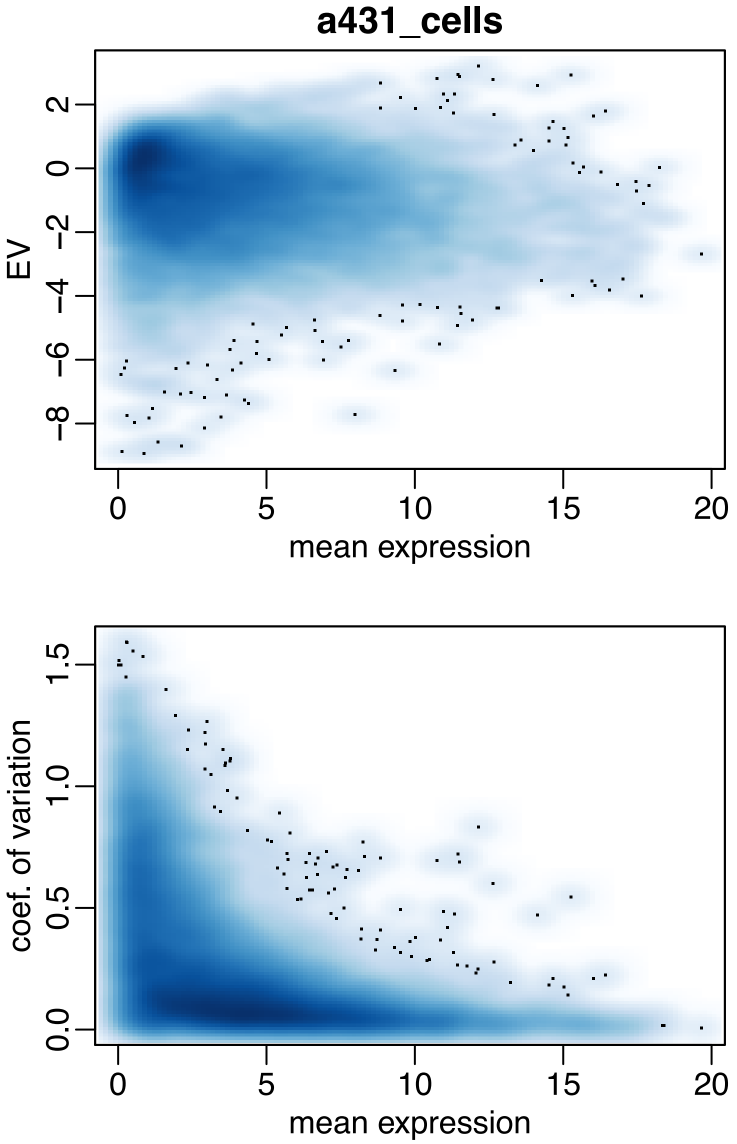
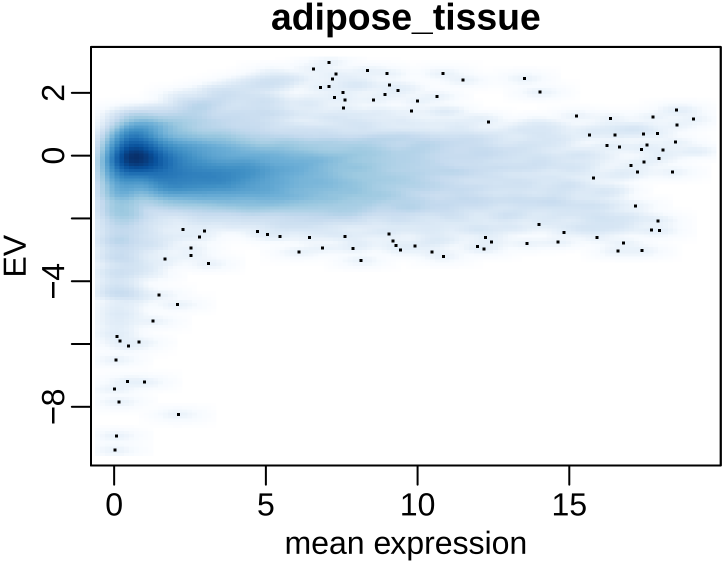
Supplement 3.

Figure 1. EV removes dependence between variability and overall mean expression. The EV measures is unbiased with respect to overall mean expression. We compare the distribution of EV conditional on mean expression for each tissue to the distribution of the coefficient of variation conditional on mean expression. The coefficient of variation shows high upward bias towards genes with low expression.

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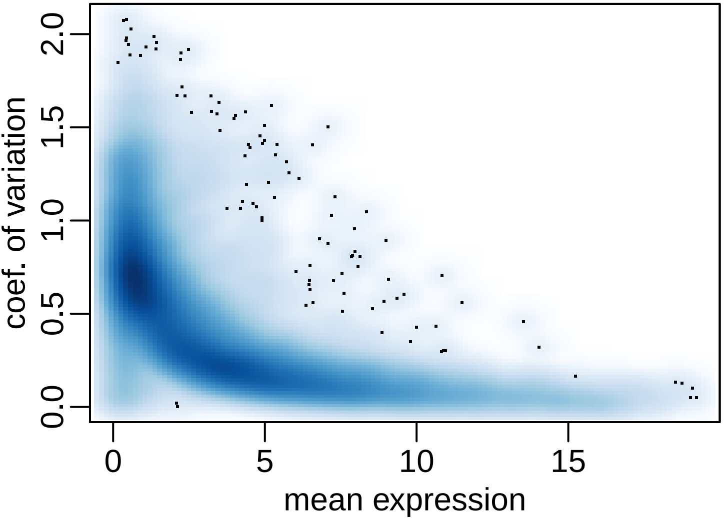
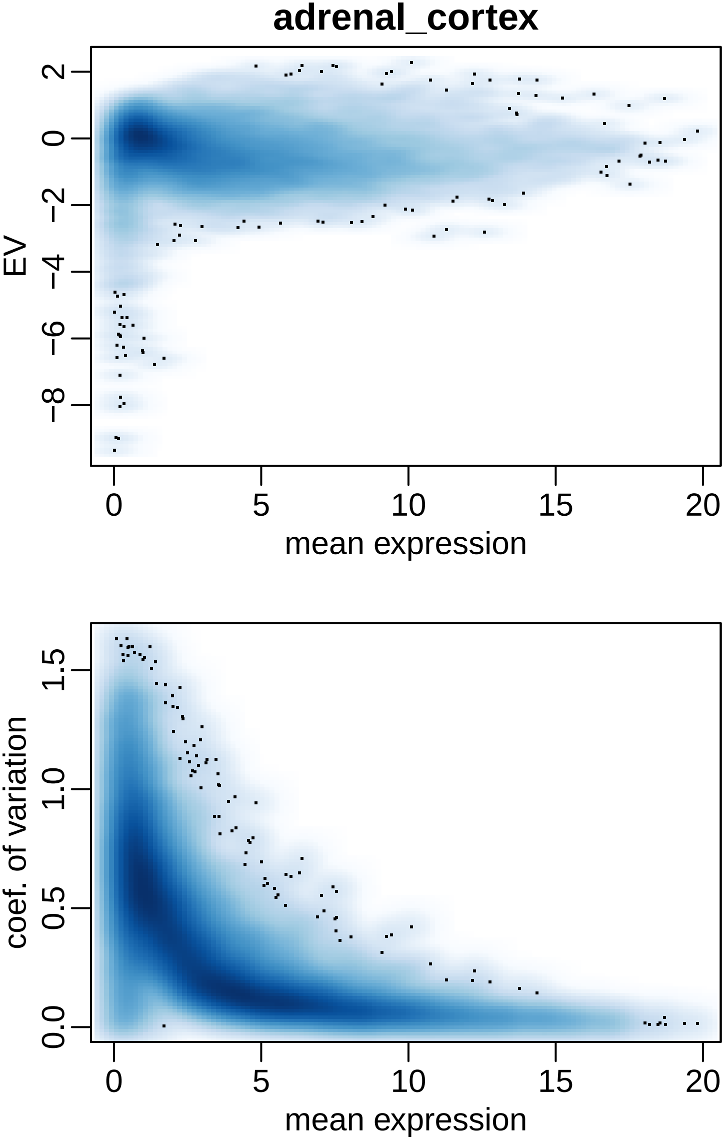
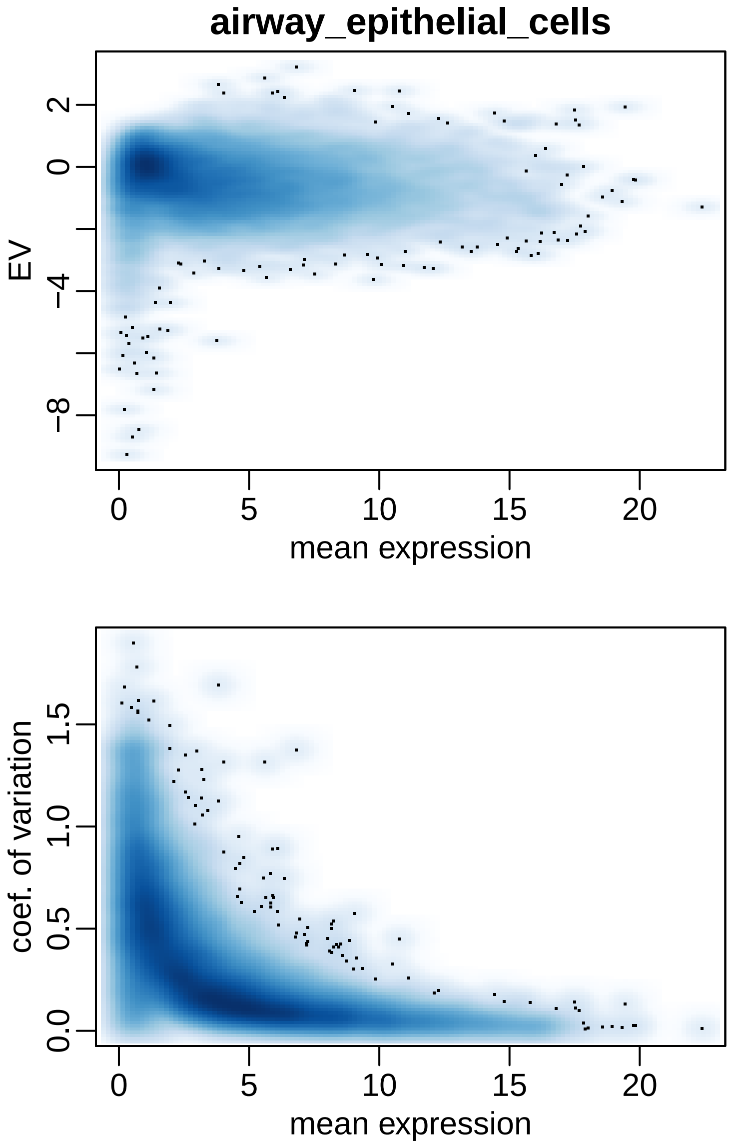
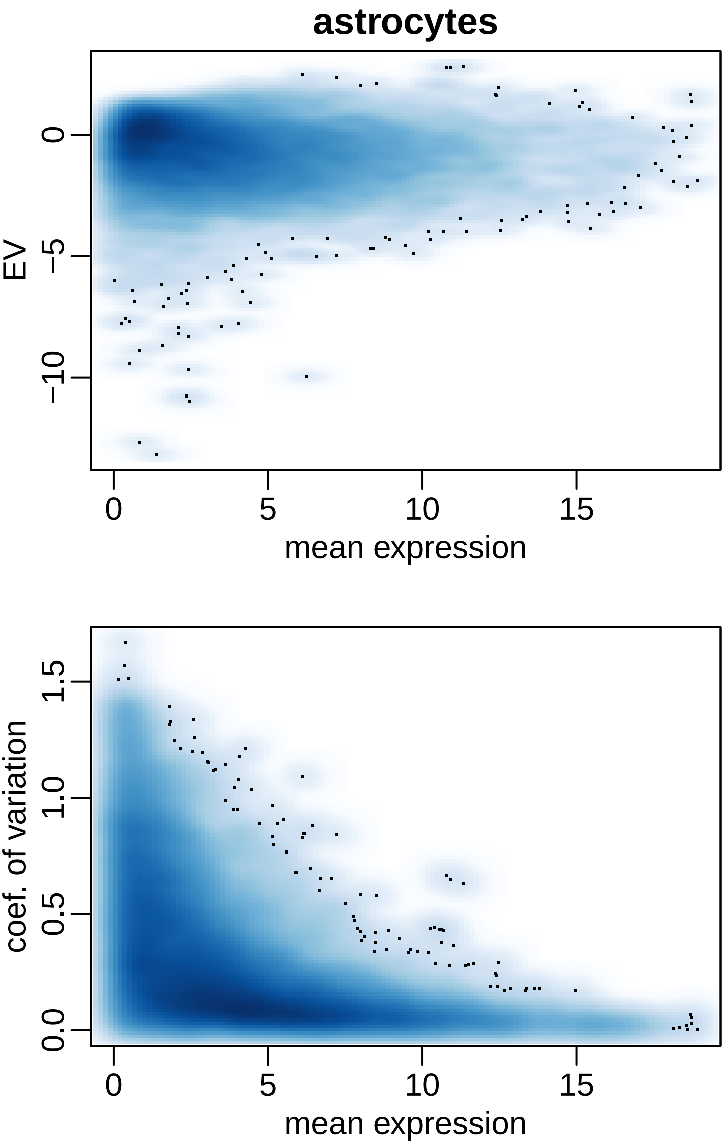
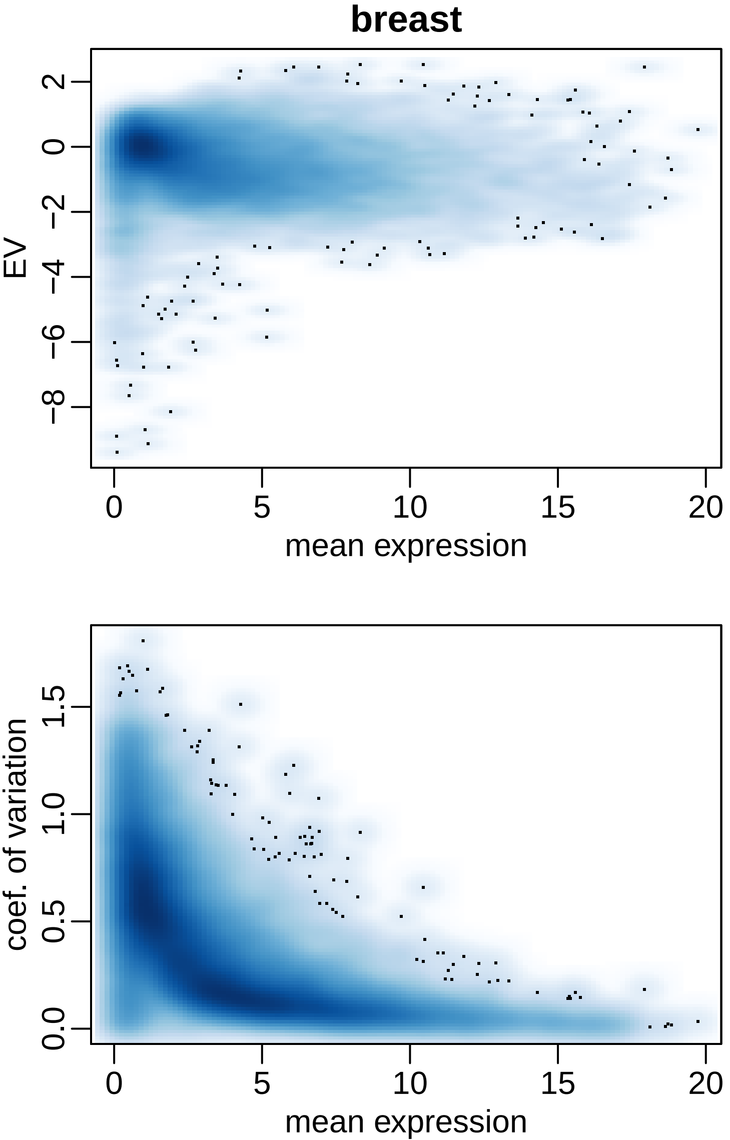
EV
2
0
−4
−8
0
5
10
15
mean expression

