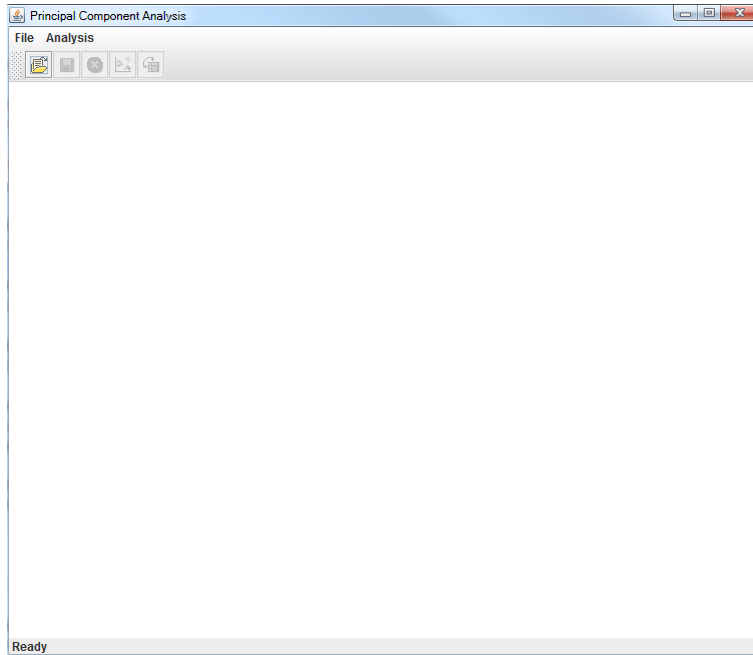


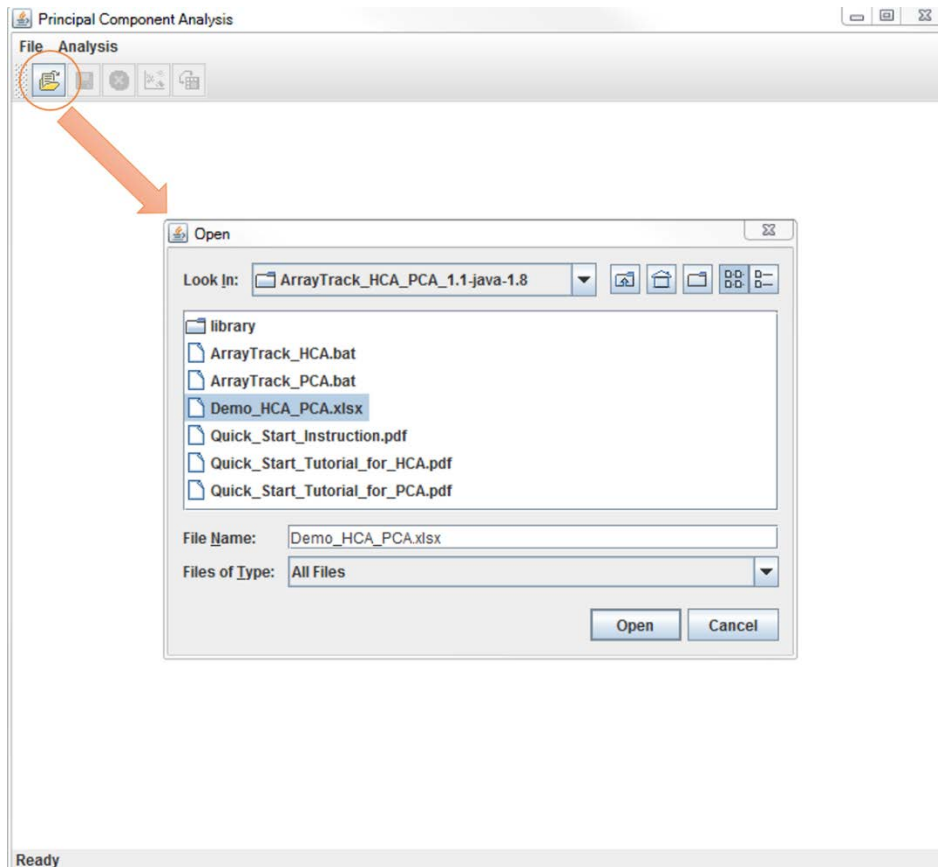
# For Windows OS

## Part 1. Load Data

Step1. Double click the batch script file “ArrayTrack\_PCA.bat” to open PCA tool.



