Overview of ICAMS R package functionalities

Strelka SBS VCF

Strelka ID VCF

Mutect VCF

SBS Catalog: 96, 192, 1536

density catalog

counts catalog

Read in variant call files (VCFs)

Collate the mutations into "catalogs" of mutational spectra
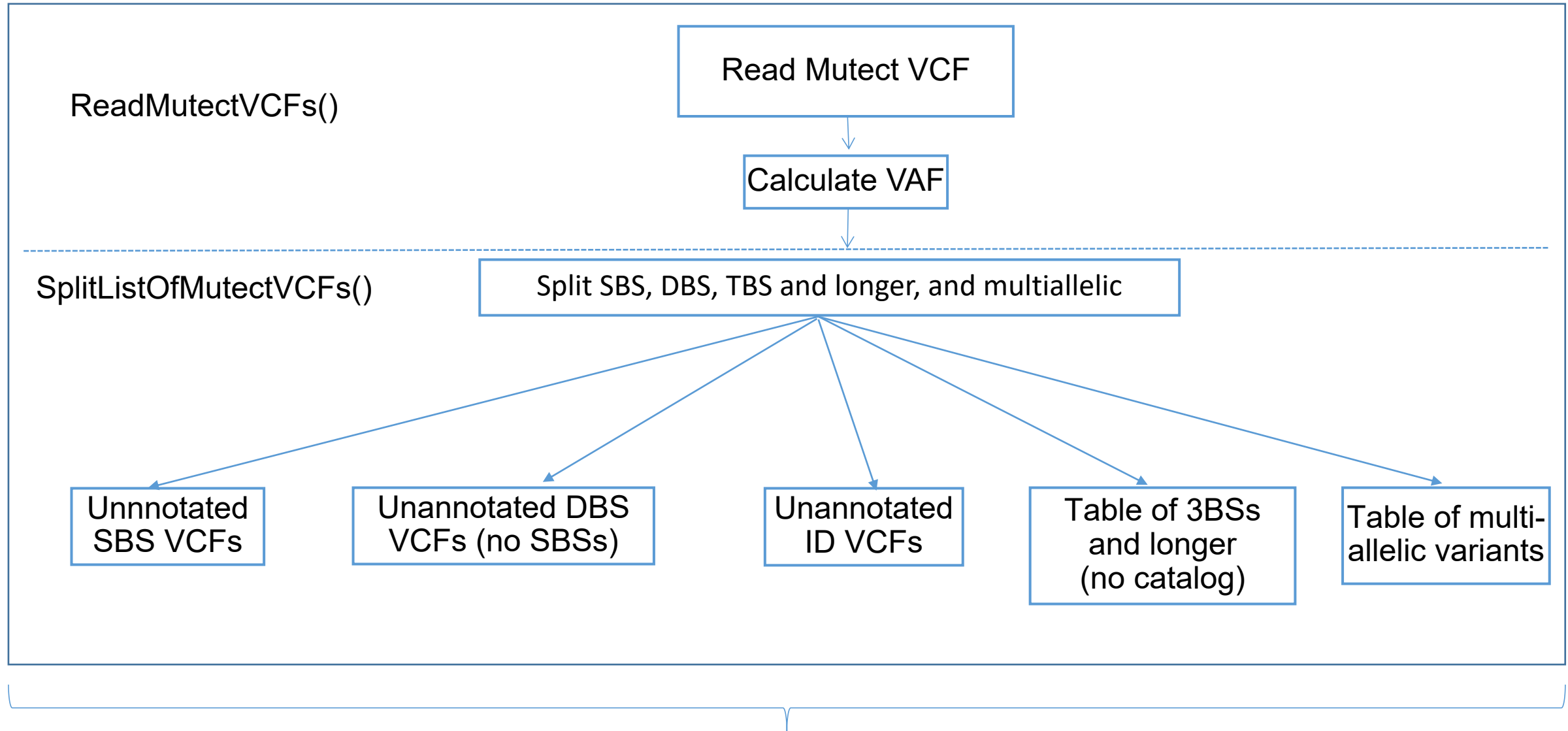
Transform and plot catalogs of mutational spectra or signatures

Write catalogs of mutational spectra or signatures to a file

DBS Catalog: 78, 144, 136

Indel Catalog

counts signature catalog

density signature catalog

*SBS 192 and DBS 144 catalogs only include mutations in transcribed regions

Strelka VCF processing

ReadStrelkaSBSVCFs()

Read Strelka SBS VCF

Calculate VAF

Split SBS, DBS, TBS, and longer

SplitListOfStrelkaSBSVCFs()

Unannotated SBS VCFs

Unannotated DBS VCFs (no SBSs)

Create table of TBSs and longer (no catalog)
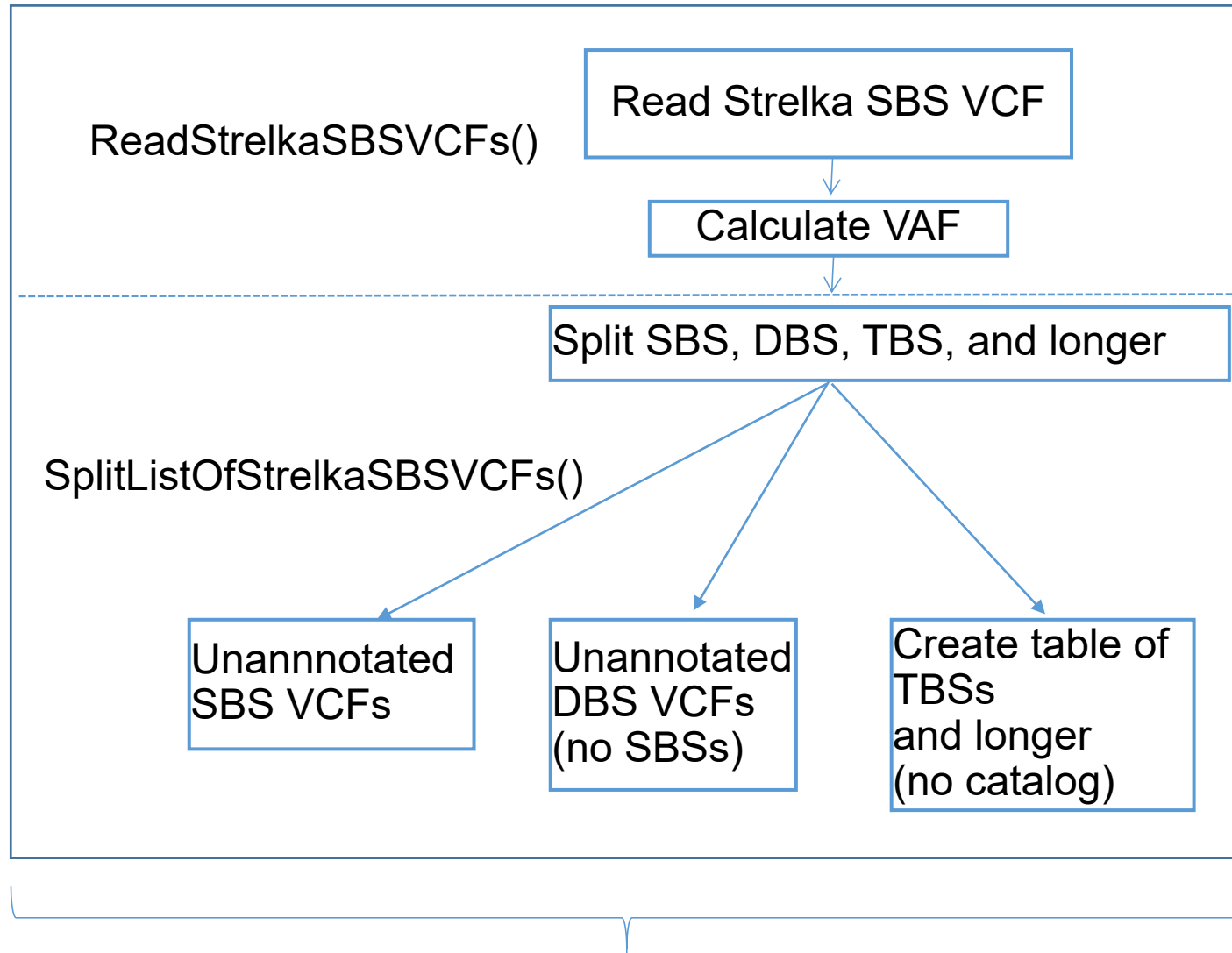
ReadAndSplitStrelkaSBSVCFs()