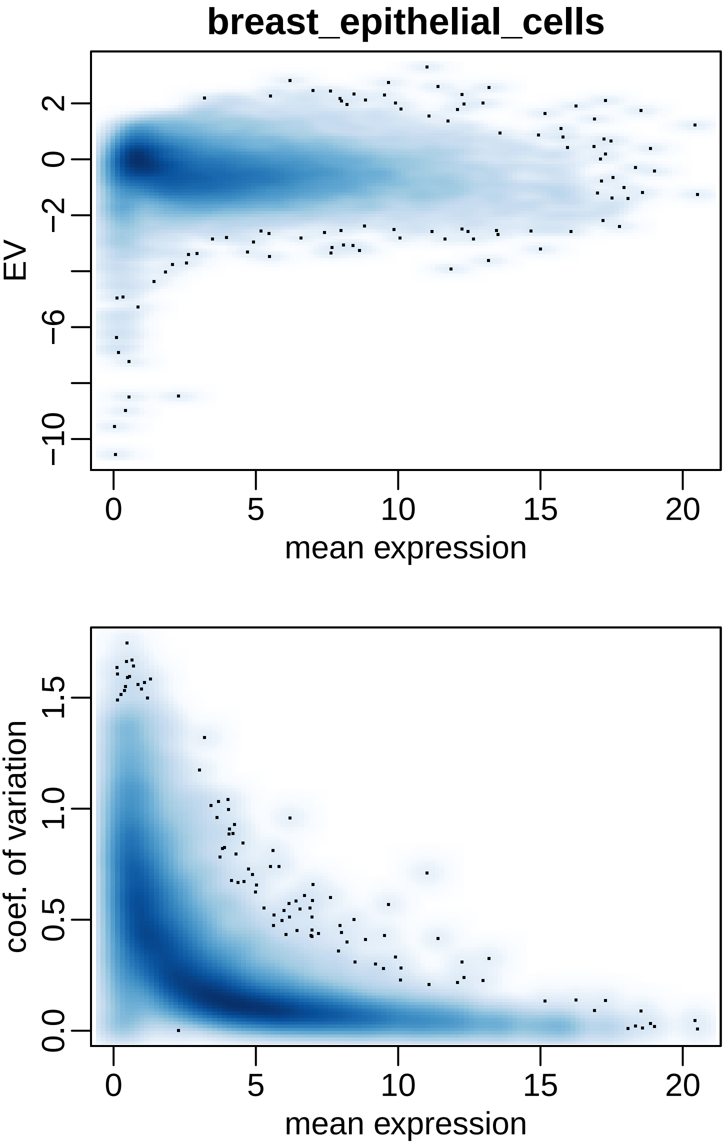

coef. of variation
0.0
0.5
1.0
1.5
2.0
0
5
10
15
mean expression


adrenal_cortex
EV
2
0
−2
−4
−6
−8
0
5
10
15
20
mean expression
coef. of variation
1.5
1.0
0.5
0.0
0
5
10
15
20
mean expression


airway_epithelial_cells
EV
2
0
−4
−8
0
5
10
15
20
mean expression
coef. of variation
1.5
1.0
0.5
0.0
0
5
10
15
20
mean expression


astrocytes
EV
0
−5
−10
0
5
10
15
mean expression
coef. of variation
0.0
0.5
1.0
1.5
0
5
10
15
mean expression


breast
EV
2
0
−2
−4
−6
−8
0
5
10
15
20
mean expression
coef. of variation
1.5
1.0
0.5
0.0
0
5
10
15
20
mean expression


breast_epithelial_cells
EV
2
0
−2
−6
−10
0
5
10
15
20
mean expression
coef. of variation
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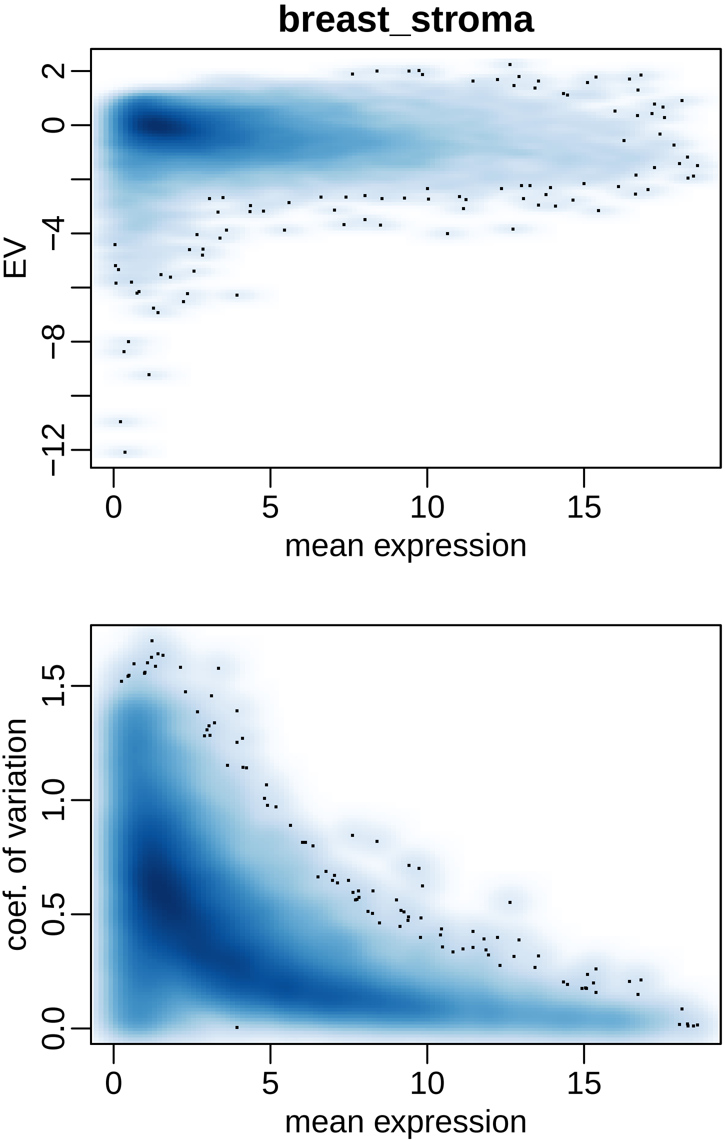
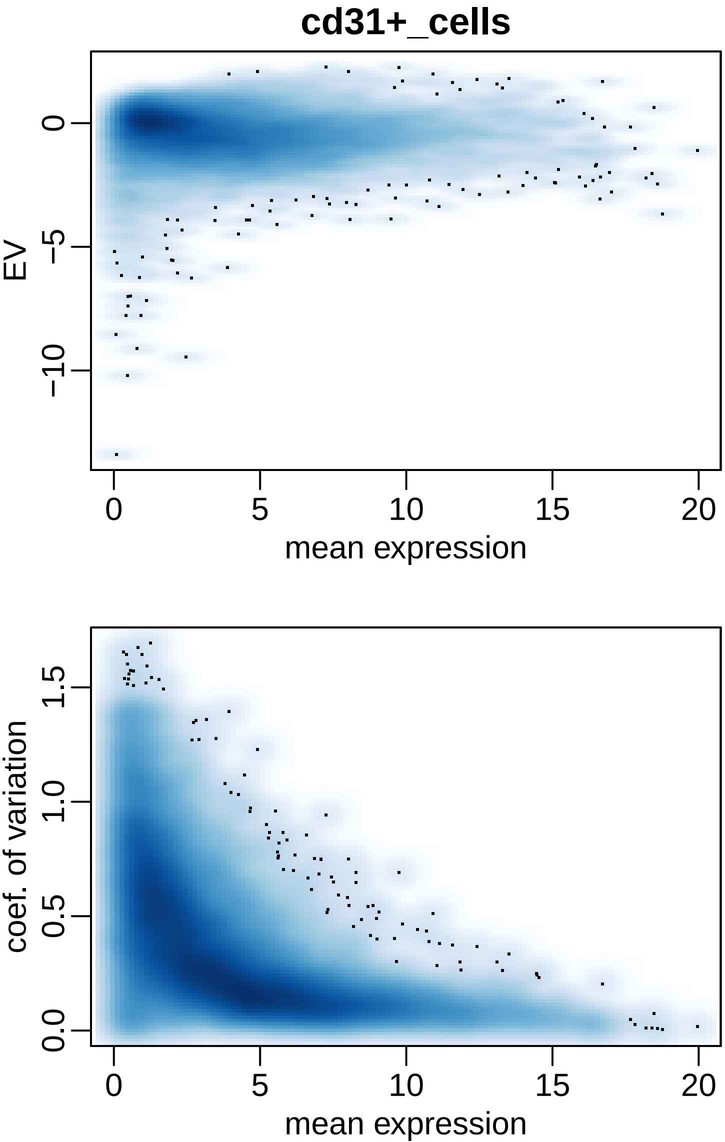
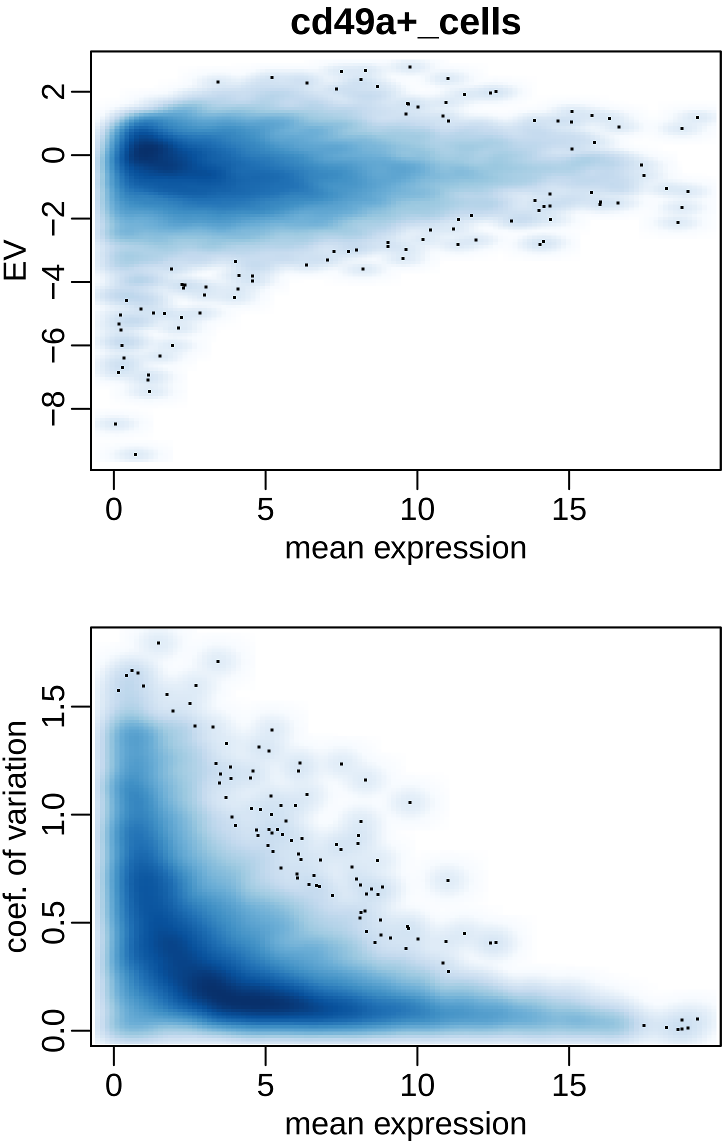
0.5
1.0
1.5
0
5
10
15
20
mean expression


breast_stroma
EV
2
0
−4
−8
−12
0
5
10
15
mean expression
coef. of variation
1.5
1.0
0.5
0.0
0
5
10
15
mean expression


cd31+_cells
EV
0
−5
−10
0
5
10
15
20
mean expression
coef. of variation
0.0
0.5
1.0
1.5
0
5
10
15
20
mean expression


