

Delta-view Installation

1. Prerequisites

1.1 Required software

Java 1.6

Tomcat 6.0

Mysql 5.0

JBrowse package (an embed JBrowse used by Delta, you need to install the JBrowse required modules)

2 Installation

2.1.1 Download & Unzip

Once the prerequisites are installed, please download the Delta-view package from <http://delta.big.ac.cn/pages/download/download.jsp>.

This will give you a .tar.gz file, which must be uncompressed and unpacked. The description of unzip files as following:

File Name	Version	Description
circosweb	1.0	The web project of Delta
DatabaseDump	1.0	The MySQL dump files

2.1.2 Populating MySQL Database

Delta uses MySQL database to store public annotation data. You need to load the MySQLdump file from which located in DatabaseDump directory.

The command as the followings:

```
mysql -uroot -ppassword -e "create database hicbrowser_20160607_1"
mysql -uroot -ppassword -e "grant all on hic.* to 'hic'@'localhost' identified by 'hic' "
mysql -uroot -ppassword hic < /home/test/DatabaseDump/Delta.sql
```

2.1.3 Deploy Web Project

Delta uses Tomcat server to start the web service, you need to put the directory "circosweb" under the Tomcat web application directory, such as /home/test/tomcat6.0/webapps/.

Some extra configurations are needed before run the web service, which is described in 2.1.4.

Then start the Tomcat, such as /home/test/tomcat6.0/bin/startup.sh

If deploy successfully, use web browser to open <http://localhost:8080/circosweb/index.jsp>, a welcome web page as the following will be shown:

Delta: An integrative analysis and visualization platform for 3D genome

Home Genome View Topological View Physical View Download Help

Welcome to Delta Platform.

Delta is an integrated platform for Hi-C data analysis and visualization. Three visualization views are provided: Genome View, Topological View and Physical View. Delta supports seamlessly data access and data exchange among these three views.

```
graph TD
    A[User upload annotated data] --> D[Delta-view]
    B[Delta analysis] --> D
    subgraph Public_data [Public data]
        C1[Encode Data  
(ChIP-seq, RNA-seq, DNase-seq, ChIP-seq...)]
        C2[Ensembl Gene]
        C3[Hi-C data  
(Interaction loop, TAD, Heatmap)]
    end
    Public_data --> D
    subgraph Delta_view [Delta-view]
        D1[Genome View]
        D2[Topological View]
        D3[Physical View]
    end
```

What's new?

1. Physical View is now available to access(2017-03-07).
2. Topological View is now available to access(2016-12-01).
3. Encode data has been integrated into Genome View(2016-05-10).
4. Genome View is now available to access(2016-05-01).

Useful link

- [3CDB](#)
- [3DGD](#)
- [3D Genome Browse](#)
- [WashU Epigenome Browser](#)
- [Hi-Browse](#)
- [JuiceBox](#)
- [TADKit](#)

Genome View

Genome View use traditional genome browser to show Hi-C data features as well as other omics data. Various data sources have been preloaded in to Genome View such as Encode, Ensembl and Hi-C data set.

Topological View

Topological View uses Circos-like view to show Hi-C data features as well as other omics data, such as Encode, Ensembl Gene.

Physical View

Physical View uses three-dimensional view to show Hi-C data features as well as other omics data, such as Encode, Ensembl Gene. In Physical View, users can do the following things:

- 1) load a 3D physical model for chromatin
- 2) add annotated data into 3D physical model
- 3) load genome view data in parallel to physical view

Suggested Browser: IE11; Firefox 51 or above; Google Chrome 56 or above; Safari 5.0

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2.1.4 Modify Database Configuration

Change MySQL configuration under circosweb project at `/home/test/tomcat6.0/webapps/circosweb/WEB-INF/applicationContext-common.xml`, find tag "dataSource", then modify the parameters url, username, password which has been done in 1.2.3.

```
<bean id="dataSource" class="org.apache.commons.dbcp.BasicDataSource" destroy-method="close">
    <property name="driverClassName">
        <value>com.mysql.jdbc.Driver</value>
    </property>
    <property name="url">
        <value>jdbc:mysql://localhost:3306/hicbrowser_20160607_1?useUnicode=true&characterEncoding=UTF-8&zeroDateTimeBehavior=convertToNull&autoReconnect=true&failOverReadOnly=false</value>
    </property>
    <property name="username">
        <value>hic</value>
    </property>
    <property name="password">
        <value>hic</value>
    </property>
</bean>
```

2.1.5 Delta -view Configuration

For the detail configuration of visualization views, you can check the document for “Genome View”, ”Topological View” and ”Physical View” from the download page <http://delta.big.ac.cn/pages/download/download.jsp>.