Read Strelka ID VCF

Unannotated ID VCFs
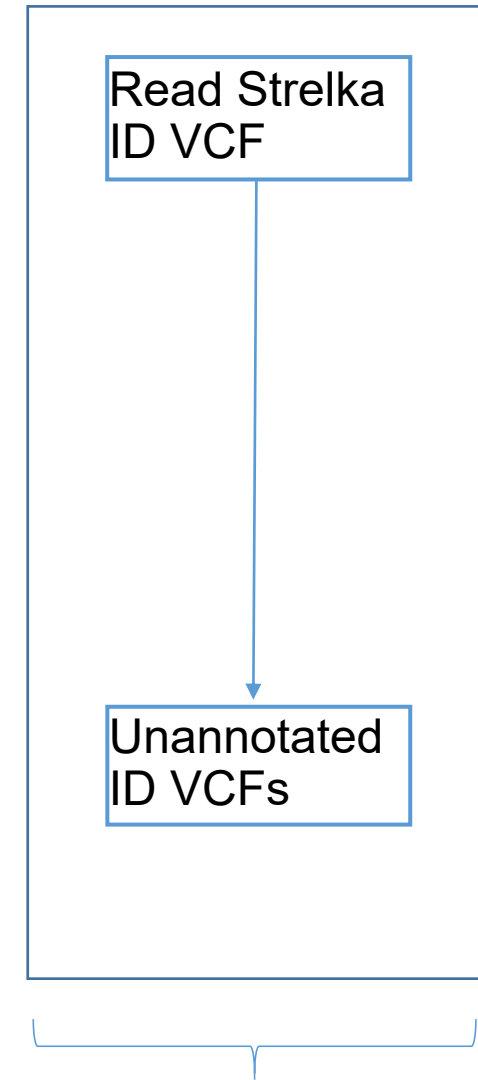
ReadStrelkaIDVCFs()

* Functions whose names in red color are exported in ICAMS

Mutect VCF processing

ReadMutectVCFs()

Read Mutect VCF

Calculate VAF

SplitListOfMutectVCFs()

Split SBS, DBS, TBS and longer, and multiallelic

Unnnotated SBS VCFs

Unannotated DBS VCFs (no SBSs)

Unannotated ID VCFs
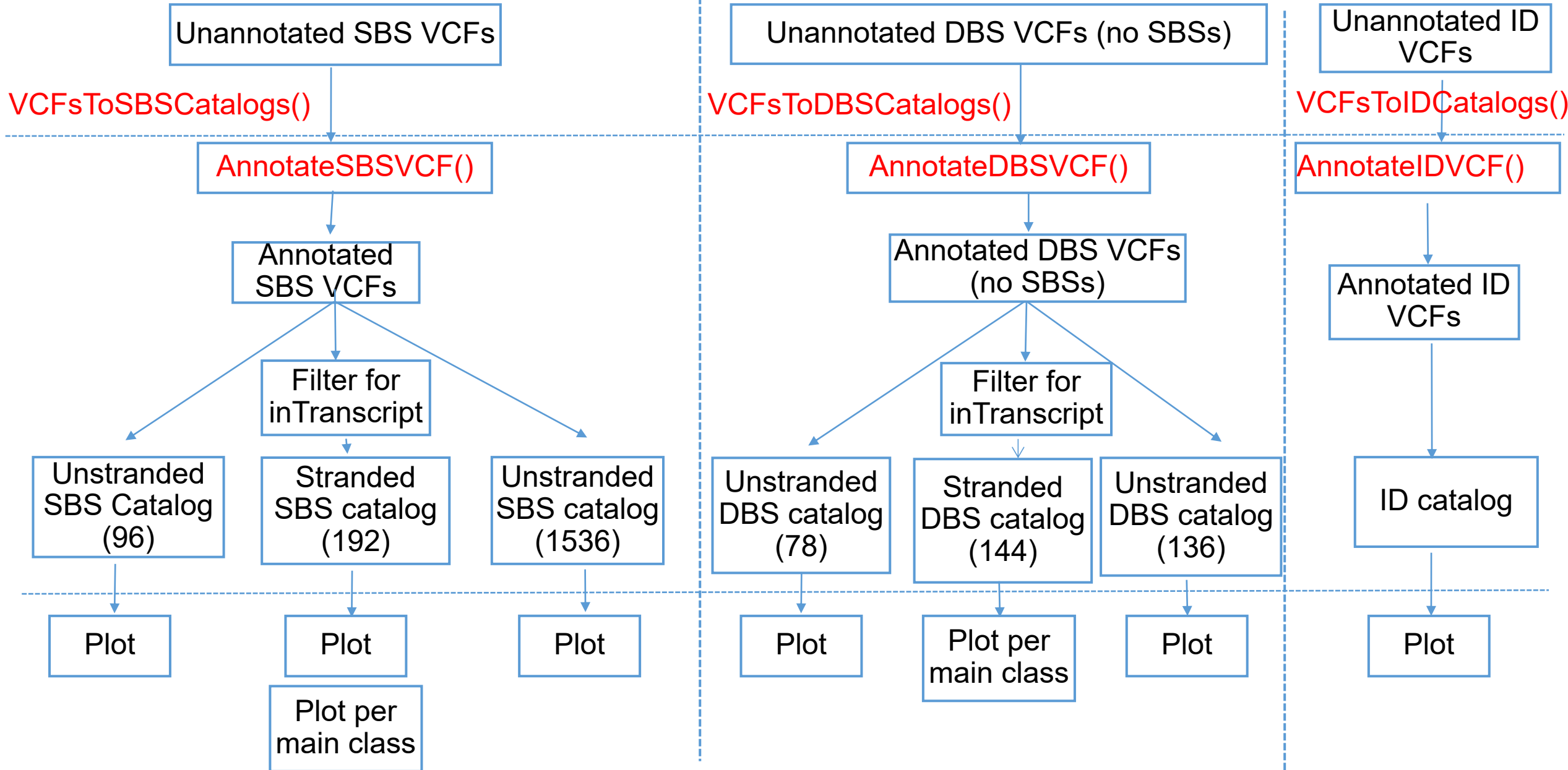
Table of 3BSs and longer (no catalog)

