Amacrine cells


## One-way Analysis of Variance (ANOVA)

The P value is 0.0020, considered very significant.
Variation among column means is significantly greater than expected
by chance.


Tukey-Kramer Multiple Comparisons Test
If the value of q is greater than 3.974 then the P value is less
than 0.05.


| Comparison | Mean Difference | q | P value | |
|---|---|---|---|---|
| GFP vs Xotx5b | 4.408 | 5.429 | ** | P<0.01 |
| GFP vs Xotx2 | 1.738 | 2.235 | ns | P>0.05 |
| GFP vs otd/Xotx2 | 2.538 | 2.708 | ns | P>0.05 |
| GFP vs otd/Xotx5b | 4.143 | 4.694 | * | P<0.05 |
| Xotx5b vs Xotx2 | -2.670 | 3.435 | ns | P>0.05 |
| Xotx5b vs otd/Xotx2 | -1.869 | 1.994 | ns | P>0.05 |
| Xotx5b vs otd/Xotx5b | -0.2649 | 0.3001 | ns | P>0.05 |
| Xotx2 vs otd/Xotx2 | 0.8009 | 0.8823 | ns | P>0.05 |
| Xotx2 vs otd/Xotx5b | 2.405 | 2.827 | ns | P>0.05 |
| otd/Xotx2 vs otd/Xotx5b | 1.604 | 1.605 | ns | P>0.05 |


| Difference | Mean Difference | 95% Confidence Interval From | To |
|---|---|---|---|
| GFP - Xotx5b | 4.408 | 1.181 | 7.634 |
| GFP - Xotx2 | 1.738 | -1.351 | 4.827 |
| GFP - otd/Xotx2 | 2.538 | -1.187 | 6.264 |
| GFP - otd/Xotx5b | 4.143 | 0.6353 | 7.650 |
| Xotx5b - Xotx2 | -2.670 | -5.759 | 0.4189 |
| Xotx5b - otd/Xotx2 | -1.869 | -5.595 | 1.856 |
| Xotx5b - otd/Xotx5b | -0.2649 | -3.772 | 3.243 |
| Xotx2 - otd/Xotx2 | 0.8009 | -2.806 | 4.408 |
| Xotx2 - otd/Xotx5b | 2.405 | -0.9763 | 5.787 |
| otd/Xotx2 - otd/Xotx5b | 1.604 | -2.367 | 5.576 |


Assumption test: Are the standard deviations of the groups equal?

ANOVA assumes that the data are sampled from populations with identical
SDs. This assumption is tested using the method of Bartlett.

Bartlett statistic (corrected) = 5.293
The P value is 0.2586.
Bartlett's test suggests that the differences among the SDs is
not significant.


Assumption test: Are the data sampled from Gaussian distributions?

ANOVA assumes that the data are sampled from populations that follow

Gaussian distributions. This assumption is tested using the method
Kolmogorov and Smirnov:

| Group | KS | P Value | Passed normality test? |
|---|---|---|---|
| GFP | 0.1229 | >0.10 | Yes |
| Xotx5b | 0.2231 | >0.10 | Yes |
| Xotx2 | 0.1431 | >0.10 | Yes |
| otd/Xotx2 | 0.2179 | >0.10 | Yes |
| otd/Xotx5b | 0.1357 | >0.10 | Yes |

Intermediate calculations. ANOVA table

| Source of variation | Degrees of freedom | Sum of squares | Mean square |
|---|---|---|---|
| Treatments (between columns) | 4 | 188.24 | 47.059 |
| Residuals (within columns) | 63 | 622.87 | 9.887 |
| Total | 67 | 811.11 | |

F = 4.760   =(MStreatment/MSresidual)

