



WocEA Manual

Word cloud for the enrichment analysis

Version 1.0

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The CUCKOO Workgroup

The latest version of WocEA is available from <http://wocea.biocuckoo.org/down.php>

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Statement

1. **Implementation.** The softwares of the CUCKOO Workgroup are implemented in JAVA (J2SE). Usually, both of online service and local stand-alone packages will be provided.
2. **Availability.** Our softwares are freely available for academic researches. For non-profit users, you can copy, distribute and use the softwares for your scientific studies. Our softwares are not free for commercial usage.
3. **GPS.** Previously, we used the GPS to denote our Group-based Phosphorylation Scoring algorithm. Currently, we are developing an integrated computational platform for post-translational modifications (PTMs) of proteins. We re-denote the GPS as Group-based Prediction Systems. This software is an indispensable part of GPS.
4. **Usage.** Our softwares are designed in an easy-to-use manner. Also, we invite you to read the manual before using the softwares.
5. **Updation.** Our softwares will be updated routinely based on users' suggestions and advices. Thus, your feedback is greatly important for our future updation. Please do not hesitate to contact with us if you have any concerns.
6. **Citation.** Usually, the latest published articles will be shown on the software websites. We wish you could cite the article if the software has been helpful for your work.
7. **Acknowledgements.** The work of CUCKOO Workgroup is supported by grants from Chinese 973 project (2002CB713700, 2006CBOF0503, and 2006CB933300), Chinese Academy of Sciences (KSCX1-YW-R65, KSCX2-YW-21, and KJCX2-YW-M02), Chinese Natural Science Foundation (39925018, 30270293, 90508002, 30700138) and National Institutes of Health (DK56292).

Introduction

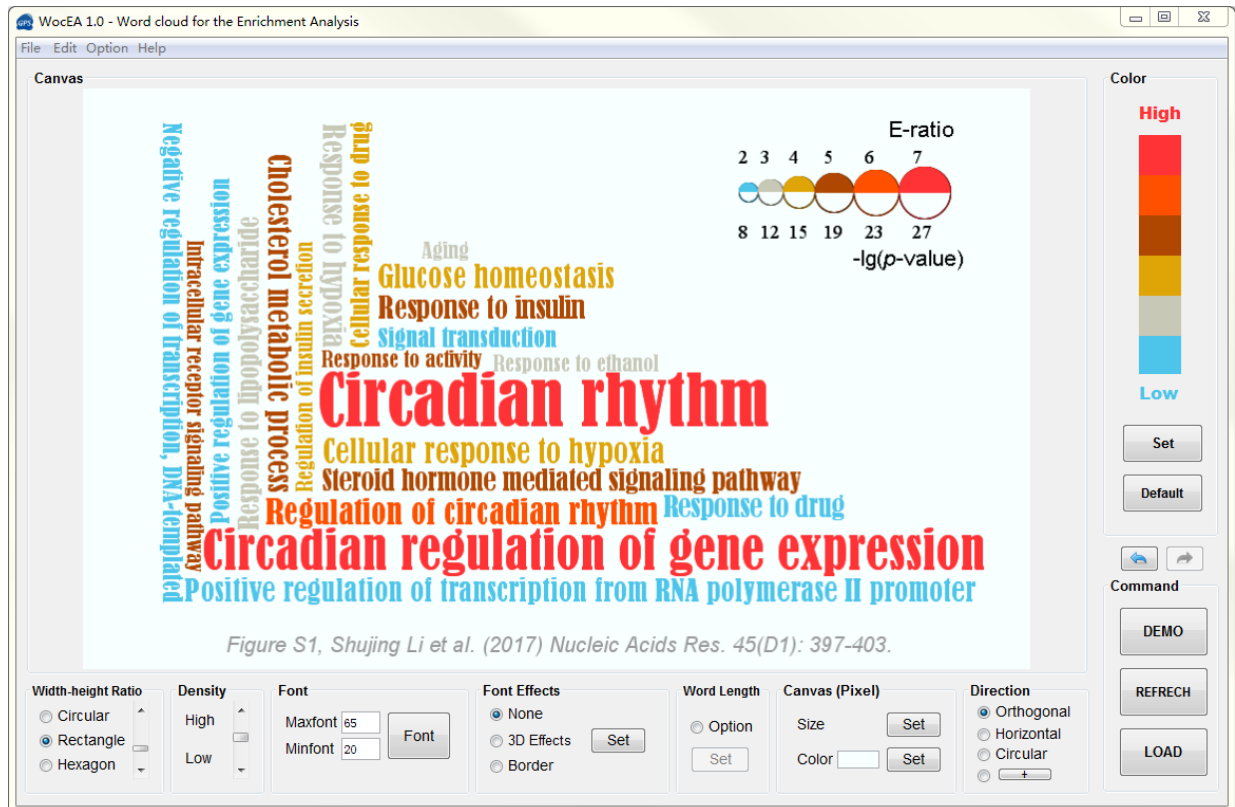


Figure 1, WocEA 1.0 User Interface

Download & Installation

The WocEA 1.0 was implemented in JAVA (J2SE) and Swing was used to implement the user interface, and could support three major Operating Systems (OS), including Windows, Linux/Unix or Mac OS X systems. Local stand-alone packages is available from: <http://wocea.biocuckoo.org/down.php>. We recommend that users could download the latest release.

