WEBSEQ

Publishing Data To Your Site

INSTRUCTION MANUAL

2023 v1

www.webseq.net

Overview

In this manual. you will learn how to prepare, upload and publish your dataset. We will use the time-course bulk transcriptomic dataset below to walk you through the process. We will call this example *Dataset A* when referencing it throughout the manual. There are other figures we will reference as well. These figures will be labeled with a corresponding letter (e.g. Figure A, Figure B) for clarity.

Dataset A is a standard example of processed RNA-sequencing data that includes normalized counts. We want to create a website where users can enter any gene of interest and have the data displayed for the user. Please take important note of the following:

- The first column of your dataset MUST include all of your gene names. See blue highlight in *Dataset* A below.
- Each column MUST be a separate sample. In the example below, the samples (highlighted in orange) are timepoints from day 80 (column B) through day 550 (column V).

Dataset A

Geneid	C3 d80	C4 d80	C3 d100	C4 d100	C3 d150	C4 d150	C4 d150	C3 d200	C4 d200	C3 d250	C4 d250	C3 d300	C4 d300	C3 d350	C4 d350	C3 d400	C4 d400	C3 d450	C4 d450	C3 d550	C4 d550
DDX11L1	4	0	0	1	1	0	0	15	21	2	4	4	1	1	1	1	0	0	0	0	0
WASH7P	145	72	109	57	55	43	76	288	286	153	184	166	105	116	115	55	38	55	31	60	25
MIR6859-3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MIR6859-2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MIR6859-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MIR6859-4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MIR1302-2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MIR1302-11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MIR1302-9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MIR1302-10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FAM138A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FAM138C	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FAM138F	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OR4F5	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	1	0	0	0
LOC729737	98	51	96	49	32	24	30	33	36	10	33	28	11	22	30	25	14	19	17	2	6
FAM138D	1	0	1	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OR4F29	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OR4F3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OR4F16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
LOC100132287	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
LOC100132062	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
LOC101928626	0	0	0	0	0	0	0	9	2	1	1	0	1	0	0	0	0	0	0	0	0
MIR6723	165	60	135	45	96	46	40	1327	1528	738	1370	1322	1371	834	1339	55	20	39	44	34	27
LOC100133331	23	16	21	15	9	7	7	60	122	35	63	67	55	31	73	11	4	7	2	3	9
LOC100288069	69	32	64	27	26	23	20	78	115	45	62	558	53	34	58	35	21	27	29	35	33
FAM87B	25	19	20	11	12	6	8	50	68	18	30	46	42	32	30	19	8	0	6	3	8
LINC00115	78	30	79	5	38	18	8	71	112	25	53	66	56	28	60	10	10	10	11	5	9
LINC01128	844	274	780	174	343	238	217	405	476	187	333	308	347	266	334	230	189	170	134	60	103
FAM41C	8	1	4	1	3	0	2	21	32	13	11	19	15	9	24	1	0	4	4	5	1
LOC100130417	109	58	61	26	23	5	30	16	32	14	33	18	23	18	34	10	11	9	12	15	14
SAMD11	216	60	211	39	64	19	19	11	13	20	33	25	37	21	39	1	10	6	4	2	16
NOC2L	4231	877	3241	817	1184	706	832	732	1180	644	830	575	761	487	791	591	557	712	663	1232	904
KLHL17	270	48	270	27	116	45	25	157	156	145	257	174	139	174	179	20	25	30	9	16	31
PLEKHN1	2	1	4	2	2	2	0	5	10	4	5	3	3	4	5	0	0	1	2	0	3
PERM1	7	4	6	2	5	2	0	8	5	2	4	6	9	9	4	0	0	1	0	1	4
HES4	10529	908	7361	305	2505	505	423	8964	5858	4160	5539	3623	3087	1952	1677	1	28	56	0	8	15
ISG15	587	59	763	34	447	101	88	300	322	180	178	259	201	297	318	81	78	137	110	279	261
AGRN	153	108	82	92	38	39	69	429	389	200	221	212	81	175	183	47	52	78	33	90	61
RNF223	0	0	1	0	0	0	1	4	3	0	0	4	3	2	5	0	0	1	0	0	3
C1orf159	634	173	525	104	211	114	83	222	316	146	199	161	161	190	194	88	71	99	81	92	79
LINC01342	12	0	18	2	17	0	2	77	127	52	76	74	68	48	100	0	3	1	0	1	1
MIR200B	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
MIR200A	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0
MIR429	0	0	1	0	0	0	0	1	2	0	0	0	0	0	0	0	0	0	0	0	0
TTLL10	45	1	42	10	17	5	1	6	10	2	2	5	1	1	1	0	3	2	0	0	1
TNFRSF18	14	1	9	8	7	4	1	3	6	1	3	2	0	2	1	1	0	0	2	0	0
TNFRSF4	3	0	1	0	1	1	1	5	1	1	5	4	2	0	1	0	2	3	1	0	0
SDF4	11009	2579	8447	1800	3502	1930	2018	2734	3866	1882	2574	2214	2823	1915	3353	125	1286	1446	130	2039	1421
B3GALT6	3574	112	2358	70	900	76	55	280	311	137	179	440	1082	241	190	43	49	42	28	55	81
FAM132A	141	11	92	7	17	14	7	67	43	21	23	12	9	6	13	1	4	3	3	5	11
UBE2J2	4413	781	3749	639	1648	618	693	1211	1844	823	1171	900	1168	798	1206	362	530	634	383	794	571
SCNN1D	111	40	104	29	40	41	29	149	139	95	90	88	61	86	109	46	32	22	32	35	3
ACAP3	578	218	497	192	233	189	128	459	678	581	873	549	479	425	419	11	96	122	21	98	36
MIR6726	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PUSL1	810	117	659	84	295	127	93	259	351	160	230	216	217	213	285	119	154	99	84	154	141
CPSF3L	4856	946	3797	724	1657	797	817	1528	2240	1088	1424	1122	1406	987	1633	828	817	895	756	1286	1051
MIR6727	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
CPTP	573	312	502	253	262	241	237	456	788	426	555	437	435	380	652	185	281	293	190	649	436

