

The Database Center for Life Science creates intellectual information infrastructure to develop life science

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To improve the accessibility of life science repositories, the Database Center for Life Science (DBCLS) was set up as a core organization to promote repository integration, enable a broad-based view of related knowledge resources, and establish a new knowledge infrastructure.

As a core institute of the Integrated Database Project funded by the Japanese Ministry of Education, Culture, Sports, Science and Technology, DBCLS provides various services from the Project's portal site (<http://lifesciencedb.jp/?Ing=en/>). Some of the services available in English (most are only available in Japanese) include a database cross-search service, a catalog that provides information on large-scale genome and post-genome projects in Japan, and other useful tools and resources.

By providing these services, we hope to promote more efficient research and development in the field of life science at institutions and in the bioindustry, and to develop a new paradigm that will become a core model for a grand alliance in life science.

Strategy planning

While Japanese scientists have constructed a number of life science databases (in most cases as part of national projects), the databases are unpopular among domestic research communities, because relevant information exists across several databases. Today, an environment that allows the effective use of these data(bases) becomes essential for the advances in life science research and the bioindustry.

To coordinate the domestic life science databases, DBCLS carries out the following activities. First DBCLS collects and compiles the current situation and trend of life science databases and makes these reports available from the Integrated Database Project's portal site. Second, DBCLS organizes a committee that is comprised of various stakeholders including Japan's representative database providers and considers and plans strategies to integrate domestic life science databases.

Third, issues surrounding data access, data sharing, copyright and privacy policies have been and continue to be discussed and considered with experts in these fields. As part of this process, DBCLS has organized conferences to discuss these issues.

Finally, the services developed as part of the Integrated Database Project are made available to the public and annually reviewed by users through a survey. The results of the survey are utilized to improve the functionality of the database services.

Issues of Life Science Databases in Japan

- Whereabouts and usage of each database are difficult to find out
- Databases are not available in Japanese
- New technologies must be developed to effectively utilize databases
- The number of people who are capable of constructing and maintaining databases are insufficient
- Outcomes and products of national projects are not sufficiently open to the public
- Databases can no longer be maintained when funding of large-scale national projects end
- Experimental biologists and bioinformaticians on databases rarely exhibit significant synergy effects
- Association between experimental data and knowledge extracted from literature is not sufficient
- Institutions responsible for coordinating database integration based on a long term plan do not exist

Solutions

Design database strategies and perform feasibility assessments

Accept databases that can no longer be maintained and archive them in repositories

Provide training and education for human resource development

Promote research and development for information technologies necessary for database integration

Annotate genomes of model organisms manually and automatically

Provide methods to access articles and publications together with databases

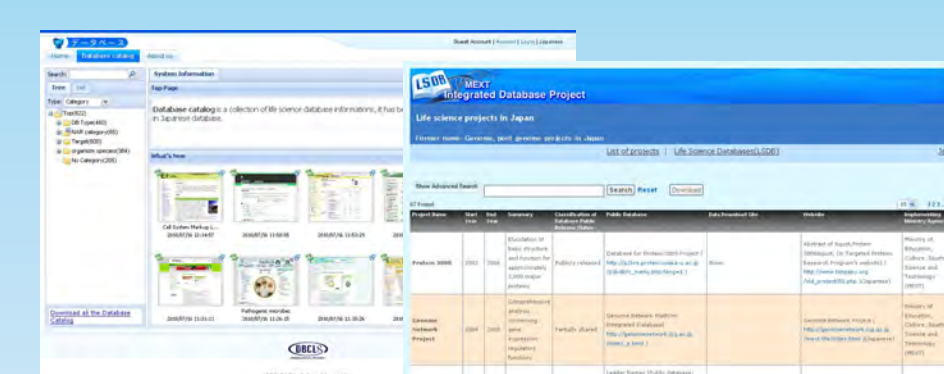
Develop and maintain a portal site that presents the whereabouts and usage of databases

Portal site of the "Integrated Database Project"
<http://lifesciencedb.jp/?Ing=en>



Towards integration of databases

Information technologies and services available from the Integrated Database Project



