

## ScreenGarden - Shiny app for data analysis Read Me

1. You should create a folder containing the files included in the zipped archive, these are:
  - a. ScreenGarden\_shiny.R
  - b. keyfile.txt
  - c. colonyAreas.txt

Note: The app works well even if the keyfile.txt and colonyArea.txt are not in the same folder as the code, creating a folder is only recommended to organise the data. Also, both keyfile and colonyAreas.txt can have different names as they are defined by uploading into the app rather than by name.

The keyfile.txt file should be numeric for Plate, Row and Column values at this stage.

| Plate | Row | Column | ORF     |
|-------|-----|--------|---------|
| 1     | 1   | 1      | YML032C |

etc.

2. Open ScreenGarden\_shiny.R in RStudio

```
1 # Shiny-app for screen data analysis (currently only working for 1536 density and 4 replicates)#
2
3 # 1. Load R packages #
4 install.packages("tidyverse") # make sure to install package before first use
5 library(tidyverse)
6 install.packages("lubridate")
7 library(lubridate)
8 install.packages("rlang")
9 library(rlang)
10 install.packages("ggplot2")
11 library(ggplot2)
12 install.packages("Cairo")
13 library(Cairo)
14 install.packages("gghighlight")
15 library(gghighlight)
16 install.packages("shiny")
17 install.packages("shinythemes")
18 library(shiny)
19 library(shinythemes)
20
21 # 2. Code for shiny app. Run code after installing the packages.
22 # Click ctrl enter to run the code (3times until bottom of packe or select all code) #
23
24 # Define UI
25 ui <- fluidPage(theme = shinytheme("flatly"),
26   navbarPage(
27     # theme = "cerulean", # <--- To use a theme,
28     "ScreenGarden",
29     tabPanel("CalculateLGRs",
30       sidebarPanel(
31         textInput("query", "Query Name:", ""),
32         textInput("control", "Control Name:", ""),
33
34         # Horizontal line ----
35         tags$hr(),
36
37         # Input: Select a file ----
38         fileInput("file1", "Choose colonyAreas.txt File",
39           multiple = TRUE,
40           accept = c("text/csv",
41             "text/comma-separated-values,text/plain",
42             ".csv")),

```

Install packages before running the script

Run script until the page bottom

After Running the Shiny R script, a 2<sup>nd</sup> window with the shiny app will appear on the screen:

### 3. Calculate LGRs (Areas2LGRs script)

Query Name:  
glc7gbp

Control Name:  
glc7

Choose colonyAreas.txt File  
Browse... No file selected

Choose Keyfile  
Browse... No file selected

Replicates  
☐ 1  
☒ 4  
☐ 16

Plate array  
☐ 96  
☐ 384  
☒ 1536  
☒ Smoothing

Enter name of query in colonyAreas.txt (pHTxy or genename)

Enter name of control in colonyAreas.txt (pHTxy or genename)