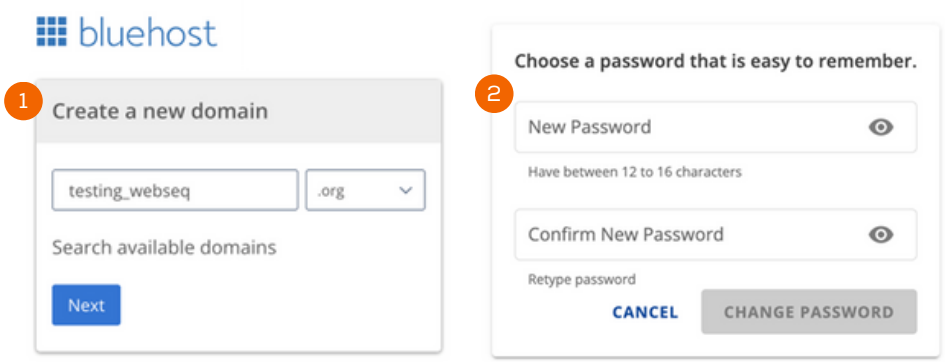
1 Finding a Provider Host For Your Wordpress Account

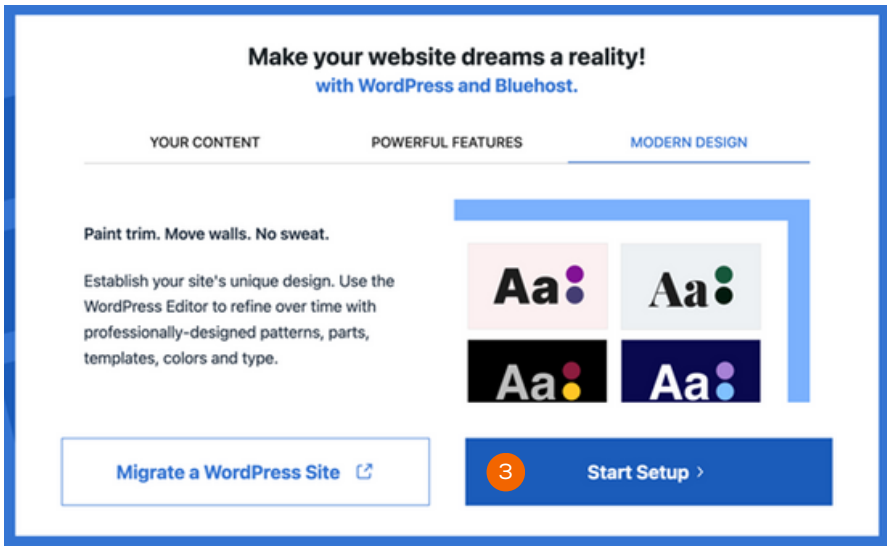
SERVICE PROVIDERS

HostGator
WP engine
bluehost
HOSTINGER
inmotion hosting
GoDaddy
DreamHost
namecheap
SiteGround

Most have very low-cost hosting options of $2-5 a month. Low-cost options are great, but may come with more advertising distractions when building your site.

STEP 1.1 SET UP WORDPRESS ACCOUNT WITH HOST PROVIDER





Our free plugin is downloadable for WordPress, the most used content management system in the world. On its own, WordPress can be difficult to install (wordpress.org). Careful! WordPress.org is different than WordPress.com, which is simply its own, more expensive, hosting service.

