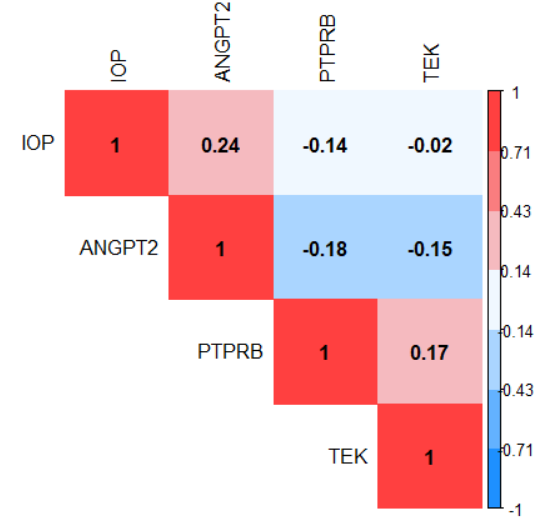
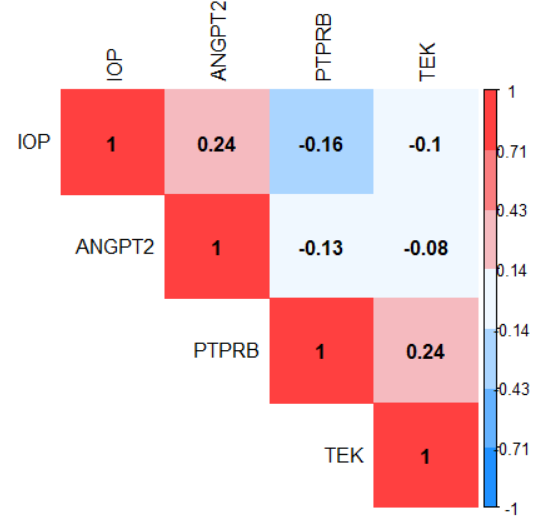
**Report date: March 17 Correlation Analysis Normalization method: Log2**

