

Hematopoiesis after anti-CD117 monoclonal antibody treatment in the settings of wild-type and Fanconi anemia mice

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Received: October 5, 2023.

Accepted: March 26, 2024.

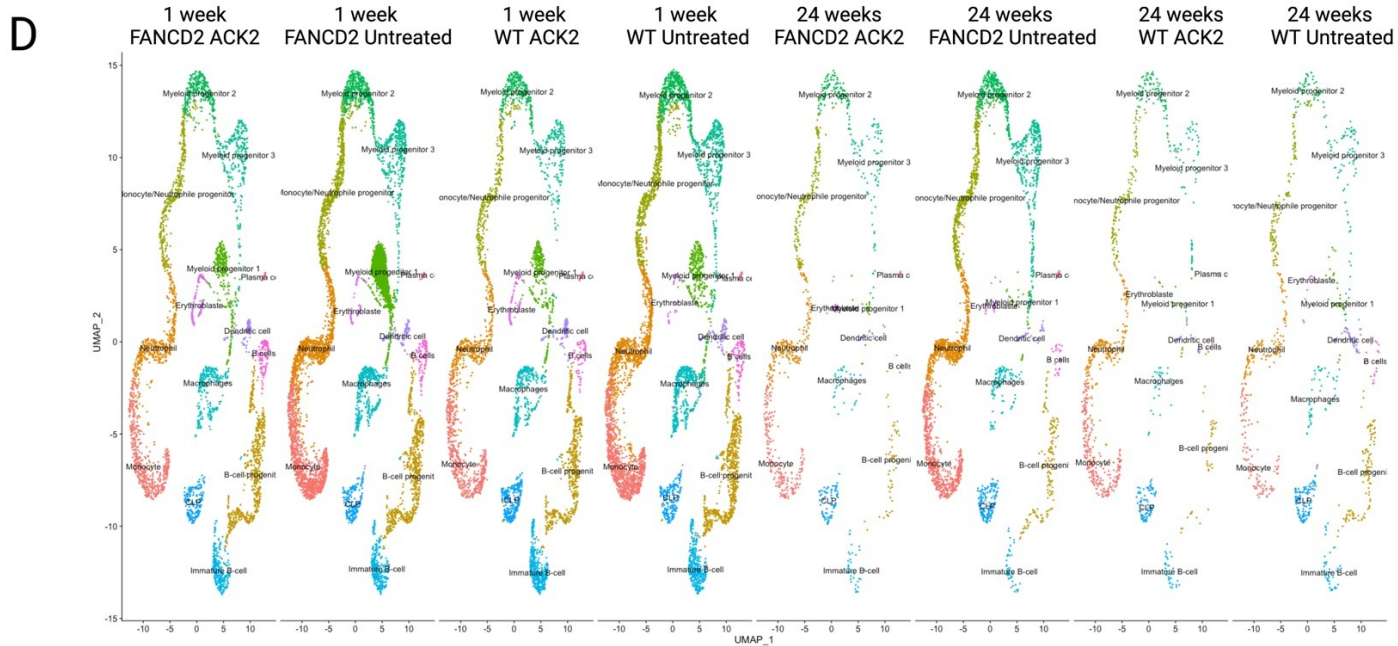
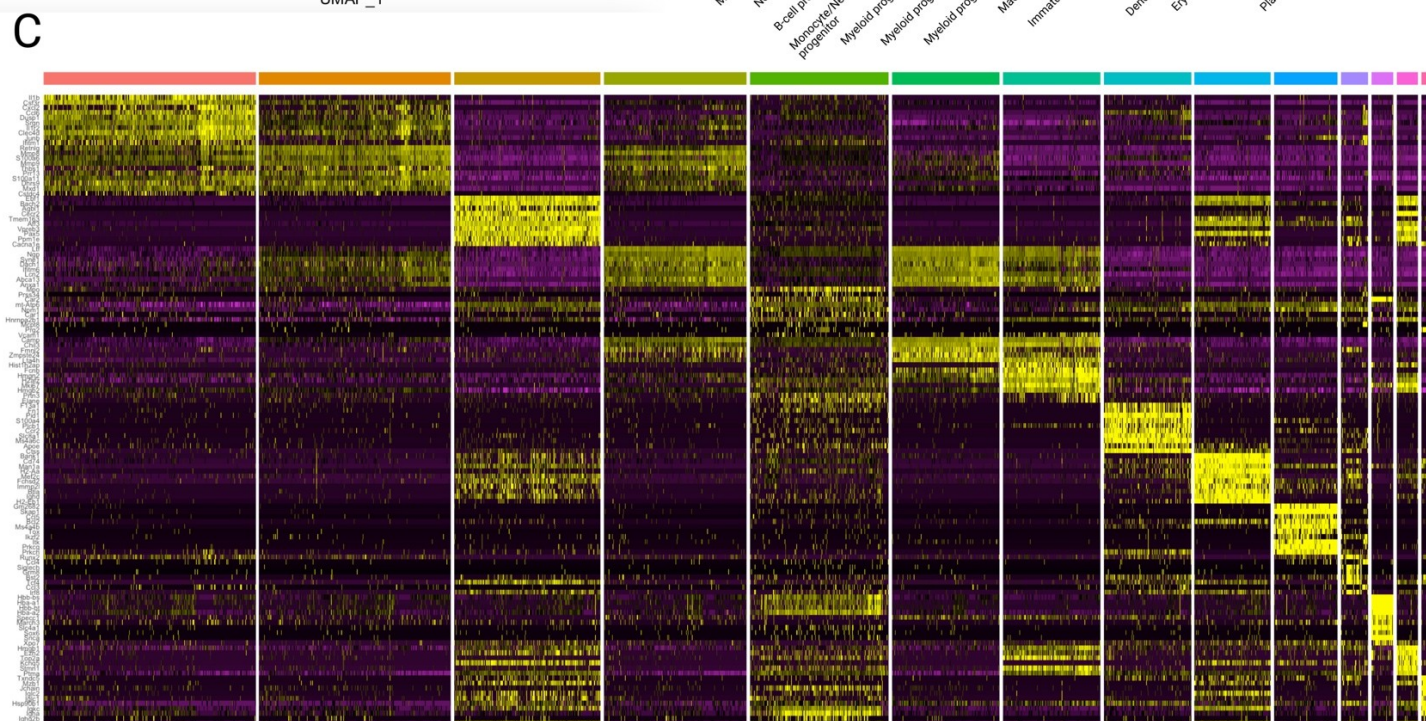
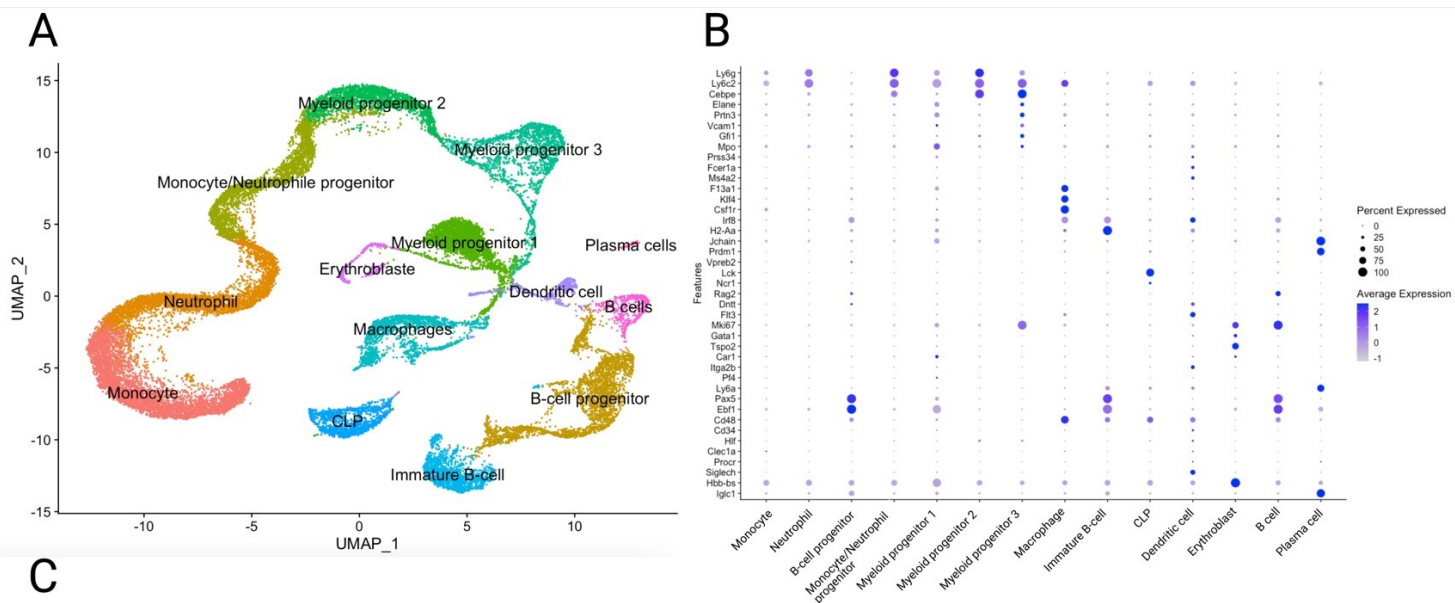
Early view: April 4, 2024.