Please choose the proper package to download. After downloading, please double-click on the software package to begin installation, following the user prompts through the installation. And snapshots of the setup program under windows 7 are shown below:

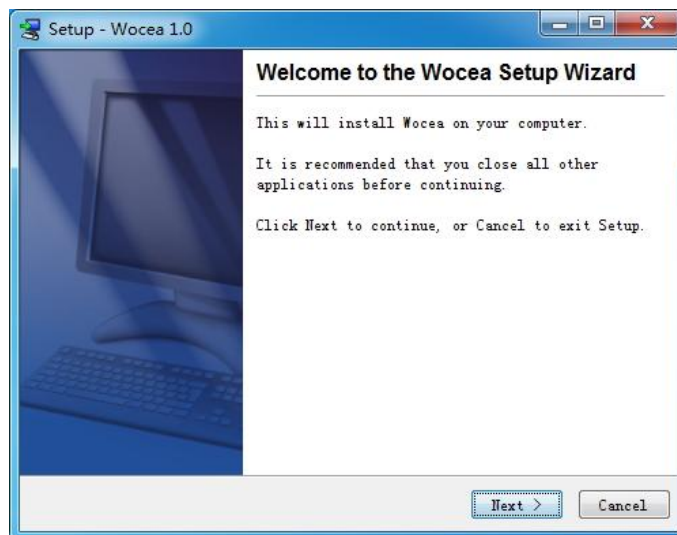


Figure 2

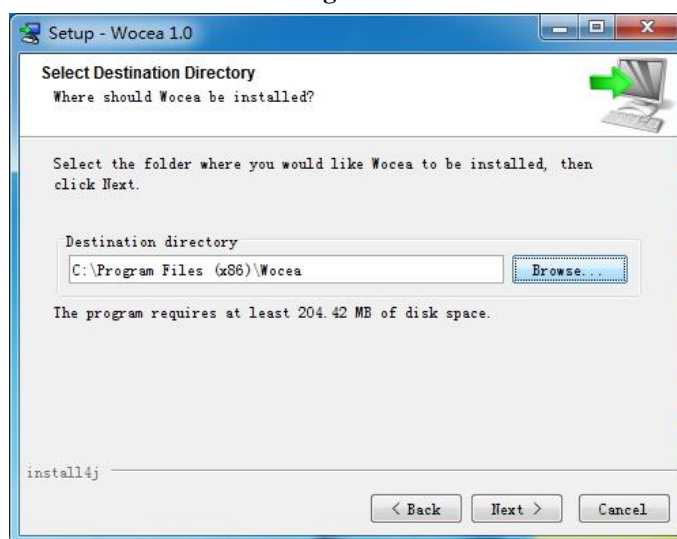


Figure 3

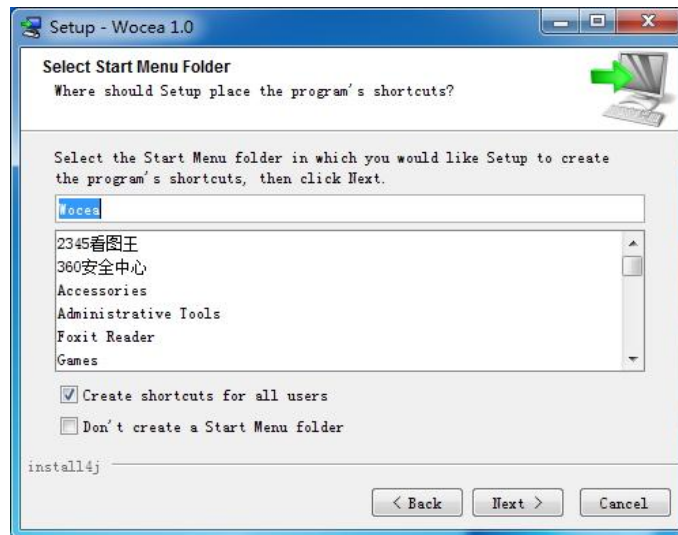


Figure 4

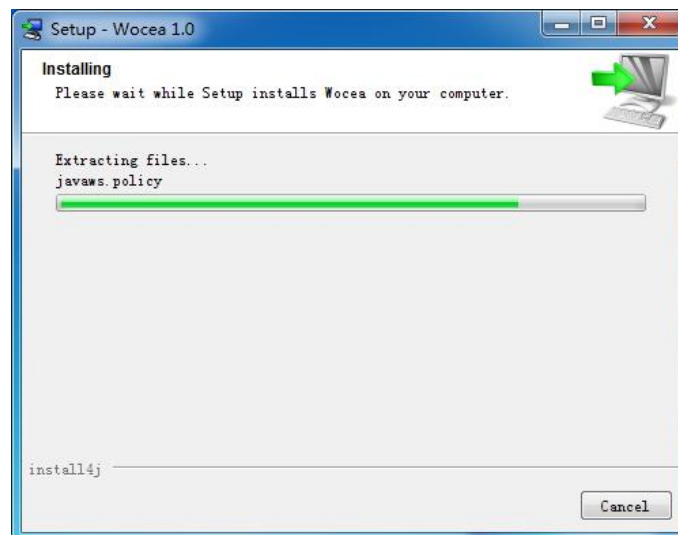


Figure 5

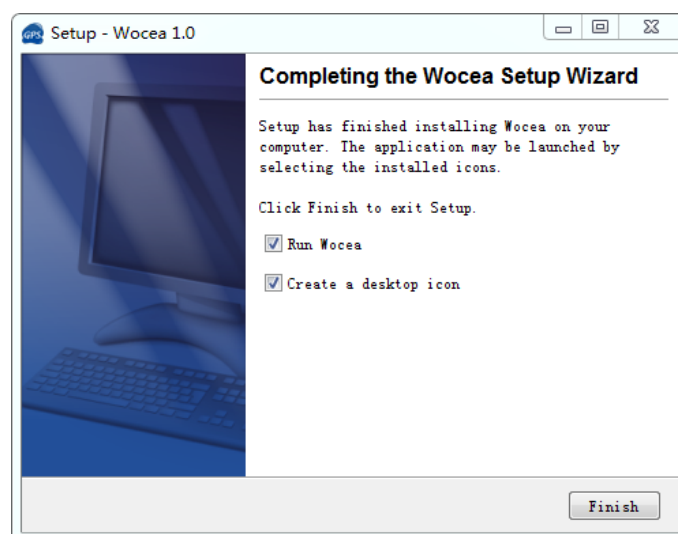


Figure 6

Finally, please click on the **Finish** button to complete the setup program.