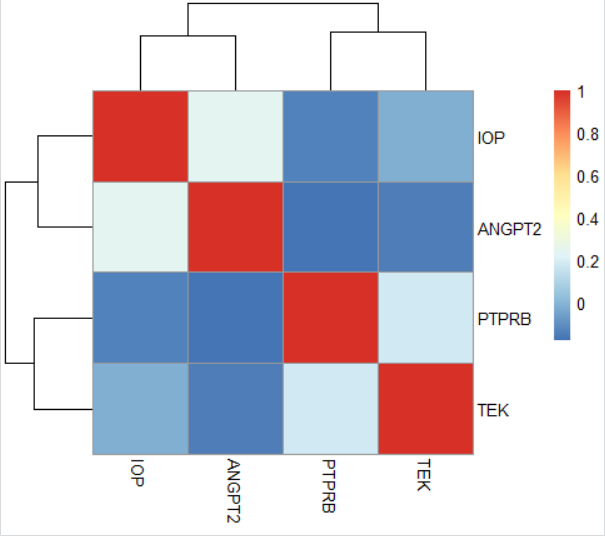
**Correlation method: Pearson**



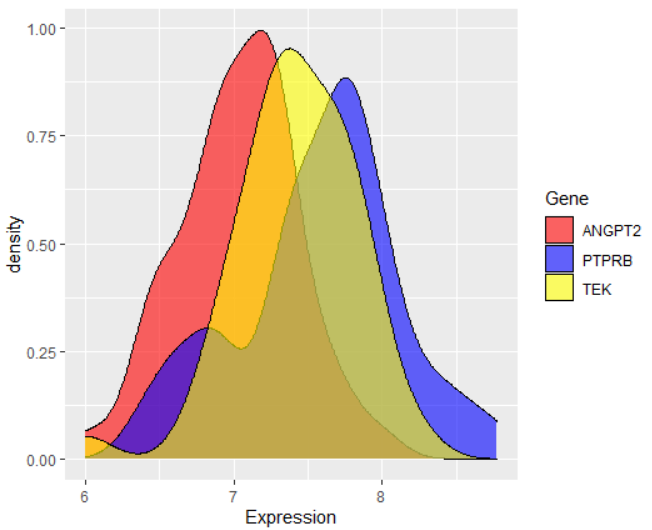
**Correlation method: Spearman**



**Clustering**

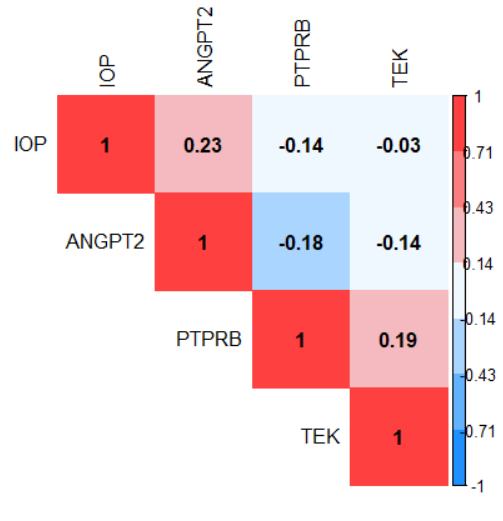


**Distribution**

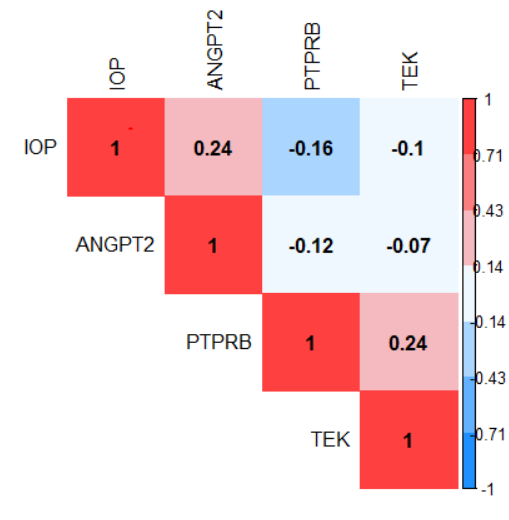


**Report date: March 17 Correlation Analysis Normalization method: rlog**

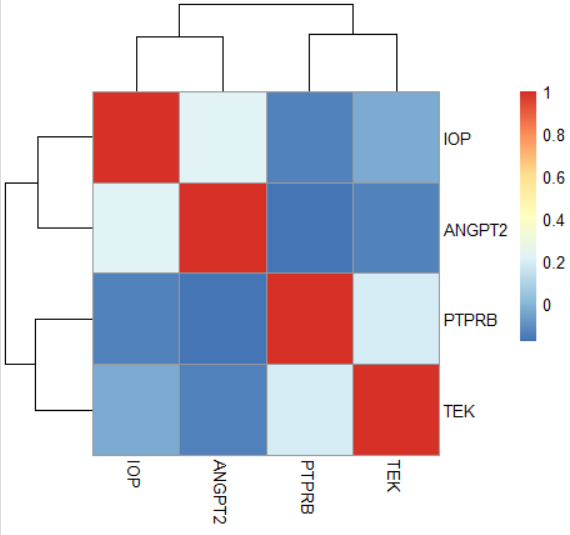
**Correlation method: Pearson**



**Correlation method: Spearman**



**Clustering**

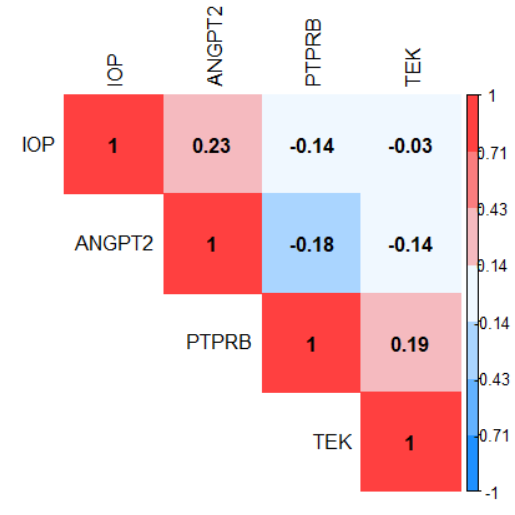


**Distribution**

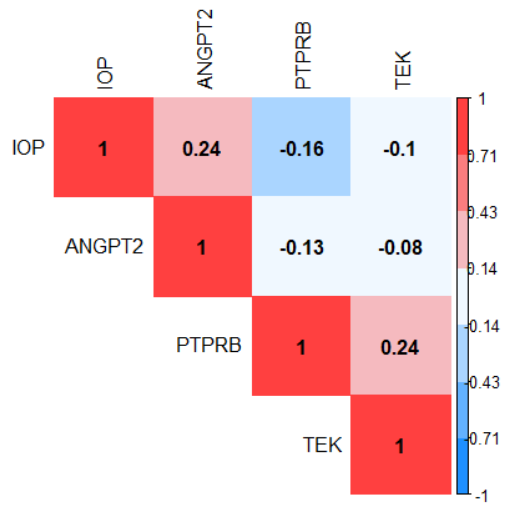


**Report date: March 17 Correlation Analysis Normalization method: vst**

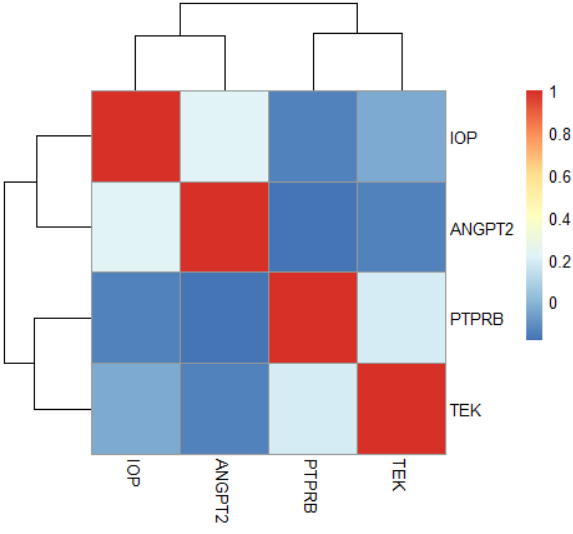