<https://doi.org/10.3324/haematol.2023.284275>

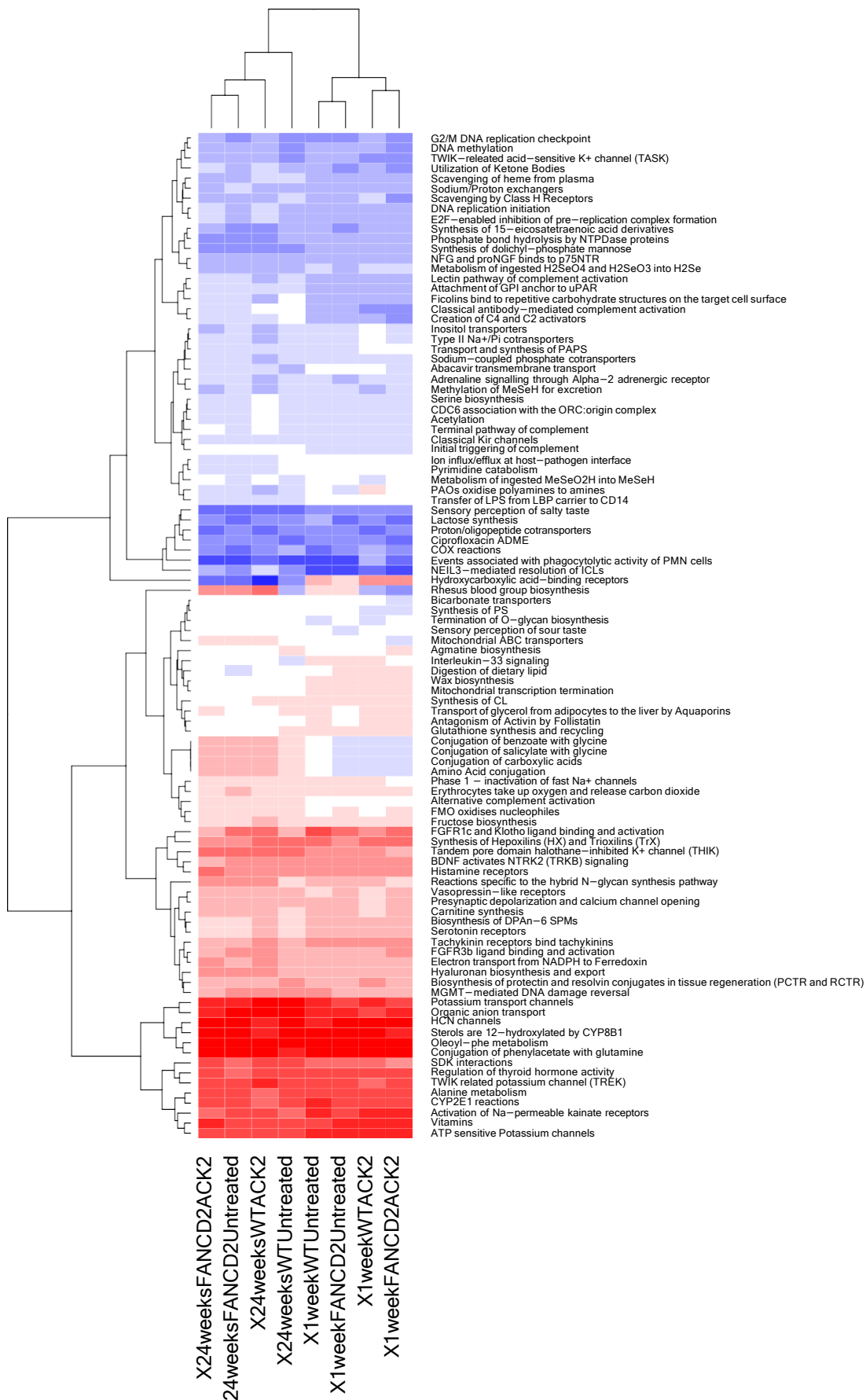
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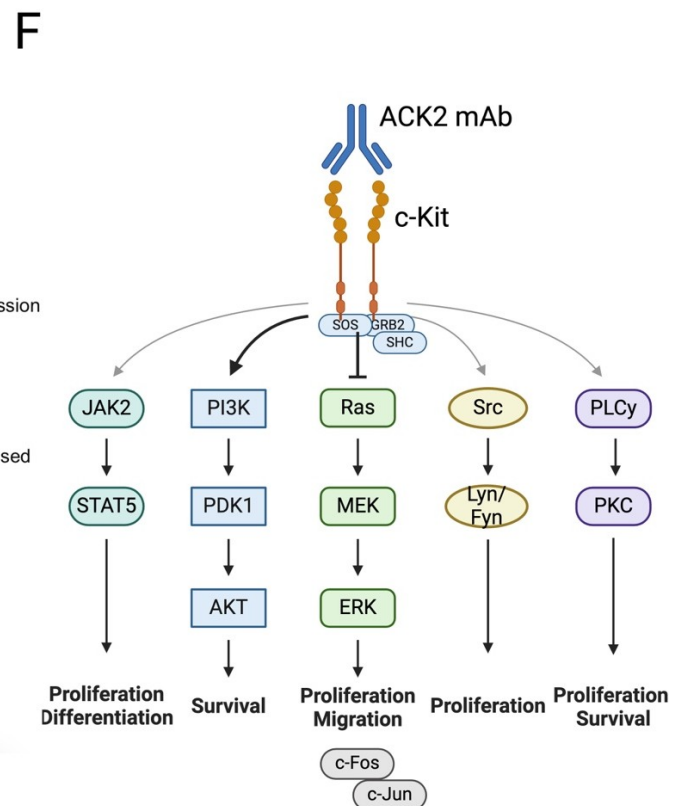
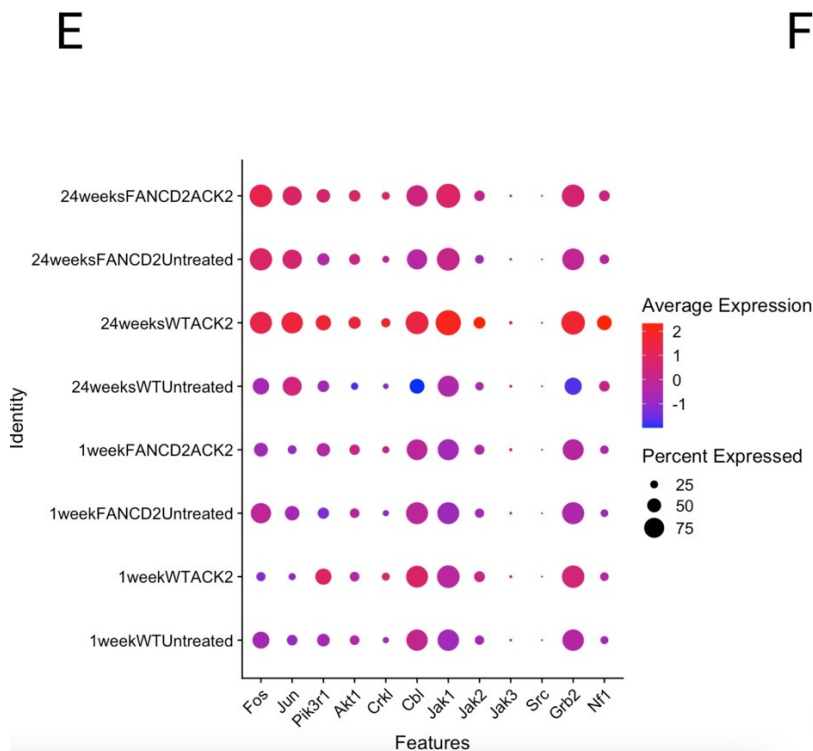
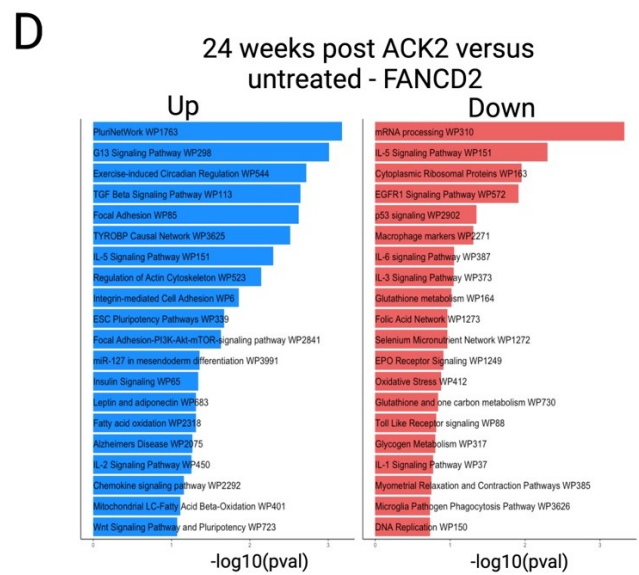
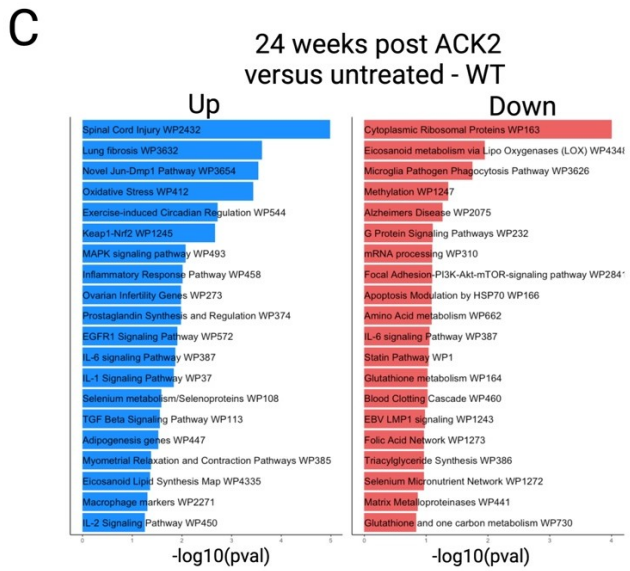
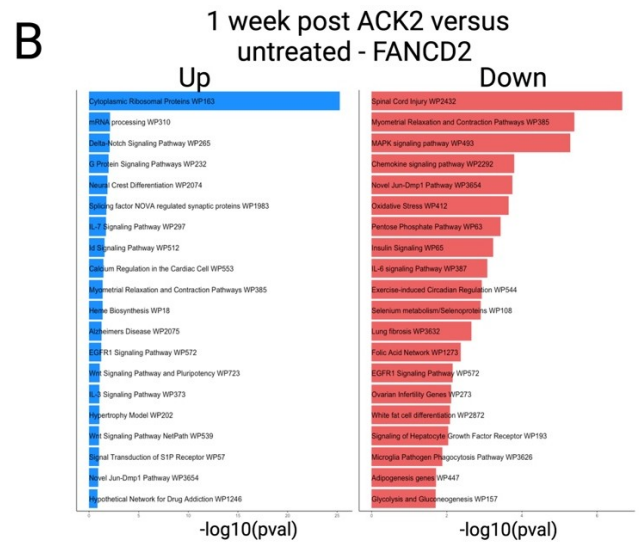
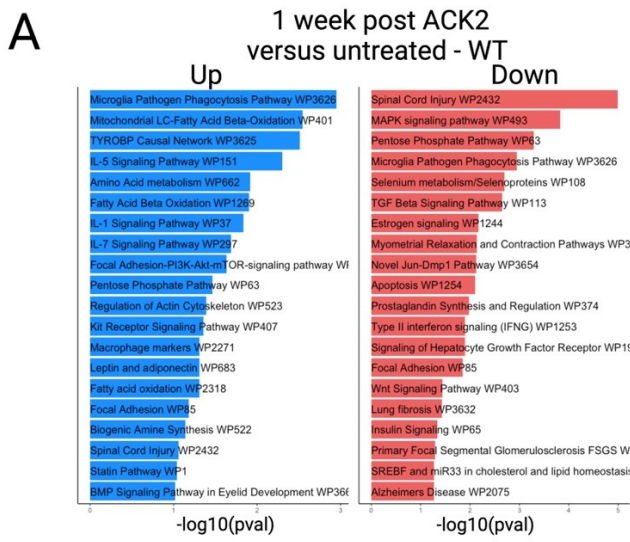




