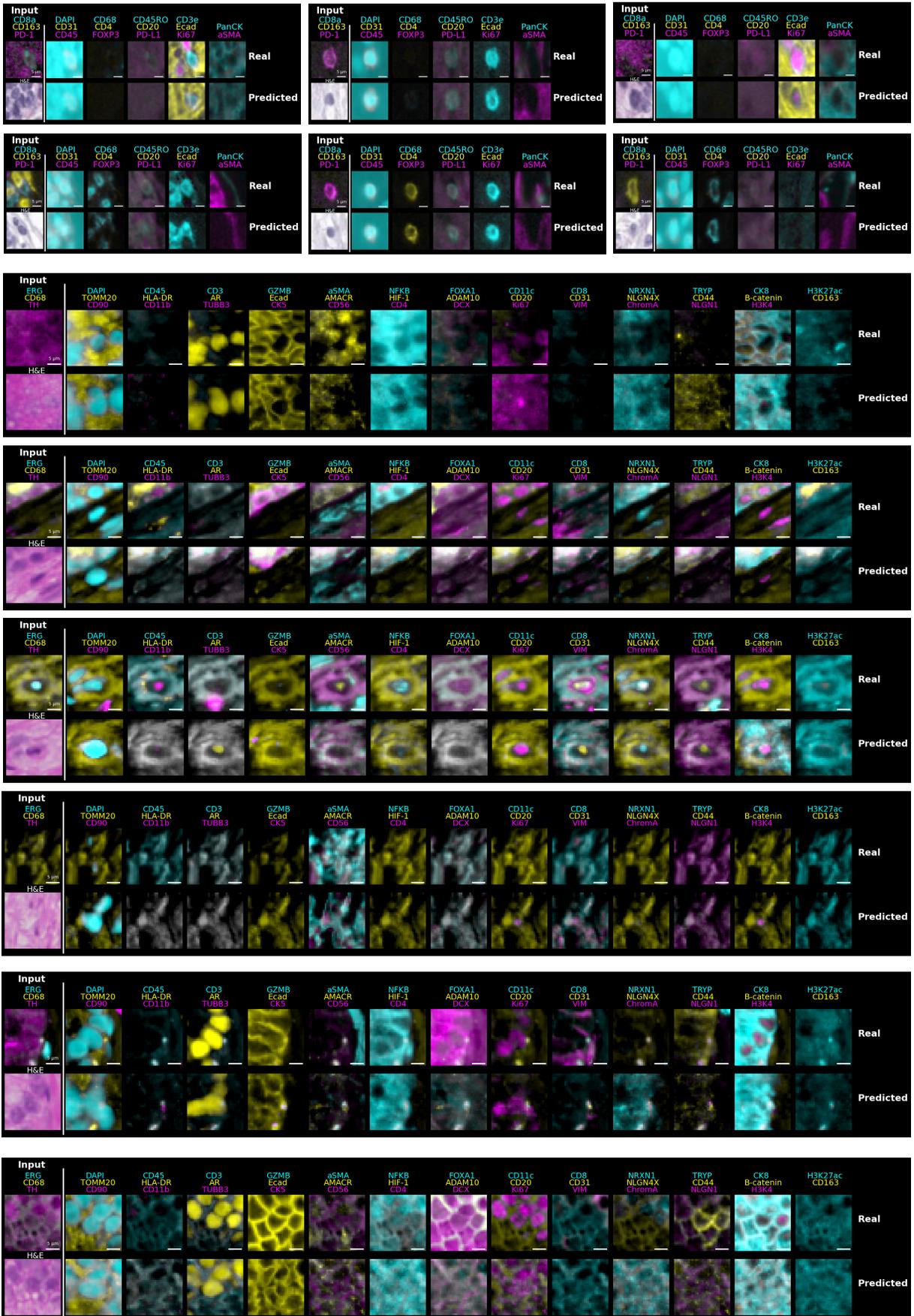
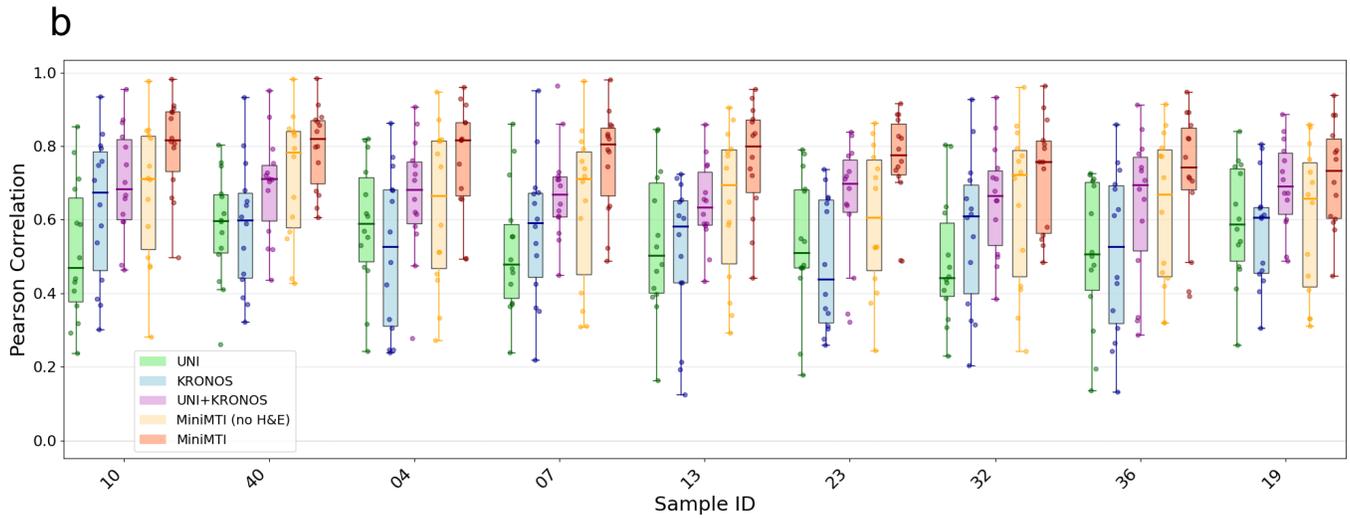
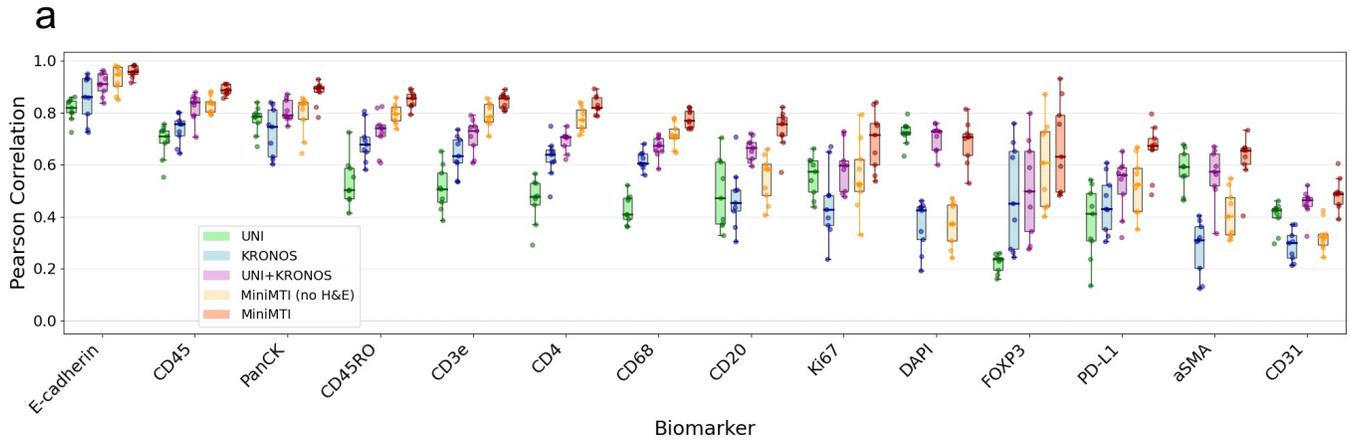


