

PCDLPicasso

SanghoonLee

2025-02-26

Plasma Cell Disorder Library - Picasso (PCDLPicasso)

This ShinyApp will help users search for available lab sequencing datasets and clinical data. Explore available lab seq datasets and count patient samples per clinical data type

Plasma Cell Disorder Library - Picasso was built on R version 4.4.1 (2024-06-15) – “**Race for Your Life**” This means you need to install R version $\geq 4.4.1$

A. Introduction

The lab has so many sequencing datasets. So, we need a tool to navigate the datasets and count the number of patient samples per disease type or sequencing type.

List of Morgan – Davies lab datasets - **These names will be revised by unique names.**

- No.1 UK myeloma (463) exome data - Patrick
- No.2 MGP data exomes and expression (1273) - Patrick
- No.3 GEP datasets Little rock (?) - Patrick
- No.4 SMM sequential WGS (Eileen)
- No.5 WGS Ancestry/ncPaper (307-294) - Patrick
- No.6 WGS next set - Sanghoon
- No.7 COMMPASS low pass WGS (794?)
- No.8 COMMPASS exomes
- No.9 COMMPASS expression
- No.10 scATAC, scRNAseq Waldenstrom (13) Dylan
- No.11 WGS Waldenstrom - Dylan
- No.12 MM cell line ATAC, HiC - Patrick
- No.13 PDX mice HiC, RNAseq, - Patrick
- No.14 scATAC, scRNA, WGS (MM, SMM, MGUS) - Di
- No.15 micropinocytosis resistant cells RNA - Dylan

No.16 NSD2 dTAG cut and tag; SLAMseq - Sanxiong
No.17 Cody structural paper - Patrick
No.18 Chromosome 1 paper Eileen - Patrick
No.19 dbMP - Patrick
No.20 External Datasets – Patrick
No.21 scDatasets – Dylan
No.22 Foundation 1 data/Caleb paper

B. Basic requirements

Step1. Download R and Rstudio, and install them.

You can just Google or Youtube for “R download and install” and “Rstudio download” to complete this step. It is not that difficult. [Youtube clip for Mac](#)

If you have some experience already, you can go install [R from CRAN](#)

You can install a user-friendly interface, R-Studio, from [rstudio.com](#)

Step2. Start Rstudio

What does ‘start Rstudio’ mean? Visit the Youtube lecture I introduced in Step1.

Step3. In the R console, install necessary R packages first.

If you have some experience already, just go below the code line. Just copy the lines, paste them to console, and hit enter key.

If you don’t much experience yet; What are ‘R console’ and ‘R package’? Try to what this 3min [Youtube lecture](#) Or, you can find more in Youtube by searching “How to install R packages?”

```
utils :: install.packages ( "pacman", repos="http://cran.us.r-project.org" )
```

```
library (pacman)
```

```
### Install and load multiple packages at a time.
```

```
### This will take 10~15 min if you are installing any packages for the first time.
```

```
utils :: install.packages (c("data.table" , "BiocManager" , "dplyr" , "stringr" , "tidyverse" ,  
  "EnvStats" , "ggbeeswarm" , "htmltools" , "ggplot2" , "ggpubr" , "purrr" , "rstatix" , "shiny" ,  
  "plotrix" , "shinyWidgets" ), repos="http://cran.us.r-project.org" )
```

```
pacman: p_load (devtools,usethis)
```