cd49a+_cells
EV
2
0
−2
−4
−6
−8
0
5
10
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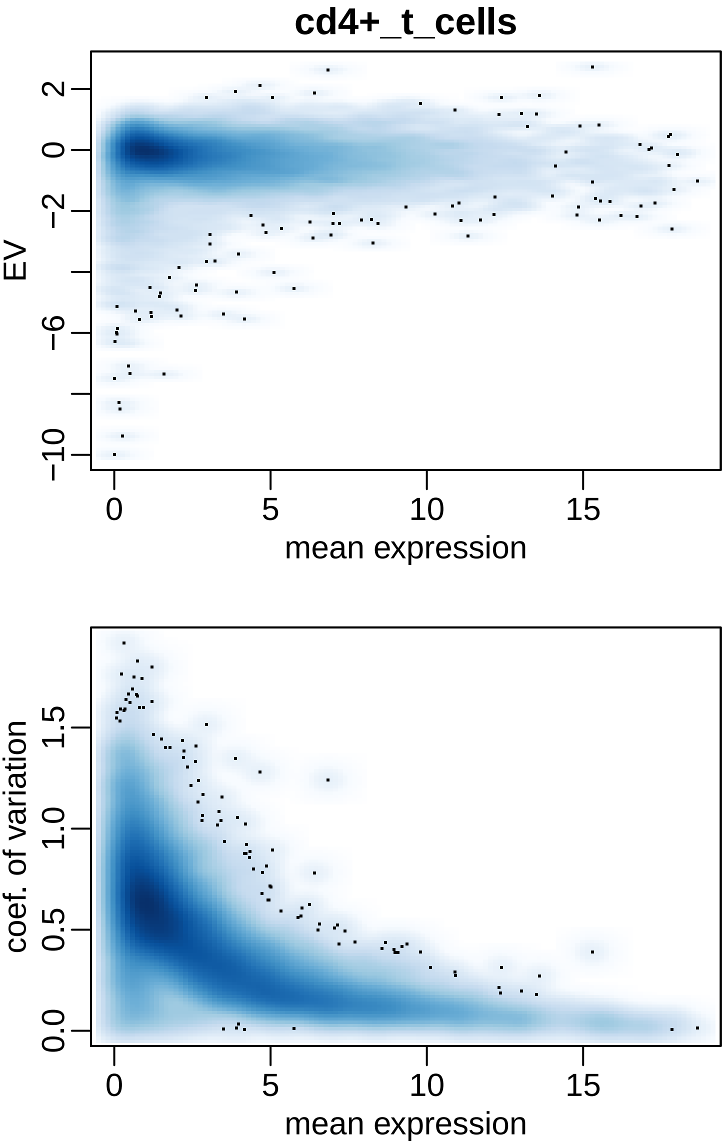
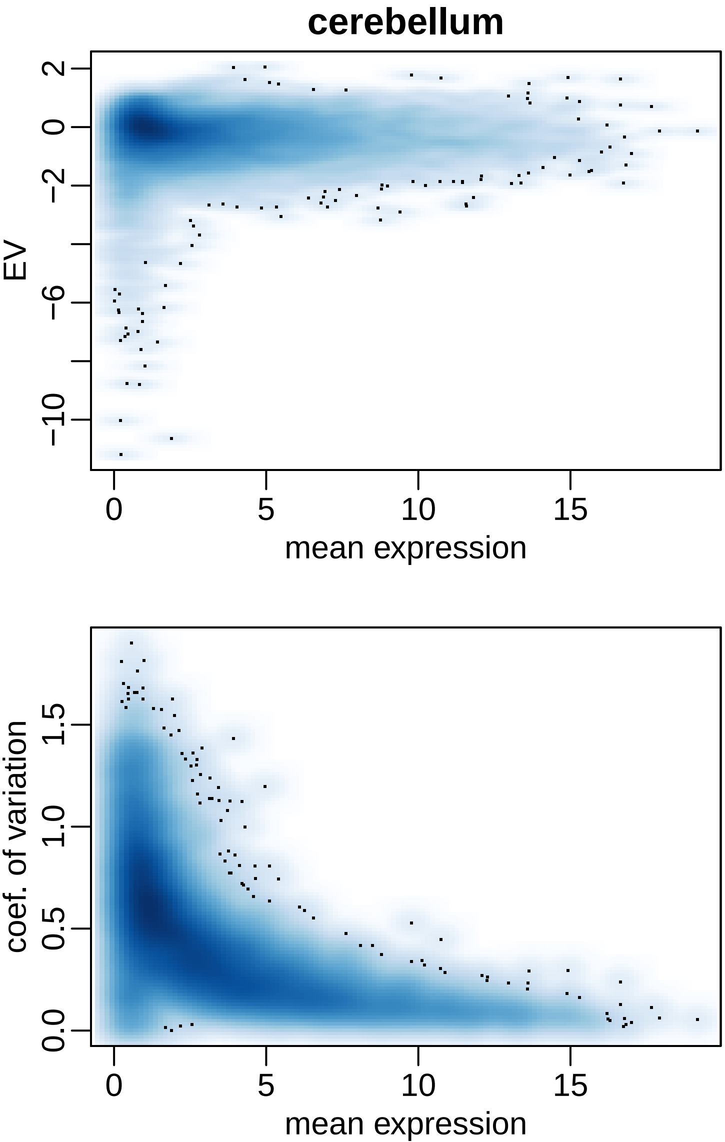
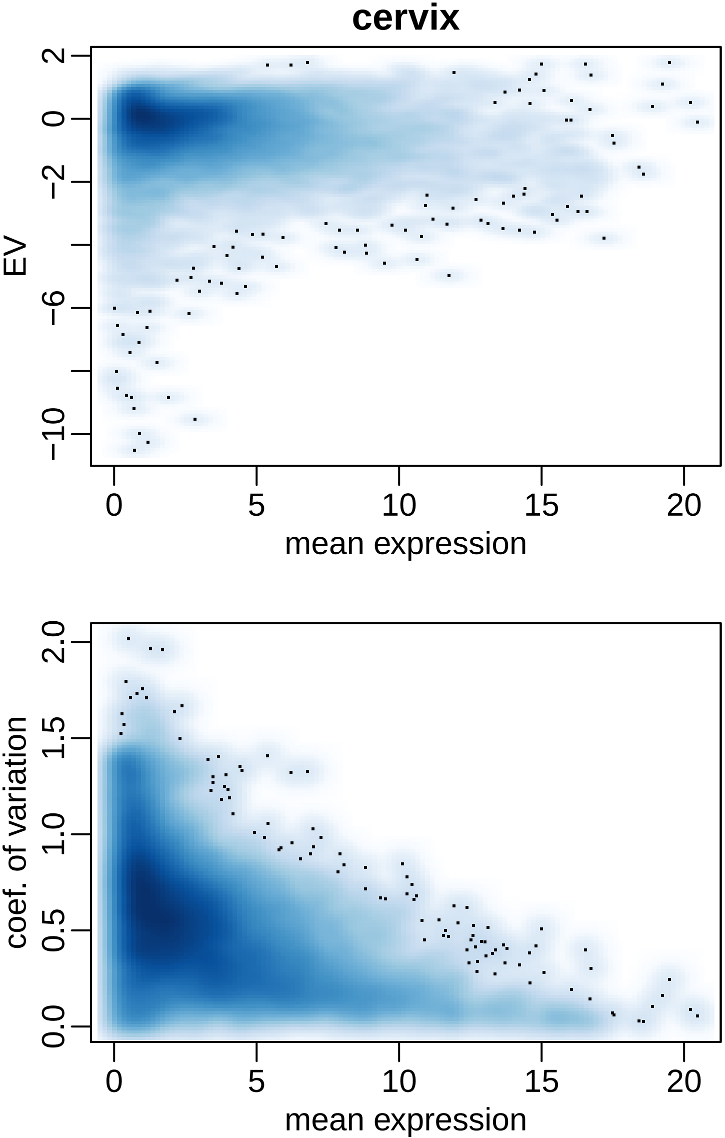
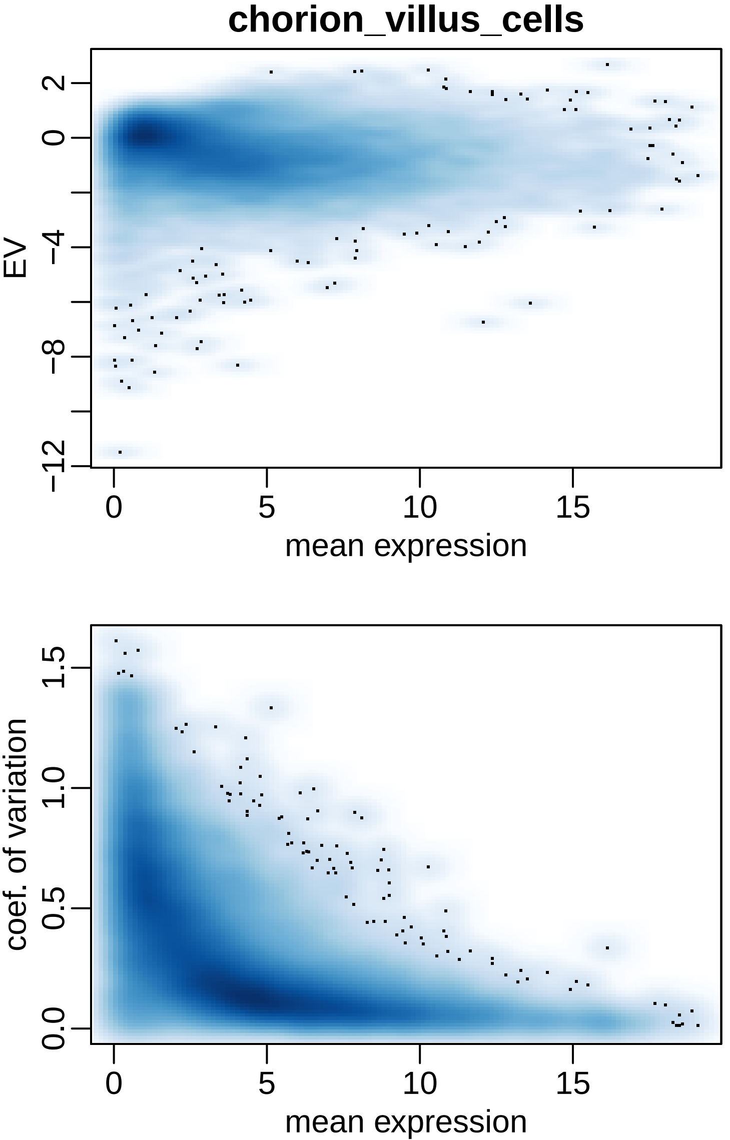
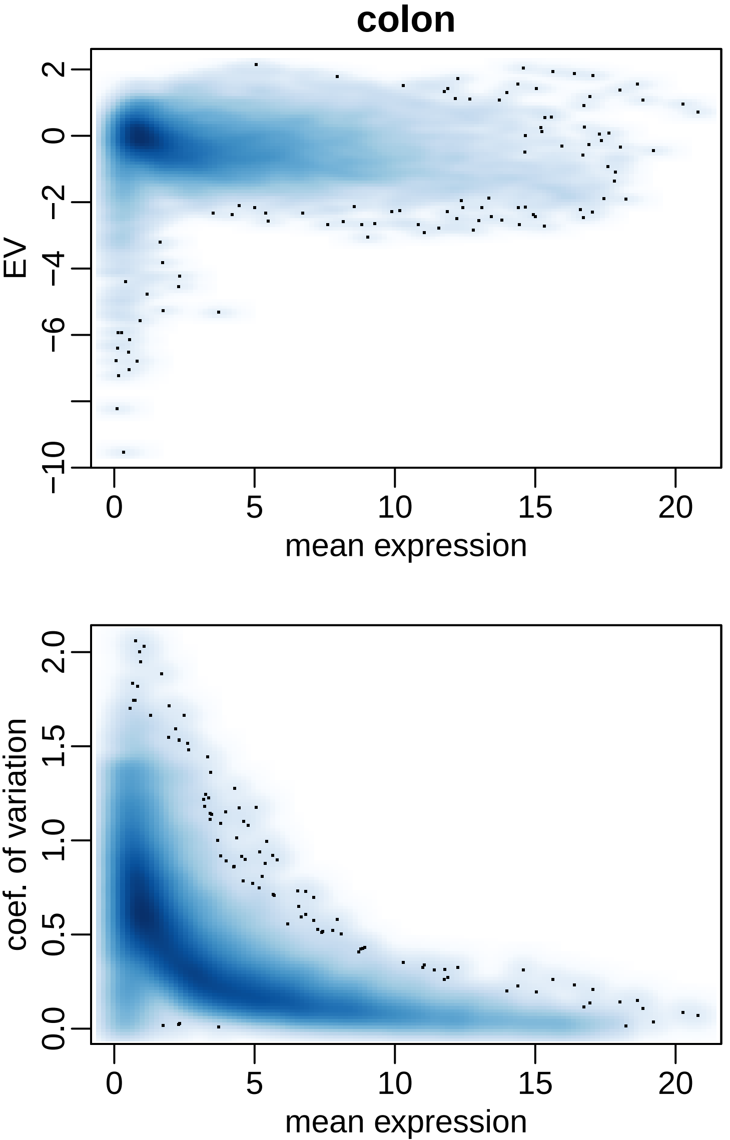
mean expression
coef. of variation
1.5
1.0
0.5
0.0
0
5
10
15
mean expression

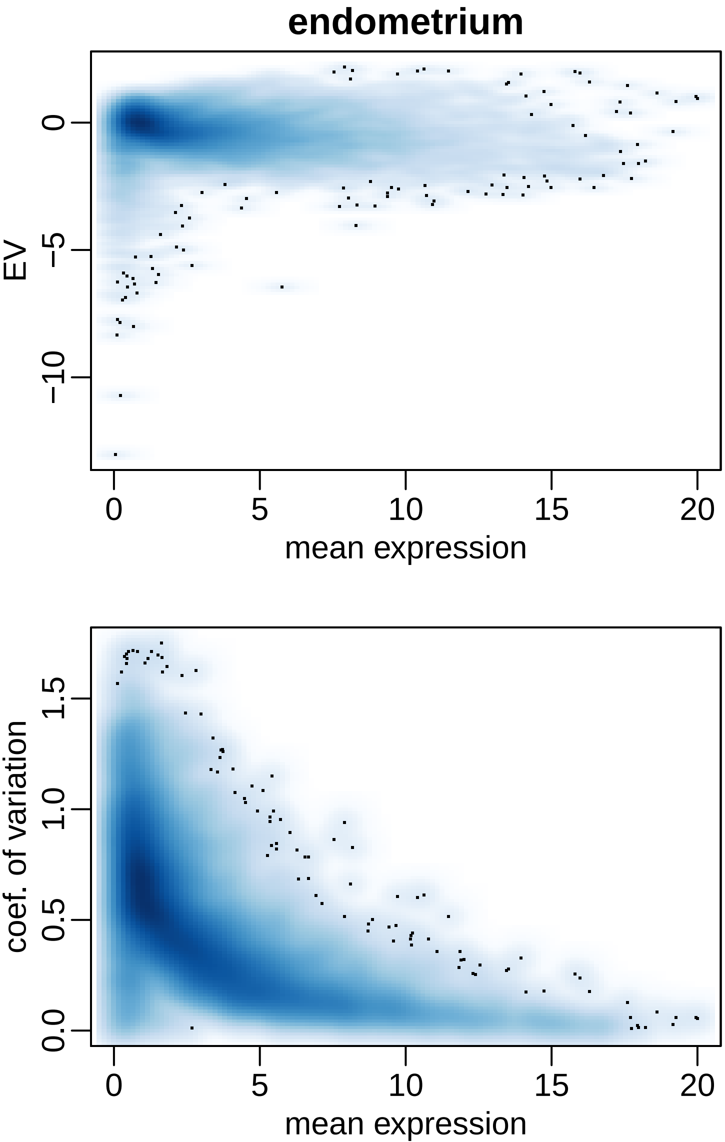

cd4+_t_cells
EV
2
0
−2
−6
−10
0
5
10
15
mean expression
coef. of variation
1.5
1.0
0.5
0.0
0
5
10
15
mean expression