Usage of WocEA

1. A fast guide for using WocEA

Before we start:

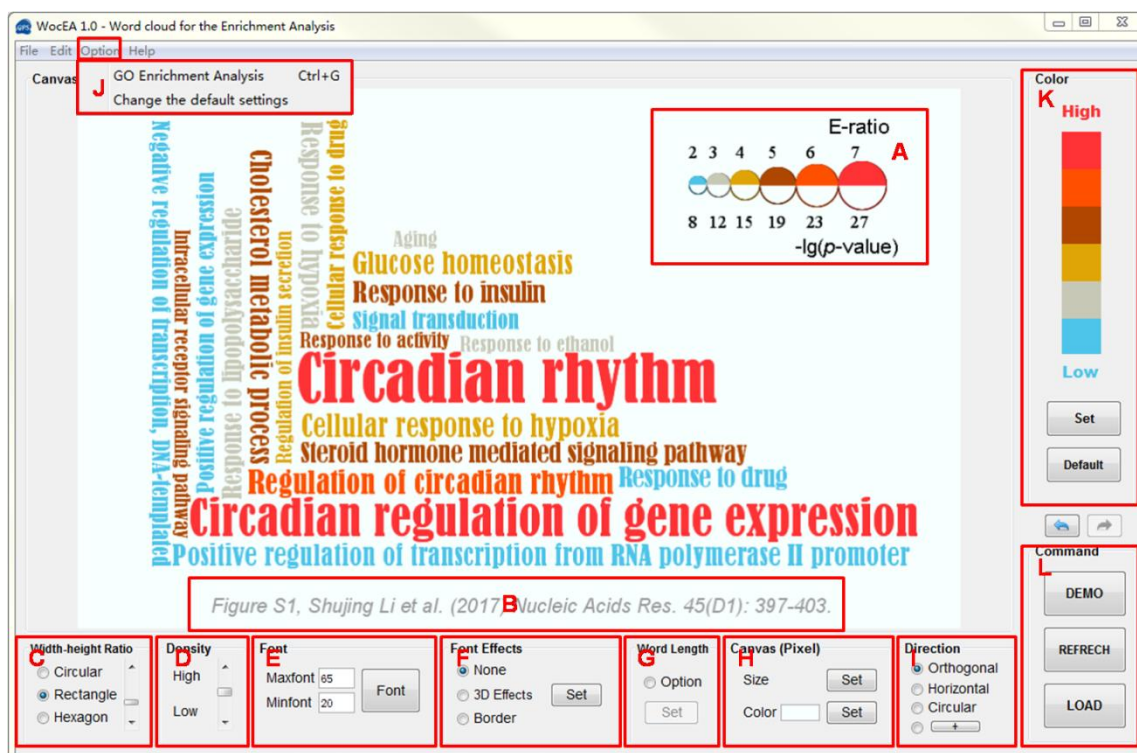


Figure 7

A: mixed(color, font) bar

B: note of picture

C: shape(circular、rectangular、hexagonal) selection and the aspect ratio setting

D: the density level between words setting

E: the maximum and minimum size of font setting and font selection

F: the font effect (no effect, 3D effect (three-dimensional effects, shadow effects, projection), the boundary effect) selection

G: word length threshold setting (words that exceed the word length threshold are omitted) and newline setting

H: the size of the canvas background, the color of the canvas background, and the relative position of the word cloud and the canvas background

I: word direction selection (orthogonal direction、horizontal direction、concentric circle、radial、spiral)

J: GO enrichment analysis

K: the color of word cloud setting (gradient, non- gradient colors)

L: command

2. Enrichment analysis

(1) First, click the "Tools" option in the menu bar to select the GO enrichment analysis or KEGG enrichment analysis (based on the hypergeometric). Here, we use GO enrichment analysis as an example.

