

# Alakazam: How to read and write files

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As part of the Immcantation suite of tools, the `alakazam` package includes a set of built-in functions capable of reading and writing tab-delimited database files created by Change-O into R `data.frames`. However, due to differences in how certain values and sequences are handled, `alakazam::readChangeoDb` and `alakazam::writeChangeoDb` will not properly read in AIRR formatted files. These files should instead be loaded using the functions included in the `airr` package (`airr::read_rearrangement` and `airr::write_rearrangement`).

You can read more about how we use both data standards here and [here](#). *Please note that the default file format for all functions in Immcantation is the AIRR-C format as of Immcantation v4.0.0, which corresponds to alakazam v1.0.0.*

## Reading data

Small example databases for both the Change-O format (`ExampleDbChangeo`) and the AIRR format (`ExampleDb`) are included in the `alakazam` package. For specific details about the latter, visit the AIRR Community documentation site.

```
# Set the file paths from inside the package directory
# These files are smaller versions of the example databases previously mentioned
changeo_file <- system.file("extdata", "example_changeo.tab.gz", package="alakazam")
airr_file <- system.file("extdata", "example_airr.tsv.gz", package="alakazam")

# Read in the data
db_changeo <- alakazam::readChangeoDb(changeo_file)
db_airr <- airr::read_rearrangement(airr_file)
```

## Writing data

```
# Write the data to a tab-delimited file
alakazam::writeChangeoDb(db_changeo, "changeo.tsv")
airr::write_rearrangement(db_airr, "airr.tsv")
```