Supplementary Figure 4: Integrated analysis for each group and identification of sub-clusters of distinct cell types. (A) UMAP of concatenate sample. The UMAP embedding and Leiden clustering were performed on the integrated gene expression, Cells are labeled based on their cluster identity. (B) Dot plot showing the average expression of selected marker genes for each cluster. The size of dots represents the fraction of cells expressing a given gene (>0 expression value) and the color intensity reflects the average expression level within each cluster. (C) Heatmap of cluster signature genes highlighted on left. Expression of the 10 top differentially expressed genes across the cells. (D) UMAP split by samples representing the distribution of cells by cluster.

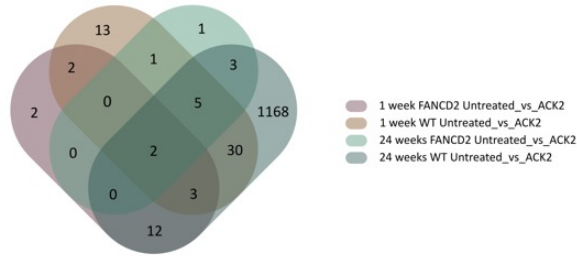


Supplementary Figure 5: Heatmap of the top 100 differential pathways by Reactome gene set analysis.

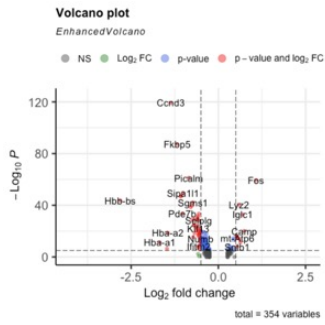


Supplementary Figure 6: Single-Cell RNA Sequencing reveals antagonistic anti-CD117 mAb effects on MAPK pathway. (A-D) Pathway enrichment is expressed as the $-\log[\text{p.value}]$ adjusted for multiple comparisons and WikiPathways_2019_Mouse data base was used²⁶. (A) Up and down regulated pathways in 1-week WT ACK2 groups compare with untreated groups. (D) Up and down regulated pathways in 1-week FANCD2^{-/-} ACK2 groups compare with untreated groups. (C) Up and down regulated pathways in 24-weeks WT ACK2 groups compare with untreated groups. (D) Up and down regulated pathways in 24-weeks FANCD2^{-/-} ACK2 groups compare with untreated groups. (E) Dot plot showing the average expression of selected marker genes for each group. The size of dots represents the fraction of cells expressing a given gene (>0 expression value) and the color intensity reflects the average expression level within each cluster. (F) Downregulation of MAPK pathways after c-Kit mAb inhibition.