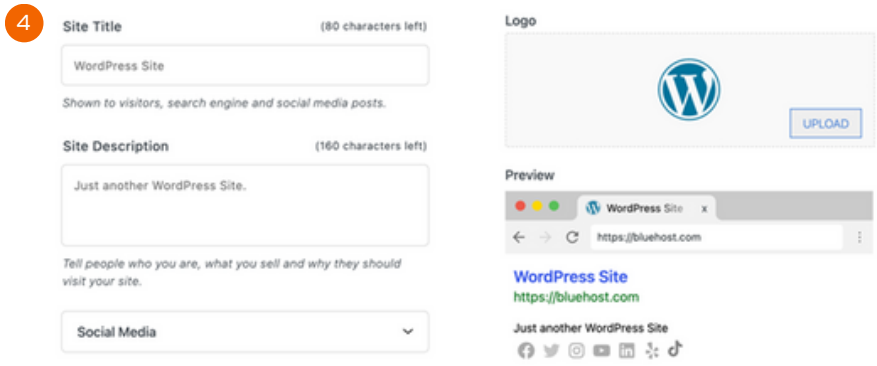
Thankfully most major reliable web hosting service providers have one-click installers (See Sevice Providers) as a solution to installing WordPress with ease. Once you choose one of these providers, simply login and with a few clicks, your WordPress website is ready and running There are many video tutorials for each of these sites on how to create your 1-click WordPress account.

STEP 1.1 SETTING UP WORDPRESS ACCOUNT WITH SERVICE PROVIDER

We will use Bluehost as a simple example here.

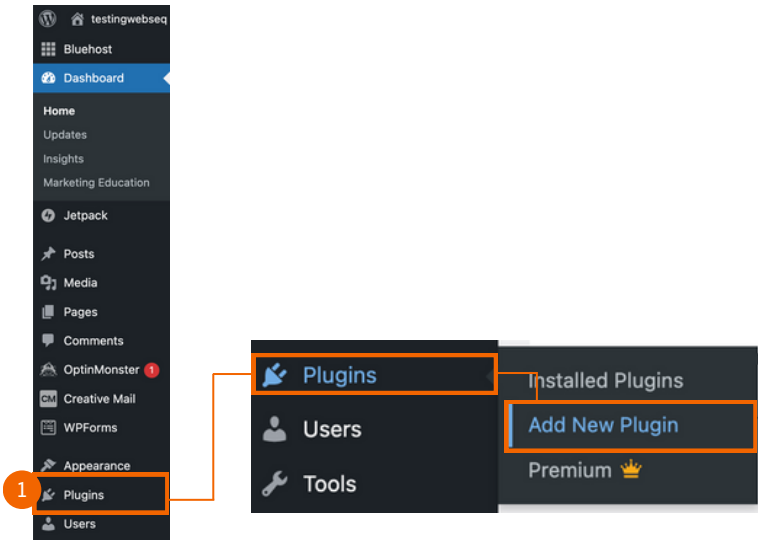
1. After choosing a plan, create a domain name (website name). For this tutorial, we'll use "testing_webseq".
2. Create a password. You will use your domain name and password to log into your WordPress account.
3. Click on "Start Setup" to create a site from scratch.

1 Finding a Provider Host For Your Wordpress Account



4 Enter your site title and skip through the introductory materials.

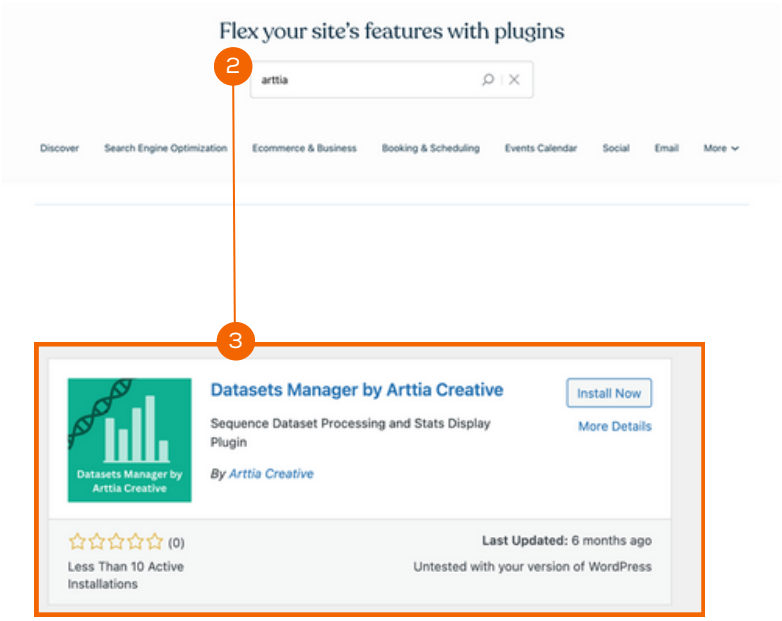
STEP 1.2 DOWNLOAD PLUGIN



STEP 1.2 DOWNLOAD PLUGIN

Once you have created your Wordpress website with the host provider, log into you WordPress account

