
Tripal Documentation

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Jan 27, 2023

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This package of modules integrates [GMOD JBrowse](#) into your [Tripal](#) site providing

1. A user interface for JBrowse instance creation and management via **Tripal JBrowse Management**
2. Drupal menu links and pages with embedded JBrowse instances via **Tripal-JBrowse Page Integration**

This powerful combination allows you to provide seamless genome browsing to your users in an administrator-friendly manner.

1.1 1) Dependencies

Please ensure that the following are installed on your server:

- JBrowse.
- Tripal

Note: JBrowse must be unpacked and `./setup.sh` run. It must be located in a directory accessible by your webserver. We recommend `[drupalsite]/tools/jbrowse`.

1.2 2) Tripal JBrowse Management

1.2.1 Installation

1. Download the module to your Drupal modules folder
2. Run `drush en -y tripal_jbrowse_mgmt` or enable through the modules page
3. Visit the configuration page at Administration » Tripal » Extensions » Tripal JBrowse Management » Settings

Note: JBrowse must be unpacked and `./setup.sh` run. It must be located in a directory accessible by your webserver. We recommend `[drupalsite]/tools/jbrowse`.

1.2.2 Configuration

In order for the module to function properly, you need to first configure it.

1. Visit your site through the browser and navigate to Administration » Tripal » Extensions » Tripal JBrowse Management » Settings.
2. Fill out the configuration form and click “Save Settings”. **You will need to know information about your JBrowse instance.**

[Home](#) » [Administration](#) » [Tripal](#) » [Extensions](#) » [Tripal JBrowse Management](#)

Tripal JBrowse Management ⊕

[LIST INSTANCES](#) [PAGE INTEGRATION](#) [SETTINGS](#)

Before filling out this form, ensure you have downloaded and installed JBrowse on your server. At this time, JBrowse needs to be on the same server as this Tripal site.
This form allows you to configure the location of JBrowse.

Data Directory *

Absolute path to where data directories should live. This directory must be accessible by the apache user.

Data Path *

Relative path to where data directories lives relative to the web browser root.

Path to JBrowse's Index File *

Path to index.html that JBrowse provides. We suggest using tools/jbrowse.

Path to JBrowse's bin Directory *

The absolute path to the bin directory that JBrowse provides. We suggest using PATH_TO_DRUPAL/tools/jbrowse/bin.

Default menuTemplate

Default menuTemplate in the trackList.json file. See the JBrowse documentation for more info.

[Save Settings](#)

1.3 3) Tripal JBrowse Page Integration

This module is available for download from github.com/tripal/tripal_jbrowse.

1. First install *Tripal JBrowse Management*
2. Run `drush en -y tripal_jbrowse_page` or enable through the modules page

1.4 Tripal JBrowse Nodes Migration

The old method of Tripal JBrowse page integration using nodes has been **deprecated**. If you are still using this method of integration, administrators will see a warning directing you here.

The new method of page integration using the Tripal JBrowse Management module to register instances with your Tripal site. The following steps will help you register your existing JBrowse instances with Tripal JBrowse Management in order to take advantage of the new page integration.

1. Enable Tripal JBrowse Management as you would any other Drupal/Tripal module. This can be done using `drush pm-enable tripal_jbrowse_mgmt`.
2. Download JBrowse and install a single instance in a web-accessible location. We recommend `DRUPAL_ROOT/tools/jbrowse`.
3. Create symbolic links to each of your existing instances where the name of the link matches the organism it is for: `genus_species__common_name`.

```
cd DRUPAL_ROOT/tools/jbrowse
mkdir data
cd data
ln -s path/to/existing/instance/data/directory genus_species__common_name
```

4. Navigate to Administration » Tripal » Extensions » Tripal JBrowse and click on “Settings”. Fill out the paths for your new single JBrowse instance.

Data Directory	DRUPAL_ROOT/tools/jbrowse/data
Data Path	./tools/jbrowse/data
Path to JBrowse’s Index File	./tools/jbrowse
Path to JBrowse’s bin Directory	DRUPAL_ROOT/tools/jbrowse/bin

5. Navigate to Administration » Tripal » Extensions » Tripal JBrowse and click on “Register Existing Instance”. Fill in the details for each of your existing instances.
6. Enable the new Tripal JBrowse Page Integration module and dynamic pages will now be available for each of your newly registered instances. This can be done using `drush pm-enable tripal_jbrowse_page`.
7. Delete your existing Tripal JBrowse Instance nodes under Admin » Content and disable the old module using `drush pm-disable tripal_jbrowse`.