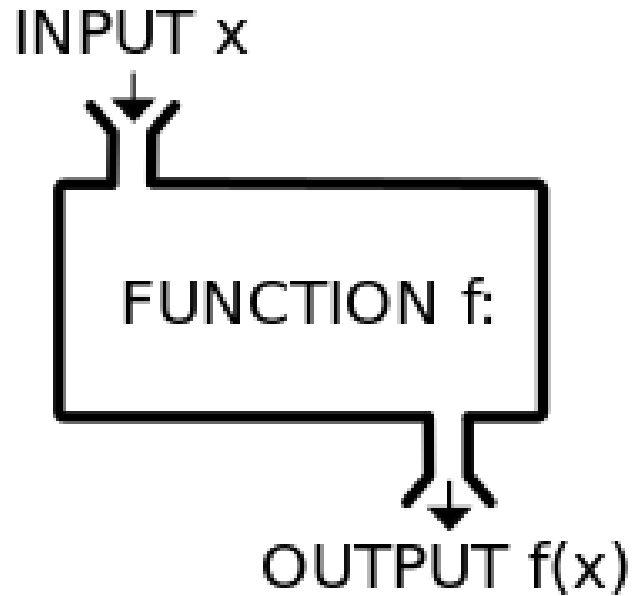Table of multi-allelic variants

ReadAndSplitMutectVCFs()

* Functions whose names in red color are exported in ICAMS

VCFs to catalogs and beyond

* Functions whose names in red color are exported in ICAMS

Important exported functions in ICAMS

INPUT x

FUNCTION f:

OUTPUT f(x)

https://howtoprogramwithjava.com/functions-in-javascript/

Creating catalogs from variant call files (VCF files)

- StrelkaSBSVCFFilesToCatalog()

- StrelkaIDVCFFilesToCatalog()

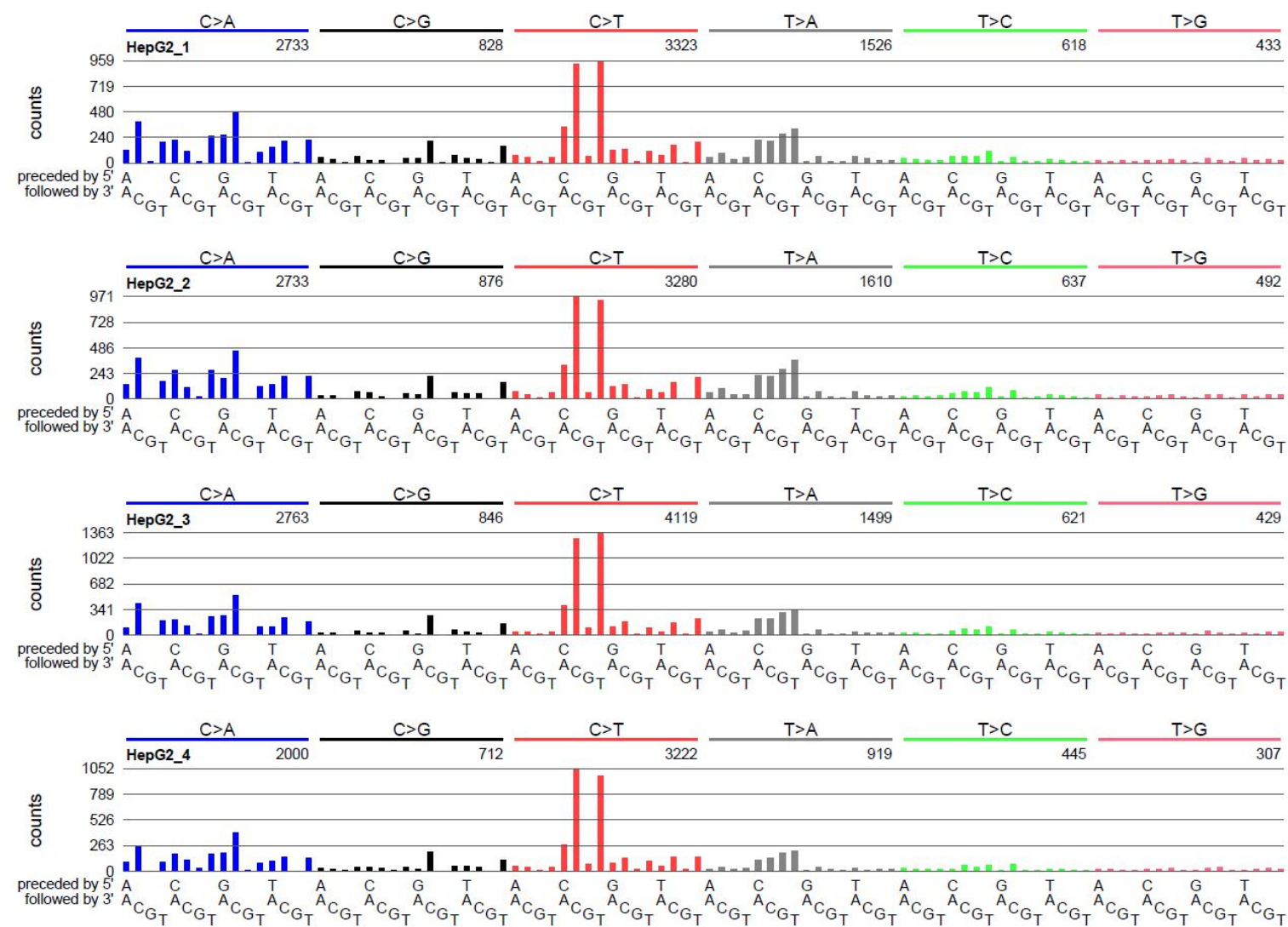- MutectVCFFilesToCatalog()

