

## Statistical analysis of *Agrobacterium* infiltrated leaves

Absorbance 470 nm

### pL2HS01 vs. pL2HS02

<i>Treatment 1 – pL2HS01</i>	<i>Treatment 2 – pL2HS02</i>
$N_2: 4$	$N_2: 5$
$df_2 = N - 1 = 4 - 1 = 3$	$df_2 = N - 1 = 5 - 1 = 4$
$M_2: 3.52$	$M_2: 6.45$
$SS_2: 2.14$	$SS_2: 2.95$
$s^2_2 = SS_2/(N - 1) = 2.14/(4-1) = 0.71$	$s^2_2 = SS_2/(N - 1) = 2.95/(5-1) = 0.74$

#### T-value Calculation

$$s^2_p = ((df_1/(df_1 + df_2)) * s^2_1) + ((df_2/(df_2 + df_2)) * s^2_2) = ((3/7) * 0.71) + ((4/7) * 0.74) = 0.73$$

$$s^2_{M1} = s^2_p/N_1 = 0.73/4 = 0.18$$

$$s^2_{M2} = s^2_p/N_2 = 0.73/5 = 0.15$$

$$t = (M_1 - M_2)/\sqrt{(s^2_{M1} + s^2_{M2})} = -2.93/\sqrt{0.33} = -5.13$$

The t-value is -5.12852. The **p-value is .000678**. The result is significant at  $p < .05$ .

### pL2HS01 vs. pL2SG2

<i>Treatment 1 – pL2HS01</i>	<i>Treatment 2 – pL2SG2</i>
$N_2: 4$	$N_2: 5$
$df_2 = N - 1 = 4 - 1 = 3$	$df_2 = N - 1 = 5 - 1 = 4$
$M_2: 3.52$	$M_2: 3.8$
$SS_2: 2.14$	$SS_2: 1.26$
$s^2_2 = SS_2/(N - 1) = 2.14/(4-1) = 0.71$	$s^2_2 = SS_2/(N - 1) = 1.26/(5-1) = 0.31$

#### T-value Calculation

$$s^2_p = ((df_1/(df_1 + df_2)) * s^2_1) + ((df_2/(df_2 + df_2)) * s^2_2) = ((3/7) * 0.71) + ((4/7) * 0.31) = 0.48$$

$$s^2_{M1} = s^2_p/N_1 = 0.48/4 = 0.12$$

$$s^2_{M2} = s^2_p/N_2 = 0.48/5 = 0.1$$

$$t = (M_1 - M_2)/\sqrt{(s^2_{M1} + s^2_{M2})} = -0.29/\sqrt{0.22} = -0.61$$

The t-value is -0.61406. The **p-value is .279299**. The result is *not* significant at  $p < .05$ .

### pL2HS01 vs. pL2SG4

<i>Treatment 1 – pL2HS01</i>	<i>Treatment 2 – pL2SG4</i>
$N_2: 4$ $df_2 = N - 1 = 4 - 1 = 3$ $M_2: 3.52$ $SS_2: 2.14$ $s^2_2 = SS_2/(N - 1) = 2.14/(4-1) = 0.71$	$N_2: 5$ $df_2 = N - 1 = 5 - 1 = 4$ $M_2: 5.21$ $SS_2: 10$ $s^2_2 = SS_2/(N - 1) = 10/(5-1) = 2.5$

#### T-value Calculation

$$s^2_p = ((df_1/(df_1 + df_2)) * s^2_1) + ((df_2/(df_2 + df_2)) * s^2_2) = ((3/7) * 0.71) + ((4/7) * 2.5) = 1.73$$

$$s^2_{M1} = s^2_p/N_1 = 1.73/4 = 0.43$$

$$s^2_{M2} = s^2_p/N_2 = 1.73/5 = 0.35$$

$$t = (M_1 - M_2)/\sqrt{(s^2_{M1} + s^2_{M2})} = -1.7/\sqrt{0.78} = -1.92$$

The t-value is -1.92123. The **p-value is .048078**. The result is significant at  $p < .05$ .

