The sequencing of the human and model genomes has provided scientists with a wealth of information available for data mining. In order to effectively apply the growing source of available biological data for advancing important scientific goals, researchers require the ability to ask more complex questions of these data, and to do so in a manner that is both efficient and cost-effective. One of the key challenges is identifying which databases to use and how to gather and integrate data from various sources.

Applied Biosystems helps customers meet this challenge through the Celera Discovery System (CDS) Online Platform. CDS is a sophisticated, web-based discovery tool that provides scientists with easy-to-use access to the most comprehensive and up-to-date set of integrated proprietary and public biological data available. More than 250 institutions worldwide are already taking advantage of this valuable resource.

CDS provides a fully integrated environment for data mining, including the aggregation and integration of more than 40 continuously updated and annotated public and private databases, genome visualisation tools such as an interactive, dynamic Map Viewer, and direct links to Applied Biosystems Assays-on-Demand™ gene expression and SNP genotyping products for laboratory experimentation.

Affordable Access to High-Quality Data
CDS allows scientists to move seamlessly between bioinformatics and wet-lab experiments. By making it easy to visualise and analyse integrated genomic information, CDS is an efficient and effective way to identify novel genes, predict their function, and uncover new insights into disease.

The system’s powerful querying capabilities lets the user define up to 50 criteria for targeted searches against multiple data sources and see results almost instantly. Logically organised menus make it easy to investigate and analyse even the most complex integrated genomic and biological data, and a user-friendly interface facilitates visualisation and analysis of genomic information. Results are just a click away with comprehensive BioMolecule™ Reports that provide detailed chromosome, transcript and protein information for any gene of interest (Figure 1).

CDS also brings together a full complement of convenient tools for analysing sequence information from the desktop, including tools for sequence comparison, sequence manipulation, and protein analysis. A sophisticated workspace stores results for easy access and record-keeping.
Powerful Visualisation and Analysis Tools

CDS links human and mouse data to other available data sources by providing a powerful Map Viewer that lets users zoom in from an entire chromosome view to a nucleotide level view. The customisable Map Viewer greatly facilitates the search for meaningful relationships among biological features in any region of study and provides links to underlying evidence (Figure 2).

The Map Viewer enables:

- Customised views, including real-time loading of data and the ability to zoom in and out of regions of interest
- Graphical displays of any human or mouse genomic feature and multi-species views
- Selective viewing of mapped features such as gene structures, expert-curated transcripts, mRNAs, human and rodent ESTs, STS markers, and BAC clones
- Review of important properties of selected features such as genomic location and sequence information
- Assessment of gene annotation by reviewing mapped RefSeq and EST data

Integrated data from human and mouse genomes, including orthologs and conserved (syntenic), regions, lets scientists easily apply comparative genomics to their research using the Map Viewer. Promoter analysis and gene regulation studies are made easier using genome-wide mapping of human transcription factor binding sites (TFBSs) generated using a phylogenetic footprinting approach (Figure 3).

Summary

CDS is a valuable platform that can save researchers significant time and costs by providing immediate online access to an integrated source of information and tools that requires no infrastructure development or maintenance. Further, CDS subscribers are now directly benefiting from the results of the Applera Genome Initiative – a $100 million research and development programme that has provided additional genomic content and functionally validated, ready-to-use Assays-on-Demand gene expression products and SNP genotyping products, which are now available through CDS. The latest enhancements to CDS provide a more complete biological reference source of comparative human and mouse studies.

Subscribing to CDS is easy, and the subscription model was recently expanded to include individual subscriptions for academic and non-profit researchers.
European Sales Offices

Austria
Tel: +43 (0)1 867 35 75 0

Belgium
Tel: +32 (0)2 532 44 84

Denmark
Tel: +45 45 58 60 00

Finland
Tel: +358 (0)9 693 794 27

France
Tel: +33 (0)1 69 59 85 85

Germany
Tel: +49 (0)6151 96 700

Italy
Tel: +39 039 83891

Luxembourg
Tel: +35 (0)180 392 400

The Netherlands
Tel: +31 (0)180 392 400

Norway
Tel: +47 23 16 25 75

Portugal
Tel: +351 22 605 33 14

Spain
Tel: +34 91 806 1210

Sweden
Tel: +46 (0)8 619 4400

Switzerland
Tel: +41 (0)41 799 77 77

United Kingdom
Tel: +44 (0)1925 825650

European Managed Territories

Africa
Tel: +27 11 478 0411

Czechia
Tel: +420 2 3536 5189

Hungary
Tel: +36 1 471 89 89

Poland
Tel: +48 22 866 4010

Russia
Tel: +7 095 935 8898

S.E. Europe, Middle East, West Asia
Tel: +44 (0)1925 282481

Applera Corporation is committed to providing the world’s leading technology and information for life scientists. Applera Corporation consists of the Applied Biosystems and Celera Genomics businesses.

For Research Use Only. Not for use in diagnostic procedures.

Applied Biosystems is a registered trademark and AB (Design), Assays-on-Demand, BioMolecule and Celera Discovery System are trademarks of Applera Corporation or its subsidiaries in the U.S. and/or certain other countries.

©2003 Applied Biosystems. Publication: CDS-AR704. All rights reserved. Prepared in the UK 06/03