HowTo: Build and use chromosomal information

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1 Overview

The annotate package provides a class that can be used to model chromosomal information about a species, using one of the metadata packages provided by Bioconductor. This class contains information about the organism and its chromosomes and provides a standardized interface to the information in the metadata packages for other software to quickly extract necessary chromosomal information. An example of using *chromLocation* objects in other software can be found with the `alongChrom` function of the *geneplotter* package in Bioconductor.

2 The chromLocation class

The *chromLocation* class is used to provide a structure for chromosomal data of a particular organism. In this section, we will discuss the various slots of the class and the methods for interacting with them. Before this though, we will create an object of class *chromLocation* for demonstration purposes later. The helper function `buildChromLocation` is used, and it takes as an argument the name of a Bioconductor metadata package, which is itself used to extract the data. For this vignette, we will be using the *hgu95av2.db* package.

```
> library("annotate")
> z <- buildChromLocation("hgu95av2")
> z

Instance of a chromLocation class with the following fields:
        Organism:  Homo sapiens
        Data source:  hgu95av2
        Number of chromosomes for this organism:  640
        Chromosomes of this organism and their lengths in base pairs:
                1 : 248956422
                2 : 242193529
                3 : 198295559
                4 : 190214555
                5 : 181538259
```

6 : 170805979
7 : 159345973
X : 156040895
8 : 145138636
9 : 138394717
11 : 135086622
10 : 133797422
12 : 133275309
13 : 114364328
14 : 107043718
15 : 101991189
16 : 90338345
17 : 83257441
18 : 80373285
20 : 64444167
19 : 58617616
Y : 57227415
22 : 50818468
21 : 46709983
8_KZ208915v1_fix : 6367528
15_ML143371v1_fix : 5500449
15_KI270905v1_alt : 5161414
15_KN538374v1_fix : 4998962
6_GL000256v2_alt : 4929269
6_GL000254v2_alt : 4827813
6_GL000251v2_alt : 4795265
6_GL000253v2_alt : 4677643
6_GL000250v2_alt : 4672374
6_GL000255v2_alt : 4606388
6_GL000252v2_alt : 4604811
17_KI270857v1_alt : 2877074
16_KI270853v1_alt : 2659700
15_KQ031389v1_alt : 2365364
16_KV880768v1_fix : 1927115
16_KI270728v1_random : 1872759
17_GL000258v2_alt : 1821992
5_GL339449v2_alt : 1612928
14_KI270847v1_alt : 1511111
17_KI270908v1_alt : 1423190
14_KI270846v1_alt : 1351393
5_KI270897v1_alt : 1144418
7_KI270803v1_alt : 1111570
19_GL949749v2_alt : 1091841
19_KI270938v1_alt : 1066800
19_GL949750v2_alt : 1066390
19_GL949748v2_alt : 1064304

12_KZ208916v1_fix : 1046838
19_GL949751v2_alt : 1002683
19_GL949746v1_alt : 987716
19_GL949752v1_alt : 987100
8_KI270821v1_alt : 985506
1_KI270763v1_alt : 911658
6_KI270801v1_alt : 870480
19_GL949753v2_alt : 796479
19_GL949747v2_alt : 729520
14_KZ208920v1_fix : 690932
7_KZ208913v1_alt : 680662
5_KV575244v1_fix : 673059
8_KI270822v1_alt : 624492
7_KZ208912v1_fix : 589656
4_GL000257v2_alt : 586476
12_KI270904v1_alt : 572349
4_KI270925v1_alt : 555799
1_KV880763v1_alt : 551020
12_KN538369v1_fix : 541038
2_KQ983256v1_alt : 535088
21_ML143377v1_fix : 519485
19_ML143376v1_fix : 493165
2_KQ031384v1_fix : 481245
16_KZ559113v1_fix : 480415
15_KI270852v1_alt : 478999
7_KV880765v1_fix : 468267
1_KQ031383v1_fix : 467143
22_ML143378v1_fix : 461303
1_KN538360v1_fix : 460100
10_ML143354v1_fix : 454963
3_KN196475v1_fix : 451168
15_KI270727v1_random : 448248
9_KI270823v1_alt : 439082
15_KI270850v1_alt : 430880
1_KI270759v1_alt : 425601
4_KV766193v1_alt : 420675
10_KN538367v1_fix : 420164
3_KN538364v1_fix : 415308
22_ML143380v1_fix : 412368
3_KV766192v1_fix : 411654
13_ML143366v1_fix : 409912
12_GL877876v1_alt : 408271
18_KQ090028v1_fix : 407387
19_KQ458386v1_fix : 405389
X_ML143381v1_fix : 403128
14_ML143367v1_fix : 399183