### pL2HS01 vs. pL2SG5

<i>Treatment 1 – pL2HS01</i>	<i>Treatment 2 – pL2SG5</i>
$N_2: 4$ $df_2 = N - 1 = 4 - 1 = 3$ $M_2: 3.52$ $SS_2: 2.14$ $s^2_2 = SS_2/(N - 1) = 2.14/(4-1) = 0.71$	$N_2: 5$ $df_2 = N - 1 = 5 - 1 = 4$ $M_2: 7.11$ $SS_2: 4.98$ $s^2_2 = SS_2/(N - 1) = 4.98/(5-1) = 1.24$

#### T-value Calculation

$$s^2_p = ((df_1/(df_1 + df_2)) * s^2_1) + ((df_2/(df_2 + df_2)) * s^2_2) = ((3/7) * 0.71) + ((4/7) * 1.24) = 1.02$$

$$s^2_{M1} = s^2_p/N_1 = 1.02/4 = 0.25$$

$$s^2_{M2} = s^2_p/N_2 = 1.02/5 = 0.2$$

$$t = (M_1 - M_2)/\sqrt{(s^2_{M1} + s^2_{M2})} = -3.6/\sqrt{0.46} = -5.32$$

The t-value is -5.32. The **p-value is .00055**. The result is significant at  $p < .05$ .

## Absorbance 540 nm

### pL2HS01 vs. pL2HS02

<i>Treatment 1 – pL2HS01</i>	<i>Treatment 2 – pL2HS02</i>
$N_1: 4$	$N_2: 5$
$df_1 = N - 1 = 4 - 1 = 3$	$df_2 = N - 1 = 5 - 1 = 4$
$M_1: 0.09$	$M_2: 8.51$
$SS_1: 0.01$	$SS_2: 11.96$
$s^2_1 = SS_1/(N - 1) = 0.01/(4-1) = 0$	$s^2_2 = SS_2/(N - 1) = 11.96/(5-1) = 2.99$

#### T-value Calculation

$$s^2_p = ((df_1/(df_1 + df_2)) * s^2_1) + ((df_2/(df_1 + df_2)) * s^2_2) = ((3/7) * 0) + ((4/7) * 2.99) = 1.71$$

$$s^2_{M1} = s^2_p/N_1 = 1.71/4 = 0.43$$

$$s^2_{M2} = s^2_p/N_2 = 1.71/5 = 0.34$$

$$t = (M_1 - M_2)/\sqrt{(s^2_{M1} + s^2_{M2})} = -8.42/\sqrt{0.77} = -9.6$$

The t-value is -9.59602. The **p-value is .000014**. The result is significant at  $p < .05$ .

### pL2HS01 vs. pL2SG2

<i>Treatment 1 – pL2HS01</i>	<i>Treatment 2 – pL2SG2</i>
$N_1: 4$	$N_2: 5$
$df_1 = N - 1 = 4 - 1 = 3$	$df_2 = N - 1 = 5 - 1 = 4$
$M_1: 0.09$	$M_2: 1.08$
$SS_1: 0.01$	$SS_2: 0.31$
$s^2_1 = SS_1/(N - 1) = 0.01/(4-1) = 0$	$s^2_2 = SS_2/(N - 1) = 0.31/(5-1) = 0.08$

#### T-value Calculation

$$s^2_p = ((df_1/(df_1 + df_2)) * s^2_1) + ((df_2/(df_1 + df_2)) * s^2_2) = ((3/7) * 0) + ((4/7) * 0.08) = 0.05$$

$$s^2_{M1} = s^2_p/N_1 = 0.05/4 = 0.01$$

$$s^2_{M2} = s^2_p/N_2 = 0.05/5 = 0.01$$

$$t = (M_1 - M_2)/\sqrt{(s^2_{M1} + s^2_{M2})} = -0.99/\sqrt{0.02} = -6.97$$

The t-value is -6.97131. The **p-value is .000109**. The result is significant at  $p < .05$ .