Important exported functions in ICAMS

INPUT x

FUNCTION f:
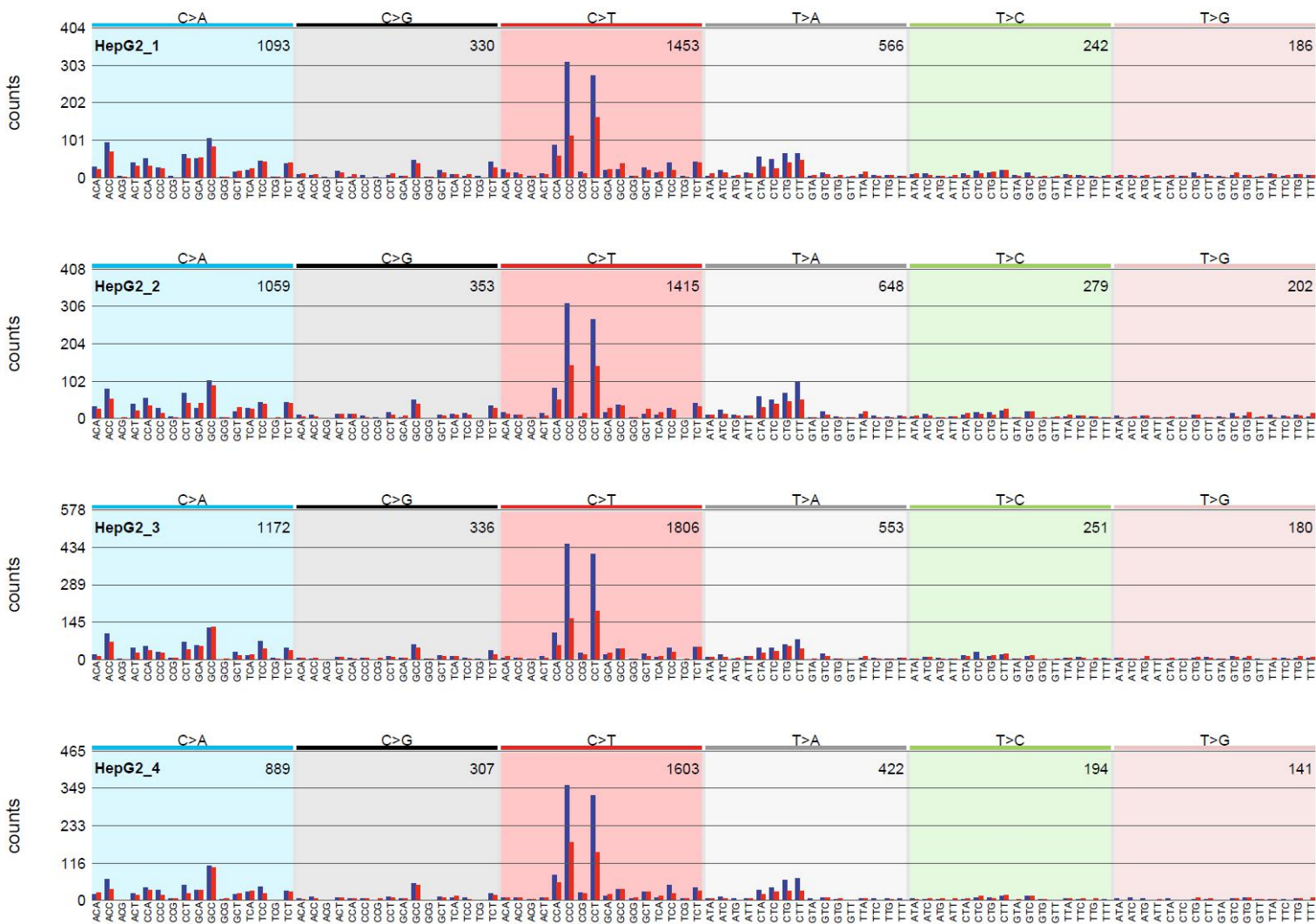
OUTPUT f(x)