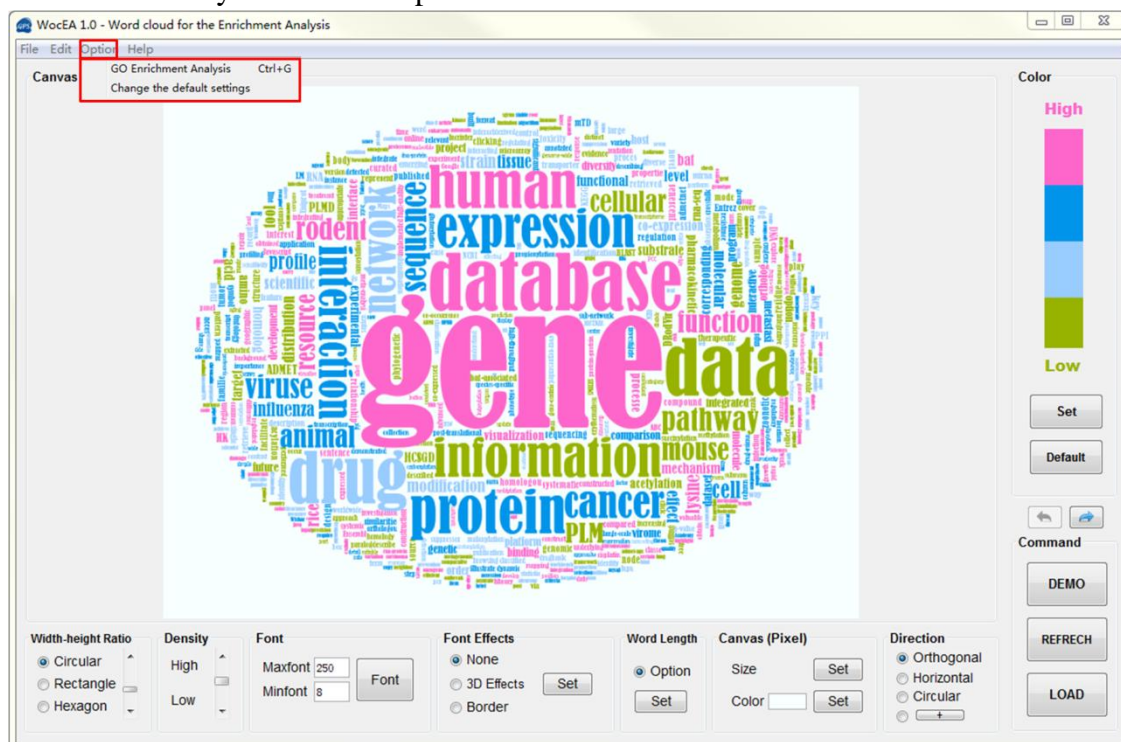


Figure 8

(2) Then, select the type of the input text and the foreground and background text file (separated by "\n") or Paste text in the text area and select the result file output address. select the threshold of the P-value of the result and species. Click the "OK" button.

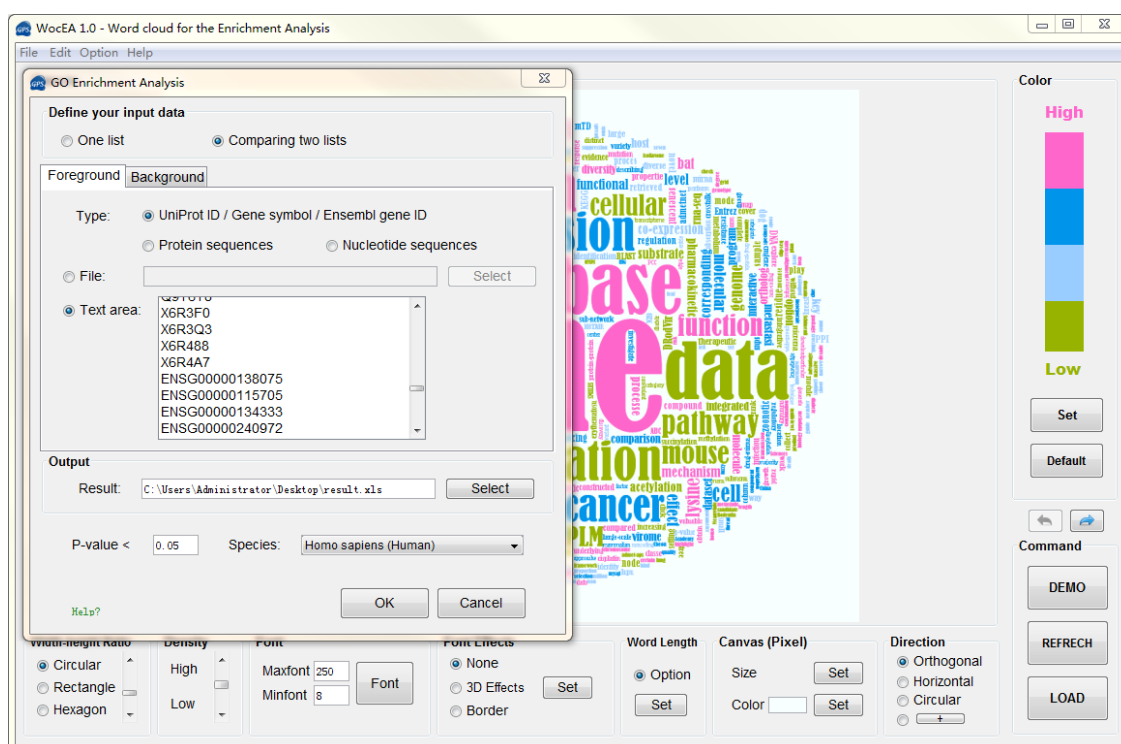


Figure 9

3. Generate word cloud

(1) First of all, please click the "LOAD" button and choose "Enrichment Analysis" to select the data file, we support three formats: Microsoft Excel workbook (*.xlsx, *.xls), tab delimited file (*.txt) and WocEA project file(*.xml). Here, we use the Microsoft Excel workbook as an example.

