

Lead Engineering and First Pass Optimize

Combinatorial Variant Generation, DMS Permissibility, and 1-Click Automated Optimization

Design, track, and build optimized antibody variants seamlessly across AbLead. The platform connects mutation designs across all analytical tools into organized Mutation Sets, integrates Deep Mutational Scanning (DMS) permissibility matrices, and features First Pass Optimize—an automated 1-click algorithm to resolve severe developability liabilities instantly.

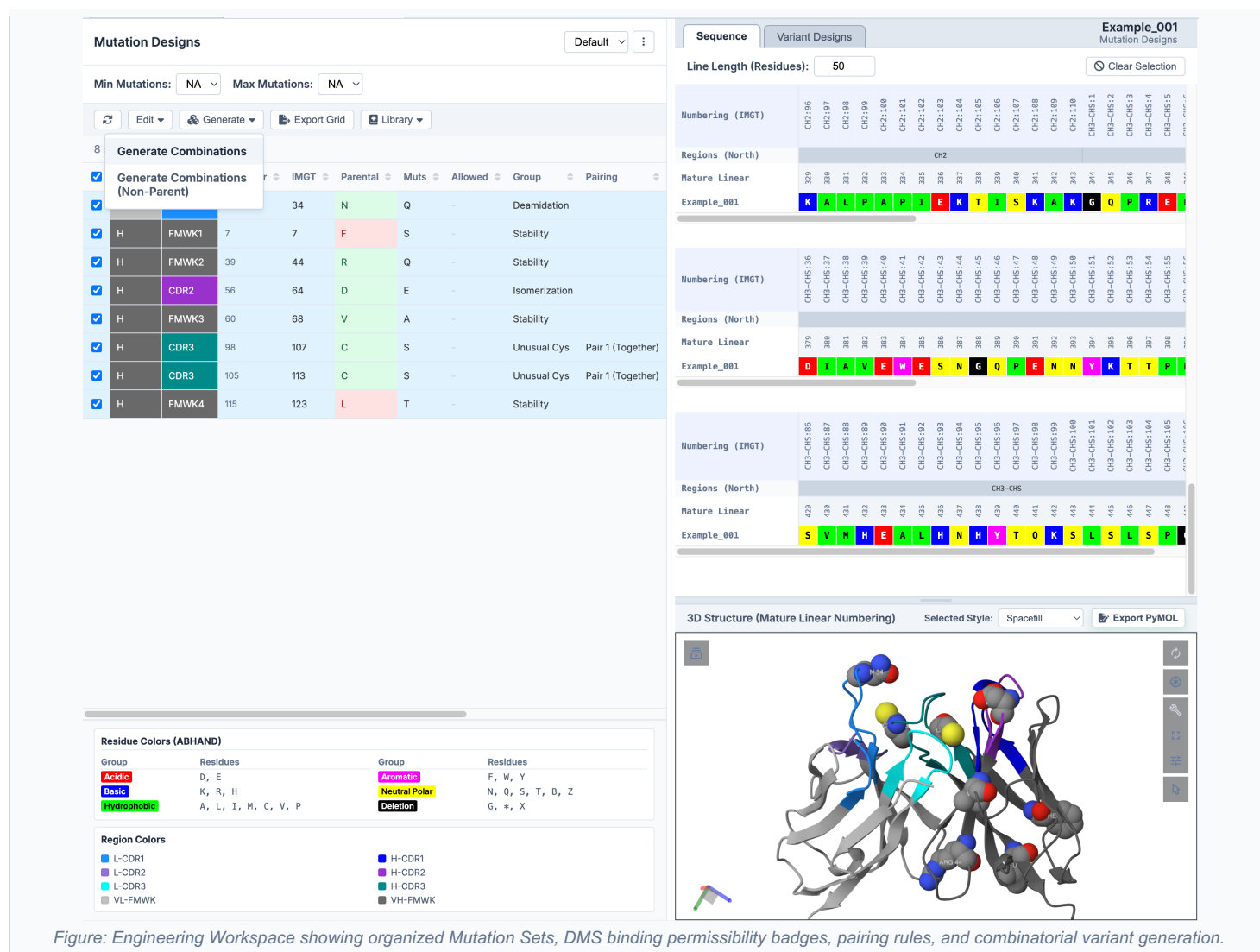


Figure: Engineering Workspace showing organized Mutation Sets, DMS binding permissibility badges, pairing rules, and combinatorial variant generation.

CORE CAPABILITIES

- **Universal Mutation Tracking:** Designs initiated anywhere in AbLead sync into organized Mutation Sets.
- **First Pass Optimize Engine:** 1-click automated algorithm that scans for severe liabilities, applies structural SASA gating, and creates optimized designs.
- **DMS Experimental Permissibility:** Ingests saturation mutagenesis matrices; displays green/red permissibility badges and auto-prunes unsafe substitutions.
- **Pairing Rules and Complexity Limits:** Enforces paired mutations (Together for disulfides/salt bridges, Single for cleavage sites) with Min/Max mutation limits.

DEVELOPABILITY ADVANTAGE and IMPACT

- **Rapid Combinatorial Generation:** Builds tens to thousands of combinatorial variants with parental controls in seconds, bypassing manual sequence drafting.
- **Structural Evaluation:** Evaluates paratope or interface residues to guide targeted combinatorial variant designs.
- **Lineage Tree Inheritance:** Descendant variants recursively inherit ancestor DMS fitness data with explicit lineage provenance tracking.
- **Direct mAb Synthesis Handoff:** Pushes generated combinatorial variants directly into the Project View for comprehensive rank ordering and FASTA export.

The AbLead Advantage: Engineering turns analytical insights into optimized therapeutic leads. With First Pass Optimize and DMS permissibility integration, AbLead automates the resolution of developability flaws while protecting binding function.

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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