

Table 1. The experiment involves the parameter setting corresponding to the datasets

Dataset	K	P	α	ρ	epsilon
Pollen	10	10	[1 1e-1 2e-3]	1e-5	1e-2
Usoskin	8	8	[1 1e-2 1e-3]	1e-5	1e-2
Yan	5	5	[1 1e-2 2e-3]	1e-5	1e-2
Zeisel	20	20	[1 1e-2 1e-3]	1e-5	1e-2
Mouse	10	10	[1 1e-2 1e-3]	1e-5	1e-2
PBMC	10	10	[1 1e-2 1e-3]	1e-5	1e-3
Chen	10	10	[1 1e-2 1e-3]	1e-5	1e-3
Loh	11	11	[1 1e-2 2e-3]	2e-4	1e-2
Petropoulos	10	10	[1 1e-2 1e-3]	1e-5	1e-2
Simulation dataset	15	8	[1 1e-1 1e-3]	1e-5	1e-5

Table 2. Parameter settings of simulation datasets generated from Splatter

Parameter	Simulation dataset	Parameter	Simulation dataset
version	1.10.1	dropout.type	“group”
nGenes	1000	method	“groups”
nCells	500	de.prob	c(0.05, 0.08, 0.01)
group.prob	c(0.3, 0.3, 0.4)	de.facLoc	0.5
dropout.shape	c(ds, ds, ds), ds $\in \{-0.3, 0, 0.05, 0.25\}$	de.facScale	0.8
dropout.mid	Default	dropout. present	Null

Table 3. A summary of nine real scRNA-seq datasets used in our experiment

Dataset	Number of clusters	Number of cells	Number of genes	Standard
Pollen	11	301	23730	Gold
Usoskin	4	622	25334	Silver
Yan	9	90	20214	Gold
Zeisel	9	3005	19972	Gold
Mouse	16	2100	20670	Gold
PBMC	8	4340	33694	Silver
Chen	46	12089	23284	Silver
Loh	8	429	23794	Gold
Petropoulos	5	1529	21749	Copper