Step2. Click the “Open File” button (marked with a red circle) to open a file browser window.

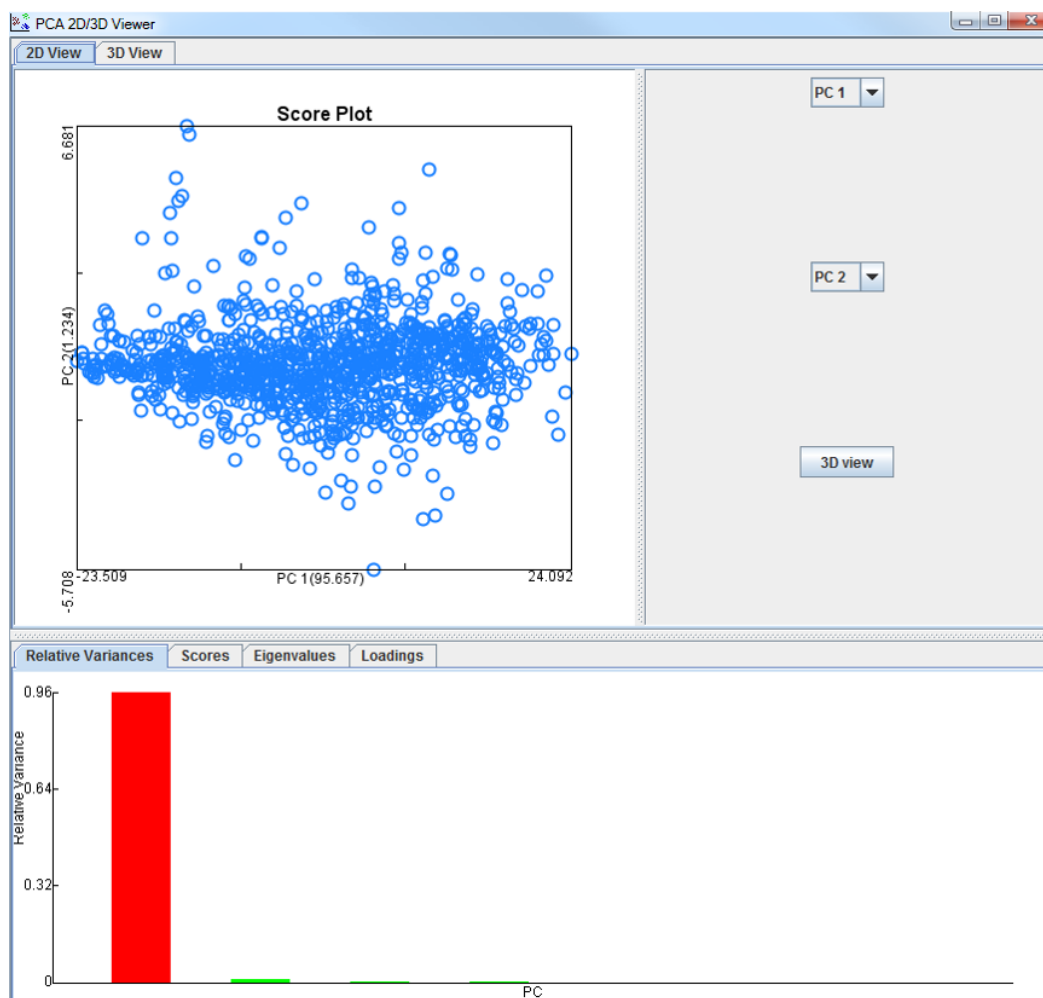


Principal Component Analysis													
File Analysis													
C:\Weizhong Zhao\for Developer-Work\ArrayTrack_HCA_PCA_1.1.java-1.1\Demo_HCA_PCA.xlsx													
R1	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13
R1	CONTROL	GENE_BAN	GENE_HSP1	GENE_HSP1	GENE_HSP1	GENE_ID	GENE_ID	LOCUS	POS_DES	REF-SEQ	SPOTID	T12	DG
R2		AA108277	HSP1	HSP1	AA108277	288444			NM_00101	516484	1	1919	
R3		AA108308	Mdm2	MDM2	AA108308	314656			2 NM_00110	516485	-0.2126		
R4		AA108308	Mdm2	MDM2	AA108308	314656			3 NM_00110	516486	8.8006		
R5		AA684537	NDUbf5	NDUFB5	AA684537	294964			4 NM_00110	516487	7.2298		
R6		AA584929			AA584929				5		516488	5.0005	
R7		AA584960			AA584960				6		516489	5.0057	
R8		AA584963	Fkbp2	FKBP2	AA584963	293702			7 NM_00110	516490	2.5762		
R9		AA585112	NDUbf8	NDUFB8	AA585112	293552			8 NM_00110	516491	8.0933		
R10		AA585152	Nedd8	NEDD8	AA585152	25490			9 NM_138878	516492	6.4337		
R11		AA585376			AA585376				10 NM	516493	5.1803		
R12		AA585676	Cyp51f	CYB51F	AA585676	304805			11 NM_00101	516494	8.1562		
R13		AA585903	Tnfr1	TNFR1	AA585903	302602			12 NM_00101	516495	10.5747		
R14		AA586031	Ndufr1	NDUFR1	AA586031	201458			13 NM_00100	516496	6.5709		
R15		AA586579	Sumo1	SUMO1	AA586579	301442			14 NM_00100	516497	5.5929		
R16		AA586870			AA586870				15 NM	516498	1.6808		
R17		AA586870			AA586870				16	516499	4.0807		
R18		AA799336	Ndufr2	NDUFR2	AA799336	293453			17 NM_00110	516500	9.167		
