
biowdl-input-converter

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CHAPTER 1

Introduction

biowdl-input-converter converts human-readable samplesheets into a format that can be easily processed by BioWDL pipelines.

For more information on BioWDL check out the documentation on <https://biowdl.github.io>.

CHAPTER 2

Installation

- Create a new virtualenv
- `run pip install biowdl-input-converter`

Parse samplesheets for BioWDL pipelines.

```
usage: biowdl-input-converter [-h] [-f FORMAT] [-o OUTPUT] [--validate]
                             [--old] [--skip-file-check]
                             [--skip-duplicate-check] [--check-file-md5sums]
                             samplesheet
```

3.1 Positional Arguments

samplesheet The input samplesheet. Format will be automatically detected from file suffix if `-format` argument not provided

3.2 Named Arguments

-f, --format The input samplesheet format - tsv, csv, json, or yaml

-o, --output The output file to which the json is written. Default: stdout

--validate Do not generate output but only validate the samplesheet.
Default: False

--old Output old style JSON as used in BioWDL germline-DNA and RNA-seq version 1 pipelines
Default: False

--skip-file-check Skip the checking if files in the samplesheet are present.
Default: True

--skip-duplicate-check Skip the checks for duplicate files in the samplesheet.

Default: True

--check-file-md5sums Do a md5sum check for reads which have md5sums added in the samplesheet.

Default: False

A samplesheet provides information about fastq files.

- Sample name
- Library name (for each sample usually one library is used to prepare the sample for sequencing)
- Readgroup name (which lane on the sequencer was used)
- Location of the fastq file containing forward reads (R1) on the filesystem
- Forward reads fastq (R1) md5sum
- Location of the fastq file containing reverse reads (R2) on the filesystem
- Reverse reads fastq (R2) md5sum
- additional properties (if necessary)

4.1 CSV/TSV Format

A samplesheet can be a comma- or tab-delimited file. An example looks like this

```
"sample","library","readgroup","R1","R1_md5","R2","R2_md5"
"s1","lib1","rg1","r1_1.fq","181a657e3f9c3cde2d3bb14ee7e894a3","r1_2.fq",
↪"ebe473b62926dcf6b38548851715820e"
"s2","lib1","rg1","r2_1.fq","7e79b87d95573b06ff2c5e49508e9dbf","r2_2.fq",
↪"dc2776dc3a07c4f468455bae1a8ff872"
```

The md5sum fields and the R2 field are optional and can be empty:

```
"sample","library","readgroup","R1","R1_md5","R2","R2_md5"
"s1","lib1","rg1","r1_1.fq",,"r1_2.fq",
"s2","lib1","rg1","r2_1.fq",,"r2_2.fq",
```

The R1_md5, R2 and R2_md5 columns are optional and can be left out entirely.

```
"sample", "library", "readgroup", "R1"
"s1", "lib1", "rg1", "r1_1.fq"
"s2", "lib1", "rg1", "r2_1.fq"
```

Additional properties at the sample level can be set using additional columns:

```
"sample", "library", "readgroup", "R1", "R1_md5", "R2", "R2_md5", "HiSeq4000", "other_property"
↪
"s1", "lib1", "rg1", "r1_1.fq", "r1_2.fq", "yes", "pizza"
"s2", "lib1", "rg1", "r2_1.fq", "r2_2.fq", "no", "broccoli"
```

Additional properties for the same sample only have to be defined in one line. This saves a lot of duplication for samples with a high readgroup or library count and makes it easier to read the file.

```
"sample", "library", "readgroup", "R1", "R1_md5", "R2", "R2_md5", "HiSeq4000", "other_property"
↪
"s1", "lib1", "rg1", "r1_1.fq", "r1_2.fq", "yes", "pizza"
"s1", "lib1", "rg2", "r1_1.fq", "r1_2.fq", "no", "broccoli"
"s1", "lib2", "rg1", "r1_1.fq", "r1_2.fq", "no", "broccoli"
"s2", "lib1", "rg1", "r2_1.fq", "r2_2.fq", "no", "broccoli"
"s2", "lib1", "rg2", "r2_1.fq", "r2_2.fq", "no", "broccoli"
"s2", "lib1", "rg3", "r2_1.fq", "r2_2.fq", "no", "broccoli"
```

If an additional column is filled with two conflicting values for the same sample an error will be thrown.

4.2 Creating comma-delimited files

These files can be easily generated using a spreadsheet program (such as Microsoft Excel or LibreOffice Calc).

Create a table:

sample	library	readgroup	R1	R1_md5	R2	R2_md5	HiSeq4000	other_property
s1	lib1	rg1	r1_1.fq	181a657e3f9c3cde2d3bb14e728914a3	r1_2.fq	dc2776dc3a07c4f468455bad1a8ff872	yes	pizza
s2	lib1	rg1	r2_1.fq		r2_2.fq			

Note: Optional fields can be left blank.

And save the table as CSV or TSV format from your spreadsheet program.

4.3 YAML format

Alternatively a YAML format can be used

```
samples:
- id: s1
  libraries:
  - id: lib1
    readgroups:
    - id: rg1
```

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```

      reads:
        R1: r1_1.fq
        R1_md5: 181a657e3f9c3cde2d3bb14ee7e894a3
        R2: r1_2.fq
        R2_md5: ebe473b62926dcf6b38548851715820e
- id: s2
  libraries:
    - id: lib1
      readgroups:
        - id: rg1
          reads:
            R1: r2_1.fq
            R1_md5: 7e79b87d95573b06ff2c5e49508e9dbf
            R2: r2_2.fq
            R2_md5: dc2776dc3a07c4f468455bae1a8ff872

```

Optional fields can be omitted and extra properties can be added:

```

samples:
- id: s1
  HiSeq4000: no
  libraries:
    - id: lib1
      readgroups:
        - id: rg1
          reads:
            R1: r1_1.fq
            R1_md5: 181a657e3f9c3cde2d3bb14ee7e894a3
            R2: r1_2.fq
- id: s2
  HiSeq4000: yes
  libraries:
    - id: lib1
      readgroups:
        - id: rg1
          reads:
            R1: r2_1.fq
            R2: r2_2.fq

```


5.1 0.3.0

- Added option to specify samplesheet fileformat explicitly
- The tool now also checks for duplicated paths in the samplesheet to prevent copy-paste errors.
- Added testing for python 3.8 and 3.9

5.2 0.2.1

- Bugfix: R1_md5 and R2_md5 columns are not required to be defined anymore in a csv file.

5.3 0.2.0

- Make sure only one line of additional properties per sample is need in a csv file.
- Fix a bug where an empty field for an additional property in a csv samplesheet would be defined as "" instead of None.

5.4 0.1.0

- Added documentation and readthedocs page
- Added changelog and release procedures
- Added test suite with coverage metrics, enabled CI
- Add validate flag to allow users to validate files
- Added command line interface with ability to write to stdout and files

- Added ability to check files for presence and md5sum checking
- Added sample group -> old style JSON/YAML conversion
- Added sample group -> new style JSON/YAML conversion
- Added yaml -> sample group conversion
- Reworked csv conversion by @DavyCats to fit the new sample group structure
- Added sample group structure to enable any-to-any conversions