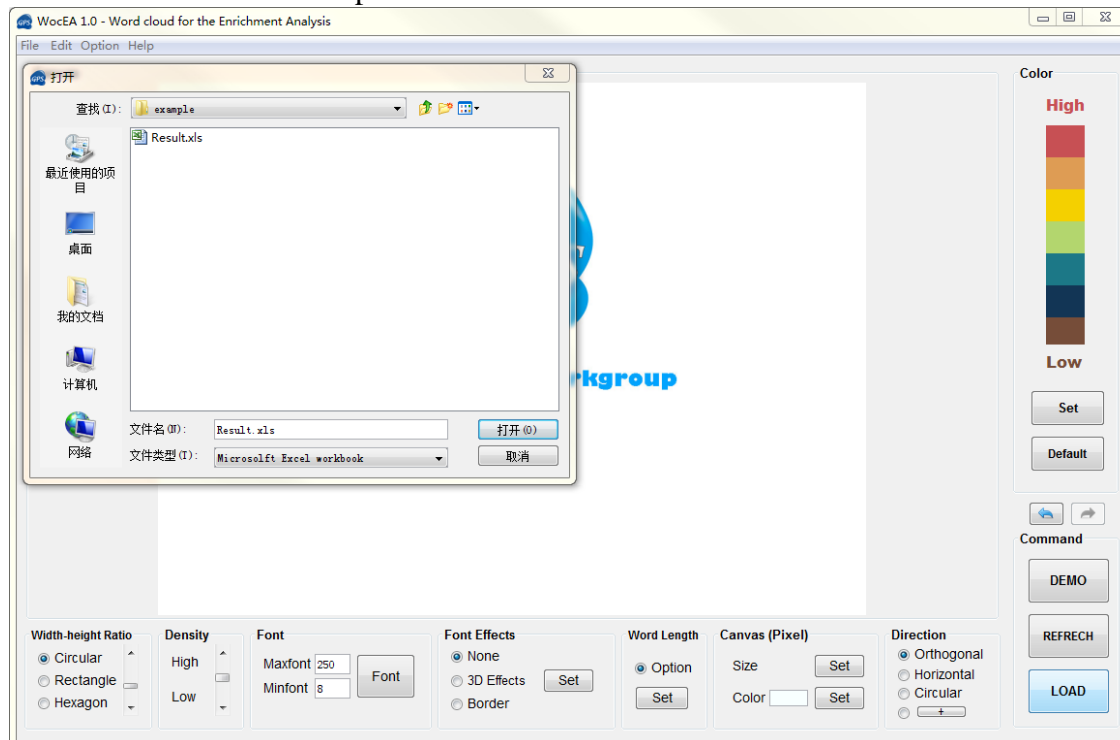


Figure 10

(2) After selecting the Excel workbook, you need to select the required sheet as the data source (if the workbook you selected contains more than one sheet), in this example, we select "sheet 1" and then click "OK".

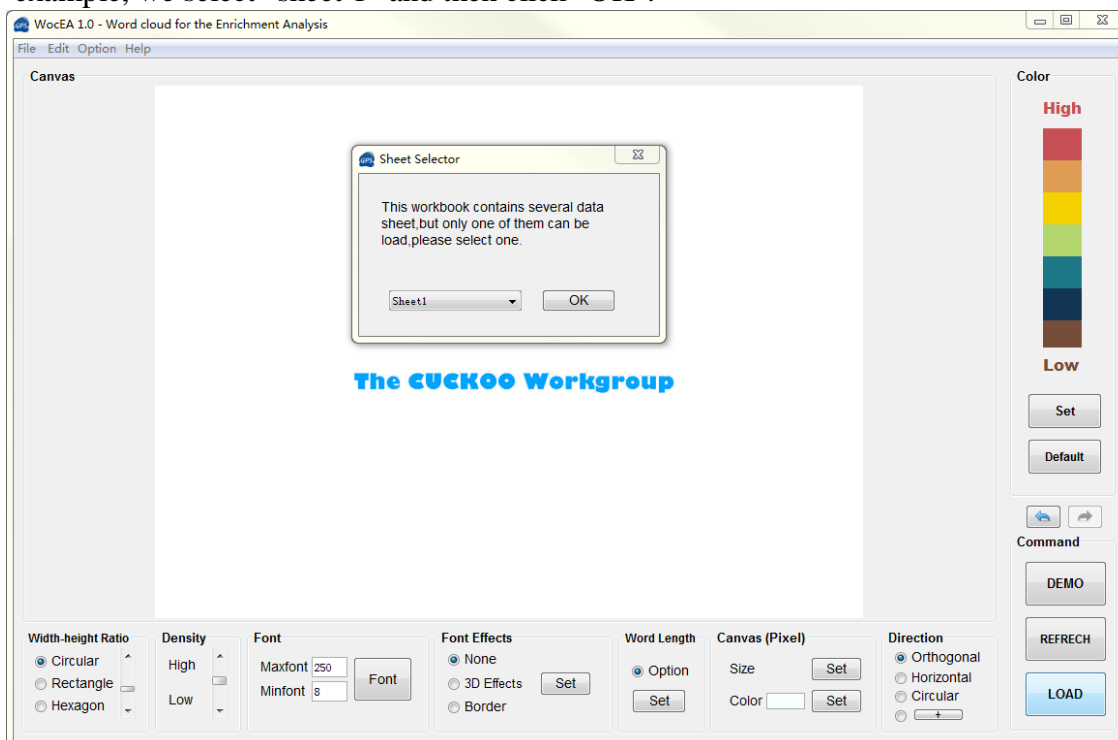


Figure 11

(3) Then data loader popped out, in this dialog, you can delete the data, select the words that appear in the word cloud and the data columns that are represented by the color and font size, respectively.