https://howtoprogramwithjava.com/functions-in-javascript/
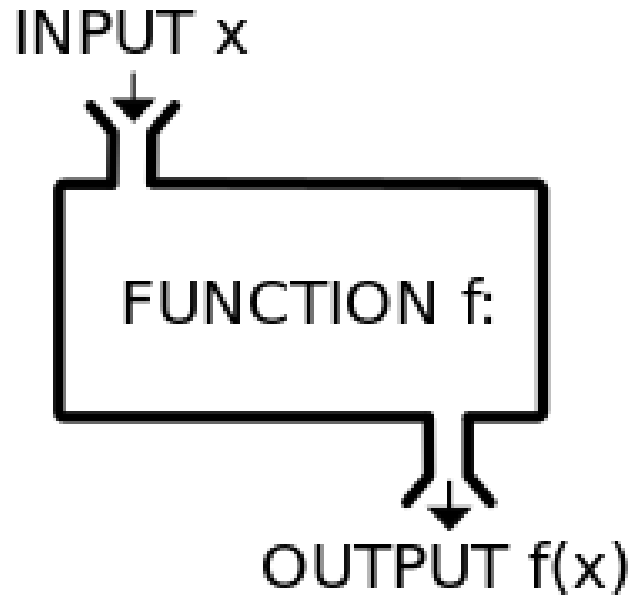
Plotting catalogs
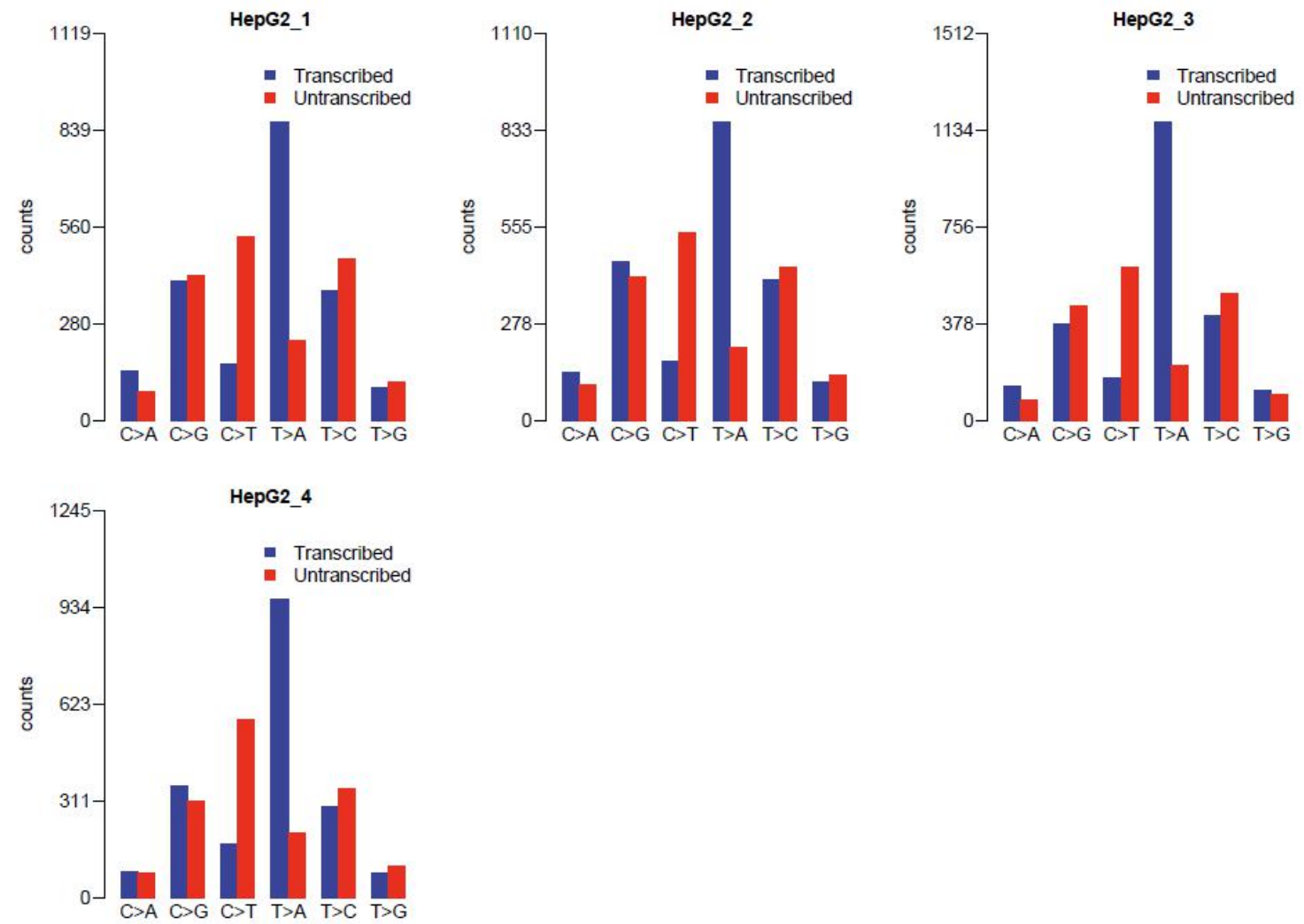
- PlotCatalog()

- PlotCatalogToPdf()

