In Vitro Aphid Choice UV

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Load Libraries

```
pacman::p_load(ggplot2, readxl, ggbeeswarm, readr, dplyr, tidyr, tidyverse, devtools,
    cowplot, knitr, emmeans, lme4, lmerTest, RColorBrewer, viridis, install = FALSE)
```

Load Data

```
aphid_choice_raw <- read_excel("data/alate_choice_in_vitro.xlsx") %>%
    mutate(block = as.factor(block))
```

Summarize aphid counts

```
aphid_choice_sum <- aphid_choice_raw %>%
    group_by(block, strain, treatment, plate, UV) %>%
    summarize(total_alates_4_hrs = sum(alates_4_hrs), total_nymphs_4_hrs = sum(nymphs_4_hrs),
        total_alates_24_hrs = sum(alates_24_hrs), total_nymphs_24_hrs = sum(nymphs_24_hrs),
        .groups = "drop")

# reshape

aphid_choice_sum <- aphid_choice_sum %>%
    pivot_wider(names_from = treatment, values_from = c(total_alates_4_hrs, total_nymphs_4_hrs,
```

```
        total_alates_24_hrs, total_nymphs_24_hrs), names_glue = "{.value}_{treatment}") %>%
    select(block, strain, plate, UV, alates_PPM_4_hrs = total_alates_4_hrs_PPM, alates_supernatant_4_hrs
        nymphs_PPM_4_hrs = total_nymphs_4_hrs_PPM, nymphs_supernatant_4_hrs = total_nymphs_4_hrs_superna
        alates_PPM_24_hrs = total_alates_24_hrs_PPM, alates_supernatant_24_hrs = total_alates_24_hrs_su
        nymphs_PPM_24_hrs = total_nymphs_24_hrs_PPM, nymphs_supernatant_24_hrs = total_nymphs_24_hrs_su
    mutate(sum_alates_4_hrs = alates_supernatant_4_hrs + alates_PPM_4_hrs, sum_nymphs_4_hrs = nymphs_su
        nymphs_PPM_4_hrs, sum_alates_24_hrs = alates_supernatant_24_hrs + alates_PPM_24_hrs,
        sum_nymphs_24_hrs = nymphs_supernatant_24_hrs + nymphs_PPM_24_hrs, total_alates_10_or_more = if
            10, "yes", "no")) %>%
    filter(sum_alates_4_hrs >= 5)
```

Calculate percent aphid counts and deviations from 50%

```
# separate by plate calculate percents
aphid_choice_percent_plate <- aphid_choice_sum %>%
    group_by(block, plate, UV, strain, total_alates_10_or_more) %>%
    summarize(percent_choice_4hrs = (100 * (alates_supernatant_4_hrs/sum_alates_4_hrs)),
        percent_choice_24hrs = (100 * (alates_supernatant_24_hrs/sum_alates_24_hrs)),
        percent_nymphs_4hrs = (100 * (nymphs_supernatant_4_hrs/sum_nymphs_4_hrs)),