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15_ML143372v1_fix : 396515
Un_KI270442v1 : 392061
17_KI270862v1_alt : 391357
15_GL383555v2_alt : 388773
19_GL383573v1_alt : 385657
4_KI270896v1_alt : 378547
4_GL383528v1_alt : 376187
17_GL383563v3_alt : 375691
8_KI270810v1_alt : 374415
3_KQ031385v1_fix : 373699
19_KN196484v1_fix : 370917
15_ML143370v1_fix : 369264
1_GL383520v2_alt : 366580
2_KN538363v1_fix : 365499
5_KV575243v1_alt : 362221
13_KN538372v1_fix : 356766
1_KI270762v1_alt : 354444
1_KQ458383v1_alt : 349938
4_ML143345v1_fix : 341066
9_KN196479v1_fix : 330164
1_KZ208906v1_fix : 330031
15_KI270848v1_alt : 327382
17_KI270909v1_alt : 325800
14_KI270844v1_alt : 322166
6_KQ031387v1_fix : 320750
8_KI270900v1_alt : 318687
12_KQ759760v1_fix : 315610
10_GL383546v1_alt : 309802
13_KI270838v1_alt : 306913
3_KN196476v1_fix : 305979
8_KI270816v1_alt : 305841
1_KN538361v1_fix : 305542
11_KZ559108v1_fix : 305244
22_KI270879v1_alt : 304135
3_KZ559103v1_alt : 302885
11_KZ559110v1_alt : 301637
8_KI270813v1_alt : 300230
12_ML143361v1_fix : 297568
11_KI270831v1_alt : 296895
15_GL383554v1_alt : 296527
19_KV575249v1_alt : 293522
10_ML143355v1_fix : 292944
8_KI270811v1_alt : 292436
18_GL383567v1_alt : 289831
X_KI270880v1_alt : 284869
8_KI270812v1_alt : 282736
```

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19_KI270921v1_alt : 282224
17_KV766196v1_fix : 281919
17_KI270729v1_random : 280839
11_KZ559109v1_fix : 279644
1_KQ983255v1_alt : 278659
17_JH159146v1_alt : 278131
10_KN196480v1_fix : 277797
17_KV766198v1_alt : 276292
4_ML143349v1_fix : 276109
X_KI270913v1_alt : 274009
6_KI270798v1_alt : 271782
7_KI270808v1_alt : 271455
16_ML143373v1_fix : 270967
11_ML143358v1_fix : 270122
6_KN196478v1_fix : 268330
16_KQ090027v1_alt : 267463
8_KV880767v1_fix : 265876
10_KQ090021v1_fix : 264545
14_ML143368v1_alt : 264228
22_KI270876v1_alt : 263666
15_KI270851v1_alt : 263054
22_KI270875v1_alt : 259914
1_KI270766v1_alt : 256271
7_ML143352v1_fix : 254759
19_KI270882v1_alt : 248807
3_KI270778v1_alt : 248252
17_KV766197v1_alt : 246895
6_KQ090016v1_fix : 245716
15_KI270849v1_alt : 244917
4_KI270786v1_alt : 244096
6_KZ208911v1_fix : 242796
19_KV575250v1_alt : 241058
12_KI270835v1_alt : 238139
4_KQ090015v1_alt : 236512
17_KI270858v1_alt : 235827
4_ML143344v1_fix : 235734
19_KI270867v1_alt : 233762
16_KI270855v1_alt : 232857
18_KZ559115v1_fix : 230843
4_KQ983257v1_fix : 230434
8_KI270926v1_alt : 229282
5_GL949742v1_alt : 226852
3_KI270780v1_alt : 224108
17_GL383565v1_alt : 223995
2_KI270774v1_alt : 223625
19_KV575256v1_alt : 223118
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4_KI270790v1_alt : 220246
11_KI270927v1_alt : 218612
11_ML143359v1_fix : 217075
19_KI270932v1_alt : 215732
3_ML143343v1_alt : 215443
11_KI270903v1_alt : 214625
2_KI270894v1_alt : 214158
1_KQ458384v1_alt : 212205
12_KN196482v1_fix : 211377
14_GL000225v1_random : 211173
Un_KI270743v1 : 210658
11_KI270832v1_alt : 210133
7_KI270805v1_alt : 209988
Y_KZ208924v1_fix : 209722
4_GL000008v2_random : 209709
7_KI270809v1_alt : 209586
19_KI270887v1_alt : 209512
2_KN538362v1_fix : 208149
13_KN538371v1_fix : 206320
4_KI270789v1_alt : 205944
4_KQ983258v1_alt : 205407
3_KI270779v1_alt : 205312
19_KI270914v1_alt : 205194
18_KQ458385v1_alt : 205101
19_KI270886v1_alt : 204239
11_KI270829v1_alt : 204059
11_KN538368v1_alt : 203552
14_GL000009v2_random : 201709
21_GL383579v2_alt : 201197
11_JH159136v1_alt : 200998
19_KI270930v1_alt : 200773
Un_KI270747v1 : 198735
18_GL383571v1_alt : 198278
19_KI270920v1_alt : 198005
3_KZ559102v1_alt : 197752
6_KI270797v1_alt : 197536
3_KI270935v1_alt : 197351
11_KQ759759v1_fix : 196940
17_KI270861v1_alt : 196688
15_KI270906v1_alt : 196384
5_KI270791v1_alt : 195710
3_KZ559105v1_alt : 195063
14_KI270722v1_random : 194050
12_ML143362v1_fix : 192531
16_GL383556v1_alt : 192462
13_KI270840v1_alt : 191684
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14_GL000194v1_random : 191469
11_JH159137v1_alt : 191409
19_KI270917v1_alt : 190932
7_KI270899v1_alt : 190869
19_KI270923v1_alt : 189352
10_KI270825v1_alt : 188315
19_GL383576v1_alt : 188024
X_KV766199v1_alt : 188004
19_KI270922v1_alt : 187935
Un_KI270742v1 : 186739
1_KN196472v1_fix : 186494
22_KI270878v1_alt : 186262
19_KI270929v1_alt : 186203
11_KI270826v1_alt : 186169
6_KB021644v2_alt : 185823
17_GL000205v2_random : 185591
10_KQ090020v1_alt : 185507
1_KI270765v1_alt : 185285
19_KI270916v1_alt : 184516
19_KI270890v1_alt : 184499
3_KI270784v1_alt : 184404
12_GL383551v1_alt : 184319
20_KI270870v1_alt : 183433
Un_GL000195v1 : 182896
1_GL383518v1_alt : 182439
11_KQ090022v1_fix : 181958
22_KI270736v1_random : 181920
2_KZ208907v1_alt : 181658
10_KI270824v1_alt : 181496
11_KZ559111v1_alt : 181167
14_KI270845v1_alt : 180703
3_GL383526v1_alt : 180671
13_KI270839v1_alt : 180306
7_KQ031388v1_fix : 179932
22_KI270733v1_random : 179772
Un_GL000224v1 : 179693
10_GL383545v1_alt : 179254
Un_GL000219v1 : 179198
5_KI270792v1_alt : 179043
17_KI270860v1_alt : 178921
19_KV575252v1_alt : 178197
19_GL000209v2_alt : 177381
11_KI270830v1_alt : 177092
9_KI270719v1_random : 176845
4_ML143347v1_fix : 176674
Un_GL000216v2 : 176608

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22_KI270928v1_alt : 176103
1_KI270712v1_random : 176043
3_KZ208909v1_alt : 175849
6_KI270800v1_alt : 175808
1_KI270706v1_random : 175055
12_KZ208918v1_alt : 174808
22_KQ458388v1_alt : 174749
2_KI270776v1_alt : 174166
18_KI270912v1_alt : 174061
3_KI270777v1_alt : 173649
5_GL383531v1_alt : 173459
3_JH636055v2_alt : 173151
14_KI270725v1_random : 172810
5_KI270796v1_alt : 172708
7_KZ559106v1_alt : 172555
14_KZ208919v1_alt : 171798
9_GL383541v1_alt : 171286
19_KV575259v1_alt : 171263
19_KI270885v1_alt : 171027
11_ML143360v1_fix : 170928
19_KI270919v1_alt : 170701
19_KI270889v1_alt : 170698
19_KI270891v1_alt : 170680
19_KI270915v1_alt : 170665
19_KI270933v1_alt : 170537
19_KI270883v1_alt : 170399
19_GL383575v2_alt : 170222
19_KV575247v1_alt : 170206
19_KI270931v1_alt : 170148
12_GL383550v2_alt : 169178
16_KQ031390v1_alt : 169136
13_KI270841v1_alt : 169134
Un_KI270744v1 : 168472
13_KQ090024v1_alt : 168146
19_KV575248v1_alt : 168131
18_KI270863v1_alt : 167999
18_GL383569v1_alt : 167950
12_GL877875v1_alt : 167313
21_KI270874v1_alt : 166743
19_KV575253v1_alt : 166713
3_KI270924v1_alt : 166540
1_KN196473v1_fix : 166200
1_KZ208904v1_alt : 166136
1_KI270761v1_alt : 165834
3_KQ031386v1_fix : 165718
3_KI270937v1_alt : 165607
```