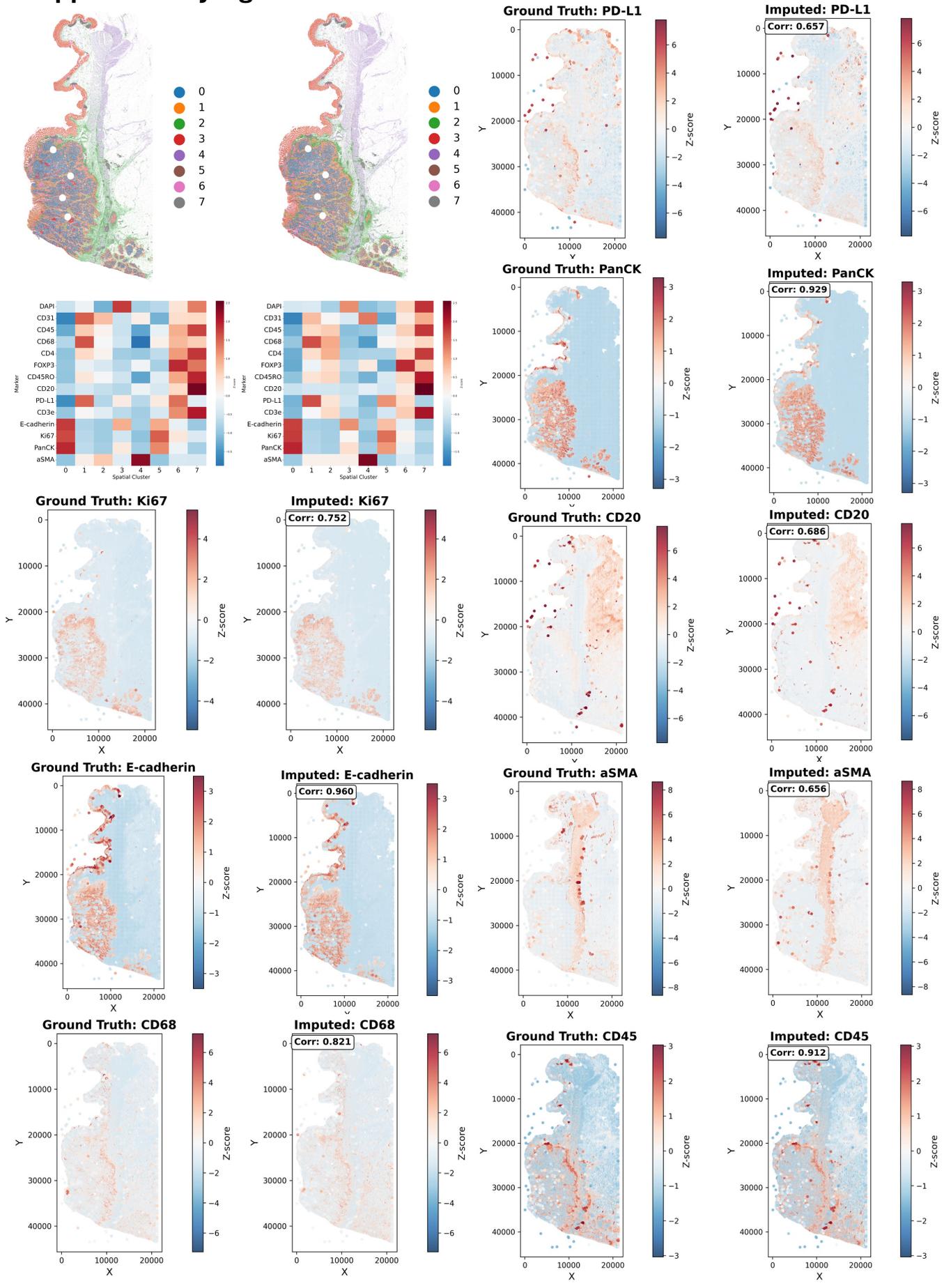
# Supplementary Figure 1

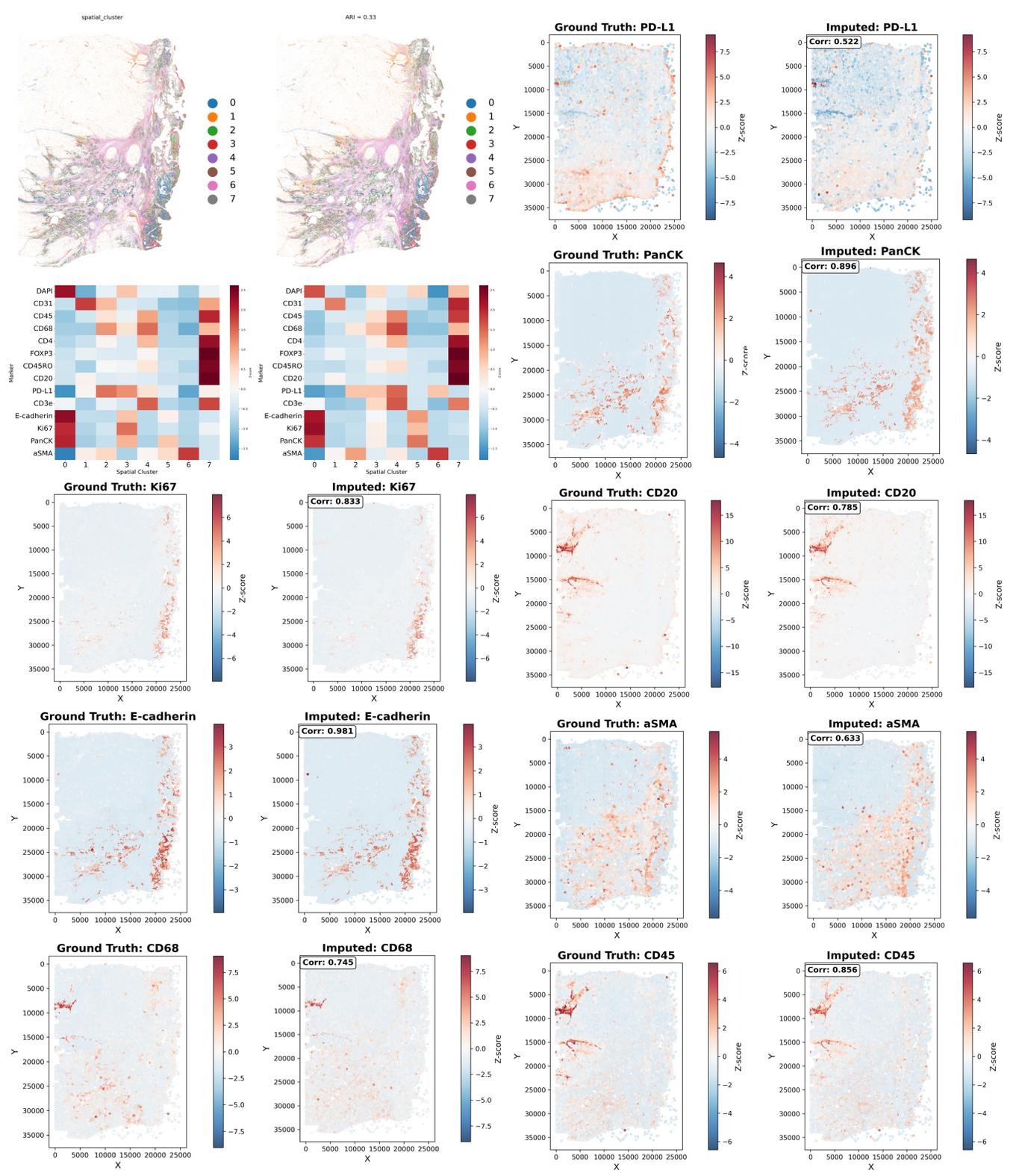


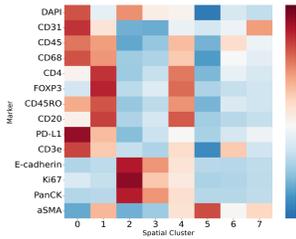
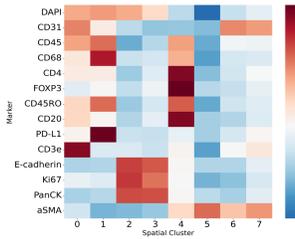
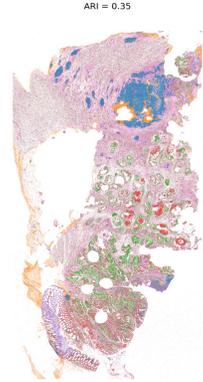
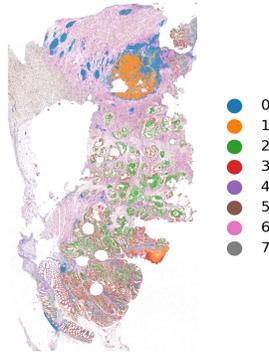
## Supplementary Figure 2



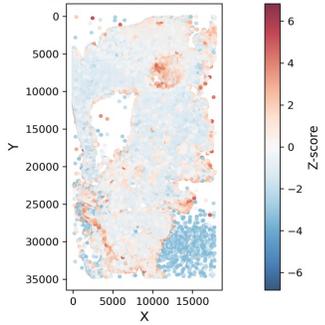
# Supplementary Figure 3 ARI = 0.43



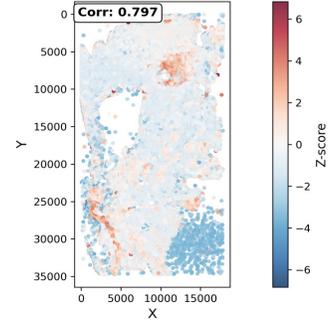




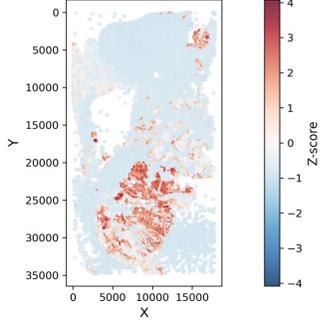
**Ground Truth: PD-L1**



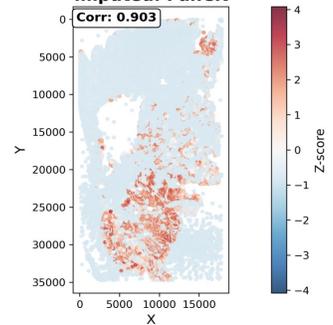
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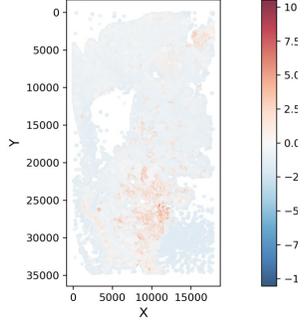
**Ground Truth: PanCK**



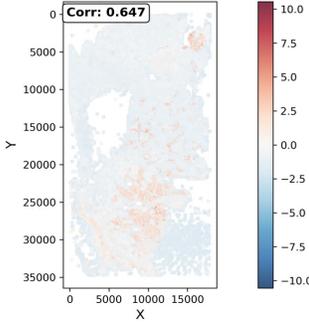
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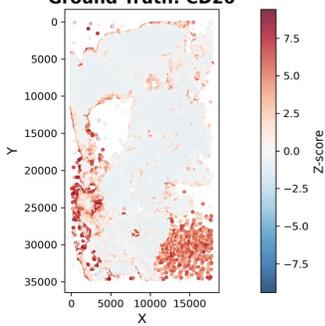
**Ground Truth: Ki67**



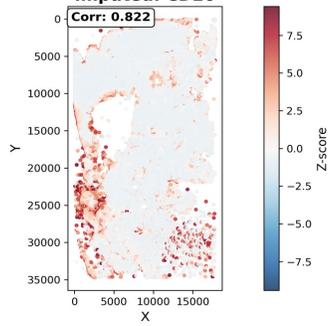
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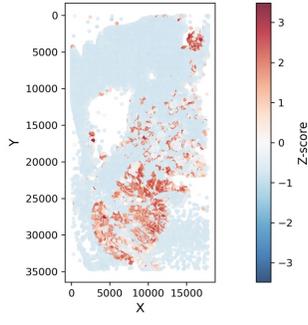
**Ground Truth: CD20**



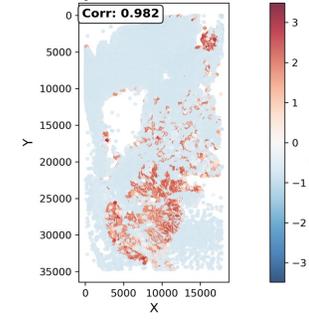
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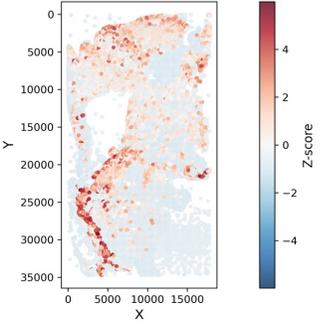
**Ground Truth: E-cadherin**



