ArrayExpress: Quick tour

This quick tour provides an overview of EMBL-EBI’s functional genomics database ArrayExpress.

This course was updated in December 2015.

An undergraduate-level understanding of biology is an advantage. You may wish to have a look at our Functional genomics: An introduction to EMBL-EBI resources [2] before taking this course.

Want to know more about ArrayExpress? After finishing the Quick Tour you can move onto our more comprehensive ArrayExpress course ArrayExpress: Discover functional genomics data quickly and easily [3]

Learning objectives:

- Basic understanding of ArrayExpress and what it can do
- Know where to find out more about ArrayExpress

Overview

During this course, we will briefly cover the following (Figure 1).
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Figure 1 Overview of the ArrayExpress quick tour.

What is ArrayExpress?

ArrayExpress [4] is a database of functional genomics [5] experiments. The data and information about the experiments are stored according to the MIAME [6] and MINSEQE [7] guidelines for microarray [8] and sequencing experiments (Figure 2).

Direct submission from researchers (curated)

Automatic import from NCBI Gene Expression Omnibus (no curation)

Figure 2 The experiments in ArrayExpress are submitted by researchers or are imported from other functional genomics databases e.g. NCBI GEO [9].
Why do we need ArrayExpress?

ArrayExpress was established to make data from high-throughput technologies available to the scientific community. It provides easy access to well-annotated functional genomics data in a structured and standardised format, and facilitates sharing.

What can I do with ArrayExpress?

ArrayExpress can be used to:

- find functional genomics experiments;
- download functional genomics data;
- store your functional genomics data.

Searching ArrayExpress

Figure 3 below shows you the main ways to search from the ArrayExpress homepage.

![ArrayExpress homepage](image)

Use the **browse** button to view all experiments in ArrayExpress

Visit the **help** page for more detailed instructions on searching ArrayExpress

Use this box to search for experiments by accession number or keywords.

Use the drop down box to select suggested terms

**Figure 3** Searching ArrayExpress.

Find out more about [how to search for public experiments](http://www.ebi.ac.uk/training/online) on ArrayExpress.

Viewing search results in ArrayExpress
Once you have carried out a search, the results will be presented as shown in Figure 4.

**Figure 4** Viewing search results in ArrayExpress.

**Viewing experiments in ArrayExpress**

Clicking on an [accession][11] number from the search results page provides you with more information about that experiment (Figure 5).
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**Figure 5** Viewing experiments in ArrayExpress.

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**Viewing samples in Array Express**

You can view information on samples and protocols in ArrayExpress by clicking on the 'Samples' link (Figure 6).
**Figure 6** Viewing samples in ArrayExpress.

**Submitting data to ArrayExpress**

- Data can be submitted to ArrayExpress using the [Annotare web tool](http://www.ebi.ac.uk/training/online) [12].
- Annotare was built to help biologists fulfill data standard requirements.
- Data remains private until it is published or released by the submitter.
- If your data is stored in a local database please [contact us](http://www.ebi.ac.uk/training/online) [13] and we can discuss the best way to submit your data to ArrayExpress.

An example submission form is shown below in Figure 7.
Figure 7 Submitting data to ArrayExpress.

See the Annotare help page [14] for more information on how to submit data to ArrayExpress.

Your feedback

Please tell us what you thought about this course. Your feedback is invaluable and helps us to improve our courses and thus enhance your learning experience.

Get help and support on ArrayExpress

You will find a link to our help pages and feedback form in the navigation bar on every page in ArrayExpress and in Annotare (Figure 8).
Figure 8 Getting help on ArrayExpress (A) and submitting to ArrayExpress using Annotare (B).

General help on ArrayExpress

- Help page [15]
- Email us [13]

Help with submissions to ArrayExpress

- Help page [14]
- Email us [16]

Related courses on Train online

- Expression Atlas: Quick tour [17]

Note: We are developing an updated version of the ‘Array Express: Exploring Functional Genomics Data with ArrayExpress’ online course which will be available in early 2016.

Contributors
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Melissa is the Scientific Training Officer (e-learning) for the Training Team at the EMBL-EBI. She joined the Training Team in July 2016 after having worked as a Scientific Curator for ArrayExpress/Expression Atlas at the EMBL-EBI. She has a PhD in Molecular Parasitology and has worked internationally as a postdoctoral researcher specialising in the functional genomics of infectious diseases.

Functional Genomics and Gene Expression Groups

The EBI's Functional Genomics [18] and Gene Expression [19] groups develop and maintain the EBI's functional genomic resources, including ArrayExpress and Expression Atlas.

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Source URL: http://www.ebi.ac.uk/training/online/course/arrayexpress-quick-tour-1

Links
[1] http://www.ebi.ac.uk/training/online/trainers/mburke
[4] https://www.ebi.ac.uk/arrayexpress/
[8] http://www.ebi.ac.uk/training/online/glossary/microarray
[12] https://www.ebi.ac.uk/arrayexpress/submit/overview.html
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