R19		AA819943			AA819943				18	516501	0.3629		
R20		AA848216	Top1	TOP1	AA848216	64550			19 NM_022615	516502	7.581		
R21		AA848268	Dnaj34	DNAAJ34	AA848268	300721			20 NM_00102	516503	5.8086		
R22		AA848421	Ung	UNG	AA848421	304577			21 NM_00101	516504	6.3146		
R23		AA848546	Pdc0d1	PDC0D1	AA848546	494345			22 NM_00100	516505	6.8258		
R24		AA848563	Hspata1b	HSPATA1B	AA848563	24472			23 NM_031971	516506	8.3181		
R25		AA849934	Loc400716	LOC400716	AA849934	3			24	516507	2.6801		
R26		AA875509	Mdm2	MDM2	AA875509	314656			25 NM_00110	516508	8.0804		
R27		AA933181	Cadm1	CADM1	AA933181	383058			26 NM_00101	516509	2.1577		
R28		AA956437	Pex1	PEX1	AA956437	500006			27 NM_00110	516510	0.3532		
R29		AA958273			AA958273				28		516511	2.3799	
R30		AA958274			AA958274				29		516512	4.3709	
R31		AB002111	Pex1	PEX1	AB002111	116718			30 NM_053921	516513	2.5217		
R32		AB030420	Dao	DAO									

Step1. Click the “Principal Component Analysis” button (marked with a red circle) to open a PCA setup window as shown. To setup the parameters: (a) Pick the Row Label column (column C2 in this demo data) which will not be used for PCA analysis; (b) Choose the expression values (columns C11-C22 in this demo data) to do PCA; (c) Choose the data scaling option (“Centered” or “Auto scaled”, “Centered” as default. “Centered” centers the feature data in columns on zero but retains the same scaling, while “Auto scaled” further divides each variable by its standard deviation) in PCA; (d) Click “OK” button to start the PCA analysis.