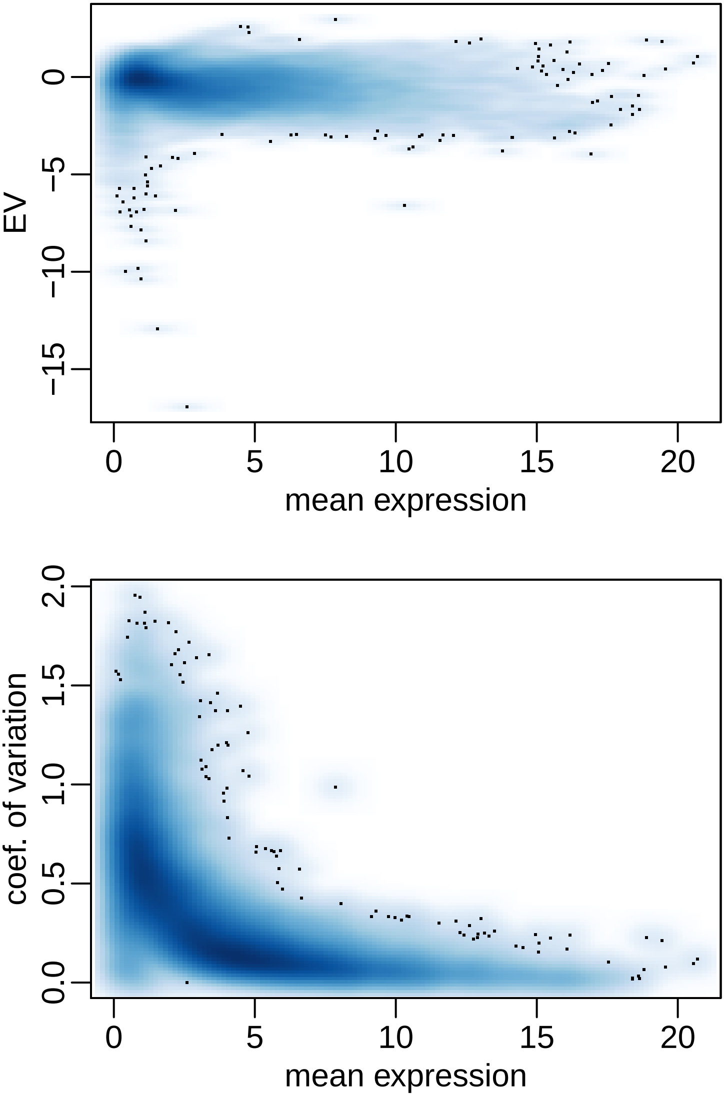

cerebellum
EV
2
0
−2
−6
−10
0
5
10
15
mean expression
coef. of variation
0.0
0.5
1.0
1.5
0
5
10
15
mean expression


cervix
EV
2
0
−2
−6
−10
0
5
10
15
20
mean expression
coef. of variation
2.0
1.5
1.0
0.5
0.0
0
5
10
15
20
mean expression

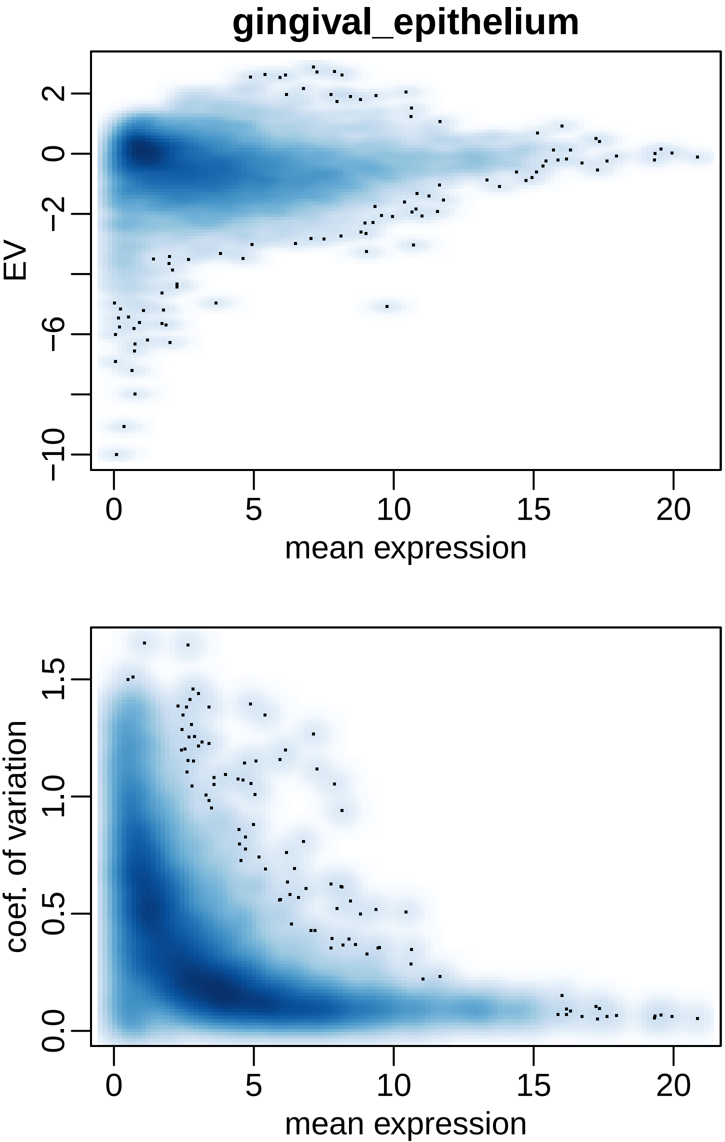

chorion_villus_cells
EV
2
0
−4
−8
−12
0
5
10
15
mean expression
coef. of variation
1.5
1.0
0.5
0.0
0
5
10
15
mean expression

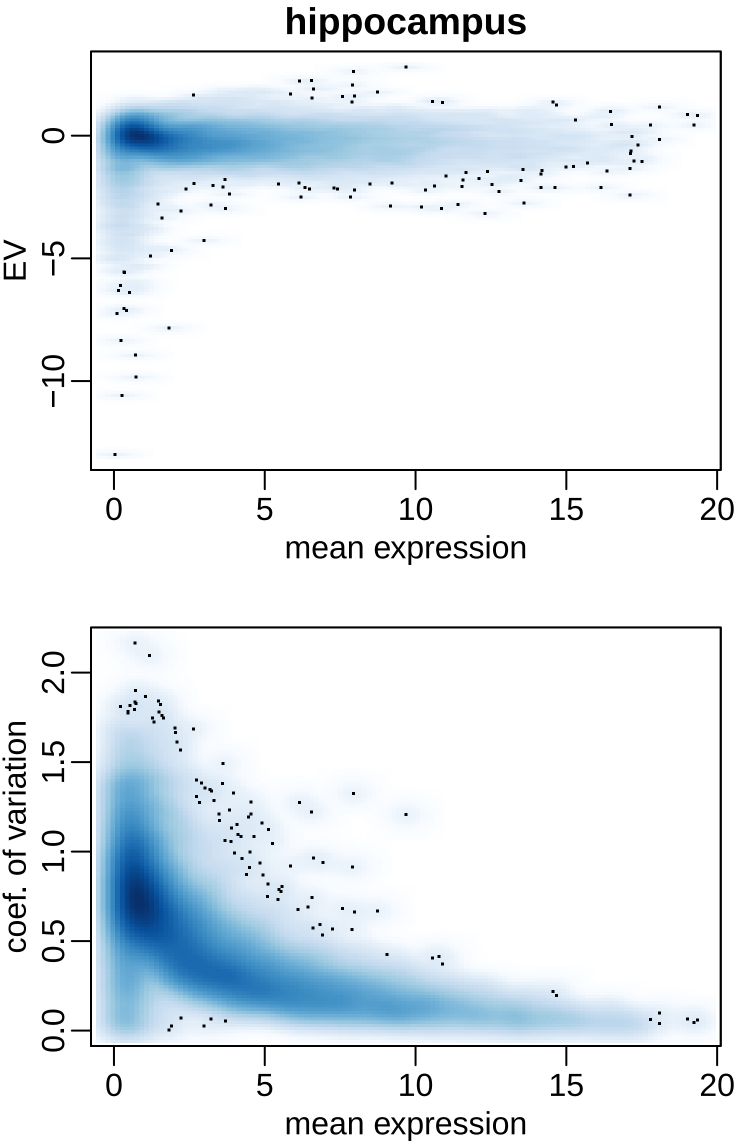

colon
EV
2
0
−2
−4
−6
−10
0
5
10
15
20
mean expression
coef. of variation
0.0
0.5
1.0
1.5
2.0
0
5
10
15
20
mean expression

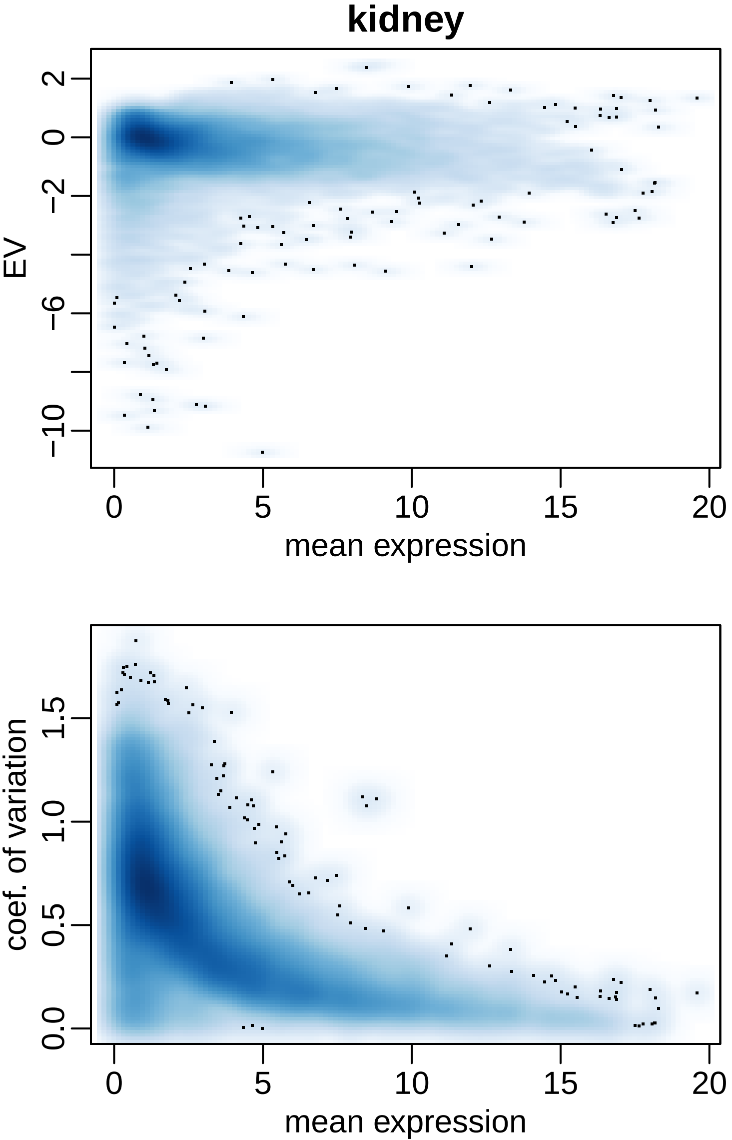

endometrium
EV
0
−5
−10
0
5
10
15
20
mean expression
coef. of variation
0.0
0.5
1.0
1.5
0
5
10
15
20
mean expression

