

Screen 4

RAG1 and RAG2 genes

Chromosome 11

These linked genes work as a pair to activate the recombination of the V and J variable segments in the immunoglobulin genes.

RAG1 is involved in the recognition of the specific site on the antibody gene that will be worked on.

Screen 5

Antibody Light Chain Gene

Chromosome 22

This gene contains V (variable, J (joining) and C (constant) segments.

Recombination of the DNA joins a single V segment with a single J segment.

Later, in the mRNA, these join with the C segment

There are 40 V segments and 5 J segments, and 2 sets of light chain genes, giving $40 \times 5 \times 2 = 400$ possible light chains.

Each B cell contains 1 of these 400 possible combinations.