

Phylogenetic tree and gene structure diagrams illustrating the evolution of the α -globin and β -globin clusters. The tree shows the divergence of the α - β cluster (450 MYA) and the independent genome duplication (Teleost). The α -globin cluster (left) and β -globin cluster (right) are shown with their respective gene structures and evolutionary events. Key events include the transposition of a β copy into the ORG region (315 MYA) and the independent genome duplication (166 MYA).

Phylogenetic Tree (Left):

- Root:** Ancestral α - β cluster (450 MYA).
- Independent Genome Duplication (Teleost):** 166 MYA.
- Transposition of a β copy into ORG region:** 315 MYA.
- Other events:** 354 MYA, 148 MYA.

Gene Structures (Right):

- α -globin cluster (Left):**
 - Teleost: α - β cluster (LCMT).
 - Amphibian: α - β cluster (LUC7L).
 - Reptile: ?
 - Avian: α - β cluster (LUC7L).
 - Monotreme: α - β cluster (LUC7L).
 - Marsupial: α - β cluster (LUC7L).
 - Eutherian: α - β cluster (LUC7L).
- β -globin cluster (Right):**
 - Teleost: α - β cluster (LCMT).
 - Amphibian: α - β cluster (LUC7L).
 - Reptile: ?
 - Avian: α - β cluster (LUC7L).
 - Monotreme: α - β cluster (LUC7L).
 - Marsupial: α - β cluster (LUC7L).
 - Eutherian: α - β cluster (LUC7L).