Lending Library: Bioinformatics Map of the β-Globin Gene® (BI)

Teaching Points

Don’t tell your students about triplet codons, reading frames, and introns and exons. Let your students discover these features of eukaryotic genes as they explore the map of the human β-globin gene. After searching through the nucleotide sequence to find the β-globin gene, your students will appreciate bioinformatics software that automates DNA sequence analysis. The Teacher’s Map includes annotated features. Map can be used individually or by small teams of students.

Models in this Collection

- 12 student β-globin maps
- 1 teacher β-globin map
- 1 CD (located in box)
- β-globin protein

Documentation Included

- How do the models fit back in the suitcase?
- Version 2.0 Notice
- Introduction
- Summary of the Human β-Globin Gene
- Student Handout with Standard Genetic Code
- Teacher Notes
- Extensions
- Features of the Teacher's Map
General Model Information

- The β-globin maps contain the double stranded DNA sequence and the protein sequences in three forward reading frames.
- Model is made of plaster with ZCorp 3D printer and in α-carbon backbone format.

Model Details

- 12 laminated student β-globin maps
- 1 laminated teacher β-globin map
  - Includes splice site mutations and mutation for sickle cell anemia
  - Protein sequence highlighted in yellow
- β-globin (PDB: 1a3n)
  - Chain B
  - His63 and His92 bind the Protoporphorin IX ring containing iron (Fe)
  - Glu6 is the sidechain that is mutated to valine in sickle cell anemia, which is also displayed on the α-helix with sidechains model
  - 3 colors (pink, cyan, and yellow) correspond with the 3 exons depicted on the gene map
- CD
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*PLEASE REMOVE ALL MARKS MADE ON MAPS BEFORE RETURNING*
Windex or rubbing alcohol will easily remove highlighter and dry erase marker lines.