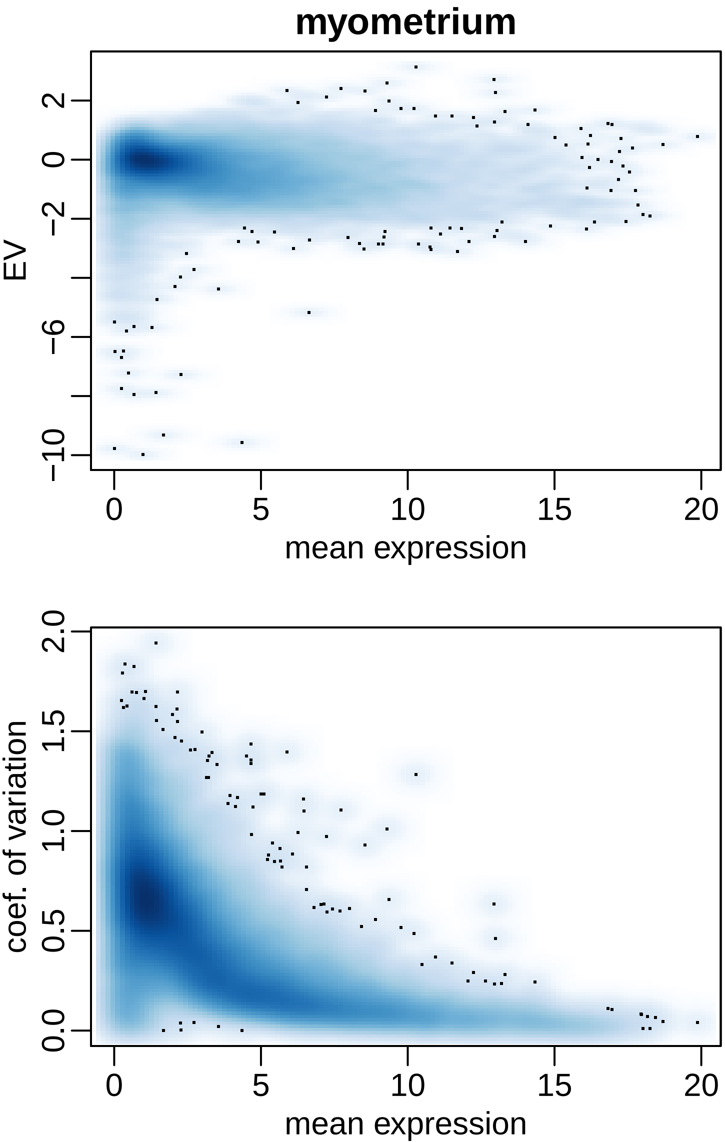


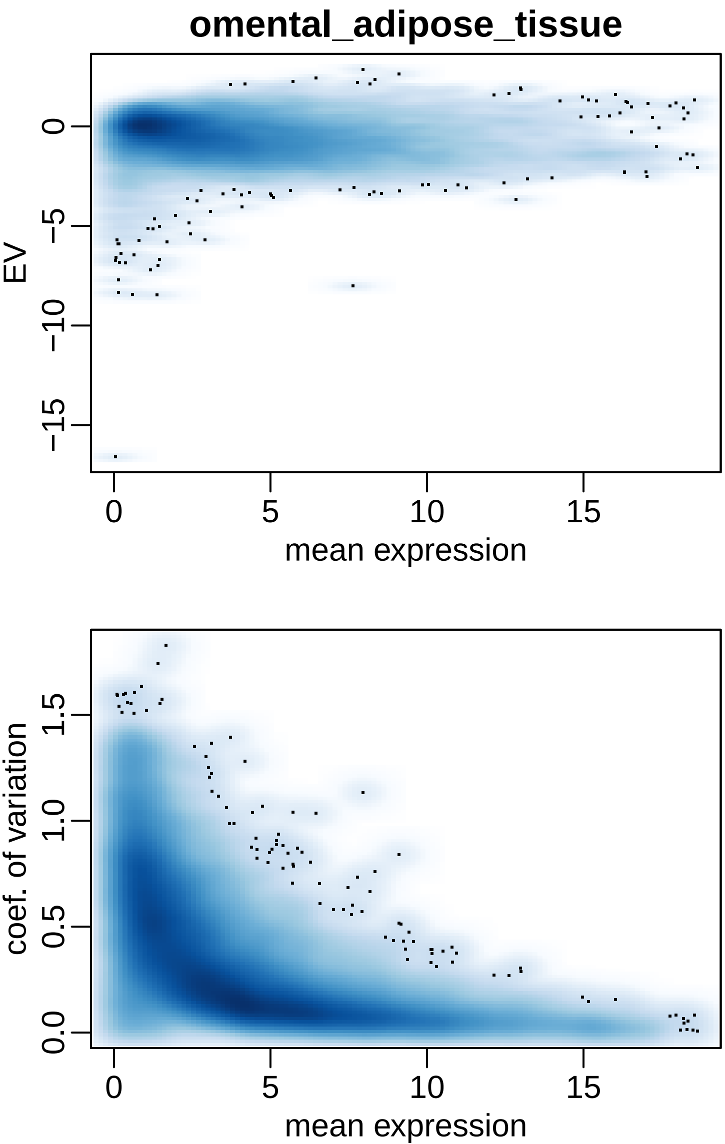
fetal_cartilage

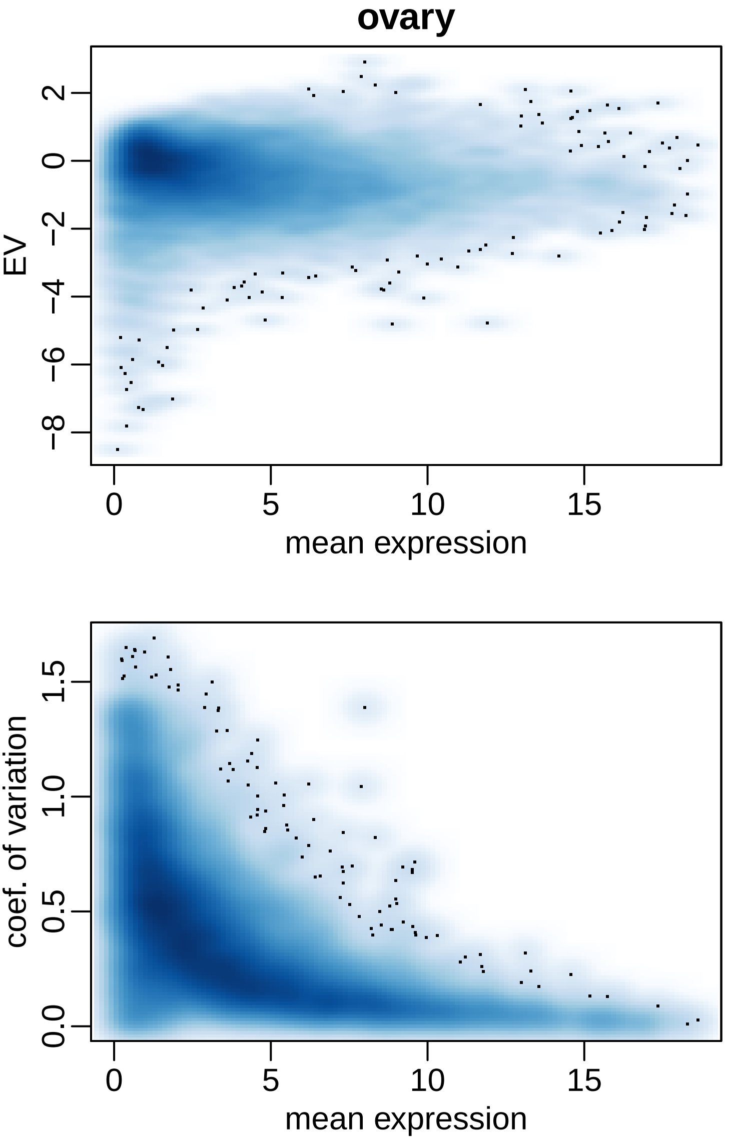

gingival_epithelium
EV
2
0
−2
−6
−10
0
5
10
15
20
mean expression
coef. of variation
1.5
1.0
0.5
0.0
0
5
10
15
20
mean expression

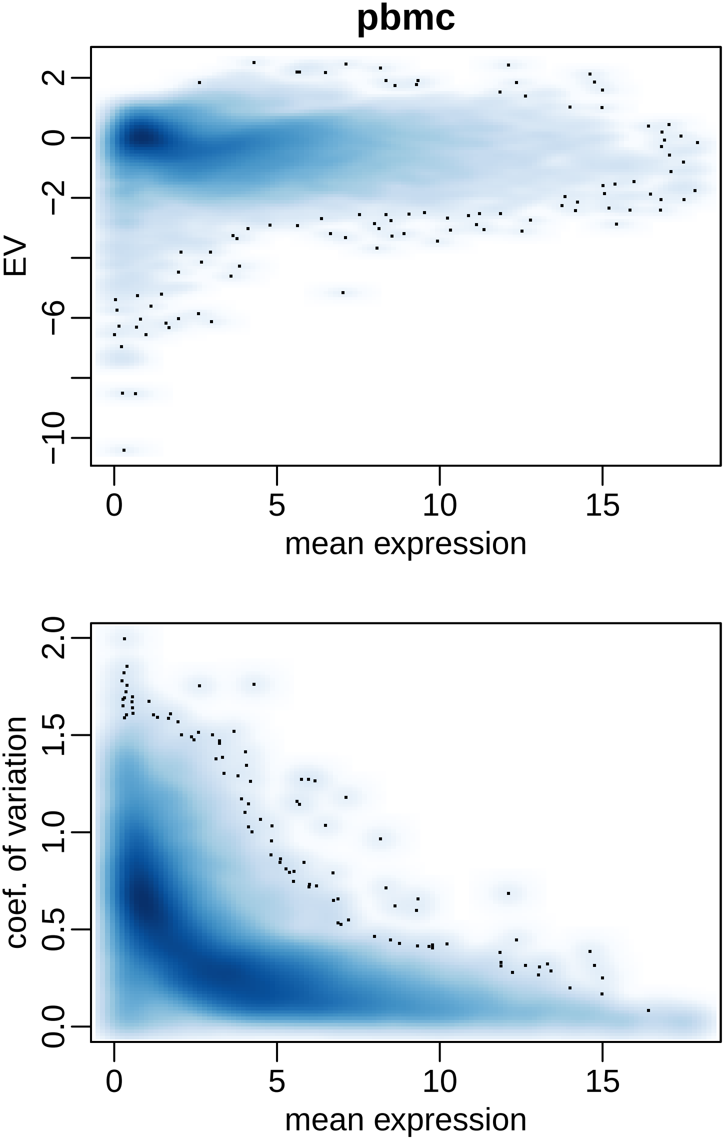

hippocampus
EV
0
−5
−10
0
5
10
15
20
mean expression
coef. of variation
0.0
0.5
1.0
1.5
2.0
0
5
10
15
20
mean expression

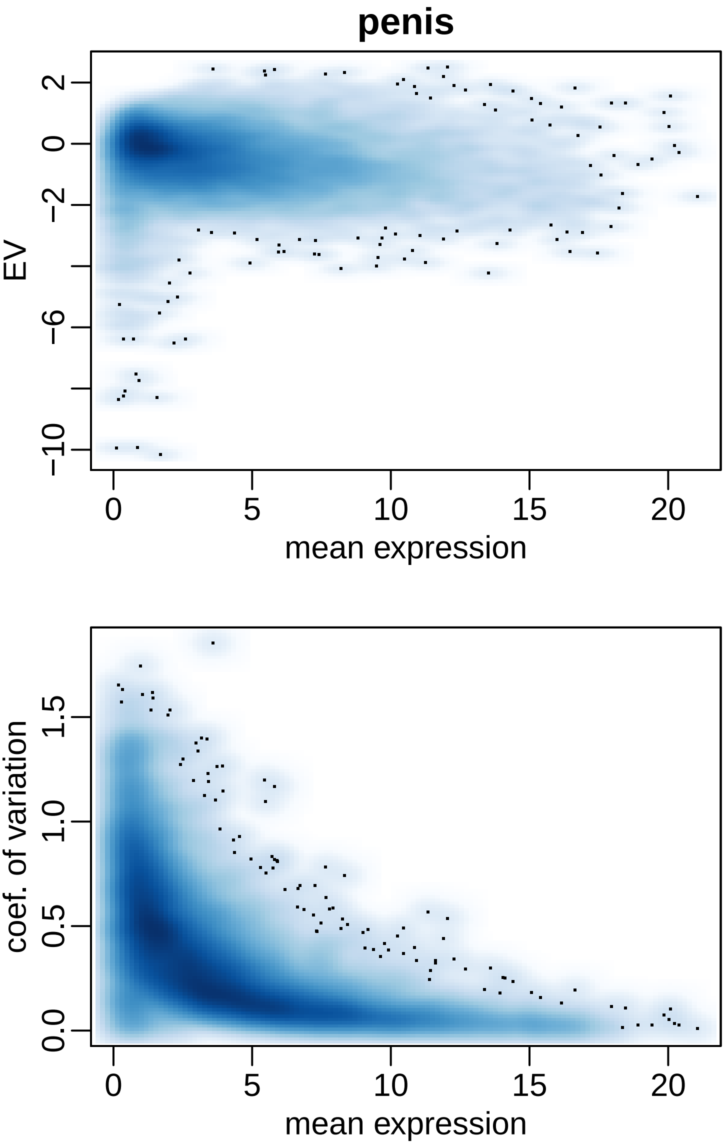

kidney
EV
2
0
−2
−6
−10
0
5
10
15
20
mean expression
coef. of variation
0.0
0.5
1.0
1.5
0
5
10
15
20
mean expression

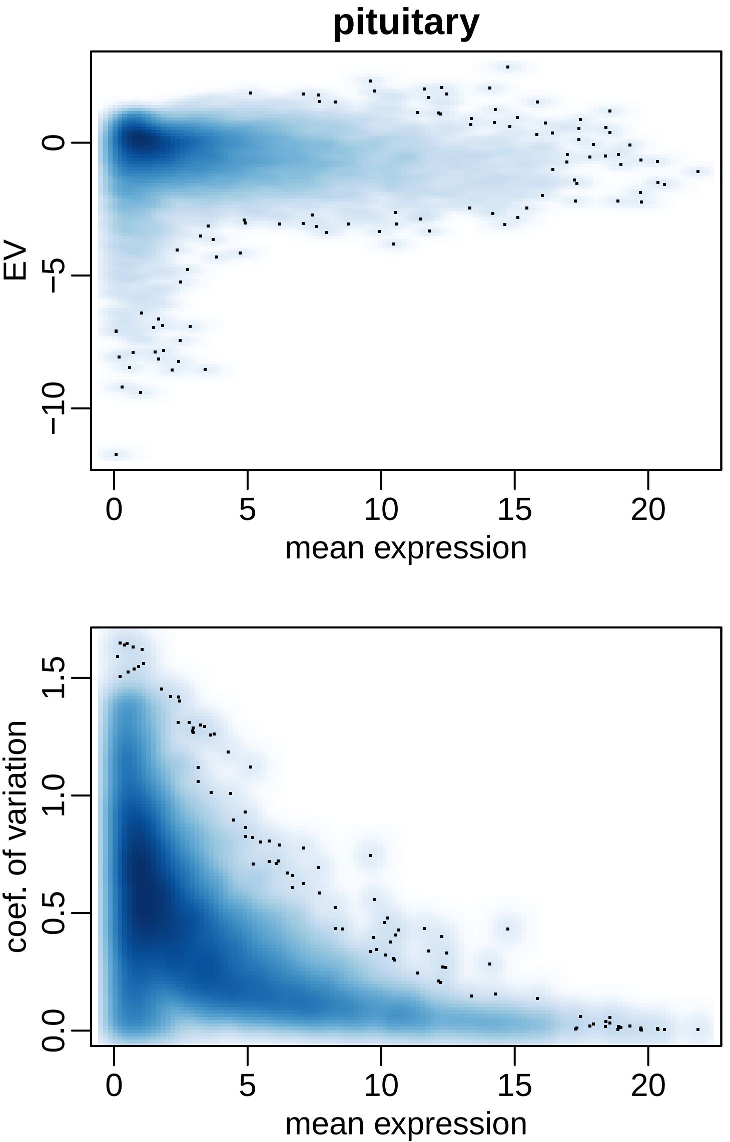

myometrium
EV
2
0
−2
−6
−10
0
5
10
15
20
mean expression
coef. of variation
2.0
1.5
1.0
0.5
0.0
0
5
10
15
20
mean expression