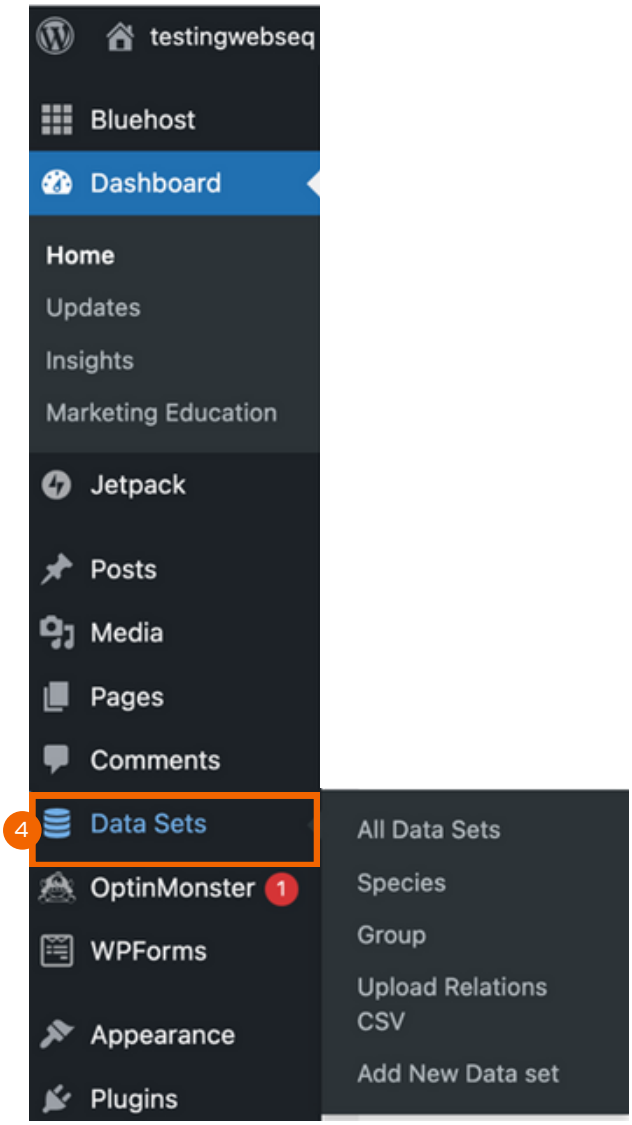
1 Select the “Plugins” and click “Add New Plugin”



2 Search “Arttia”

3 Click on “Datasets Manager by Arttia Creative” and Install Now, then Activate.

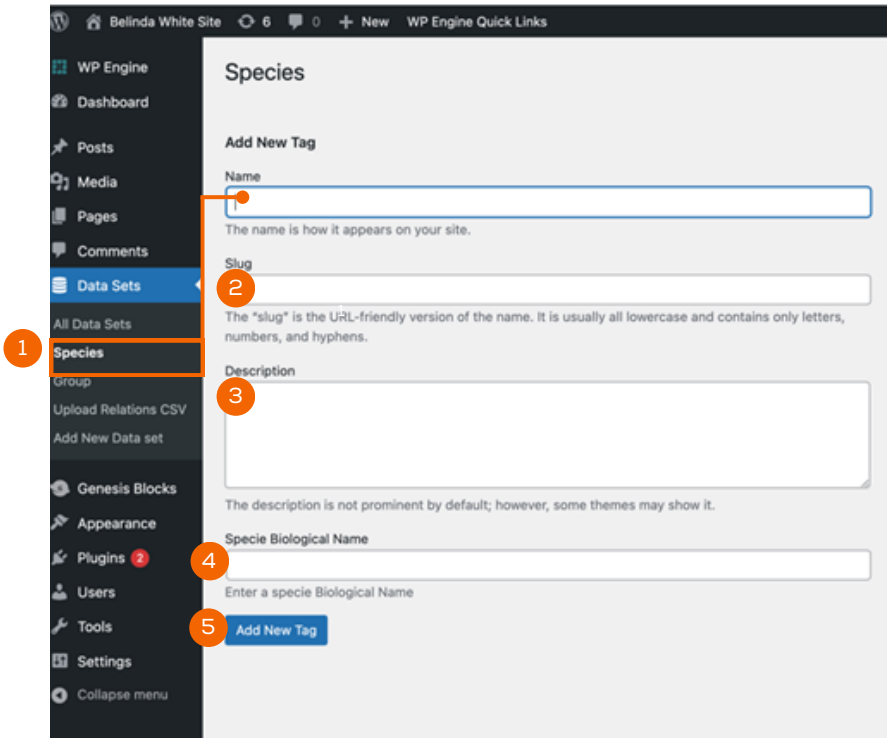
1 Finding a Provider Host For Your Wordpress Account