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11_ML143357v1_fix : 165419
8_KZ208914v1_fix : 165120
22_KI270734v1_random : 165050
18_GL383570v1_alt : 164789
5_KI270794v1_alt : 164558
4_GL383527v1_alt : 164536
Un_GL000213v1 : 164239
3_KI270936v1_alt : 164170
3_KZ559101v1_alt : 164041
19_KV575246v1_alt : 163926
9_KQ090018v1_alt : 163882
4_KQ090014v1_alt : 163749
3_KI270934v1_alt : 163458
18_KZ559116v1_alt : 163186
9_GL383539v1_alt : 162988
3_KI270895v1_alt : 162896
22_GL383582v2_alt : 162811
3_KI270782v1_alt : 162429
1_KI270892v1_alt : 162212
Un_GL000220v1 : 161802
2_KI270767v1_alt : 161578
2_KI270715v1_random : 161471
2_KI270893v1_alt : 161218
Un_GL000218v1 : 161147
19_KV575255v1_alt : 161095
18_GL383572v1_alt : 159547
19_KV575251v1_alt : 159285
8_KI270817v1_alt : 158983
4_KI270788v1_alt : 158965
13_ML143364v1_fix : 158944
Un_KI270749v1 : 158759
7_KI270806v1_alt : 158166
7_KI270804v1_alt : 157952
18_KI270911v1_alt : 157710
Un_KI270741v1 : 157432
17_KI270910v1_alt : 157099
19_KI270884v1_alt : 157053
8_KV880766v1_fix : 156998
19_KV575258v1_alt : 156965
22_KN196485v1_alt : 156562
22_KQ458387v1_alt : 155930
19_GL383574v1_alt : 155864
19_KI270888v1_alt : 155532
3_GL000221v1_random : 155397
17_KV575245v1_fix : 154723
11_GL383547v1_alt : 154407
```

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12_KZ559112v1_alt : 154139
2_KI270716v1_random : 153799
22_KN196486v1_alt : 153027
12_GL383553v2_alt : 152874
6_KI270799v1_alt : 152148
22_KI270731v1_random : 150754
Un_KI270751v1 : 150742
Un_KI270750v1 : 148850
13_KN538373v1_fix : 148762
2_ML143341v1_fix : 145975
19_KV575260v1_alt : 145691
8_KI270818v1_alt : 145606
22_KQ759761v1_alt : 145162
X_KI270881v1_alt : 144206
21_KI270873v1_alt : 143900
2_GL383521v1_alt : 143390
7_KV880764v1_fix : 142129
8_KI270814v1_alt : 141812
1_KQ458382v1_alt : 141019
11_KV766195v1_fix : 140877
2_KZ208908v1_alt : 140361
1_KZ208905v1_alt : 140355
6_KV766194v1_fix : 139427
5_KN196477v1_alt : 139087
12_GL383552v1_alt : 138655
Un_KI270519v1 : 138126
2_KI270775v1_alt : 138019
17_ML143374v1_fix : 137908
17_KI270907v1_alt : 137721
Un_GL000214v1 : 137718
8_KI270901v1_alt : 136959
2_KI270770v1_alt : 136240
5_KZ208910v1_alt : 135987
16_KI270854v1_alt : 134193
9_KQ090019v1_alt : 134099
8_KI270819v1_alt : 133535
17_GL383564v2_alt : 133151
2_KI270772v1_alt : 133041
8_KI270815v1_alt : 132244
5_KI270795v1_alt : 131892
5_KI270898v1_alt : 130957
20_GL383577v2_alt : 128386
1_KI270708v1_random : 127682
7_KI270807v1_alt : 126434
5_KI270793v1_alt : 126136
4_ML143348v1_fix : 125549
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6_GL383533v1_alt : 124736
2_GL383522v1_alt : 123821
13_KQ090025v1_alt : 123480
19_KI270918v1_alt : 123111
1_KN196474v1_fix : 122022
12_GL383549v1_alt : 120804
2_KI270769v1_alt : 120616
4_KI270785v1_alt : 119912
12_KI270834v1_alt : 119498
7_GL383534v2_alt : 119183
20_KI270869v1_alt : 118774
17_KZ559114v1_alt : 116753
21_GL383581v2_alt : 116689
3_KI270781v1_alt : 113034
17_KI270730v1_random : 112551
Un_KI270438v1 : 112505
4_KI270787v1_alt : 111943
18_KI270864v1_alt : 111737
2_KI270771v1_alt : 110395
1_GL383519v1_alt : 110268
2_KI270768v1_alt : 110099
1_KI270760v1_alt : 109528
12_KQ090023v1_alt : 109323
3_KI270783v1_alt : 109187
11_KN196481v1_fix : 108875
17_KI270859v1_alt : 108763
11_KI270902v1_alt : 106711
3_KZ559104v1_fix : 105527
18_GL383568v1_alt : 104552
22_KI270737v1_random : 103838
13_KI270843v1_alt : 103832
8_KZ559107v1_alt : 103072
22_KI270877v1_alt : 101331
5_GL383530v1_alt : 101241
Y_KN196487v1_fix : 101150
22_KQ759762v1_fix : 101037
19_KV575257v1_alt : 100553
11_KI270721v1_random : 100316
19_KV575254v1_alt : 99845
22_KI270738v1_random : 99375
15_ML143369v1_fix : 97763
22_GL383583v2_alt : 96924
2_GL582966v2_alt : 96131
Un_KI270748v1 : 93321
18_KZ208922v1_fix : 93070
Un_KI270435v1 : 92983
```

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5_GL000208v1_random : 92689
Un_KI270538v1 : 91309
4_KQ090013v1_alt : 90922
17_GL383566v1_alt : 90219
5_ML143350v1_fix : 89956
16_GL383557v1_alt : 89672
17_JH159148v1_alt : 88070
12_KN538370v1_fix : 86533
10_KN538366v1_fix : 85284
2_ML143342v1_fix : 84043
5_GL383532v1_alt : 82728
21_KI270872v1_alt : 82692
6_KQ090017v1_alt : 82315
Un_KI270756v1 : 79590
16_KZ208921v1_alt : 78609
6_KI270758v1_alt : 76752
12_KI270833v1_alt : 76061
6_KI270802v1_alt : 75005
21_GL383580v2_alt : 74653
22_KB663609v1_alt : 74013
22_KI270739v1_random : 73985
6_ML143351v1_fix : 73265
9_GL383540v1_alt : 71551
Un_KI270757v1 : 71251
2_KI270773v1_alt : 70887
17_JH159147v1_alt : 70345
X_ML143383v1_fix : 68192
11_KI270827v1_alt : 67707
1_KI270709v1_random : 66860
Un_KI270746v1 : 66486
13_ML143365v1_fix : 65394
12_KZ208917v1_fix : 64689
16_KI270856v1_alt : 63982
21_GL383578v2_alt : 63917
Un_KI270753v1 : 62944
19_KI270868v1_alt : 61734
9_GL383542v1_alt : 60032
16_KQ090026v1_alt : 59016
20_KI270871v1_alt : 58661
17_ML143375v1_fix : 56695
12_KI270836v1_alt : 56134
4_ML143346v1_fix : 53476
19_KI270865v1_alt : 52969
1_KI270764v1_alt : 50258
Y_KZ208923v1_fix : 48370
11_ML143356v1_fix : 45257
```

```
1_KZ559100v1_fix : 44955
Un_KI270589v1 : 44474
14_KI270726v1_random : 43739
19_KI270866v1_alt : 43156
22_KI270735v1_random : 42811
1_KI270711v1_random : 42210
Un_KI270745v1 : 41891
1_KI270714v1_random : 41717
22_KI270732v1_random : 41543
1_KI270713v1_random : 40745
Un_KI270754v1 : 40191
1_KI270710v1_random : 40176
12_KI270837v1_alt : 40090
9_KI270717v1_random : 40062
14_KI270724v1_random : 39555
9_KI270720v1_random : 39050
14_KI270723v1_random : 38115
9_KI270718v1_random : 38054
Un_KI270317v1 : 37690
13_KI270842v1_alt : 37287
Y_KI270740v1_random : 37240
Un_KI270755v1 : 36723
8_KI270820v1_alt : 36640
13_KN196483v1_fix : 35455
1_KI270707v1_random : 32032
Un_KI270579v1 : 31033
X_ML143382v1_fix : 28824
Un_KI270752v1 : 27745
9_ML143353v1_fix : 25408
Un_KI270512v1 : 22689
Un_KI270322v1 : 21476
X_ML143385v1_fix : 17435
M : 16569
Un_GL000226v1 : 15008
X_ML143384v1_fix : 14678
10_KN538365v1_fix : 14347
Un_KI270311v1 : 12399
22_ML143379v1_fix : 12295
Un_KI270366v1 : 8320
Un_KI270511v1 : 8127
Un_KI270448v1 : 7992
Un_KI270521v1 : 7642
13_ML143363v1_fix : 7309
Un_KI270581v1 : 7046
Un_KI270582v1 : 6504
Un_KI270515v1 : 6361
```

Un_KI270588v1 : 6158
Un_KI270591v1 : 5796
Un_KI270522v1 : 5674
Un_KI270507v1 : 5353
Un_KI270590v1 : 4685
Un_KI270584v1 : 4513
Un_KI270320v1 : 4416
Un_KI270382v1 : 4215
Un_KI270468v1 : 4055
Un_KI270467v1 : 3920
Un_KI270362v1 : 3530
Un_KI270517v1 : 3253
Un_KI270593v1 : 3041
Un_KI270528v1 : 2983
Un_KI270587v1 : 2969
Un_KI270364v1 : 2855
Un_KI270371v1 : 2805
Un_KI270333v1 : 2699
Un_KI270374v1 : 2656
Un_KI270411v1 : 2646
Un_KI270414v1 : 2489
Un_KI270510v1 : 2415
Un_KI270390v1 : 2387
Un_KI270375v1 : 2378
Un_KI270420v1 : 2321
Un_KI270509v1 : 2318
Un_KI270315v1 : 2276
Un_KI270302v1 : 2274
Un_KI270518v1 : 2186
Un_KI270530v1 : 2168
Un_KI270304v1 : 2165
Un_KI270418v1 : 2145
Un_KI270424v1 : 2140
Un_KI270417v1 : 2043
Un_KI270508v1 : 1951
Un_KI270303v1 : 1942
Un_KI270381v1 : 1930
Un_KI270529v1 : 1899
Un_KI270425v1 : 1884
Un_KI270396v1 : 1880
Un_KI270363v1 : 1803
Un_KI270386v1 : 1788
Un_KI270465v1 : 1774
Un_KI270383v1 : 1750
Un_KI270384v1 : 1658
Un_KI270330v1 : 1652

