

# Next-generation sequencing request management system in Galaxy

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# Researchers



Samples



# Sequencing Core



Analysis



# Sample and request infrastructure

Galaxy

[Analyze Data](#)
[Workflow](#)
[Data Libraries](#)
[Lab](#)
[Admin](#)
[Help](#)
[User](#)

## Sequencing Requests

Create new request

🔍
[Advanced Search](#)

	Name	Description	Sample(s)	Type	Last Updated	State
<input type="checkbox"/>	<a href="#">BCa1</a> ▼		<u>0</u>	Library construction inputs	May 03, 2010	<span style="border: 1px solid #ccc; padding: 2px 5px;">New</span>
<input type="checkbox"/>	<a href="#">BCa1</a> ▼		<u>0</u>	Library construction details	May 03, 2010	<span style="border: 1px solid #ccc; padding: 2px 5px;">New</span>
<input type="checkbox"/>	<a href="#">BCa1</a> ▼		<u>0</u>	Library validation details	May 03, 2010	<span style="border: 1px solid #ccc; padding: 2px 5px;">New</span>
<input type="checkbox"/>	<a href="#">BCa1</a> ▼		<u>0</u>	Next gen sequencing inputs	Apr 30, 2010	<span style="border: 1px solid #ccc; padding: 2px 5px;">New</span>
<input type="checkbox"/>			<u>0</u>	Quantitation details	May 03, 2010	<span style="border: 1px solid #ccc; padding: 2px 5px;">New</span>

# Functionality

- Researcher sample entry
- Sequencing tracking and management
- Layout of flow cells
- Full integration with Galaxy


# Multiple services

The screenshot shows the Galaxy web interface. The top navigation bar includes 'Galaxy' and links for 'Analyze Data', 'Workflow', 'Data Libraries', 'Lab', 'Admin', 'Help', and 'User'. A left sidebar contains a menu with 'Samples' (sub-items: 'Define samples and services', 'Submit samples as a project', 'View projects') and 'Sequencing' (sub-items: 'Queues', 'Runs'). The main content area is titled 'Specify sample details' and contains the following form fields:

- Name:** A text input field containing 'BCa4'. Below it is the text: 'Assigned sample name. Please label submissions using this name.'
- Description:** An empty text input field. Below it is the text: '(Required)'
- Genome Build:** A dropdown menu showing 'Human Mar. 2006 (hg18)' with a plus icon. Below it is the text: '(Required)'
- Services needed:** A list of checkboxes:
  - Library construction
  - Library validation
  - Next gen sequencingBelow this list is the text: '(Required)'

At the bottom of the form is a 'Continue' button. At the bottom right of the page are navigation icons.

# Sample entry

 Analyze Data Workflow Data Libraries Lab Visualization Admin Help User

**Samples**

- Define samples and services
- Submit samples as a project
- View projects

**Sequencing**

- Queues
- Runs

**Specify sample details**

**Name**  
  
Assigned sample name. Please label submissions using this name.


**Description**  
  
(Required)

**Genome Build**  
  
(Required)

**Next gen sequencing**

**Cycles**

**Method**



# Organize as projects

The screenshot shows the Galaxy web interface. At the top, there is a navigation bar with the Galaxy logo and several menu items: Analyze Data, Workflow, Data Libraries, Lab, Visualization, Admin, Help, and User. On the left side, there is a sidebar menu with the following sections: Samples (with sub-items: Define samples and services, Submit samples as a project, View projects), Sequencing (with sub-items: Queues, Runs), and a search icon. The main content area displays a form titled 'Specify project details'. At the top of the form, there is a red error message: 'Please enter information for: Samples'. The form contains the following fields: 'Project name' (text input with 'Example project' and '(Required)' label), 'Description' (text area), 'Payment (Fund number)' (text input with '12345' and '(Required)' label), and 'Samples' (checkbox with label 'BCa2: Sample 5 -- Services: Next gen sequencing; Sequencing: 76 single'). A 'Submit' button is located at the bottom of the form. At the bottom right of the page, there are several navigation icons.

