```r
library(dplyr)

rladies_global %>%
  filter(city == 'Munich')
```


dplyr:
a grammar of data manipulation

Overview

- For one dataset

  - **Colums**
    - ▸ `mutate()` adds new variables from info in existing variables
    - ▸ `select()` picks variables by name or column number

  - **Rows**
    - ▸ `filter()` picks observations based on their values
    - ▸ `arrange()` changes ordering of rows

  - **Others**
    - ▸ `summarise()` calculates statistical summaries
    - ▸ `group_by()` allows to do analyses "by group"

- For two datasets

Installation

Stand-alone
```r
install.packages('dplyr')
library(dplyr)
```

From the tidyverse
```r
install.packages('tidyverse')
library(tidyverse)
```

Usage: `filter()`

```
> starwars %>%
    filter(species == "Droid")

# A tibble: 5 x 13
   name height  mass hair_color   skin_color eye_color birth_year
  <chr>  <int> <dbl>      <chr>         <chr>     <chr>      <dbl>
1 C-3PO    167    75       <NA>          gold    yellow        112
2 R2-D2     96    32       <NA> white, blue         red         33
3 R5-D4     97    32       <NA>  white, red         red         NA
4 IG-88    200   140       none        metal         red         15
5   BB8     NA    NA       none         none       black         NA
# ... with 6 more variables: gender <chr>, homeworld <chr>,
#   species <chr>, films <list>, vehicles <list>, starships <list>
```

Usage: `select()`

```
> starwars %>%
    select(name, ends_with("color"))

# A tibble: 87 x 4
                name    hair_color   skin_color eye_color
               <chr>         <chr>        <chr>     <chr>
 1    Luke Skywalker         blond         fair      blue
 2             C-3PO          <NA>         gold    yellow
 3             R2-D2          <NA>  white, blue       red
 4       Darth Vader          none        white    yellow
 5       Leia Organa         brown        light     brown
 6         Owen Lars   brown, grey        light      blue
 7 Beru Whitesun lars         brown        light      blue
 8             R5-D4          <NA>   white, red       red
 9 Biggs Darklighter         black        light     brown
10    Obi-Wan Kenobi auburn, white         fair blue-gray
# ... with 77 more rows
```

Usage: `mutate() + select()`

```
> starwars %>%
    mutate(name, bmi = mass / ((height / 100) ^ 2)) %>%
    select(name:mass, bmi)

# A tibble: 87 x 4
                 name height  mass       bmi
                <chr>  <int> <dbl>     <dbl>
 1    Luke Skywalker    172    77 26.02758
 2            C-3PO    167    75 26.89232
 3            R2-D2     96    32 34.72222
 4      Darth Vader    202   136 33.33007
 5      Leia Organa    150    49 21.77778
 6        Owen Lars    178   120 37.87401
 7 Beru Whitesun lars   165    75 27.54821
 8            R5-D4     97    32 34.00999
 9 Biggs Darklighter    183    84 25.08286
10    Obi-Wan Kenobi    182    77 23.24598
# ... with 77 more rows
```

Usage: `arrange()`

```
> starwars %>%
      group_by(species) %>%
      summarise(
        n = n(),
        mass = mean(mass, na.rm = TRUE)
      ) %>%
      filter(n > 1)
```

```
# A tibble: 9 x 3
    species     n      mass
      <chr> <int>     <dbl>
1     Droid     5  69.75000
2    Gungan     3  74.00000
3     Human    35  82.78182
4  Kaminoan     2  88.00000
5  Mirialan     2  53.10000
6   Twi'lek     2  55.00000
7   Wookiee     2 124.00000
8    Zabrak     2  80.00000
9      <NA>     5  48.00000
```

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```

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