PEC1_SummarizedExperiment

Celia Martínez Saz

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Lo primero de todo cargamos nuestro dataset que estudia la caquexia humana y lo exploramos.

```
library(readxl)
```

```
## Warning: package 'readxl' was built under R version 4.4.3
```

```
human_cachexia <- read_excel("C:/Users/celch/OneDrive/Desktop/UOC/Datos omicos/Bloque 1 - las omicas/PEC
head (human_cachexia)
```

```
## # A tibble: 6 x 65
##   'Patient ID' 'Muscle loss' '1,6-Anhydro-beta-D-glucose' '1-Methylnicotinamide'
##   <chr>        <chr>         <chr>                        <chr>
## 1 PIF_178      cachexic      40.85                        65.37
## 2 PIF_087      cachexic      62.18                        340.36
## 3 PIF_090      cachexic      270.43                       64.72
## 4 NETL_005_V1  cachexic      154.47                       52.98
## 5 PIF_115      cachexic      22.2                         73.7
## 6 PIF_110      cachexic      212.72                       31.82
## # i 61 more variables: '2-Aminobutyrate' <chr>, '2-Hydroxyisobutyrate' <chr>,
## #   '2-Oxoglutarate' <chr>, '3-Aminoisobutyrate' <chr>,
## #   '3-Hydroxybutyrate' <chr>, '3-Hydroxyisovalerate' <chr>,
## #   '3-Indoxylsulfate' <chr>, '4-Hydroxyphenylacetate' <chr>, Acetate <chr>,
## #   Acetone <chr>, Adipate <chr>, Alanine <chr>, Asparagine <chr>,
## #   Betaine <chr>, Carnitine <chr>, Citrate <chr>, Creatine <chr>,
## #   Creatinine <chr>, Dimethylamine <chr>, Ethanolamine <chr>, ...
```

