Aledb 1.0: A database of mutations from adaptive laboratory evolution experimentation - DTU Orbit (12/08/2019)

Aledb 1.0: A database of mutations from adaptive laboratory evolution experimentation

Adaptive Laboratory Evolution (ALE) has emerged as an experimental approach to discover causal mutations that confer desired phenotypic functions. ALE not only represents a controllable experimental approach to systematically discover genotype-phenotype relationships, but also allows for the revelation of the series of genetic alterations required to acquire the new phenotype. Numerous ALE studies have been published, providing a strong impetus for developing databases to warehouse experimental evolution information and make it retrievable for large-scale analysis. Here, the first step towards establishing this resource is presented: ALEdb (http://aledb.org). This initial release contains over 11,000 mutations that have been discovered from eleven ALE publications. ALEdb (i) is a web-based platform that comprehensively reports on ALE acquired mutations and their conditions, (ii) reports key mutations using previously established trends, (iii) enables a search-driven workflow to enhance user mutation functional analysis through mutation crossreference, (iv) allows exporting of mutation query results for custom analysis, (v) includes a bibliome describing the databased experiment publications and (vi) contains experimental evolution mutations from multiple model organisms. Thus, ALEdb is an informative platform which will become increasingly revealing as the number of reported ALE experiments and identified mutations continue to expand.

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