Select colonyAreas.txt

Select keyfile.txt



Query Name:  
glc7gbp

Control Name:  
glc7

Choose colonyAreas.txt File  
Browse... colonyAreas.txt  
Upload complete

Choose Keyfile  
Browse... keyfile.txt  
Upload complete

Replicates  
☐ 1  
☒ 4  
☐ 16

Plate array  
☐ 96  
☐ 384  
☒ 1536  
☒ Smoothing

Display  
☐ Head  
☒ All

Download

Download datafile

| Plate | Row  | Column | control | query  | norm_query | norm_control | log_norm_query |
|-------|------|--------|---------|--------|------------|--------------|----------------|
| 1.00  | 1.00 | 1.00   | 269.00  | 204.75 | 1.47       | 1.81         | 0.38           |
| 2.00  | 1.00 | 1.00   | 220.25  | 259.25 | 1.85       | 1.51         | 0.61           |
| 3.00  | 1.00 | 1.00   | 283.00  | 270.00 | 1.60       | 1.81         | 0.46           |
| 4.00  | 1.00 | 1.00   | 35.25   | 14.25  | 0.08       | 0.21         | -3.01          |
| 5.00  | 1.00 | 1.00   | 243.75  | 324.25 | 1.74       | 1.74         | 0.54           |
| 6.00  | 1.00 | 1.00   | 158.25  | 157.00 | 0.85       | 1.13         | -1.23          |
| 7.00  | 1.00 | 1.00   | 247.00  | 280.50 | 1.58       | 1.72         | 0.45           |
| 8.00  | 1.00 | 1.00   | 117.75  | 242.25 | 1.26       | 0.79         | 0.22           |
| 9.00  | 1.00 | 1.00   | 214.75  | 297.50 | 1.85       | 1.84         | 0.61           |
| 10.00 | 1.00 | 1.00   | 218.25  | 269.50 | 1.57       | 1.72         | 0.45           |
| 11.00 | 1.00 | 1.00   | 204.50  | 162.75 | 0.85       | 1.93         | -0.18          |
| 1.00  | 2.00 | 1.00   | 234.25  | 193.50 | 1.39       | 1.57         | 0.33           |
| 2.00  | 2.00 | 1.00   | 143.50  | 176.00 | 1.26       | 0.98         | 0.23           |
| 3.00  | 2.00 | 1.00   | 234.75  | 244.75 | 1.45       | 1.50         | 0.37           |
| 4.00  | 2.00 | 1.00   | 154.75  | 152.25 | 0.84       | 0.92         | -0.83          |
| 5.00  | 2.00 | 1.00   | 215.50  | 266.50 | 1.43       | 1.54         | 0.35           |
| 6.00  | 2.00 | 1.00   | 42.00   | 126.50 | 0.68       | 0.30         | -0.40          |
| 7.00  | 2.00 | 1.00   | 221.25  | 232.00 | 1.30       | 1.54         | 0.26           |
| 8.00  | 2.00 | 1.00   | 143.00  | 207.25 | 1.07       | 0.95         | 0.06           |
| 9.00  | 2.00 | 1.00   | 138.25  | 222.00 | 1.38       | 1.18         | 0.31           |
| 10.00 | 2.00 | 1.00   | 168.75  | 227.75 | 1.32       | 1.33         | 0.28           |
| 11.00 | 2.00 | 1.00   | 154.75  | 245.25 | 1.28       | 1.46         | 0.24           |
| 1.00  | 3.00 | 1.00   | 218.00  | 183.75 | 1.32       | 1.46         | 0.28           |
| 2.00  | 3.00 | 1.00   | 158.75  | 170.00 | 1.21       | 1.09         | 0.19           |
| 3.00  | 3.00 | 1.00   | 225.75  | 218.00 | 1.29       | 1.45         | 0.25           |
| 4.00  | 3.00 | 1.00   | 45.75   | 30.25  | 0.17       | 0.27         | -1.79          |

4. Combine2Controls (CombineSPIdata script produces merge file, optional if screens are performed with 2 controls)

ScreenGarden

CalculateLGRs

Combine2controls

Plots

Choose CTR1 File

Browse...

vsGBP.csv

Upload complete

Choose CTR2 File

Browse...

vsGOI.csv

Upload complete

Download

Select 1<sup>st</sup> file downloaded from CalculateLGRs

Select 2<sup>nd</sup> file downloaded from CalculateLGRs

Download datafile

| X.1 | Plate | Row | Column | query.1 | control.1 | norm_query.1 | norm_control.1 | log_norm_query.1 | log_norm_control.1 | mean_usLG |
|-----|-------|-----|--------|---------|-----------|--------------|----------------|------------------|--------------------|-----------|
| 1   | 1     | 1   | 1      | 204.75  | 157.75    | 1.47         | 1.06           | 0.38             | 0.03               | -C        |
| 2   | 2     | 1   | 1      | 259.25  | 287.25    | 1.85         | 1.82           | 0.61             | 0.59               | -C        |
| 3   | 3     | 1   | 1      | 270.00  | 286.75    | 1.60         | 1.67           | 0.46             | 0.51               | C         |
| 4   | 4     | 1   | 1      | 14.25   | 62.50     | 0.08         | 0.35           | -3.01            | -1.04              | 1         |
| 5   | 5     | 1   | 1      | 324.25  | 253.50    | 1.74         | 1.75           | 0.54             | 0.55               | C         |
| 6   | 6     | 1   | 1      | 157.00  | 189.00    | 0.85         | 1.07           | -1.23            | -0.06              | 1         |
| 7   | 7     | 1   | 1      | 280.50  | 304.75    | 1.58         | 2.00           | 0.45             | 0.69               | C         |
| 8   | 8     | 1   | 1      | 242.25  | 307.50    | 1.26         | 1.88           | 0.22             | 0.61               | C         |
| 9   | 9     | 1   | 1      | 297.50  | 225.50    | 1.85         | 1.56           | 0.61             | 0.43               | -C        |
| 10  | 10    | 1   | 1      | 269.50  | 270.75    | 1.57         | 1.91           | 0.45             | 0.64               | C         |
| 11  | 11    | 1   | 1      | 162.75  | 133.25    | 0.85         | 1.02           | -0.18            | 0.00               | C         |
| 12  | 1     | 2   | 1      | 193.50  | 210.75    | 1.39         | 1.41           | 0.33             | 0.34               | C         |
| 13  | 2     | 2   | 1      | 176.00  | 216.50    | 1.26         | 1.37           | 0.23             | 0.31               | C         |

5. Plotting data: note that output files from both scripts (CalculateLGRs and Combine2controls) can be plotted. Plotting works independently from the other scripts, thus any dataset which contains a column called "Mean\_LGR" can be plotted

ScreenGarden CalculateLGRs Combine2controls **Plots**