```
Un_KI270372v1 : 1650
Un_KI270548v1 : 1599
Un_KI270580v1 : 1553
Un_KI270387v1 : 1537
Un_KI270391v1 : 1484
Un_KI270305v1 : 1472
Un_KI270373v1 : 1451
Un_KI270422v1 : 1445
Un_KI270316v1 : 1444
Un_KI270338v1 : 1428
Un_KI270340v1 : 1428
Un_KI270583v1 : 1400
Un_KI270334v1 : 1368
Un_KI270429v1 : 1361
Un_KI270393v1 : 1308
Un_KI270516v1 : 1300
Un_KI270389v1 : 1298
Un_KI270466v1 : 1233
Un_KI270388v1 : 1216
Un_KI270544v1 : 1202
Un_KI270310v1 : 1201
Un_KI270412v1 : 1179
Un_KI270395v1 : 1143
Un_KI270376v1 : 1136
Un_KI270337v1 : 1121
Un_KI270335v1 : 1048
Un_KI270378v1 : 1048
Un_KI270379v1 : 1045
Un_KI270329v1 : 1040
Un_KI270419v1 : 1029
Un_KI270336v1 : 1026
Un_KI270312v1 : 998
Un_KI270539v1 : 993
Un_KI270385v1 : 990
Un_KI270423v1 : 981
Un_KI270392v1 : 971
Un_KI270394v1 : 970
```

Once we have an object of the *chromLocation* class, we can now access its various slots to get the information contained within it. There are six slots in this class:

```
organism:       This lists the organism that this object is describing.
dataSource:     Where this data was acquired from.
chromLocs:      A list with an element for every unique chromosome
                name, where each element contains a named vector where
                the names are probe IDs and the values describe the
                location of that probe on the chromosome.  Negative
```

```
                values indicate that the location is on the antisense
                strand.
probesToChrom:  A hash table which will translate a probe ID to the
                chromosome it belongs to.
chromInfo:      A numerical vector representing each chromosome, where
                the names are the names of the chromosomes and the
                values are the lengths of those chromosomes.
geneSymbols:    An environment that maps a probe ID to the appropriate
                gene symbol.
```

There is a basic 'get' type method for each of these slots, all with the same name as the respective slot. In the following example, we will demonstrate these basic methods. For the `probesToChrom` and `geneSymbols` methods, the return value is an environment which maps a probe ID to other values, we will be using the probe ID '32972_at', which was selected at random for these examples. We are showing only part of the `chromLocs` method's output as it is quite long in its entirety.

```
> organism(z)

[1] "Homo sapiens"

> dataSource(z)

[1] "hgu95av2"

> ## The chromLocs list is extremely large.  Let's only
> ## look at one of the elements.
> names(chromLocs(z))

  [1] "1"                    "10"                   "11"
  [4] "12"                   "13"                   "14"
  [7] "15"                   "16"                   "17"
 [10] "18"                   "19"                   "2"
 [13] "20"                   "21"                   "22"
 [16] "22_KI270879v1_alt"    "3"                    "4"
 [19] "5"                    "6"                    "7"
 [22] "8"                    "9"                    "X"
 [25] "Y"                    "14_KZ208920v1_fix"    "17_KV766198v1_alt"
 [28] "7_KZ208912v1_fix"     "17_KI270857v1_alt"    "20_KI270869v1_alt"
 [31] "10_KQ090021v1_fix"    "17_KV575245v1_fix"    "19_KI270867v1_alt"
 [34] "2_KN538363v1_fix"     "16_KI270853v1_alt"    "15_KI270849v1_alt"
 [37] "1_KQ458383v1_alt"     "8_KZ208914v1_fix"     "11_KQ759759v1_fix"
 [40] "2_GL383522v1_alt"     "13_KI270842v1_alt"    "17_GL383564v2_alt"
 [43] "6_GL000251v2_alt"     "8_KZ208915v1_fix"     "19_KQ458386v1_fix"
 [46] "11_KN196481v1_fix"    "11_KI270831v1_alt"    "6_GL000254v2_alt"
 [49] "6_GL000256v2_alt"     "20_KI270870v1_alt"    "19_KI270866v1_alt"
 [52] "8_KI270822v1_alt"     "8_KI270819v1_alt"     "17_GL383563v3_alt"
 [55] "2_KZ208908v1_alt"     "1_GL383519v1_alt"     "19_KN196484v1_fix"
```