Estudiamos el dataset seleccionado, comprobando aunque ya nos lo han indicado que no hay missing values.

```
class(human_cachexia)
```

```
## [1] "tbl_df"     "tbl"        "data.frame"
```

```
colnames(human_cachexia)
```

```
##  [1] "Patient ID"                "Muscle loss"
##  [3] "1,6-Anhydro-beta-D-glucose" "1-Methylnicotinamide"
##  [5] "2-Aminobutyrate"           "2-Hydroxyisobutyrate"
##  [7] "2-Oxoglutarate"            "3-Aminoisobutyrate"
##  [9] "3-Hydroxybutyrate"         "3-Hydroxyisovalerate"
```

```
## [11] "3-Indoxylsulfate"           "4-Hydroxyphenylacetate"
## [13] "Acetate"                     "Acetone"
## [15] "Adipate"                     "Alanine"
## [17] "Asparagine"                  "Betaine"
## [19] "Carnitine"                   "Citrate"
## [21] "Creatine"                    "Creatinine"
## [23] "Dimethylamine"               "Ethanolamine"
## [25] "Formate"                     "Fucose"
## [27] "Fumarate"                    "Glucose"
## [29] "Glutamine"                   "Glycine"
## [31] "Glycolate"                   "Guanidoacetate"
## [33] "Hippurate"                   "Histidine"
## [35] "Hypoxanthine"                "Isoleucine"
## [37] "Lactate"                     "Leucine"
## [39] "Lysine"                      "Methylamine"
## [41] "Methylguanidine"             "N,N-Dimethylglycine"
## [43] "O-Acetylcarnitine"           "Pantothenate"
## [45] "Pyroglutamate"               "Pyruvate"
## [47] "Quinolinate"                 "Serine"
## [49] "Succinate"                   "Sucrose"
## [51] "Tartrate"                    "Taurine"
## [53] "Threonine"                   "Trigonelline"
## [55] "Trimethylamine N-oxide"      "Tryptophan"
## [57] "Tyrosine"                    "Uracil"
## [59] "Valine"                      "Xylose"
## [61] "cis-Aconitate"               "myo-Inositol"
## [63] "trans-Aconitate"             "pi-Methylhistidine"
## [65] "tau-Methylhistidine"
```

```r
dim(human_cachexia)
```

```
## [1] 77 65
```

```r
is.na(human_cachexia)
```

```
##       Patient ID Muscle loss 1,6-Anhydro-beta-D-glucose 1-Methylnicotinamide
##  [1,]      FALSE       FALSE                      FALSE                FALSE
##  [2,]      FALSE       FALSE                      FALSE                FALSE
##  [3,]      FALSE       FALSE                      FALSE                FALSE
##  [4,]      FALSE       FALSE                      FALSE                FALSE
##  [5,]      FALSE       FALSE                      FALSE                FALSE
##  [6,]      FALSE       FALSE                      FALSE                FALSE
##  [7,]      FALSE       FALSE                      FALSE                FALSE
##  [8,]      FALSE       FALSE                      FALSE                FALSE
##  [9,]      FALSE       FALSE                      FALSE                FALSE
## [10,]      FALSE       FALSE                      FALSE                FALSE
## [11,]      FALSE       FALSE                      FALSE                FALSE
## [12,]      FALSE       FALSE                      FALSE                FALSE
## [13,]      FALSE       FALSE                      FALSE                FALSE
## [14,]      FALSE       FALSE                      FALSE                FALSE
## [15,]      FALSE       FALSE                      FALSE                FALSE
## [16,]      FALSE       FALSE                      FALSE                FALSE
## [17,]      FALSE       FALSE                      FALSE                FALSE
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```
## [18,]     FALSE     FALSE                    FALSE          FALSE
## [19,]     FALSE     FALSE                    FALSE          FALSE
## [20,]     FALSE     FALSE                    FALSE          FALSE
## [21,]     FALSE     FALSE                    FALSE          FALSE
## [22,]     FALSE     FALSE                    FALSE          FALSE
## [23,]     FALSE     FALSE                    FALSE          FALSE
## [24,]     FALSE     FALSE                    FALSE          FALSE
## [25,]     FALSE     FALSE                    FALSE          FALSE
## [26,]     FALSE     FALSE                    FALSE          FALSE
## [27,]     FALSE     FALSE                    FALSE          FALSE
## [28,]     FALSE     FALSE                    FALSE          FALSE
## [29,]     FALSE     FALSE                    FALSE          FALSE
## [30,]     FALSE     FALSE                    FALSE          FALSE
## [31,]     FALSE     FALSE                    FALSE          FALSE
## [32,]     FALSE     FALSE                    FALSE          FALSE
## [33,]     FALSE     FALSE                    FALSE          FALSE
## [34,]     FALSE     FALSE                    FALSE          FALSE
## [35,]     FALSE     FALSE                    FALSE          FALSE
## [36,]     FALSE     FALSE                    FALSE          FALSE
## [37,]     FALSE     FALSE                    FALSE          FALSE
## [38,]     FALSE     FALSE                    FALSE          FALSE
## [39,]     FALSE     FALSE                    FALSE          FALSE
## [40,]     FALSE     FALSE                    FALSE          FALSE
## [41,]     FALSE     FALSE                    FALSE          FALSE
## [42,]     FALSE     FALSE                    FALSE          FALSE
## [43,]     FALSE     FALSE                    FALSE          FALSE
## [44,]     FALSE     FALSE                    FALSE          FALSE
## [45,]     FALSE     FALSE                    FALSE          FALSE
## [46,]     FALSE     FALSE                    FALSE          FALSE
## [47,]     FALSE     FALSE                    FALSE          FALSE
## [48,]     FALSE     FALSE                    FALSE          FALSE
## [49,]     FALSE     FALSE                    FALSE          FALSE
## [50,]     FALSE     FALSE                    FALSE          FALSE
## [51,]     FALSE     FALSE                    FALSE          FALSE
## [52,]     FALSE     FALSE                    FALSE          FALSE
## [53,]     FALSE     FALSE                    FALSE          FALSE
## [54,]     FALSE     FALSE                    FALSE          FALSE
## [55,]     FALSE     FALSE                    FALSE          FALSE
## [56,]     FALSE     FALSE                    FALSE          FALSE
## [57,]     FALSE     FALSE                    FALSE          FALSE
## [58,]     FALSE     FALSE                    FALSE          FALSE
## [59,]     FALSE     FALSE                    FALSE          FALSE
## [60,]     FALSE     FALSE                    FALSE          FALSE
## [61,]     FALSE     FALSE                    FALSE          FALSE
## [62,]     FALSE     FALSE                    FALSE          FALSE
## [63,]     FALSE     FALSE                    FALSE          FALSE
## [64,]     FALSE     FALSE                    FALSE          FALSE
## [65,]     FALSE     FALSE                    FALSE          FALSE
## [66,]     FALSE     FALSE                    FALSE          FALSE
## [67,]     FALSE     FALSE                    FALSE          FALSE
## [68,]     FALSE     FALSE                    FALSE          FALSE
## [69,]     FALSE     FALSE                    FALSE          FALSE
## [70,]     FALSE     FALSE                    FALSE          FALSE
## [71,]     FALSE     FALSE                    FALSE          FALSE
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```
## [72,]       FALSE       FALSE                      FALSE              FALSE
## [73,]       FALSE       FALSE                      FALSE              FALSE
## [74,]       FALSE       FALSE                      FALSE              FALSE
## [75,]       FALSE       FALSE                      FALSE              FALSE
## [76,]       FALSE       FALSE                      FALSE              FALSE
## [77,]       FALSE       FALSE                      FALSE              FALSE
##          2-Aminobutyrate 2-Hydroxyisobutyrate 2-Oxoglutarate 3-Aminoisobutyrate
## [1,]           FALSE                FALSE         FALSE              FALSE
## [2,]           FALSE                FALSE         FALSE              FALSE
## [3,]           FALSE                FALSE         FALSE              FALSE
## [4,]           FALSE                FALSE         FALSE              FALSE
## [5,]           FALSE                FALSE         FALSE              FALSE
## [6,]           FALSE                FALSE         FALSE              FALSE
## [7,]           FALSE                FALSE         FALSE              FALSE
## [8,]           FALSE                FALSE         FALSE              FALSE
## [9,]           FALSE                FALSE         FALSE              FALSE
## [10,]          FALSE                FALSE         FALSE              FALSE
## [11,]          FALSE                FALSE         FALSE              FALSE
## [12,]          FALSE                FALSE         FALSE              FALSE
## [13,]          FALSE                FALSE         FALSE              FALSE
## [14,]          FALSE                FALSE         FALSE              FALSE
## [15,]          FALSE                FALSE         FALSE              FALSE
## [16,]          FALSE                FALSE         FALSE              FALSE
## [17,]          FALSE                FALSE         FALSE              FALSE
## [18,]          FALSE                FALSE         FALSE              FALSE
## [19,]          FALSE                FALSE         FALSE              FALSE
## [20,]          FALSE                FALSE         FALSE              FALSE
## [21,]          FALSE                FALSE         FALSE              FALSE
## [22,]          FALSE                FALSE         FALSE              FALSE
## [23,]          FALSE                FALSE         FALSE              FALSE
## [24,]          FALSE                FALSE         FALSE              FALSE
## [25,]          FALSE                FALSE         FALSE              FALSE
## [26,]          FALSE                FALSE         FALSE              FALSE
## [27,]          FALSE                FALSE         FALSE              FALSE
## [28,]          FALSE                FALSE         FALSE              FALSE
## [29,]          FALSE                FALSE         FALSE              FALSE
## [30,]          FALSE                FALSE         FALSE              FALSE
## [31,]          FALSE                FALSE         FALSE              FALSE
## [32,]          FALSE                FALSE         FALSE              FALSE
## [33,]          FALSE                FALSE         FALSE              FALSE
## [34,]          FALSE                FALSE         FALSE              FALSE
## [35,]          FALSE                FALSE         FALSE              FALSE
## [36,]          FALSE                FALSE         FALSE              FALSE
## [37,]          FALSE                FALSE         FALSE              FALSE
## [38,]          FALSE                FALSE         FALSE              FALSE
## [39,]          FALSE                FALSE         FALSE              FALSE
## [40,]          FALSE                FALSE         FALSE              FALSE
## [41,]          FALSE                FALSE         FALSE              FALSE
## [42,]          FALSE                FALSE         FALSE              FALSE
## [43,]          FALSE                FALSE         FALSE              FALSE
## [44,]          FALSE                FALSE         FALSE              FALSE
## [45,]          FALSE                FALSE         FALSE              FALSE
## [46,]          FALSE                FALSE         FALSE              FALSE
## [47,]          FALSE                FALSE         FALSE              FALSE
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## [48,]               FALSE              FALSE             FALSE              FALSE