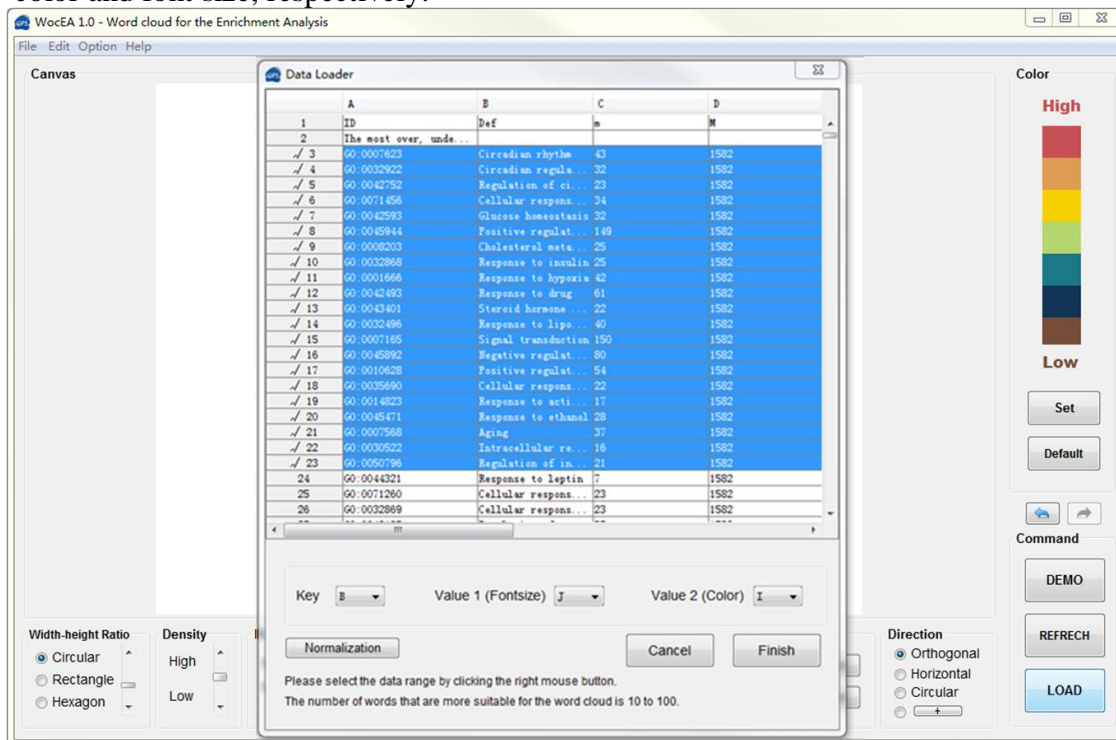


Figure 12

(4) Click the bottom of the button "Finish" to complete the drawing. You can then choose to draw a bar as needed. You can reset the color, font, and then click the word cloud to refresh. You can drag and drop individual words of the word cloud as needed. If you double-click a single word, a dialog box will appear, you can modify the word as needed. You can also drag the bar or note to change its position.

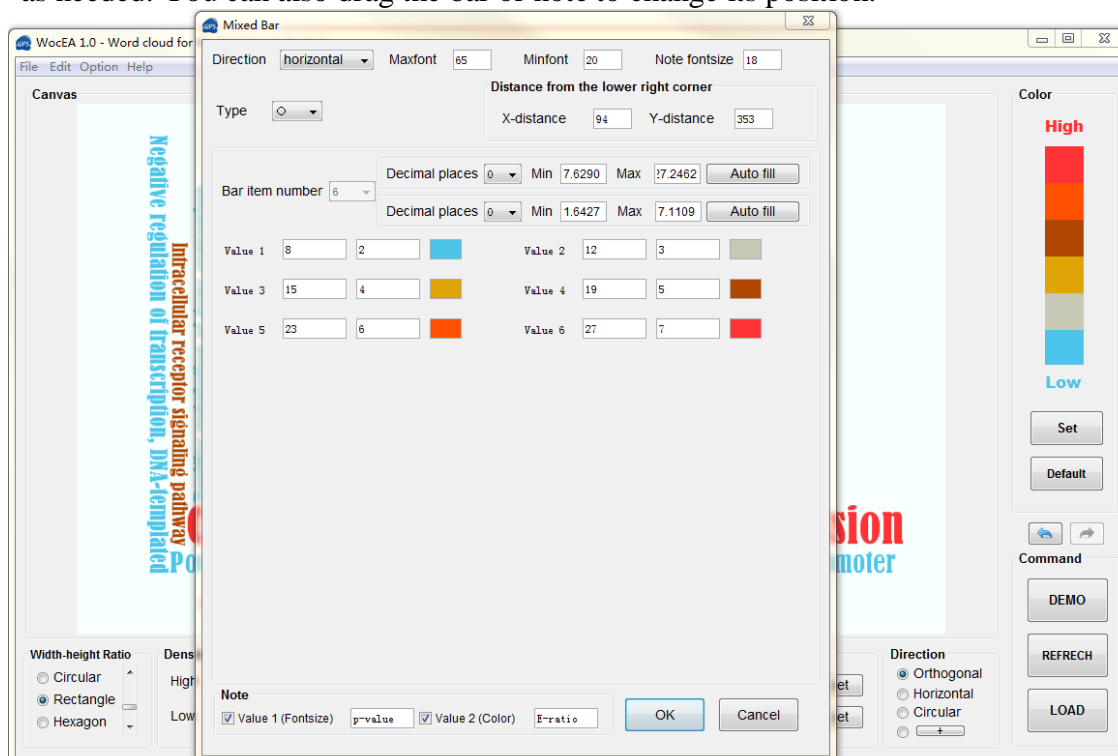


Figure 13

(5) Right-click on the canvas and select "Export Image" or choose "File" - "Export Image" to export the picture in a predefined format and resolution.