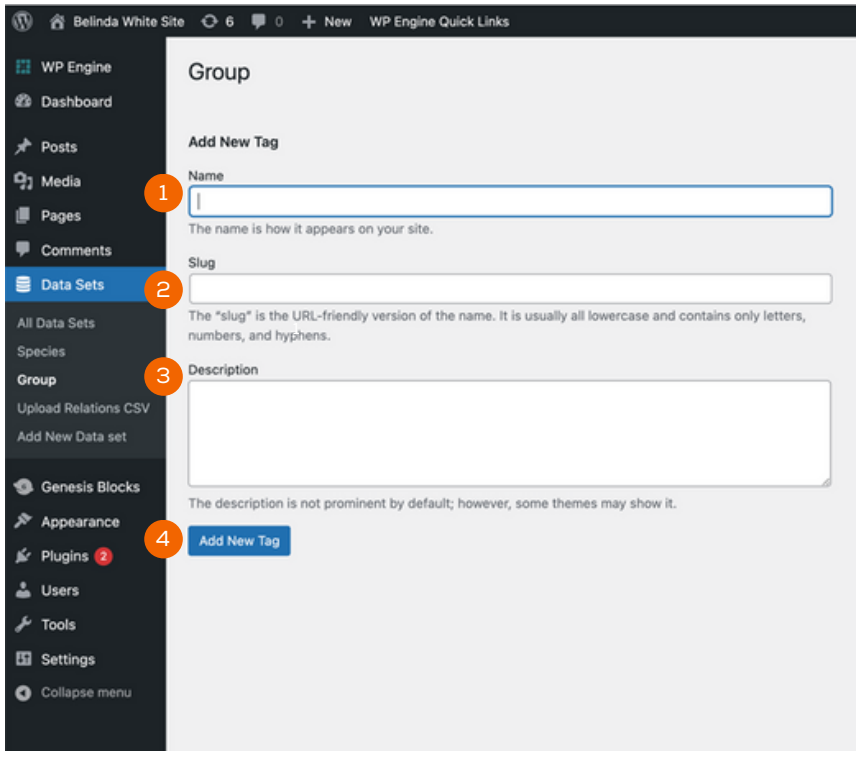
4 After activating the plugin, you should now see a new tab on your menu called “Data Sets” (orange box).

2 Using the Plugin: Add Dataset Details

STEP 2.1 ADD SPECIES



STEP 2.2 ADD GROUPS (AKA EXPERIMENTAL VARIABLES)



STEP 2.1 ADD SPECIES

1. Under Data Sets tab, click “Species” Include the name for the species for the dataset *(eg. human, mouse)*.
2. Rewrite the species name here without any spaces, if any were used above. “Slug” is the URL friendly version of the name. Adding a specific slug is optional.
3. “Description” is optional.
4. Repeat the species biological name here. The default options (unless you upload a custom relations file) are human, mouse, rat, zebrafish, fly and c_elegans.
5. Click “Add New Tag”

To add more species, repeat the steps above. These labels will be saved permanently.

STEP 2.2 ADD GROUPS

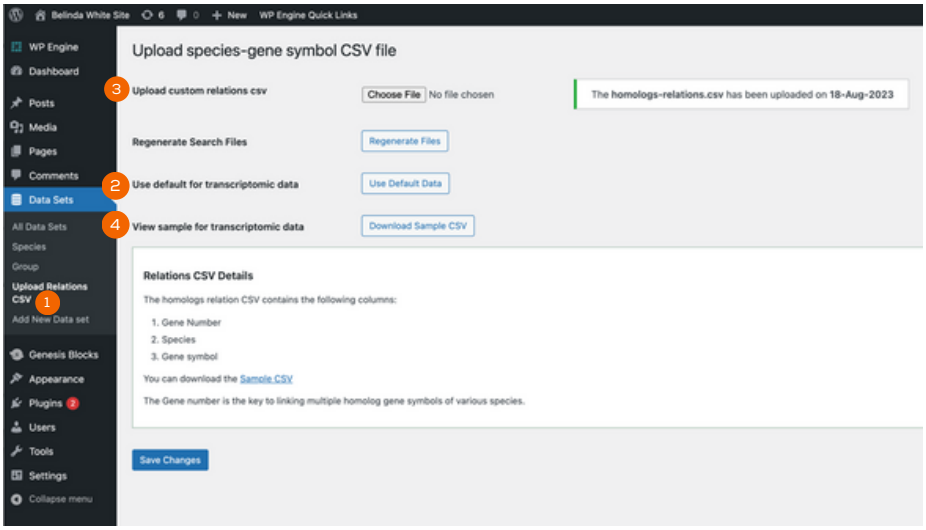
Groups will include the categories of your dataset and will be displayed on the website graph. For example, this could include control, treatment_1, treatment_2. In our sample data, Dataset A, we have timepoints that we will clump together into "early', "middle", and “late". These 3 categories will be our group names.

1. Enter group name
2. Rewrite the species name here with no spaces, if any. “Slug” is the URL friendly version of the name. Adding a specific slug is optional.
3. “Description” is optional
4. Click “Add New Tag”

To add more groups, repeat the steps above. These labels will be saved permanently.

2 Build the Search Function

STEP 2.3 UPLOAD RELATIONS CSV FILE



	A	B	C
1	Gene numbe	Species	Gene sy
2	3	human	ACADM
3	3	mouse	Acadm
4	3	rat	Acadm
5	3	zebrafish	acadm
6	3	fly	CG1226
7	3	c_elegans	acdh-8
8	3	c_elegans	acdh-7
9	5	human	ACADVL
10	5	mouse	Acadvl
11	5	rat	Acadvl
12	5	zebrafish	acadvl
13	5	fly	CG7461
14	5	c_elegans	acdh-12
15	6	human	ACAT1
16	6	mouse	Acat1
17	6	rat	Acat1
18	6	zebrafish	acat1
19	6	fly	CG1093

FIGURE A: SAMPLE OF TRANSCRIPTOMIC DATA

Column "C" represents the entire searchable database. The user can search any term in column C and the homologs for all gene number will be displayed.