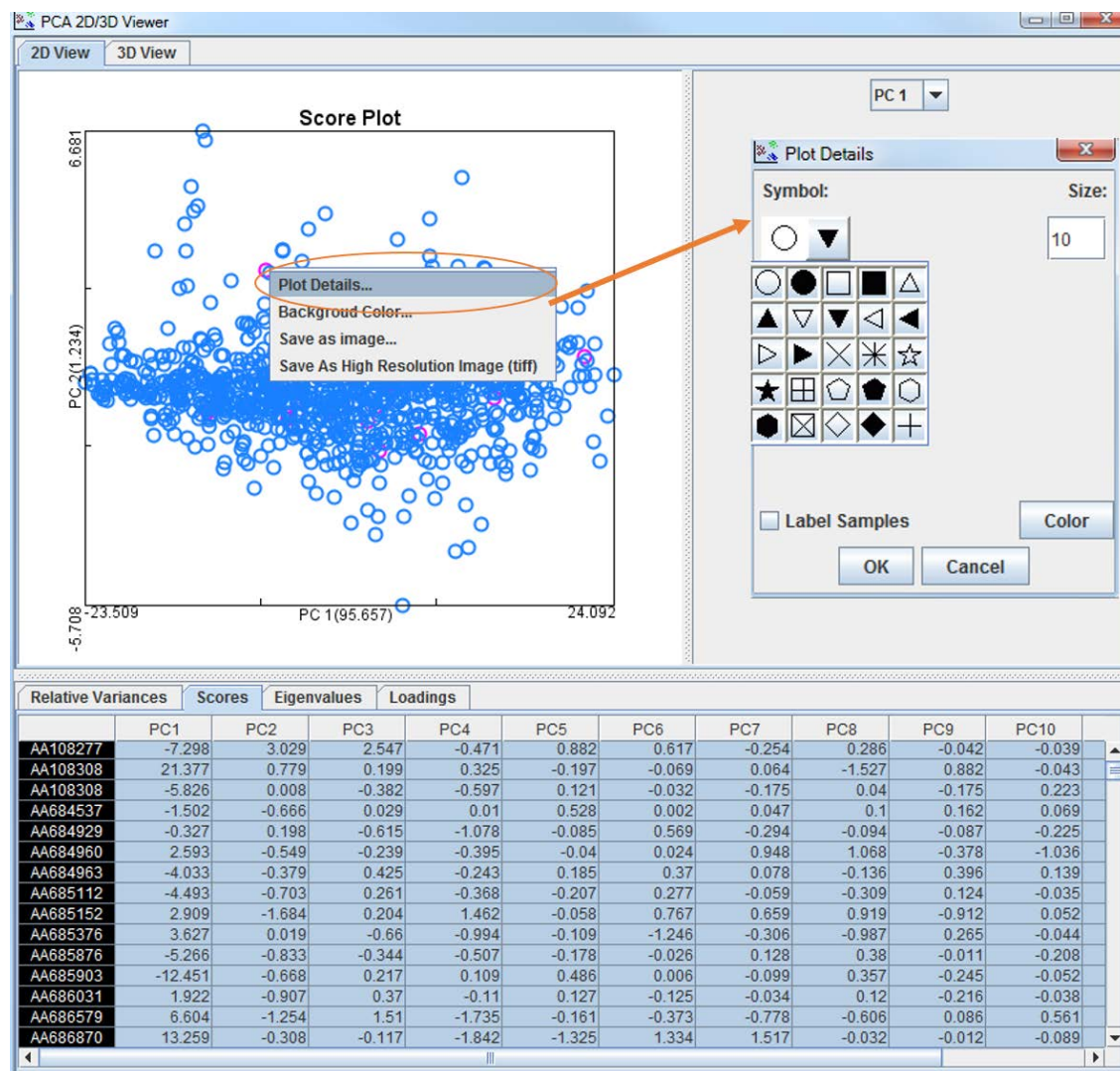
[illegible]

Step2. After PCA analysis has finished, results (2D View as the default setting) will be shown as follows.