## [49,]               FALSE              FALSE             FALSE              FALSE
## [50,]               FALSE              FALSE             FALSE              FALSE
## [51,]               FALSE              FALSE             FALSE              FALSE
## [52,]               FALSE              FALSE             FALSE              FALSE
## [53,]               FALSE              FALSE             FALSE              FALSE
## [54,]               FALSE              FALSE             FALSE              FALSE
## [55,]               FALSE              FALSE             FALSE              FALSE
## [56,]               FALSE              FALSE             FALSE              FALSE
## [57,]               FALSE              FALSE             FALSE              FALSE
## [58,]               FALSE              FALSE             FALSE              FALSE
## [59,]               FALSE              FALSE             FALSE              FALSE
## [60,]               FALSE              FALSE             FALSE              FALSE
## [61,]               FALSE              FALSE             FALSE              FALSE
## [62,]               FALSE              FALSE             FALSE              FALSE
## [63,]               FALSE              FALSE             FALSE              FALSE
## [64,]               FALSE              FALSE             FALSE              FALSE
## [65,]               FALSE              FALSE             FALSE              FALSE
## [66,]               FALSE              FALSE             FALSE              FALSE
## [67,]               FALSE              FALSE             FALSE              FALSE
## [68,]               FALSE              FALSE             FALSE              FALSE
## [69,]               FALSE              FALSE             FALSE              FALSE
## [70,]               FALSE              FALSE             FALSE              FALSE
## [71,]               FALSE              FALSE             FALSE              FALSE
## [72,]               FALSE              FALSE             FALSE              FALSE
## [73,]               FALSE              FALSE             FALSE              FALSE
## [74,]               FALSE              FALSE             FALSE              FALSE
## [75,]               FALSE              FALSE             FALSE              FALSE
## [76,]               FALSE              FALSE             FALSE              FALSE
## [77,]               FALSE              FALSE             FALSE              FALSE
##         3-Hydroxybutyrate 3-Hydroxyisovalerate 3-Indoxylsulfate
## [1,]               FALSE                FALSE            FALSE
## [2,]               FALSE                FALSE            FALSE
## [3,]               FALSE                FALSE            FALSE
## [4,]               FALSE                FALSE            FALSE
## [5,]               FALSE                FALSE            FALSE
## [6,]               FALSE                FALSE            FALSE
## [7,]               FALSE                FALSE            FALSE
## [8,]               FALSE                FALSE            FALSE
## [9,]               FALSE                FALSE            FALSE
## [10,]              FALSE                FALSE            FALSE
## [11,]              FALSE                FALSE            FALSE
## [12,]              FALSE                FALSE            FALSE
## [13,]              FALSE                FALSE            FALSE
## [14,]              FALSE                FALSE            FALSE
## [15,]              FALSE                FALSE            FALSE
## [16,]              FALSE                FALSE            FALSE
## [17,]              FALSE                FALSE            FALSE
## [18,]              FALSE                FALSE            FALSE
## [19,]              FALSE                FALSE            FALSE
## [20,]              FALSE                FALSE            FALSE
## [21,]              FALSE                FALSE            FALSE
## [22,]              FALSE                FALSE            FALSE
## [23,]              FALSE                FALSE            FALSE
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## [24,]           FALSE           FALSE           FALSE
## [25,]           FALSE           FALSE           FALSE
## [26,]           FALSE           FALSE           FALSE
## [27,]           FALSE           FALSE           FALSE
## [28,]           FALSE           FALSE           FALSE
## [29,]           FALSE           FALSE           FALSE
## [30,]           FALSE           FALSE           FALSE
## [31,]           FALSE           FALSE           FALSE
## [32,]           FALSE           FALSE           FALSE
## [33,]           FALSE           FALSE           FALSE
## [34,]           FALSE           FALSE           FALSE
## [35,]           FALSE           FALSE           FALSE
## [36,]           FALSE           FALSE           FALSE
## [37,]           FALSE           FALSE           FALSE
## [38,]           FALSE           FALSE           FALSE
## [39,]           FALSE           FALSE           FALSE
## [40,]           FALSE           FALSE           FALSE
## [41,]           FALSE           FALSE           FALSE
## [42,]           FALSE           FALSE           FALSE
## [43,]           FALSE           FALSE           FALSE
## [44,]           FALSE           FALSE           FALSE
## [45,]           FALSE           FALSE           FALSE
## [46,]           FALSE           FALSE           FALSE
## [47,]           FALSE           FALSE           FALSE
## [48,]           FALSE           FALSE           FALSE
## [49,]           FALSE           FALSE           FALSE
## [50,]           FALSE           FALSE           FALSE
## [51,]           FALSE           FALSE           FALSE
## [52,]           FALSE           FALSE           FALSE
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## [54,]           FALSE           FALSE           FALSE
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## [56,]           FALSE           FALSE           FALSE
## [57,]           FALSE           FALSE           FALSE
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## [59,]           FALSE           FALSE           FALSE
## [60,]           FALSE           FALSE           FALSE
## [61,]           FALSE           FALSE           FALSE
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## [63,]           FALSE           FALSE           FALSE
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## [68,]           FALSE           FALSE           FALSE
## [69,]           FALSE           FALSE           FALSE
## [70,]           FALSE           FALSE           FALSE
## [71,]           FALSE           FALSE           FALSE
## [72,]           FALSE           FALSE           FALSE
## [73,]           FALSE           FALSE           FALSE
## [74,]           FALSE           FALSE           FALSE
## [75,]           FALSE           FALSE           FALSE
## [76,]           FALSE           FALSE           FALSE
## [77,]           FALSE           FALSE           FALSE
```

```
##      4-Hydroxyphenylacetate Acetate Acetone Adipate Alanine Asparagine Betaine
##  [1,]                  FALSE   FALSE   FALSE   FALSE   FALSE      FALSE   FALSE
##  [2,]                  FALSE   FALSE   FALSE   FALSE   FALSE      FALSE   FALSE
##  [3,]                  FALSE   FALSE   FALSE   FALSE   FALSE      FALSE   FALSE
##  [4,]                  FALSE   FALSE   FALSE   FALSE   FALSE      FALSE   FALSE
##  [5,]                  FALSE   FALSE   FALSE   FALSE   FALSE      FALSE   FALSE
##  [6,]                  FALSE   FALSE   FALSE   FALSE   FALSE      FALSE   FALSE
##  [7,]                  FALSE   FALSE   FALSE   FALSE   FALSE      FALSE   FALSE
##  [8,]                  FALSE   FALSE   FALSE   FALSE   FALSE      FALSE   FALSE
##  [9,]                  FALSE   FALSE   FALSE   FALSE   FALSE      FALSE   FALSE
## [10,]                  FALSE   FALSE   FALSE   FALSE   FALSE      FALSE   FALSE
## [11,]                  FALSE   FALSE   FALSE   FALSE   FALSE      FALSE   FALSE
## [12,]                  FALSE   FALSE   FALSE   FALSE   FALSE      FALSE   FALSE
## [13,]                  FALSE   FALSE   FALSE   FALSE   FALSE      FALSE   FALSE
## [14,]                  FALSE   FALSE   FALSE   FALSE   FALSE      FALSE   FALSE
## [15,]                  FALSE   FALSE   FALSE   FALSE   FALSE      FALSE   FALSE
## [16,]                  FALSE   FALSE   FALSE   FALSE   FALSE      FALSE   FALSE
## [17,]                  FALSE   FALSE   FALSE   FALSE   FALSE      FALSE   FALSE
## [18,]                  FALSE   FALSE   FALSE   FALSE   FALSE      FALSE   FALSE
## [19,]                  FALSE   FALSE   FALSE   FALSE   FALSE      FALSE   FALSE
## [20,]                  FALSE   FALSE   FALSE   FALSE   FALSE      FALSE   FALSE
## [21,]                  FALSE   FALSE   FALSE   FALSE   FALSE      FALSE   FALSE
## [22,]                  FALSE   FALSE   FALSE   FALSE   FALSE      FALSE   FALSE
## [23,]                  FALSE   FALSE   FALSE   FALSE   FALSE      FALSE   FALSE
## [24,]                  FALSE   FALSE   FALSE   FALSE   FALSE      FALSE   FALSE
## [25,]                  FALSE   FALSE   FALSE   FALSE   FALSE      FALSE   FALSE
## [26,]                  FALSE   FALSE   FALSE   FALSE   FALSE      FALSE   FALSE
## [27,]                  FALSE   FALSE   FALSE   FALSE   FALSE      FALSE   FALSE
## [28,]                  FALSE   FALSE   FALSE   FALSE   FALSE      FALSE   FALSE
## [29,]                  FALSE   FALSE   FALSE   FALSE   FALSE      FALSE   FALSE
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## [31,]                  FALSE   FALSE   FALSE   FALSE   FALSE      FALSE   FALSE
## [32,]                  FALSE   FALSE   FALSE   FALSE   FALSE      FALSE   FALSE
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## [35,]                  FALSE   FALSE   FALSE   FALSE   FALSE      FALSE   FALSE
## [36,]                  FALSE   FALSE   FALSE   FALSE   FALSE      FALSE   FALSE
## [37,]                  FALSE   FALSE   FALSE   FALSE   FALSE      FALSE   FALSE
## [38,]                  FALSE   FALSE   FALSE   FALSE   FALSE      FALSE   FALSE
## [39,]                  FALSE   FALSE   FALSE   FALSE   FALSE      FALSE   FALSE
## [40,]                  FALSE   FALSE   FALSE   FALSE   FALSE      FALSE   FALSE
## [41,]                  FALSE   FALSE   FALSE   FALSE   FALSE      FALSE   FALSE
## [42,]                  FALSE   FALSE   FALSE   FALSE   FALSE      FALSE   FALSE
## [43,]                  FALSE   FALSE   FALSE   FALSE   FALSE      FALSE   FALSE
## [44,]                  FALSE   FALSE   FALSE   FALSE   FALSE      FALSE   FALSE
## [45,]                  FALSE   FALSE   FALSE   FALSE   FALSE      FALSE   FALSE
## [46,]                  FALSE   FALSE   FALSE   FALSE   FALSE      FALSE   FALSE
## [47,]                  FALSE   FALSE   FALSE   FALSE   FALSE      FALSE   FALSE
## [48,]                  FALSE   FALSE   FALSE   FALSE   FALSE      FALSE   FALSE
## [49,]                  FALSE   FALSE   FALSE   FALSE   FALSE      FALSE   FALSE
## [50,]                  FALSE   FALSE   FALSE   FALSE   FALSE      FALSE   FALSE
## [51,]                  FALSE   FALSE   FALSE   FALSE   FALSE      FALSE   FALSE
## [52,]                  FALSE   FALSE   FALSE   FALSE   FALSE      FALSE   FALSE
## [53,]                  FALSE   FALSE   FALSE   FALSE   FALSE      FALSE   FALSE
```