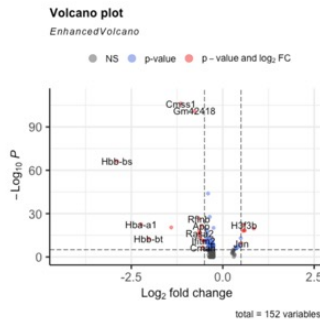
Cluster 1



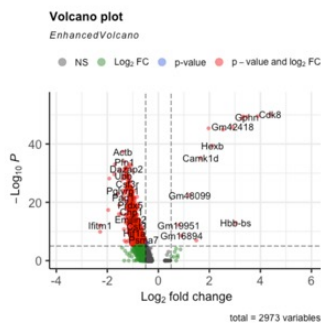
1 week WT Untreated versus ACK2



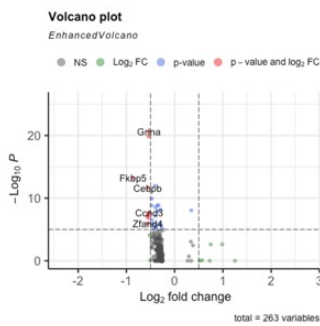
1 week FANCD2 Untreated versus ACK2



24 week WT Untreated versus ACK2



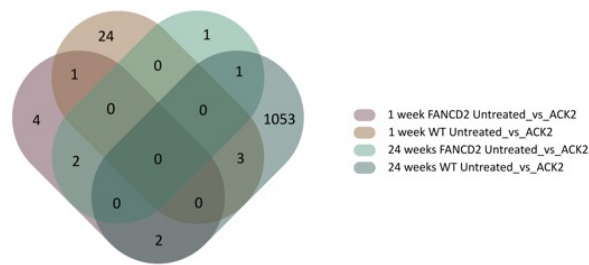
24 week FANCD2 Untreated versus ACK2



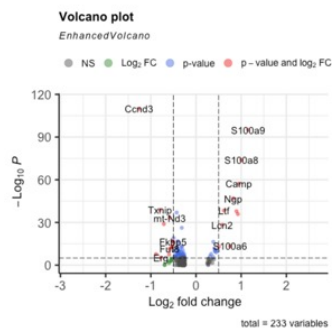
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1 week FANCD2 Untreated_vs_ACK2 1 week WT Untreated_vs_ACK2 24 weeks WT Untreated_vs_ACK2	7	Ifitm1 Ifi1rap Fos Hbb-bs Zfp36 Lrg1 Hba-a2
1 week WT Untreated_vs_ACK2 24 weeks FANCD2 Untreated_vs_ACK2 24 weeks WT Untreated_vs_ACK2	6	Camp Sipa111 Pde7b Klf13 Crispld2 Rbm47
1 week FANCD2 Untreated_vs_ACK2 24 weeks WT Untreated_vs_ACK2	12	Ier2 Nup98 Gm42418 Klf2 Wfdc17 Dennd4a Egr1 Cmss1 Hbb Ier5 Cdk8 Ubc
1 week WT Untreated_vs_ACK2 24 weeks FANCD2 Untreated_vs_ACK2	7	Mmp8 Sla Fkbp5 Nedd9 Zfand4 Ccn3 4932438A13Rik
1 week WT Untreated_vs_ACK2 24 weeks WT Untreated_vs_ACK2	30	Antxr2 Sik3 Hectd1 Btg2 Csf33 Plin2 Sgms1 Plaur Babam2 Arl15 Ndel1 Slpr2 Dusp1 Adam19 Birc3 Picalm Arid5b Igf1r Ralgap1 Sbn2 Tmod3 Gpcpd1 Cpne2 Tsc22d3 Fndc3b Bcl6 Gab2 Hh3ra1 Ube2h Ifitm2
24 weeks FANCD2 Untreated_vs_ACK2 24 weeks WT Untreated_vs_ACK2	2	Retnlg Rdh12

Supplementary Figure 8: Differential gene expressions for each subgroup in untreated versus ACK2 treated for cluster 1 – Neutrophils. (A) Venn diagram. (B) Genes in common that were up- or down-regulated across groups. (C) Volcano plot for each comparison. p-value < 0.05 and an average log2 fold change (avg_log2FC) < ±0.5.

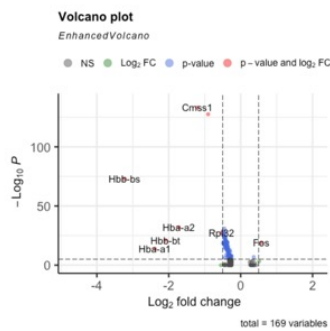
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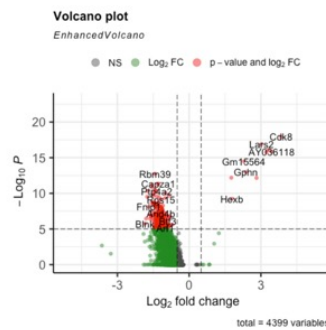
1 week WT Untreated versus ACK2



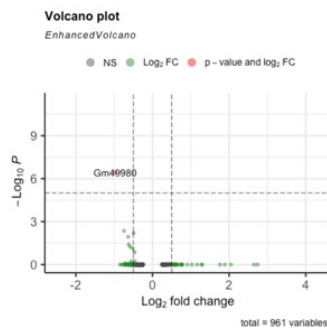
1 week FANCD2 Untreated versus ACK2



24 week WT Untreated versus ACK2



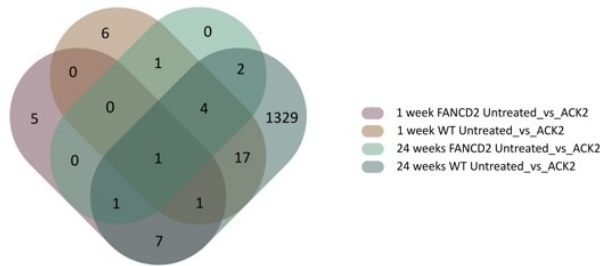
24 week FANCD2 Untreated versus ACK2



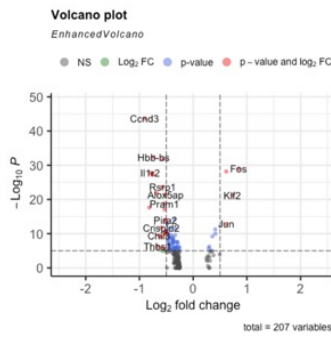
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1 week FANCD2 Untreated_vs_ACK2 24 weeks FANCD2 Untreated_vs_ACK2	2	Hbb-bs Hba-a2
1 week FANCD2 Untreated_vs_ACK2 24 weeks WT Untreated_vs_ACK2	2	Gm42418 Cms1
1 week WT Untreated_vs_ACK2 24 weeks WT Untreated_vs_ACK2	3	S100a9 mt-Nd3 S100a8
24 weeks FANCD2 Untreated_vs_ACK2 24 weeks WT Untreated_vs_ACK2	1	Gm49980

Supplementary Figure 9: Differential gene expressions for each subgroup in untreated versus ACK2 treated for cluster 2 – B cell progenitor (A) Venn diagram. (B) Genes in common that were up- or down-regulated across groups. (C) Volcano plot for each comparison. p-value < 0.05 and an average log2 fold change (avg_log2FC) < ±0.5.