```
 [58] "4_GL000257v2_alt"     "2_KI270776v1_alt"     "14_KI270846v1_alt"
 [61] "22_KI270875v1_alt"    "19_KI270868v1_alt"    "8_KI270821v1_alt"
 [64] "16_KZ559113v1_fix"    "11_KI270721v1_random" "9_KN196479v1_fix"
 [67] "7_KI270803v1_alt"     "15_KI270850v1_alt"    "17_JH159146v1_alt"
 [70] "12_KN538369v1_fix"    "8_KI270816v1_alt"     "14_KI270847v1_alt"
 [73] "16_KQ090026v1_alt"    "16_KV880768v1_fix"    "11_KI270832v1_alt"
 [76] "17_KI270861v1_alt"    "12_KN538370v1_fix"    "11_KZ559109v1_fix"
 [79] "3_KN196475v1_fix"     "7_KZ208913v1_alt"     "22_KQ759762v1_fix"
 [82] "11_KZ559110v1_alt"    "1_KZ208904v1_alt"     "5_KI270791v1_alt"
 [85] "8_KI270814v1_alt"     "18_KQ090028v1_fix"    "9_GL383540v1_alt"
 [88] "6_KQ090016v1_fix"     "4_GL383527v1_alt"     "7_KI270808v1_alt"
 [91] "7_KV880765v1_fix"     "5_KV575244v1_fix"     "3_KN538364v1_fix"
 [94] "17_KI270862v1_alt"    "19_GL383574v1_alt"    "22_KI270877v1_alt"
 [97] "12_KZ208916v1_fix"    "17_KI270860v1_alt"    "1_KI270762v1_alt"
[100] "4_KQ090015v1_alt"     "7_KI270809v1_alt"     "10_KI270825v1_alt"
[103] "1_GL383518v1_alt"     "11_KI270830v1_alt"    "11_KI270903v1_alt"
[106] "17_KI270909v1_alt"    "8_KI270813v1_alt"     "21_KI270873v1_alt"
[109] "5_KI270795v1_alt"     "5_KI270898v1_alt"     "7_KI270806v1_alt"
[112] "6_GL000255v2_alt"     "3_KZ559103v1_alt"     "12_GL877876v1_alt"
[115] "12_KI270904v1_alt"    "20_KI270871v1_alt"    "15_KN538374v1_fix"
[118] "15_KI270905v1_alt"    "17_KI270908v1_alt"    "17_GL000258v2_alt"
[121] "11_KI270927v1_alt"    "6_KI270801v1_alt"     "5_GL339449v2_alt"
[124] "10_GL383546v1_alt"    "11_KZ559111v1_alt"    "13_KN538371v1_fix"
[127] "19_GL949746v1_alt"    "19_GL949752v1_alt"    "19_KI270938v1_alt"
[130] "19_GL949747v2_alt"    "19_GL949753v2_alt"    "2_KQ983256v1_alt"
[133] "1_KI270763v1_alt"     "22_KI270734v1_random" "12_GL877875v1_alt"
[136] "15_KQ031389v1_alt"    "1_KV880763v1_alt"     "1_KQ458384v1_alt"
[139] "2_GL582966v2_alt"     "12_KI270833v1_alt"    "6_GL000252v2_alt"
[142] "1_KN196474v1_fix"     "19_KI270865v1_alt"    "16_KI270855v1_alt"
[145] "16_KQ090027v1_alt"    "3_KI270782v1_alt"     "8_KI270817v1_alt"
[148] "2_KI270768v1_alt"     "11_KI270902v1_alt"    "13_KI270838v1_alt"
[151] "4_KI270896v1_alt"     "4_KQ983257v1_fix"     "4_KQ983258v1_alt"
[154] "2_KI270769v1_alt"     "15_KI270851v1_alt"    "21_GL383581v2_alt"
[157] "16_KI270854v1_alt"    "3_KV766192v1_fix"     "6_GL000250v2_alt"
[160] "19_GL383575v2_alt"    "9_KI270823v1_alt"     "22_KN196485v1_alt"
[163] "22_KI270928v1_alt"    "22_GL383582v2_alt"    "22_KB663609v1_alt"
[166] "21_KI270872v1_alt"    "5_KI270897v1_alt"     "22_KI270876v1_alt"
[169] "1_KN196473v1_fix"     "6_GL000253v2_alt"     "8_KI270900v1_alt"
[172] "8_KI270926v1_alt"     "8_KI270818v1_alt"     "8_KI270812v1_alt"
[175] "3_KQ031385v1_fix"     "2_KI270774v1_alt"     "18_KI270863v1_alt"
[178] "19_GL383573v1_alt"    "7_GL383534v2_alt"     "6_KZ208911v1_fix"
[181] "10_KN196480v1_fix"    "12_KI270837v1_alt"    "6_KI270758v1_alt"
[184] "15_KI270848v1_alt"    "1_GL383520v2_alt"     "22_KQ458387v1_alt"
[187] "22_KN196486v1_alt"    "22_KQ759761v1_alt"    "22_KQ458388v1_alt"
[190] "19_GL949748v2_alt"    "19_GL949749v2_alt"    "19_GL949750v2_alt"
[193] "19_GL949751v2_alt"    "7_KQ031388v1_fix"     "5_KV575243v1_alt"
```

```
[196] "19_KV575250v1_alt"    "19_KI270922v1_alt"    "19_KV575258v1_alt"
[199] "19_KI270920v1_alt"    "19_KI270917v1_alt"    "19_KI270923v1_alt"
[202] "19_KI270929v1_alt"    "19_KI270921v1_alt"    "17_KI270910v1_alt"
[205] "3_KI270934v1_alt"     "3_KI270895v1_alt"     "3_KI270779v1_alt"
[208] "3_KI270936v1_alt"     "3_KI270935v1_alt"     "3_KI270924v1_alt"
[211] "3_KI270937v1_alt"     "19_GL000209v2_alt"    "19_KI270882v1_alt"
[214] "19_KI270883v1_alt"    "19_KI270884v1_alt"    "19_KI270885v1_alt"
[217] "19_KI270886v1_alt"    "19_KI270887v1_alt"    "19_KI270888v1_alt"
[220] "19_KI270889v1_alt"    "19_KI270890v1_alt"    "19_KI270891v1_alt"
[223] "19_KI270914v1_alt"    "19_KI270915v1_alt"    "19_KI270916v1_alt"
[226] "19_KI270918v1_alt"    "19_KI270919v1_alt"    "19_KI270930v1_alt"
[229] "19_KI270931v1_alt"    "19_KI270932v1_alt"    "19_KI270933v1_alt"
[232] "19_KV575246v1_alt"    "19_KV575247v1_alt"    "19_KV575248v1_alt"
[235] "19_KV575249v1_alt"    "19_KV575251v1_alt"    "19_KV575252v1_alt"
[238] "19_KV575253v1_alt"    "19_KV575254v1_alt"    "19_KV575255v1_alt"
[241] "19_KV575256v1_alt"    "19_KV575257v1_alt"    "19_KV575259v1_alt"
[244] "19_KV575260v1_alt"
```

```
> chromLocs(z)[["Y"]]
```

```
  31534_at   31911_at   32864_at 32991_f_at   35885_at   36321_at   40030_at
   2935380   13703898   -2786854   -6865917   12701230   12662366    7273971
  41214_at 34172_s_at   34215_at   34753_at   37583_at   37583_at   38182_at
   2841601    1591603    1591603   57067864  -19703864  -19705414   19567357
  38182_at   40097_at   40097_at   40435_at 40436_g_at   41108_at     938_at
  19567357   20575710   20575775   -1386151   -1386151    -304749   57184215
  31411_at   31411_at   31411_at   34477_at   34477_at   34477_at    1185_at
  22984262   24618003  -25030900  -13248378  -13323033  -13297508    1336784
   1185_at   35073_at   35073_at   36553_at   36553_at   36554_at   36554_at
   1336615     624343     624343   -1403138   -1403138   -1403138   -1403138
  39168_at   39168_at   41138_at   41138_at   38355_at   38355_at   38355_at
  -2486434   -2486413    2691294    2691294   12905704   12904785   12904857
  38355_at   38355_at 32930_f_at 32930_f_at 32930_f_at 32930_f_at 32930_f_at
  12903998   12904867   14524528   14622020   14522615   14523745   14524573
32930_f_at 35447_s_at 35447_s_at 35447_s_at 33665_s_at 33665_s_at 33665_s_at
  14523504    1595454    1615132    1615058    1268813    1268813    1268813
33665_s_at
   1268813
```