**Correlation method: Pearson**



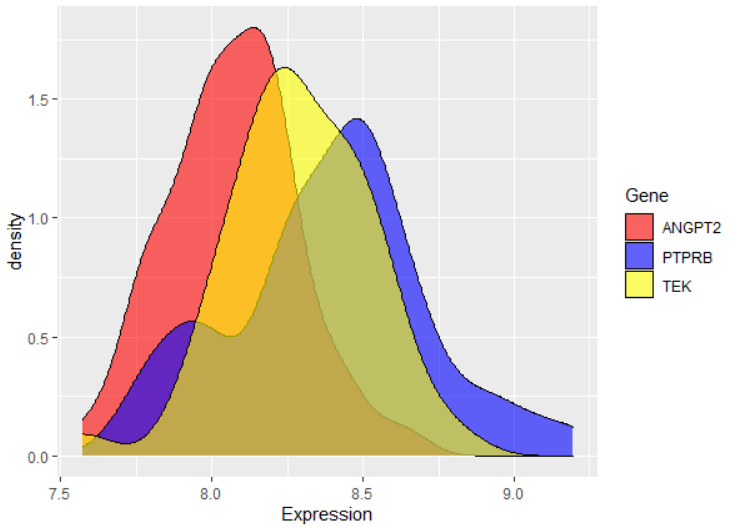
**Correlation method: Spearman**



**Clustering**

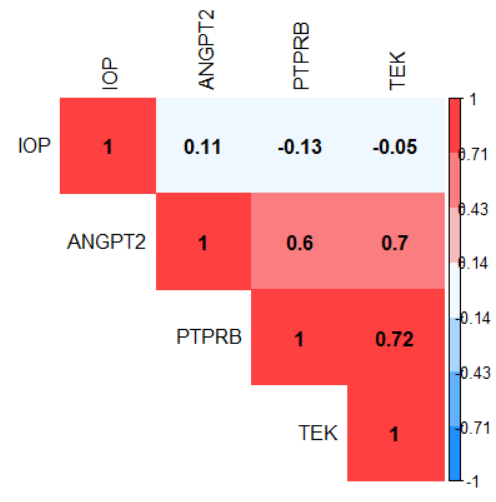


**Distribution**

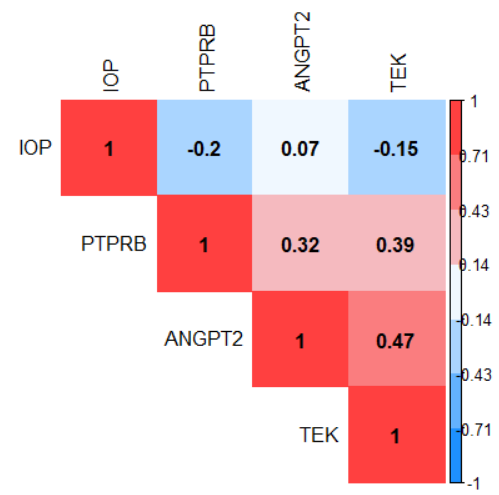


**Report date: March 17 Correlation Analysis No Normalization (Real Counts)**

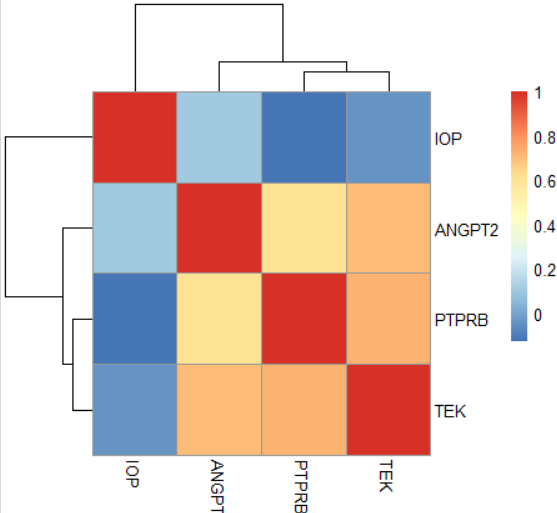
**Correlation method: Pearson**



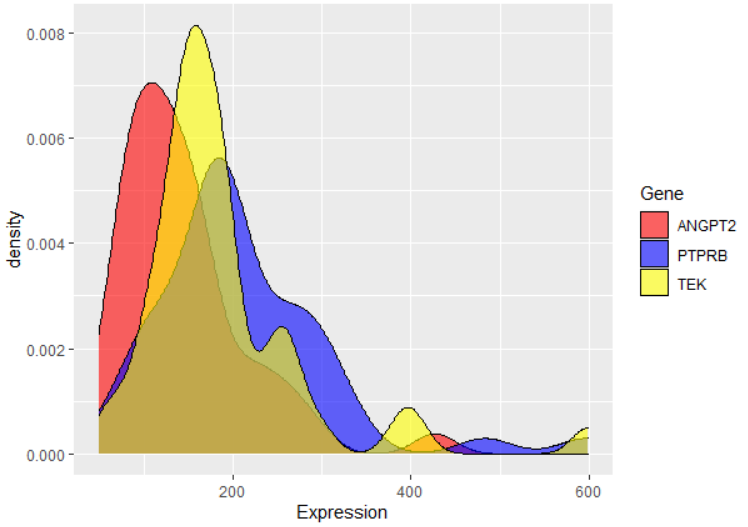
**Correlation method: Spearman**



**Clustering**



**Distribution**

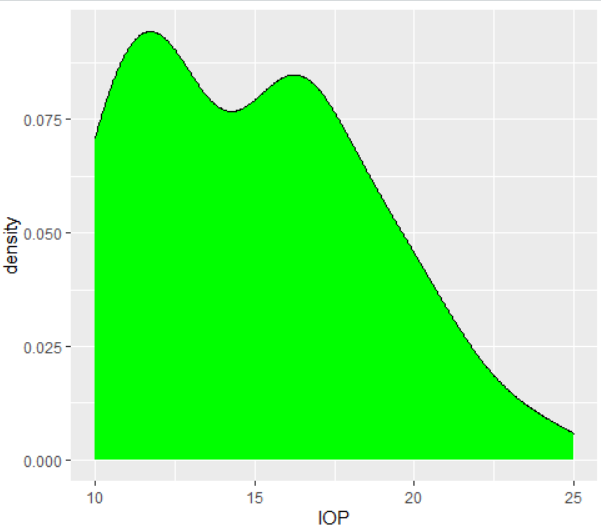


**Dsicusion:**

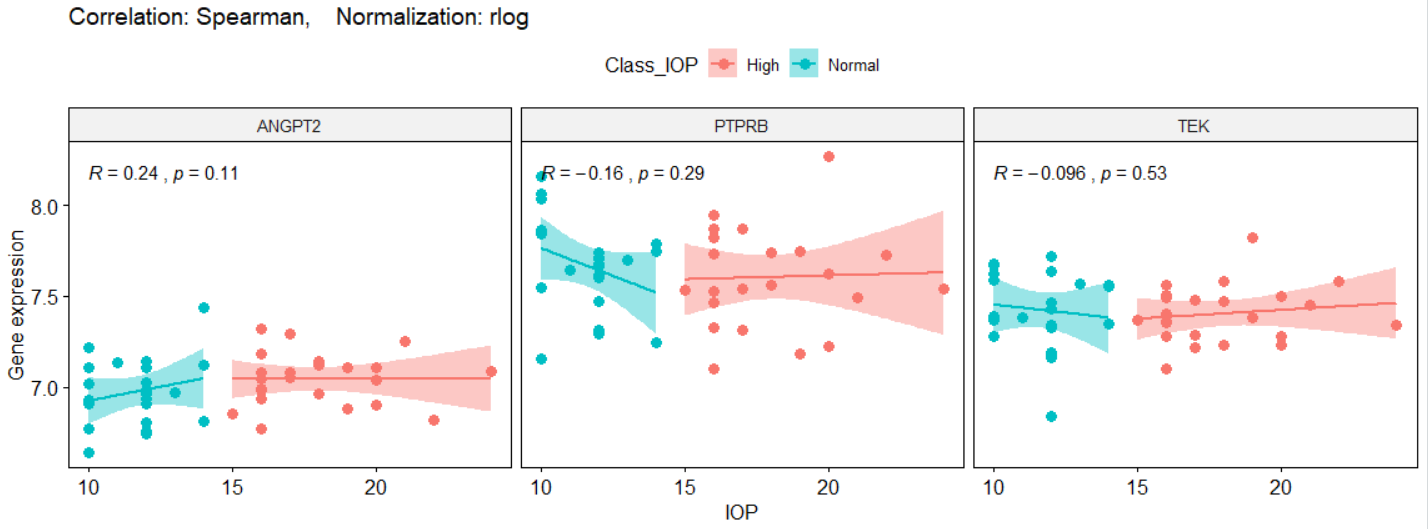
Based on the Clustering and Heatmap figures, I found that, two genes **PTPRB** and **TEK** act similarly. They have negative correlation with **IOP** and **ANGPT2**. Also, **IOP** has a weak positive correlation with **ANGPT2**. Compare three normalization methods: **Log2** (Log2 Normalized Counts Transformation), **rlog** (Regularized Log Transformation), and **vst** (Variance Stabilizing Transformation), and based on the distribution plots of three genes, it shows that **rlog** normalization gives good performance for our analysis in this step. Therefore, I considere **rlog** function as a normalization method for next analysis.