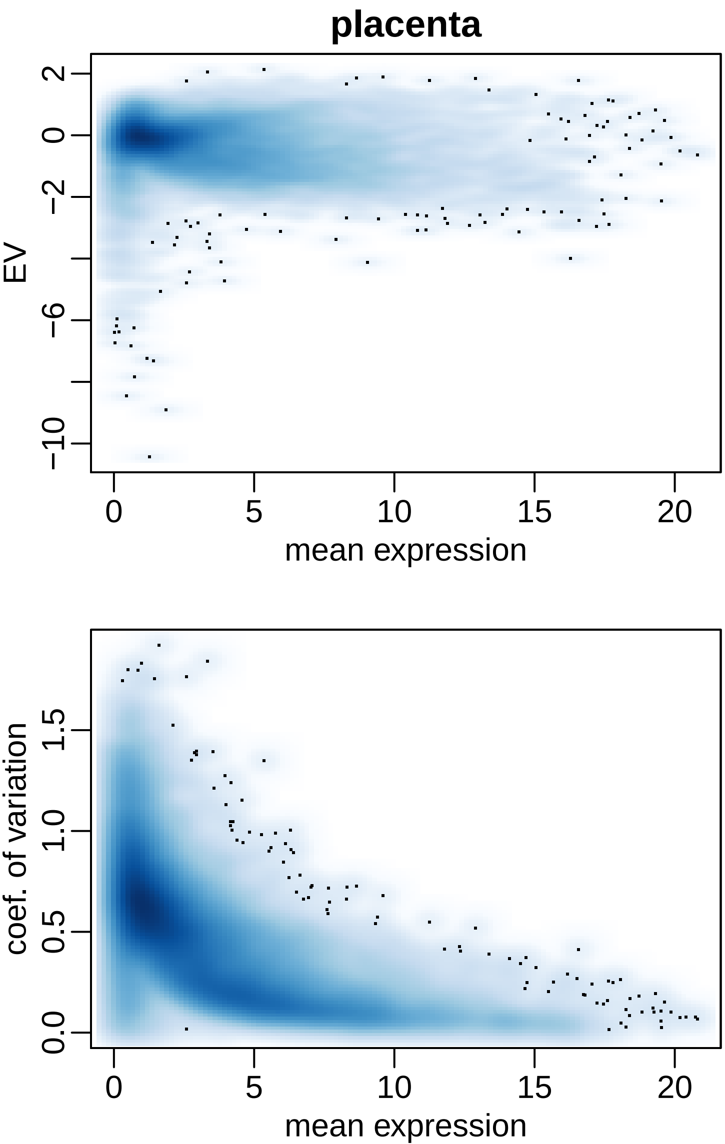

omental_adipose_tissue
EV
0
−5
−10
−15
0
5
10
15
mean expression
coef. of variation
0.0
0.5
1.0
1.5
0
5
10
15
mean expression


ovary
EV
2
0
−2
−4
−6
−8
0
5
10
15
mean expression
coef. of variation
1.5
1.0
0.5
0.0
0
5
10
15
mean expression


pbmc
EV
2
0
−2
−6
−10
0
5
10
15
mean expression
coef. of variation
2.0
1.5
1.0
0.5
0.0
0
5
10
15
mean expression


penis
EV
2
0
−2
−6
−10
0
5
10
15
20
mean expression
coef. of variation
1.5
1.0
0.5
0.0
0
5
10
15
20
mean expression


pituitary
EV
0
−5
−10
0
5
10
15
20
mean expression
coef. of variation
0.0
0.5
1.0
1.5
0
5
10
15
20
mean expression


placenta
EV
2
0
−2
−6
−10
0
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10
15
20
mean expression
coef. of variation
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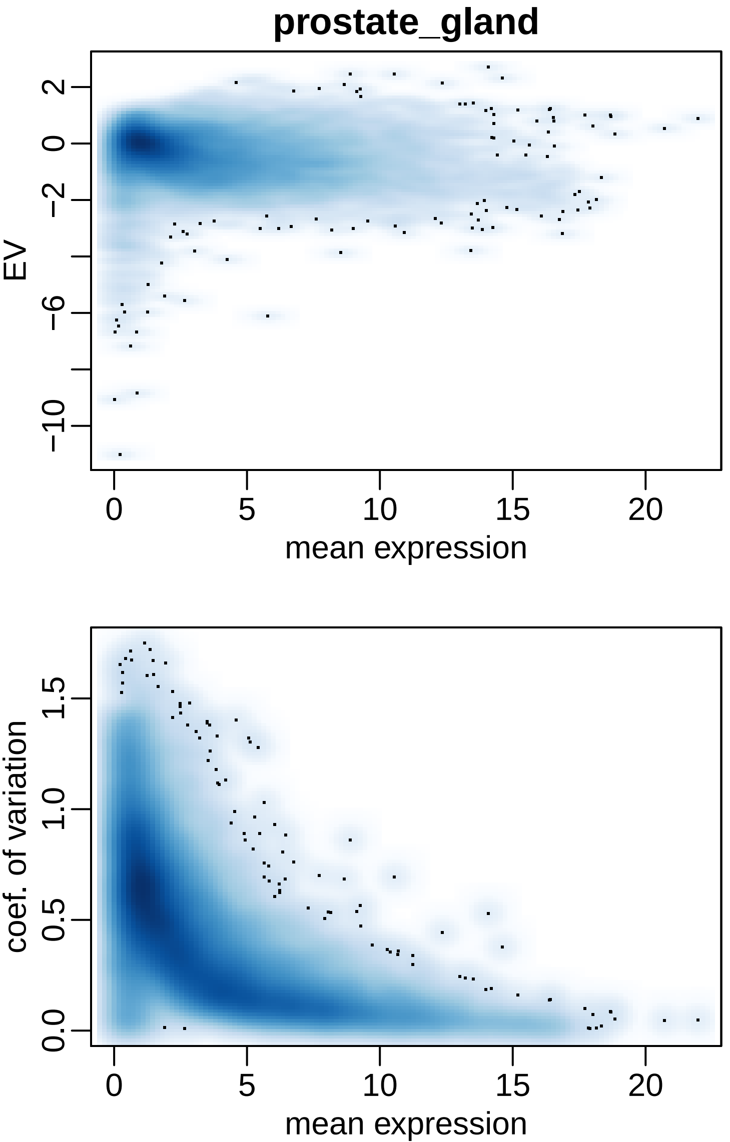
1.0
1.5
0
5
10
15
20
mean expression


prostate_gland
EV
2
0
−2
−6
−10
0
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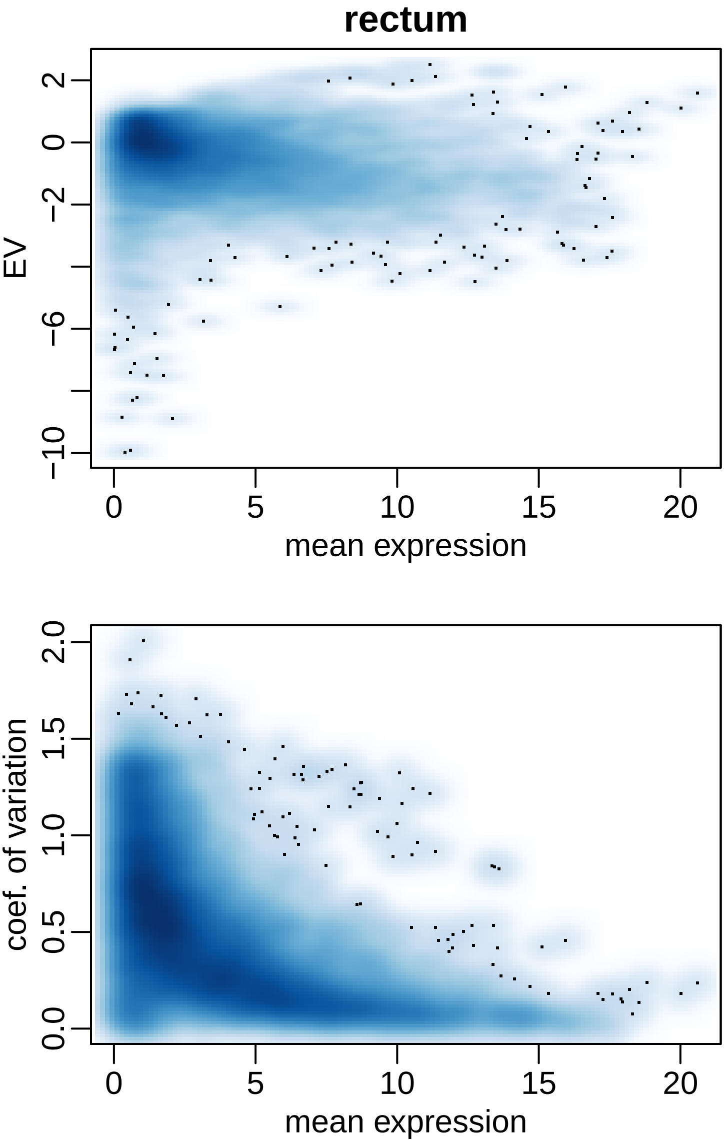
10
15
20
mean expression
coef. of variation
0.0
0.5
1.0
1.5
0
5
10
15
20
mean expression


rectum
EV
2
0
−2
−6
−10
0
5
10
15
20
mean expression
coef. of variation
2.0
1.5
1.0
0.5
0.0
0
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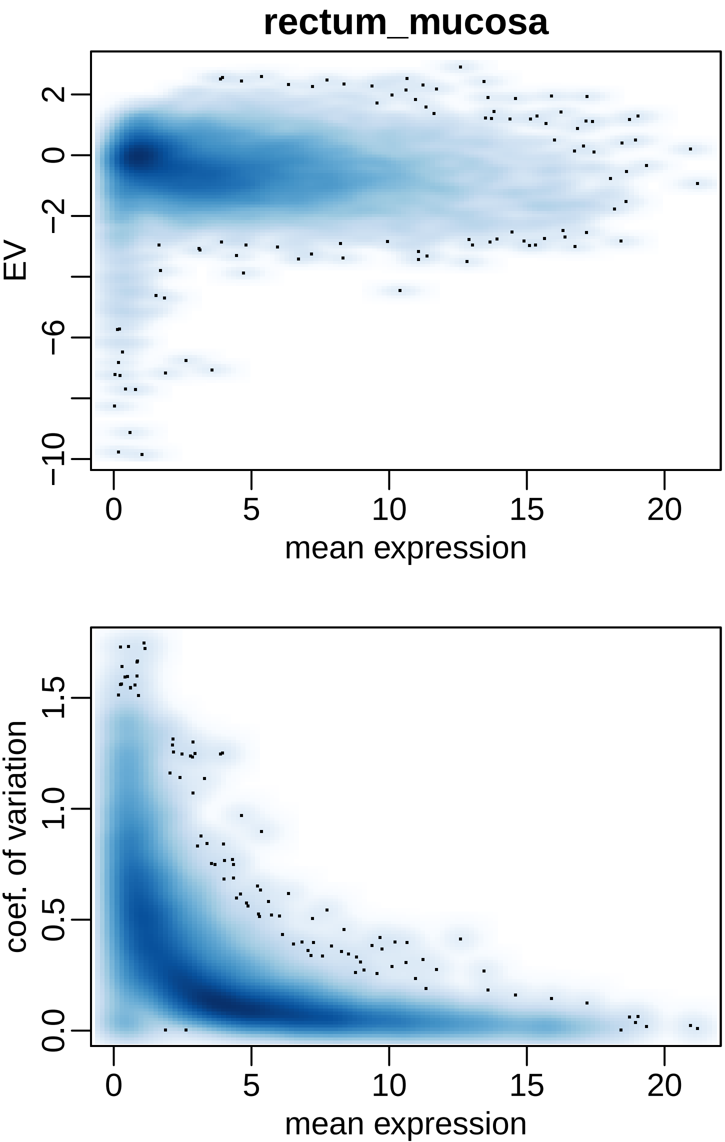
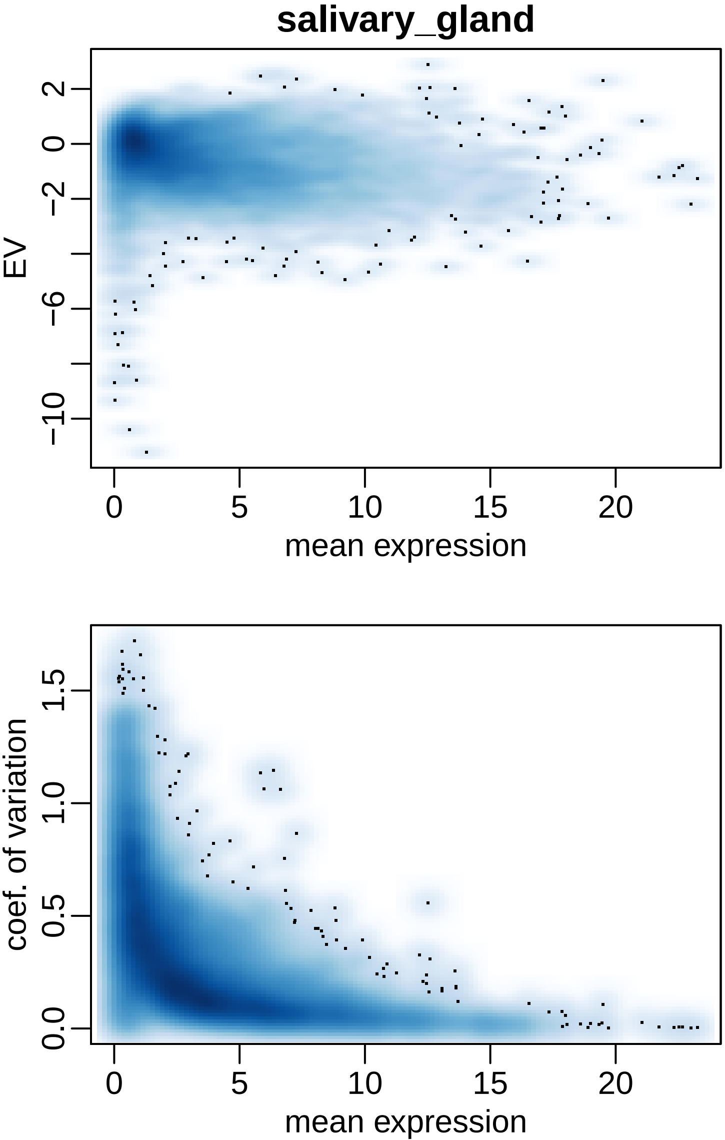
10
15
20
mean expression


rectum_mucosa
EV
2
0
−2
−6
−10
0
5
10
15
20
mean expression
coef. of variation
0.0
0.5
1.0
1.5
0
5
10
15
20
mean expression