Metadata catalogs of life science databases



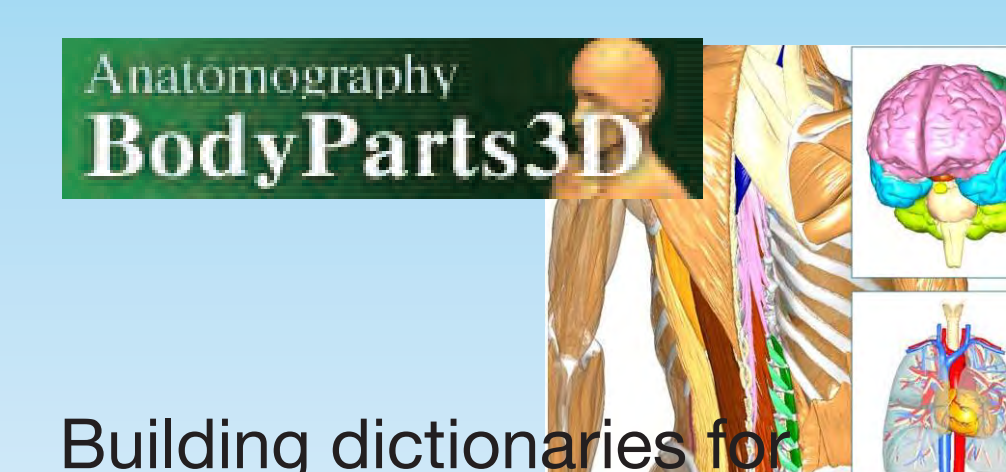
Search systems using natural language processing



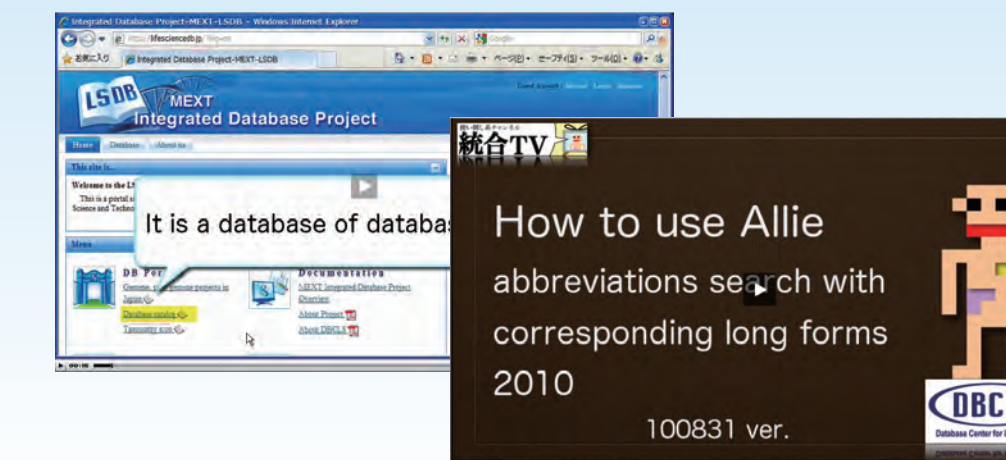
Tools and resources



International conferences



Building dictionaries for life science vocabulary



Text and movie tutorials

Integrating databases

Finding databases and retrieving records that fulfill one's needs from over 500 domestic databases or over ten million databases worldwide have become time-consuming and difficult.

As part of the Integrated Database Project and to overcome this situation, DBCLS is committed to providing various database services. For example, there is a database of life science databases (e.g. "Database catalog") from which users can browse and find out about the life science databases that are currently available worldwide. There are also movie tutorials (e.g. "TogoTV") that describe how to use a certain database or tool and an archive (e.g. "Life Science Database Archive") where a user can submit his/her datasets to be made downloadable and maintained in a long-term and stable state. In addition to these services, DBCLS carries out basic research and development of web services, tools and ontologies that are essential information technologies for database integration.

A single integrated database cannot satisfy the interests of every researcher in the life sciences, since there are specific research fields within the life science community. Therefore, institutions participating in the Integrated Database Project develop databases for specific research fields, such as medicine, pharmacology and glycobiology. Along with general integration tools mentioned above, these specific databases should help to unearth useful information that a researcher was previously unaware of. We hope that these activities take us a step further to resolve issues surrounding life science databases.

Public relations and communications

In cooperation with institutions participating in the Integrated Database Project, DBCLS holds training courses for potential annotators, curators and system administrators on a regular basis.

These training courses cover basic to advanced uses of life science databases and tools and are held at universities nation-wide.

DBCLS also exhibits its services at annual meetings and exhibitions to receive feedback from users. Events and information related to the Integrated Database Project are available from the "Information" Section of the Project's website.

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