Also, between pearson (linear correlation) method and speaman (linear-skewed correlation) method, I found that the probability density function of TEK (yellow) is between ANGPT2 (red) and PTPRB (blue). It means that there is an important role or relation between ANGPT2 and TEK. I think, Spearman correlation is better than Pearson, and states that ANGPT2 and TEK are almost uncorrelated. I mean, I think thte ANGPT2 and PTPRB have negative correlation, PTPRB and TEK have positive correlation, and ANGPT2 and TEK are uncorrelated. Moreover, based on the density function of IOP, in figure below, there is almost negative correlation between two density function of IOP and PTPRB.

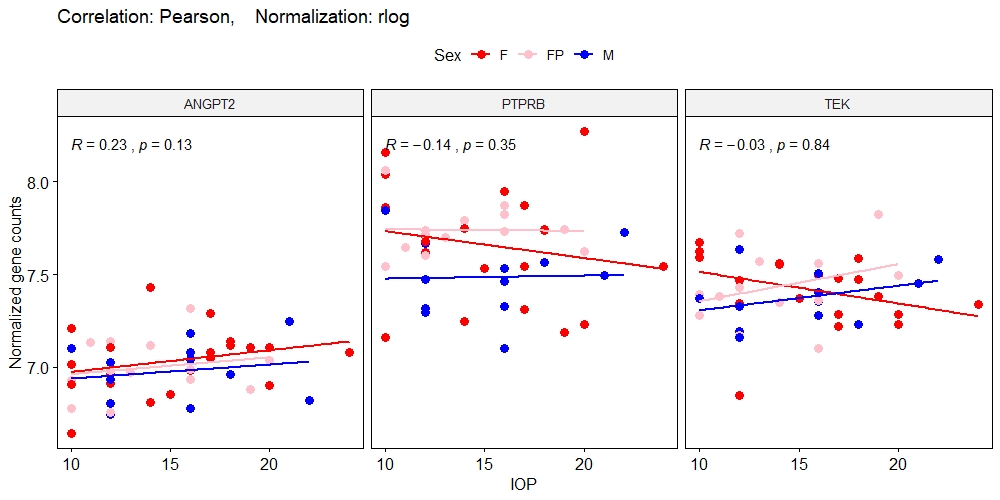
Therefore, I consider **rlog** as normalization method and **Spearman** as correlation method for further analysis.

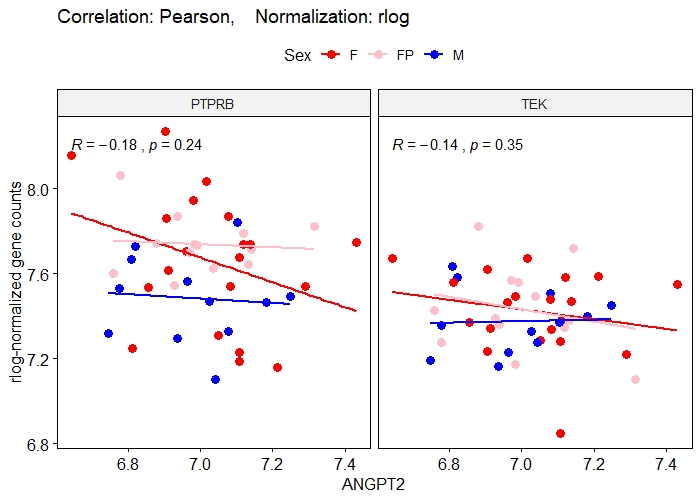
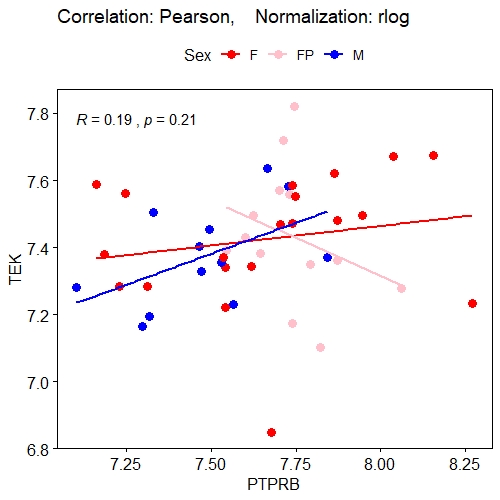
 