salivary_gland
EV
2
0
−2
−6
−10
0
5
10
15
20
mean expression
coef. of variation
1.5
1.0
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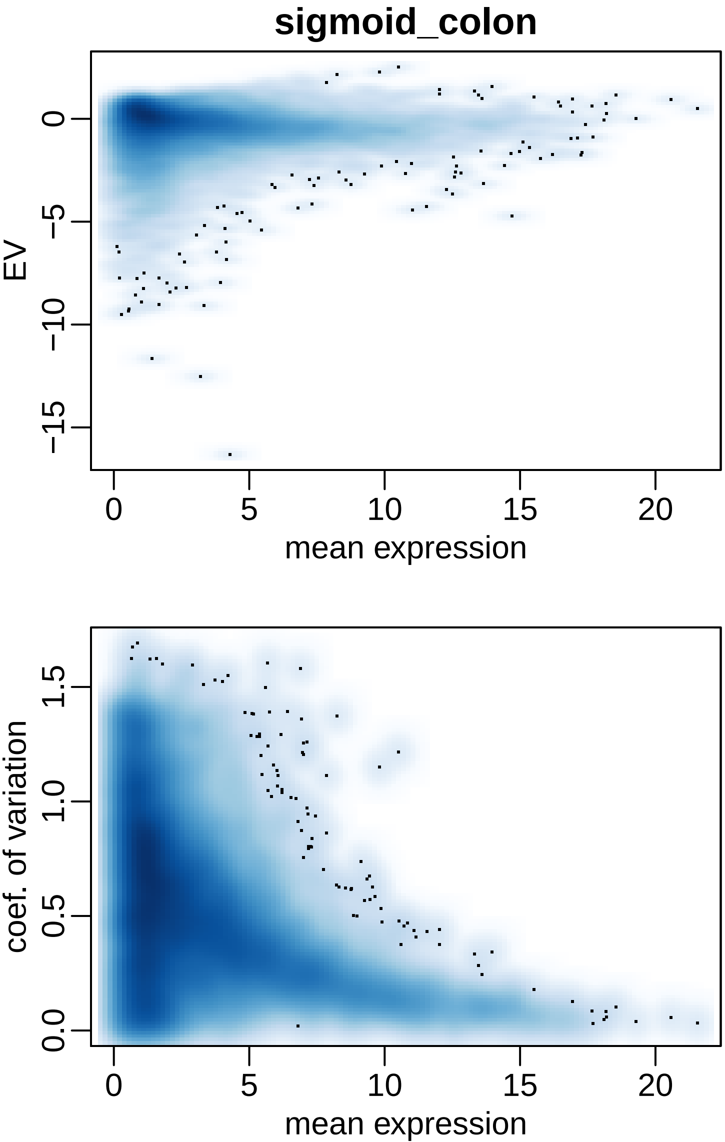
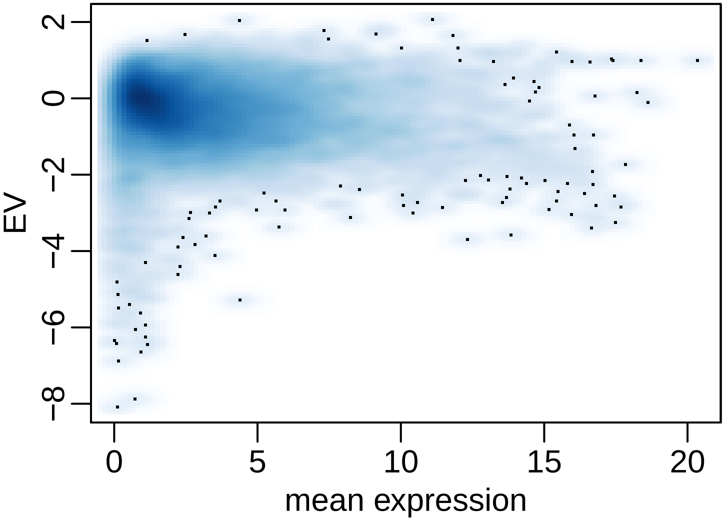
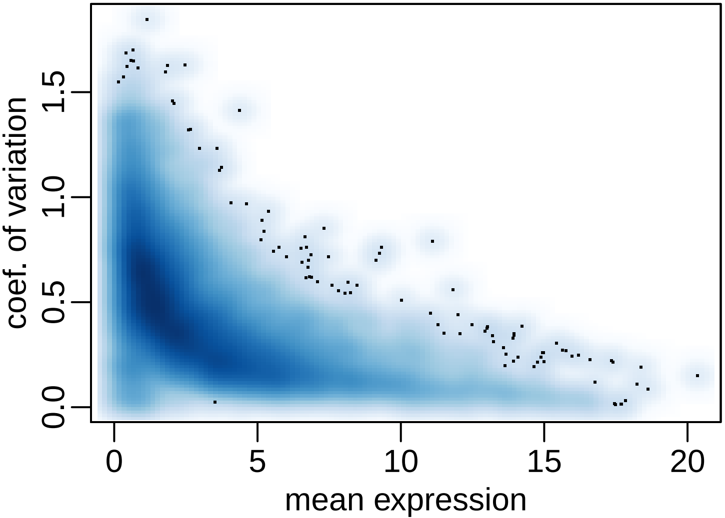
5
10
15
20
mean expression