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## [54,]                     FALSE   FALSE   FALSE   FALSE   FALSE      FALSE   FALSE
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## [56,]                     FALSE   FALSE   FALSE   FALSE   FALSE      FALSE   FALSE
## [57,]                     FALSE   FALSE   FALSE   FALSE   FALSE      FALSE   FALSE
## [58,]                     FALSE   FALSE   FALSE   FALSE   FALSE      FALSE   FALSE
## [59,]                     FALSE   FALSE   FALSE   FALSE   FALSE      FALSE   FALSE
## [60,]                     FALSE   FALSE   FALSE   FALSE   FALSE      FALSE   FALSE
## [61,]                     FALSE   FALSE   FALSE   FALSE   FALSE      FALSE   FALSE
## [62,]                     FALSE   FALSE   FALSE   FALSE   FALSE      FALSE   FALSE
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## [72,]                     FALSE   FALSE   FALSE   FALSE   FALSE      FALSE   FALSE
## [73,]                     FALSE   FALSE   FALSE   FALSE   FALSE      FALSE   FALSE
## [74,]                     FALSE   FALSE   FALSE   FALSE   FALSE      FALSE   FALSE
## [75,]                     FALSE   FALSE   FALSE   FALSE   FALSE      FALSE   FALSE
## [76,]                     FALSE   FALSE   FALSE   FALSE   FALSE      FALSE   FALSE
## [77,]                     FALSE   FALSE   FALSE   FALSE   FALSE      FALSE   FALSE
##         Carnitine Citrate Creatine Creatinine Dimethylamine Ethanolamine Formate
##  [1,]       FALSE   FALSE    FALSE      FALSE         FALSE        FALSE   FALSE
##  [2,]       FALSE   FALSE    FALSE      FALSE         FALSE        FALSE   FALSE
##  [3,]       FALSE   FALSE    FALSE      FALSE         FALSE        FALSE   FALSE
##  [4,]       FALSE   FALSE    FALSE      FALSE         FALSE        FALSE   FALSE
##  [5,]       FALSE   FALSE    FALSE      FALSE         FALSE        FALSE   FALSE
##  [6,]       FALSE   FALSE    FALSE      FALSE         FALSE        FALSE   FALSE
##  [7,]       FALSE   FALSE    FALSE      FALSE         FALSE        FALSE   FALSE
##  [8,]       FALSE   FALSE    FALSE      FALSE         FALSE        FALSE   FALSE
##  [9,]       FALSE   FALSE    FALSE      FALSE         FALSE        FALSE   FALSE
## [10,]       FALSE   FALSE    FALSE      FALSE         FALSE        FALSE   FALSE
## [11,]       FALSE   FALSE    FALSE      FALSE         FALSE        FALSE   FALSE
## [12,]       FALSE   FALSE    FALSE      FALSE         FALSE        FALSE   FALSE
## [13,]       FALSE   FALSE    FALSE      FALSE         FALSE        FALSE   FALSE
## [14,]       FALSE   FALSE    FALSE      FALSE         FALSE        FALSE   FALSE
## [15,]       FALSE   FALSE    FALSE      FALSE         FALSE        FALSE   FALSE
## [16,]       FALSE   FALSE    FALSE      FALSE         FALSE        FALSE   FALSE
## [17,]       FALSE   FALSE    FALSE      FALSE         FALSE        FALSE   FALSE
## [18,]       FALSE   FALSE    FALSE      FALSE         FALSE        FALSE   FALSE
## [19,]       FALSE   FALSE    FALSE      FALSE         FALSE        FALSE   FALSE
## [20,]       FALSE   FALSE    FALSE      FALSE         FALSE        FALSE   FALSE
## [21,]       FALSE   FALSE    FALSE      FALSE         FALSE        FALSE   FALSE
## [22,]       FALSE   FALSE    FALSE      FALSE         FALSE        FALSE   FALSE
## [23,]       FALSE   FALSE    FALSE      FALSE         FALSE        FALSE   FALSE
## [24,]       FALSE   FALSE    FALSE      FALSE         FALSE        FALSE   FALSE
## [25,]       FALSE   FALSE    FALSE      FALSE         FALSE        FALSE   FALSE
## [26,]       FALSE   FALSE    FALSE      FALSE         FALSE        FALSE   FALSE
## [27,]       FALSE   FALSE    FALSE      FALSE         FALSE        FALSE   FALSE
## [28,]       FALSE   FALSE    FALSE      FALSE         FALSE        FALSE   FALSE
## [29,]       FALSE   FALSE    FALSE      FALSE         FALSE        FALSE   FALSE
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```
## [30,]     FALSE   FALSE    FALSE     FALSE       FALSE     FALSE   FALSE
## [31,]     FALSE   FALSE    FALSE     FALSE       FALSE     FALSE   FALSE
## [32,]     FALSE   FALSE    FALSE     FALSE       FALSE     FALSE   FALSE
## [33,]     FALSE   FALSE    FALSE     FALSE       FALSE     FALSE   FALSE
## [34,]     FALSE   FALSE    FALSE     FALSE       FALSE     FALSE   FALSE
## [35,]     FALSE   FALSE    FALSE     FALSE       FALSE     FALSE   FALSE
## [36,]     FALSE   FALSE    FALSE     FALSE       FALSE     FALSE   FALSE
## [37,]     FALSE   FALSE    FALSE     FALSE       FALSE     FALSE   FALSE
## [38,]     FALSE   FALSE    FALSE     FALSE       FALSE     FALSE   FALSE
## [39,]     FALSE   FALSE    FALSE     FALSE       FALSE     FALSE   FALSE
## [40,]     FALSE   FALSE    FALSE     FALSE       FALSE     FALSE   FALSE
## [41,]     FALSE   FALSE    FALSE     FALSE       FALSE     FALSE   FALSE
## [42,]     FALSE   FALSE    FALSE     FALSE       FALSE     FALSE   FALSE
## [43,]     FALSE   FALSE    FALSE     FALSE       FALSE     FALSE   FALSE
## [44,]     FALSE   FALSE    FALSE     FALSE       FALSE     FALSE   FALSE
## [45,]     FALSE   FALSE    FALSE     FALSE       FALSE     FALSE   FALSE
## [46,]     FALSE   FALSE    FALSE     FALSE       FALSE     FALSE   FALSE
## [47,]     FALSE   FALSE    FALSE     FALSE       FALSE     FALSE   FALSE
## [48,]     FALSE   FALSE    FALSE     FALSE       FALSE     FALSE   FALSE
## [49,]     FALSE   FALSE    FALSE     FALSE       FALSE     FALSE   FALSE
## [50,]     FALSE   FALSE    FALSE     FALSE       FALSE     FALSE   FALSE
## [51,]     FALSE   FALSE    FALSE     FALSE       FALSE     FALSE   FALSE
## [52,]     FALSE   FALSE    FALSE     FALSE       FALSE     FALSE   FALSE
## [53,]     FALSE   FALSE    FALSE     FALSE       FALSE     FALSE   FALSE
## [54,]     FALSE   FALSE    FALSE     FALSE       FALSE     FALSE   FALSE
## [55,]     FALSE   FALSE    FALSE     FALSE       FALSE     FALSE   FALSE
## [56,]     FALSE   FALSE    FALSE     FALSE       FALSE     FALSE   FALSE
## [57,]     FALSE   FALSE    FALSE     FALSE       FALSE     FALSE   FALSE
## [58,]     FALSE   FALSE    FALSE     FALSE       FALSE     FALSE   FALSE
## [59,]     FALSE   FALSE    FALSE     FALSE       FALSE     FALSE   FALSE
## [60,]     FALSE   FALSE    FALSE     FALSE       FALSE     FALSE   FALSE
## [61,]     FALSE   FALSE    FALSE     FALSE       FALSE     FALSE   FALSE
## [62,]     FALSE   FALSE    FALSE     FALSE       FALSE     FALSE   FALSE
## [63,]     FALSE   FALSE    FALSE     FALSE       FALSE     FALSE   FALSE
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## [66,]     FALSE   FALSE    FALSE     FALSE       FALSE     FALSE   FALSE
## [67,]     FALSE   FALSE    FALSE     FALSE       FALSE     FALSE   FALSE
## [68,]     FALSE   FALSE    FALSE     FALSE       FALSE     FALSE   FALSE
## [69,]     FALSE   FALSE    FALSE     FALSE       FALSE     FALSE   FALSE
## [70,]     FALSE   FALSE    FALSE     FALSE       FALSE     FALSE   FALSE
## [71,]     FALSE   FALSE    FALSE     FALSE       FALSE     FALSE   FALSE
## [72,]     FALSE   FALSE    FALSE     FALSE       FALSE     FALSE   FALSE
## [73,]     FALSE   FALSE    FALSE     FALSE       FALSE     FALSE   FALSE
## [74,]     FALSE   FALSE    FALSE     FALSE       FALSE     FALSE   FALSE
## [75,]     FALSE   FALSE    FALSE     FALSE       FALSE     FALSE   FALSE
## [76,]     FALSE   FALSE    FALSE     FALSE       FALSE     FALSE   FALSE
## [77,]     FALSE   FALSE    FALSE     FALSE       FALSE     FALSE   FALSE
##         Fucose Fumarate Glucose Glutamine Glycine Glycolate Guanidoacetate
## [1,]  FALSE    FALSE    FALSE     FALSE   FALSE    FALSE          FALSE
## [2,]  FALSE    FALSE    FALSE     FALSE   FALSE    FALSE          FALSE
## [3,]  FALSE    FALSE    FALSE     FALSE   FALSE    FALSE          FALSE
## [4,]  FALSE    FALSE    FALSE     FALSE   FALSE    FALSE          FALSE
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## [75,] FALSE FALSE FALSE    FALSE FALSE FALSE           FALSE
## [76,] FALSE FALSE FALSE    FALSE FALSE FALSE           FALSE
## [77,] FALSE FALSE FALSE    FALSE FALSE FALSE           FALSE
##       Hippurate Histidine Hypoxanthine Isoleucine Lactate Leucine Lysine
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## [19,]     FALSE     FALSE        FALSE      FALSE   FALSE   FALSE  FALSE
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## [75,]        FALSE           FALSE              FALSE              FALSE
## [76,]        FALSE           FALSE              FALSE              FALSE
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## [37,]       FALSE           FALSE    FALSE       FALSE  FALSE     FALSE   FALSE
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## [39,]       FALSE           FALSE    FALSE       FALSE  FALSE     FALSE   FALSE
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## [41,]       FALSE           FALSE    FALSE       FALSE  FALSE     FALSE   FALSE
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## [76,]          FALSE          FALSE   FALSE      FALSE FALSE      FALSE   FALSE
## [77,]          FALSE          FALSE   FALSE      FALSE FALSE      FALSE   FALSE
##         Tartrate Taurine Threonine Trigonelline Trimethylamine N-oxide Tryptophan
##  [1,]    FALSE   FALSE     FALSE       FALSE                     FALSE     FALSE
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## [16,]    FALSE   FALSE     FALSE       FALSE                     FALSE     FALSE
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## [76,]    FALSE   FALSE     FALSE       FALSE                      FALSE    FALSE
## [77,]    FALSE   FALSE     FALSE       FALSE                      FALSE    FALSE
##         Tyrosine Uracil Valine Xylose cis-Aconitate myo-Inositol trans-Aconitate
##  [1,]    FALSE  FALSE  FALSE  FALSE         FALSE        FALSE          FALSE
##  [2,]    FALSE  FALSE  FALSE  FALSE         FALSE        FALSE          FALSE
##  [3,]    FALSE  FALSE  FALSE  FALSE         FALSE        FALSE          FALSE
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## [31,]    FALSE  FALSE  FALSE  FALSE         FALSE        FALSE          FALSE
## [32,]    FALSE  FALSE  FALSE  FALSE         FALSE        FALSE          FALSE
## [33,]    FALSE  FALSE  FALSE  FALSE         FALSE        FALSE          FALSE
## [34,]    FALSE  FALSE  FALSE  FALSE         FALSE        FALSE          FALSE
## [35,]    FALSE  FALSE  FALSE  FALSE         FALSE        FALSE          FALSE
## [36,]    FALSE  FALSE  FALSE  FALSE         FALSE        FALSE          FALSE
## [37,]    FALSE  FALSE  FALSE  FALSE         FALSE        FALSE          FALSE
## [38,]    FALSE  FALSE  FALSE  FALSE         FALSE        FALSE          FALSE
## [39,]    FALSE  FALSE  FALSE  FALSE         FALSE        FALSE          FALSE
## [40,]    FALSE  FALSE  FALSE  FALSE         FALSE        FALSE          FALSE
## [41,]    FALSE  FALSE  FALSE  FALSE         FALSE        FALSE          FALSE
## [42,]    FALSE  FALSE  FALSE  FALSE         FALSE        FALSE          FALSE
## [43,]    FALSE  FALSE  FALSE  FALSE         FALSE        FALSE          FALSE
## [44,]    FALSE  FALSE  FALSE  FALSE         FALSE        FALSE          FALSE
## [45,]    FALSE  FALSE  FALSE  FALSE         FALSE        FALSE          FALSE
## [46,]    FALSE  FALSE  FALSE  FALSE         FALSE        FALSE          FALSE
## [47,]    FALSE  FALSE  FALSE  FALSE         FALSE        FALSE          FALSE
```