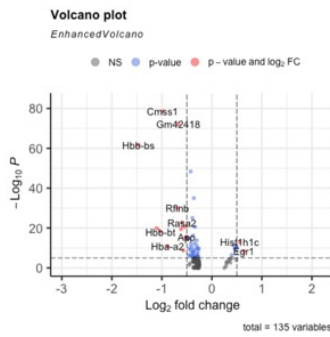
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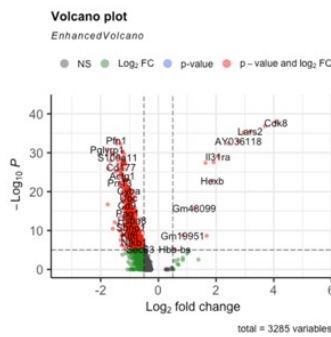
1 week WT Untreated versus ACK2



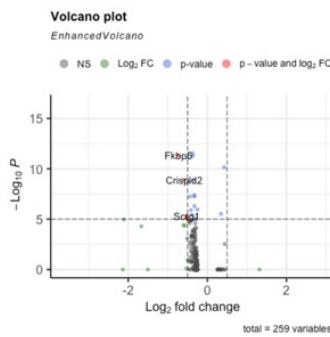
1 week FANCD2 Untreated versus ACK2



24 week WT Untreated versus ACK2



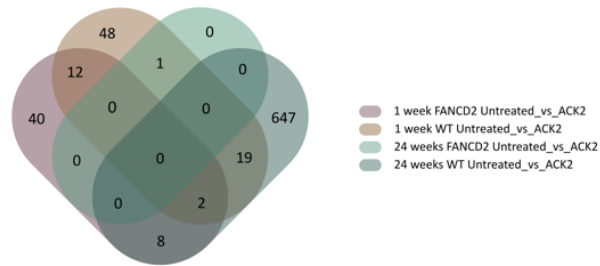
24 week FANCD2 Untreated versus ACK2



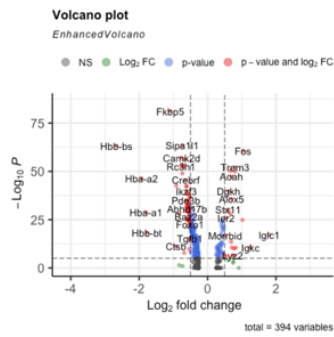
Names	Total	Elements
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1 week FANCD2 Untreated_vs_ACK2 1 week WT Untreated_vs_ACK2 24 weeks WT Untreated_vs_ACK2	1	fltm6
1 week FANCD2 Untreated_vs_ACK2 24 weeks FANCD2 Untreated_vs_ACK2 24 weeks WT Untreated_vs_ACK2	1	Hba-a2
1 week WT Untreated_vs_ACK2 24 weeks FANCD2 Untreated_vs_ACK2 24 weeks WT Untreated_vs_ACK2	4	Crispld2 Cebpb Picalm Scrg1
1 week FANCD2 Untreated_vs_ACK2 24 weeks WT Untreated_vs_ACK2	7	Rasa2 Npepps App Rarb Gm42418 Denn4a Cms1
1 week WT Untreated_vs_ACK2 24 weeks FANCD2 Untreated_vs_ACK2	1	Fkbp5
1 week WT Untreated_vs_ACK2 24 weeks WT Untreated_vs_ACK2	17	Sipa1l1 Klf2 Fos Thbs1 Il1r2 Clec4d Cnc3 Pram1 Alox5ap Antr2 Chil3 Dach1 Sgms1 Ccxr2 Hp Ccr1 Gab2
24 weeks FANCD2 Untreated_vs_ACK2 24 weeks WT Untreated_vs_ACK2	2	Zfp362 Retnlg

Supplementary Figure 10: Differential gene expressions for each subgroup in untreated versus ACK2 treated for cluster 3 – Monocyte/Neutrophil progenitor (A) Venn diagram. (B) Genes in common that were up- or down-regulated across groups. (C) Volcano plot for each comparison. p -value < 0.05 and an average \log_2 fold change ($\text{avg}_{\log_2\text{FC}}$) $< \pm 0.5$.

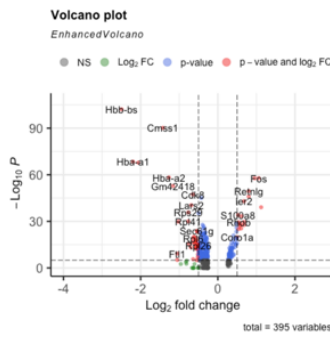
Cluster 4



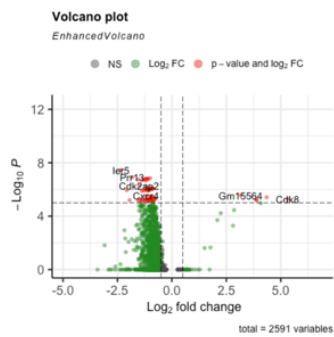
1 week WT Untreated versus ACK2



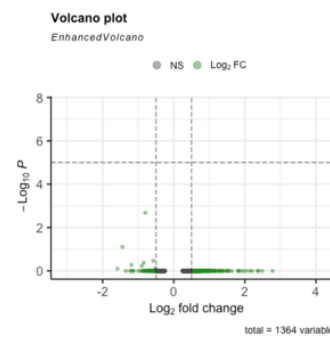
1 week FANCD2 Untreated versus ACK2



24 week WT Untreated versus ACK2



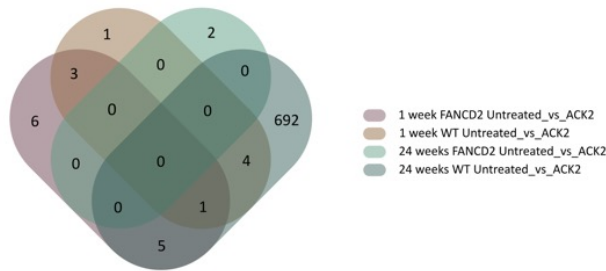
24 week FANCD2 Untreated versus ACK2



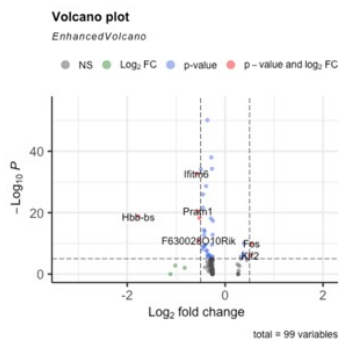
Names	Total	Elements
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1 week FANCD2 Untreated_vs_ACK2 1 week WT Untreated_vs_ACK2	12	Irf2 Hba-a1 S100a8 Fos Dusp1 Hbb-bs Hbb-bt Iglc1 Igkc Hba-a2 Mmp9 Ctsb
1 week FANCD2 Untreated_vs_ACK2 24 week WT Untreated_vs_ACK2	8	Irf1 Ccl6 Rho Camk1d Retnlg Lars2 Cms1 Cdk8
1 week WT Untreated_vs_ACK2 24 week FANCD2 Untreated_vs_ACK2	1	Fkbp5
1 week WT Untreated_vs_ACK2 24 week WT Untreated_vs_ACK2	19	Rassf2 Napsa mt-Atf8 Lpp Trim12a Aoh Adam19 Chil1 Padi4 Glg1 Trem3 Tgfb2 Rbm47 Alox5 Malt1 Stx11 Cdc42se2 Dgkh Baz2a

Supplementary Figure 11: Differential gene expressions for each subgroup in untreated versus ACK2 treated for cluster 4 – Myeloid progenitor 1 (A) Venn diagram. (B) Genes in common that were up- or down-regulated across groups. (C) Volcano plot for each comparison. p-value < 0.05 and an average log2 fold change (avg_log2FC) < ±0.5.

