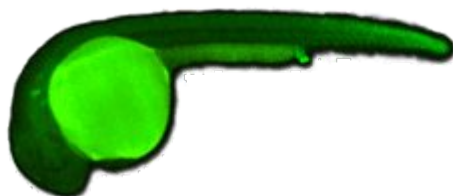


The Enhancer Screen

<http://www.upo.es/CABD/EnhancerScreen/>

amfermin@upo.es



Browser Handbook

(v1.0)

Index

Browser Handbook.....	1
A) Data Table.....	2
B) Detailed descriptions for each Data Table column.....	3
B1) ES.....	3
B2) Vector.....	3
B3) DNA Source.....	3
B4) Genomic Coordinates.....	3
B5, B6 and B7) Expression Patterns Parameters, "Search by Anatomical Region".....	4
B8 and B9) Paper Reference and Published Info.....	4
B10) ZFIN name.....	4
C) Data Table: Filters.....	5
C1) Next, a few examples about using both types of filters (selectors and text inputs):.....	5
C2) Searching ES lines by expression pattern using anatomical terms (see B5, B6, B7):.....	6
D) ES Pages.....	8
D1) Expression patterns by anatomical domains:.....	9
D2) Images of expression patterns:.....	9
D3) Map Info.....	9
E) References.....	9
Appendix: Website Info / Walkthrough.....	10

Notes:

This pdf version of the Browser Handbook is available for download at <http://www.upo.es/CABD/EnhancerScreen/handbook.html> .

If visiting the page at low screen resolutions it might be better to click the images in the Handbook's sections to open them at their original size.



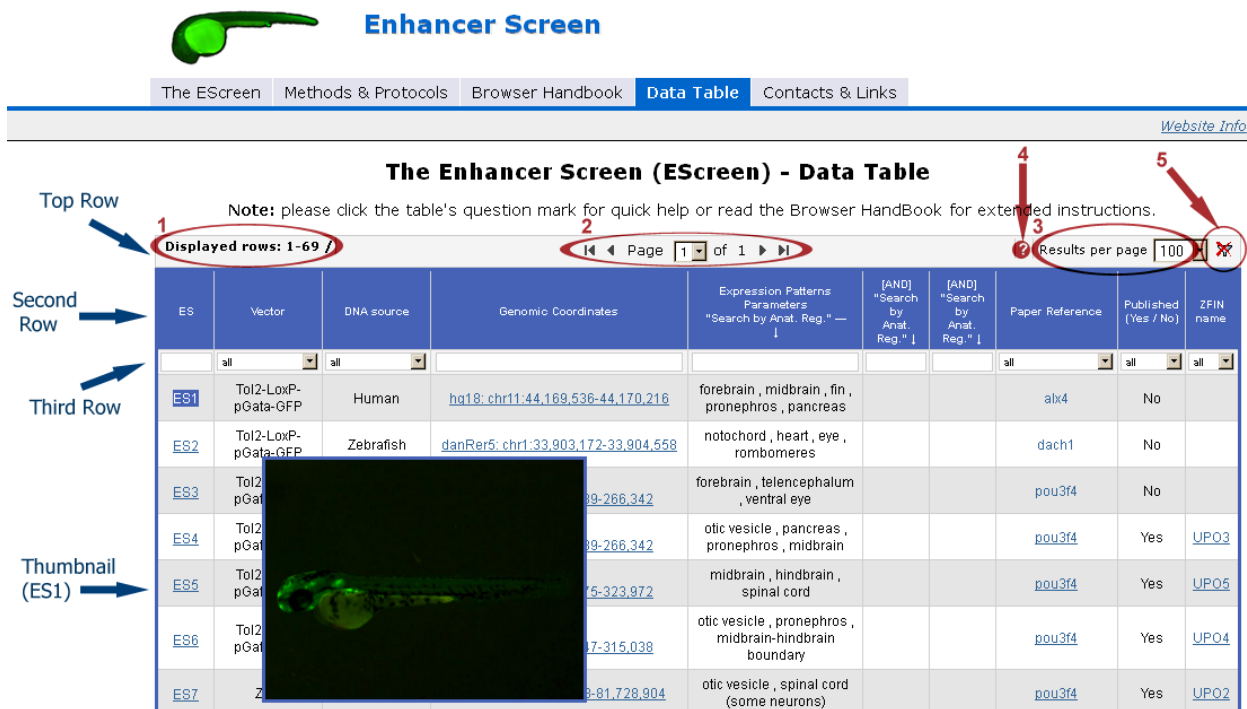
CABD - Centro Andaluz de Biología del Desarrollo