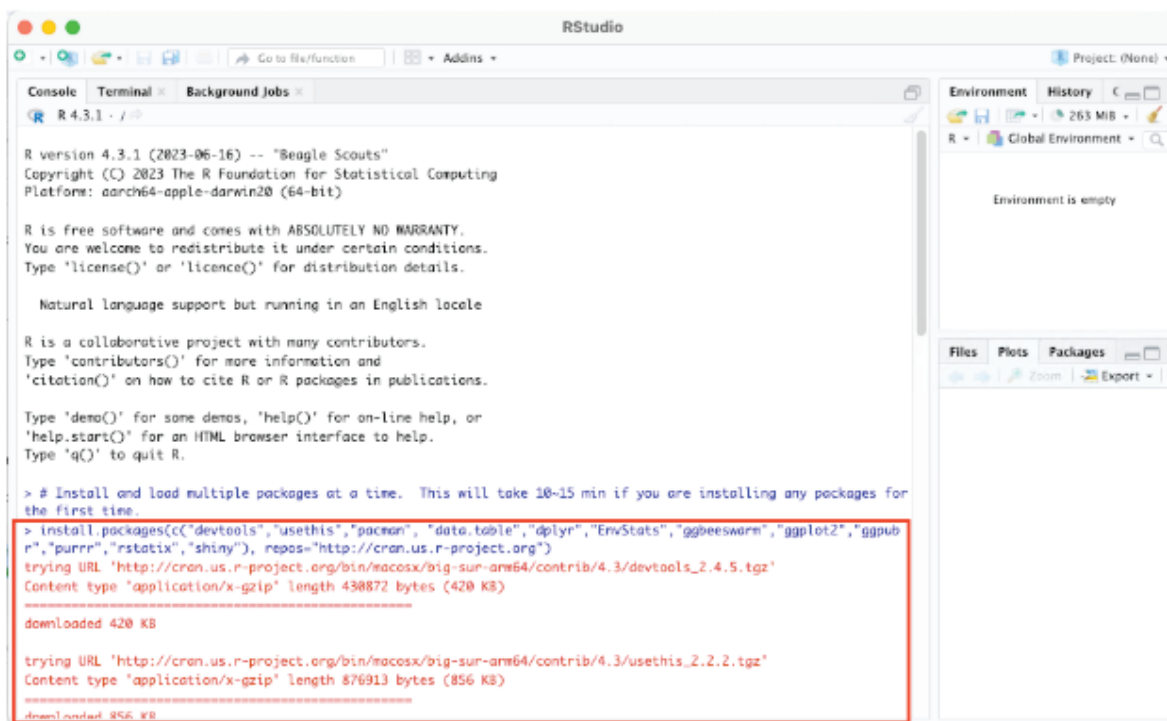


Figure 1: Installing R packages

C. Install PCDLPicasso R package

Step4. Install PCDLPicasso R package and load it

```
### Install PCDLPicasso R package
install_github("Sanghoon-Lee_NYULH/PCDLPicasso")
```

Using GitHub PAT from the git credential store.

Skipping install of 'PCDLPicasso' from a github remote, the SHA1 (44a3f117) has not changed :
Use `force = TRUE` to force installation

```
### Load the R package. Note you DON'T need quotation.
### The package name is PCDLPicasso, not Sanghoon-Lee_NYULH/PCDLPicasso
library(PCDLPicasso)
```

```
> install_github("Sanghoon-Lee_NYULH/PCDLPicasso")
Using GitHub PAT from the git credential store.
Downloading GitHub repo Sanghoon-Lee_NYULH/PCDLPicasso@HEAD
— R CMD build —
✓ checking for file '/private/var/folders/3t/dr5hjr912d5468hqh338rf_hg9aq0p2/T/RtmpYt7fvA/remotes253216012a3d/Sanghoon-Lee_NYULH
7c7b56c4b24cc1a05adbde732eb1/DESCRIPTION' ...
- preparing 'PCDLPicasso':
✓ checking DESCRIPTION meta-information ...
- checking for LF line-endings in source and make files and shell scripts
- checking for empty or unneeded directories
- building 'PCDLPicasso_0.1.0.tar.gz'
Warning: invalid uid value replaced by that for user 'nobody'
Warning: invalid gid value replaced by that for user 'nobody'

* installing *source* package 'PCDLPicasso' ...
** using staged installation
** R
** data
*** moving datasets to lazyload DB
** byte-compile and prepare package for lazy loading
** help
*** installing help indices
** building package indices
** installing vignettes
** testing if installed package can be loaded from temporary location
** testing if installed package can be loaded from final location
** testing if installed package keeps a record of temporary installation path
* DONE (PCDLPicasso)
> library(PCDLPicasso)
>
```

Figure 2: Installing PCDLPicasso packages

D. Play with PCDLPicasso

Step5. Run ShinyApp and Play

In R console, run the command below.

```
shiny::shinyApp(ui=PCDD_UserInterface, server=PCDD_Server)
```

Plasma Cell Disorder Library Picasso (PCDLPicasso)

Plasma Cell Disorder Dictionary (PCDD) is to explore plasma cell disorder datasets by clinical subtype in Morgan_Davies Lab. Select your interest of dataset in Dataset Query box, and select your interest of clinical datatype

Expand the ShinyApp windows, and scroll down to see more plots

Select Dataset of your interest:

N19_dbMP **Step1. Select a dataset of your interest**

Demographic and Clinical subtype table by Race, Gender, Diagnosis or SampleType -- Select a subtype below and click the tab on the top of the table in the main panel

Step2. Select a clinical subtype in the drop-down box

Step3. Select a tab of clinical data

Patient information table is displayed and then Piechart/Barplot is displayed below. Please scroll d

Institute subtype: AllSubType

Race subtype: Black_or_African_American

Gender subtype: Female

Age subtype: LowerThan50

Diagnosis subtype: AllSubType

SampleType subtype: AllSubType

InstituteName_subtype Race_subtype Gender_subtype Age_subtype Diagnosis_subtype Sampletype_subtype

