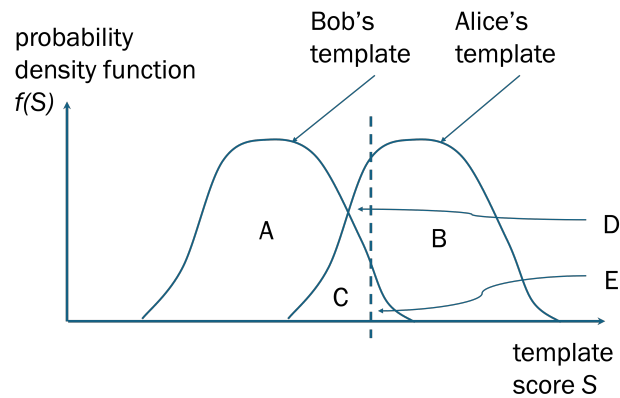


**Question 1: Biometric Templates** The probability of Bob falsely authenticating as Alice is given by the area of which region?



**Question 2: False-Positive Rates** Given a population of 1 million, a False-Negative rate of 1% (0.01) and a base rate of .01% (.0001), what must the false-positive rate be in order for the probability that a person is orange, given that they are identified as orange, be 50%?

**Question 3: True Positive Rate** Police have a photo of an unidentified person. They use facial recognition software to compare that photo to the state's database of 1 million driver's licenses. What is the probability that a person identified as a match is the person in the photo given a False-Positive rate of 0.01% (.001) and a False-Negative Rate of 10% (.1).?