### pL2HS01 vs. pL2SG4

<i>Treatment 1 – pL2HS01</i>	<i>Treatment 2 – pL2SG4</i>
$N_1: 4$	$N_2: 5$
$df_1 = N - 1 = 4 - 1 = 3$	$df_2 = N - 1 = 5 - 1 = 4$
$M_1: 0.09$	$M_2: 0.08$
$SS_1: 0.01$	$SS_2: 0.01$
$s^2_1 = SS_1/(N - 1) = 0.01/(4-1) = 0$	$s^2_2 = SS_2/(N - 1) = 0.01/(5-1) = 0$

#### T-value Calculation

$$s^2_p = ((df_1/(df_1 + df_2)) * s^2_1) + ((df_2/(df_1 + df_2)) * s^2_2) = ((3/7) * 0) + ((4/7) * 0) = 0$$

$$s^2_{M1} = s^2_p/N_1 = 0/4 = 0$$

$$s^2_{M2} = s^2_p/N_2 = 0/5 = 0$$

$$t = (M_1 - M_2)/\sqrt{(s^2_{M1} + s^2_{M2})} = 0/\sqrt{0} = 0.14$$

The t-value is 0.13723. The **p-value is .447357**. The result is *not* significant at  $p < .05$ .

### pL2HS01 vs. pL2SG5

<i>Treatment 1 – pL2HS01</i>	<i>Treatment 2 – pL2SG5</i>
$N_1: 4$	$N_2: 5$
$df_1 = N - 1 = 4 - 1 = 3$	$df_2 = N - 1 = 5 - 1 = 4$
$M_1: 0.09$	$M_2: 0.15$
$SS_1: 0.01$	$SS_2: 0.01$
$s^2_1 = SS_1/(N - 1) = 0.01/(4-1) = 0$	$s^2_2 = SS_2/(N - 1) = 0.01/(5-1) = 0$

#### T-value Calculation

$$s^2_p = ((df_1/(df_1 + df_2)) * s^2_1) + ((df_2/(df_1 + df_2)) * s^2_2) = ((3/7) * 0) + ((4/7) * 0) = 0$$

$$s^2_{M1} = s^2_p/N_1 = 0/4 = 0$$

$$s^2_{M2} = s^2_p/N_2 = 0/5 = 0$$

$$t = (M_1 - M_2)/\sqrt{(s^2_{M1} + s^2_{M2})} = -0.06/\sqrt{0} = -1.71$$

The t-value is -1.70604. The **p-value is .065883**. The result is *not* significant at  $p < .05$ .

## Fluorescence 470/510 nm

### pL2HS01 vs. pL2HS02

Treatment 1 – pL2HS01	Treatment 2 – pL2HS02
$N_1: 4$ $df_1 = N - 1 = 4 - 1 = 3$ $M_1: 5161.75$ $SS_1: 3048208.69$ $s^2_1 = SS_1/(N - 1) = 3048208.69/(4-1) = 1016069.56$	$N_2: 5$ $df_2 = N - 1 = 5 - 1 = 4$ $M_2: 7038.6$ $SS_2: 21563008.12$ $s^2_2 = SS_2/(N - 1) = 21563008.12/(5-1)=5390752.03$

#### T-value Calculation

$$s^2_p = ((df_1/(df_1 + df_2)) * s^2_1) + ((df_2/(df_2 + df_2)) * s^2_2) = ((3/7) * 1016069.56) + ((4/7) * 5390752.03) = 3515888.12$$

$$s^2_{M1} = s^2_p/N_1 = 3515888.12/4 = 878972.03$$

$$s^2_{M2} = s^2_p/N_2 = 3515888.12/5 = 703177.62$$

$$t = (M_1 - M_2)/\sqrt{(s^2_{M1} + s^2_{M2})} = -1876.85/\sqrt{1582149.65} = -1.49$$

The t-value is -1.49213. The **p-value is .089648**. The result is *not* significant at  $p < .05$ .