Summary of Data

| Group | Number of Points | Mean | Standard Deviation | Standard Error of Mean | Median |
|---|---|---|---|---|---|
| GFP | 15 | 16.218 | 3.790 | 0.9786 | 16.102 |
| Xotx5b | 15 | 11.810 | 3.601 | 0.9299 | 12.150 |
| Xotx2 | 18 | 14.480 | 2.553 | 0.6017 | 14.538 |
| otd/Xotx2 | 9 | 13.679 | 1.994 | 0.6646 | 13.971 |
| otd/Xotx5b | 11 | 12.075 | 3.124 | 0.9419 | 11.620 |

| Group | Minimum | Maximum | 95% Confidence Interval From | To |
|---|---|---|---|---|
| GFP | 9.524 | 22.609 | 14.118 | 18.317 |
| Xotx5b | 1.961 | 18.293 | 9.815 | 13.805 |
| Xotx2 | 7.692 | 20.430 | 13.210 | 15.750 |
| otd/Xotx2 | 10.526 | 15.909 | 12.147 | 15.212 |
| otd/Xotx5b | 5.882 | 17.460 | 9.976 | 14.173 |

*      *      *

Bipolar cells


## One-way Analysis of Variance (ANOVA)

The P value is < 0.0001, considered extremely significant.
Variation among column means is significantly greater than expected
by chance.


Tukey-Kramer Multiple Comparisons Test
If the value of q is greater than 3.974 then the P value is less
than 0.05.


| Comparison | Mean Difference | q | P value | |
|---|---|---|---|---|
| GFP vs Xotx5b | -1.456 | 1.644 | ns | P>0.05 |
| GFP vs Xotx2 | -9.206 | 10.857 | *** | P<0.001 |
| GFP vs otd/Xotx2 | -7.871 | 7.696 | *** | P<0.001 |
| GFP vs otd/Xotx5b | -0.9381 | 0.9743 | ns | P>0.05 |
| Xotx5b vs Xotx2 | -7.751 | 9.140 | *** | P<0.001 |
| Xotx5b vs otd/Xotx2 | -6.415 | 6.273 | *** | P<0.001 |
| Xotx5b vs otd/Xotx5b | 0.5177 | 0.5377 | ns | P>0.05 |
| Xotx2 vs otd/Xotx2 | 1.335 | 1.349 | ns | P>0.05 |
| Xotx2 vs otd/Xotx5b | 8.268 | 8.907 | *** | P<0.001 |
| otd/Xotx2 vs otd/Xotx5b | 6.933 | 6.359 | *** | P<0.001 |

| Difference | Mean Difference | 95% Confidence Interval From | To |
|---|---|---|---|
| GFP - Xotx5b | -1.456 | -4.976 | 2.064 |
| GFP - Xotx2 | -9.206 | -12.576 | -5.836 |
| GFP - otd/Xotx2 | -7.871 | -11.935 | -3.807 |
| GFP - otd/Xotx5b | -0.9381 | -4.764 | 2.888 |
| Xotx5b - Xotx2 | -7.751 | -11.121 | -4.381 |
| Xotx5b - otd/Xotx2 | -6.415 | -10.479 | -2.351 |
| Xotx5b - otd/Xotx5b | 0.5177 | -3.309 | 4.344 |
| Xotx2 - otd/Xotx2 | 1.335 | -2.600 | 5.271 |
| Xotx2 - otd/Xotx5b | 8.268 | 4.579 | 11.957 |
| otd/Xotx2 - otd/Xotx5b | 6.933 | 2.600 | 11.265 |


Assumption test: Are the standard deviations of the groups equal?

ANOVA assumes that the data are sampled from populations with identical
SDs. This assumption is tested using the method of Bartlett.

Bartlett statistic (corrected) = 6.918
The P value is 0.1403.
Bartlett's test suggests that the differences among the SDs is
not significant.


Assumption test: Are the data sampled from Gaussian distributions?

