Data Visualization with ggplot2

CMB 710 Tidybiology
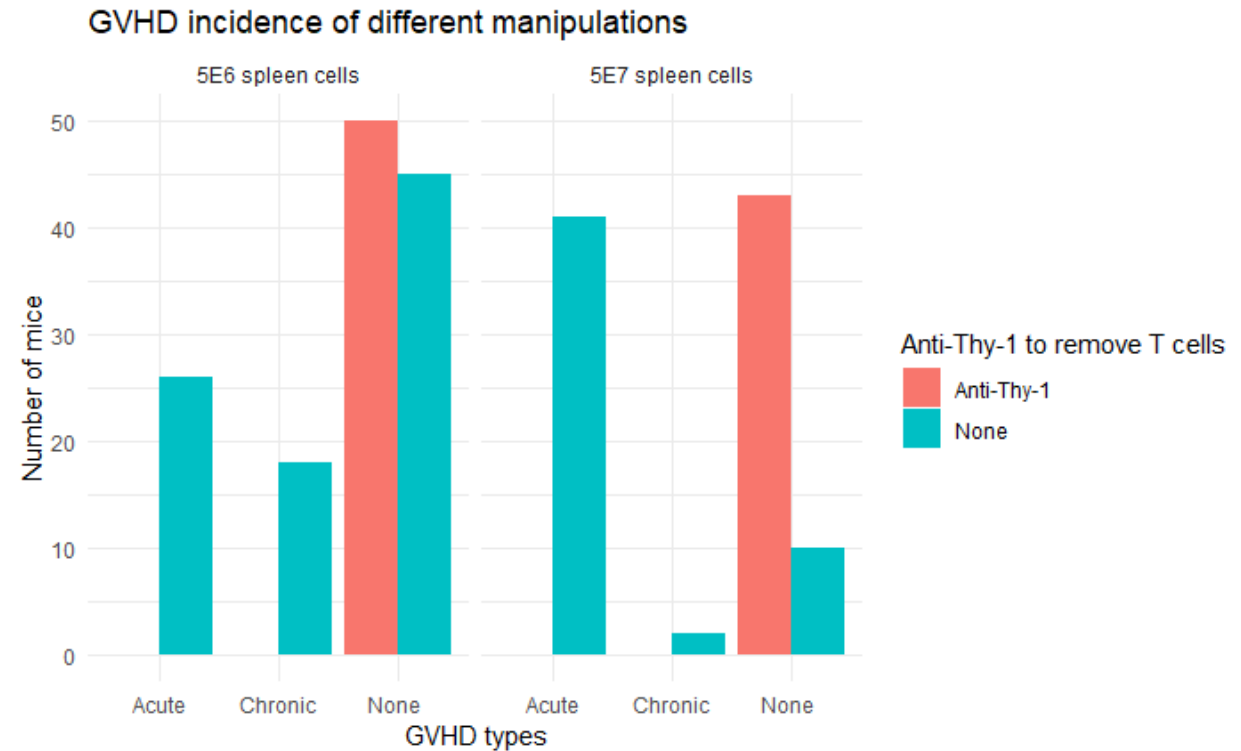
Junqi Lu

Visualization Provides Straightforward Presentations

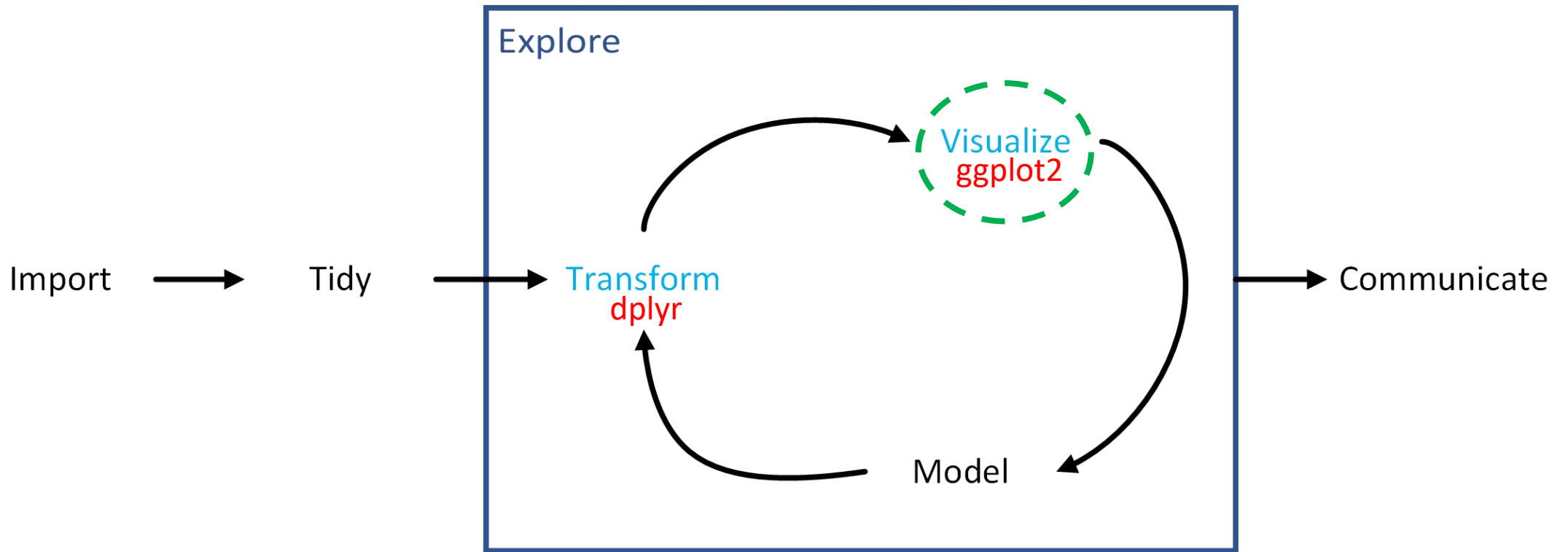TABLE 2. Prevention of acute and chronic GVHD with IgM Anti-Thy 1.2 antibody