### pL2HS01 vs. pL2SG2

Treatment 1 – pL2HS01	Treatment 2 – pL2HS02
$N_1: 4$ $df_1 = N - 1 = 4 - 1 = 3$ $M_1: 5161.75$ $SS_1: 3048208.69$ $s^2_1 = SS_1/(N - 1) = 3048208.69/(4-1) = 1016069.56$	$N_2: 5$ $df_2 = N - 1 = 5 - 1 = 4$ $M_2: 4179.87$ $SS_2: 1279037.37$ $s^2_2 = SS_2/(N - 1) = 1279037.37/(5-1) = 319759.34$

#### T-value Calculation

$$s^2_p = ((df_1/(df_1 + df_2)) * s^2_1) + ((df_2/(df_2 + df_2)) * s^2_2) = ((3/7) * 1016069.56) + ((4/7) * 319759.34) = 618178.01$$

$$s^2_{M1} = s^2_p/N_1 = 618178.01/4 = 154544.5$$

$$s^2_{M2} = s^2_p/N_2 = 618178.01/5 = 123635.6$$

$$t = (M_1 - M_2)/\sqrt{(s^2_{M1} + s^2_{M2})} = 981.88/\sqrt{278180.1} = 1.86$$

The t-value is 1.86164. The **p-value is .052479**. The result is *not* significant at  $p < .05$ .

### pL2HS01 vs. pL2SG4

Treatment 1 – pL2HS01	Treatment 2 – pL2SG4
$N_1: 4$ $df_1 = N - 1 = 4 - 1 = 3$ $M_1: 5161.75$ $SS_1: 3048208.69$ $s^2_1 = SS_1/(N - 1) = 3048208.69/(4-1) = 1016069.56$	$N_2: 5$ $df_2 = N - 1 = 5 - 1 = 4$ $M_2: 141297.73$ $SS_2: 20816203335.99$ $s^2_2 = SS_2/(N - 1) = 20816203335.99/(5-1) = 5204050834$

#### T-value Calculation

$$s^2_p = ((df_1/(df_1 + df_2)) * s^2_1) + ((df_2/(df_1 + df_2)) * s^2_2) = ((3/7) * 1016069.56) + ((4/7) * 5204050834) = 2974178792.1$$

$$s^2_{M1} = s^2_p/N_1 = 2974178792.1/4 = 743544698.02$$

$$s^2_{M2} = s^2_p/N_2 = 2974178792.1/5 = 594835758.42$$

$$t = (M_1 - M_2)/\sqrt{(s^2_{M1} + s^2_{M2})} = -136135.99/\sqrt{1338380456.44} = -3.72$$

The t-value is -3.7212. The **p-value is .003722**. The result is significant at  $p < .05$ .

### pL2HS01 vs. pL2SG5

Treatment 1 – pL2HS01	Treatment 2 – pL2SG5
$N_1: 4$ $df_1 = N - 1 = 4 - 1 = 3$ $M_1: 5161.75$ $SS_1: 3048208.69$ $s^2_1 = SS_1/(N - 1) = 3048208.69/(4-1) = 1016069.56$	$N_2: 5$ $df_2 = N - 1 = 5 - 1 = 4$ $M_2: 235344.4$ $SS_2: 592701093.86$ $s^2_2 = SS_2/(N - 1) = 592701093.86/(5-1) = 148175273.46$

#### T-value Calculation

$$s^2_p = ((df_1/(df_1 + df_2)) * s^2_1) + ((df_2/(df_1 + df_2)) * s^2_2) = ((3/7) * 1016069.56) + ((4/7) * 148175273.46) = 85107043.22$$

$$s^2_{M1} = s^2_p/N_1 = 85107043.22/4 = 21276760.81$$

$$s^2_{M2} = s^2_p/N_2 = 85107043.22/5 = 17021408.64$$

$$t = (M_1 - M_2)/\sqrt{(s^2_{M1} + s^2_{M2})} = -230182.65/\sqrt{38298169.45} = -37.19$$

The t-value is -37.19492. The **p-value is < .00001**. The result is significant at  $p < .05$ .