<http://www.cabd.es>

A) Data Table

One of the most important pages of the site is the Data Table, containing all Enhancer Screen entries and allowing the users to interactively search information via filters (selectors in drop-down lists or text inputs, including operators).

Once the Data Table fully loads (it might take a while, depending of Internet connection speed, computer specs, operating system, browser):



The Enhancer Screen (EScreen) - Data Table

Note: please click the table's question mark for quick help or read the Browser HandBook for extended instructions.

Displayed rows: 1-69 / Page 1 of 1 Results per page 100

ES	Vector	DNA source	Genomic Coordinates	Expression Patterns Parameters "Search by Anat. Reg." ↓	[AND] "Search by Anat. Reg." ↓	[AND] "Search by Anat. Reg." ↓	Paper Reference	Published (Yes / No)	ZFIN name
ES1	Tol2-LoxP-pGata-GFP	Human	hg18: chr11:44,169,536-44,170,216	forebrain , midbrain , fin , pronephros , pancreas			abx4	No	
ES2	Tol2-LoxP-pGata-GFP	Zebrafish	danRer5: chr1:33,903,172-33,904,558	notochord , heart , eye , rombomeres			dach1	No	
ES3	Tol2-pGata-GFP		89-266,342	forebrain , telencephalum , ventral eye			pou3f4	No	
ES4	Tol2-pGata-GFP		89-266,342	otic vesicle , pancreas , pronephros , midbrain			pou3f4	Yes	UPO3
ES5	Tol2-pGata-GFP		5-323,972	midbrain , hindbrain , spinal cord			pou3f4	Yes	UPO5
ES6	Tol2-pGata-GFP		7-315,038	otic vesicle , pronephros , midbrain-hindbrain boundary			pou3f4	Yes	UPO4
ES7	Z		8-81,728,904	otic vesicle , spinal cord (some neurons)			pou3f4	Yes	UPO2

- Top Row: Number of displayed rows **(1)**, selection of table pages **(2)** and number of rows per page **(3)**. Clicking on the question mark **(4)** makes the Quick Help to pop-up, which contains the list of all anatomical terms used to describe the ES expression patterns. At the rightmost side there is a red cross **(5)**: clicking on it resets all filters.

- Second Row: contains descriptions for each column (this will be detailed next).

- Third Row: used to filter data (text inputs or by selecting from drop-down lists).

B) Detailed descriptions for each Data Table column

(all examples are from data on RC / v1.0 of EScreen site)

B1) ES

- This column presents the ES number attributed to each stable transgenic line generated by the EScreen.
- Filter (text input): intended ES number
- On Mouse Hover : thumbnail of the ES case
- On Mouse Click: access to the respective ES page

Reminder: visitors can click [here](#) to open a list of all ES pages included in the current version of the site; this might be handy, providing an alternative method to browse the information in those pages (beyond using the Data Table).

B2) Vector

- Three different versions of the ZED vector were used in the EScreen (Tol2-LoxP-pGata-GFP, Tol2-LoxP-pZiro-GFP, ZED). The ZED vector is the most up-to-date version. For more information on these vectors please go to the "[Methods & Protocols](#)" section.
- Filter (selector): Tol2-LoxP-pGata-GFP, Tol2-LoxP-pZiro-GFP, Tol2-mCherry-pNvGata, Z48-Gw-Xcar GFP, ZED

B3) DNA Source

- In this column it is shown the DNA source used as template to amplify the enhancer regions.
- Filter (selector): Amphioxus, Human, Mouse, Nematostella, Sacoglossus, Sea urchin, Xenopus, Xenopus, Zebrafish

B4) Genomic Coordinates

- This column contains the coordinates of the enhancers cloned to generate the ES lines. A link is available for the genomic landscape of the corresponding ES line in the [UCSC genome browser](#).
- Filter (text input): for example, write **chr##** (replacing ## by the chromosome number; note that not all links follow this standard) ; (hint: writing ' : ' (colon) returns a complete list of ES lines with links to UCSC)
- On mouse click: when available, link to the respective position on [genome.ucsc.edu](#) (UCSC Genome Bioinformatics). Example, ES31: [hg19:chr9:22,009,390-22,012,229](#).