**Prtial Correlation Analysis Normalization: rlog Correlation: Spearman**



**SEX**

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**Age**

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**346**

**238**

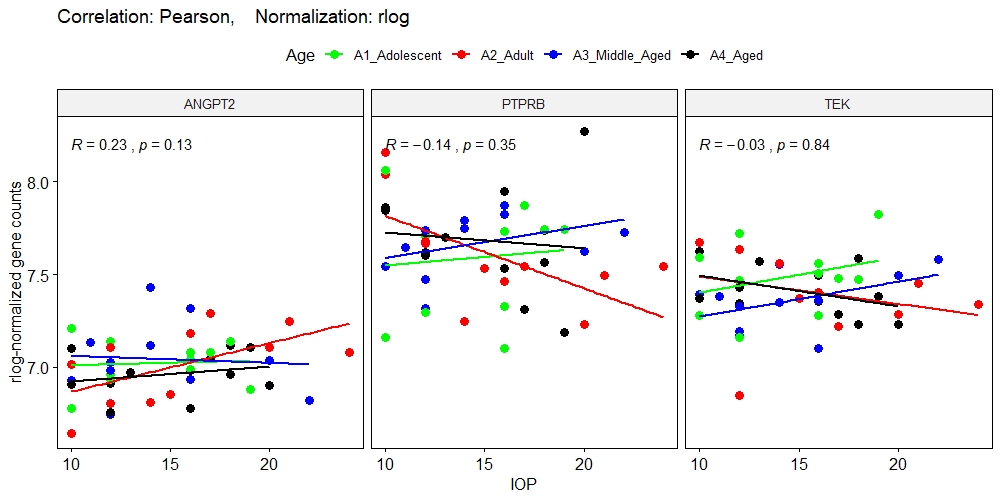
**183**

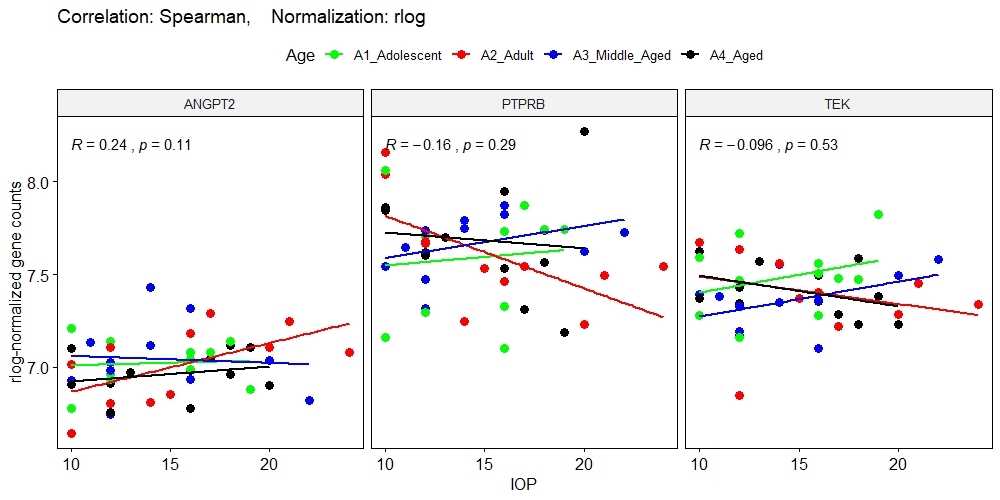
**154**

**135**

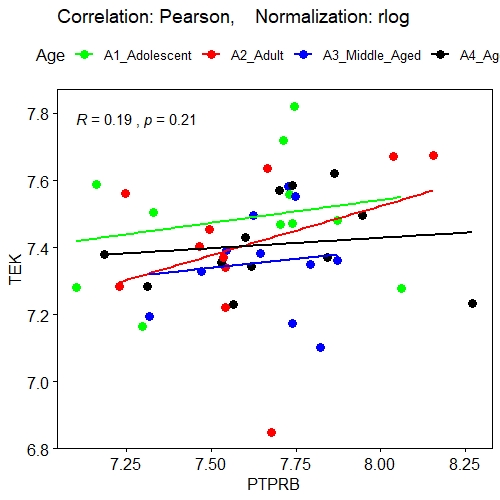
**113**

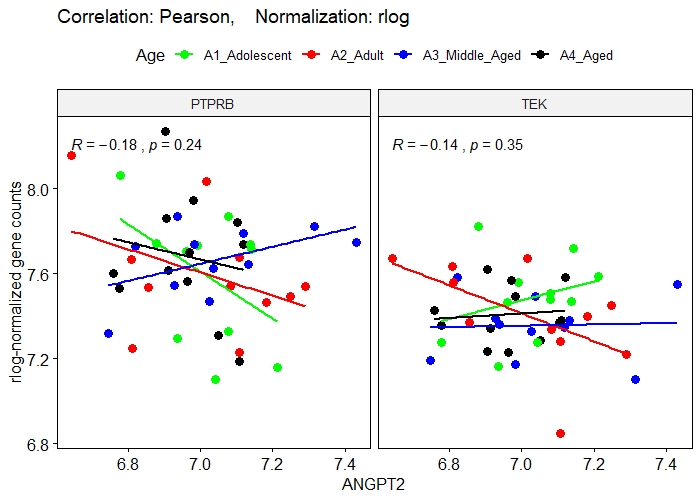