No. spleen cells transplanted[a]	Treatment	No. mice	No. mice with GVHD		
			Acute	Chronic	None
5×10^6	None	89	26	18	45
	Anti-Thy 1	50	0	0	50
50×10^6	None	53	41	2	10
	Anti-Thy 1	43	0	0	43

[a] All mice received 1×10^7 Anti-Thy-1.2-treated LP bone marrow cells.

GVHD incidence of different manipulations

Even interactive plots and animations …

Hamilton, Brian L.; Parkman, Robertson ACUTE AND CHRONIC GRAFT-VERSUS-HOST DISEASE INDUCED BY MINOR HISTOCOMPATIBILITY ANTIGENS IN MICE, Transplantation: August 1983 - Volume 36 - Issue 2 - p 150-154

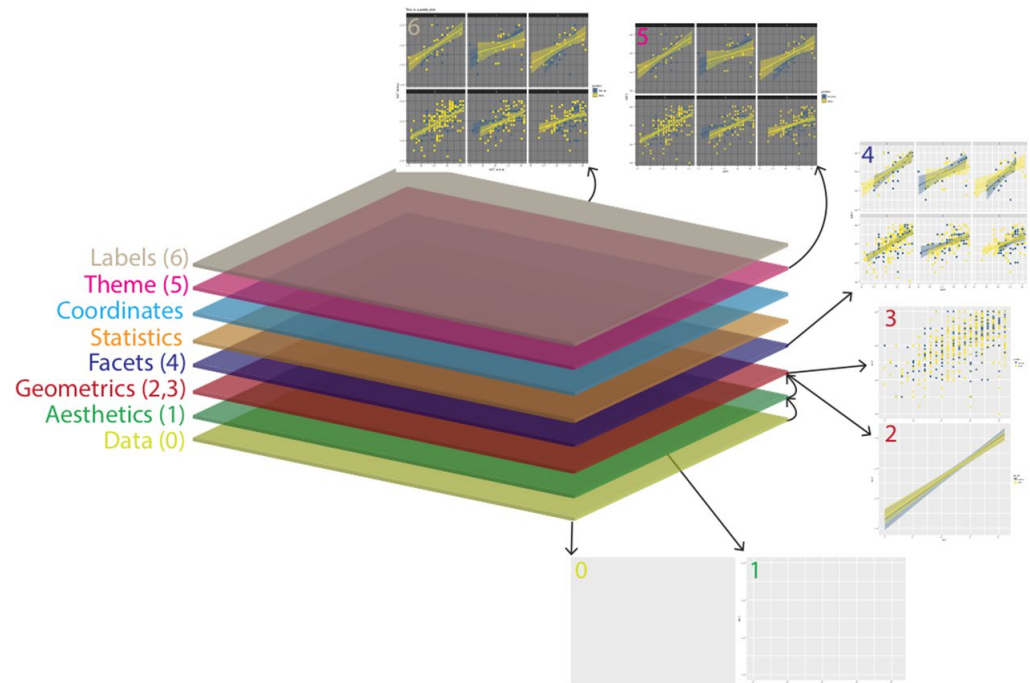# ggplot2 Works with dplyr for Data Communication

Layer System/Logic of ggplot2

- Different layers of ggplot2
  - Plot-to-plot overlapping issues

Layer System/Logic of ggplot2, con't

- Different syntax connector from pipes: %>% [pipes, ggplot1] vs. + [ggplot2]
- Aesthetics inheritance

ggplot2 Explorer as Efficient Assistant

- addins installation: https://rstudio.github.io/rstudioaddins/#installation

- Demo: idea → ggplot2 explorer → code details

- Accentuate on ggplot2 explorer provides a plotting frame and users still need to settle down details

More Power to ggplot2

- ggplot2 gallery with codes: https://www.r-graph-gallery.com/ggplot2-package.html

- Colorblind friendly palette: viridis

- Add significance annotations: ggsignif

- Marginal plots: ggExtra

- 99 powerful registered ggplot2 extensions: https://exts.ggplot2.tidyverse.org/gallery/

Save a Favorite Style to Use Later

- Encapsule part of the styling into a list and use it by simply attach the name of the list to the end of the ggplot2 layer system
    - Syntax:
        - StyleName=list(
            - theme_linedraw() +
            - theme(
                - command1,
                - command2,
                - …
            -)
        -)

Data Visualization is a Powerful Art

Never trust summary statistics alone; always visualize your data. *-Alberto Cairo*