B5, B6 and B7) Expression Patterns Parameters, "Search by Anatomical Region"

- The first column (B5) describes the anatomical regions showing expression of GFP (and/or RFP) for each ES line. ES lines can be searched by expression patterns using anatomical terms. Second and third columns (B6 and B7) are available to perform searches using combination of terms. For a deeper description on how to search ES lines by anatomical terms, please see section C2.
- Filter (text input): a reference list of searchable anatomical terms is available when clicking on the question mark located at the top right side of the Data Table.

B8 and B9) Paper Reference and Published Info

- Cases with published papers can be filtered by selecting 'Yes' in B9 column. If a paper has been published, its reference in B8 column is a clickable link leading to its abstract or download location. In any case, doing mouse-hover on the paper's reference may also provide additional information.
- Filter (selector, B8 column): paper's short reference (title, quick description, ID)
- Filter (selector, B9 column): Yes, No

B10) ZFIN name

- In this column there is a link to ZFIN site for the published ES lines.
- Filter (selector): Drop-down list of associated genes
- On mouse click: when available, gene link at zfin.org (Zebrafish International Resource Center)

C) Data Table: Filters

Interaction with the EScreen data can be achieved by using the functionalities of the interesting HTML Table Filter Generator script that powers the Data Table.

Information can be filtered when selecting parameters from drop-down lists or when writing text inputs (and by combining such inputs with operators).

There are three operators that might be specially useful while searching EScreen's Data Table:

- = : Exact match search, only the whole search term(s) is matched (EQUAL)
- ! : Data that doesn't contain search term(s) is matched (NOT)
- | : Data containing at least one of the search terms is matched (OR)
- (for complete documentation please visit <http://tablefilter.free.fr/doc.php>)

C1) Next, a few examples about using both types of filters (selectors and text inputs):

Example1 (text input, on Genomic Coordinates:

- **chr14** returns ES66, ES67 and ES68

ES	Vector	DNA source	Genomic Coordinates	Expression Patterns Parameters "Search by Anat. Reg." ↓	[AND] "Search by Anat. Reg." ↓	[AND] "Search by Anat. Reg." ↓	Paper Reference	Published (Yes / No)	ZFIN name
Displayed rows: 1-3 / Page 1 of 1 Results per page 100									
	all	all	chr14				all	all	all
ES66	ZED	Zebrafish	danRer6:chr14:33394644-33396122	hindbrain , spinal cord			zic3/fgf1 3	No	
ES67	ZED	Zebrafish	danRer6:chr14:33382859-33384188	midbrain			zic3/fgf1 3	No	
ES68	ZED	Zebrafish	danRer6:chr14:33187801-33189026	hindbrain , spinal cord			zic3/fgf1 3	No	

Example2 (text input and operator), on ES:

- **=ES1** exactly returns ES1 (else, if writing ES1, returns ES1, ES10 to ES19, etc)
- **=ES5 | | =ES29** returns both (ES5 or ES29)
- (for eventual ES equal or greater than 100 it's enough to simply write the number, without '=ES')

ES	Vector	DNA source	Genomic Coordinates	Expression Patterns Parameters "Search by Anat. Reg." ↓	[AND] "Search by Anat. Reg." ↓	[AND] "Search by Anat. Reg." ↓	Paper Reference	Published (Yes / No)	ZFIN name
Displayed rows: 1-2 / Page 1 of 1 Results per page 100									
=ES5 =ES29	all	all					all	all	all
ES5	Tol2-LoxP-pGata-GFP	Xenopus	xenTro2:scaffold_384:323,475-323,972	midbrain , hindbrain , spinal cord			pou3f4	Yes	UPO5
ES29	Tol2-LoxP-pGata-GFP	Xenopus	XenTro2:scaffold_384:153,119-153,705	dorsal midbrain			pou3f4	Yes	