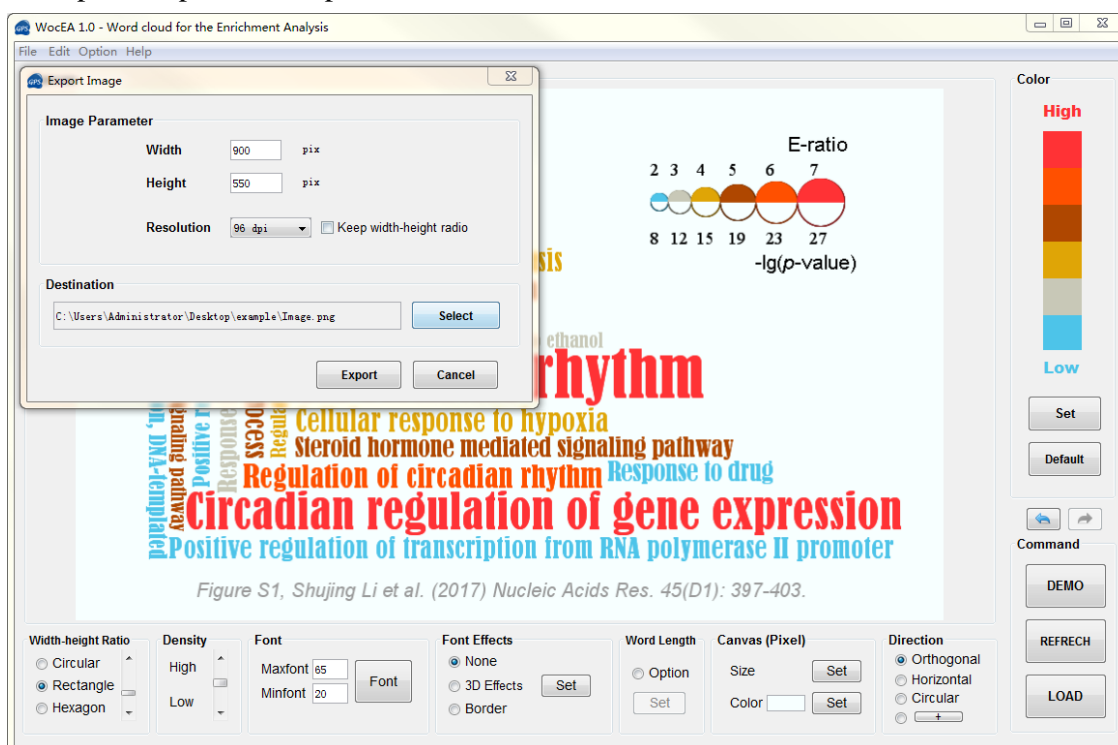


Figure 14

If you choose 96dpi, export format can be JPEG, PNG, BMP and TIFF, if you choose 300dpi or 600dpi, file format can only be TIFF.

2. Pop-out menu of canvas



Figure 17

A:

1. Export Image: To export the image to certain destination, resolution and format.
2. View data: View the data used to draw the word cloud and export the data to an Excel file or a TXT file.
3. Delete Image: Delete the current word cloud.
4. Set up background: Set the canvas background

B:

5. Delete mixed bar: Delete the mixed bar in the image.
6. Delete color bar: Delete the color bar in the image.
7. Delete font bar: Delete the font bar in the image.
8. Delete note: Delete the note in the image.

1. Set up bar: define your own color bar .

Bar

Direction: horizontal Length (Pix): 140 Width (Pix): 20 Note fontsize: 15

☒ Discrete bar ☐ Gradient bar

Distance from the lower right corner
X-distance: 100 Y-distance: 0

Bar item number: 8 Decimal places: 0 Min: 1.6427 Max: 7.1109 Auto fill

Value 1: 2 [blue bar] Value 2: 3 [grey bar]
Value 3: 4 [yellow bar] Value 4: 5 [brown bar]
Value 5: 6 [orange bar] Value 6: 7 [red bar]

Note
☒ Value []

OK Cancel

Figure 18

- 1) Direction: The direction of the color bar, it can be horizontal and vertical direction.
- 2) Length: length of the color bar (pixel).
- 3) Width: width of the color bar (pixel).
- 4) Note fontsize: The font size of the note of the color bar.
- 5) Discrete bar: In this mode, the color of the color bar are intermittent.
- 6) Gradient bar: Set the color of the color bar to gradient.
- 7) X-Distance: The distance to the lower right corner of the canvas background in the horizontal direction.
- 8) Y-distance: The distance to the lower right corner of the canvas background in the vertical direction.
- 9) Value: Add a label that represents the meaning of the value represented by the color to the color bar.

2. Set up font note: Define your own font size bar.

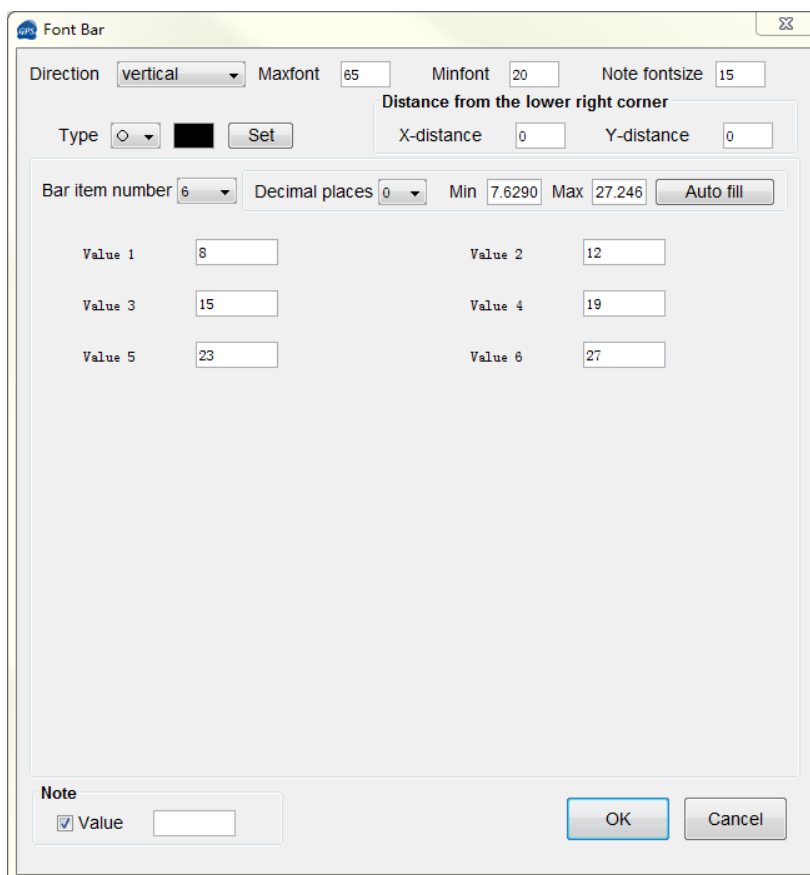


Figure 19

- 1) Direction: The direction of the font bar, it can be horizontal and vertical direction.
- 2) Maxfont: The maximum font size of a word cloud.
- 3) Minfont: The minimum font size of a word cloud.
- 4) Note fontsize: The font size of the note of the font bar.
- 5) Type: The style and color of the font bar.
- 6) X-Distance: The distance to the lower right corner of the canvas background in the horizontal direction.
- 7) Y-distance: The distance to the lower right corner of the canvas background in the vertical direction.
- 8) Value: Add a label that represents the meaning of the value represented by the font size. to the font bar.