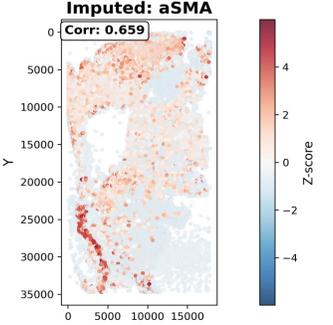
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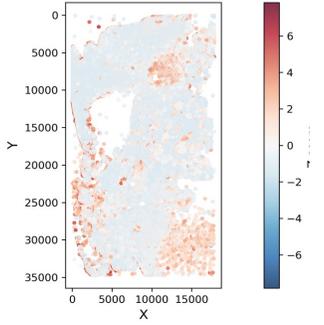
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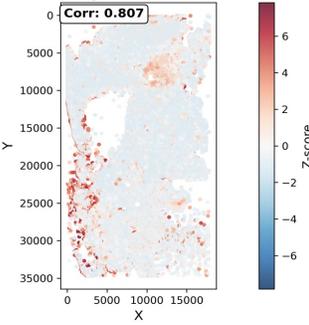
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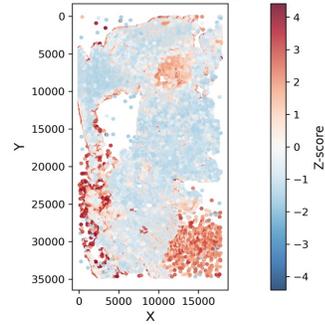
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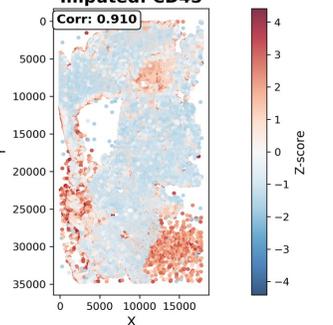
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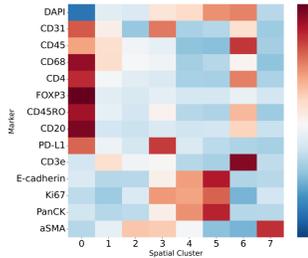
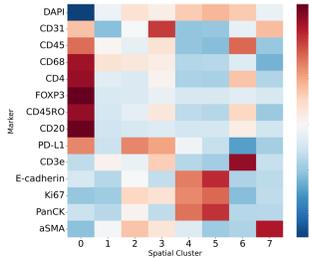
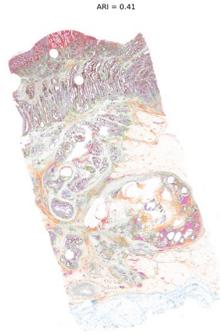


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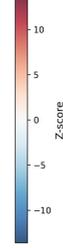
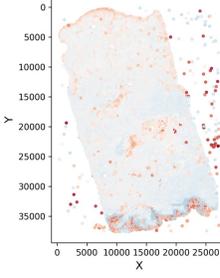


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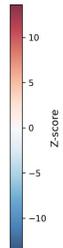
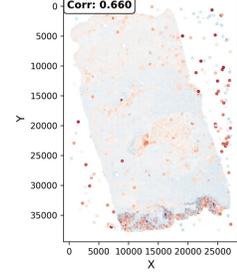




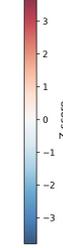
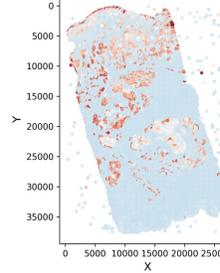
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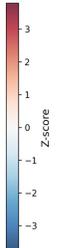
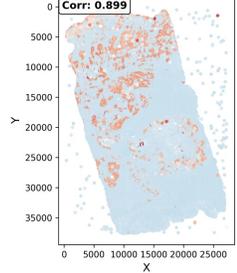
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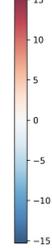
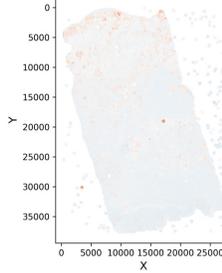
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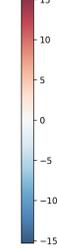
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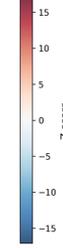
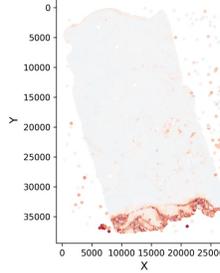
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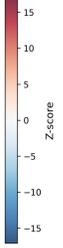
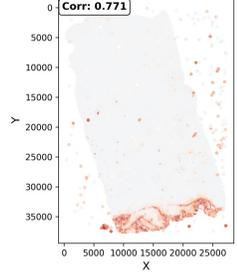
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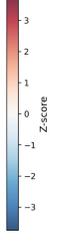
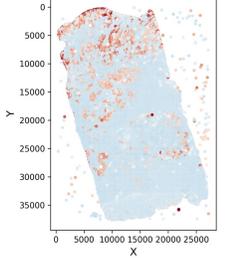
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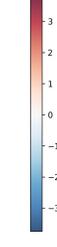
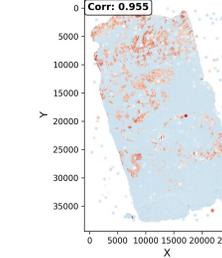
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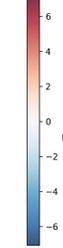
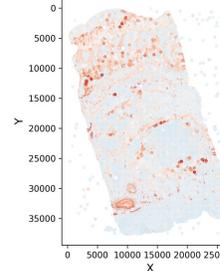
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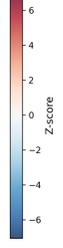
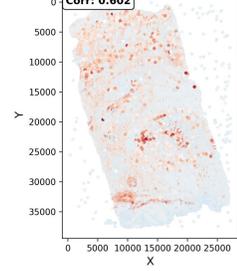
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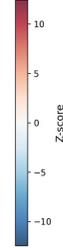
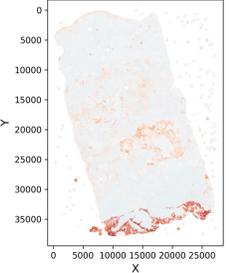
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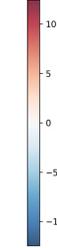
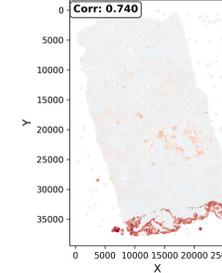
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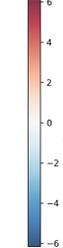
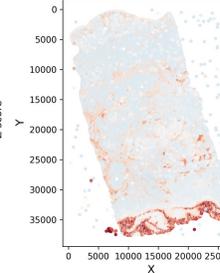
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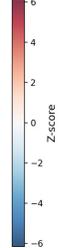
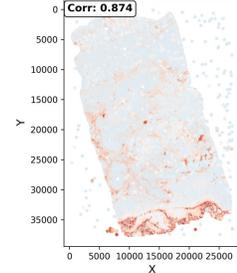
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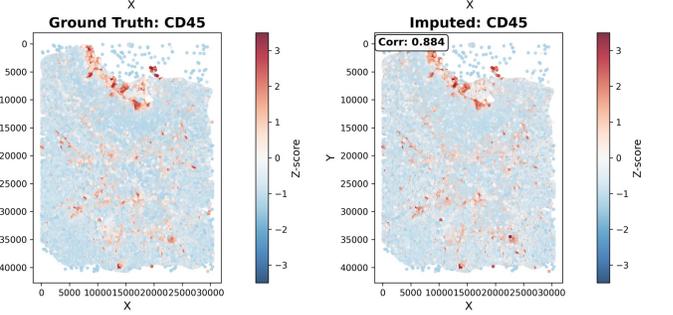
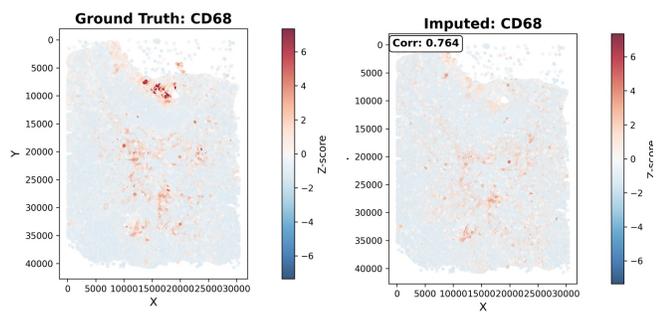
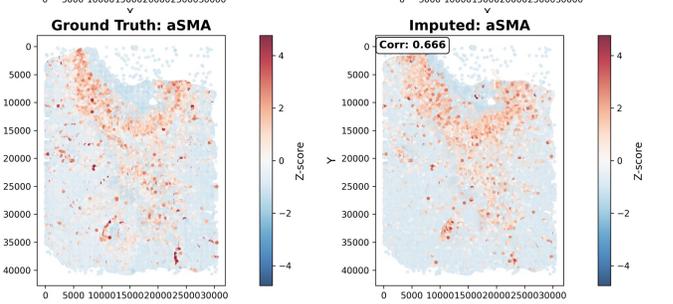
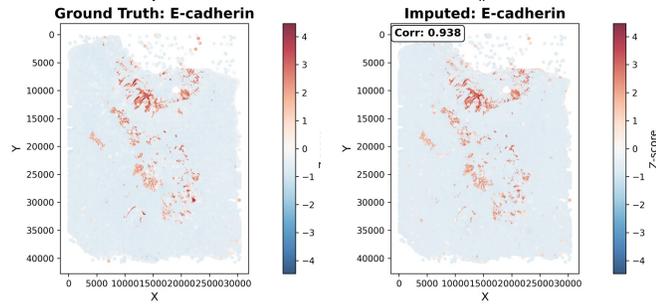
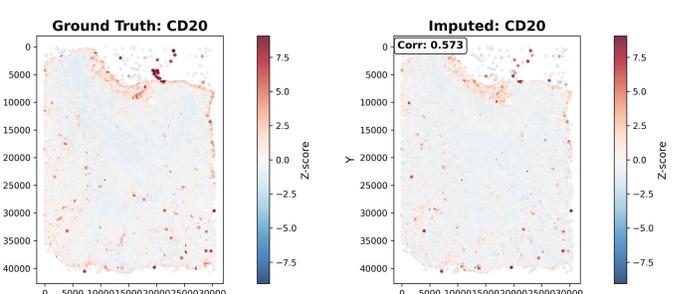
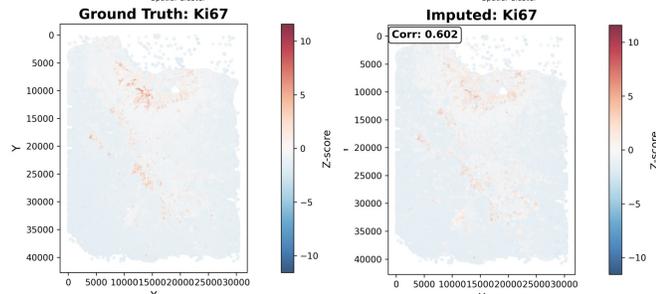
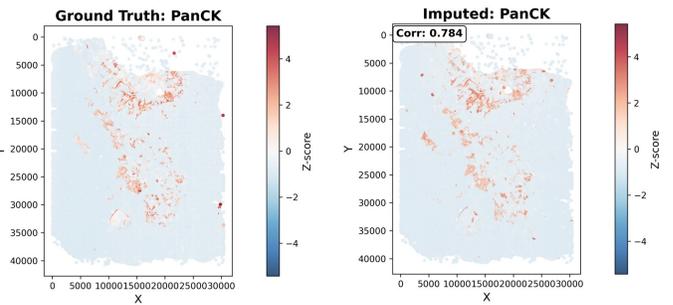
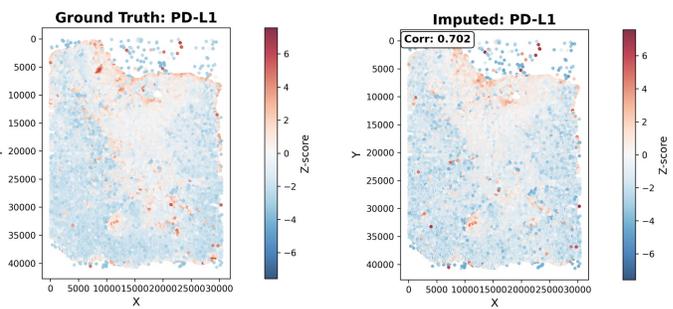
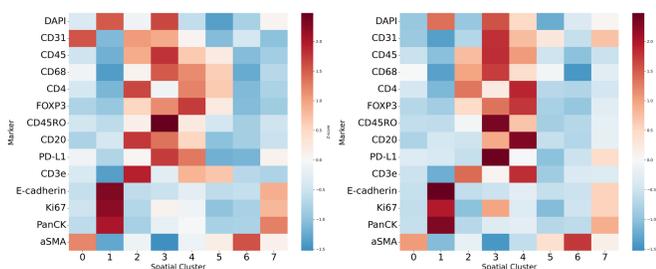
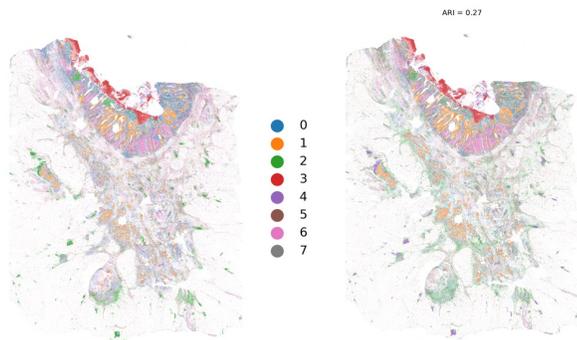