ANOVA assumes that the data are sampled from populations that follow

Gaussian distributions. This assumption is tested using the method
Kolmogorov and Smirnov:

```
      Group        KS     P Value  Passed normality test?
=============== ======  ========  =======================
          GFP   0.1836 >0.10      Yes
        Xotx5b  0.1675 >0.10      Yes
         Xotx2  0.2534 >0.10      Yes
     otd/Xotx2  0.2168 >0.10      Yes
    otd/Xotx5b  0.1610 >0.10      Yes
```

Intermediate calculations. ANOVA table

```
         Source of            Degrees of  Sum of    Mean
         variation              freedom   squares   square
=========================== ==========  ========  ========
Treatments (between columns)         4    1062.8    265.71
Residuals (within columns)          63     741.32   11.767
--------------------------- ----------  --------
Total                               67    1804.2
```

F = 22.581  =(MStreatment/MSresidual)

<center>Summary of Data</center>

```
                Number                     Standard
                  of            Standard   Error of
      Group      Points   Mean   Deviation   Mean     Median
=============== ======  ======== =========  ========  ========
          GFP     15     29.028    2.034     0.5251    28.571
        Xotx5b    15     30.484    3.622     0.9352    31.148
         Xotx2    18     38.234    3.532     0.8326    38.152
     otd/Xotx2     9     36.899    4.515     1.505     36.029
    otd/Xotx5b    11     29.966    3.529     1.064     28.929
```

```
                                        95% Confidence Interval
      Group    Minimum  Maximum     From        To
=============== ======== ======== ========== ==========
          GFP   26.667   33.333     27.901     30.154
        Xotx5b  24.735   35.000     28.478     32.490
         Xotx2  34.409   50.000     36.477     39.991
     otd/Xotx2  32.121   47.368     33.428     40.369
    otd/Xotx5b  25.000   35.294     27.595     32.337
```

<center>*     *     *</center>

Photoreceptors


## One-way Analysis of Variance (ANOVA)
_____

The P value is < 0.0001, considered extremely significant.
Variation among column means is significantly greater than expected
by chance.


Tukey-Kramer Multiple Comparisons Test
_____
If the value of q is greater than 3.974 then the P value is less
than 0.05.


|  | Mean | | |
| Comparison | Difference | q | P value |
|===|===|===|===|
| GFP vs Xotx5b | -9.406 | 9.110 | *** P<0.001 |
| GFP vs Xotx2 | 6.430 | 6.504 | *** P<0.001 |
| GFP vs otd/Xotx2 | 0.02300 | 0.01929 | ns  P>0.05 |
| GFP vs otd/Xotx5b | -4.633 | 4.127 | *   P<0.05 |
| Xotx5b vs Xotx2 | 15.835 | 16.019 | *** P<0.001 |
| Xotx5b vs otd/Xotx2 | 9.429 | 7.908 | *** P<0.001 |
| Xotx5b vs otd/Xotx5b | 4.773 | 4.252 | *   P<0.05 |
| Xotx2 vs otd/Xotx2 | -6.407 | 5.550 | **  P<0.01 |
| Xotx2 vs otd/Xotx5b | -11.062 | 10.223 | *** P<0.001 |
| otd/Xotx2 vs otd/Xotx5b | -4.656 | 3.663 | ns  P>0.05 |

|  | Mean | 95% Confidence Interval | |
| Difference | Difference | From | To |
|===|===|===|===|
| GFP - Xotx5b | -9.406 | -13.509 | -5.302 |
| GFP - Xotx2 | 6.430 | 2.501 | 10.358 |
| GFP - otd/Xotx2 | 0.02300 | -4.715 | 4.761 |
| GFP - otd/Xotx5b | -4.633 | -9.093 | -0.1719 |
| Xotx5b - Xotx2 | 15.835 | 11.907 | 19.764 |
| Xotx5b - otd/Xotx2 | 9.429 | 4.691 | 14.167 |
| Xotx5b - otd/Xotx5b | 4.773 | 0.3125 | 9.234 |
| Xotx2 - otd/Xotx2 | -6.407 | -10.994 | -1.819 |
| Xotx2 - otd/Xotx5b | -11.062 | -15.363 | -6.762 |
| otd/Xotx2 - otd/Xotx5b | -4.656 | -9.706 | 0.3951 |


Assumption test: Are the standard deviations of the groups equal?
_____

ANOVA assumes that the data are sampled from populations with identical
SDs. This assumption is tested using the method of Bartlett.