```
> get("32972_at", probesToChrom(z))
```

```
[1] "X"
```

```
> chromInfo(z)
```

```
                  1                   2                   3
          248956422           242193529           198295559
```

4	5	6
190214555	181538259	170805979
7	X	8
159345973	156040895	145138636
9	11	10
138394717	135086622	133797422
12	13	14
133275309	114364328	107043718
15	16	17
101991189	90338345	83257441
18	20	19
80373285	64444167	58617616
Y	22	21
57227415	50818468	46709983
8_KZ208915v1_fix	15_ML143371v1_fix	15_KI270905v1_alt
6367528	5500449	5161414
15_KN538374v1_fix	6_GL000256v2_alt	6_GL000254v2_alt
4998962	4929269	4827813
6_GL000251v2_alt	6_GL000253v2_alt	6_GL000250v2_alt
4795265	4677643	4672374
6_GL000255v2_alt	6_GL000252v2_alt	17_KI270857v1_alt
4606388	4604811	2877074
16_KI270853v1_alt	15_KQ031389v1_alt	16_KV880768v1_fix
2659700	2365364	1927115
16_KI270728v1_random	17_GL000258v2_alt	5_GL339449v2_alt
1872759	1821992	1612928
14_KI270847v1_alt	17_KI270908v1_alt	14_KI270846v1_alt
1511111	1423190	1351393
5_KI270897v1_alt	7_KI270803v1_alt	19_GL949749v2_alt
1144418	1111570	1091841
19_KI270938v1_alt	19_GL949750v2_alt	19_GL949748v2_alt
1066800	1066390	1064304
12_KZ208916v1_fix	19_GL949751v2_alt	19_GL949746v1_alt
1046838	1002683	987716
19_GL949752v1_alt	8_KI270821v1_alt	1_KI270763v1_alt
987100	985506	911658
6_KI270801v1_alt	19_GL949753v2_alt	19_GL949747v2_alt
870480	796479	729520
14_KZ208920v1_fix	7_KZ208913v1_alt	5_KV575244v1_fix
690932	680662	673059
8_KI270822v1_alt	7_KZ208912v1_fix	4_GL000257v2_alt
624492	589656	586476
12_KI270904v1_alt	4_KI270925v1_alt	1_KV880763v1_alt
572349	555799	551020
12_KN538369v1_fix	2_KQ983256v1_alt	21_ML143377v1_fix
541038	535088	519485

19_ML143376v1_fix	2_KQ031384v1_fix	16_KZ559113v1_fix
493165	481245	480415
15_KI270852v1_alt	7_KV880765v1_fix	1_KQ031383v1_fix
478999	468267	467143
22_ML143378v1_fix	1_KN538360v1_fix	10_ML143354v1_fix
461303	460100	454963
3_KN196475v1_fix	15_KI270727v1_random	9_KI270823v1_alt
451168	448248	439082
15_KI270850v1_alt	1_KI270759v1_alt	4_KV766193v1_alt
430880	425601	420675
10_KN538367v1_fix	3_KN538364v1_fix	22_ML143380v1_fix
420164	415308	412368
3_KV766192v1_fix	13_ML143366v1_fix	12_GL877876v1_alt
411654	409912	408271
18_KQ090028v1_fix	19_KQ458386v1_fix	X_ML143381v1_fix
407387	405389	403128
14_ML143367v1_fix	15_ML143372v1_fix	Un_KI270442v1
399183	396515	392061
17_KI270862v1_alt	15_GL383555v2_alt	19_GL383573v1_alt
391357	388773	385657
4_KI270896v1_alt	4_GL383528v1_alt	17_GL383563v3_alt
378547	376187	375691
8_KI270810v1_alt	3_KQ031385v1_fix	19_KN196484v1_fix
374415	373699	370917
15_ML143370v1_fix	1_GL383520v2_alt	2_KN538363v1_fix
369264	366580	365499
5_KV575243v1_alt	13_KN538372v1_fix	1_KI270762v1_alt
362221	356766	354444
1_KQ458383v1_alt	4_ML143345v1_fix	9_KN196479v1_fix
349938	341066	330164
1_KZ208906v1_fix	15_KI270848v1_alt	17_KI270909v1_alt
330031	327382	325800
14_KI270844v1_alt	6_KQ031387v1_fix	8_KI270900v1_alt
322166	320750	318687
12_KQ759760v1_fix	10_GL383546v1_alt	13_KI270838v1_alt
315610	309802	306913
3_KN196476v1_fix	8_KI270816v1_alt	1_KN538361v1_fix
305979	305841	305542
11_KZ559108v1_fix	22_KI270879v1_alt	3_KZ559103v1_alt
305244	304135	302885
11_KZ559110v1_alt	8_KI270813v1_alt	12_ML143361v1_fix
301637	300230	297568
11_KI270831v1_alt	15_GL383554v1_alt	19_KV575249v1_alt
296895	296527	293522
10_ML143355v1_fix	8_KI270811v1_alt	18_GL383567v1_alt
292944	292436	289831

X_KI270880v1_alt	8_KI270812v1_alt	19_KI270921v1_alt
284869	282736	282224
17_KV766196v1_fix	17_KI270729v1_random	11_KZ559109v1_fix
281919	280839	279644
1_KQ983255v1_alt	17_JH159146v1_alt	10_KN196480v1_fix
278659	278131	277797
17_KV766198v1_alt	4_ML143349v1_fix	X_KI270913v1_alt
276292	276109	274009
6_KI270798v1_alt	7_KI270808v1_alt	16_ML143373v1_fix
271782	271455	270967
11_ML143358v1_fix	6_KN196478v1_fix	16_KQ090027v1_alt
270122	268330	267463
8_KV880767v1_fix	10_KQ090021v1_fix	14_ML143368v1_alt
265876	264545	264228
22_KI270876v1_alt	15_KI270851v1_alt	22_KI270875v1_alt
263666	263054	259914
1_KI270766v1_alt	7_ML143352v1_fix	19_KI270882v1_alt
256271	254759	248807
3_KI270778v1_alt	17_KV766197v1_alt	6_KQ090016v1_fix
248252	246895	245716
15_KI270849v1_alt	4_KI270786v1_alt	6_KZ208911v1_fix
244917	244096	242796
19_KV575250v1_alt	12_KI270835v1_alt	4_KQ090015v1_alt
241058	238139	236512
17_KI270858v1_alt	4_ML143344v1_fix	19_KI270867v1_alt
235827	235734	233762
16_KI270855v1_alt	18_KZ559115v1_fix	4_KQ983257v1_fix
232857	230843	230434
8_KI270926v1_alt	5_GL949742v1_alt	3_KI270780v1_alt
229282	226852	224108
17_GL383565v1_alt	2_KI270774v1_alt	19_KV575256v1_alt
223995	223625	223118
4_KI270790v1_alt	11_KI270927v1_alt	11_ML143359v1_fix
220246	218612	217075
19_KI270932v1_alt	3_ML143343v1_alt	11_KI270903v1_alt
215732	215443	214625
2_KI270894v1_alt	1_KQ458384v1_alt	12_KN196482v1_fix
214158	212205	211377
14_GL000225v1_random	Un_KI270743v1	11_KI270832v1_alt
211173	210658	210133
7_KI270805v1_alt	Y_KZ208924v1_fix	4_GL000008v2_random
209988	209722	209709
7_KI270809v1_alt	19_KI270887v1_alt	2_KN538362v1_fix
209586	209512	208149
13_KN538371v1_fix	4_KI270789v1_alt	4_KQ983258v1_alt
206320	205944	205407

3_KI270779v1_alt	19_KI270914v1_alt	18_KQ458385v1_alt
205312	205194	205101
19_KI270886v1_alt	11_KI270829v1_alt	11_KN538368v1_alt
204239	204059	203552
14_GL000009v2_random	21_GL383579v2_alt	11_JH159136v1_alt
201709	201197	200998
19_KI270930v1_alt	Un_KI270747v1	18_GL383571v1_alt
200773	198735	198278