        percent_nymphs_24hrs = (100 * (nymphs_supernatant_24_hrs/sum_nymphs_24_hrs)),
        ) %>%
    mutate(percent_diff_from_50_4hrs = percent_choice_4hrs - 50, percent_diff_from_50_24hrs = percent_c
        50  # Calculate the difference from 50%
)
```

```
## `summarise()` has grouped output by 'block', 'plate', 'UV', 'strain'. You can
## override using the `.groups` argument.
```

```
# Calculate the mean for UV and no UV groups
aphid_choice_mean <- aphid_choice_percent_plate %>%
    group_by(UV, strain) %>%
    summarise(mean_percent_diff_from_50_4hrs = mean(percent_diff_from_50_4hrs, na.rm = TRUE),
        mean_percent_diff_from_50_24hrs = mean(percent_diff_from_50_24hrs, na.rm = TRUE)) %>%
    ungroup()
```

```
## `summarise()` has grouped output by 'UV'. You can override using the `.groups`
## argument.
```

Plots

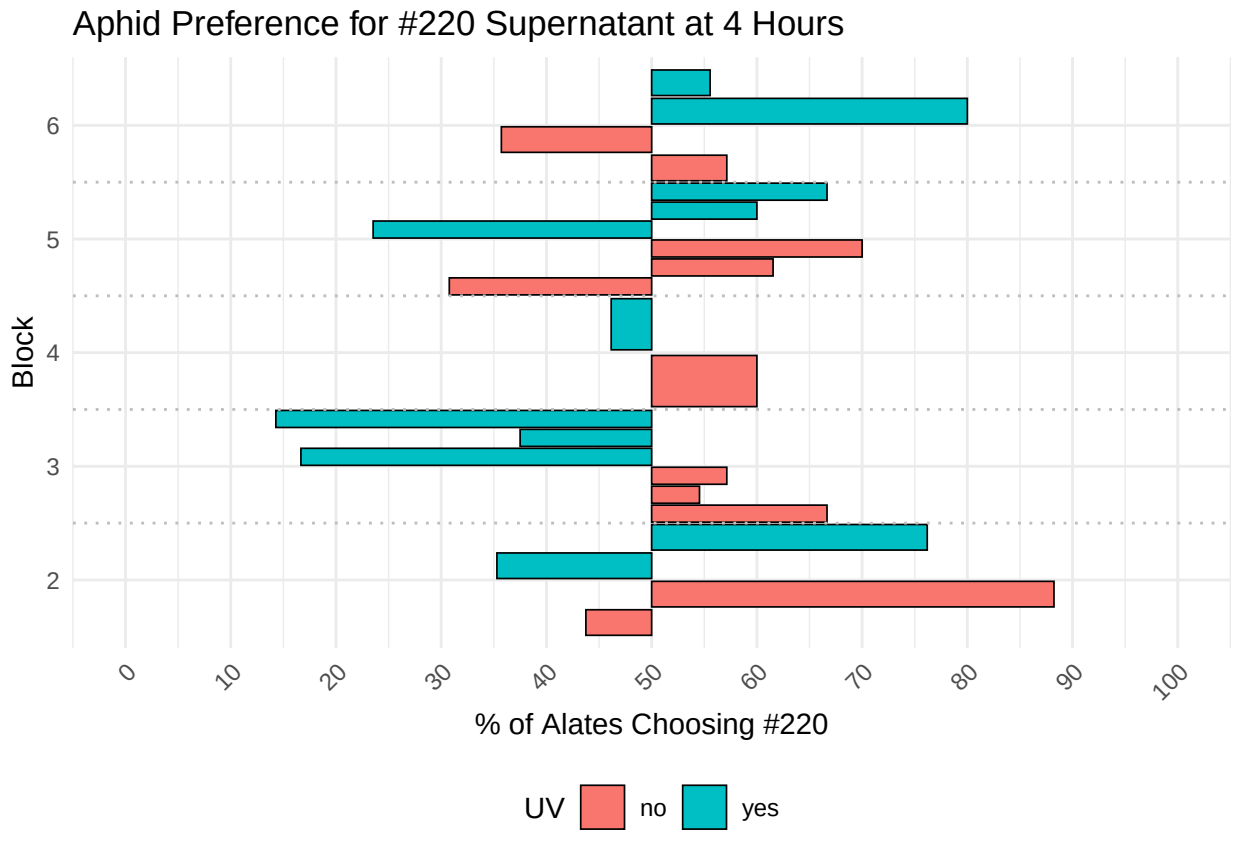
4 Hour Alate Choice

```
# remove block 1
aphid_choice_percent_plate_no_block1 <- aphid_choice_percent_plate %>%
  filter(block != "1")

#plot it!
```

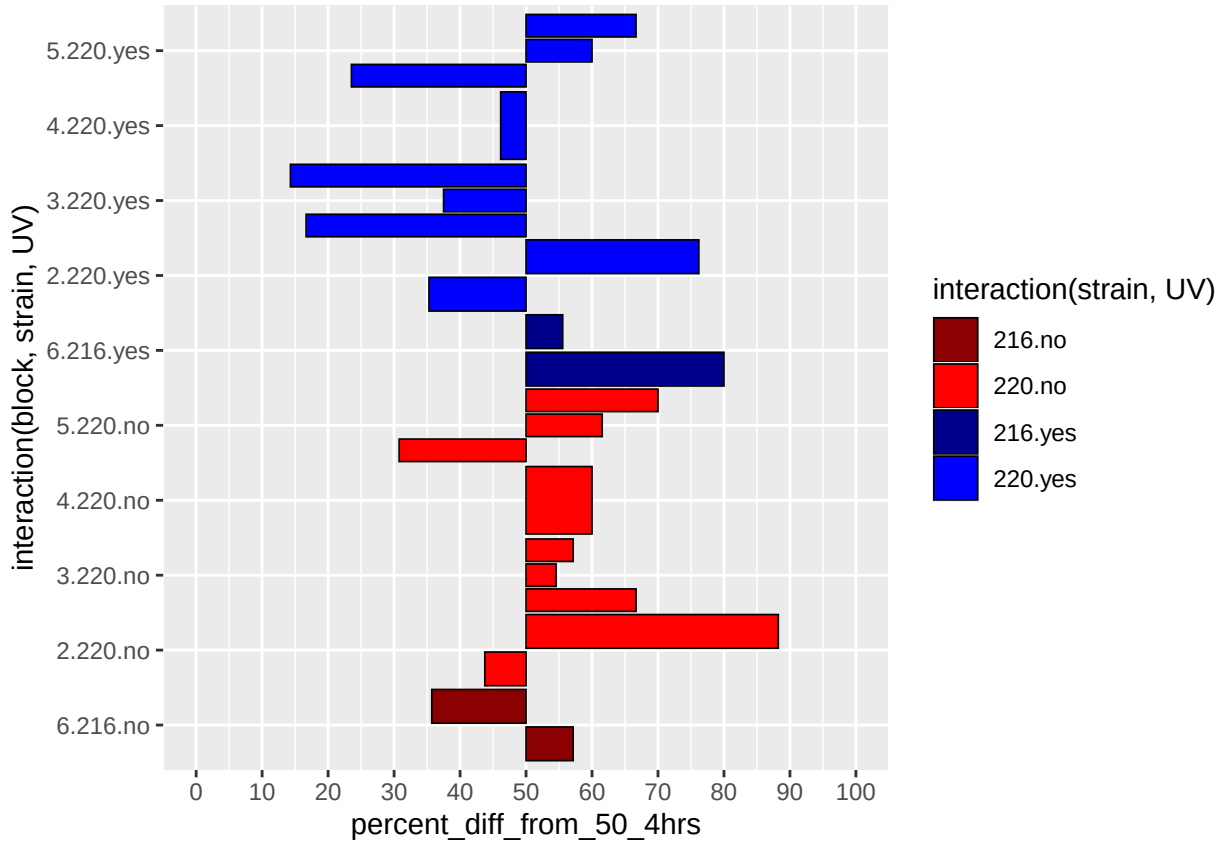
```r
ggplot(aphid_choice_percent_plate_no_block1, aes(x = block, y = percent_diff_from_50_4hrs, fill = UV, g
  geom_col(position = position_dodge(width = 1), color = "black", size = 0.3) +  # Dodge bars by both p
  scale_y_continuous(limits = c(-50, 50),  # Set y-axis from -50% to +50% (around 50%)
                     breaks = seq(-50, 50, 10),  # Customize y-axis breaks
                     labels = c("0", "10", "20", "30", "40", "50", "60", "70", "80", "90", "100")) +  #
  coord_flip() +  # Flip coordinates so the bars are horizontal
  theme_minimal() +  # Use minimal theme
  labs(x = "Block",
       y = "% of Alates Choosing #220",
       title = "Aphid Preference for #220 Supernatant at 4 Hours") +
  geom_hline(yintercept = 0, color = "white", alpha = 0) +  # Add a horizontal line at 50%
  theme(axis.text.x = element_text(angle = 45, hjust = 1),  # Rotate x-axis text for better readability
        legend.position = "bottom") + # Place legend at the bottom
  # Add dotted lines between different block groups
  geom_vline(xintercept = seq(1.5, length(unique(aphid_choice_percent_plate_no_block1$block)) - 0.5, by
             linetype = "dotted", color = "grey", size = 0.5)  # Dotted lines between blocks
```