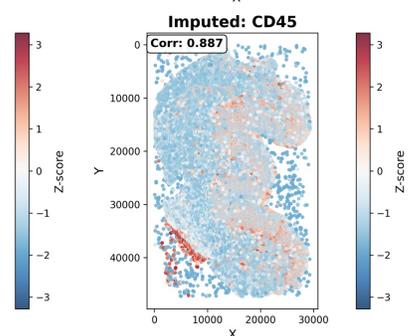
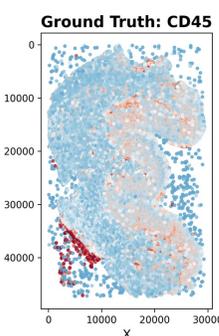
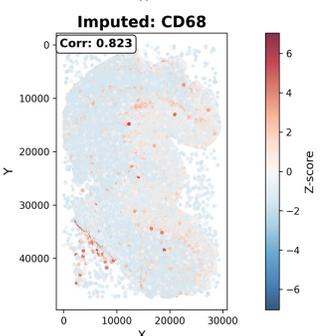
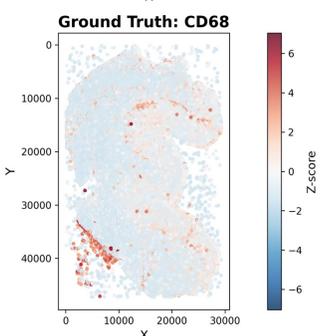
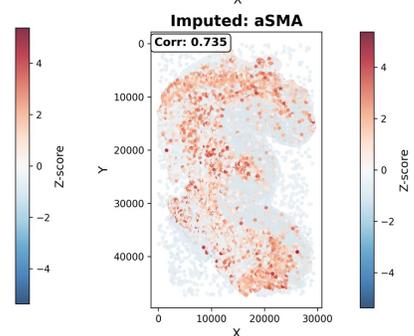
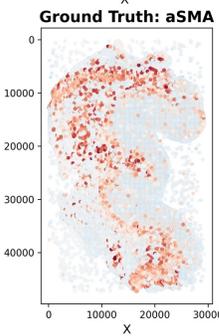
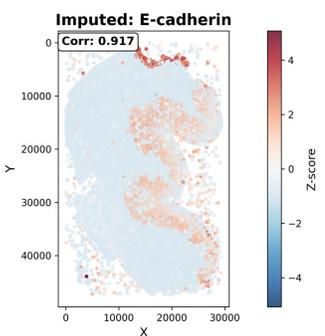
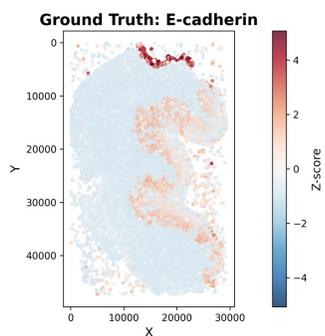
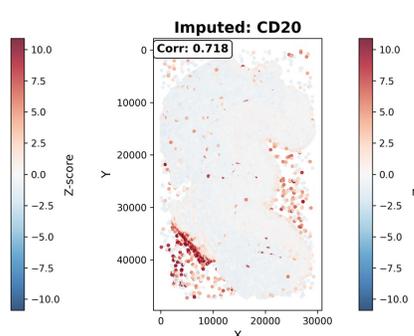
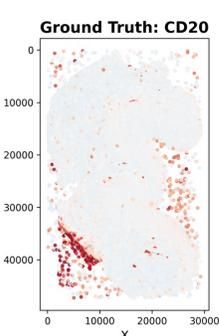
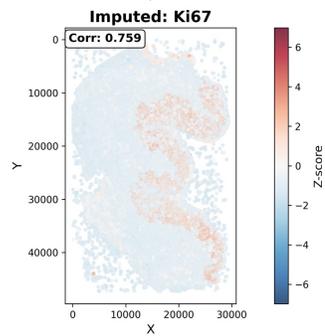
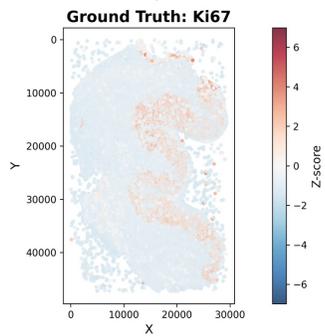
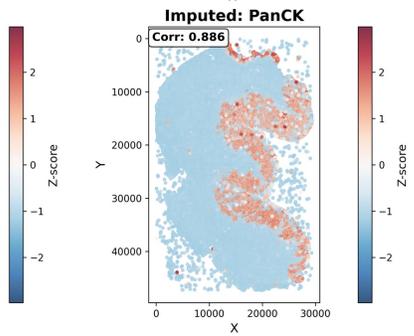
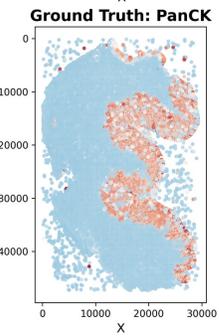
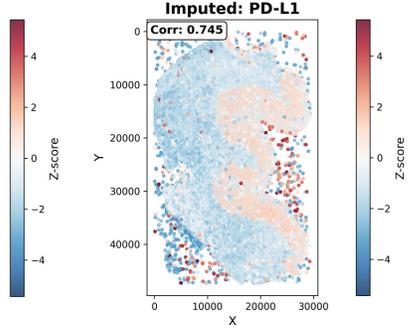
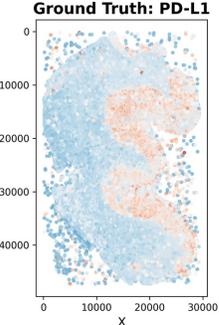
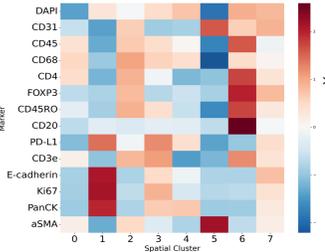
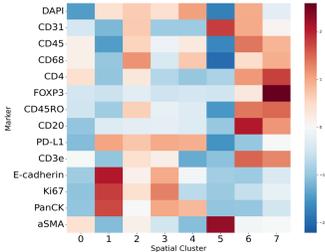
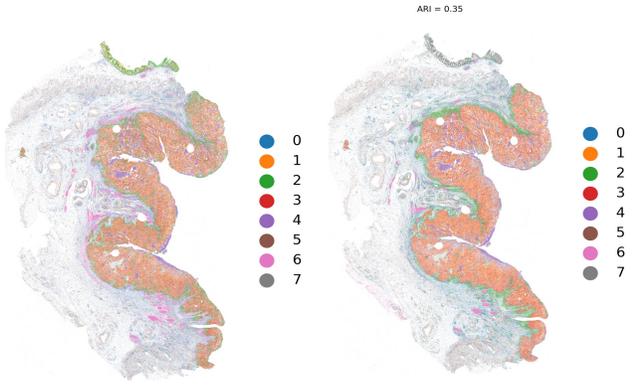
Ground Truth: CD45



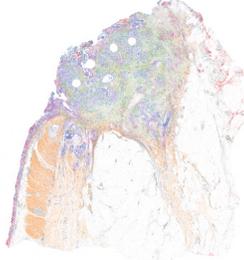
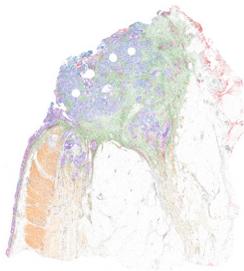
Imputed: CD45



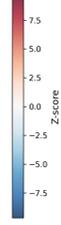
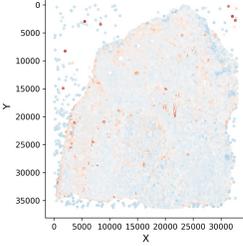




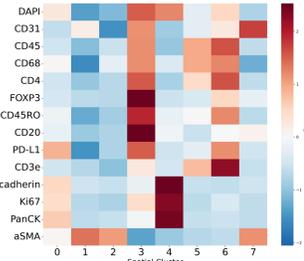
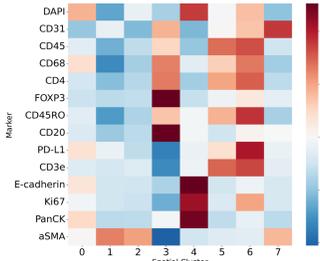
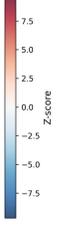
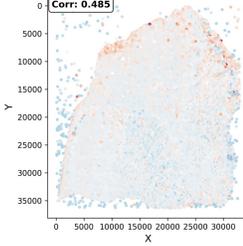
ARI = 0.35



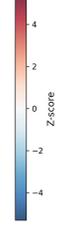
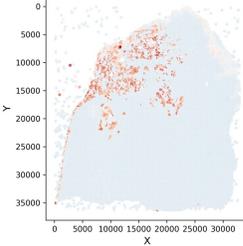
Ground Truth: PD-L1



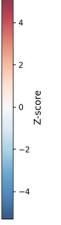
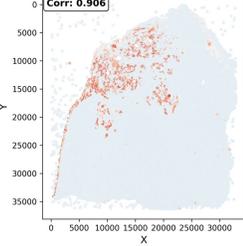
Imputed: PD-L1