**Galaxy** Analyze Data Workflow Data Libraries Lab Visualization Admin Help User

✖ Please enter information for: Samples

**Specify project details**

**Project name**  
Example project  
(Required)

**Description**

**Payment (Fund number)**  
12345  
(Required)

**Samples**  
 BCa2: Sample 5 -- Services: Next gen sequencing; Sequencing: 76 single

Submit

# Project based view

**Galaxy** Analyze Data Workflow Data Libraries Lab Visualization Admin Help User

**Samples**

- Define samples and services
- Submit samples as a project
- View projects

**Sequencing**

- Queues
- Runs

## Sequencing projects

Project	Researcher	Samples	Sequencing	Sample States	Last update
Test project 1	Brad Chapman	1	76 paired	Sequencing	May 06, 2010
Project 2	Test Jones	3	36 paired, 36 single	Pre-sequencing quantitation, Sequencing	May 06, 2010
Project 4	Brad Chapman	1	36 single	Sequencing confirmation	May 05, 2010
Project 3	Brad Chapman	1	36 single	Cancelled	May 05, 2010

Navigation icons: back, forward, search, refresh, list, home, search, refresh



# Tracking and management

**Galaxy** Analyze Data Workflow Data Libraries Lab Visualization Admin Help User

**Samples**

- Define samples and services
- Submit samples as a project
- View projects

**Sequencing**

- Queues
- Runs

## Sequencing queues

[On hold](#) | [Awaiting sample](#) | [Construction](#) | [Validation](#) | [Pre-sequencing quantitation](#) | **[Sequencing](#)** | [Sequencing confirmation](#) | [Complete](#) | [Cancelled](#)

	Name	Description	Researcher	Sequencing	Services	Last update
<input type="checkbox"/>	<a href="#">TJa1</a>	Sample 2	Test Jones	36 single	Next gen sequencing	May 05, 2010
<input type="checkbox"/>	<a href="#">TJa3</a>	Sample 4	Test Jones	36 paired	Next gen sequencing	May 05, 2010
<input type="checkbox"/>	<a href="#">BCa1</a>	Test sample 1	Brad Chapman	76 paired	Library validation, Next gen sequencing	May 06, 2010

For selected samples: **Prepare flow cell**

*Click on a sample name for expanded information.*

# Flow cell layout

The screenshot displays the Galaxy web interface for configuring a flow cell layout. The top navigation bar includes the Galaxy logo and menu items: Analyze Data, Workflow, Data Libraries, Lab, Visualization, Admin, Help, and User. A left sidebar contains a navigation menu with sections for Samples and Sequencing, each with sub-links.

The main content area is divided into two columns. The left column contains a 'Samples' section with a text input field containing 'TJa3 Sample 4' and a 'Copy' section with an empty text input field. The right column contains eight 'Lane' sections, labeled Lane 1 through Lane 8. Lane 1 has a text input field with 'TJa1 Sample 2'. Lane 2 has a text input field with 'PhiX control'. Lane 3 has a text input field with 'BCa1 Test sample 1'. Lanes 4, 5, 6, 7, and 8 have empty text input fields.

At the bottom right of the interface, there are several navigation icons: a left arrow, a right arrow, a refresh icon, a search icon, and a home icon.

**Galaxy** Analyze Data Workflow Data Libraries Lab Visualization Admin Help User

**Samples**

- Define samples and services
- Submit samples as a project
- View projects

**Sequencing**

- Queues
- Runs

**Samples**

TJa3 Sample 4

**Copy**

**Lane 1**

TJa1 Sample 2

**Lane 2**

PhiX control

**Lane 3**

BCa1 Test sample 1

**Lane 4**

**Lane 5**

**Lane 6**

**Lane 7**

**Lane 8**

# Leverages Galaxy infrastructure

## Display

- grids
- form builder

## Database

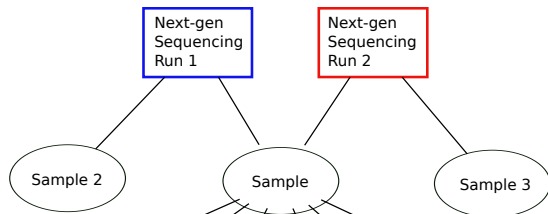
- samples
- requests
- events
- form values

Added to database

One relationship table

# Sample request relationships

Requests:



Requests:



# Community

## Positives

- Consistent interface
- Excellent backend
- Maintainability

## Suggestions

- High level update summaries
- Internals documentation
- Roadmap

## Availability

Repository tracking Galaxy development

`http://bitbucket.org/chapmanb/  
galaxy-central`

Hope to integrate with the main code base