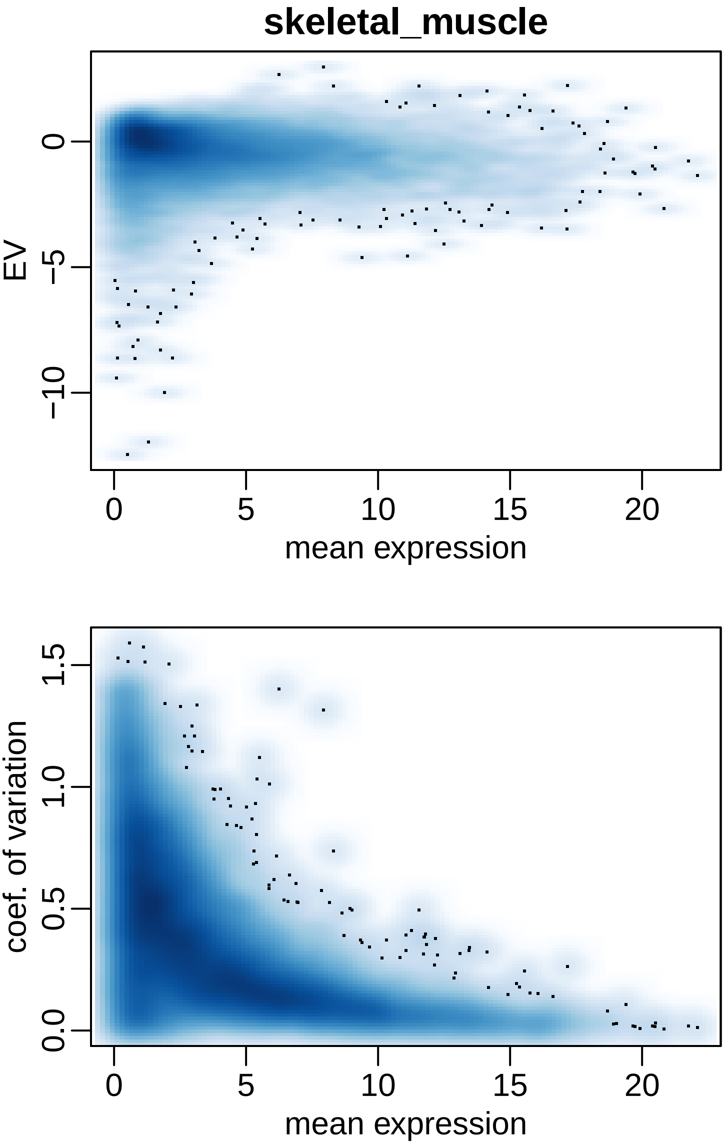


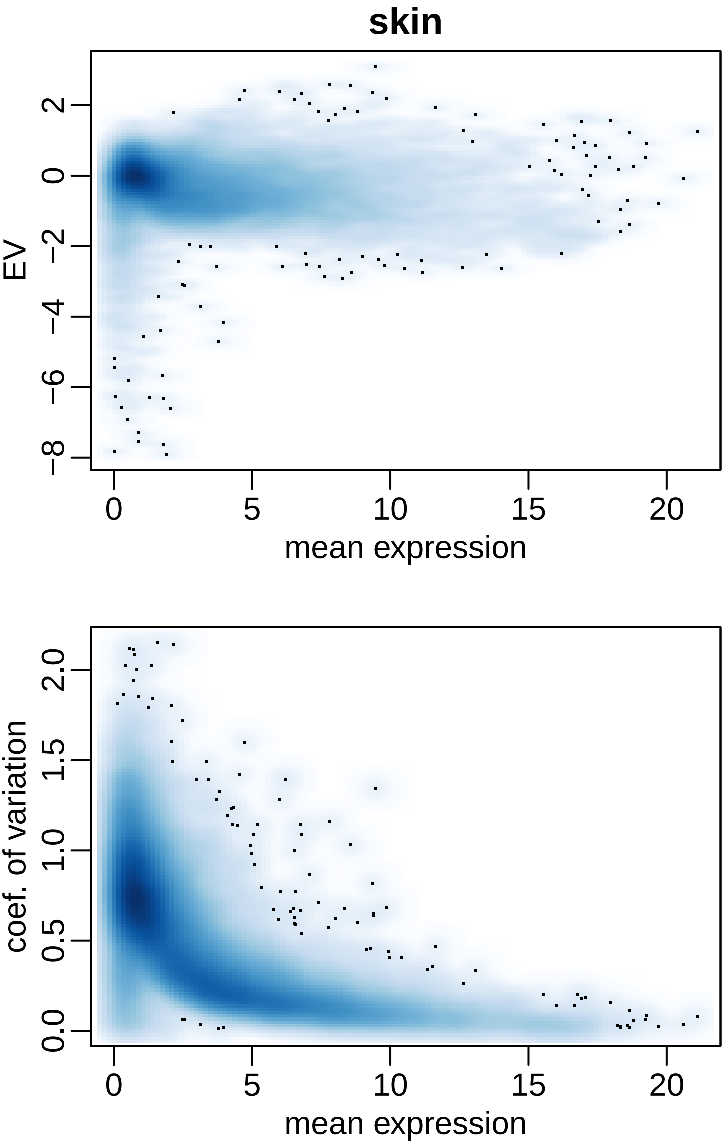
sigmoid_colon

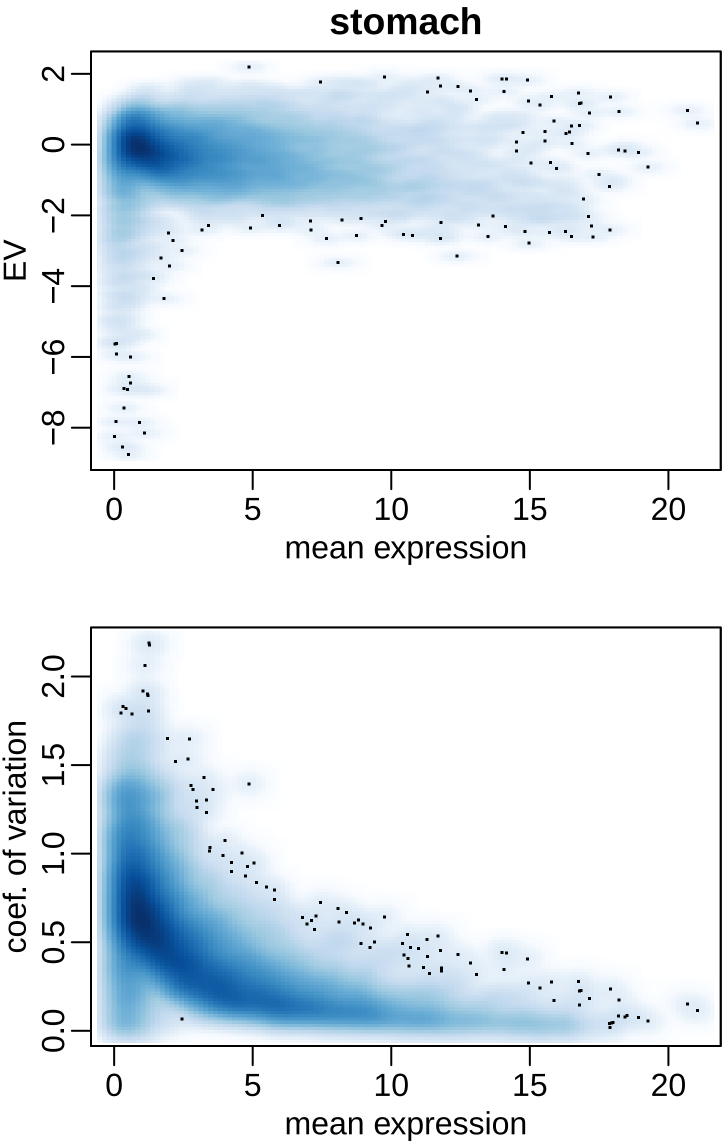
sinus_mucosa

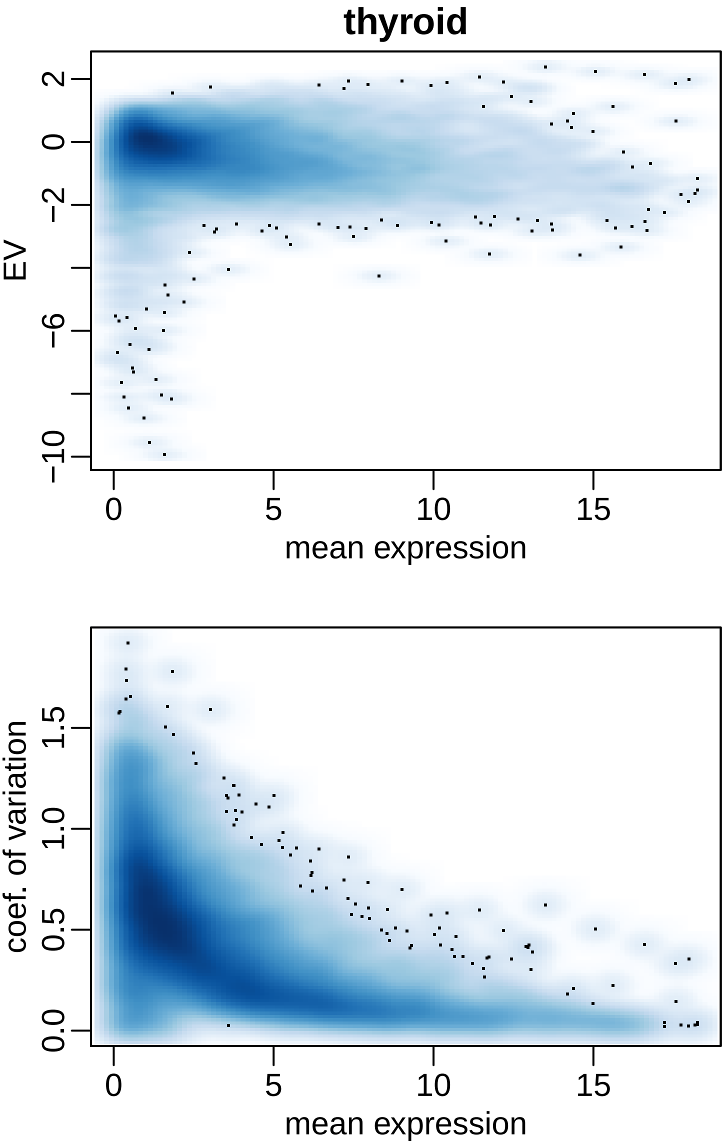


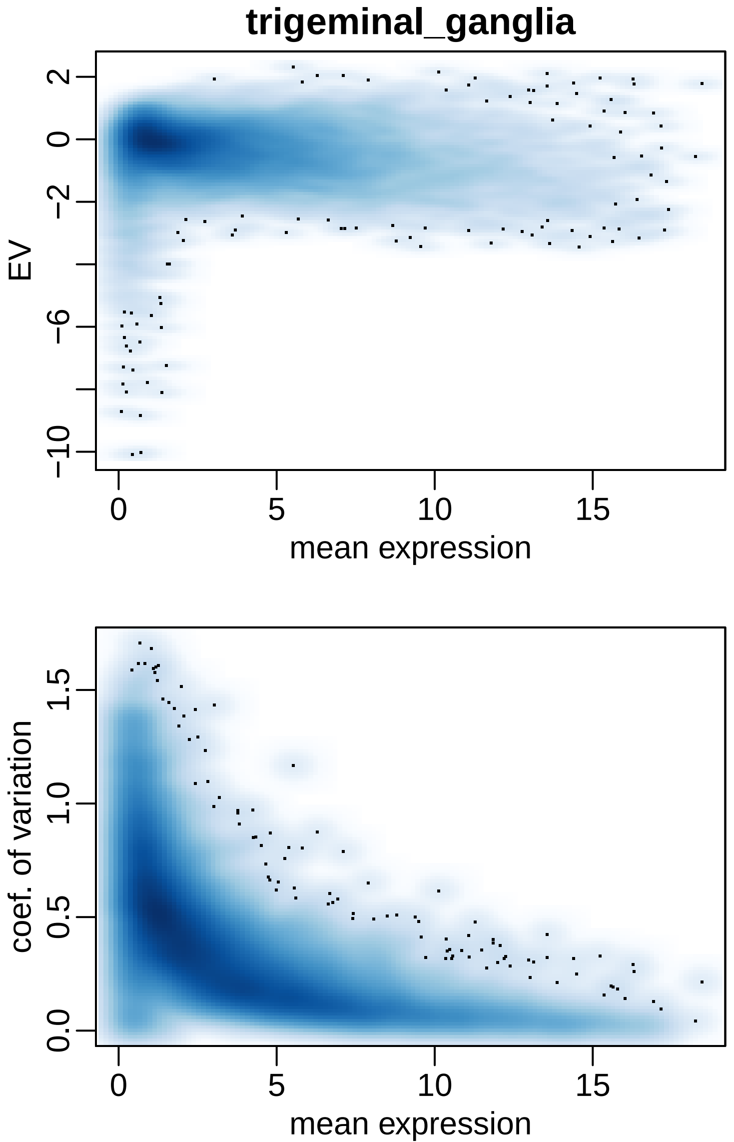


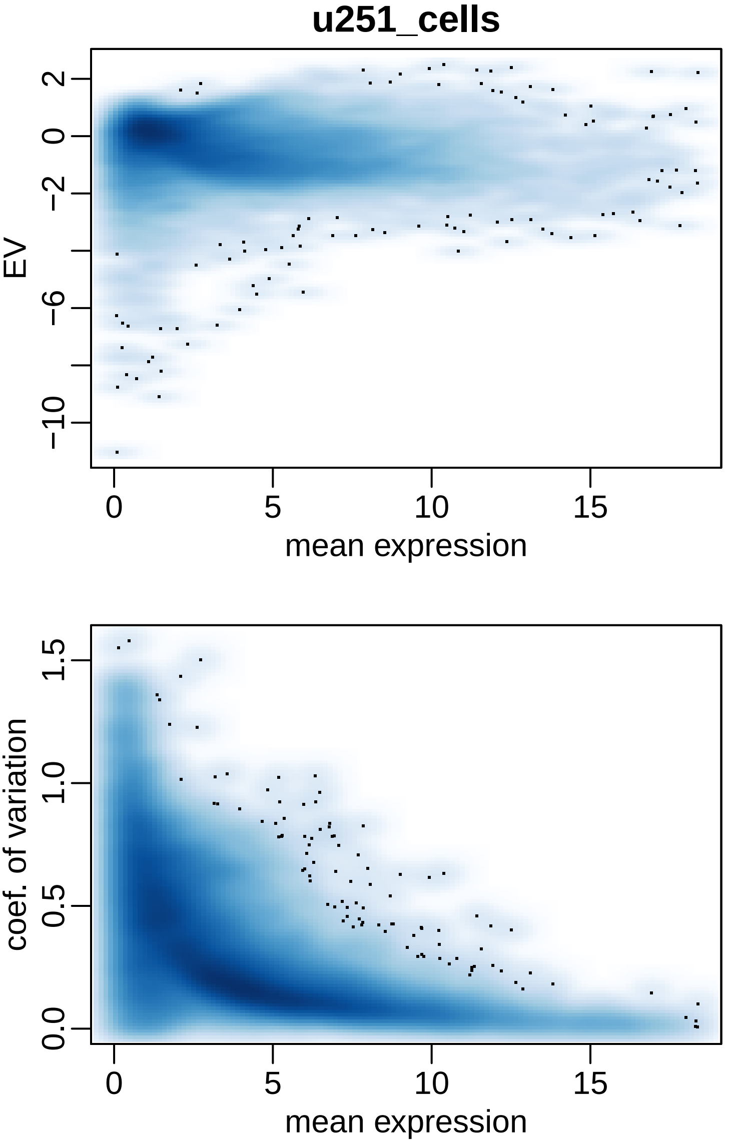

skeletal_muscle
EV
0
−5
−10
0
5
10
15
20
mean expression
coef. of variation
0.0
0.5
1.0
1.5
0
5
10
15
20
mean expression

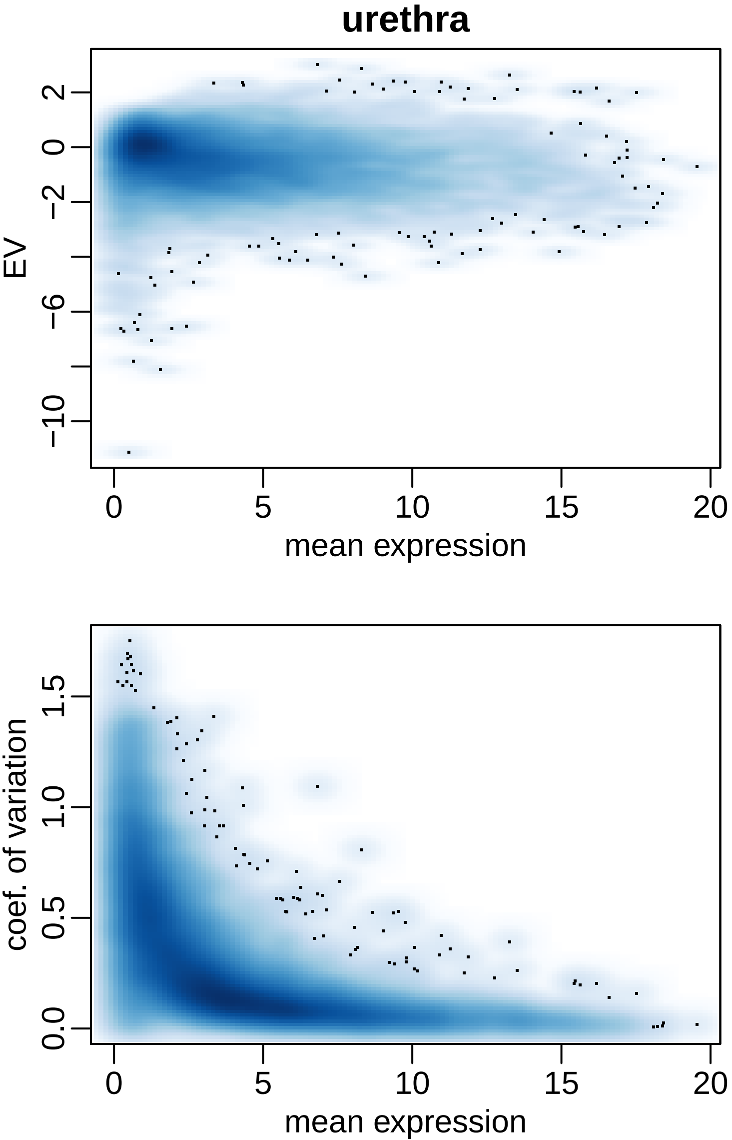

skin
EV
2
0
−2
−4
−6
−8
0
5
10
15
20
mean expression
coef. of variation
0.0
0.5
1.0
1.5
2.0
0
5
10
15
20
mean expression

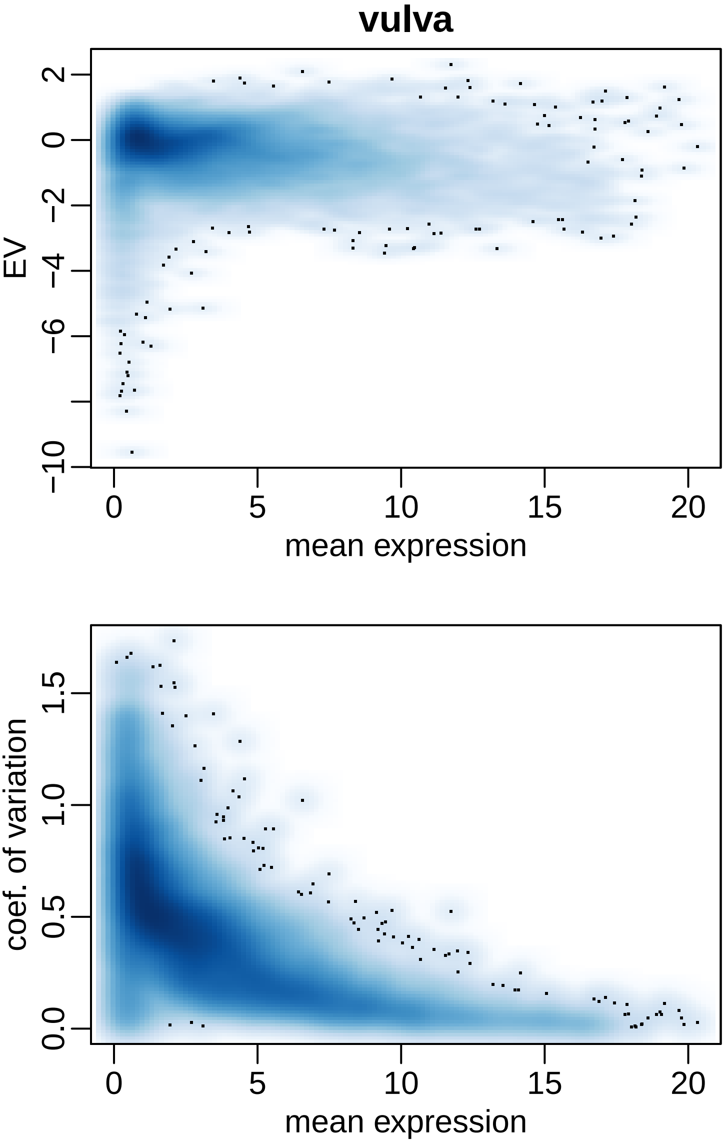

stomach
EV
2
0
−2
−4
−6
−8
0
5
10
15
20
mean expression
coef. of variation
2.0
1.5
1.0
0.5
0.0
0
5
10
15
20
mean expression


thyroid
EV
2
0
−2
−6
−10
0
5
10
15
mean expression
coef. of variation
0.0
0.5
1.0
1.5
0
5
10
15
mean expression


trigeminal_ganglia
EV
2
0
−2
−6
−10
0
5
10
15
mean expression
coef. of variation
1.5
1.0
0.5
0.0
0
5
10
15
mean expression


u251_cells
EV
2
0
−2
−6
−10
0
5
10
15
mean expression
coef. of variation
1.5
1.0
0.5
0.0
0
5
10
15
mean expression


urethra
EV
2
0
−2
−6
−10
0
5
10
15
20
mean expression
coef. of variation
1.5
1.0
0.5
0.0
0
5
10
15
20
mean expression



vulva

EV
2
0
−2
−4
−6
−10
0
5
10
15
20
mean expression
coef. of variation
1.5
1.0
0.5
0.0
0
5
10
15
20
mean expression

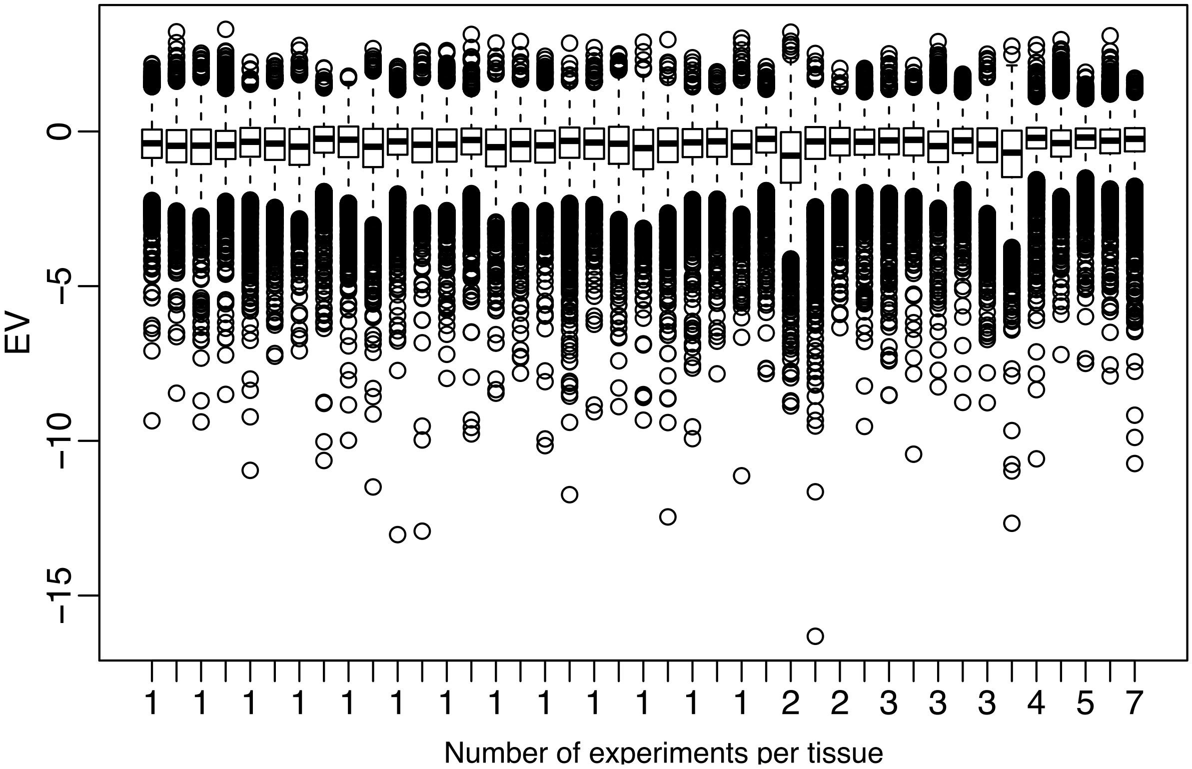


Figure 2. EV is independent of the number of experiments per tissue in dataset. We show the distribution of EV per tissue and indicate the number of GEO experiments used to compile the set of microarrays for each tissue. The EV distribution is very similar across tissues regardless of the number of GEO experiments included in the dataset.