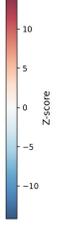
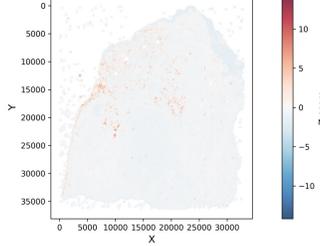
Ground Truth: PanCK



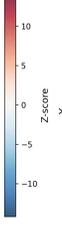
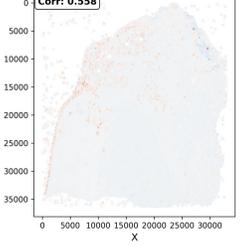
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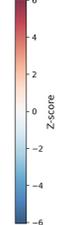
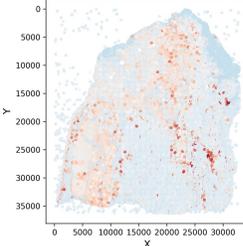
Ground Truth: Ki67



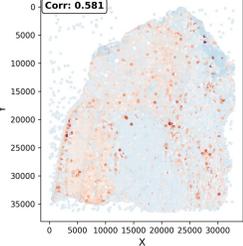
Imputed: Ki67



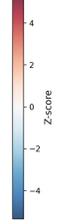
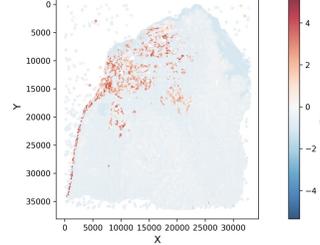
Ground Truth: aSMA



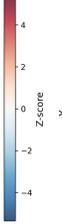
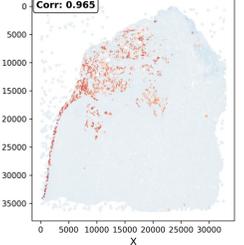
Imputed: aSMA



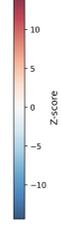
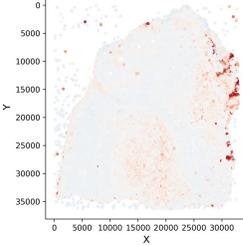
Ground Truth: E-cadherin



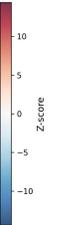
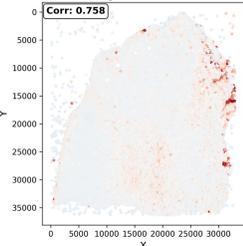
Imputed: E-cadherin



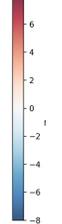
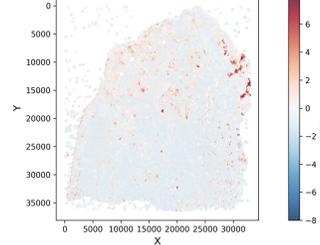
Ground Truth: CD20



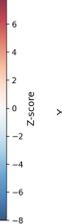
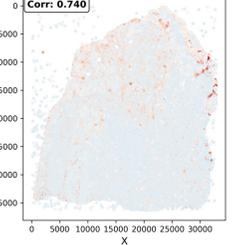
Imputed: CD20



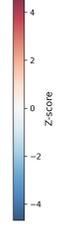
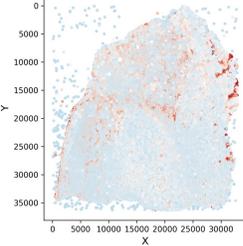
Ground Truth: CD68



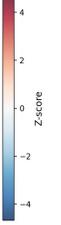
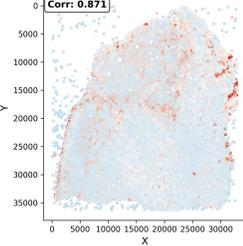
Imputed: CD68

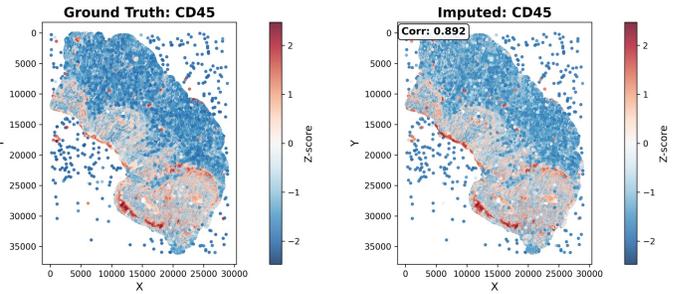
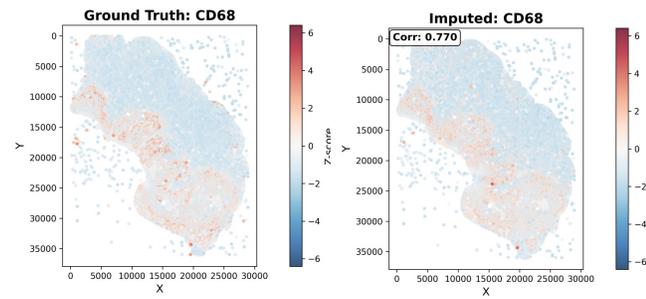
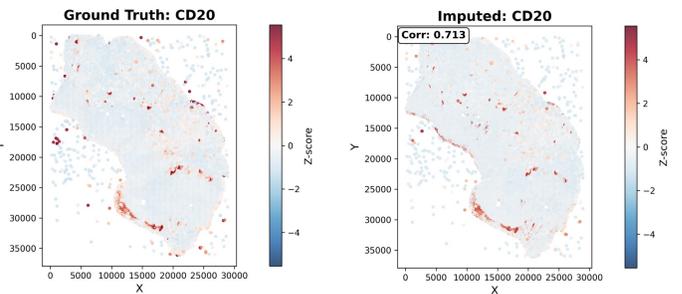
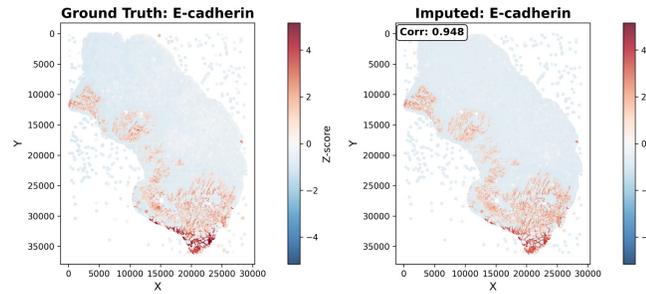
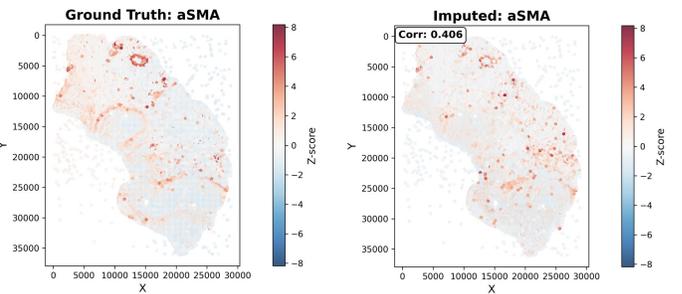
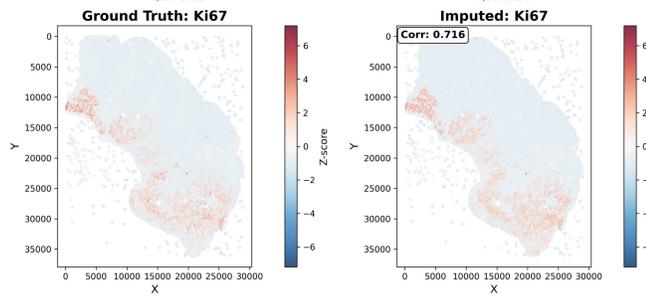
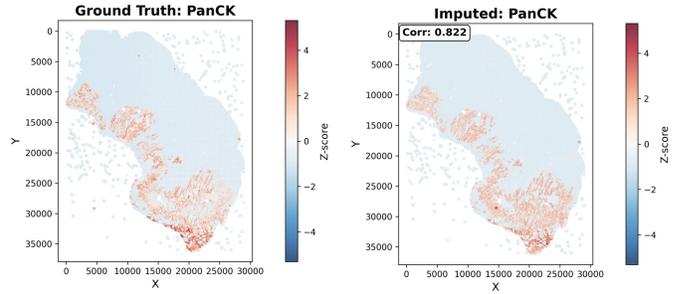
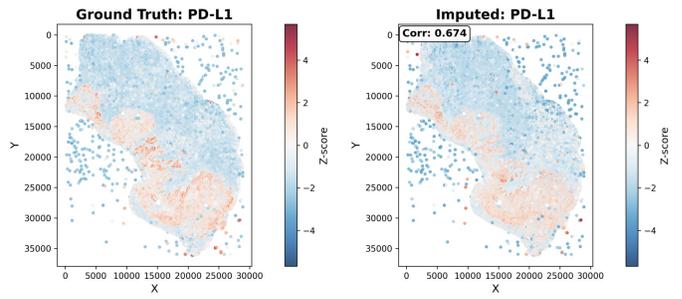
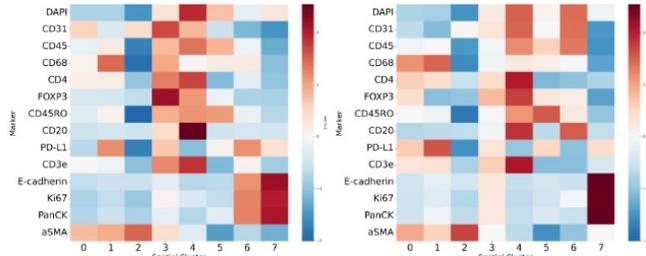
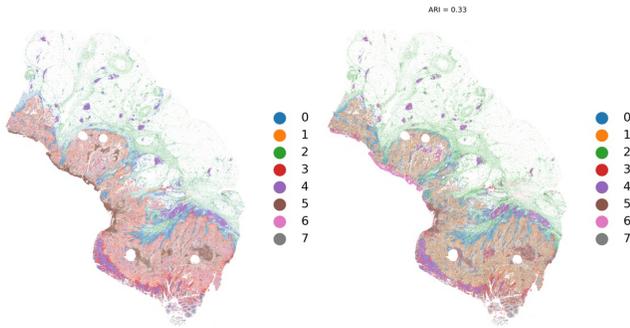