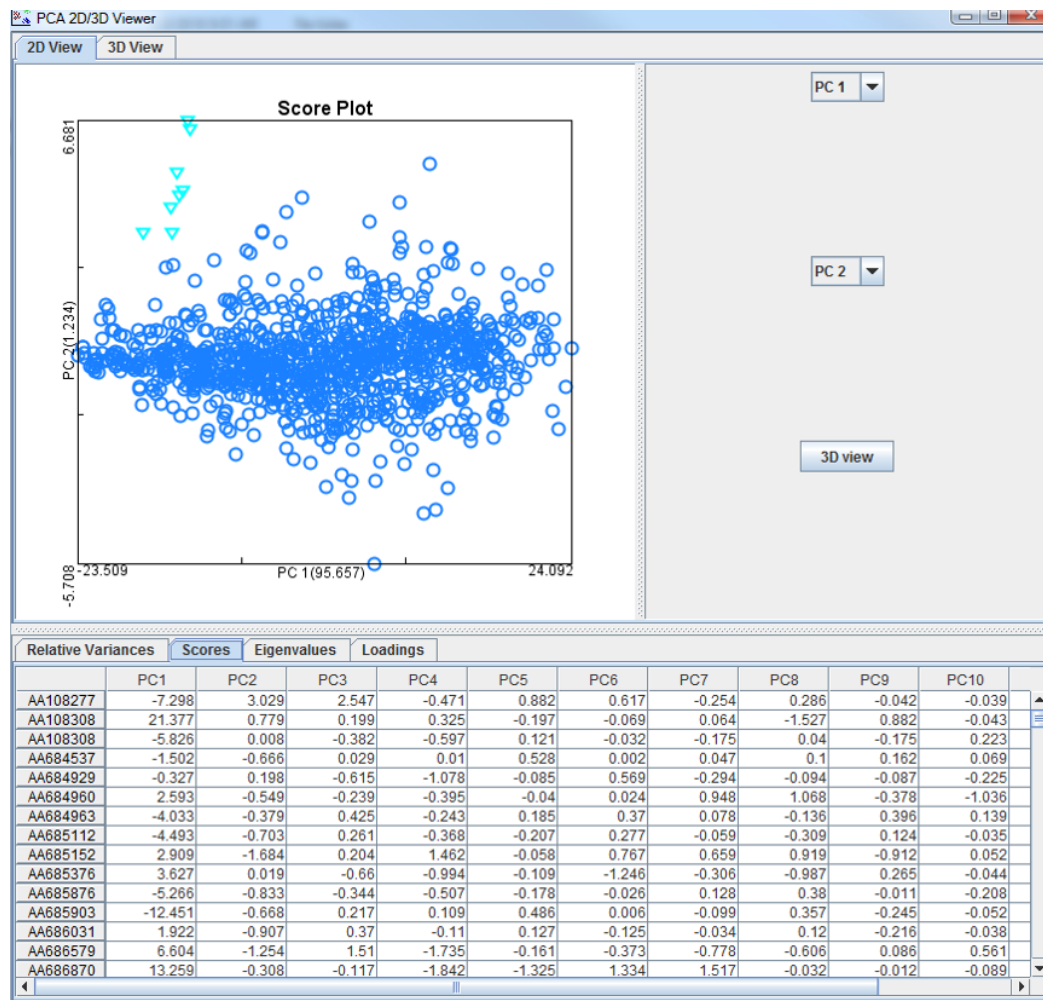


### Part 3. Result Presentation

Step1. To change the default settings of the 2D View plot: (a) Select the “Scores” tab to view the scores for all the hybridizations; (b) Select the rows to be edited, the corresponding data will be highlighted pink spots in the PCA plot (c) An additional option is to use the mouse to draw a circle around the spots in the plot and the corresponding data will be highlighted in the “Scores” tab; (d) Right-click one of those spots to access the context menu; (e) Choose “Plot Details” to define the symbol, size, shape and color of those spots.

