

Creating a gene list using the Venn Diagram

The *List Manager* can be used to generate lists of genes by applying criteria such as fold change and false discovery rate (FDR) adjusted p-value thresholds.

- Select the **Analysis** tab
- Select **ANOVAResults** in the spreadsheet tree
- Select **Create Gene List** from the *Analysis* section of the *Gene Expression* workflow (Figure 1)

The screenshot displays the Partek Genomics Suite interface. The main window shows a spreadsheet titled 'ANOVA-3way (ANOVAResults)' with columns for Column #, Probeset ID, Entrez Gene, Gene Symbol, Gene Title, RefSeq Transcript ID, p-value(Treatment), and p-value(Treatment). The 'Gene Expression' workflow is open on the right, and the 'Create Gene List' option is highlighted under the 'Analysis' section.

1. Column #	2. Probeset ID	3. Entrez Gene	4. Gene Symbol	5. Gene Title	6. RefSeq Transcript ID	7. p-value(Treatment)	8. p-value(Treatment)	
1.	4490	33799_at	6478	SLAH2	slah E3	NM_005067	1.59274e-07	0.243475
2.	2489	31798_at	7031	TFF1	trefoil factor 1	NM_003225	3.43187e-07	0.0096470
3.	1141	1237_at	8870	IER3	immediate early	NM_003897	5.46804e-07	0.112467
4.	4994	34303_at	219654	ZCCHC24	zinc finger,	NM_153367	5.50565e-07	4.33981e-07
5.	1836	1933_g_at	10057	ABCC5	ATP binding	NM_001023587	1.36059e-06	0.0028372
6.	10472	39781_at	3487	IGFBP4	insulin like	NM_001552	1.42754e-06	0.275441
7.	7717	37026_at	1316	KLF6	Kruppel-like	NM_001008490	1.73458e-06	6.14322e-06
8.	6979	36288_at	3887	KRT81	keratin 81,	NM_002281	2.05143e-06	1.84419e-06
9.	274	368_at	7162	TPBG	trophoblast	NM_001166392	3.07097e-06	0.0164127
10.	11950	41259_at	51491	NOP16	NOP16	NM_001256539	3.57845e-06	4.66809e-06
11.	4062	33371_s_at	11031	RAB31	RAB31,	NM_006868	3.85637e-06	0.608732
12.	9420	38729_at	2288	FKBP4	FK506 binding	NM_002014	4.30285e-06	0.113071
13.	9003	38312_at	169611	OLFML2A	olfactomedin	NM_001282715	5.05105e-06	0.252829
14.	11681	40990_at	10098	TSPAN5	tetraspanin 5	NM_005723	5.80858e-06	0.110513
15.	10333	39642_at	54898	ELOVL2	ELOVL fatty	NM_017770	6.11469e-06	0.0229098
16.	1835	1932_at	10057	ABCC5	ATP binding	NM_001023587	7.66495e-06	0.862655
17.	7481	36790_at	7168	TPM1	tropomyosin 1	NM_000366	8.15471e-06	0.188266
18.	12283	41592_at	8651	SOC3	suppressor of	NM_003745	8.6549e-06	0.334994
19.	9330	38639_at	10608	MXD4	MAX	NM_006454	9.51684e-06	0.0834692
20.	119	713_at	4019	ROR1	receptor	NM_001083502	1.75531e-05	0.0011116

Figure 4. Selecting Create Gene List from the Gene Expression workflow

- Select **E2 vs. Control** from the *Contrast* panel of the *ANOVA Streamlined* tab in the *List Manager* dialog
- Deselect the *Include size of the change* option
- Set *p-value with FDR < to 0.1* (Figure 2)