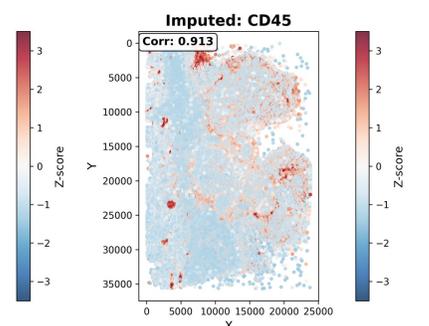
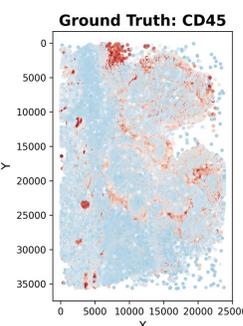
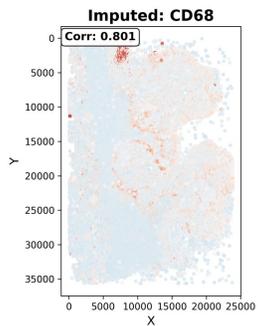
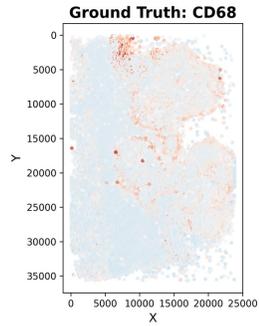
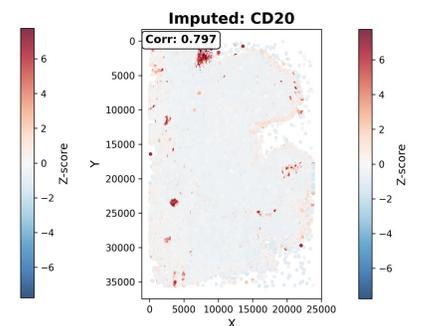
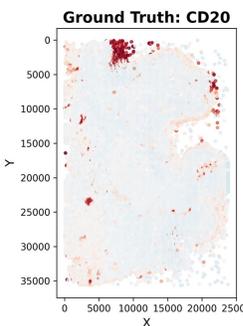
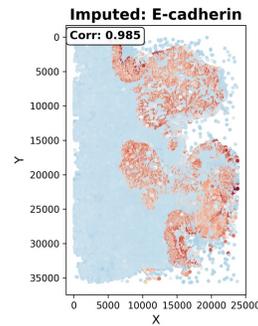
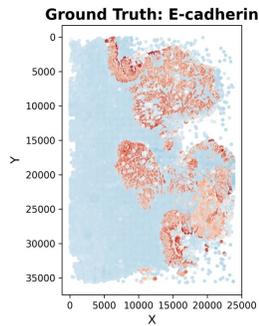
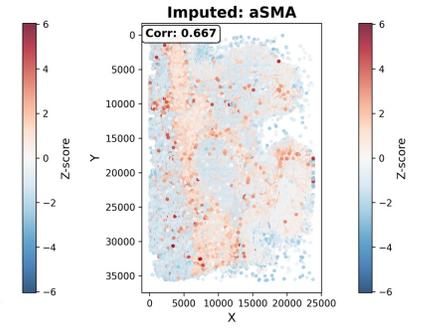
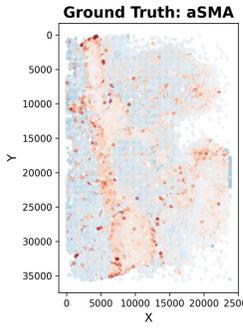
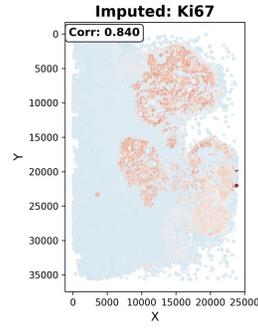
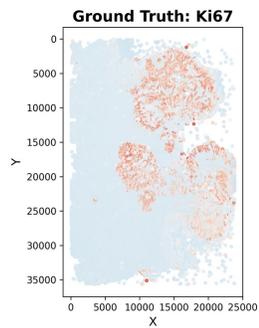
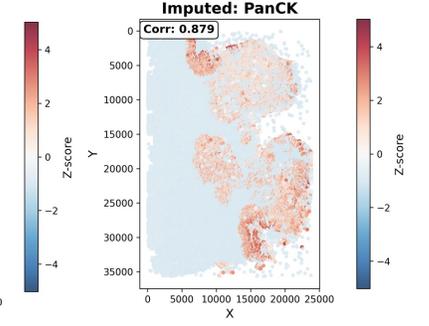
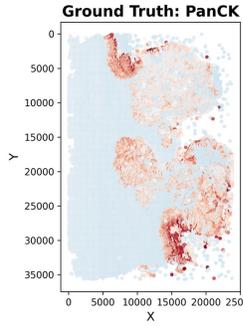
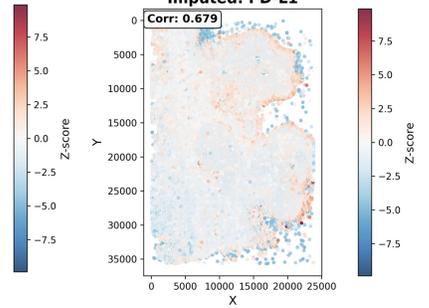
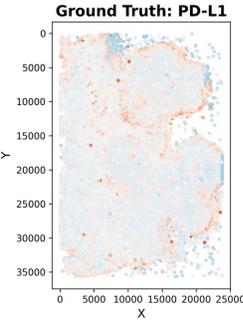
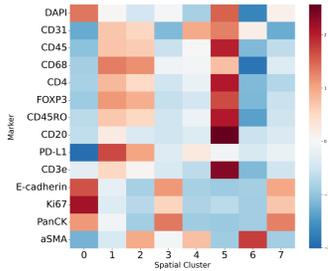
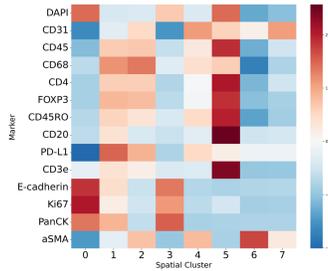
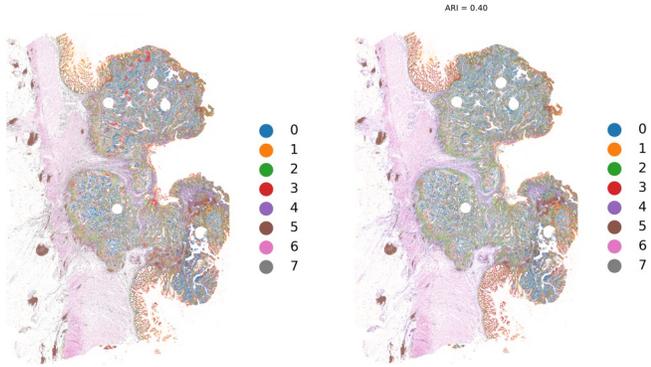
Ground Truth: CD45