 Tripal JBrowse Management

2.1 Managing Instances

2.1.1 Listing and Creating Instances

To list all instances, visit Administration » Tripal » Extensions » Tripal JBrowse Management.

Home » Administration » Tripal » Extensions

Tripal JBrowse Management

LIST INSTANCES PAGE INTEGRATION SETTINGS

+ Create New Instance + Register Existing Instance

ORGANISM	SUBMITTER	DESCRIPTION	TRACKS	LAUNCH	INSTANCE
Tripalusb databasica	tripaladmin	Lorem ipsum...	Manage Tracks	Launch	Edit Delete

2.1.2 Creating Instances

As highlighted on the screenshot above, you can create new instances by clicking the “Create New Instance” link. This will create a new data directory based on the organism chosen. All instances created will use the same JBrowse installation, which makes it easier to update JBrowse.

2.1.3 Registering Existing Instances

You can also register existing JBrowse instances with this module. To do so 1. Create a symbolic link in your configured data directory where the name of the link matches the organism it is for: `genus_species__common_name`. 2. Click on “Register Existing Instance” as highlighted on the screenshot above. 3. Fill out the form to describe the existing JBrowse instance.

Note: If you would like to move an existing instance to the JBrowse managed by this module permanently then copy the data directory rather than creating a symbolic link.

2.1.4 Deleting Instances

To delete an instance, you must first visit the instances list page and clicking the delete instance link.

Warning: The actual files for the instance are not deleted. You will need to delete all files manually.

Note: If you accidentally delete an instance, you can use the “Register Existing Instance” process to re-register it with the system. All previously created tracks will no longer be able to be managed but you will be able to add new tracks, etc.

2.2 Managing Tracks

2.2.1 Creating and Deleting Tracks

To create a new track, you need visit the instances list page (Administration » Tripal » Extensions » Tripal JBrowse Management) and click Manage Tracks.

The screenshot shows the Tripal JBrowse Management interface. At the top, there is a breadcrumb trail: Home » Administration » Tripal » Extensions. Below this, the page title is "Tripal JBrowse Management" with a dropdown arrow. To the right, there are three tabs: "LIST INSTANCES" (active), "PAGE INTEGRATION", and "SETTINGS". Below the tabs, there are two links: "+ Create New Instance" and "+ Register Existing Instance". The main content is a table with the following columns: ORGANISM, SUBMITTER, DESCRIPTION, TRACKS, LAUNCH, and INSTANCE. The table contains one row with the following data: ORGANISM: Tripalus databasica, SUBMITTER: tripaladmin, DESCRIPTION: Lorem ipsum..., TRACKS: Manage Tracks (highlighted with a green box), LAUNCH: Launch, and INSTANCE: Edit, Delete.

ORGANISM	SUBMITTER	DESCRIPTION	TRACKS	LAUNCH	INSTANCE
Tripalus databasica	tripaladmin	Lorem ipsum...	Manage Tracks	Launch	Edit Delete

The manage tracks link, will lead to a page where you can create and delete tracks (see screenshot below).

Home » Administration » Tripal » Extensions » Tripal JBrowse

Manage Tripalus databasica JBrowse

[+ Add New Track](#) [+ Delete Instance](#) [+ Edit Instance](#)

KEY	VALUE
Instance Name	Tripalus databasica
Created At	12/05/2019
Organism	Tripalus databasica
Created By	tripaladmin
Launch	See Tripalus databasica on JBrowse

Tracks

LABEL	TRACK TYPE	FILE TYPE	CREATED BY	CREATED AT	MANAGE	DELETE TRACK
Genes	CanvasFeatures	gff	tripaladmin	12/05/2019	Manage Track	Delete Track
Reference sequence	SequenceTrack					

Warning: Please note that files don't get automatically removed. You have to manually remove the track files yourself.

2.2.2 Editing Tracks

This module allows you to configure a track after it has been created. This provides a way to add the track to a category, change the colors and type of the track amongst other configuration options.

To edit a track, simply click the manage track button on the "manage tracks" page as shown on the screenshot above.

Tripal Page Integration

3.1 Embedded JBrowse Instance

This guide will show you **how to embed a JBrowse instance within your Tripal site for an existing JBrowse instance**. This ensures a *consistent user experience* by making the menu system of the Tripal site available to the user while browsing. If the user needs more space they can choose the *FullScreen option* to remove the menus.

