CAMBRIDGE Enterprise

AbNativ Method: VQ-VAE-based assessment of antibody and nanobody nativeness for hit selection, humanisation, and engineering

Category
Software

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AbNatiV is a deep learning tool for assessing the nativeness of antibodies and nanobodies, that is, their likelihood of belonging to the distribution of immune-system-derived human antibodies or camelid nanobodies.

AbNatiV is a multipurpose tool that accurately predicts the nativeness of Fv sequences from any source, including synthetic libraries and computational design. It provides an interpretable score that predicts the likelihood of immunogenicity, and a residue-level profile that can guide the engineering of antibodies and nanobodies indistinguishable from immunesystem-derived ones. We further introduce an automated humanization pipeline, which can be applied to nanobodies and traditional (VH/VL) Fv regions. Immune-system-derived antibodies tend to have favourable properties in vivo, including long half-life, low reactivity with selfantigens and low toxicity, thus underscoring the importance of nativeness predictions and optimisation