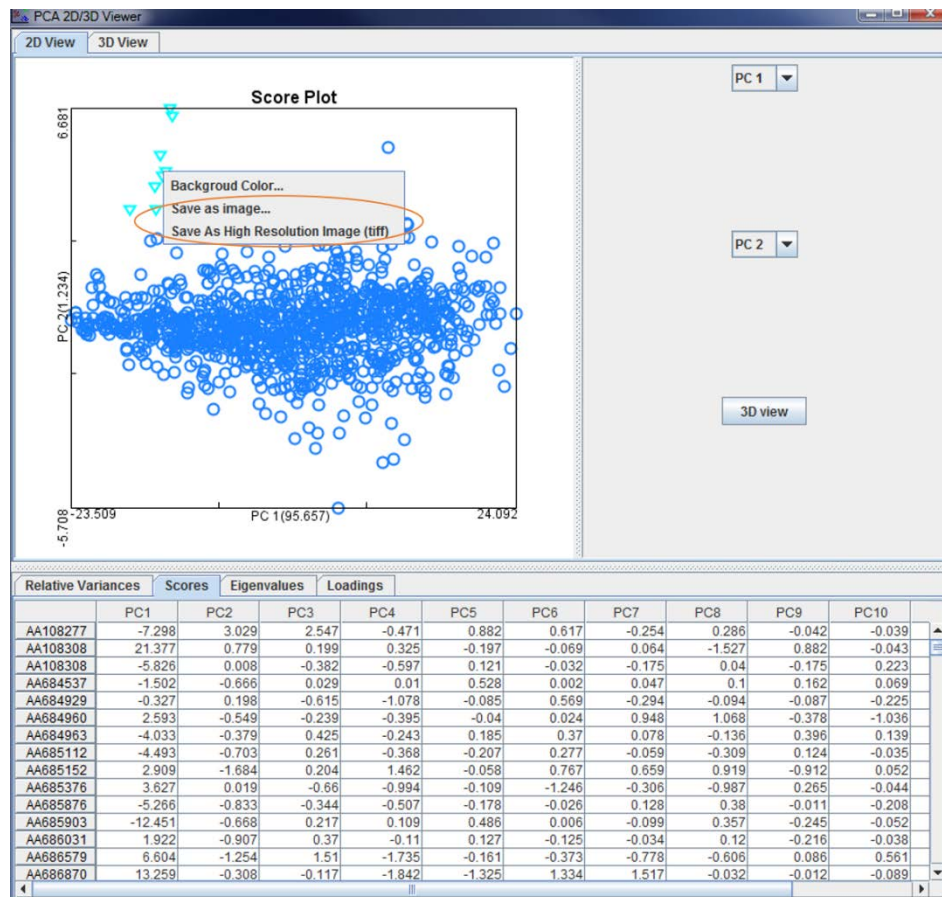


Step2. An example of the results after changing the shape and color.

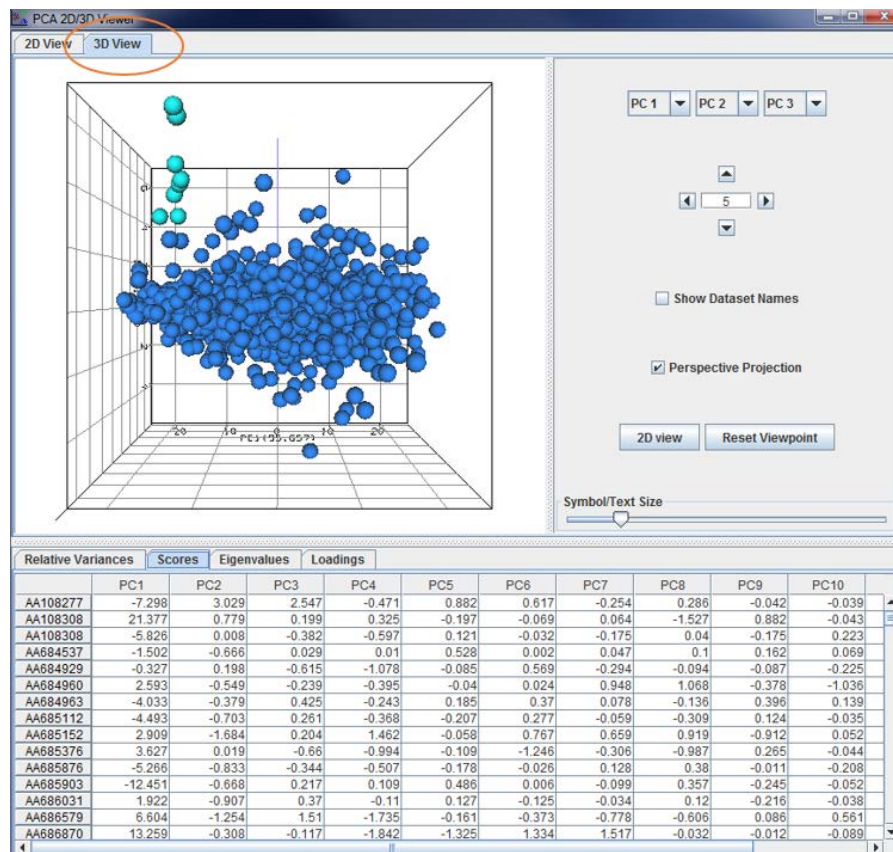


Step3. To save the result in 2D View: (a) Right click the Score Plot and click the “Save as image” menu to save the result as “.png / .jpg / .jpeg”; (b) Right click the plot and click “Save As High Resolution Image (tiff)” menu to save the results as a “.tiff” file.

