

Computer-aided cell factory design

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With Caffeine, a web-based CAD (computer aided design) software, we aim to bring constraint-based modeling closer to everyone, and allow performing strain/community designs and interpreting generated data from the lab, without extensive programming labour. The platform allows simulating with several flux-balance analysis methods, visualizing the results immediately in metabolic maps, and provides strain design tools for assessing e.g. knockouts and gene additions. Our latest additions to the platform include integration of proteomics with enzyme-constrained modeling and visualization of interactions between microbial communities.

Caffeine makes a broad spectrum of simulation tools and omics data useful for biotechnology and life science research by integrating systems biology with design in a one-stop resource. All research efforts are integrated in an open source, interactive, intuitive web-based platform available to both industrial and academic research. Caffeine is freely available at <https://caffeine.dd-decaf.eu>.