Bartlett statistic (corrected) = 25.821
The P value is < 0.0001.
Bartlett's test suggests that the differences among the SDs is
extremely significant.
Since ANOVA assumes populations with equal SDs, you should consider
transforming your data (reciprocal or log) or selecting a
nonparametric test.

Assumption test: Are the data sampled from Gaussian distributions?

ANOVA assumes that the data are sampled from populations that follow
Gaussian distributions. This assumption is tested using the method
Kolmogorov and Smirnov:

| Group | KS | P Value | Passed normality test? |
|---|---|---|---|
| GFP | 0.08800 | >0.10 | Yes |
| Xotx5b | 0.2178 | >0.10 | Yes |
| Xotx2 | 0.1602 | >0.10 | Yes |
| otd/Xotx2 | 0.1433 | >0.10 | Yes |
| otd/Xotx5b | 0.1910 | >0.10 | Yes |

Intermediate calculations. ANOVA table

| Source of variation | Degrees of freedom | Sum of squares | Mean square |
|---|---|---|---|
| Treatments (between columns) | 4 | 2222.1 | 555.52 |
| Residuals (within columns) | 63 | 1007.4 | 15.991 |
| Total | 67 | 3229.5 | |

F = 34.739  =(MStreatment/MSresidual)

Summary of Data

| Group | Number of Points | Mean | Standard Deviation | Standard Error of Mean | Median |
|---|---|---|---|---|---|
| GFP | 15 | 30.393 | 2.861 | 0.7388 | 30.000 |
| Xotx5b | 15 | 39.799 | 5.172 | 1.335 | 38.000 |
| Xotx2 | 18 | 23.964 | 2.278 | 0.5370 | 23.785 |
| otd/Xotx2 | 9 | 30.370 | 7.001 | 2.334 | 31.579 |
| otd/Xotx5b | 11 | 35.026 | 1.950 | 0.5878 | 35.484 |

| Group | Minimum | Maximum | 95% Confidence Interval From | To |
|---|---|---|---|---|
| GFP | 26.271 | 35.766 | 28.809 | 31.978 |
| Xotx5b | 34.756 | 51.852 | 36.935 | 42.663 |
| Xotx2 | 19.355 | 27.404 | 22.830 | 25.097 |
| otd/Xotx2 | 20.455 | 39.344 | 24.989 | 35.752 |
| otd/Xotx5b | 31.818 | 37.870 | 33.716 | 36.336 |

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Ganglion cells


_____ One-way Analysis of Variance (ANOVA) _____


The P value is 0.0019, considered very significant.
Variation among column means is significantly greater than expected
by chance.


Tukey-Kramer Multiple Comparisons Test
If the value of q is greater than 3.974 then the P value is less
than 0.05.


|                   Comparison | Mean Difference | q | P value | |
|===|===|===|===|===|
| GFP vs Xotx5b | 4.113 | 4.191 | * | P<0.05 |
| GFP vs Xotx2 | 2.634 | 2.803 | ns | P>0.05 |
| GFP vs otd/Xotx2 | 4.328 | 3.819 | ns | P>0.05 |
| GFP vs otd/Xotx5b | -0.9305 | 0.8721 | ns | P>0.05 |
| Xotx5b vs Xotx2 | -1.479 | 1.574 | ns | P>0.05 |
| Xotx5b vs otd/Xotx2 | 0.2151 | 0.1898 | ns | P>0.05 |
| Xotx5b vs otd/Xotx5b | -5.044 | 4.727 | * | P<0.05 |
| Xotx2 vs otd/Xotx2 | 1.694 | 1.544 | ns | P>0.05 |
| Xotx2 vs otd/Xotx5b | -3.564 | 3.465 | ns | P>0.05 |
| otd/Xotx2 vs otd/Xotx5b | -5.259 | 4.353 | * | P<0.05 |