```
## Warning: Using `size` aesthetic for lines was deprecated in ggplot2 3.4.0.
## i Please use `linewidth` instead.
## This warning is displayed once every 8 hours.
## Call `lifecycle::last_lifecycle_warnings()` to see where this warning was
## generated.
```



```
#-----------------------------------------------

#rearrange so all UV is grouped and color by strain and UV
ggplot(aphid_choice_percent_plate_no_block1, aes(x = interaction(block, strain, UV), y = percent_diff_fi
  geom_col(position = position_dodge(width = 1), color = "black", size = 0.3) +  # Dodge bars by both p
  scale_y_continuous(limits = c(-50, 50),  # Set y-axis from -50% to +50% (around 50%)
                     breaks = seq(-50, 50, 10),  # Customize y-axis breaks
                     labels = c("0", "10", "20", "30", "40", "50", "60", "70", "80", "90", "100")) +  #
  coord_flip() +  # Flip coordinates so the bars are horizontal
  scale_fill_manual(values = c("darkred", "red", "darkblue", "blue"))
```




```
  theme_minimal() +  # Use minimal theme
  labs(x = NULL,
       y = "% of Alates Choosing #220",
       title = "Aphid Preference for #220 Supernatant at 4 Hours") +
  theme(axis.text.x = element_text(angle = 45, hjust = 1),  # Rotate x-axis text for better readability
        axis.text.y = element_blank(),  # Remove y-axis labels
        legend.position = "bottom",  # Place legend at the bottom
        axis.ticks.x = element_blank()) # Remove x-axis ticks for a cleaner look
```

```
## List of 138
##  $ line                            :List of 6
##   ..$ colour       : chr "black"
##   ..$ linewidth    : num 0.5
```

```
##   ..$ linetype     : num 1
##   ..$ lineend      : chr "butt"
##   ..$ arrow        : logi FALSE
##   ..$ inherit.blank: logi TRUE
##   ..- attr(*, "class")= chr [1:2] "element_line" "element"
##  $ rect                           :List of 5
##   ..$ fill         : chr "white"
##   ..$ colour       : chr "black"
##   ..$ linewidth    : num 0.5
##   ..$ linetype     : num 1
##   ..$ inherit.blank: logi TRUE
##   ..- attr(*, "class")= chr [1:2] "element_rect" "element"
##  $ text                           :List of 11
##   ..$ family       : chr ""
##   ..$ face         : chr "plain"
##   ..$ colour       : chr "black"
##   ..$ size         : num 11
##   ..$ hjust        : num 0.5
##   ..$ vjust        : num 0.5
##   ..$ angle        : num 0
##   ..$ lineheight   : num 0.9
##   ..$ margin       : 'margin' num [1:4] 0points 0points 0points 0points
##   .. ..- attr(*, "unit")= int 8
##   ..$ debug        : logi FALSE
##   ..$ inherit.blank: logi TRUE
##   ..- attr(*, "class")= chr [1:2] "element_text" "element"
##  $ title                          : chr "Aphid Preference for #220 Supernatant at 4 Hours"
##  $ aspect.ratio                   : NULL
##  $ axis.title                     : NULL
##  $ axis.title.x                   :List of 11
##   ..$ family       : NULL
##   ..$ face         : NULL
##   ..$ colour       : NULL
##   ..$ size         : NULL
##   ..$ hjust        : NULL
##   ..$ vjust        : num 1
##   ..