**Age**

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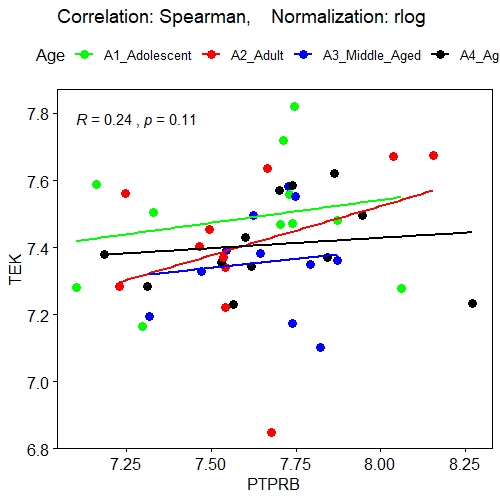
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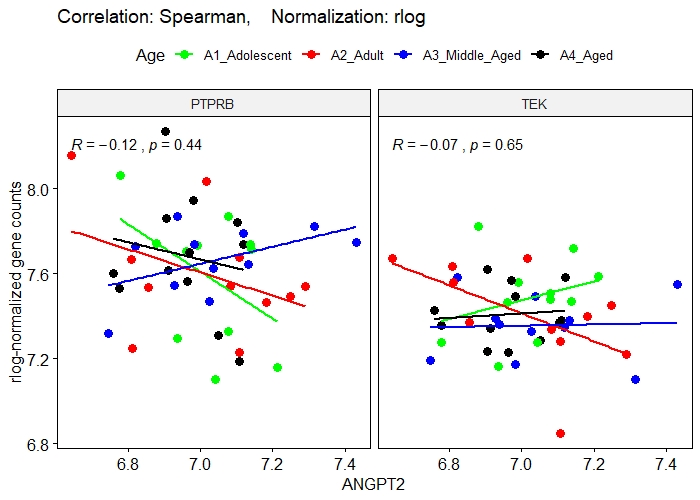
**Age**

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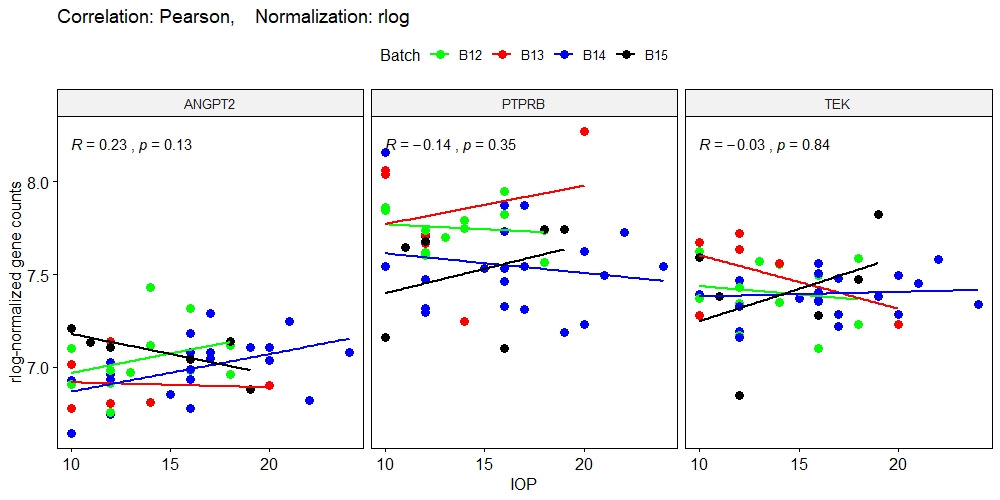
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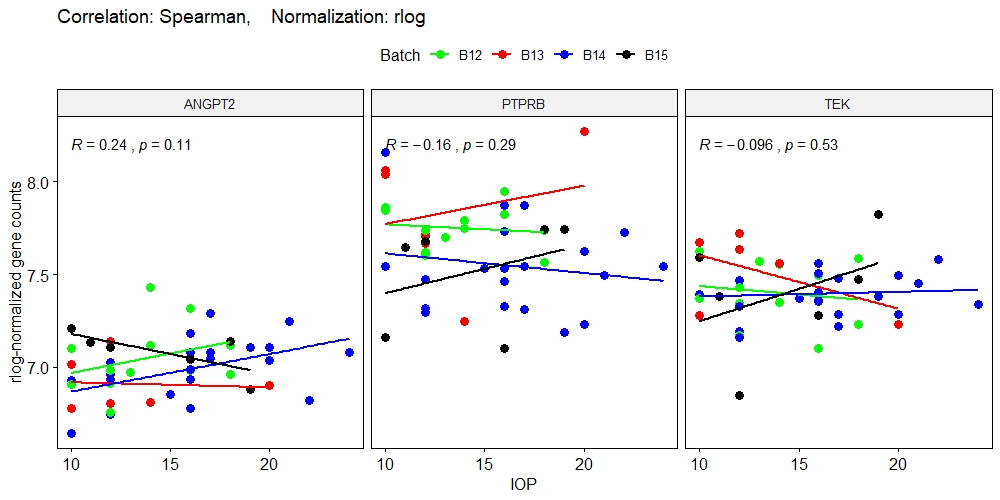
**Age**