|                   Difference | Mean Difference | 95% Confidence Interval From | To |
|===|===|===|===|
| GFP - Xotx5b | 4.113 | 0.2125 | 8.014 |
| GFP - Xotx2 | 2.634 | -1.101 | 6.368 |
| GFP - otd/Xotx2 | 4.328 | -0.1758 | 8.832 |
| GFP - otd/Xotx5b | -0.9305 | -5.171 | 3.310 |
| Xotx5b - Xotx2 | -1.479 | -5.214 | 2.255 |
| Xotx5b - otd/Xotx2 | 0.2151 | -4.289 | 4.719 |
| Xotx5b - otd/Xotx5b | -5.044 | -9.284 | -0.8033 |
| Xotx2 - otd/Xotx2 | 1.694 | -2.667 | 6.055 |
| Xotx2 - otd/Xotx5b | -3.564 | -7.653 | 0.5238 |
| otd/Xotx2 - otd/Xotx5b | -5.259 | -10.060 | -0.4574 |


Assumption test: Are the standard deviations of the groups equal?


ANOVA assumes that the data are sampled from populations with identical
SDs. This assumption is tested using the method of Bartlett.

Bartlett statistic (corrected) = 4.267
The P value is 0.3711.
Bartlett's test suggests that the differences among the SDs is
not significant.


Assumption test: Are the data sampled from Gaussian distributions?


ANOVA assumes that the data are sampled from populations that follow

Gaussian distributions. This assumption is tested using the method
Kolmogorov and Smirnov:

| Group | KS | P Value | Passed normality test? |
|---|---|---|---|
| GFP | 0.2191 | >0.10 | Yes |
| Xotx5b | 0.1607 | >0.10 | Yes |
| Xotx2 | 0.1468 | >0.10 | Yes |
| otd/Xotx2 | 0.1868 | >0.10 | Yes |
| otd/Xotx5b | 0.1903 | >0.10 | Yes |

Intermediate calculations. ANOVA table

| Source of variation | Degrees of freedom | Sum of squares | Mean square |
|---|---|---|---|
| Treatments (between columns) | 4 | 277.42 | 69.354 |
| Residuals (within columns) | 63 | 910.42 | 14.451 |
| Total | 67 | 1187.8 | |

F = 4.799  =(MStreatment/MSresidual)

## Summary of Data

| Group | Number of Points | Mean | Standard Deviation | Standard Error of Mean | Median |
|---|---|---|---|---|---|
| GFP | 15 | 15.242 | 3.480 | 0.8985 | 14.365 |
| Xotx5b | 15 | 11.129 | 3.422 | 0.8837 | 10.448 |
| Xotx2 | 18 | 12.608 | 4.061 | 0.9571 | 12.528 |
| otd/Xotx2 | 9 | 10.914 | 5.249 | 1.750 | 10.294 |
| otd/Xotx5b | 11 | 16.173 | 2.760 | 0.8322 | 16.129 |

| Group | Minimum | Maximum | 95% Confidence Interval From | To |
|---|---|---|---|---|
| GFP | 11.429 | 23.810 | 13.315 | 17.169 |
| Xotx5b | 3.704 | 16.260 | 9.233 | 13.024 |
| Xotx2 | 6.452 | 21.739 | 10.589 | 14.628 |
| otd/Xotx2 | 3.509 | 19.277 | 6.879 | 14.948 |
| otd/Xotx5b | 12.088 | 20.710 | 14.318 | 18.027 |

*     *     *

Horizontal cells

## One-way Analysis of Variance (ANOVA)

The P value is 0.0129, considered significant.
Variation among column means is significantly greater than expected
by chance.

Tukey-Kramer Multiple Comparisons Test
If the value of q is greater than 3.974 then the P value is less
than 0.05.

| Comparison | Mean Difference | q | P value | |
|---|---|---|---|---|
| GFP vs Xotx5b | 2.341 | 2.563 | ns | P>0.05 |
| GFP vs Xotx2 | -1.595 | 1.824 | ns | P>0.05 |
| GFP vs otd/Xotx2 | 0.9812 | 0.9304 | ns | P>0.05 |
| GFP vs otd/Xotx5b | 2.358 | 2.375 | ns | P>0.05 |
| Xotx5b vs Xotx2 | -3.936 | 4.501 | * | P<0.05 |
| Xotx5b vs otd/Xotx2 | -1.359 | 1.289 | ns | P>0.05 |
| Xotx5b vs otd/Xotx5b | 0.01755 | 0.01768 | ns | P>0.05 |
| Xotx2 vs otd/Xotx2 | 2.576 | 2.523 | ns | P>0.05 |
| Xotx2 vs otd/Xotx5b | 3.953 | 4.130 | * | P<0.05 |
| otd/Xotx2 vs otd/Xotx5b | 1.377 | 1.225 | ns | P>0.05 |