Imputed: CD45

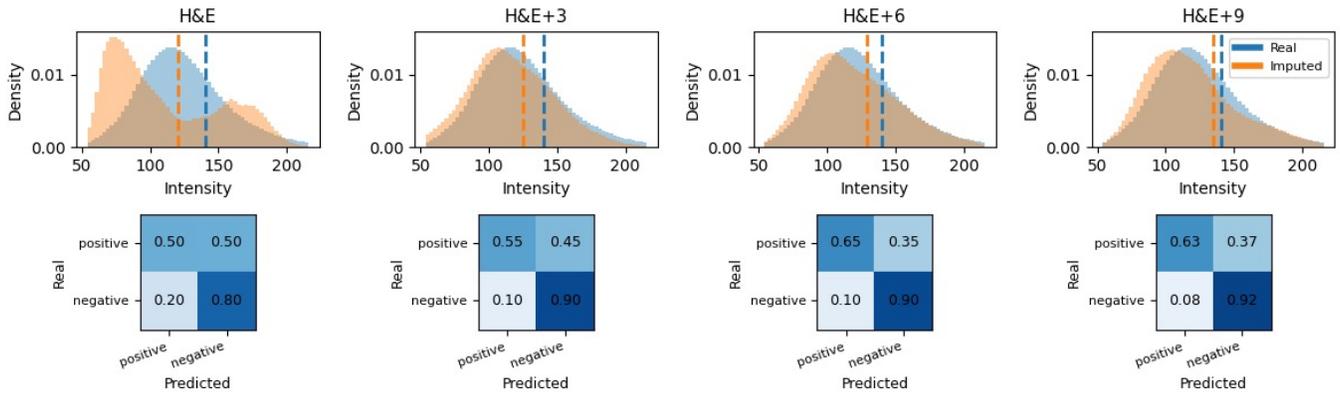




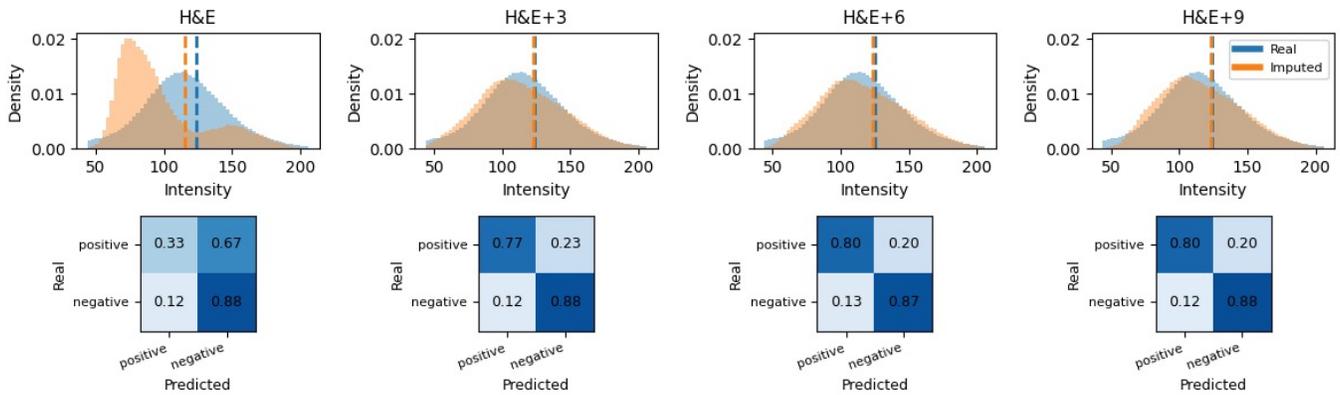


# Supplementary Figure 4

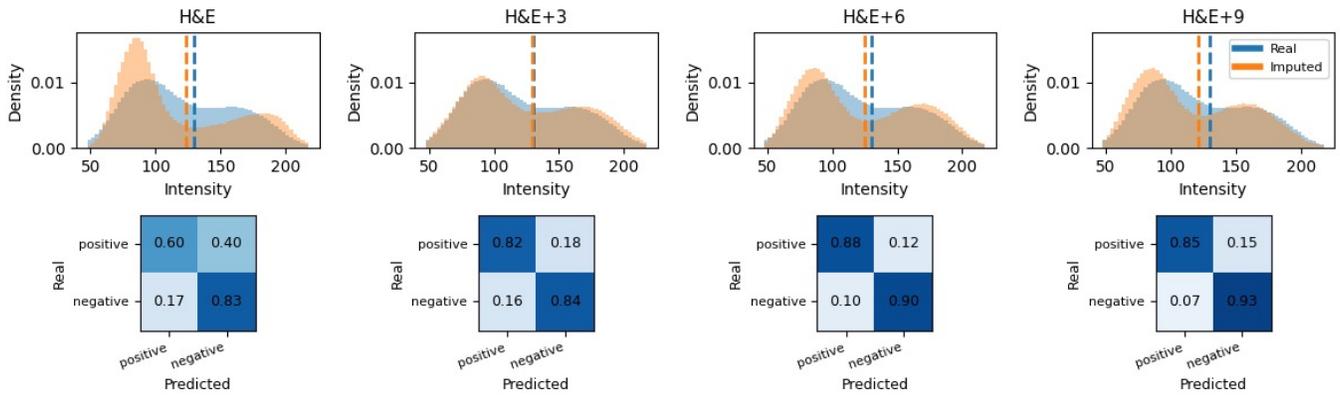
## ADAM10



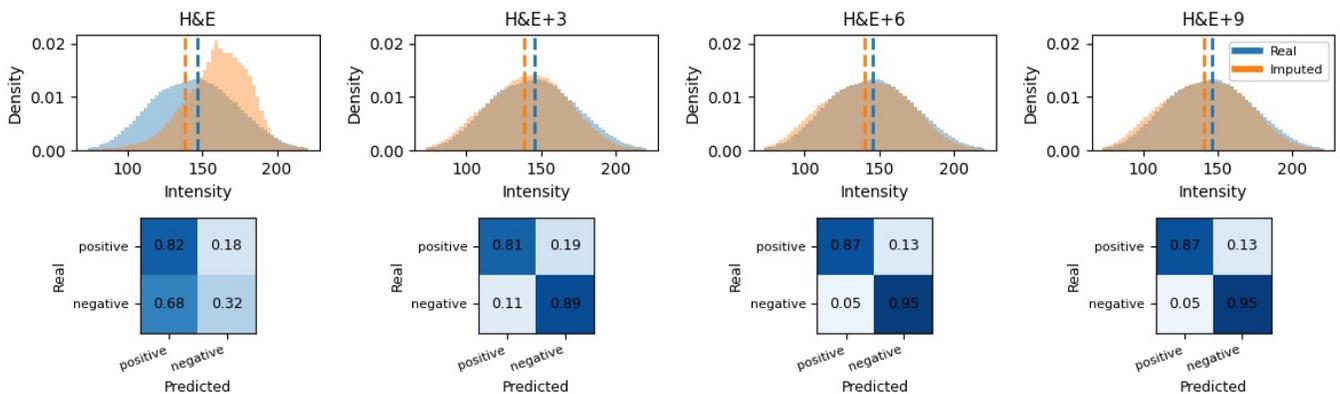
## AMACR



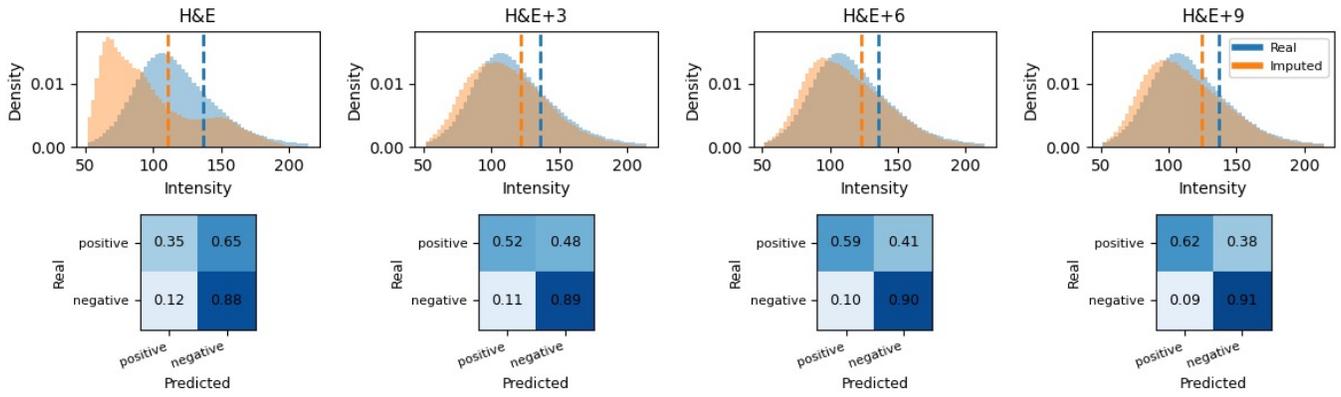
## AR



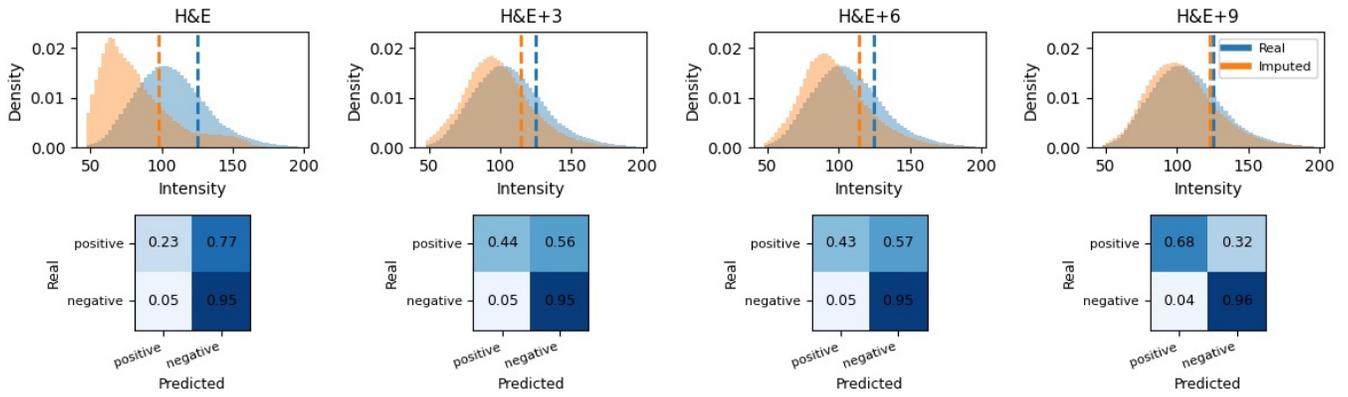
## B-catenin



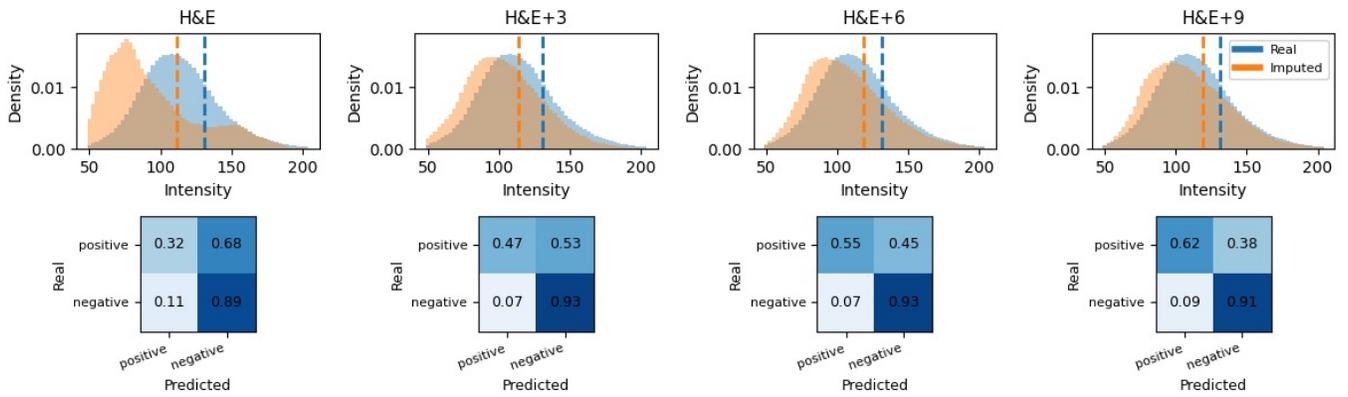
### CD11b



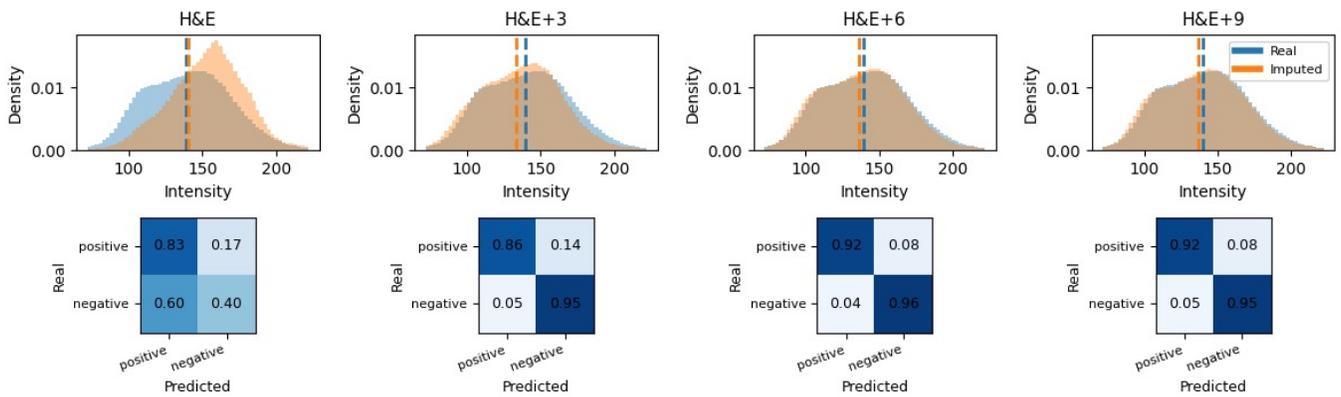