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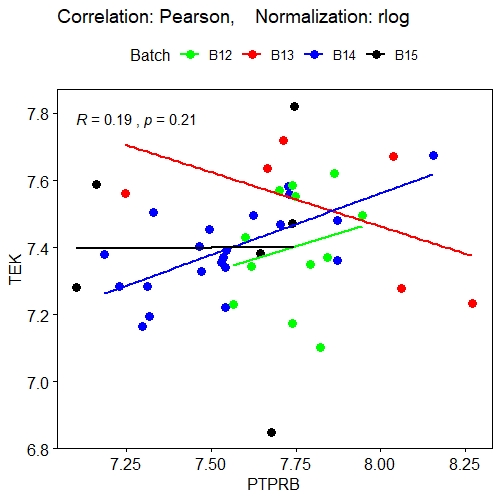
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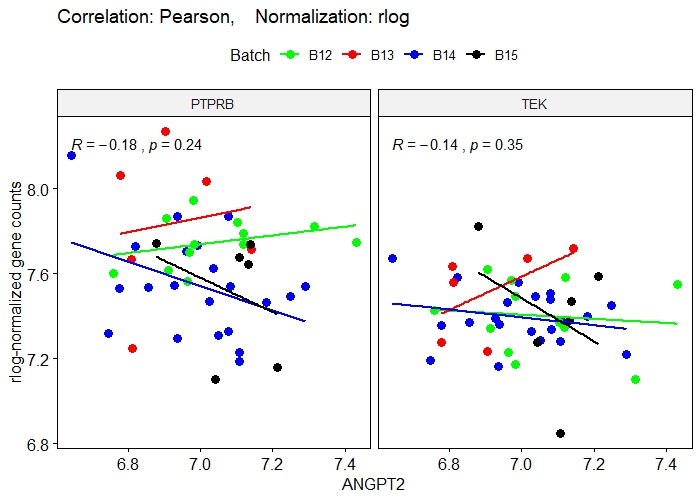
**Batch**

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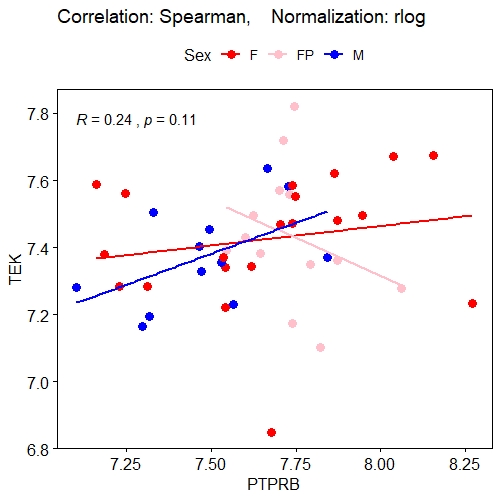
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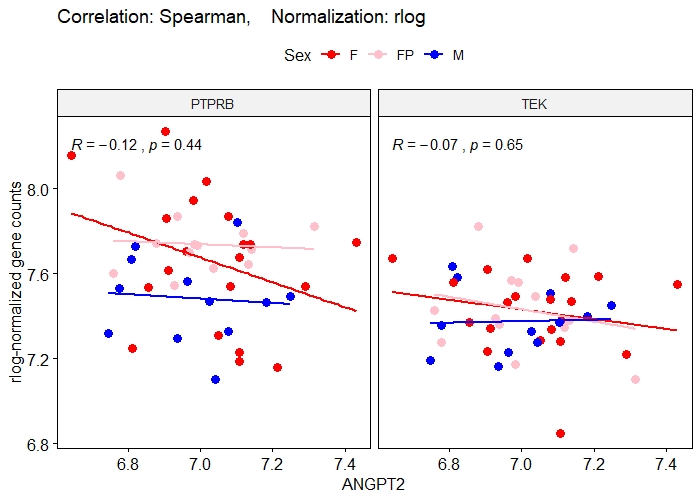
**Batch**

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**Batch**

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