



Finding Our Way Through the Genome – Maps

Why do we need maps?

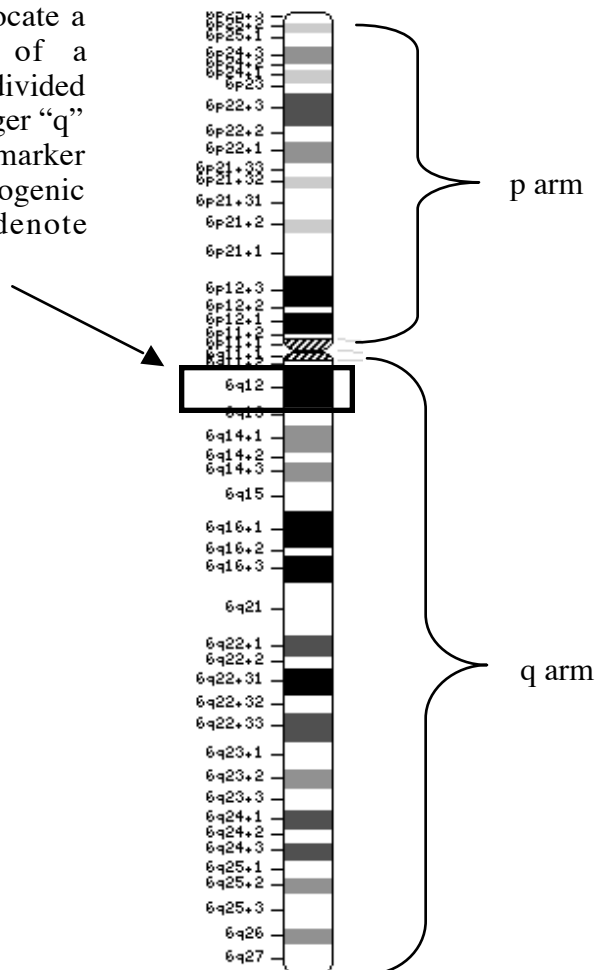
The human genome contains 3 billion base pairs. It is an enormous amount of data. Maps allow us to find specific locations in the enormous amount of information that is the genome.

There are two general categories of maps – genetic maps and physical maps.

Genetic maps – use markers to show an approximate location of a gene relative to markers, but not the distance in base-pairs between the gene and the markers

Physical maps – also make use of markers, but provide information about the distance between the gene and the markers

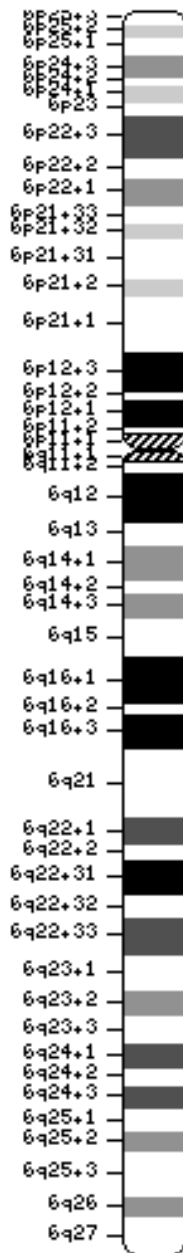
Cytogenic maps are a type of physical map (see following page). They locate a gene to a particular region of a chromosome. Each chromosome is divided into two arms – a “p” arm and a longer “q” arm. Within each arm are many marker bands that are numbered. The cytogenic map position 6q12 would denote chromosome 6, q arm, band 12.



Mapping Animation at DNA Interactive

Examine the animation at DNA Interactive (www.dnai.org) for an explanation of maps and markers. Go to DNA Interactive at www.dnai.org. Choose “Genome” from the bar at the top. Choose “The Project” from the bar at the bottom. Choose “Pieces of the Puzzle” from the bar at the top. Choose the first puzzle piece “Maps and Markers”. View the animation.

To explore how markers were used to assemble the sequence of the human genome, see the section “Putting It Together”, also at DNA Interactive. Try your hand at the sequencing game to see if you can assemble the sequence correctly!



Cytogenic Map of Human Chromosome 6