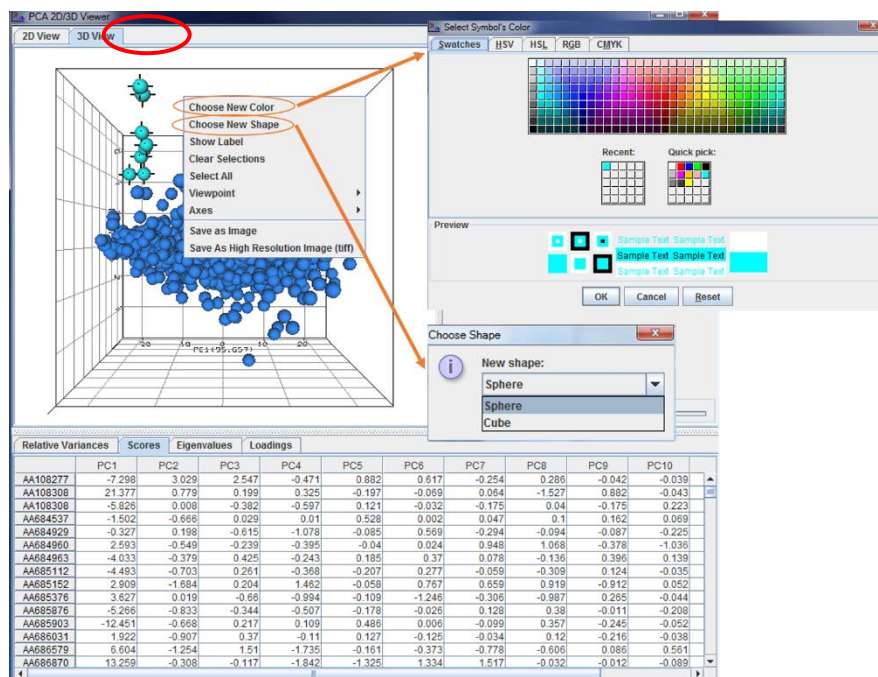




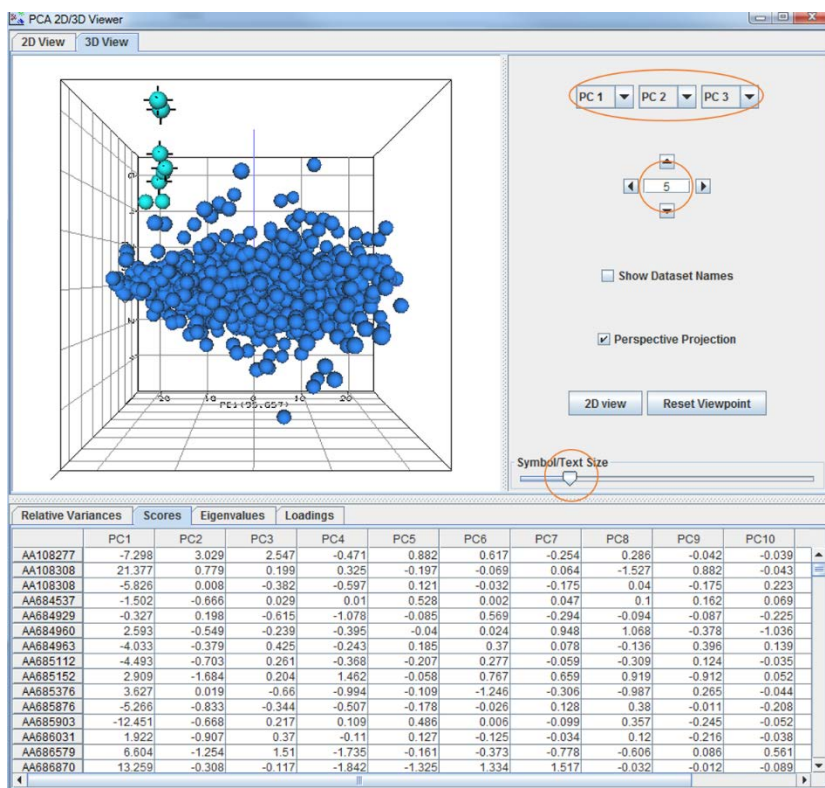
Step4. Click the “3D view” button to change to 3D visualization of PCA results.