```
## [48,]    FALSE FALSE FALSE FALSE        FALSE        FALSE        FALSE
## [49,]    FALSE FALSE FALSE FALSE        FALSE        FALSE        FALSE
## [50,]    FALSE FALSE FALSE FALSE        FALSE        FALSE        FALSE
## [51,]    FALSE FALSE FALSE FALSE        FALSE        FALSE        FALSE
## [52,]    FALSE FALSE FALSE FALSE        FALSE        FALSE        FALSE
## [53,]    FALSE FALSE FALSE FALSE        FALSE        FALSE        FALSE
## [54,]    FALSE FALSE FALSE FALSE        FALSE        FALSE        FALSE
## [55,]    FALSE FALSE FALSE FALSE        FALSE        FALSE        FALSE
## [56,]    FALSE FALSE FALSE FALSE        FALSE        FALSE        FALSE
## [57,]    FALSE FALSE FALSE FALSE        FALSE        FALSE        FALSE
## [58,]    FALSE FALSE FALSE FALSE        FALSE        FALSE        FALSE
## [59,]    FALSE FALSE FALSE FALSE        FALSE        FALSE        FALSE
## [60,]    FALSE FALSE FALSE FALSE        FALSE        FALSE        FALSE
## [61,]    FALSE FALSE FALSE FALSE        FALSE        FALSE        FALSE
## [62,]    FALSE FALSE FALSE FALSE        FALSE        FALSE        FALSE
## [63,]    FALSE FALSE FALSE FALSE        FALSE        FALSE        FALSE
## [64,]    FALSE FALSE FALSE FALSE        FALSE        FALSE        FALSE
## [65,]    FALSE FALSE FALSE FALSE        FALSE        FALSE        FALSE
## [66,]    FALSE FALSE FALSE FALSE        FALSE        FALSE        FALSE
## [67,]    FALSE FALSE FALSE FALSE        FALSE        FALSE        FALSE
## [68,]    FALSE FALSE FALSE FALSE        FALSE        FALSE        FALSE
## [69,]    FALSE FALSE FALSE FALSE        FALSE        FALSE        FALSE
## [70,]    FALSE FALSE FALSE FALSE        FALSE        FALSE        FALSE
## [71,]    FALSE FALSE FALSE FALSE        FALSE        FALSE        FALSE
## [72,]    FALSE FALSE FALSE FALSE        FALSE        FALSE        FALSE
## [73,]    FALSE FALSE FALSE FALSE        FALSE        FALSE        FALSE
## [74,]    FALSE FALSE FALSE FALSE        FALSE        FALSE        FALSE
## [75,]    FALSE FALSE FALSE FALSE        FALSE        FALSE        FALSE
## [76,]    FALSE FALSE FALSE FALSE        FALSE        FALSE        FALSE
## [77,]    FALSE FALSE FALSE FALSE        FALSE        FALSE        FALSE
##       pi-Methylhistidine tau-Methylhistidine
## [1,]              FALSE             FALSE
## [2,]              FALSE             FALSE
## [3,]              FALSE             FALSE
## [4,]              FALSE             FALSE
## [5,]              FALSE             FALSE
## [6,]              FALSE             FALSE
## [7,]              FALSE             FALSE
## [8,]              FALSE             FALSE
## [9,]              FALSE             FALSE
## [10,]             FALSE             FALSE
## [11,]             FALSE             FALSE
## [12,]             FALSE             FALSE
## [13,]             FALSE             FALSE
## [14,]             FALSE             FALSE
## [15,]             FALSE             FALSE
## [16,]             FALSE             FALSE
## [17,]             FALSE             FALSE
## [18,]             FALSE             FALSE
## [19,]             FALSE             FALSE
## [20,]             FALSE             FALSE
## [21,]             FALSE             FALSE
## [22,]             FALSE             FALSE
## [23,]             FALSE             FALSE
```