3. Set up mixed bar: Define your own mixed (color, font size) bar (Figure 7,A).

Mixed Bar

Direction: **horizontal** Maxfont: **65** Minfont: **20** Note fontsize: **18**

Type: **○**

Distance from the lower right corner
X-distance: **94** Y-distance: **353**

Bar item number: **6** Decimal places: **0** Min: **7.6290** Max: **27.2462** **Auto fill**

Value 1: **8** Value 2: **12**
Value 3: **15** Value 4: **19**
Value 5: **23** Value 6: **27**

Note
☒ Value 1 (FontSize) ☐ p-value ☒ Value 2 (Color) ☐ E-ratio

OK **Cancel**

Figure 20

- 1) Direction: The direction of the mixed bar, it can be horizontal and vertical direction.
- 2) Maxfont: The maximum font size of a word cloud.
- 3) Minfont: The minimum font size of a word cloud.
- 4) Note fontsize: The font size of the note of the mixed bar.
- 5) Type: the style of the mixed bar (square, lozenge and circle).
- 6) X-Distance: The distance to the lower right corner of the canvas background in the horizontal direction.
- 7) Y-distance: The distance to the lower right corner of the canvas background in the vertical direction.
- 8) Value1: Add a label that represents the meaning of the value represented by the font size to the mixed bar.
- 9) Value2: Add a label that represents the meaning of the value represented by the color to the mixed bar.

4. Add a note: Add a note to the word cloud.

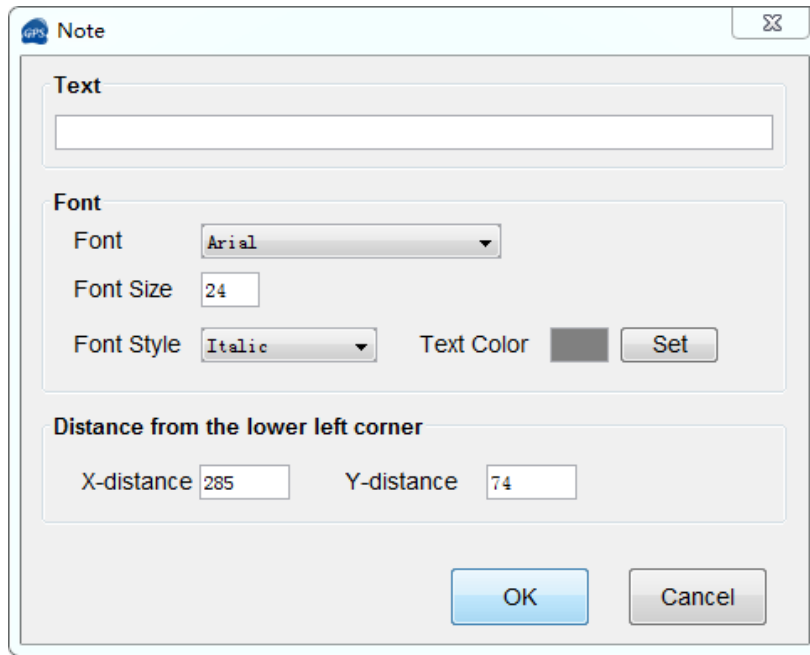


Figure 21

- 1) Text: Add some text to the image.
- 2) Font: Text font selection.
- 3) Font Size: Text font size selection.
- 4) Font Style: Text font style selection.
- 5) Text Color: Text color selection.
- 6) X-distance: The distance to the lower left corner of the canvas background in the horizontal direction.
- 7) Y-distance: The distance to the lower left corner of the canvas background in the vertical direction.

3. Menu

A:

File:

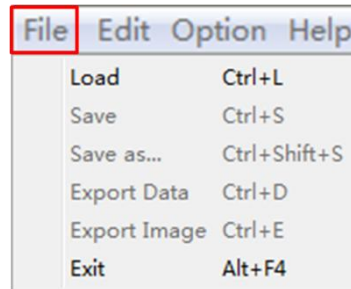


Figure 22

1. Load: load Excel / TXT file.
2. Save: save current project.
3. Save as: save current project to another file.
4. Export Data: export the data to an Excel file or a TXT file.
5. Export Image: export current word cloud to local file.
6. Exit: exit WocEA.

Option:

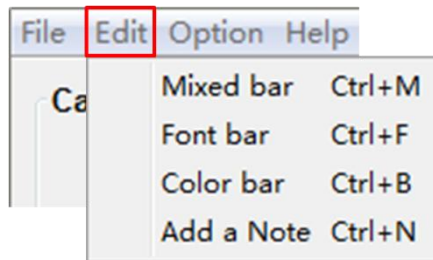


Figure 23

1. Mixed bar: same as "Set up mixed bar" in pop-out menu.
2. Font bar: same as "Set up font bar " in pop-out menu.
3. Color bar: same as "Set up color bar " in pop-out menu.
4. Add a Note: same as "Add a note" in pop-out menu.

Help:

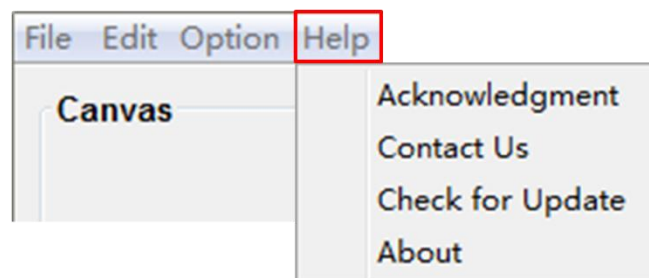


Figure 24

1. Acknowledgement: Acknowledgement of help from other group for products of THE CUCKOO WORKGROUP.
2. Contact Us: If you have any suggestion or problem, please contact us.
3. Check for Update: Check if there is any updating of WocEA.
4. About: Other tools of THE CUCKOO WORKGROUP and their link.