Resource Summary Report

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DNAWorks at Helix Systems

RRID:SCR_008470
Type: Tool

Proper Citation

DNAWorks at Helix Systems (RRID:SCR_008470)

Resource Information

URL: http://helixweb.nih.gov/dnaworks

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Description: DNAWorks automates the design of oligonucleotides for gene synthesis by PCR-based methods. The availability of sequences of entire genomes has dramatically increased the number of protein targets, many of which will need to be overexpressed in cells other than the original source of DNA. Gene synthesis often provides a fast and economically efficient approach. The synthetic gene can be optimized for expression and constructed for easy mutational manipulation without regard to the parent genome. DNAWorks accesses a computer program that automates the design of oligonucleotides for gene synthesis. The website provides forms for simple input information, i.e. amino acid sequence of the target protein and melting temperature (needed for the gene assembly) of synthetic oligonucleotides. The program outputs a series of oligonucleotide sequences with codons optimized for expression in an organism of choice. Those oligonucleotides are characterized by highly homogeneous melting temperatures and a minimized tendency for hairpin formation. The approach presented here simplifies the production of proteins from a wide variety of organisms for genomics-based studies.

Synonyms: DNAWorks

Resource Type: service resource

Defining Citation: PMID:12000848

Keywords: oligonucleotide, pcr, oligo primer

Funding: Intramural AIDS Targeted Antiviral Program of the Office of the Director ; NIH

Resource Name: DNAWorks at Helix Systems

Resource ID: SCR_008470

Alternate IDs: nif-0000-30422

Record Creation Time: 20220129T080247+0000

Record Last Update: 20250519T203546+0000

Ratings and Alerts

No rating or validation information has been found for DNAWorks at Helix Systems.

No alerts have been found for DNAWorks at Helix Systems.

Data and Source Information

Source: SciCrunch Registry

Usage and Citation Metrics

We found 35 mentions in open access literature.

Listed below are recent publications. The full list is available at dkNET.

Daniel-Ivad P, et al. (2024) Structure of methyltransferase RedM that forms the dimethylpyrrolinium of the bisindole reductasporine. The Journal of biological chemistry, 300(1), 105520.

Smiley AT, et al. (2024) Sequence-Directed Covalent Protein-RNA Linkages in a Single Step Using Engineered HUH-Tags. bioRxiv : the preprint server for biology.

Xuan B, et al. (2024) Postbiotic-based recombinant receptor activator of NF-?B ligand enhanced oral vaccine efficiency in chicken. Applied microbiology and biotechnology, 108(1), 397.

Okhrimenko IS, et al. (2023) Mirror proteorhodopsins. Communications chemistry, 6(1), 88.

Zeng G, et al. (2023) A novel protein purification scheme based on salt inducible self-assembling peptides. Microbial cell factories, 22(1), 224.

Nawarathnage S, et al. (2022) Crystals of TELSAM-target protein fusions that exhibit minimal

crystal contacts and lack direct inter-TELSAM contacts. Open biology, 12(3), 210271.

Xuan B, et al. (2022) Oral Immunization of Mice with Cell Extracts from Recombinant Lactococcus lactis Expressing SARS-CoV-2 Spike Protein. Current microbiology, 79(6), 167.

Wan J, et al. (2021) Novel Japanese encephalitis virus NS1-based vaccine: Truncated NS1 fused with E. coli heat labile enterotoxin B subunit. EBioMedicine, 67, 103353.

Ying W, et al. (2021) High-level extracellular production and immobilisation of methyl parathion hydrolase from Plesiomonas sp. M6 expressed in Pichia pastoris. Protein expression and purification, 183, 105859.

Ben-Sasson AJ, et al. (2021) Design of biologically active binary protein 2D materials. Nature, 589(7842), 468.

Sun T, et al. (2021) Fluorescent Protein Variants Generated by Reassembly between Skeleton and Chromophore. ACS omega, 6(4), 2925.

Xue SJ, et al. (2019) Over-expression of Vitreoscilla hemoglobin (VHb) and flavohemoglobin (FHb) genes greatly enhances pullulan production. International journal of biological macromolecules, 132, 701.

Ries RJ, et al. (2019) m6A enhances the phase separation potential of mRNA. Nature, 571(7765), 424.

Yano D, et al. (2017) Characterization of four arginine kinases in the ciliate Paramecium tetraurelia: Investigation on the substrate inhibition mechanism. International journal of biological macromolecules, 101, 653.

Podlevsky JD, et al. (2016) Structure and function of echinoderm telomerase RNA. RNA (New York, N.Y.), 22(2), 204.

Tsui MM, et al. (2016) Vectors for Genetically-Encoded Tags for Electron Microscopy Contrast in Drosophila. Biological procedures online, 18, 5.

Manat Y, et al. (2016) Expression, purification and immunochemical characterization of recombinant OMP28 protein of Brucella species. Open veterinary journal, 6(2), 71.

Koday MT, et al. (2016) A Computationally Designed Hemagglutinin Stem-Binding Protein Provides In Vivo Protection from Influenza Independent of a Host Immune Response. PLoS pathogens, 12(2), e1005409.

Lu Y, et al. (2016) High-level expression of improved thermo-stable alkaline xylanase variant in Pichia Pastoris through codon optimization, multiple gene insertion and high-density fermentation. Scientific reports, 6, 37869.

Ma X, et al. (2016) Expression, purification and identification of a thermolysin-like protease, neutral protease I, from Aspergillus oryzae with the Pichia pastoris expression system. Protein expression and purification, 128, 52.