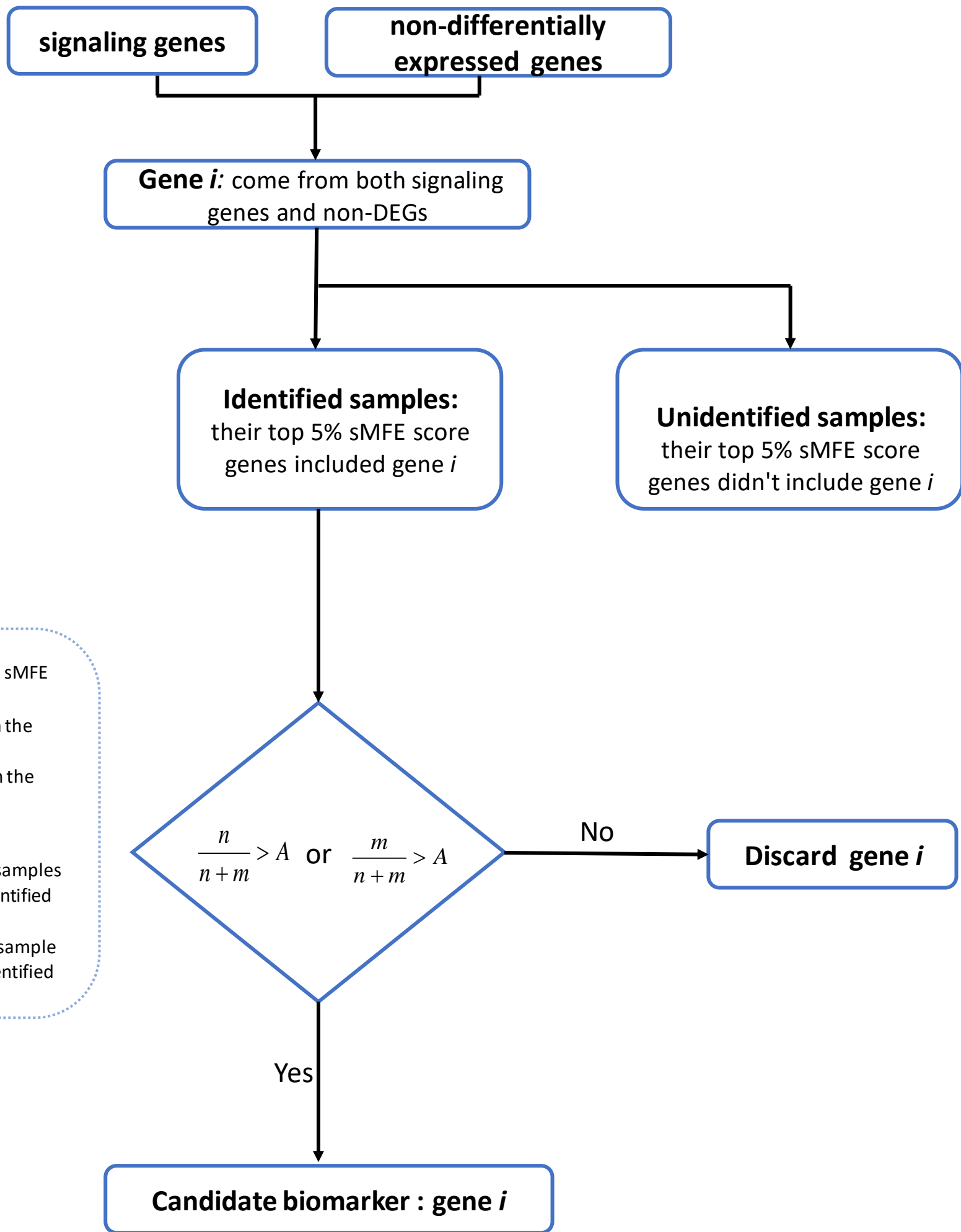


**Step 1**



**Step 2**



**signaling genes:** the gene with top 5% sMFE value in identified critical state  
**n:** The number of identified samples from the long-survival group  
**m:** The number of identified samples from the short-survival group  
**A:** we choose 0.6 as empirical coefficient  
**O-LNE:** optimistic sMFE gene (identified samples survival time significantly longer than unidentified samples,  $p < 0.05$ )  
**P-LNE:** pessimistic sMFE gene (identified sample survival time significantly shorter than unidentified samples,  $p < 0.05$ )

**Step 3**