| Difference | Mean Difference | 95% Confidence Interval From | To |
|---|---|---|---|
| GFP - Xotx5b | 2.341 | -1.289 | 5.970 |
| GFP - Xotx2 | -1.595 | -5.070 | 1.880 |
| GFP - otd/Xotx2 | 0.9812 | -3.210 | 5.172 |
| GFP - otd/Xotx5b | 2.358 | -1.588 | 6.304 |
| Xotx5b - Xotx2 | -3.936 | -7.410 | -0.4606 |
| Xotx5b - otd/Xotx2 | -1.359 | -5.550 | 2.832 |
| Xotx5b - otd/Xotx5b | 0.01755 | -3.928 | 3.963 |
| Xotx2 - otd/Xotx2 | 2.576 | -1.482 | 6.634 |
| Xotx2 - otd/Xotx5b | 3.953 | 0.1492 | 7.757 |
| otd/Xotx2 - otd/Xotx5b | 1.377 | -3.091 | 5.844 |

Assumption test: Are the standard deviations of the groups equal?

ANOVA assumes that the data are sampled from populations with identical
SDs. This assumption is tested using the method of Bartlett.

Bartlett statistic (corrected) = 10.120
The P value is 0.0385.
Bartlett's test suggests that the differences among the SDs is
significant.
Since ANOVA assumes populations with equal SDs, you should consider
transforming your data (reciprocal or log) or selecting a
nonparametric test.

Assumption test: Are the data sampled from Gaussian distributions?

ANOVA assumes that the data are sampled from populations that follow
Gaussian distributions. This assumption is tested using the method
Kolmogorov and Smirnov:

| Group | KS | P Value | Passed normality test? |
|---|---|---|---|
| GFP | 0.1247 | >0.10 | Yes |
| Xotx5b | 0.1306 | >0.10 | Yes |
| Xotx2 | 0.2069 | >0.10 | Yes |
| otd/Xotx2 | 0.1482 | >0.10 | Yes |
| otd/Xotx5b | 0.1615 | >0.10 | Yes |

Intermediate calculations. ANOVA table

| Source of variation | Degrees of freedom | Sum of squares | Mean square |
|---|---|---|---|
| Treatments (between columns) | 4 | 172.87 | 43.218 |
| Residuals (within columns) | 63 | 788.22 | 12.511 |
| Total | 67 | 961.10 | |

F = 3.454  =(MStreatment/MSresidual)


Summary of Data

| Group | Number of Points | Mean | Standard Deviation | Standard Error of Mean | Median |
|---|---|---|---|---|---|
| GFP | 15 | 9.119 | 3.194 | 0.8247 | 8.571 |
| Xotx5b | 15 | 6.779 | 2.891 | 0.7464 | 6.504 |
| Xotx2 | 18 | 10.714 | 4.979 | 1.173 | 10.148 |
| otd/Xotx2 | 9 | 8.138 | 2.631 | 0.8769 | 8.560 |
| otd/Xotx5b | 11 | 6.761 | 2.273 | 0.6853 | 6.690 |

| Group | Minimum | Maximum | 95% Confidence Interval From | To |
|---|---|---|---|---|
| GFP | 4.762 | 15.254 | 7.350 | 10.888 |
| Xotx5b | 1.724 | 12.500 | 5.178 | 8.380 |
| Xotx2 | 3.158 | 25.806 | 8.238 | 13.190 |
| otd/Xotx2 | 4.412 | 12.821 | 6.116 | 10.160 |
| otd/Xotx5b | 3.297 | 10.345 | 5.234 | 8.288 |


                              *      *      *