$ angle        : NULL
##   ..$ lineheight   : NULL
##   ..$ margin       : 'margin' num [1:4] 2.75points 0points 0points 0points
##   .. ..- attr(*, "unit")= int 8
##   ..$ debug        : NULL
##   ..$ inherit.blank: logi TRUE
##   ..- attr(*, "class")= chr [1:2] "element_text" "element"
##  $ axis.title.x.top               :List of 11
##   ..$ family       : NULL
##   ..$ face         : NULL
##   ..$ colour       : NULL
##   ..$ size         : NULL
##   ..$ hjust        : NULL
##   ..$ vjust        : num 0
##   ..$ angle        : NULL
##   ..$ lineheight   : NULL
##   ..$ margin       : 'margin' num [1:4] 0points 0points 2.75points 0points
##   .. ..- attr(*, "unit")= int 8
```

```
##   ..$ debug        : NULL
##   ..$ inherit.blank: logi TRUE
##   ..- attr(*, "class")= chr [1:2] "element_text" "element"
##  $ axis.title.x.bottom             : NULL
##  $ axis.title.y                    :List of 11
##   ..$ family       : NULL
##   ..$ face         : NULL
##   ..$ colour       : NULL
##   ..$ size         : NULL
##   ..$ hjust        : NULL
##   ..$ vjust        : num 1
##   ..$ angle        : num 90
##   ..$ lineheight   : NULL
##   ..$ margin       : 'margin' num [1:4] 0points 2.75points 0points 0points
##   .. ..- attr(*, "unit")= int 8
##   ..$ debug        : NULL
##   ..$ inherit.blank: logi TRUE
##   ..- attr(*, "class")= chr [1:2] "element_text" "element"
##  $ axis.title.y.left               : NULL
##  $ axis.title.y.right              :List of 11
##   ..$ family       : NULL
##   ..$ face         : NULL
##   ..$ colour       : NULL
##   ..$ size         : NULL
##   ..$ hjust        : NULL
##   ..$ vjust        : num 1
##   ..$ angle        : num -90
##   ..$ lineheight   : NULL
##   ..$ margin       : 'margin' num [1:4] 0points 0points 0points 2.75points
##   .. ..- attr(*, "unit")= int 8
##   ..$ debug        : NULL
##   ..$ inherit.blank: logi TRUE
##   ..- attr(*, "class")= chr [1:2] "element_text" "element"
##  $ axis.text                       :List of 11
##   ..$ family       : NULL
##   ..$ face         : NULL
##   ..$ colour       : chr "grey30"
##   ..$ size         : 'rel' num 0.8
##   ..$ hjust        : NULL
##   ..$ vjust        : NULL
##   ..$ angle        : NULL
##   ..$ lineheight   : NULL
##   ..$ margin       : NULL
##   ..$ debug        : NULL
##   ..$ inherit.blank: logi TRUE
##   ..- attr(*, "class")= chr [1:2] "element_text" "element"
##  $ axis.text.x                     :List of 11
##   ..$ family       : NULL
##   ..$ face         : NULL
##   ..$ colour       : NULL
##   ..$ size         : NULL
##   ..$ hjust        : num 1
##   ..$ vjust        : num 1
##   ..$ angle        : num 45
```

```