C2) Searching ES lines by expression pattern using anatomical terms (see B5, B6, B7):

- Three columns are ready for text input (in order to not clutter the table, only the leftmost has visible text; the other columns are functionally equivalent though). Each column represents [AND] conditions which can be combined with operators:
- The first column (B5) describes the anatomical regions showing expression of GFP (and/or RFP) for each ES line. ES lines can be searched by expression patterns using anatomical terms. Second and third columns (B6 and B7) are available to perform searches using combination of terms.
- Filter (text input): a reference list of searchable anatomical terms is available when clicking on the question mark located at the top right side of the Data Table

Examples:

- **brain, neurons, somites**
- one term in each column - (brain [AND] eye [AND] fin) - results in ES16 (forebrain)
- **forebrain, midbrain, !eye**
- results in ES1, ES8, ES11, ES25, ES39, ES45, ES46 (all these without eye)
- **forebrain, midbrain, eye**
- removing the '!' (not condition) results in ES13, ES48 and ES49
- **forebrain, midbrain**
- results in all the previous two cases

Displayed rows: 1-7 / Page 1 of 1 Results per page 100

ES	Vector	DNA source	Genomic Coordinates	Expression Patterns Parameters "Search by Anat. Reg."	[AND] "Search by Anat. Reg."	[AND] "Search by Anat. Reg."	Paper Reference	Published (Yes / No)	ZFIN name
	all	all		forebrain	midbrain	!eye	all	all	all
ES1	Tol2-LoxP-pGata-GFP	Human	hg18:chr11:44,169,536-44,170,216	forebrain , midbrain , fin , pronephros , pancreas			alx4	No	
ES8	ZED	Amphioxus	braFlo1:chrUn:98,259,924-98,260,913	forebrain , midbrain , spinal cord			snail	No	
ES11	ZED	Human	hg18:chr13:94156730-94157445	forebrain , midbrain , spinal cord			sox	No	
ES25	Tol2-LoxP-pGata-GFP	Xenopus	XenTro2:scaffold_384:178,759-179,650	forebrain , midbrain , hindbrain , neural tube			pou3f4	Yes	
ES39	ZED	Human	hg18:chr13:27293116-27295833	central nervous system , forebrain , midbrain , hindbrain			PRH	No	
ES45	ZED	Zebrafish	danrer7:chr17:23994805-23995785	forebrain , midbrain , hindbrain			otx1b	Yes	
ES46	ZED	Human	hg18:chr1:50937783-50939374	forebrain , limbs , midbrain , hindbrain , spinal cord			CNEs from Pennacchio in zebrafish	Yes	

This method may not yet be very robust but it already allows a good level of interactivity: together with the filters in all the other columns it is possible to arrive at more restricted sub-groups of ES cases or at individual cases, example, [ES46](#):

Displayed rows: 1-1 / Page 1 of 1 Results per page 100

ES	Vector	DNA source	Genomic Coordinates	Expression Patterns Parameters "Search by Anat. Reg." ↓	[AND] "Search by Anat. Reg." ↓	[AND] "Search by Anat. Reg." ↓	Paper Reference	Published (Yes / No)	ZFIN name
ES46	ZED	Human	hg18:chr1:50937783-50939374	forebrain	midbrain	eye	CNEs from Pennacchio in zebrafish	Yes	

D) ES Pages

ES pages contain additional information for each ES line distributed into three main sections: Expression patterns by anatomical domains, Images of expression patterns and Map info. The pages can be visited via:

- Data Table browsing
- Bookmarks folder (for example, created with the help of the '[ES - All Links](#)' page.
- Or directly, by typing the intended ES url in the web browser:

<http://www.upo.es/CABD/EnhancerScreen/ES/ES###.html>

(replacing ### by the ES number; example, 050 to access [ES50](#)).

Each ES page is divided into three main sections with extra information in relation to what is visible in the Data Table.