```
## [24,]            FALSE            FALSE
## [25,]            FALSE            FALSE
## [26,]            FALSE            FALSE
## [27,]            FALSE            FALSE
## [28,]            FALSE            FALSE
## [29,]            FALSE            FALSE
## [30,]            FALSE            FALSE
## [31,]            FALSE            FALSE
## [32,]            FALSE            FALSE
## [33,]            FALSE            FALSE
## [34,]            FALSE            FALSE
## [35,]            FALSE            FALSE
## [36,]            FALSE            FALSE
## [37,]            FALSE            FALSE
## [38,]            FALSE            FALSE
## [39,]            FALSE            FALSE
## [40,]            FALSE            FALSE
## [41,]            FALSE            FALSE
## [42,]            FALSE            FALSE
## [43,]            FALSE            FALSE
## [44,]            FALSE            FALSE
## [45,]            FALSE            FALSE
## [46,]            FALSE            FALSE
## [47,]            FALSE            FALSE
## [48,]            FALSE            FALSE
## [49,]            FALSE            FALSE
## [50,]            FALSE            FALSE
## [51,]            FALSE            FALSE
## [52,]            FALSE            FALSE
## [53,]            FALSE            FALSE
## [54,]            FALSE            FALSE
## [55,]            FALSE            FALSE
## [56,]            FALSE            FALSE
## [57,]            FALSE            FALSE
## [58,]            FALSE            FALSE
## [59,]            FALSE            FALSE
## [60,]            FALSE            FALSE
## [61,]            FALSE            FALSE
## [62,]            FALSE            FALSE
## [63,]            FALSE            FALSE
## [64,]            FALSE            FALSE
## [65,]            FALSE            FALSE
## [66,]            FALSE            FALSE
## [67,]            FALSE            FALSE
## [68,]            FALSE            FALSE
## [69,]            FALSE            FALSE
## [70,]            FALSE            FALSE
## [71,]            FALSE            FALSE
## [72,]            FALSE            FALSE
## [73,]            FALSE            FALSE
## [74,]            FALSE            FALSE
## [75,]            FALSE            FALSE
## [76,]            FALSE            FALSE
## [77,]            FALSE            FALSE
```

Encontramos que nuestro dataset es un dataframe con 77 muestras y presenta 65 columnas siendo la primera columna el ID de la muestra del paciente y la segunda si ha habido pérdida de masa muscular y grasa (caquexia) o no (control), el resto de columna se corresponden con diversos metabolitos.

Para tener más información acerca de nuestro estudio determinamos el número de pacientes que presenta caquexia y los pacientes control.