##   ..$ lineheight   : NULL
##   ..$ margin       : 'margin' num [1:4] 2.2points 0points 0points 0points
##   .. ..- attr(*, "unit")= int 8
##   ..$ debug        : NULL
##   ..$ inherit.blank: logi FALSE
##   ..- attr(*, "class")= chr [1:2] "element_text" "element"
##  $ axis.text.x.top                :List of 11
##   ..$ family       : NULL
##   ..$ face         : NULL
##   ..$ colour       : NULL
##   ..$ size         : NULL
##   ..$ hjust        : NULL
##   ..$ vjust        : num 0
##   ..$ angle        : NULL
##   ..$ lineheight   : NULL
##   ..$ margin       : 'margin' num [1:4] 0points 0points 2.2points 0points
##   .. ..- attr(*, "unit")= int 8
##   ..$ debug        : NULL
##   ..$ inherit.blank: logi TRUE
##   ..- attr(*, "class")= chr [1:2] "element_text" "element"
##  $ axis.text.x.bottom             : NULL
##  $ axis.text.y                    : list()
##   ..- attr(*, "class")= chr [1:2] "element_blank" "element"
##  $ axis.text.y.left               : NULL
##  $ axis.text.y.right              :List of 11
##   ..$ family       : NULL
##   ..$ face         : NULL
##   ..$ colour       : NULL
##   ..$ size         : NULL
##   ..$ hjust        : num 0
##   ..$ vjust        : NULL
##   ..$ angle        : NULL
##   ..$ lineheight   : NULL
##   ..$ margin       : 'margin' num [1:4] 0points 0points 0points 2.2points
##   .. ..- attr(*, "unit")= int 8
##   ..$ debug        : NULL
##   ..$ inherit.blank: logi TRUE
##   ..- attr(*, "class")= chr [1:2] "element_text" "element"
##  $ axis.text.theta                : NULL
##  $ axis.text.r                    :List of 11
##   ..$ family       : NULL
##   ..$ face         : NULL
##   ..$ colour       : NULL
##   ..$ size         : NULL
##   ..$ hjust        : num 0.5
##   ..$ vjust        : NULL
##   ..$ angle        : NULL
##   ..$ lineheight   : NULL
##   ..$ margin       : 'margin' num [1:4] 0points 2.2points 0points 2.2points
##   .. ..- attr(*, "unit")= int 8
##   ..$ debug        : NULL
##   ..$ inherit.blank: logi TRUE
##   ..- attr(*, "class")= chr [1:2] "element_text" "element"
##  $ axis.ticks                     : list()
```

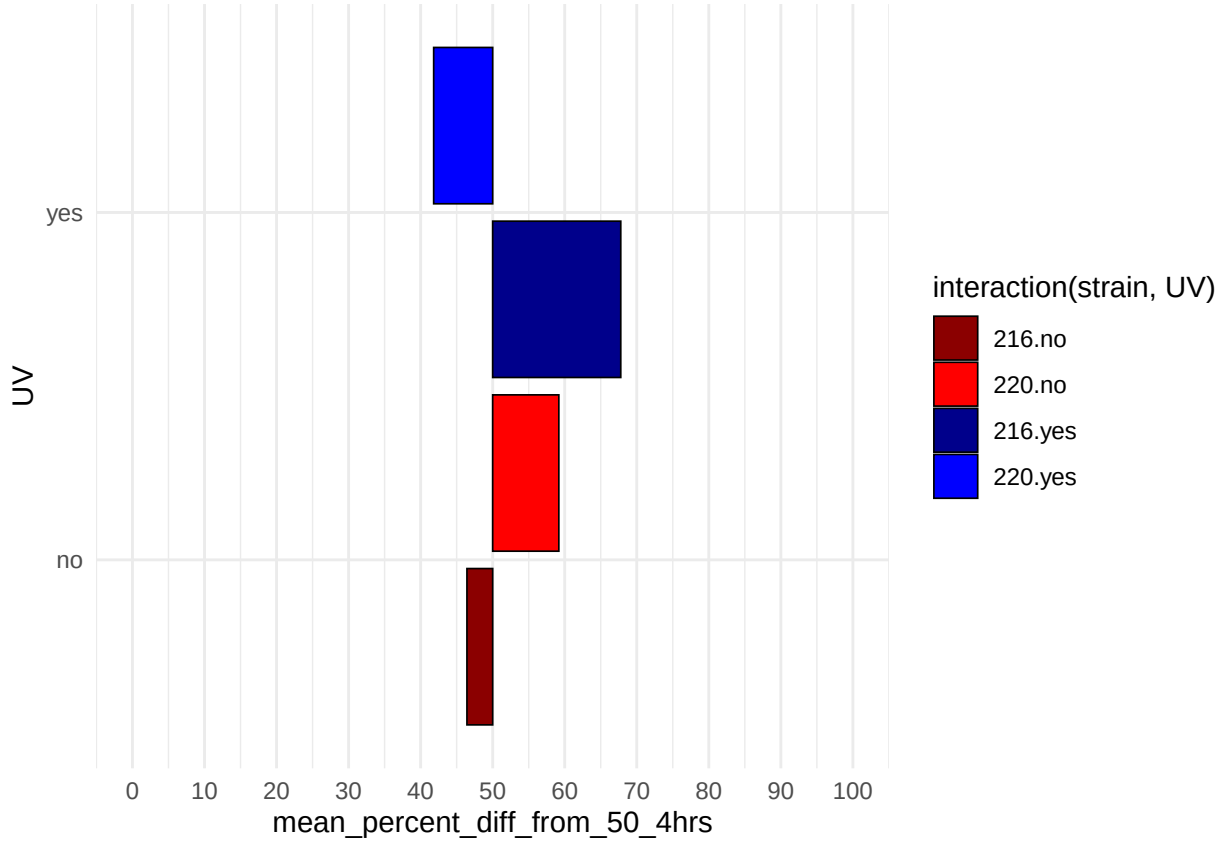
```
##   ..- attr(*, "class")= chr [1:2] "element_blank" "element"
##  $ axis.ticks.x                    : list()
##   ..- attr(*, "class")= chr [1:2] "element_blank" "element"
##  $ axis.ticks.x.top                : NULL
##  $ axis.ticks.x.bottom             : NULL
##  $ axis.ticks.y                    : NULL
##  $ axis.ticks.y.left               : NULL
##  $ axis.ticks.y.right              : NULL
##  $ axis.ticks.theta                : NULL
##  $ axis.ticks.r                    : NULL
##  $ axis.minor.ticks.x.top          : NULL
##  $ axis.minor.ticks.x.bottom       : NULL
##  $ axis.minor.ticks.y.left         : NULL
##  $ axis.minor.ticks.y.right        : NULL
##  $ axis.minor.ticks.theta          : NULL
##  $ axis.minor.ticks.r              : NULL
##  $ axis.ticks.length               : 'simpleUnit' num 2.75points
##   ..- attr(*, "unit")= int 8
##  $ axis.ticks.length.x             : NULL
##  $ axis.ticks.length.x.top         : NULL
##  $ axis.ticks.length.x.bottom      : NULL
##  $ axis.ticks.length.y             : NULL
##  $ axis.ticks.length.y.left        : NULL
##  $ axis.ticks.length.y.right       : NULL
##  $ axis.ticks.length.theta         : NULL
##  $ axis.ticks.length.r             : NULL
##  $ axis.minor.ticks.length         : 'rel' num 0.75
##  $ axis.minor.ticks.length.x       : NULL
##  $ axis.minor.ticks.length.x.top   : NULL
##  $ axis.minor.ticks.length.x.bottom: NULL
##  $ axis.minor.ticks.length.y       : NULL
##  $ axis.minor.ticks.length.y.left  : NULL
##  $ axis.minor.ticks.length.y.right : NULL
##  $ axis.minor.ticks.length.theta   : NULL
##  $ axis.minor.ticks.length.r       : NULL
##  $ axis.line                       : list()
##   ..