Warning: This requires you already have a JBrowse instance created through the Tripal JBrowse Management sub-module. For information on how to do this, see the associated Tripal JBrowse Management documentation.

This is the default functionality of the “Tripal-JBrowse Page Integration” module. If you have already created your JBrowse instances using the “Tripal JBrowse Management” module then enabling this module automatically creates pages and menu items for those instances!

The screenshot shows the Tripal website interface. At the top, there is a blue header with the Tripal logo and the text 'Tripal Dev A'. Below the header, there is a navigation menu with 'Home' and 'JBrowse' options. The main content area is titled 'Tripalus databasica' and features an embedded JBrowse genome browser. The browser displays a genomic track for chromosome 1, with a search bar and navigation controls. The track shows several genes, including Medtr1g046640.1 (seven in absencia family protein), Medtr1g046650.1 (family protein), Medtr1g046650.2 (family protein), Medtr1g046650.3 (family protein), Medtr1g046650.4 (family protein), Medtr1g046650 (seven in absencia family protein), Medtr1g046660.1 (polyketide cyclase/dehydrase and lipid transporter), and Medtr1g046660 (polyketide cyclase/dehydrase and lipid transporter). The interface includes a search bar, a navigation menu, and a list of available tracks.

3.2 Links to Original JBrowse

This guide will show you how to ensure the links created by this module direct users to the original JBrowse rather than to an embedded JBrowse page. This may be preferable if your theme does not provide much space to content thus causing the embedded JBrowse to be too small.

By installing the “Tripal-JBrowse Page Integration” module you will already have embedded JBrowse pages for all Tripal JBrowse instances created by the “Tripal JBrowse Management” module. To switch these links and pages to redirect to the original full-screen JBrowse, go to Administration Toolbar > Tripal > Extensions > Tripal JBrowse Management > Page Integration. **Here you simply need to uncheck the “Embed JBrowse in your site” checkbox and click “Save Settings”**

Home » Administration » Tripal » Extensions » Tripal JBrowse Management

Tripal JBrowse Management

LIST INSTANCES PAGE INTEGRATION SETTINGS

GENERAL PAGE INTEGRATION SETTINGS

- Create Menu Items
Checking this box ensures that menu items under "Navigation" will be created for each JBrowse instance. This only applies to JBrowse Instances with a page.
- Embed JBrowse in your Tripal Site
Check this box if you would like to embed the JBrowse in your Tripal site. Conversely, uncheck it for links to go directly to the full-screen JBrowse.

EXCLUDE JBROWSE INSTANCES FROM PAGE INTEGRATION

To exclude a JBrowse instance from page integration (i.e. no embedded page will be shown and it won't show up in the listing), check the checkbox below.

GENUS	SPECIES
<input type="checkbox"/> Tripalus	databasica

Save Settings

Now, all links in the `yourdrupalsite.com/jbrowse` listing and menu items will point the original, full screen JBrowse!

3.3 Exclude Specific JBrowse Instances

Sometimes you may want to manage a JBrowse Instance using “Tripal JBrowse Management” but not display it to users through “Tripal-JBrowse Page Integration”. For example, if you have just begun development and are not ready to release it. To do this, go to Administration Toolbar > Tripal > Extensions > Tripal JBrowse Management > Page Integration. Check the checkbox beside the instance you would like to exclude from menu items, lists and pages and click “Save Settings”.

Home » Administration » Tripal » Extensions » Tripal JBrowse Management

Tripal JBrowse Management

LIST INSTANCES PAGE INTEGRATION SETTINGS

GENERAL PAGE INTEGRATION SETTINGS

- Create Menu Items
Checking this box ensures that menu items under "Navigation" will be created for each JBrowse instance. This only applies to JBrowse Instances with a page.
- Embed JBrowse in your Tripal Site
Check this box if you would like to embed the JBrowse in your Tripal site. Conversely, uncheck it for links to go directly to the full-screen JBrowse.

EXCLUDE JBROWSE INSTANCES FROM PAGE INTEGRATION

To exclude a JBrowse instance from page integration (i.e. no embedded page will be shown and it won't show up in the listing), check the checkbox below.

GENUS	SPECIES
<input checked="" type="checkbox"/> Tripalus	databasica

Save Settings