Enhancer Screen → ES50

The EScreen | Methods & Protocols | Browser Handbook | Data Table | Contacts & Links

[Website Info](#)

Search... only search Escreen

ES50

Expression

GFP	hindbrain	limbs	forebrain	eye
-----	-----------	-------	-----------	-----

Stages:

GFP 24 to 36 hpf

GFP 48 to 60 hpf

MAP info

Primer F:
CACCTGAAGAGGGCTGTCTCTGA

Primer R:
TTGCTATGTAATGGAGTACGCTCT

D1) Expression patterns by anatomical domains

D2) Images of expression patterns

D3) Map Info

Centro Andaluz de Biología del Desarrollo

D1) Expression patterns by anatomical domains:

- The GFP (and RFP, if available) expression is annotated by anatomical domains, corresponding to developmental times that span from 24 to 60 hours post fertilization (hpf).
- In the Data Table (B5), these anatomical domains are concatenated and GFP and RFP expression is not discriminated.

D2) Images of expression patterns:

- If available, thumbnails are provided for the individual channels (GFP or RFP) for 24 to 36 and 48 to 60 (hpf).
- Higher resolution versions of these images can be viewed if clicking on each thumbnail.

Note: the 'thumbnail' sizes are dynamically dependent of web browser width in pixels (if using modern browsers).

D3) Map Info

- Primer F and R sequences used to amplify the enhancer regions.
-

E) References

1. Zebrafish Enhancer Detection (ZED) Vector: A New Tool to Facilitate Transgenesis and the Functional Analysis of cis-Regulatory Regions in Zebrafish.

José Bessa, Juan J. Tena, Elisa de la Calle-Mustienes, Ana Fernández-Miñán, Silvia Naranjo, Almudena Fernández, Lluís Montoliu, Altuna Akalin, Boris Lenhard, Fernando Casares, and José Luis Gómez-Skarmeta.

DEVELOPMENTAL DYNAMICS 238:2409–2417, 2009

Appendix: Website Info / Walkthrough

1) The EScreen (Home Page)	Page loaded by default, when entering the website: contains a brief description of the Enhancer Screen objectives.
2) Methods & Protocols (methods.html)	Description of the laboratory procedures used to perform the Enhancer Screen, including Map of ES insertions and Vectors used.
3) Browser Handbook (handbook.html)	Page containing information about the site's main contents, key navigation features and dedicated help sections for Data Table and ES pages. The Browser Handbook is also the place from where additional files can be downloaded.
4) Methods & Protocols (methods.html)	The Data Table is the core page of the site's navigation: it can be used to select, compare parameters and have access to all available Enhancer Screen contents, including individual pages for each ES case (please see respective handbook sections). Visitors can also click here to open a list of all ES pages included in the current version of the site (it might be handy, providing an alternative method - beyond using the Data Table - to browse the information in those pages).
5) Contacts & Links (contacts.html)	If having any inquiry or feedback about EScreen, please feel free to use the provided email, phone, fax or address contacts. A few ES related links are also displayed.

Generic Website Notes:

- The site is structured with a simple layout intended to be adaptable to various screen resolutions (based on a two-column liquid design template, also see '**Website Info**' page for extra information).
- Despite its 'liquid design' nature, unless the user's browser / device has an adaptive zoom feature (like what is traditional in portable devices), it is recommended that the minimum resolution should not go lower than a width of 1024px: this is mostly due to space requirements related with Data Table presentation and, although with a lower constraint, with the Expression Table and Map Info sections on ES pages (such resolution constraints might be improved in eventual future code revisions). At the moment, optimum computer resolutions should be equal or greater than 1024x768.
- Although there was an effort to make the site multi-browser and cross-platform compatible, some features might not work so well in older browsers (ex: IE5.5 / 6, Netscape): in principle, this should not limit the presentation of the most important data nor have significant impacts on navigation.
- At the right top side of all pages (except the Data Table) there is a Google Search Box (by default, the search is limited to within EScreen domain - <http://www.upo.es/CABD/EnhancerScreen/> - if the 'search only in EScreen' box is kept checked).
- All pages have issue dates, at the bottom right corner, to inform when they were last updated.