```
human_cachexia$`Muscle loss`<-as.factor(human_cachexia$`Muscle loss`)
summary(human_cachexia$`Muscle loss`)
```

```
## cachexic  control
##      47       30
```

De los 77 pacientes tenemos 30 control y 47 con caquexia.

A continuación, procedemos a crear el SummarizedExperiment

```
if (!require("BiocManager", quietly = TRUE))
  install.packages("BiocManager")
BiocManager::install(version = "3.20")
```

```
## Bioconductor version 3.20 (BiocManager 1.30.25), R 4.4.2 (2024-10-31 ucrt)
```

```
## Installation paths not writeable, unable to update packages
##   path: C:/Program Files/R/R-4.4.2/library
##   packages:
##     class, cluster, foreign, KernSmooth, MASS, Matrix, nlme, nnet, rpart,
##     spatial, survival
```

```
## Old packages: 'readxl'
```

```
library(SummarizedExperiment)
```

```
## Cargando paquete requerido: MatrixGenerics
```

```
## Cargando paquete requerido: matrixStats
```

```
##
## Adjuntando el paquete: 'MatrixGenerics'
```

```
## The following objects are masked from 'package:matrixStats':
##
##     colAlls, colAnyNAs, colAnys, colAvgsPerRowSet, colCollapse,
##     colCounts, colCummaxs, colCummins, colCumprods, colCumsums,
##     colDiffs, colIQRDiffs, colIQRs, colLogSumExps, colMadDiffs,
##     colMads, colMaxs, colMeans2, colMedians, colMins, colOrderStats,
##     colProds, colQuantiles, colRanges, colRanks, colSdDiffs, colSds,
##     colSums2, colTabulates, colVarDiffs, colVars, colWeightedMads,
##     colWeightedMeans, colWeightedMedians, colWeightedSds,
##     colWeightedVars, rowAlls, rowAnyNAs, rowAnys, rowAvgsPerColSet,
##     rowCollapse, rowCounts, rowCummaxs, rowCummins, rowCumprods,
```