19_KI270920v1_alt	3_KZ559102v1_alt	6_KI270797v1_alt
198005	197752	197536
3_KI270935v1_alt	11_KQ759759v1_fix	17_KI270861v1_alt
197351	196940	196688
15_KI270906v1_alt	5_KI270791v1_alt	3_KZ559105v1_alt
196384	195710	195063
14_KI270722v1_random	12_ML143362v1_fix	16_GL383556v1_alt
194050	192531	192462
13_KI270840v1_alt	14_GL000194v1_random	11_JH159137v1_alt
191684	191469	191409
19_KI270917v1_alt	7_KI270899v1_alt	19_KI270923v1_alt
190932	190869	189352
10_KI270825v1_alt	19_GL383576v1_alt	X_KV766199v1_alt
188315	188024	188004
19_KI270922v1_alt	Un_KI270742v1	1_KN196472v1_fix
187935	186739	186494
22_KI270878v1_alt	19_KI270929v1_alt	11_KI270826v1_alt
186262	186203	186169
6_KB021644v2_alt	17_GL000205v2_random	10_KQ090020v1_alt
185823	185591	185507
1_KI270765v1_alt	19_KI270916v1_alt	19_KI270890v1_alt
185285	184516	184499
3_KI270784v1_alt	12_GL383551v1_alt	20_KI270870v1_alt
184404	184319	183433
Un_GL000195v1	1_GL383518v1_alt	11_KQ090022v1_fix
182896	182439	181958
22_KI270736v1_random	2_KZ208907v1_alt	10_KI270824v1_alt
181920	181658	181496
11_KZ559111v1_alt	14_KI270845v1_alt	3_GL383526v1_alt
181167	180703	180671
13_KI270839v1_alt	7_KQ031388v1_fix	22_KI270733v1_random
180306	179932	179772
Un_GL000224v1	10_GL383545v1_alt	Un_GL000219v1
179693	179254	179198
5_KI270792v1_alt	17_KI270860v1_alt	19_KV575252v1_alt
179043	178921	178197
19_GL000209v2_alt	11_KI270830v1_alt	9_KI270719v1_random
177381	177092	176845

4_ML143347v1_fix	Un_GL000216v2	22_KI270928v1_alt
176674	176608	176103
1_KI270712v1_random	3_KZ208909v1_alt	6_KI270800v1_alt
176043	175849	175808
1_KI270706v1_random	12_KZ208918v1_alt	22_KQ458388v1_alt
175055	174808	174749
2_KI270776v1_alt	18_KI270912v1_alt	3_KI270777v1_alt
174166	174061	173649
5_GL383531v1_alt	3_JH636055v2_alt	14_KI270725v1_random
173459	173151	172810
5_KI270796v1_alt	7_KZ559106v1_alt	14_KZ208919v1_alt
172708	172555	171798
9_GL383541v1_alt	19_KV575259v1_alt	19_KI270885v1_alt
171286	171263	171027
11_ML143360v1_fix	19_KI270919v1_alt	19_KI270889v1_alt
170928	170701	170698
19_KI270891v1_alt	19_KI270915v1_alt	19_KI270933v1_alt
170680	170665	170537
19_KI270883v1_alt	19_GL383575v2_alt	19_KV575247v1_alt
170399	170222	170206
19_KI270931v1_alt	12_GL383550v2_alt	16_KQ031390v1_alt
170148	169178	169136
13_KI270841v1_alt	Un_KI270744v1	13_KQ090024v1_alt
169134	168472	168146
19_KV575248v1_alt	18_KI270863v1_alt	18_GL383569v1_alt
168131	167999	167950
12_GL877875v1_alt	21_KI270874v1_alt	19_KV575253v1_alt
167313	166743	166713
3_KI270924v1_alt	1_KN196473v1_fix	1_KZ208904v1_alt
166540	166200	166136
1_KI270761v1_alt	3_KQ031386v1_fix	3_KI270937v1_alt
165834	165718	165607
11_ML143357v1_fix	8_KZ208914v1_fix	22_KI270734v1_random
165419	165120	165050
18_GL383570v1_alt	5_KI270794v1_alt	4_GL383527v1_alt
164789	164558	164536
Un_GL000213v1	3_KI270936v1_alt	3_KZ559101v1_alt
164239	164170	164041
19_KV575246v1_alt	9_KQ090018v1_alt	4_KQ090014v1_alt
163926	163882	163749
3_KI270934v1_alt	18_KZ559116v1_alt	9_GL383539v1_alt
163458	163186	162988
3_KI270895v1_alt	22_GL383582v2_alt	3_KI270782v1_alt
162896	162811	162429
1_KI270892v1_alt	Un_GL000220v1	2_KI270767v1_alt
162212	161802	161578

2_KI270715v1_random	2_KI270893v1_alt	Un_GL000218v1
161471	161218	161147
19_KV575255v1_alt	18_GL383572v1_alt	19_KV575251v1_alt
161095	159547	159285
8_KI270817v1_alt	4_KI270788v1_alt	13_ML143364v1_fix
158983	158965	158944
Un_KI270749v1	7_KI270806v1_alt	7_KI270804v1_alt
158759	158166	157952
18_KI270911v1_alt	Un_KI270741v1	17_KI270910v1_alt
157710	157432	157099
19_KI270884v1_alt	8_KV880766v1_fix	19_KV575258v1_alt
157053	156998	156965
22_KN196485v1_alt	22_KQ458387v1_alt	19_GL383574v1_alt
156562	155930	155864
19_KI270888v1_alt	3_GL000221v1_random	17_KV575245v1_fix
155532	155397	154723
11_GL383547v1_alt	12_KZ559112v1_alt	2_KI270716v1_random
154407	154139	153799
22_KN196486v1_alt	12_GL383553v2_alt	6_KI270799v1_alt
153027	152874	152148
22_KI270731v1_random	Un_KI270751v1	Un_KI270750v1
150754	150742	148850
13_KN538373v1_fix	2_ML143341v1_fix	19_KV575260v1_alt
148762	145975	145691
8_KI270818v1_alt	22_KQ759761v1_alt	X_KI270881v1_alt
145606	145162	144206
21_KI270873v1_alt	2_GL383521v1_alt	7_KV880764v1_fix
143900	143390	142129
8_KI270814v1_alt	1_KQ458382v1_alt	11_KV766195v1_fix
141812	141019	140877
2_KZ208908v1_alt	1_KZ208905v1_alt	6_KV766194v1_fix
140361	140355	139427
5_KN196477v1_alt	12_GL383552v1_alt	Un_KI270519v1
139087	138655	138126
2_KI270775v1_alt	17_ML143374v1_fix	17_KI270907v1_alt
138019	137908	137721
Un_GL000214v1	8_KI270901v1_alt	2_KI270770v1_alt
137718	136959	136240
5_KZ208910v1_alt	16_KI270854v1_alt	9_KQ090019v1_alt
135987	134193	134099
8_KI270819v1_alt	17_GL383564v2_alt	2_KI270772v1_alt
133535	133151	133041
8_KI270815v1_alt	5_KI270795v1_alt	5_KI270898v1_alt
132244	131892	130957
20_GL383577v2_alt	1_KI270708v1_random	7_KI270807v1_alt
128386	127682	126434

5_KI270793v1_alt	4_ML143348v1_fix	6_GL383533v1_alt
126136	125549	124736
2_GL383522v1_alt	13_KQ090025v1_alt	19_KI270918v1_alt
123821	123480	123111
1_KN196474v1_fix	12_GL383549v1_alt	2_KI270769v1_alt
122022	120804	120616
4_KI270785v1_alt	12_KI270834v1_alt	7_GL383534v2_alt
119912	119498	119183
20_KI270869v1_alt	17_KZ559114v1_alt	21_GL383581v2_alt
118774	116753	116689
3_KI270781v1_alt	17_KI270730v1_random	Un_KI270438v1
113034	112551	112505
4_KI270787v1_alt	18_KI270864v1_alt	2_KI270771v1_alt
111943	111737	110395
1_GL383519v1_alt	2_KI270768v1_alt	1_KI270760v1_alt
110268	110099	109528
12_KQ090023v1_alt	3_KI270783v1_alt	11_KN196481v1_fix