STEP 2.3 UPLOAD CSV FILE

Uploading your CSV file is critical for building the search terms for your site. This file is the library that the search bar will use when users explore your data. In this step, you will provide the search terms for your site in the form of a csv file that the search bar will use when users explore your data. This csv file is called a "custom relations csv".

1. Click "Upload Relations CSV" under the Data Sets tab

2. **Standard Transcriptomic Data**

   If you have standard transcriptomic gene expression data, select "Use Default Data." Allow the file to upload automatically which takes about 5 minutes.

   (Standard species included are mouse, rat, human, zebrafish, Drosophila, and C.elegans)

3. **Uploading Custom Relations CSV (Optional)**

   You can upload a custom relations csv by modifying the sheet generated or generating your own. For example, if you have proteomics data, column A may be called "Protein number", column B will remain "Species" (it's ok to have a single species), and column "C" would be "Protein Symbol"

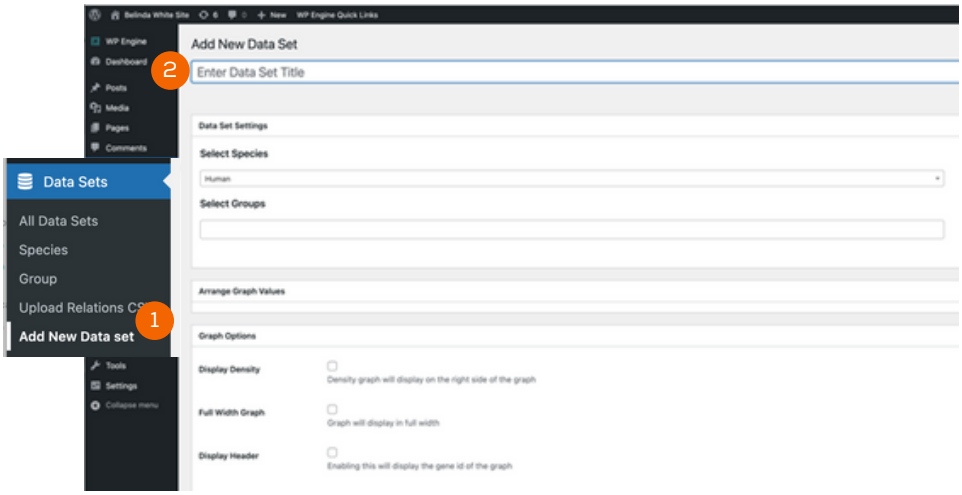
4. **Viewing Sample Dataset (Optional)**

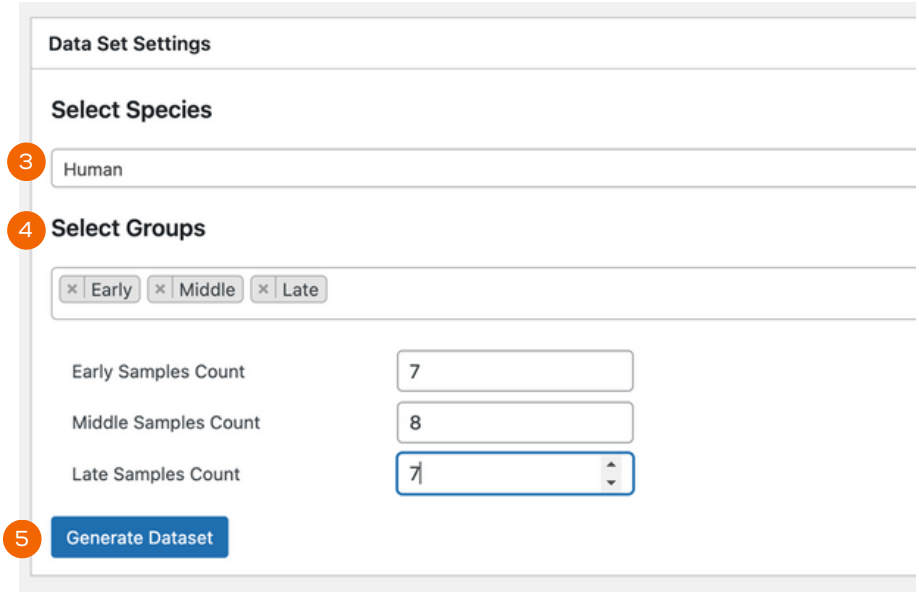
   If you want to view the sample relations CSV and its format for transcriptomc data (Figure A) , click here

*Take important note of the example CSV file in **Figure A:***

2 Preparing For Dataset Upload

STEP 2.4 ADD NEW DATA SET





STEP 2.4 ADD NEW DATASET

1. Select “Add New Data set” from the Data Set section of the side menu.
2. Enter a name for your dataset. You will be able to store multiple datasets on your plugin.
3. Select the species of your dataset from the pulldown menu. You will see the names you previously entered from Step 2.1. If you forgot to add species, you can go back to step 1 to add additional information.
4. Select the groups you entered from step 2.2. In our example, *Dataset A* groups were“early,” “middle,” and “late”. Make sure these are correct and add up to the total number of samples in your dataset. Be sure to add the quantity of replicates for each.
5. Click “Generate Dataset”

