



Proteomics

Client Overview

The client is one of the world's leading private research and teaching institutions and one of the oldest institutions of higher learning in the United States. The Institute has a multidisciplinary group of scientists and scholars, from mathematicians and engineers, biologists to computer scientists, physicists and artists in an interactive and collaborative environment.

Challenge

While working in the area of proteomics, the client noticed that there was no database for proteins involved in the protein-protein interaction with desired parameters. So the client required a comprehensive database for proteins which could be browsed by organism name, which could generate and display the phylogenetic relationship between the proteins, which could compare the protein sequence with the other protein sequences present in the database to find out the homology using BLAST program etc. There was also a need to associate the data with information in other databases and integration of all the required tools to display the data.

Solution

Optra Systems built a new database of protein sequence homologs which are groups of homologous microbial proteins likely to have equivalent biochemical functions and each provided with the unique ID.

- The created database allows the researcher to search for proteins by using homology details or by organism name. The application facilitates search by details like consensus name or the unique ID or the product name. It also allows the user to search the sequence homology of a protein sequence against protein sequence homology profile or all the

bacterial protein sequences. In the organism page, the application lists out all the organisms present in the database.

- Initially the thorough analysis of the data and the data variations was done in various file formats and the database schema was designed to accommodate this variety of data.
- To extract the information of proteins, organisms, homology, unique IDs etc oracle procedures were used. The same was done for processing of the extracted data.
- The GUI was developed to display the data using JAVA, JSP scripts and the JAVA libraries. The tools like Jmol, Jalview were integrated in the database to get the structural images of the proteins. The images were then generated from the available data for the domain display.



- For the protein homology searches rpsBLAST and the BLAST libraries from NCBI were also integrated in the database.
- Finally the database was associated to different protein databases and the data was displayed in the graphical manner.

Benefits

- Optra Systems' domain and technical expertise assisted the client to create a comprehensive database for proteins involved in the protein-protein interaction with desired parameters.
- This is the novel database where the researchers could see combined data fetched from different resources and could work on several integrated tools on a single platform.
- Linking of data to other available sources helps researchers to get more information regarding their query.

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Technologies

- JAVA, JSP scripts and the JAVA libraries
- Oracle as a backend database

About Optra Health

Optra Health is an ISO-certified global organization with deep domain expertise in medical devices, lab automation, life science informatics and healthcare IT solutions. The company provides a fully-scalable, cost-effective OptiShore™ delivery model. This enables customers to choose the optimal balance between on-site, on-shore, and off-shore development that will best address their budget and collaboration requirements. With Optra Health, customers are able to shrink their time-to-market by leveraging practical, building-block based solutions. Committed to clear communication and total transparency, the company consistently meets or exceeds its clients' expectations. Offering a full complement of expert engineering and consulting services, Optra Health is aligned to real business needs applied over the entire product development lifecycle. The robust, scalable and efficient IT infrastructure of the company, together with its outstanding project management team, consistently ensures superior results. Optra Health's global delivery model helps its customers cut costs by about 50% without compromising on quality and realize a 200% improved production cycle.

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Contact Optra Health Today

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