

Repertoire Clading and Lineage Distribution

Phylogenetic Clustering, Germline Rooting, and Parsimonious Liability Tracking

Uncover sequence-distance relationships, B-cell clonal expansion, and ancestral developability modifications across your antibody repertoire. AbLead automatically builds hierarchical cladograms, reconstructs unmutated common ancestor (UCA) germline roots, and parsimoniously maps sequence liabilities along clade branches.

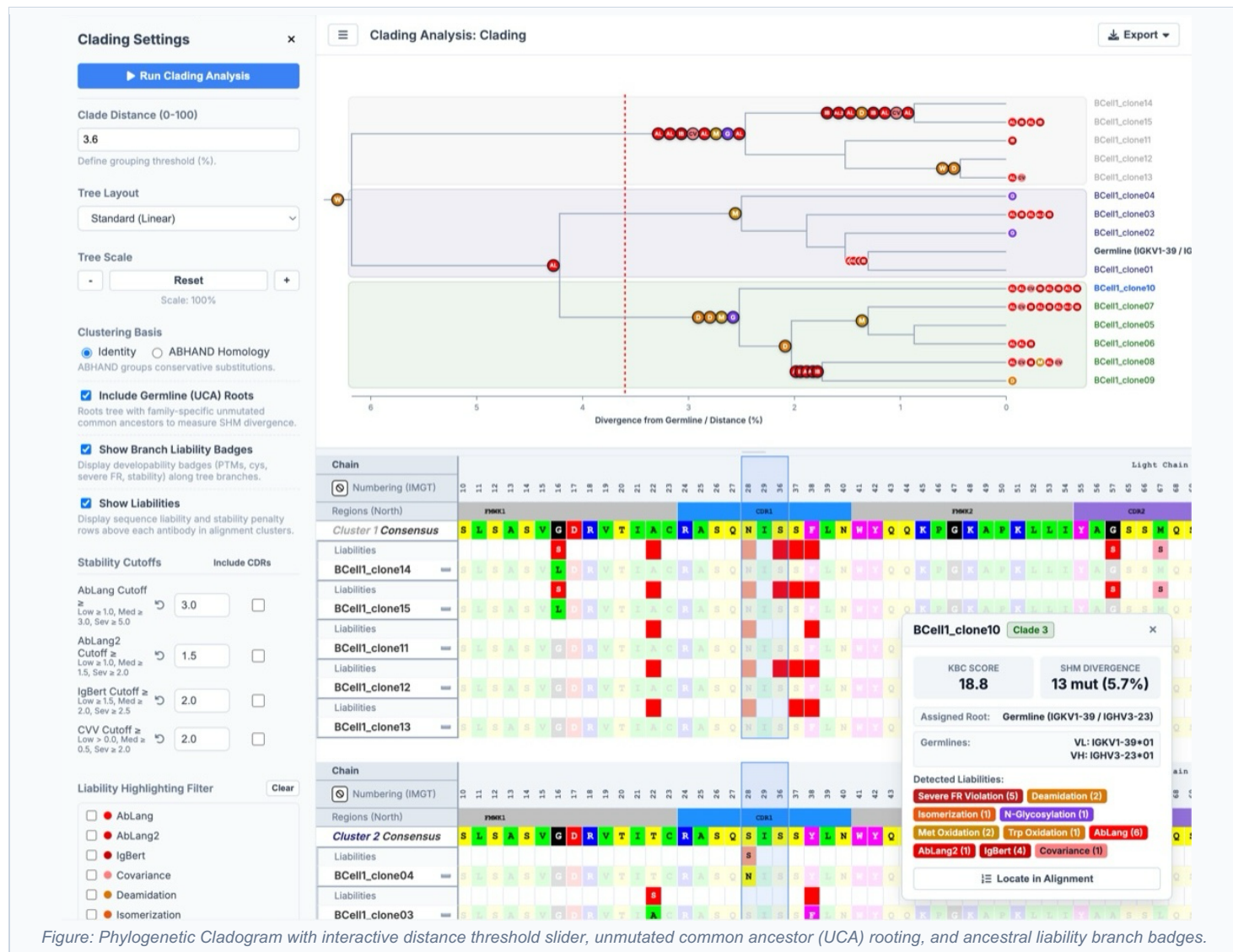


Figure: Phylogenetic Cladogram with interactive distance threshold slider, unmutated common ancestor (UCA) rooting, and ancestral liability branch badges.

CORE CAPABILITIES

- **Dual Tree Layouts:** Switch dynamically between Linear and Circular phylogenetic projections with interactive real-time cutoff distance sliding.
- **Dual Clustering Metrics:** Cluster sequences by Sequence Identity (Hamming distance) or ABHAND Homology (physicochemical property distance).
- **Germline (UCA) Rooting:** Synthesizes multi-family unmutated ancestral germlines to establish B-cell origins and somatic hypermutation (SHM) rates.
- **Parsimonious Liability Mapping:** Automatically distinguishes ancestral liabilities shared across entire sub-lineages from private leaf mutations.

DEVELOPABILITY ADVANTAGE and IMPACT

- **Repertoire Diversity Preservation:** Prevents over-sampling identical clones by clustering repertoires into distinct functional families.
- **Liability Origin De-Risking:** Identifies whether a developability flaw was introduced during affinity maturation or inherited from a germline framework.
- **Cluster Alignment Exports:** Exports multi-chain alignments grouped by clade into formatted Excel workbooks with consensus and developability metrics.
- **Phylogenetic Interoperability:** Exports trees to standard Newick (.nwk) format for seamless publication figure generation in FigTree, iTOL, and MEGA.

The AbLead Advantage: Clading empowers discovery teams to navigate repertoire diversity, intelligently selecting the most potent, developable representatives from every lineage while avoiding clones compromised by ancestral liabilities.

Accelerate Your Antibody Lead Optimization and De-Risk Development

Request a Live Demo: ablead@ketchemconsulting.com | Explore Platform: ablead.ketchemconsulting.com

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