3 Uploading Dataset

STEP 3.1 DOWNLOAD HEADERS

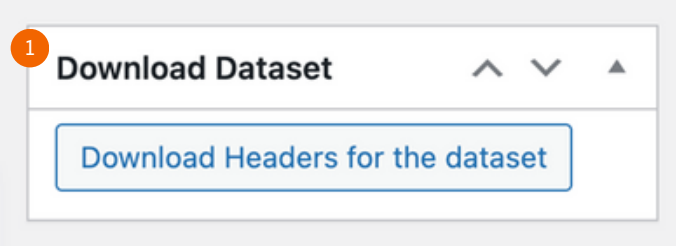
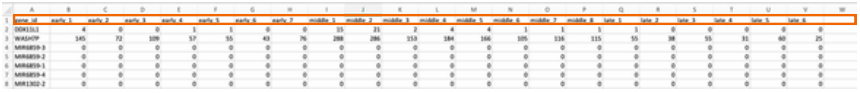


FIGURE B



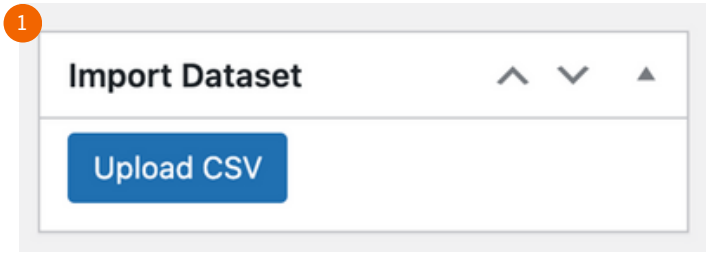
STEP 3.1 DOWNLOAD HEADERS

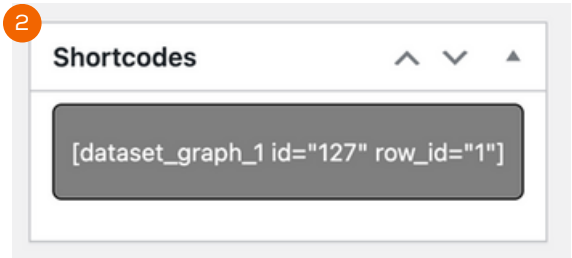
1. After dataset has been generated, click “Dowload Headers for the dataset” on the right side fo the screen to open the file.
2. Copy the top row (the headers) from this file to your original dataset. It should match perfectly. If not, perhaps your total number of samples per group are incorrect.

Your new headers should now be present on your dataset as shown in ***Figure B***.

2. Save this file as a .csv (no UTF-8 versions; just plain .csv)

STEP 3.2 UPLOAD CSV



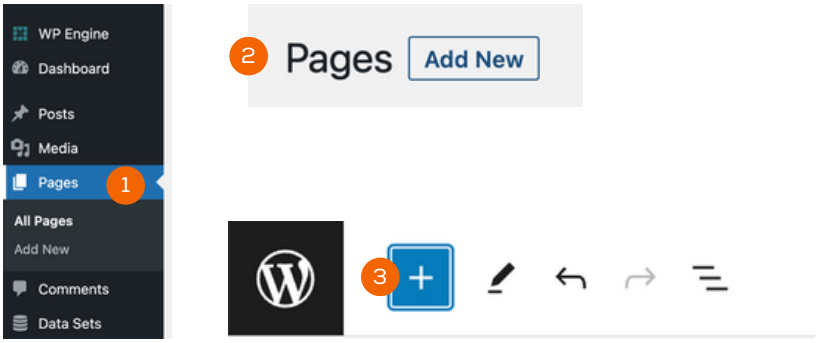


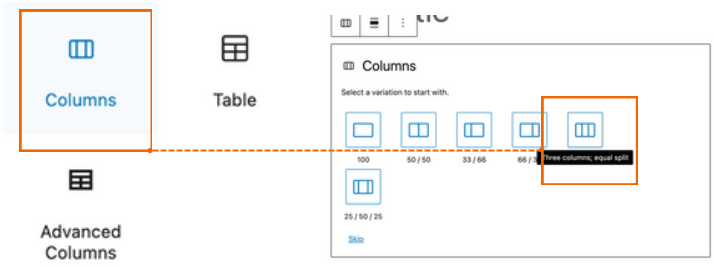
STEP 3.2 UPLOAD .CSV FILE

1. Click “Upload CSV” and select the .csv file (containing headers detailed in STEP 3.1) from your computer. A status bar will appear showcasing the download progression.
2. After uploading, you will see a shortcode listed on the right side of the screen. Copy this shortcode (highlight and copy) . This code will be used in the next session to build the site.