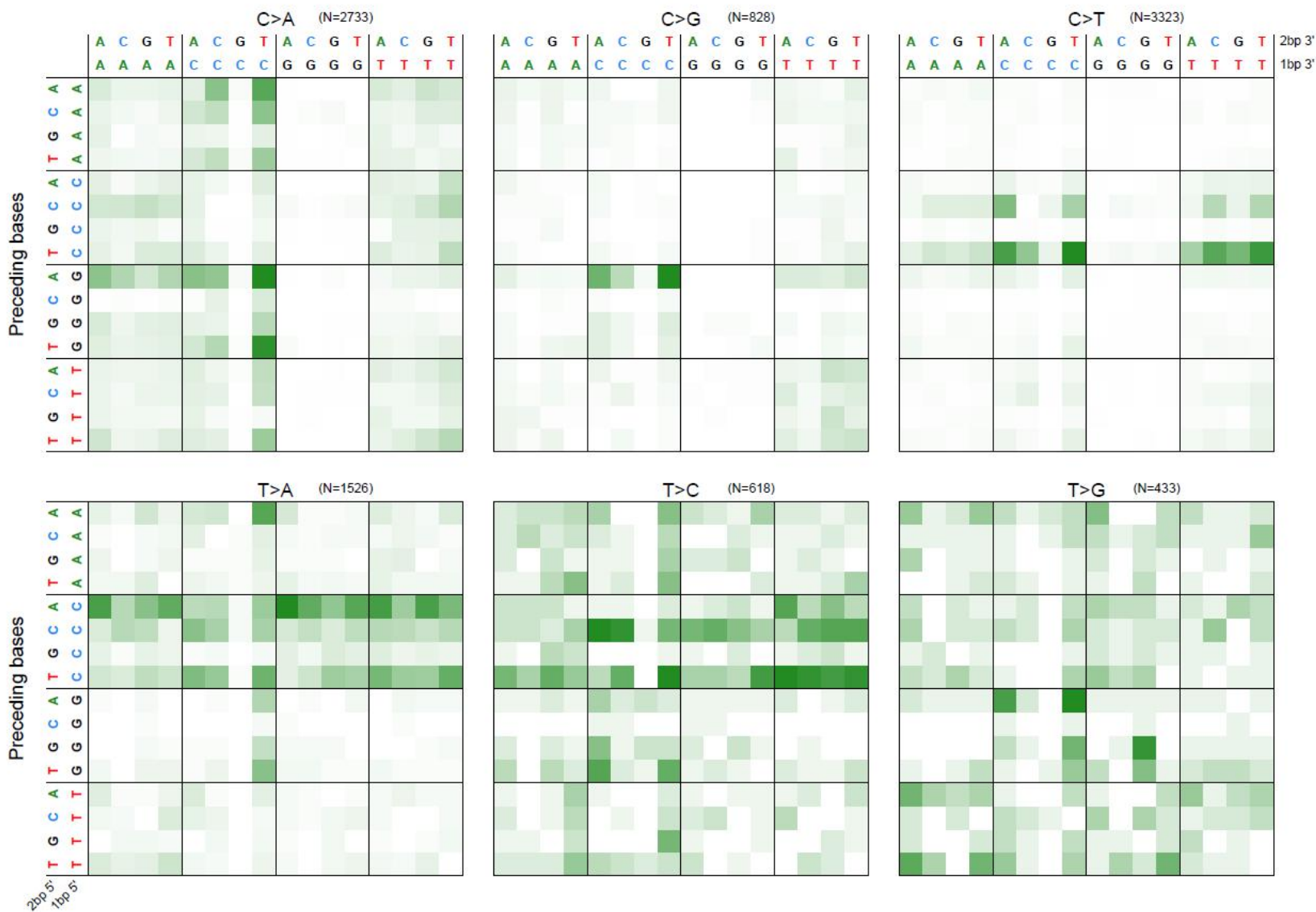# PlotCatalogToPdf(): SBS96 Catalog

PlotCatalogToPdf(): SBS192 Catalog

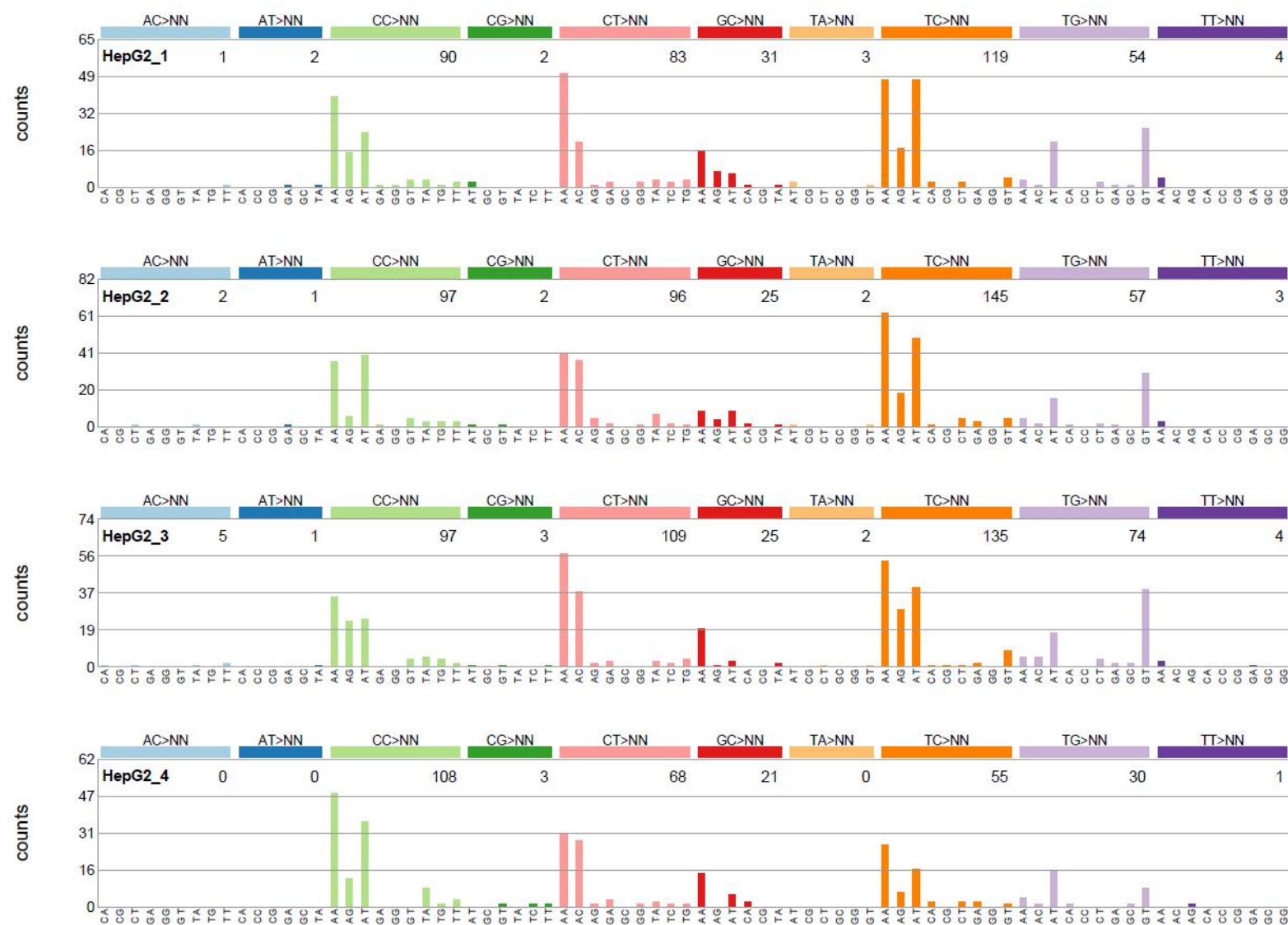# PlotCatalogToPdf(): SBS192 Catalog with argument plot.SBS12 = TRUE
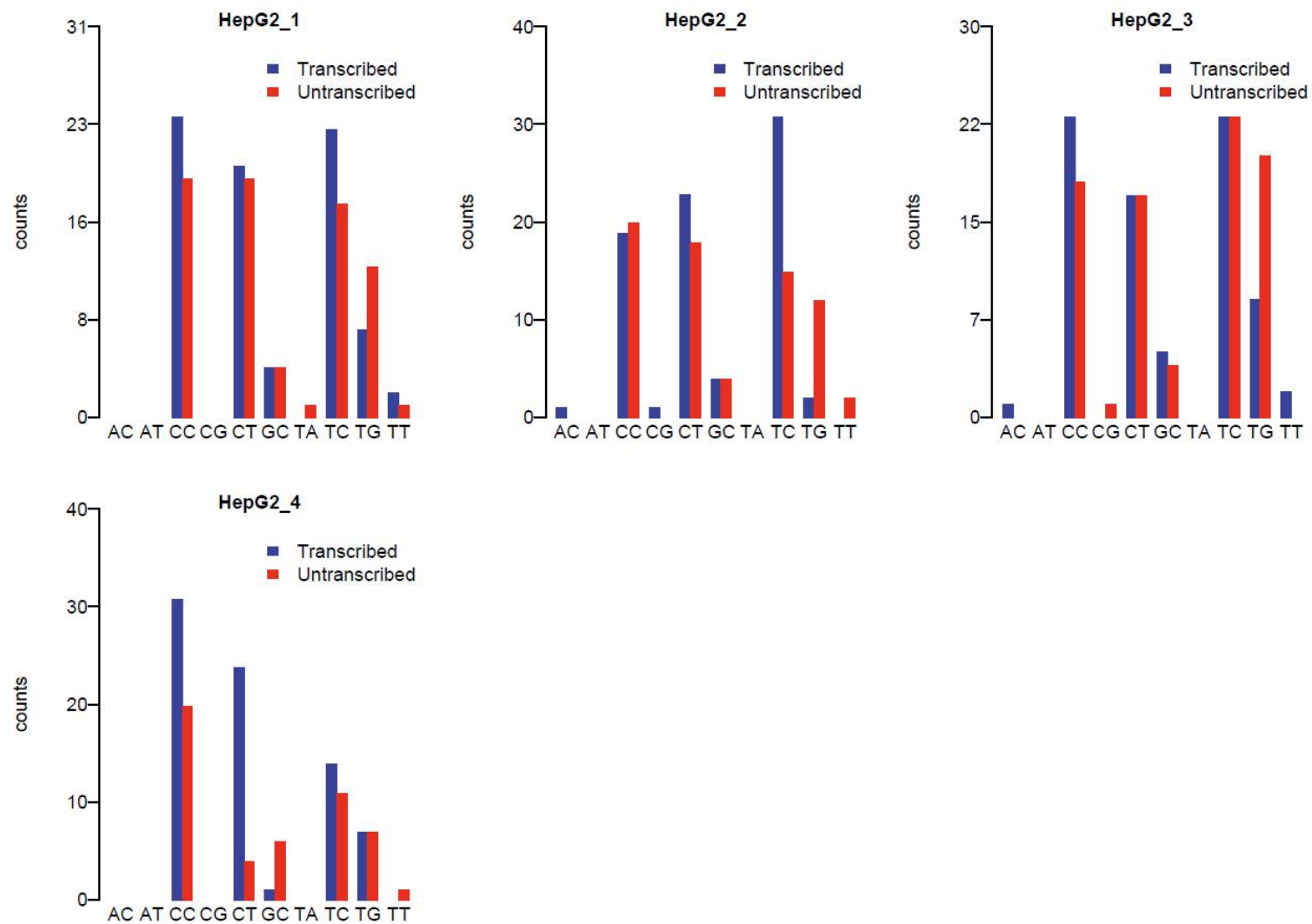
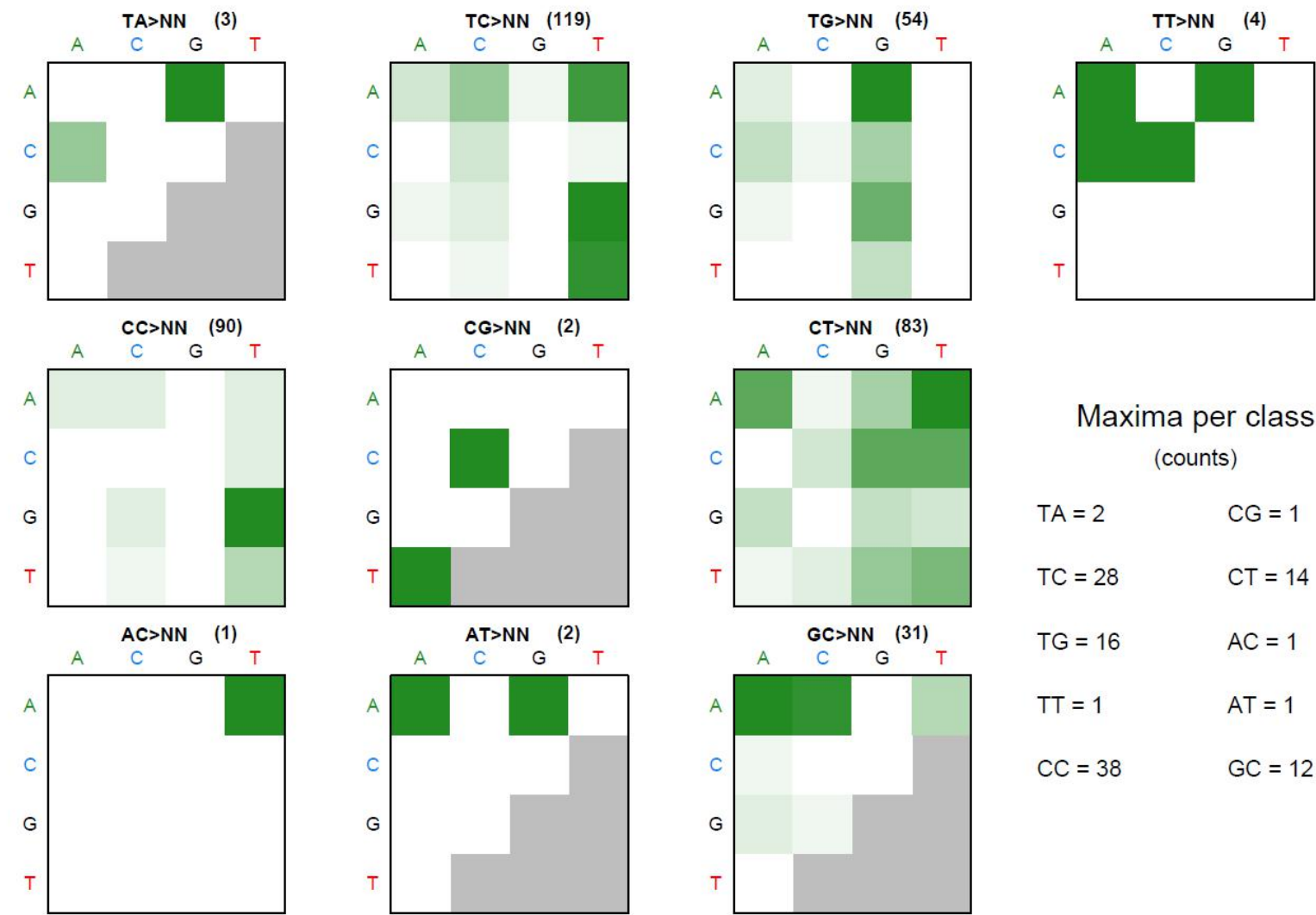# PlotCatalogToPdf(): SBS1536 Catalog