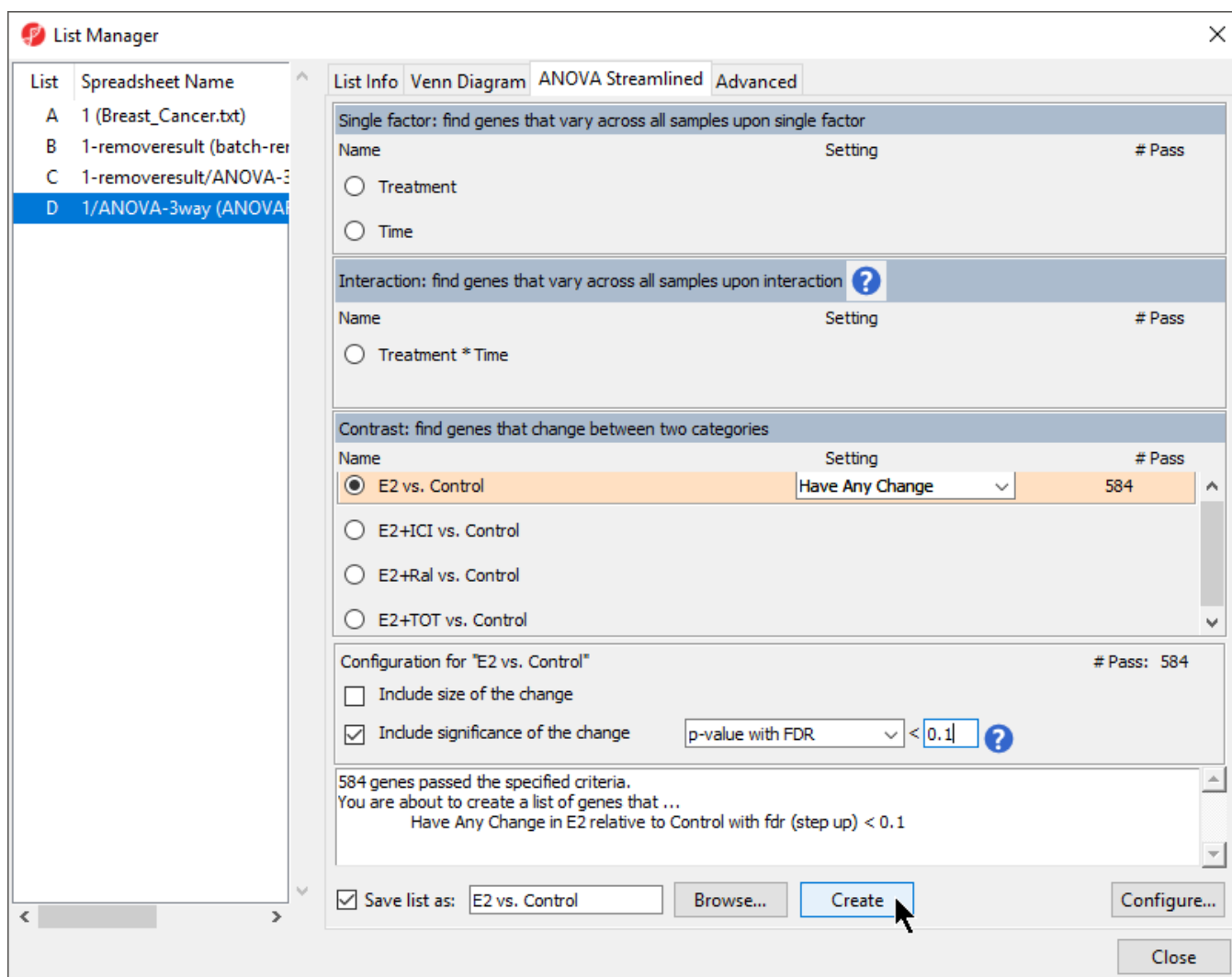


Figure 5. Configuring the List Manager using the ANOVA Streamlined filtering options

There should be ~545 probe(sets)/genes that meet this threshold.

- Select **Create**

A new spreadsheet, *E2 vs. Control*, will be added as a child spreadsheet of *Breast_Cancer.txt*.

- Repeat the steps listed above to create lists for *E2+ICI vs. Control* (~24 genes), *E2+Ral vs. Control* (~22 genes), and *E2+TOT vs. Control* (~177 genes) with the same threshold

Now we can use the *Venn Diagram* to create a list of genes that are differentially regulated in all treatment groups.

- Select the **Venn Diagram** tab in the *List Manager* dialog

The *Venn Diagram* shows overlap between selected gene lists.

- Select the four created lists (E-H) in the spreadsheet list in the *List Manager* dialog by selecting each while holding the **Ctrl** key on your keyboard

The *Venn Diagram* will display the number of overlapping and distinct genes from the four lists (Figure 3).