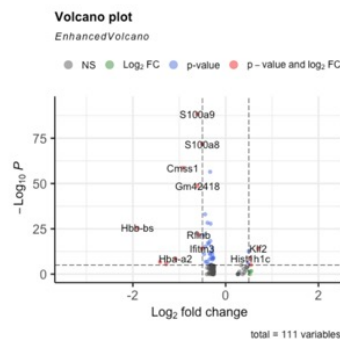
Cluster 5



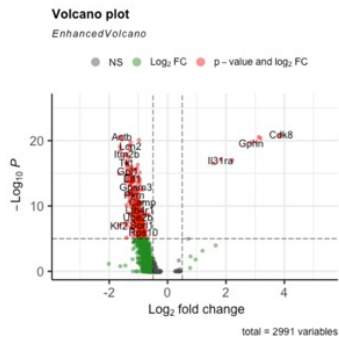
1 week WT Untreated versus ACK2



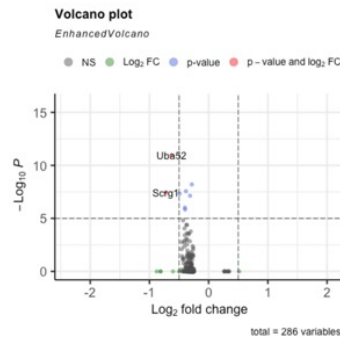
1 week FANCD2 Untreated versus ACK2



24 week WT Untreated versus ACK2



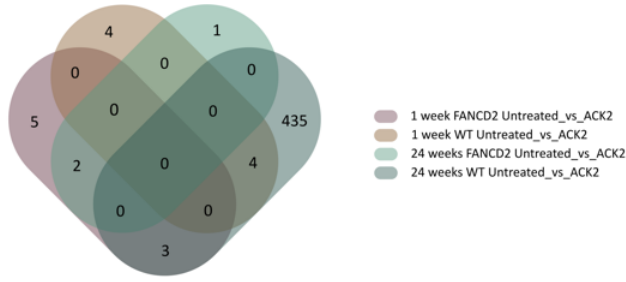
24 week FANCD2 Untreated versus ACK2



Names	Total	Elements
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1 week FANCD2 Untreated_vs_ACK2 1 week WT Untreated_vs_ACK2	3	Hbb-bs Hbb-bt Hba-a2
1 week FANCD2 Untreated_vs_ACK2 24 week WT Untreated_vs_ACK2	5	Btg2 Gm42418 Ifitm3 Cms1 Rflnb
1 week WT Untreated_vs_ACK2 24 week WT Untreated_vs_ACK2	4	Pirb Fos Pram1 Ifitm6

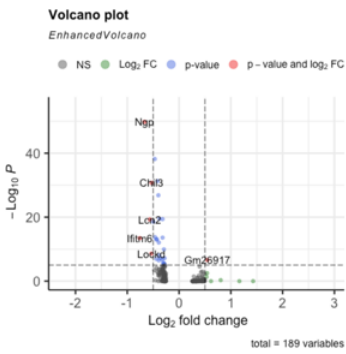
Supplementary Figure 12: Differential gene expressions for each subgroup in untreated versus ACK2 treated for cluster 5 – Myeloid progenitor 2 (A) Venn diagram. (B) Genes in common that were up- or down-regulated across groups. (C) Volcano plot for each comparison. p-value < 0.05 and an average log2 fold change (avg_log2FC) < ±0.5.

Cluster 6

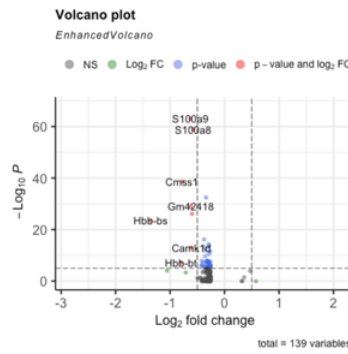


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1 week FANCD2 Untreated_vs_ACK2 24 week WT Untreated_vs_ACK2	3	Camk1d Cms1 Gm42418
1 week WT Untreated_vs_ACK2 24 week WT Untreated_vs_ACK2	4	Lcn2 Gm26917 Ngp Ifitm6

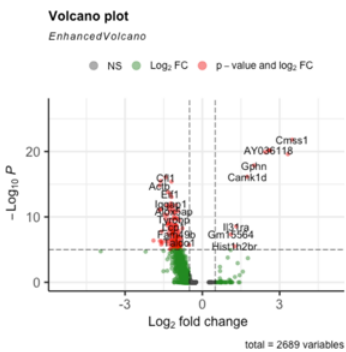
1 week WT Untreated versus ACK2



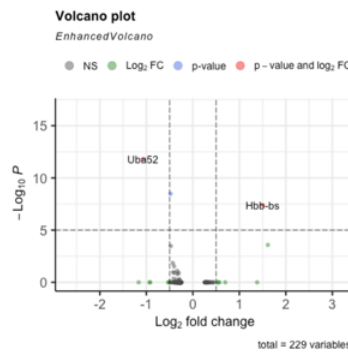
1 week FANCD2 Untreated versus ACK2



24 week WT Untreated versus ACK2

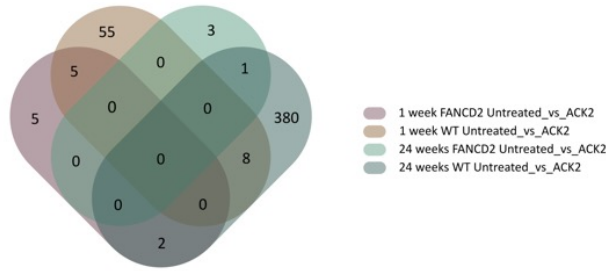


24 week FANCD2 Untreated versus ACK2

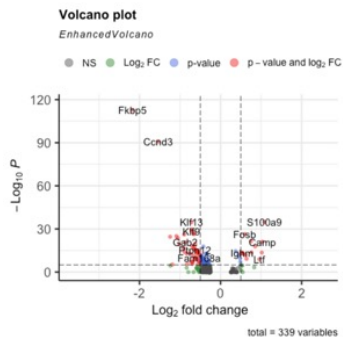


Supplementary Figure 13: Differential gene expressions for each subgroup in untreated versus ACK2 treated for cluster 6 – Myeloid progenitor 3 (A) Venn diagram. (B) Genes in common that were up- or down-regulated across groups. (C) Volcano plot for each comparison. p-value < 0.05 and an average log₂ fold change (avg_log₂FC) < ±0.5.

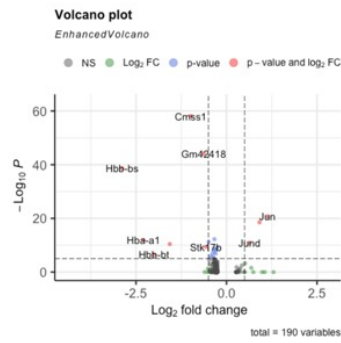
Cluster 7



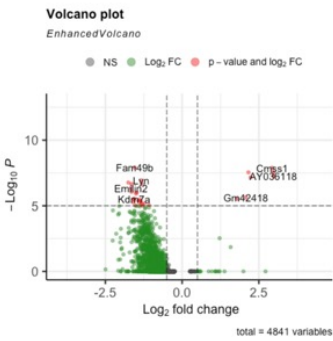
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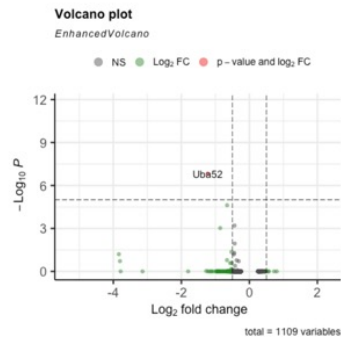
1 week FANCD2 Untreated versus ACK2



24 week WT Untreated versus ACK2



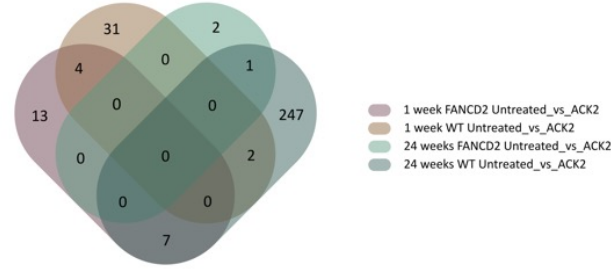
24 week FANCD2 Untreated versus ACK2



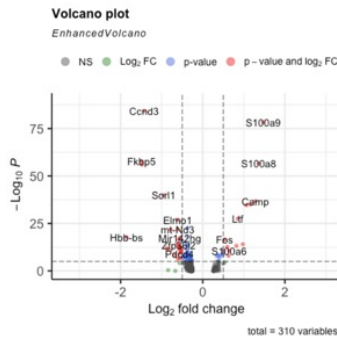
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1 week FANCD2 Untreated_vs_ACK2 24 week WT Untreated_vs_ACK2	2	Ccnd3 Gm42418
1 week WT Untreated_vs_ACK2 24 week WT Untreated_vs_ACK2	8	Picalm Gsr Vcan Dock4 Stat3 Klf13 Gda Ddi2
24 week FANCD2 Untreated_vs_ACK2 24 week WT Untreated_vs_ACK2	1	Rpl5

Supplementary Figure 14: Differential gene expressions for each subgroup in untreated versus ACK2 treated for cluster 7 – Macrophages (A) Venn diagram. (B) Genes in common that were up- or down-regulated across groups. (C) Volcano plot for each comparison. p-value < 0.05 and an average log2 fold change (avg_log2FC) < ±0.5.

