A

Metadata

id	machine_name	date	...	condition	sex	...	p
xxx...xx|x	machine_001	2016-09-01	...	A	M	...	p_1
xxx...xx|y	machine_001	2016-09-01	...	B	M	...	p_2
xxx...xx|z	machine_002	2016-09-03	...	A	F	...	p_3
⋮	⋮	⋮	⋱	⋮	⋮	⋱	⋮
n	$machine_n$	$date_n$	...	$condition_n$	sex_n	...	p_n

Platform fields (mandatory) — Experiment fields (arbitrary & optional)
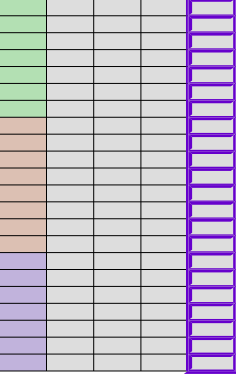
+

Data
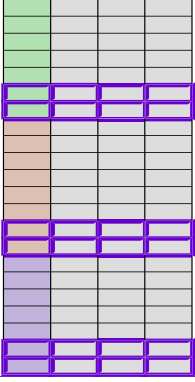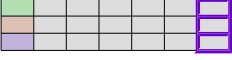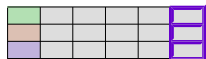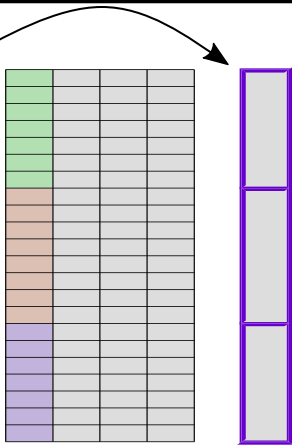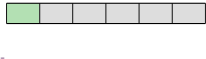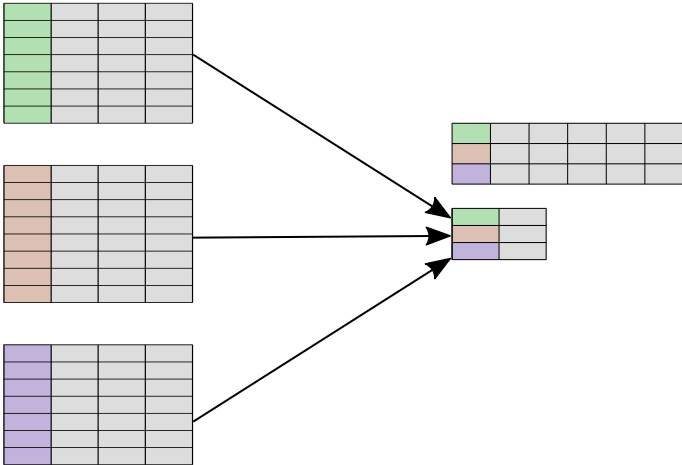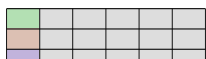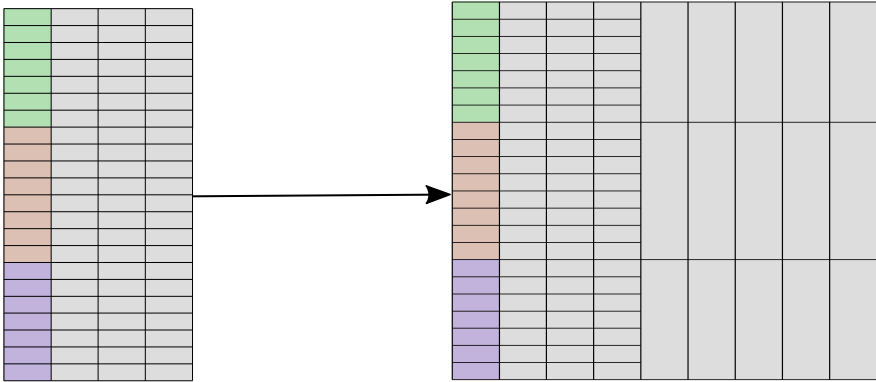
id	t	activity	...	q
xxx...xx|x	1	1	⋰	$q_{1,1}$
xxx...xx|x	2	0	⋰	$q_{1,2}$
xxx...xx|x	3	0	⋰	$q_{1,3}$
xxx...xx|x	⋮	⋮	⋰	⋮
xxx...xx|y	⋮	⋮	⋰	⋮
xxx...xx|z	1	0	⋰	$q_{3,1}$
xxx...xx|z	2	2	⋰	$q_{3,2}$
xxx...xx|z	3	0	⋰	$q_{3,3}$
xxx...xx|z	⋮	⋮	⋰	⋮
⋮	⋮	⋮	⋰	⋮
n	⋮	⋮	⋰	q_{n,k_n}

B

	Metadata	Data

Select	`dt[CRITERIA, meta = TRUE]`
	
	# to subet the metadata only for males
	`> male_meta <- dt[sex == "M",`
	`            meta = TRUE]`
		`dt[CRITERIA]`
		
		# to keep only data > 5s
		`> late_dt <- dt[t > 5]`
		
		Note: metadata is updated when selection removes all data from one id.

Alter, create & delete (meta)variables	`dt[, X := value, meta = TRUE]`
	# to create a metavariable set to "wt"
	`> dt[, genotype := "wt", meta = TRUE]`
	# delete
	`> dt[, sex := NULL, meta = TRUE]`
		`dt[, Y := value]`
		# to create t_2 (t - 1)
		`> dt[, t_2 := t - 1]`
		# to delete t
		`> dt[, t := NULL]`
		Note: update data in place. No copy of dt in memory.

Expand metavariables as variables	`dt[xmv(X)]`
	
	# to select data with sex
	`> dt <- dt[xmv(sex) == "M"]`
	
	# to copy a metavariable as a variable
	`> dt[, s := xmv(sex)]`	

Aggregate & summary	`dt[, OPERATION, by = id]`
	
	# to compute mean activity, per individual
	`> dt <- dt[,.(`
	`        mean_act = mean(activity)`
	`        ), by = id]`
	
	# to count reads per id
	`> dt[, .N, by = id]`
		OPERATION

Join data & metadata	`rejoin(dt)`
	
	# to reunite data and metadata
	`> full_table <- rejoin(dt)`
	
	Note: used mostly after aggregation or preprocessing
		REJOIN