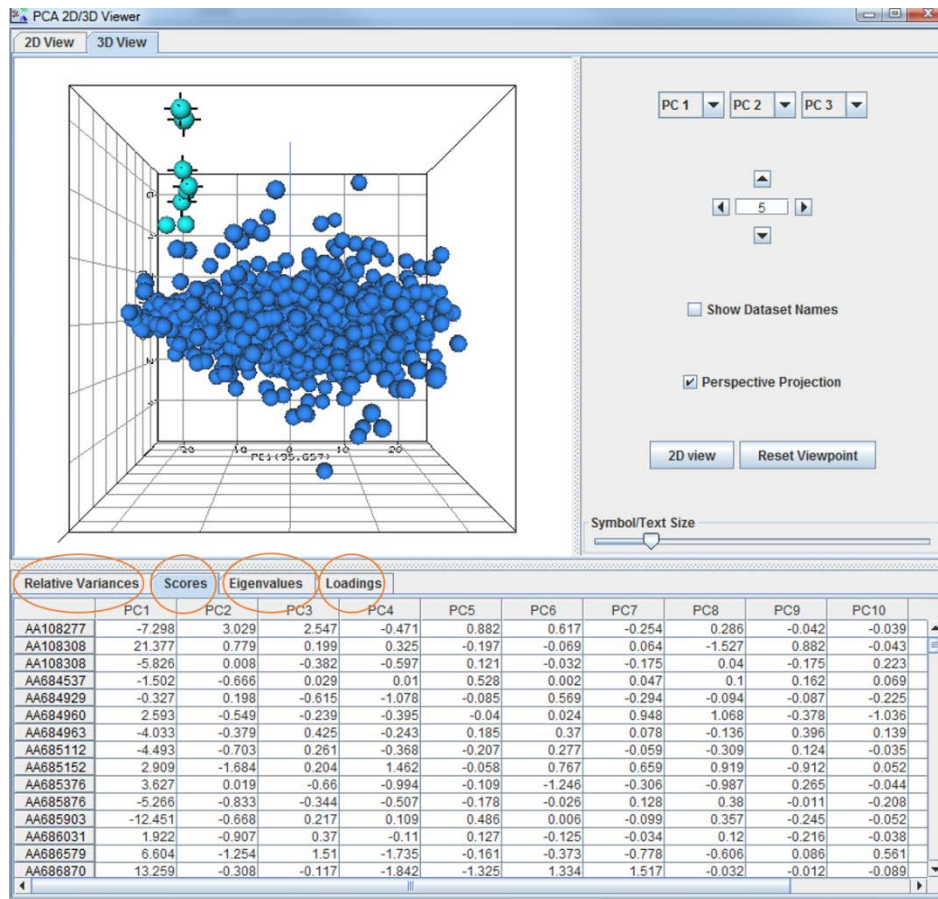
Step5. To change the default setting of 3D View: (a) View the scores for all the hybridizations by selecting the “Scores” tab; (b) Select the rows to be edited, the corresponding spots in the PCA plot will be highlighted with a crossover X; (c) Right-click one of those spots and use “Choose New Color” and “Choose New Shape” to define the shape and color as follows.



Step6. Use the top-right panel to change the default setting of 3D visualization of the results, including components to visualize, perspective angle, symbol/text size, etc. To change the perspective angle of the 3D view, left click and hold on the 3D plot and drag the mouse. To zoom in/out of the 3D plot, hold the Shift key down and left click and hold on the plot, then drag the mouse up/down. To move the entire 3D plot, hold the Ctrl key down and left click and hold on the 3D plot, then drag the mouse.



Step7. Use the bottom panel to view the component scores, eigenvalues, loadings, etc.



## Part 4. Exit

Step1. Click the “Close” button to close the PCA window to exit the tool.