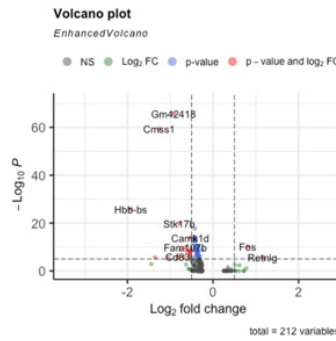
Cluster 8



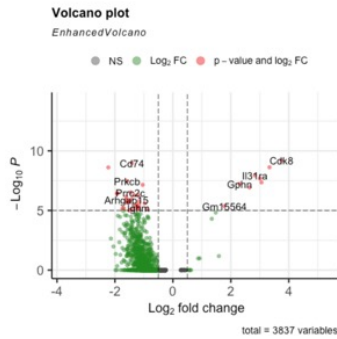
1 week WT Untreated versus ACK2



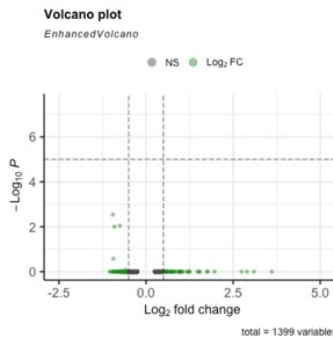
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24 week WT Untreated versus ACK2



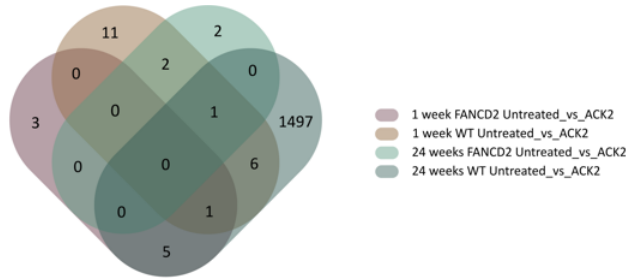
24 week FANCD2 Untreated versus ACK2



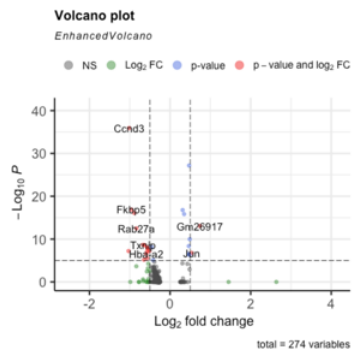
Names	Total	Elements
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1 week FANCD2 Untreated_vs_ACK2 24 week WT Untreated_vs_ACK2	7	Dennd4a Camk1d Cmss1 Gm42418 Cdk8 Fbxo11 Skt17b
1 week WT Untreated_vs_ACK2 24 week WT Untreated_vs_ACK2	4	Fchs2 Elmo1 Foxn3 Hvcm1
24 week FANCD2 Untreated_vs_ACK2 24 week WT Untreated_vs_ACK2	1	Ebf1

Supplementary Figure 15: Differential gene expressions for each subgroup in untreated versus ACK2 treated for cluster 8 – Immature B-cell (A) Venn diagram. (B) Genes in common that were up- or down-regulated across groups. (C) Volcano plot for each comparison. p-value < 0.05 and an average log2 fold change (avg_log2FC) < ±0.5.

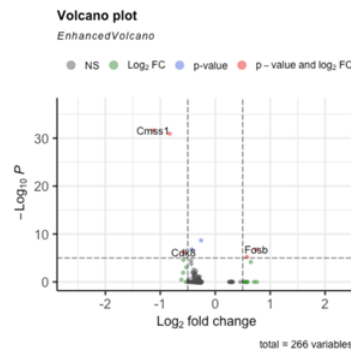
Cluster 9



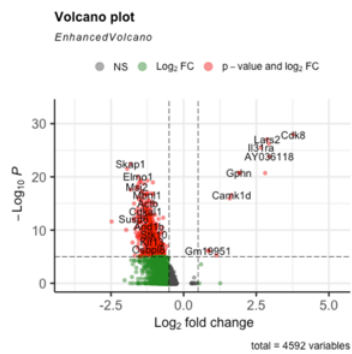
1 week WT Untreated versus ACK2



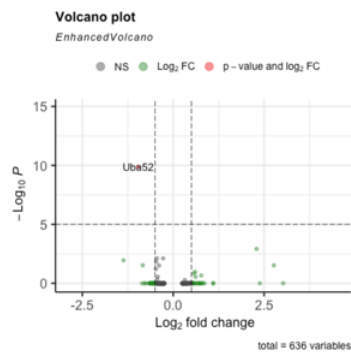
1 week FANCD2 Untreated versus ACK2



24 week WT Untreated versus ACK2



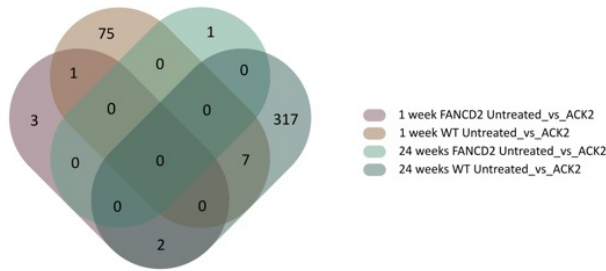
24 week FANCD2 Untreated versus ACK2



Names	Total	Elements
1 week FANCD2 Untreated_vs_ACK2 1 week WT Untreated_vs_ACK2 24 week WT Untreated_vs_ACK2	1	Jun
1 week WT Untreated_vs_ACK2 24 week FANCD2 Untreated_vs_ACK2 24 week WT Untreated_vs_ACK2	1	Hbb-bs
1 week FANCD2 Untreated_vs_ACK2 24 week WT Untreated_vs_ACK2	5	Ptgn22 Cdk8 Fosb Gm42418 Cms1
1 week WT Untreated_vs_ACK2 24 week FANCD2 Untreated_vs_ACK2	2	Il7r Hba-a2
1 week WT Untreated_vs_ACK2 24 week WT Untreated_vs_ACK2	6	mt-Nd3 Ccnd3 Arhgap26 Serinc3 Resf1 Arhgef18

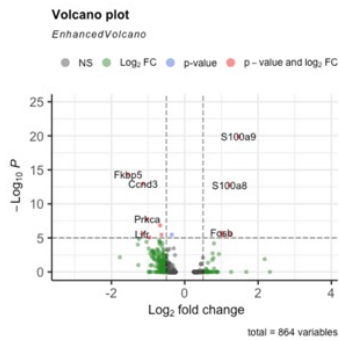
Supplementary Figure 16: Differential gene expressions for each subgroup in untreated versus ACK2 treated for cluster 9 – CLP (A) Venn diagram. (B) Genes in common that were up- or down-regulated across groups. (C) Volcano plot for each comparison. p-value < 0.05 and an average log2 fold change (avg_log2FC) $\leq \pm 0.5$.