- attr(*, "class")= chr [1:2] "element_blank" "element"
##  $ axis.line.x                     : NULL
##  $ axis.line.x.top                 : NULL
##  $ axis.line.x.bottom              : NULL
##  $ axis.line.y                     : NULL
##  $ axis.line.y.left                : NULL
##  $ axis.line.y.right               : NULL
##  $ axis.line.theta                 : NULL
##  $ axis.line.r                     : NULL
##  $ legend.background               : list()
##   ..- attr(*, "class")= chr [1:2] "element_blank" "element"
##  $ legend.margin                   : 'margin' num [1:4] 5.5points 5.5points 5.5points 5.5points
##   ..- attr(*, "unit")= int 8
##  $ legend.spacing                  : 'simpleUnit' num 11points
##   ..- attr(*, "unit")= int 8
##  $ legend.spacing.x                : NULL
##  $ legend.spacing.y                : NULL
##  $ legend.key                      : list()
```

```
##   ..- attr(*, "class")= chr [1:2] "element_blank" "element"
##  $ legend.key.size                 : 'simpleUnit' num 1.2lines
##   ..- attr(*, "unit")= int 3
##  $ legend.key.height               : NULL
##  $ legend.key.width                : NULL
##  $ legend.key.spacing              : 'simpleUnit' num 5.5points
##   ..- attr(*, "unit")= int 8
##  $ legend.key.spacing.x            : NULL
##  $ legend.key.spacing.y            : NULL
##  $ legend.frame                    : NULL
##  $ legend.ticks                    : NULL
##  $ legend.ticks.length             : 'rel' num 0.2
##  $ legend.axis.line                : NULL
##  $ legend.text                     :List of 11
##   ..$ family       : NULL
##   ..$ face         : NULL
##   ..$ colour       : NULL
##   ..$ size         : 'rel' num 0.8
##   ..$ hjust        : NULL
##   ..$ vjust        : NULL
##   ..$ angle        : NULL
##   ..$ lineheight   : NULL
##   ..$ margin       : NULL
##   ..$ debug        : NULL
##   ..$ inherit.blank: logi TRUE
##   ..- attr(*, "class")= chr [1:2] "element_text" "element"
##  $ legend.text.position            : NULL
##  $ legend.title                    :List of 11
##   ..$ family       : NULL
##   ..$ face         : NULL
##   ..$ colour       : NULL
##   ..$ size         : NULL
##   ..$ hjust        : num 0
##   ..$ vjust        : NULL
##   ..$ angle        : NULL
##   ..$ lineheight   : NULL
##   ..$ margin       : NULL
##   ..$ debug        : NULL
##   ..$ inherit.blank: logi TRUE
##   ..- attr(*, "class")= chr [1:2] "element_text" "element"
##  $ legend.title.position           : NULL
##  $ legend.position                 : chr "bottom"
##  $ legend.position.inside          : NULL
##  $ legend.direction                : NULL
##  $ legend.byrow                    : NULL
##  $ legend.justification            : chr "center"
##  $ legend.justification.top        : NULL
##  $ legend.justification.bottom     : NULL
##  $ legend.justification.left       : NULL
##  $ legend.justification.right      : NULL
##  $ legend.justification.inside     : NULL
##  $ legend.location                 : NULL
##  $ legend.box                      : NULL
##  $ legend.box.just                 : NULL
```