PlotCatalogToPdf(): DBS78 Catalog

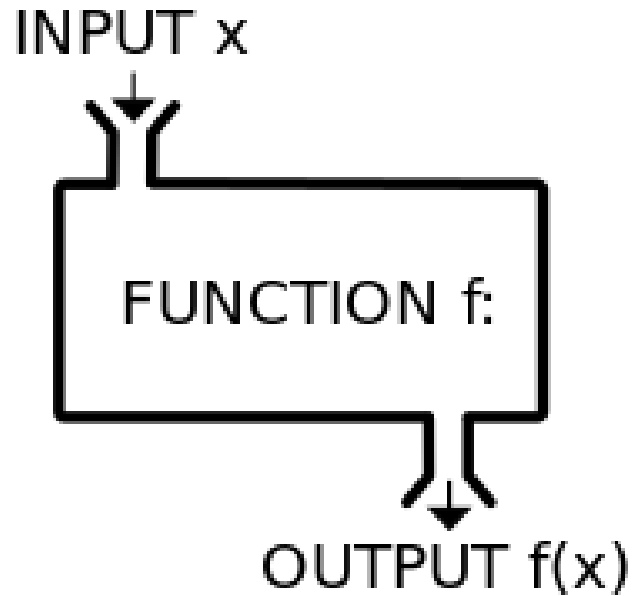# PlotCatalogToPdf(): DBS144 Catalog

PlotCatalogToPdf(): DBS136 Catalog

HepG2_1

Maxima per class (counts)

