BioResource World
An Integrated database of Biological Resources

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Biological Resource Banks in Japan

Ministry of Education, Culture, Sports, Science and Technology (MEXT)
→ National BioResource Project (NBRP)
  Research Resources

Ministry of Agriculture, Forestry and Fisheries (MAFF):
→ National Institute of Agrobiological Sciences (NIAS) Genebank
  Plants, animals, microorganisms of agricultural importance

Ministry of Economy, Trade and Industry (METI)
→ NBRC (Biological Resource Center, NITE):
  Microbial resources for industrial applications

Ministry of Health, Labour and Welfare (MHLW)
→ National Institute of Biomedical Innovation (NIBIO):
  Disease/Medical bioresources
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Related info.:
- Resource info.
- Genomic info.
- Related info.

Resource core facilities 29

NBRP Information Center Organization


Research community

Deposit materials

Feedback research results

Resource Research Circulation

Institute Community Research

C. elegans
Drosophila
Arabidopsis
Chrysanthemum
Morning glory
Lotus/Glycine
tomato
rice
wheat
barley
Algae
Slime mold
Pathogenic Human and Animal Cell
General microbes
Yeast
Prkaryotes(E.coli/B.sub)
Pathogenic Human and Animal Cell

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C. int.
Chicken/Quail
Paramecium
Tropical clawed frog
medaka
Silkworm
Drosophila
tomato
Arabidopsis
Lotus/Glycine
Morning glory
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Animals

Plants

Microbes・Cells・DNA

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Microbes・Cells・DNA
Resource information from each database
Integration and cross-species search (BRW)
Outcome of the project
**NBRP Statistics**

All resources: 6,361,536

- Animal: 3,702,660 (59%)
- Plant: 2,481,422 (44%)
- Microbes: 177,454 (3%)

Cover 8700 species

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**Strains vs Genomic/cDNA clones**

- Strains: 4%
  - Animals: 24%
  - Plants: 32%

- Genomic/cDNA clones: 96%
  - Animals: 69%
  - Plants: 28%

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**BRW** provides various gateways to search for information. Users are able to search by **Keyword(s)**, **DNA sequence**, **Gene ontology (GO)**, **Disease ontology (DO)**, **Taxonomic tree** and **Journal articles**.
1. Keyword

Run query “flowering” against the BRW

Found 99563 resources (91 strains, 99472 clones) including Tomato, Wheat, Barley, Arabidopsis.

Select one of the resources.

User can request it from here.

2. BLAST

Input query DNA sequence

Search results containing wheat and barley clones

Wheat database

Alignment

Online request
Enter a query keyword ("cation transport").

Found several resources including mouse, C. elegans, drosophila, arabidopsis, rice, E. coli, yeast, cellular slime molds.

E. coli resource is available for online ordering.
Run query “diabete” against BRW-DO.
Several DO-IDs found.

Selecting one DO-ID gives several resources including mouse, rat, Drosophila, C. elegans and cellular slime molds.
Ontology is a powerful and promising tool especially for semantic integration of different descriptions because it provides a common platform of regulated vocabulary and absorbs the differences in technical terms from different fields.

We plan to apply new ontology such as “Plant Ontology (PO: plant anatomy and developmental stage)” and “Phenotype and Trait Ontology (PATO)” to our search methodology in the future.

“pathway search” and “image search” are also planned to be implemented.
We encourage resource users to submit the paper information upon publication of their research outcome using the NBRP resources.
NBRP is PubMed LinkOut provider

PubMed users can directly access to the NBRP resources

current BRW system

Internet

Web App

SHUNSAKU Data Manager

Search Server: Shunsaku Engine

Director Server: XML DB

RDB DB

Database Server

NBRP Databases

Shunsaku can perform indexless searches on XML data by using search engines equipped with the SIGMA algorithm
problems with SHUNSAKU system

--- Costly with large amount of data
--- No more support by the maker

New system

--- use open source full text search system (Solr)
--- indexing features of Solr support for inflected word forms, faceted search, auto suggest functionality

the search is more comprehensive, performs faster and the refine search is more advanced.
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