BridgeDb: standardized access to gene, protein and metabolite identifier mapping services

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The Identifier mapping problem

Many interesting problems in bioinformatics require integration of data from various sources:

![Diagram showing the Identifier mapping problem]

Whenever we integrate datasets from different origins, inevitably an identifier mapping problem occurs. BridgeDb helps to solve that problem.

Connect mapping sources to tools

Which mapping source is connected to which bioinformatics tool? Follow the lines to find out!

BridgeDb connects any mapping source to any bioinformatics tool. This way we avoid duplication of effort, and enable more features for more tools.

Information for developers

BridgeDb is an Application Programming Interface (API), and thus it is primarily useful for bioinformatics tool developers.

Object Model

The figure on the right shows the object model. The BridgeDb class is a central access point, which instantiates an implementation of IDMapper. A DataSource (such as Ensembl or Entrez Gene) is combined with a local identifier to form an Xref. An Xref functions as a global identifier.

Java API

First, establish a connection through a JDBC-like connection string:

```java
// Connect to a local duty database
IDMapper mapper = BridgeDb.connect("jdbc:postgresql://PC01_MMM401;"

// Connect to a BIOMART WebService
IDMapper mapper = BridgeDb.connect("jdbc:biomart:// http://www.ensembl.org/biomart/entrezgene?rs=9606&db=homologene&dbver=93&format=csv&showSequence=1& Xref L");

// Connect to the PC01 WebService
IDMapper mapper = BridgeDb.connect("jdbc:postgresql://PC01_MMM401;")
```

After that you can map, search and get the name of identifiers in the same way regardless of the mapping source.

```
Xref ref = new Xref("D357", BIOMART_SOURCE_9606, 2010);
Xref ref = new Xref("L142", BIOMART_SOURCE_9606);
```

Java API

For non-Java programming languages a REST API is also available.

```
http://webservice.bridgedb.org/Human/xrefs/L/1234
http://webservice.bridgedb.org/Human/search/ENSG00000122375
http://webservice.bridgedb.org/Human/attributeSet
http://webservice.bridgedb.org/Human/properties
http://webservice.bridgedb.org/Human/targetDataSources
http://webservice.bridgedb.org/Human/attributes/L/3643
http://localhost:8183/Human/xrefs/L/3643
```

Contact

Website: http://www.bridgedb.org
Mailinglist: bridgedb-discuss@googlegroups.com
Availability: Open Source (Apache 2.0 License)
Code repository: http://svn.bigcat.unimaas.nl/bridgedb
See also: Van Iersel et al., BMC Bioinformatics 2010, 11.5

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