TA = 2   CG = 1

TC = 28   CT = 14

TG = 16   AC = 1

TT = 1   AT = 1

CC = 38   GC = 12

PlotCatalogToPdf(): Indel Catalog

Important exported functions in ICAMS

INPUT x

FUNCTION f:

OUTPUT f(x)

https://howtoprogramwithjava.com/functions-in-javascript/
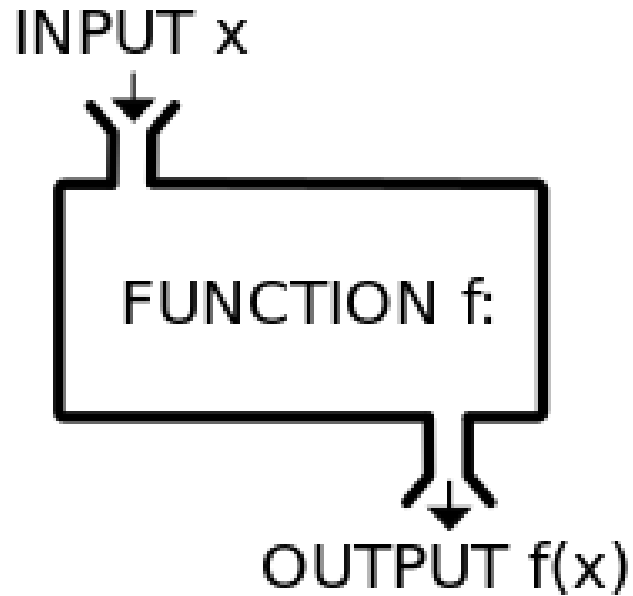
Creating catalogs and plot them to PDF

- StrelkaSBSVCFFilesToCatalogAndPlotToPdf()

- StrelkaIDVCFFilesToCatalogAndPlotToPdf()

- MutectVCFFilesToCatalogAndPlotToPdf()
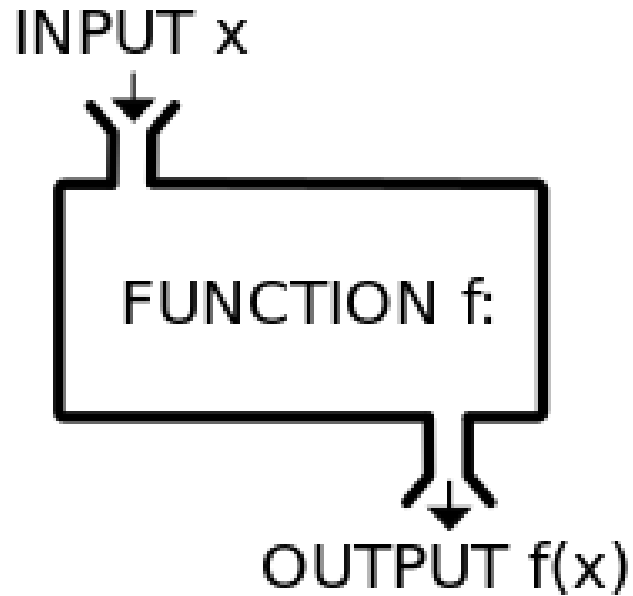
Important exported functions in ICAMS

INPUT x

FUNCTION f:

OUTPUT f(x)

https://howtoprogramwithjava.com/functions-in-javascript/

Annotating in-memory VCFs

- AnnotateSBSVCF()

- AnnotateDBSVCF()

- AnnotateIDVCF()

Important exported functions in ICAMS

INPUT x

FUNCTION f:

OUTPUT f(x)

https://howtoprogramwithjava.com/functions-in-javascript/

Reading and writing catalogs

- ReadCatalog()

- WriteCatalog()

Important exported functions in ICAMS

INPUT x

FUNCTION f:

OUTPUT f(x)

https://howtoprogramwithjava.com/functions-in-javascript/
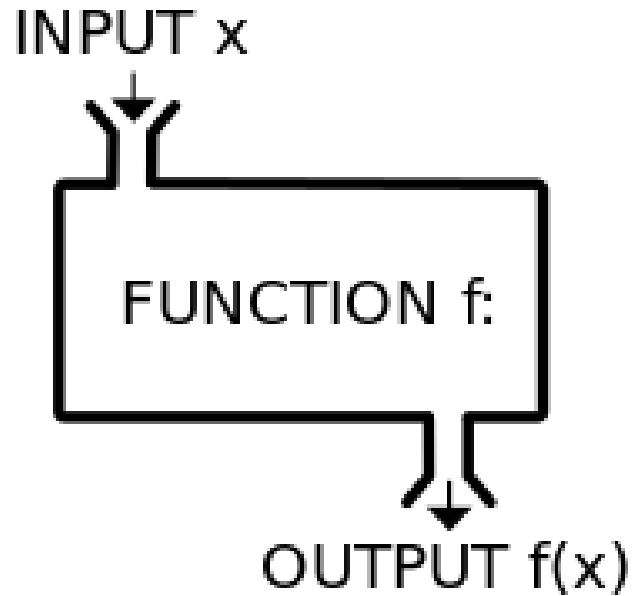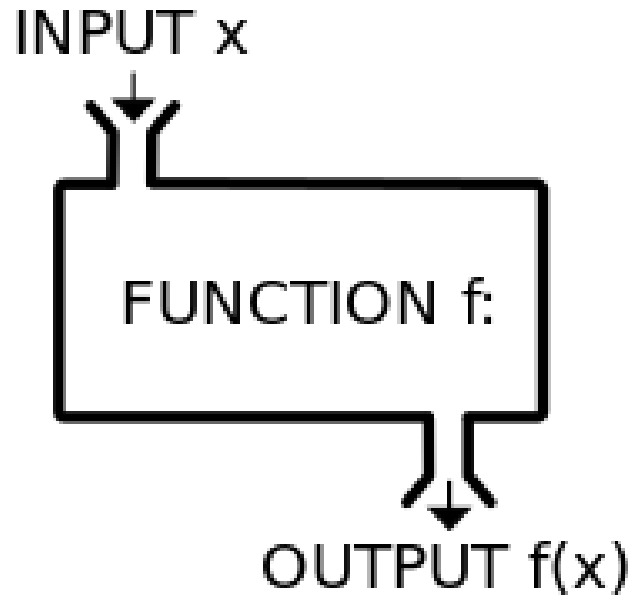
"Collapse" a catalog

- Collapse192CatalogTo96()

- Collapse1536CatalogTo96()

- Collapse144CatalogTo78()

Important exported functions in ICAMS

INPUT x

FUNCTION f:

OUTPUT f(x)

https://howtoprogramwithjava.com/functions-in-javascript/

Utility functions

- TransformCatalog()

- as.catalog()

- revc()