```
##  $ legend.box.margin               : 'margin' num [1:4] 0cm 0cm 0cm 0cm
##   ..- attr(*, "unit")= int 1
##  $ legend.box.background           : list()
##   ..- attr(*, "class")= chr [1:2] "element_blank" "element"
##  $ legend.box.spacing              : 'simpleUnit' num 11points
##   ..- attr(*, "unit")= int 8
##   [list output truncated]
##  - attr(*, "class")= chr [1:2] "theme" "gg"
##  - attr(*, "complete")= logi TRUE
##  - attr(*, "validate")= logi TRUE
```

```r
#-----------------------------------------------

# average across UV/no UV
ggplot(aphid_choice_mean, aes(x = UV, y = mean_percent_diff_from_50_4hrs, fill = interaction(strain, UV)
  geom_col(position = position_dodge(width = 1), color = "black", size = 0.3) +  # Dodge bars by both p
  scale_y_continuous(limits = c(-50, 50),  # Set y-axis from -50% to +50% (around 50%)
                     breaks = seq(-50, 50, 10),  # Customize y-axis breaks
                     labels = c("0", "10", "20", "30", "40", "50", "60", "70", "80", "90", "100")) +  #
  coord_flip() +  # Flip coordinates so the bars are horizontal
  theme_minimal() +  # Use minimal theme
  scale_fill_manual(values = c("darkred", "red", "darkblue", "blue"))
```



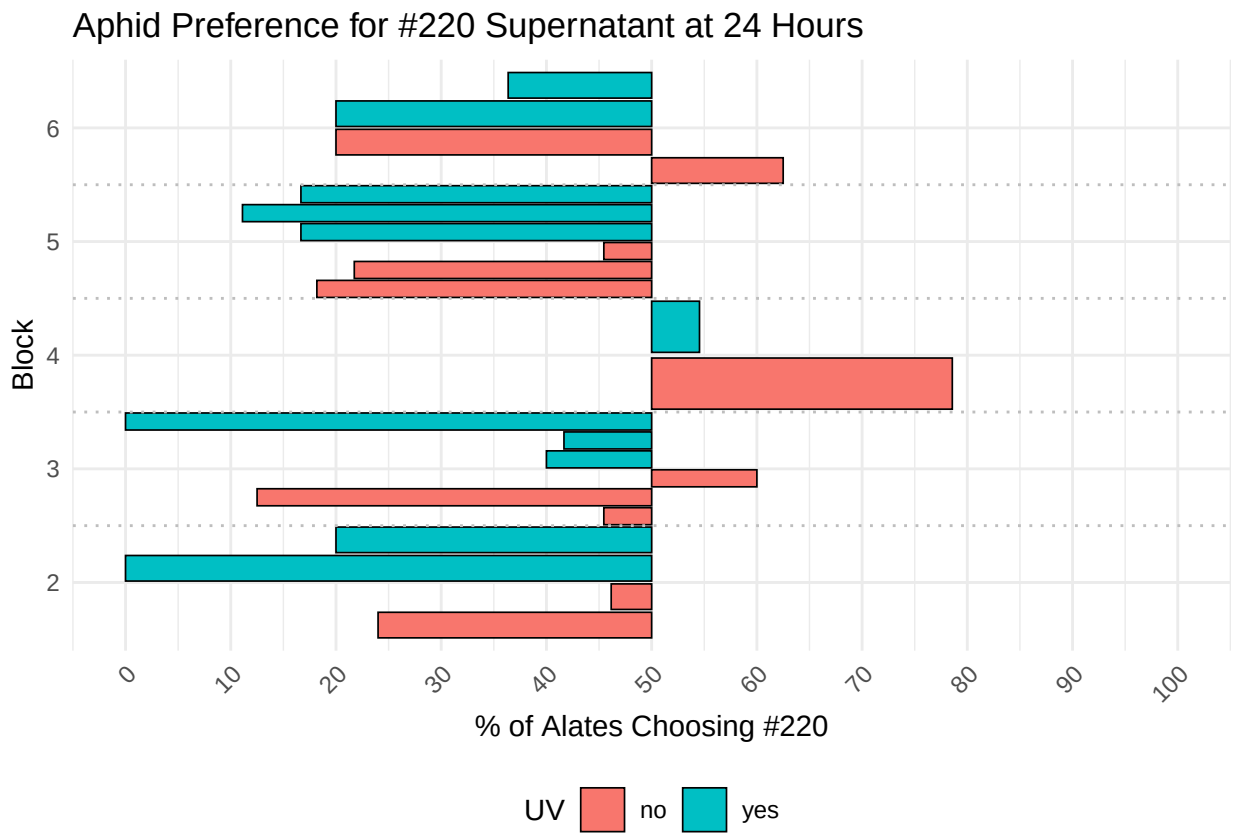

```r
  labs(x = NULL,
       y = "% of Alates Choosing #220",
```

```
       title = "MEAN Aphid Preference for #220 Supernatant at 4 Hours") +
  theme(axis.text.x = element_text(angle = 45, hjust = 1),  # Rotate x-axis text for better readability
        axis.text.y = element_blank(),  # Remove y-axis labels
        legend.position = "bottom",  # Place legend at the bottom
        axis.ticks.x = element_blank())  # Remove x-axis ticks for a cleaner look
```

```
## NULL
```

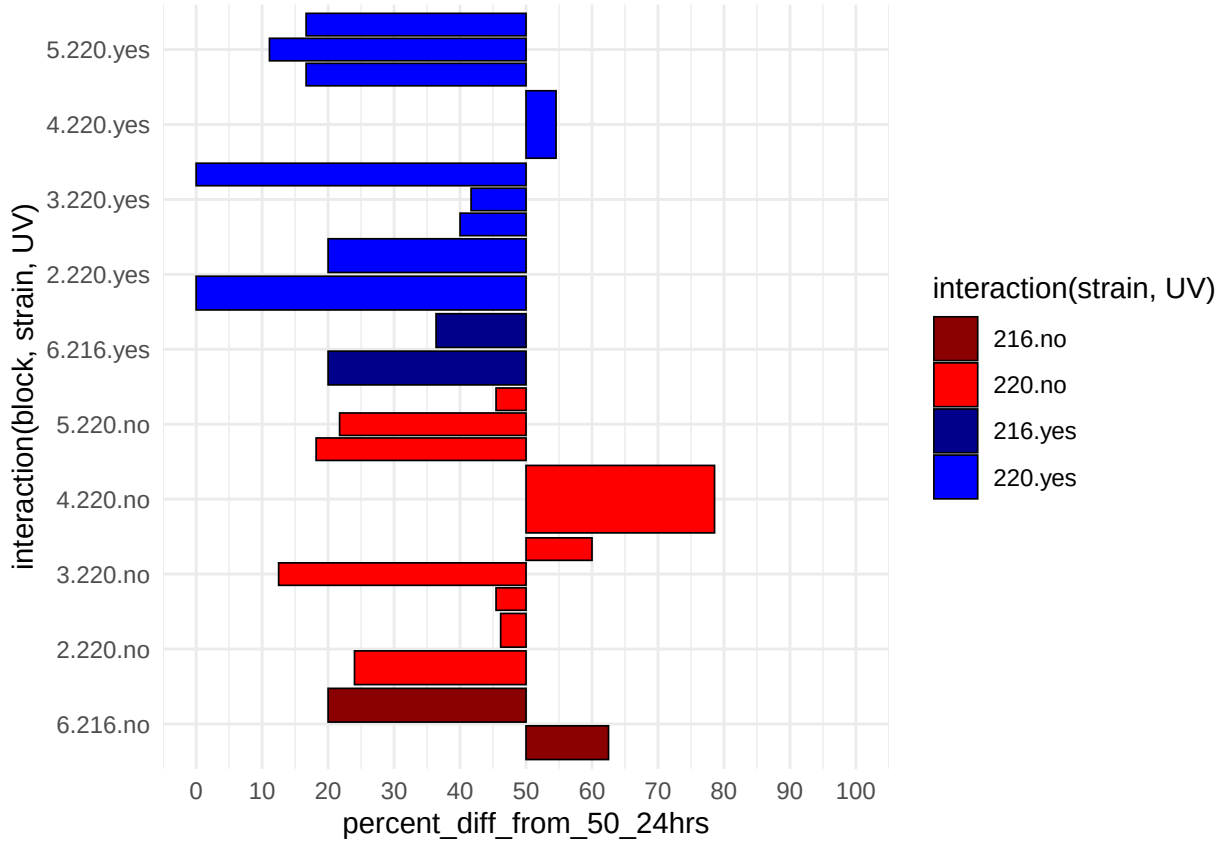
24 Hour Alate Choice

```
#plot it!
ggplot(aphid_choice_percent_plate, aes(x = block, y = percent_diff_from_50_24hrs, fill = UV, group = int
  geom_col(position = position_dodge(width = 1), color = "black", size = 0.3) +  # Dodge bars by both p
  scale_y_continuous(limits = c(-50, 50),  # Set y-axis from -50% to +50% (around 50%)
                     breaks = seq(-50, 50, 10),  # Customize y-axis breaks
                     labels = c("0", "10", "20", "30", "40", "50", "60", "70", "80", "90", "100")) +  #
  coord_flip() +  # Flip coordinates so the bars are horizontal
  theme_minimal() +  # Use minimal theme
  labs(x = "Block",
       y = "% of Alates Choosing #220",
       title = "Aphid Preference for #220 Supernatant at 24 Hours") +
  geom_hline(yintercept = 0, color = "white", alpha = 0) +  # Add a horizontal line at 50%