```
##      rowCumsums, rowDiffs, rowIQRDiffs, rowIQRs, rowLogSumExps,
##      rowMadDiffs, rowMads, rowMaxs, rowMeans2, rowMedians, rowMins,
##      rowOrderStats, rowProds, rowQuantiles, rowRanges, rowRanks,
##      rowSdDiffs, rowSds, rowSums2, rowTabulates, rowVarDiffs, rowVars,
##      rowWeightedMads, rowWeightedMeans, rowWeightedMedians,
##      rowWeightedSds, rowWeightedVars


## Cargando paquete requerido: GenomicRanges


## Cargando paquete requerido: stats4


## Cargando paquete requerido: BiocGenerics


##
## Adjuntando el paquete: 'BiocGenerics'


## The following objects are masked from 'package:stats':
##
##      IQR, mad, sd, var, xtabs


## The following objects are masked from 'package:base':
##
##      anyDuplicated, aperm, append, as.data.frame, basename, cbind,
##      colnames, dirname, do.call, duplicated, eval, evalq, Filter, Find,
##      get, grep, grepl, intersect, is.unsorted, lapply, Map, mapply,
##      match, mget, order, paste, pmax, pmax.int, pmin, pmin.int,
##      Position, rank, rbind, Reduce, rownames, sapply, saveRDS, setdiff,
##      table, tapply, union, unique, unsplit, which.max, which.min


## Cargando paquete requerido: S4Vectors


##
## Adjuntando el paquete: 'S4Vectors'


## The following object is masked from 'package:utils':
##
##      findMatches


## The following objects are masked from 'package:base':
##
##      expand.grid, I, unname


## Cargando paquete requerido: IRanges


##
## Adjuntando el paquete: 'IRanges'


## The following object is masked from 'package:grDevices':
##
##      windows
```

```
## Cargando paquete requerido: GenomeInfoDb


## Cargando paquete requerido: Biobase


## Welcome to Bioconductor
##
##     Vignettes contain introductory material; view with
##     'browseVignettes()'. To cite Bioconductor, see
##     'citation("Biobase")', and for packages 'citation("pkgname")'.


##
## Adjuntando el paquete: 'Biobase'


## The following object is masked from 'package:MatrixGenerics':
##
##     rowMedians


## The following objects are masked from 'package:matrixStats':
##
##     anyMissing, rowMedians
```

A continuación tenemos que crear dos matrices, la de datos y la de metadatos.

```r
# Para crear la matriz de datos solo incluimos los datos de las concentraciones de metabolitos
matriz_caquexia<-as.matrix(human_cachexia[, 3:ncol(human_cachexia)])

# ID de los sujetos como nombre de fila
rownames(matriz_caquexia)<-human_cachexia$`Patient ID`
# Nombre de los metabolitos
metabolitos<-colnames(matriz_caquexia)

# Ahora creamos los metadatos de columnas y filas,

metadatos_columnas <-DataFrame(
  metabolitos = metabolitos,
  Dataset = rep ("Human_cachexia.csv", ncol(matriz_caquexia)),
  row.names = metabolitos)

  metadatos_filas <-DataFrame(
    Perdida_muscular = human_cachexia$`Muscle loss`,
    Dataset = rep ("Human_cachexia.csv", nrow(human_cachexia)),
    row.names = human_cachexia$`Patient ID`)
```

Una vez ya hemos creado las matrices me dispongo a crear el objeto SummarizedExperiment, al que luego agregaremos información acerca de los experimentos en los metadatos.

```r
SE <-SummarizedExperiment(assays = list(counts = matriz_caquexia),
                          rowData = metadatos_filas,
                          colData = metadatos_columnas)
SE
```

```
## class: SummarizedExperiment
## dim: 77 63
## metadata(0):
## assays(1): counts
## rownames(77): PIF_178 PIF_087 ... NETL_003_V1 NETL_003_V2
## rowData names(2): Perdida_muscular Dataset
## colnames(63): 1,6-Anhydro-beta-D-glucose 1-Methylnicotinamide ...
##    pi-Methylhistidine tau-Methylhistidine
## colData names(2): metabolitos Dataset
```

```r
# Anadimos la información obtenida de GitHub en los metadatos
# Como se trata de una lista podemos añadir toda la información que queramos, alguna de ella me la inve
metadata(SE) <- list(
  Descripción =  "Cachexia is a complex metabolic syndrome associated with an underlying illness (such a
  Dataset= "Human_cachexia.csv",
  Informacion_muestras ="77 muestras urinarias de 47 pacientes con caquexia y 30 controles",
  Tecnica = "RMN unidimensional",
  Projecto= "Estudio de la metabolomica urinaria para mejorar la detección de caquexia",
  IP = "Celia Martínez Saz")

SE
```

```
## class: SummarizedExperiment
## dim: 77 63
## metadata(6): Descripción Dataset ... Projecto IP
## assays(1): counts
## rownames(77): PIF_178 PIF_087 ... NETL_003_V1 NETL_003_V2
## rowData names(2): Perdida_muscular Dataset
## colnames(63): 1,6-Anhydro-beta-D-glucose 1-Methylnicotinamide ...
##    pi-Methylhistidine tau-Methylhistidine
## colData names(2): metabolitos Dataset
```

Ahora podríamos probar algunas operzaciones comunes en esta clase de objetos como por ejemplo subconjuntos:

```r
SE[1:5,1:3] #Mostramos las 5 primeras muestras de los 3 primeros metabolitos
```

```
## class: SummarizedExperiment
## dim: 5 3
## metadata(6): Descripción Dataset ... Projecto IP
## assays(1): counts
## rownames(5): PIF_178 PIF_087 PIF_090 NETL_005_V1 PIF_115
## rowData names(2): Perdida_muscular Dataset
## colnames(3): 1,6-Anhydro-beta-D-glucose 1-Methylnicotinamide
##    2-Aminobutyrate
## colData names(2): metabolitos Dataset
```

```r
control <-SE[rowData(SE)$Perdida_muscular == "control,"] # Solo mostramos los individuos control
assay(SE)[1:5,1:3]
```

```
##               1,6-Anhydro-beta-D-glucose 1-Methylnicotinamide 2-Aminobutyrate
```

```
## PIF_178      "40.85"                     "65.37"                     "18.73"
## PIF_087      "62.18"                     "340.36"                    "24.29"
## PIF_090      "270.43"                    "64.72"                     "12.18"
## NETL_005_V1 "154.47"                     "52.98"                     "172.43"
## PIF_115      "22.2"                      "73.7"                      "15.64"
```

Finalmente guardamos nuestro objeto SummarizedExperiment para poder subirlo a GitHub.

```
save(SE, file = "SummarizedExperiment_PEC1.Rda")
```