109323	109187	108875
17_KI270859v1_alt	11_KI270902v1_alt	3_KZ559104v1_fix
108763	106711	105527
18_GL383568v1_alt	22_KI270737v1_random	13_KI270843v1_alt
104552	103838	103832
8_KZ559107v1_alt	22_KI270877v1_alt	5_GL383530v1_alt
103072	101331	101241
Y_KN196487v1_fix	22_KQ759762v1_fix	19_KV575257v1_alt
101150	101037	100553
11_KI270721v1_random	19_KV575254v1_alt	22_KI270738v1_random
100316	99845	99375
15_ML143369v1_fix	22_GL383583v2_alt	2_GL582966v2_alt
97763	96924	96131
Un_KI270748v1	18_KZ208922v1_fix	Un_KI270435v1
93321	93070	92983
5_GL000208v1_random	Un_KI270538v1	4_KQ090013v1_alt
92689	91309	90922
17_GL383566v1_alt	5_ML143350v1_fix	16_GL383557v1_alt
90219	89956	89672
17_JH159148v1_alt	12_KN538370v1_fix	10_KN538366v1_fix
88070	86533	85284
2_ML143342v1_fix	5_GL383532v1_alt	21_KI270872v1_alt
84043	82728	82692
6_KQ090017v1_alt	Un_KI270756v1	16_KZ208921v1_alt
82315	79590	78609
6_KI270758v1_alt	12_KI270833v1_alt	6_KI270802v1_alt
76752	76061	75005
21_GL383580v2_alt	22_KB663609v1_alt	22_KI270739v1_random
74653	74013	73985

6_ML143351v1_fix	9_GL383540v1_alt	Un_KI270757v1
73265	71551	71251
2_KI270773v1_alt	17_JH159147v1_alt	X_ML143383v1_fix
70887	70345	68192
11_KI270827v1_alt	1_KI270709v1_random	Un_KI270746v1
67707	66860	66486
13_ML143365v1_fix	12_KZ208917v1_fix	16_KI270856v1_alt
65394	64689	63982
21_GL383578v2_alt	Un_KI270753v1	19_KI270868v1_alt
63917	62944	61734
9_GL383542v1_alt	16_KQ090026v1_alt	20_KI270871v1_alt
60032	59016	58661
17_ML143375v1_fix	12_KI270836v1_alt	4_ML143346v1_fix
56695	56134	53476
19_KI270865v1_alt	1_KI270764v1_alt	Y_KZ208923v1_fix
52969	50258	48370
11_ML143356v1_fix	1_KZ559100v1_fix	Un_KI270589v1
45257	44955	44474
14_KI270726v1_random	19_KI270866v1_alt	22_KI270735v1_random
43739	43156	42811
1_KI270711v1_random	Un_KI270745v1	1_KI270714v1_random
42210	41891	41717
22_KI270732v1_random	1_KI270713v1_random	Un_KI270754v1
41543	40745	40191
1_KI270710v1_random	12_KI270837v1_alt	9_KI270717v1_random
40176	40090	40062
14_KI270724v1_random	9_KI270720v1_random	14_KI270723v1_random
39555	39050	38115
9_KI270718v1_random	Un_KI270317v1	13_KI270842v1_alt
38054	37690	37287
Y_KI270740v1_random	Un_KI270755v1	8_KI270820v1_alt
37240	36723	36640
13_KN196483v1_fix	1_KI270707v1_random	Un_KI270579v1
35455	32032	31033
X_ML143382v1_fix	Un_KI270752v1	9_ML143353v1_fix
28824	27745	25408
Un_KI270512v1	Un_KI270322v1	X_ML143385v1_fix
22689	21476	17435
M	Un_GL000226v1	X_ML143384v1_fix
16569	15008	14678
10_KN538365v1_fix	Un_KI270311v1	22_ML143379v1_fix
14347	12399	12295
Un_KI270366v1	Un_KI270511v1	Un_KI270448v1
8320	8127	7992
Un_KI270521v1	13_ML143363v1_fix	Un_KI270581v1
7642	7309	7046

Un_KI270582v1	Un_KI270515v1	Un_KI270588v1
6504	6361	6158
Un_KI270591v1	Un_KI270522v1	Un_KI270507v1
5796	5674	5353
Un_KI270590v1	Un_KI270584v1	Un_KI270320v1
4685	4513	4416
Un_KI270382v1	Un_KI270468v1	Un_KI270467v1
4215	4055	3920
Un_KI270362v1	Un_KI270517v1	Un_KI270593v1
3530	3253	3041
Un_KI270528v1	Un_KI270587v1	Un_KI270364v1
2983	2969	2855
Un_KI270371v1	Un_KI270333v1	Un_KI270374v1
2805	2699	2656
Un_KI270411v1	Un_KI270414v1	Un_KI270510v1
2646	2489	2415
Un_KI270390v1	Un_KI270375v1	Un_KI270420v1
2387	2378	2321
Un_KI270509v1	Un_KI270315v1	Un_KI270302v1
2318	2276	2274
Un_KI270518v1	Un_KI270530v1	Un_KI270304v1
2186	2168	2165
Un_KI270418v1	Un_KI270424v1	Un_KI270417v1
2145	2140	2043
Un_KI270508v1	Un_KI270303v1	Un_KI270381v1
1951	1942	1930
Un_KI270529v1	Un_KI270425v1	Un_KI270396v1
1899	1884	1880
Un_KI270363v1	Un_KI270386v1	Un_KI270465v1
1803	1788	1774
Un_KI270383v1	Un_KI270384v1	Un_KI270330v1
1750	1658	1652
Un_KI270372v1	Un_KI270548v1	Un_KI270580v1
1650	1599	1553
Un_KI270387v1	Un_KI270391v1	Un_KI270305v1
1537	1484	1472
Un_KI270373v1	Un_KI270422v1	Un_KI270316v1
1451	1445	1444
Un_KI270338v1	Un_KI270340v1	Un_KI270583v1
1428	1428	1400
Un_KI270334v1	Un_KI270429v1	Un_KI270393v1
1368	1361	1308
Un_KI270516v1	Un_KI270389v1	Un_KI270466v1
1300	1298	1233
Un_KI270388v1	Un_KI270544v1	Un_KI270310v1
1216	1202	1201

```
      Un_KI270412v1        Un_KI270395v1        Un_KI270376v1
               1179                 1143                 1136
      Un_KI270337v1        Un_KI270335v1        Un_KI270378v1
               1121                 1048                 1048
      Un_KI270379v1        Un_KI270329v1        Un_KI270419v1
               1045                 1040                 1029
      Un_KI270336v1        Un_KI270312v1        Un_KI270539v1
               1026                  998                  993
      Un_KI270385v1        Un_KI270423v1        Un_KI270392v1
                990                  981                  971
      Un_KI270394v1
                970
```

```
> get("32972_at", geneSymbols(z))
```

```
[1] "NOX1"
```

```
>
```

Another method which can be used to access information about the particular *chromLocation* object is the `nChrom` method, which will list how many chromosomes this organism has:

```
> nChrom(z)
```

```
[1] 640
```

3 Summary

The *chromLocation* class has a simple design, but can be powerful if one wants to store the chromosomal data contained in a Bioconductor package into a single object. These objects can be created once and then passed around to multiple functions, which can cut down on computation time to access the desired information from the package. These objects allow access to basic but also important information, and provide a standard interface for writers of other software to access this information.