

Antisense to the Rescue

Have you heard the news?? There's trouble in the thousand acre woods. Pooh Bear is reading the word in hope of finding someone who can help him and his forest friends before it is too late. The trouble, you see, is a nasty recent explosion of the woozle virus in the thousand acre woods which is quickly killing all the oak trees like the ones used for homes by Pooh, Piglet, Owl, and Kanga. The only hope, it appears, is for some clever genetics student to genetically engineer a new virus-resistant strain of oak tree using antisense technology. Using the information provided below, please fill in the 2 Nitrogen base "gene" codes that you would genetically engineer to make all future thousand acre woods oak trees resistant to the woozle virus. Remember that your 2 "genes" should result in antisense aRNA products that will block all exposed mRNA nucleotides in the mRNA ribosome recognition site (rrs) up to the initiation (AUG-->"start") CODON. HINT: place brackets () around the mRNA AUG "start" CODONS.

Genetically Engineered Oak Tree Genes:

Gene #1

coding strand

Gene #2

coding strand

Woozle Virus Genes

Gene #1

(cell attachment protein)

Non-coding strand

Gene #2

(cell invasion protein)

Non-coding strand

GCCTACGAGTCCATAATG.....

coding strand

GGCATGTCCACGTAC.....

coding strand

mRNA

rrs ic "start"

mRNA

rrs ic "start"

Antisense aRNA

Antisense aRNA