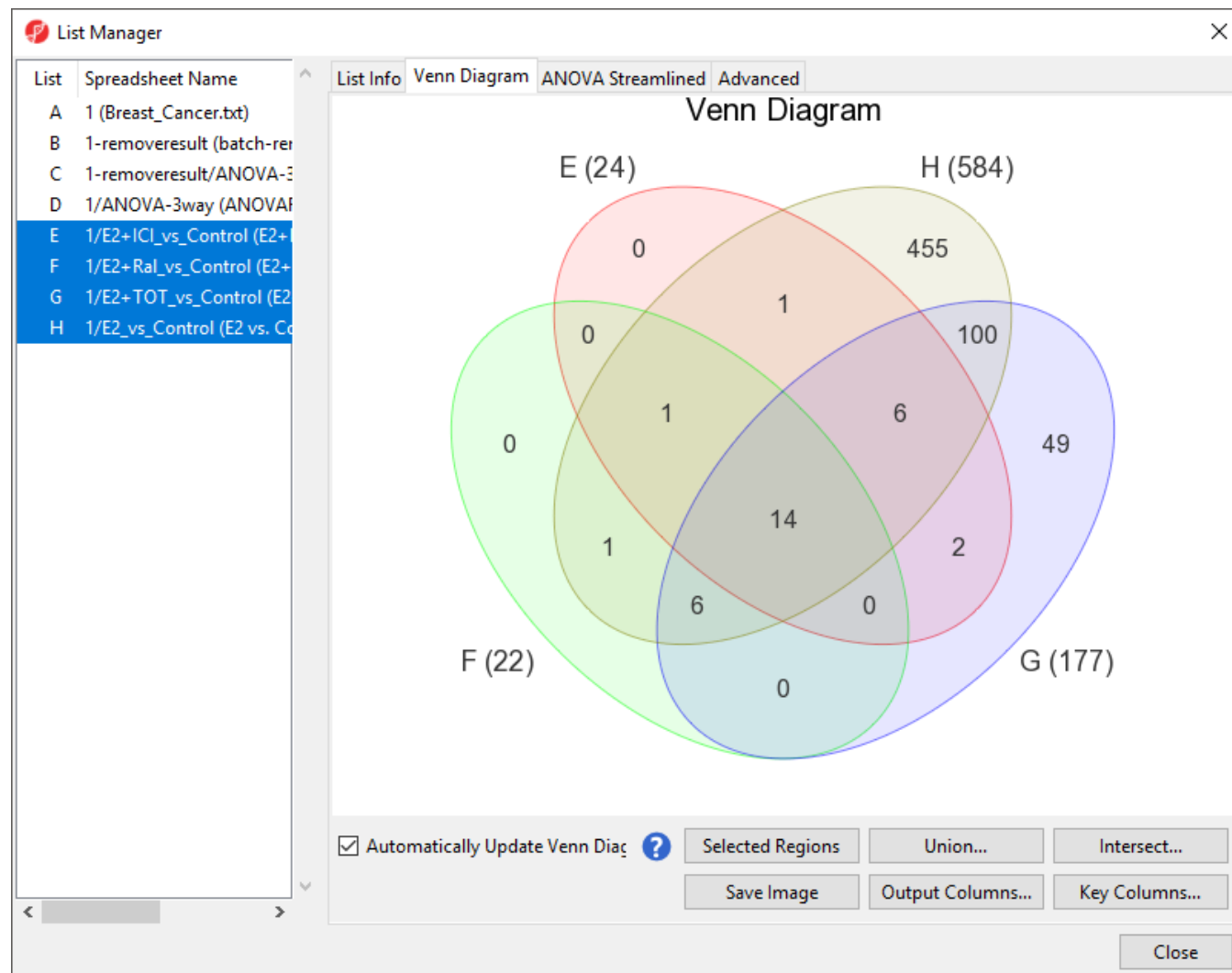


Figure 6. Viewing the Venn Diagram with intersections of four lists of significant genes

The intersection of the four ellipses shows that 14 differentially regulated genes are in common between the four treatment schemes.

- Select the region intersecting all four ellipses
- Right-click the intersected region
- Select **Create List From Highlighted Regions**
- Select **Close** to exit the *List Manager* dialog

The new list will appear in the spreadsheet tree with a temporary file name (ptpm).

- Select the temporary list in the spreadsheet tree
- Select (Save icon) from the command bar
- Save the list as *fourtreatments*

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Additional Assistance

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