  theme(axis.text.x = element_text(angle = 45, hjust = 1),  # Rotate x-axis text for better readability
        legend.position = "bottom") + # Place legend at the bottom
  # Add dotted lines between different block groups
  geom_vline(xintercept = seq(1.5, length(unique(aphid_choice_percent_plate_no_block1$block)) - 0.5, by
             linetype = "dotted", color = "grey", size = 0.5)  # Dotted lines between blocks
```




```
#-----------------------------------------------

#rearrange so all UV is grouped
ggplot(aphid_choice_percent_plate, aes(x = interaction(block, strain, UV), y = percent_diff_from_50_24h
  geom_col(position = position_dodge(width = 1), color = "black", size = 0.3) +  # Dodge bars by both p
  scale_y_continuous(limits = c(-50, 50),  # Set y-axis from -50% to +50% (around 50%)
                     breaks = seq(-50, 50, 10),  # Customize y-axis breaks
                     labels = c("0", "10", "20", "30", "40", "50", "60", "70", "80", "90", "100")) +  #
  coord_flip() +  # Flip coordinates so the bars are horizontal
  theme_minimal() +  # Use minimal theme
  scale_fill_manual(values = c("darkred", "red", "darkblue", "blue"))
```

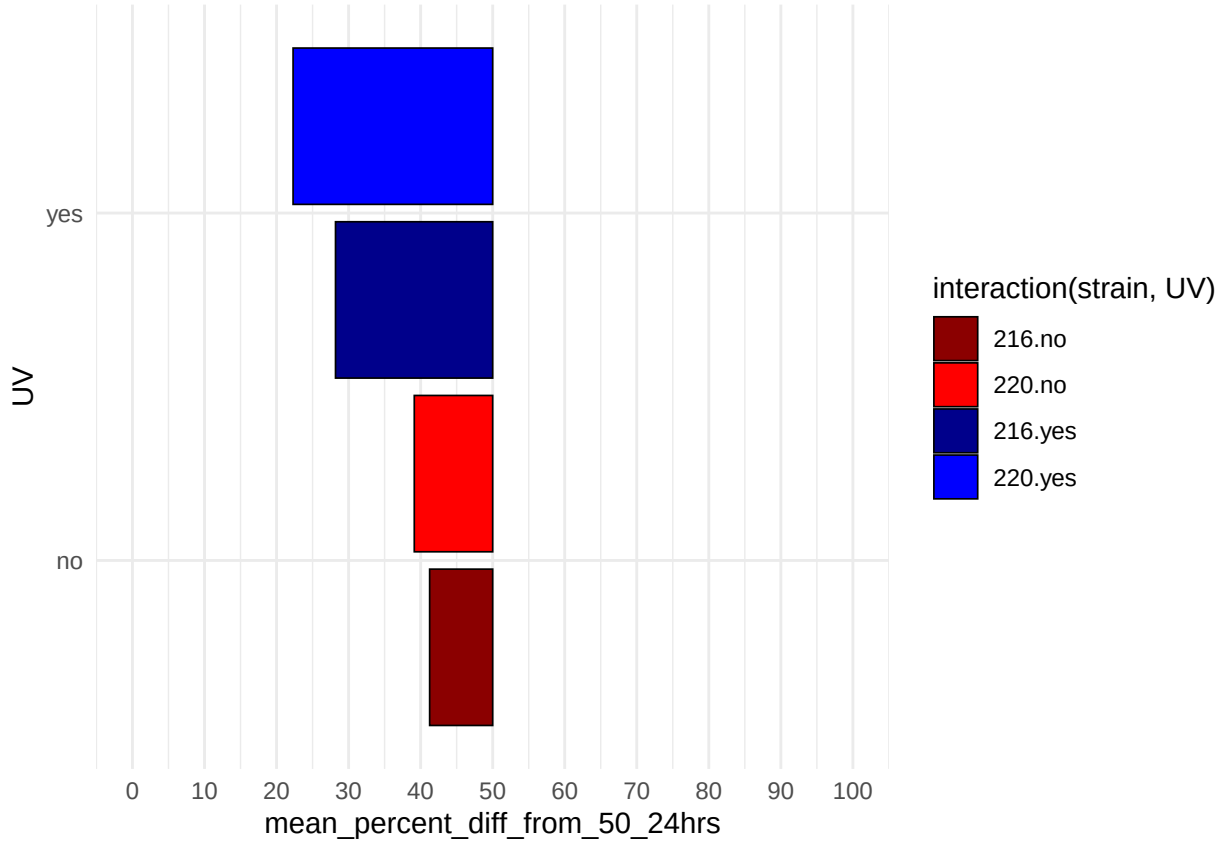



```
  labs(x = NULL,
       y = "% of Alates Choosing #220",
       title = "Aphid Preference for #220 Supernatant at 24 Hours") +
  geom_hline(yintercept = 0, color = "white", alpha = 0) +  # Add a horizontal line at 50%
  theme(axis.text.x = element_text(angle = 45, hjust = 1),  # Rotate x-axis text for better readability
        axis.text.y = element_blank(),  # Remove y-axis labels
        legend.position = "bottom",  # Place legend at the bottom
        axis.ticks.x = element_blank()) # Remove x-axis ticks for a cleaner look
```

```
## NULL
```

```
#-------------------------------------------------

# average across UV/no UV
ggplot(aphid_choice_mean, aes(x = UV, y = mean_percent_diff_from_50_24hrs, fill = interaction(strain, U
  geom_col(position = position_dodge(width = 1), color = "black", size = 0.3) +  # Dodge bars by both p
  scale_y_continuous(limits = c(-50, 50),  # Set y-axis from -50% to +50% (around 50%)
                     breaks = seq(-50, 50, 10),  # Customize y-axis breaks
                     labels = c("0", "10", "20", "30", "40", "50", "60", "70", "80", "90", "100")) +  #
  coord_flip() +  # Flip coordinates so the bars are horizontal
  theme_minimal() +  # Use minimal theme
  scale_fill_manual(values = c("darkred", "red", "darkblue", "blue"))
```




```
  labs(x = NULL,
       y = "% of Alates Choosing #220",
       title = "MEAN Aphid Preference for #220 Supernatant at 24 Hours") +
  geom_hline(yintercept = 0, color = "white", alpha = 0) +  # Add a horizontal line at 50%
  theme(axis.text.x = element_text(angle = 45, hjust = 1),  # Rotate x-axis text for better readability
        axis.text.y = element_blank(),  # Remove y-axis labels
        legend.position = "bottom",  # Place legend at the bottom
        axis.ticks.x = element_blank())  # Remove x-axis ticks for a cleaner look
```

```
## NULL
```