4 Publishing Site

STEP 4.1 SET UP SHORTCODES





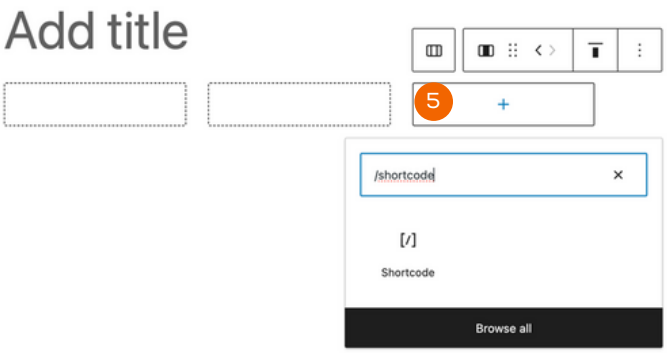


FIGURE C

FIGURE D

We will get you started with setting up your site by showing you how to generate the data-searching capacity of the site. There are 3 minimun "shortcodes" that are needed to create a searchable dataset on your page. All other aesthetics are up to you.

You can always go back to customize your site to your liking such as adding media or using a pre-designed templates

STEP 4.1 SET UP SHORTCODES

1. Select "Pages" from the pulldown menu.

2. Click "Add New." A blank Wordpress page will appear. This page will be the front-facing page of your website.

3. Click the plus sign icon at the top of the blank page. We will begin adding columns for the 3 shortcodes mentioned earlier.

4. Enter "column" in the search bar and choose the "three columns; equal split." Columns should appear. We will now add shortcodes to each.

5. Click the "+" symbol in the box and type "/shortcode" in the search bar. Select the "shortcode" option to add this feature to each box.

6. Add the following 3 shortcodes to the boxes

   [dataset_search] : this tells the plugin to add a search bar to the site

   [dataset_search_term] : this tells the plugin to use the search terms from the relations .csv we uploaded earlier

   Paste the shortcode that matches the dataset you just uploaded in the last box. If you didn't copy the shortcode, please go back to step 3.2 to copy it. See our example shortcode from our *Dataset A* in **Figure C.**

The graphical output of your search data should resemble **Figure D.** These shortcodes can be displayed in any order and location you desire on your page.

Done!

Huzaaah! Your page is now live and ready to run. Final visual aspects can be edited to your liking. As mentioned above, there are many Wordpress tutorials for this.

Remember to Publish the page to make it go live!

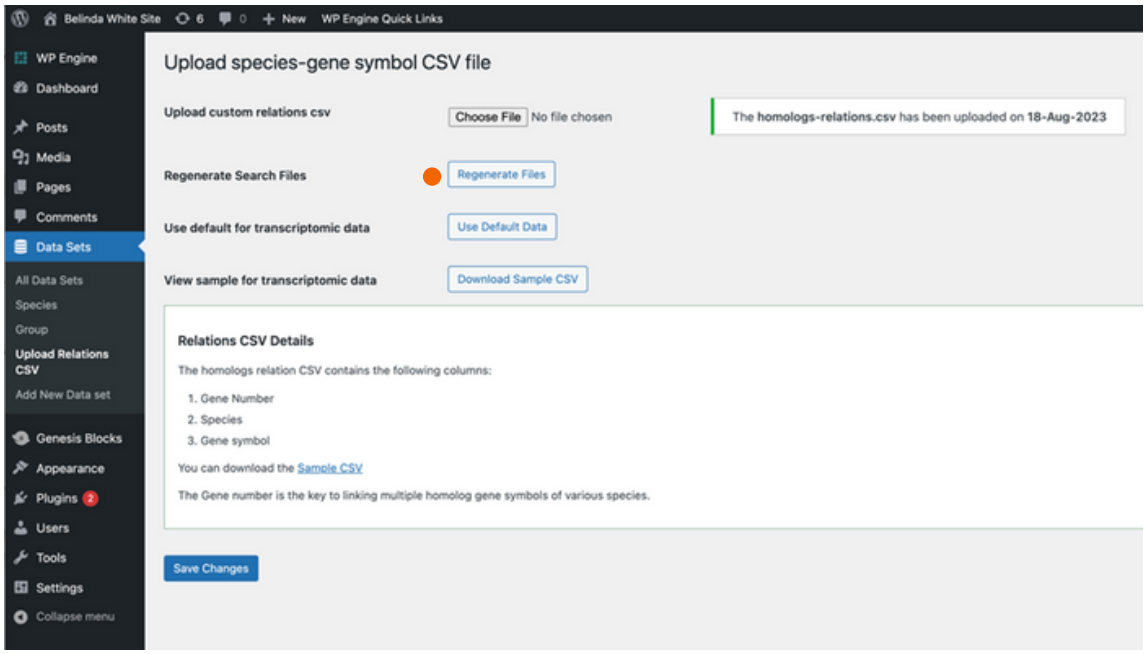
Troubleshooting

- **I am able to enter a search term successfully in the site (the search term is found and matched), but no data is appearing.**

There may be an issue with the data upload file. Make sure the source code matches exactly what's on your dataset page. If this doesn't work, try reuploading the dataset as a new name and copy in the new source code to the site.

- **When I enter a search term in the site, no matching values are found or returned.**

This issue may be related to the relations file. Return to the upload relations tab and select "Regenerate Files." Then try to open the site and run the search again.



Make sure your species name is the same as in the relations file. For example, only lower-case letters. Use "human" instead of "Human" or "Homo sapien"

Make sure you correctly type [dataset_search] and [dataset_search_term] in your shortcode boxes.