Show 10 entries Search:

	PatientID	InterestClinicalData	InstOriginID	Race	Gender	Age	Diagnosis	SampleID
1	DBMP00001	UAB	UAB1869	White	Male	62	MM	ML-0000 BM-01
2	DBMP00002	UAB	UAB0038	Black_or_African_American	Male	57	MM	ML-0000 BM-01
3	DBMP00003	UAB	UAB0188	Black_or_African_American	Male	52	MM	ML-0000 BM-01
4	DBMP00004	UAB	UAB0203	Black_or_African_American	Male	53	MM	ML-0000 BM-01
5	DBMP00005	UAB	UAB0207	Black_or_African_American	Female	56	MM	ML-0000 BM-01
7	DBMP00006	UAB	UAB0208	Black_or_African_American	Female	59	MM	ML-0000 BM-01

Figure 3: PCDLPicasso ShinyApp - ClinicalData Tables

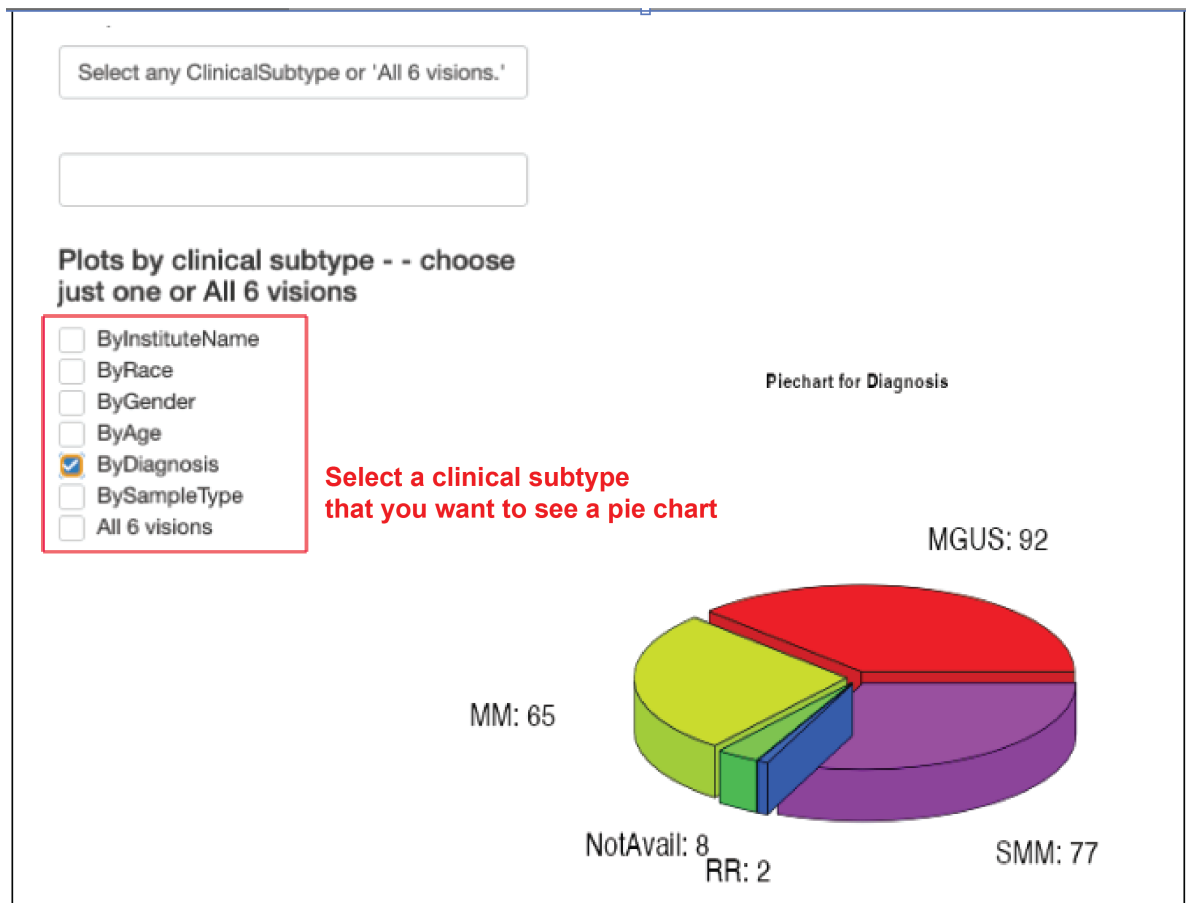


Figure 4: PCDLPicasso ShinyApp - ClinicalData Piechart