Cluster 10

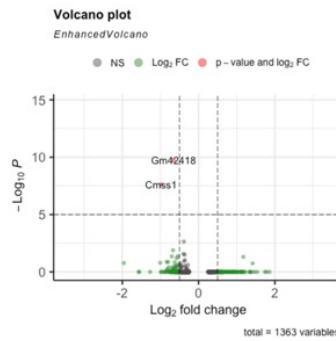


Names	Total	Elements
1 week FANCD2 Untreated_vs_ACK2 1 week WT Untreated_vs_ACK2	1	Fos
1 week FANCD2 Untreated_vs_ACK2 24 week WT Untreated_vs_ACK2	2	Cmss1 Gm42418
1 week WT Untreated_vs_ACK2 24 week WT Untreated_vs_ACK2	7	Ltf Lcn2 Camp Ngp S100a8 S100a9 Lyz2

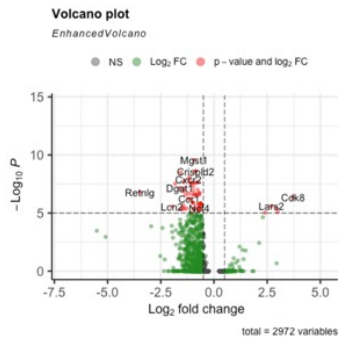
1 week WT Untreated versus ACK2



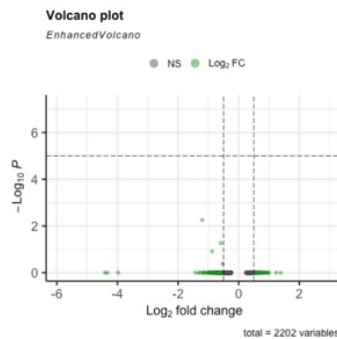
1 week FANCD2 Untreated versus ACK2



24 week WT Untreated versus ACK2

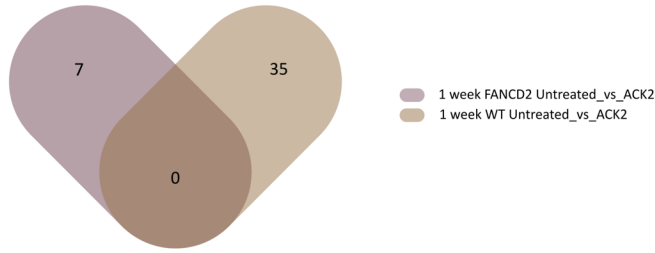


24 week FANCD2 Untreated versus ACK2

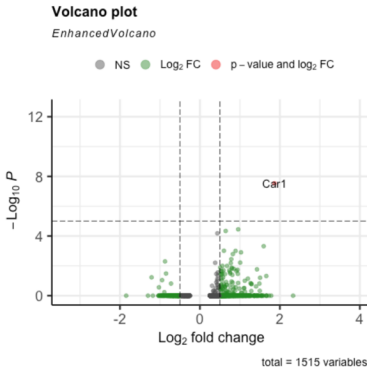


Supplementary Figure 17: Differential gene expressions for each subgroup in untreated versus ACK2 treated for cluster 10 – Dendritic cell (A) Venn diagram. (B) Genes in common that were up- or down-regulated across groups. (C) Volcano plot for each comparison. p-value < 0.05 and an average log2 fold change (avg_log2FC) < ±0.5.

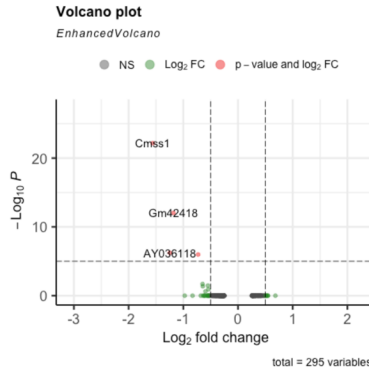
Cluster 11



1 week WT Untreated versus ACK2

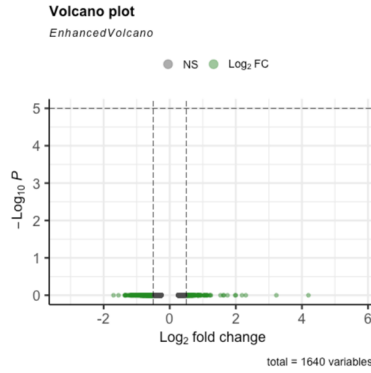


1 week FANCD2 Untreated versus ACK2



24 week WT Untreated versus ACK2

24 week FANCD2 Untreated versus ACK2



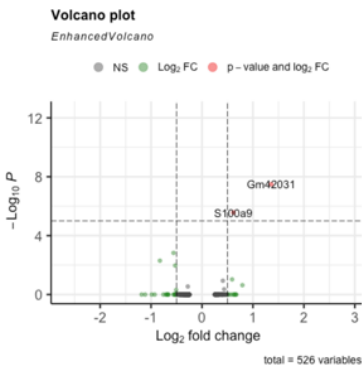
Supplementary Figure 18: Differential gene expressions for each subgroup in untreated versus ACK2 treated for cluster 11 – Erythroblast (A) Venn diagram. (B) Genes in common that were up- or down-regulated across groups. (C) Volcano plot for each comparison. p-value < 0.05 and an average log₂ fold change (avg_log2FC) < ±0.5.

Cluster 12

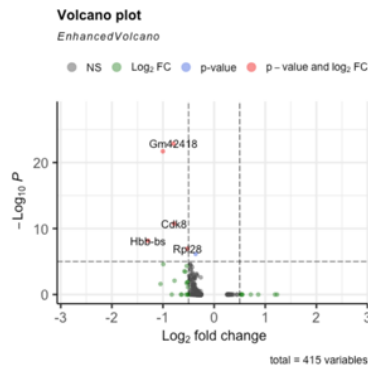


Names	Total	Elements
1 week FANCD2 Untreated_vs_ACK2	1	Hbb-bs
1 week WT Untreated_vs_ACK2		

1 week WT Untreated versus ACK2

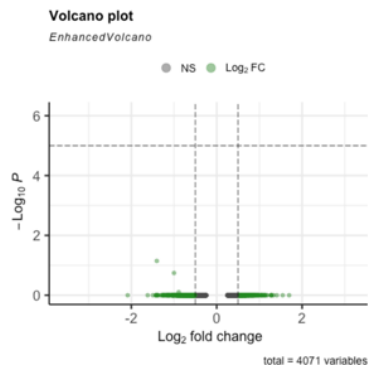


1 week FANCD2 Untreated versus ACK2



24 week WT Untreated versus ACK2

24 week FANCD2 Untreated versus ACK2

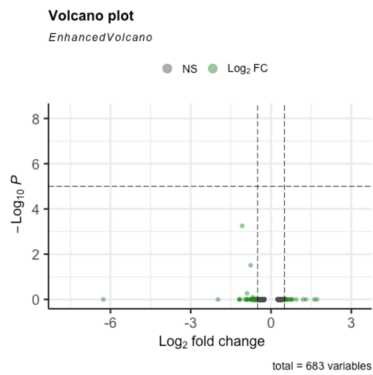


Supplementary Figure 19: Differential gene expressions for each subgroup in untreated versus ACK2 treated for cluster 12 – B cells (A) Venn diagram. (B) Genes in common that were up- or down-regulated across groups. (C) Volcano plot for each comparison. p-value < 0.05 and an average log₂ fold change (avg_log₂FC) < ±0.5.

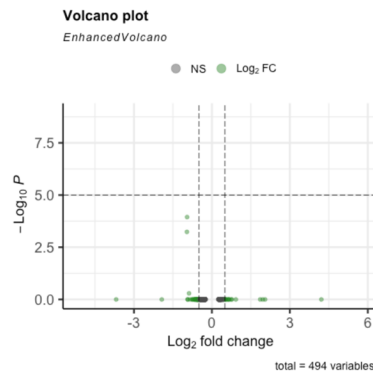
Cluster 13



1 week WT Untreated versus ACK2

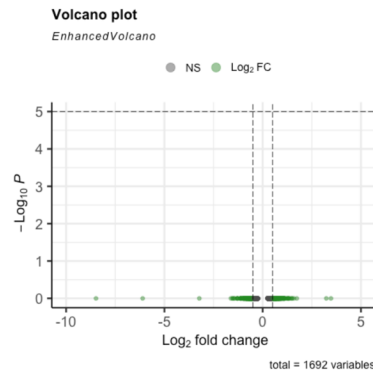


1 week FANCD2 Untreated versus ACK2



24 week WT Untreated versus ACK2

24 week FANCD2 Untreated versus ACK2



Supplementary Figure 20: Differential gene expressions for each subgroup in untreated versus ACK2 treated for cluster 13 – Plasma cells (A) Venn diagram. (B) Genes in common that were up- or down-regulated across groups. (C) Volcano plot for each comparison. p -value < 0.05 and an average \log_2 fold change ($\text{avg_log}_2\text{FC}$) $< \pm 0.5$.