### CD11c



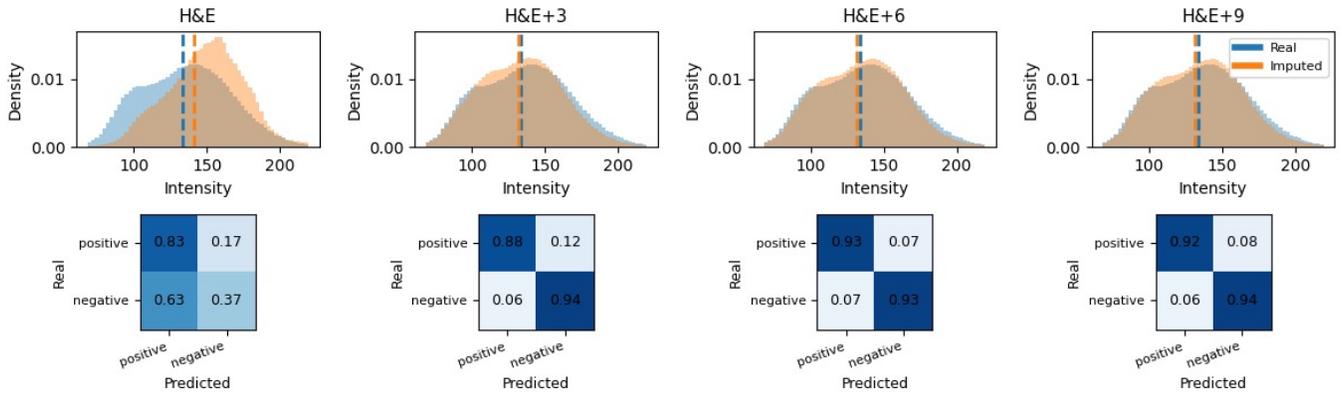
### CD163



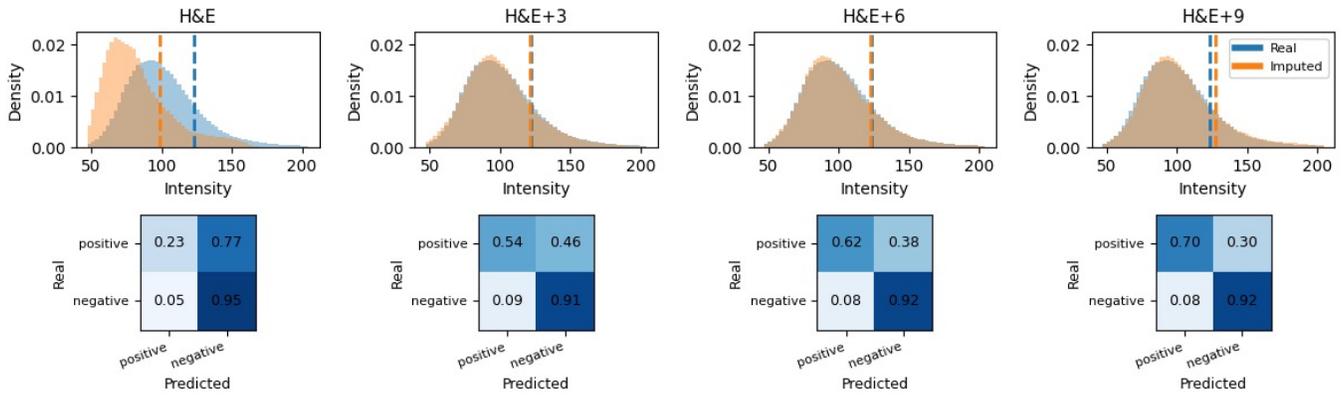
### CD20



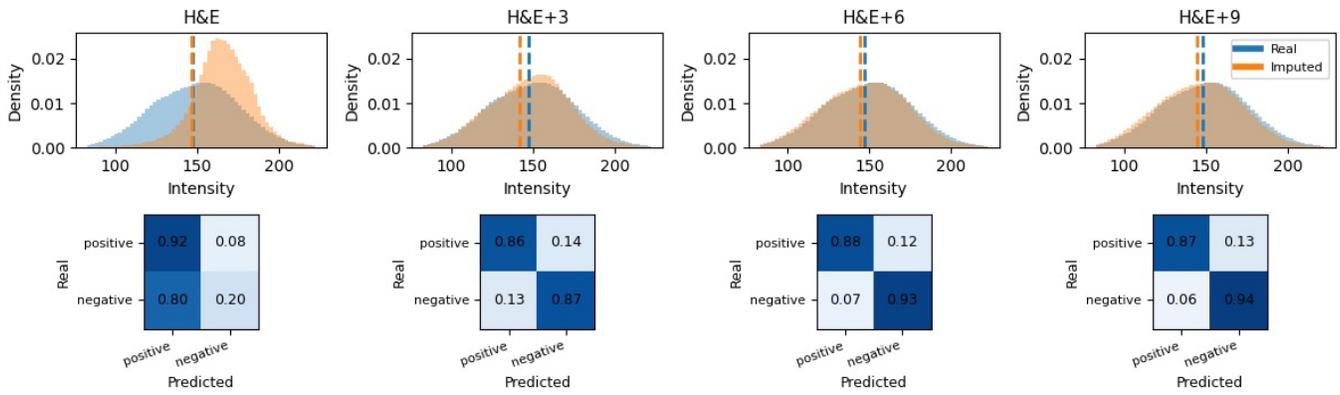
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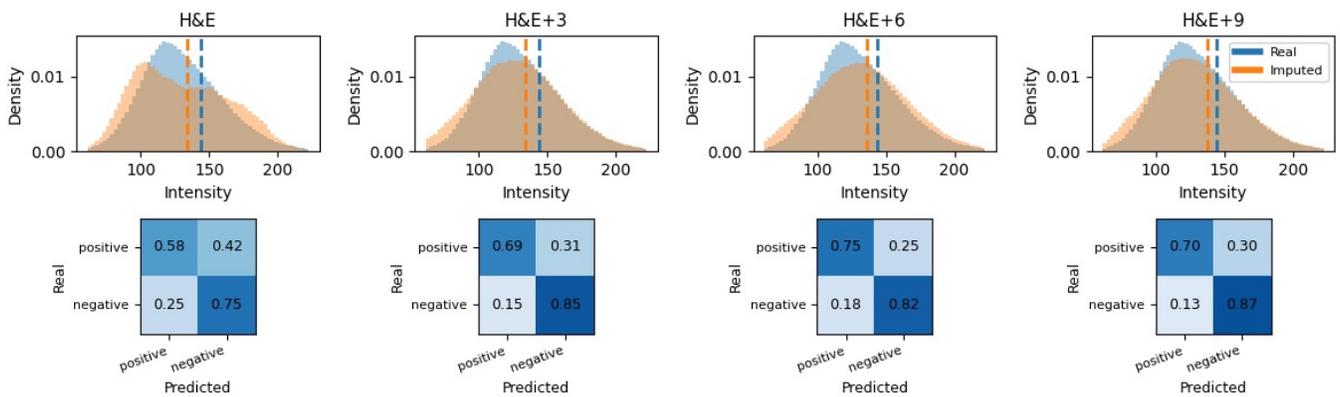
### CD31



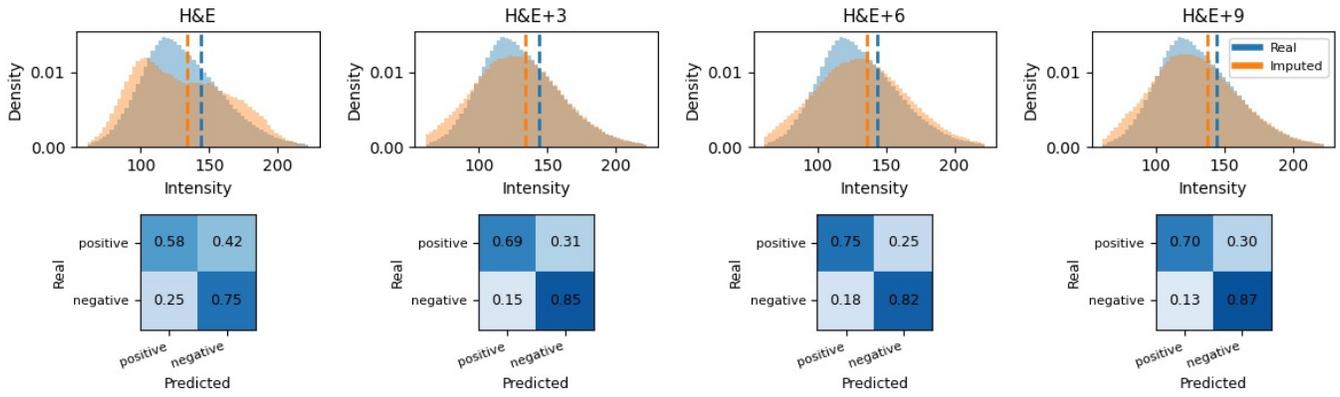
### FOXA1



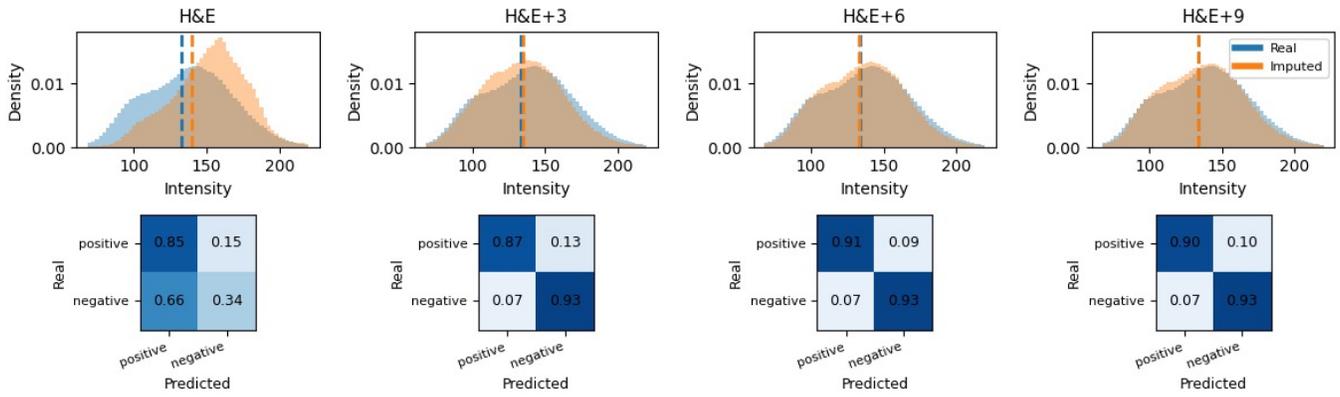
### CD44



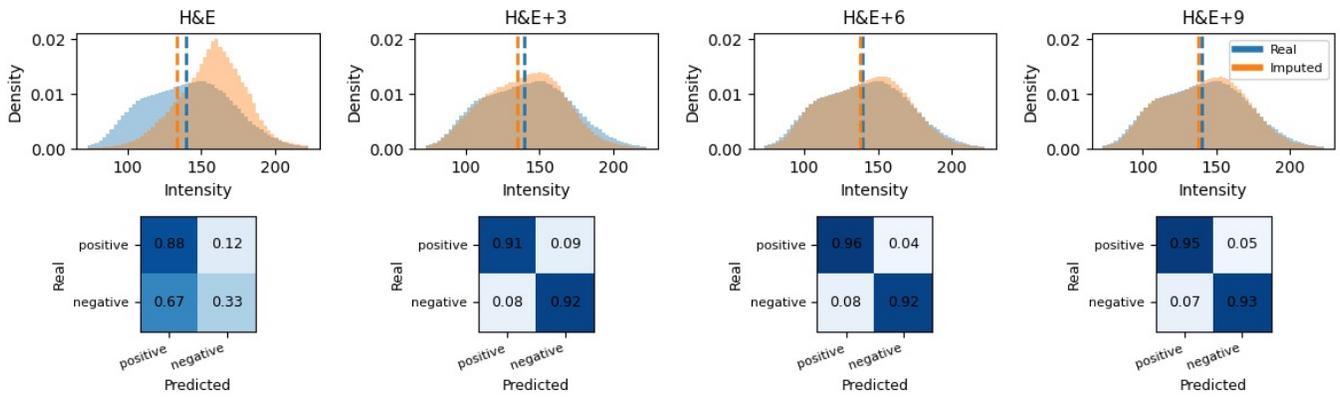
## CD44



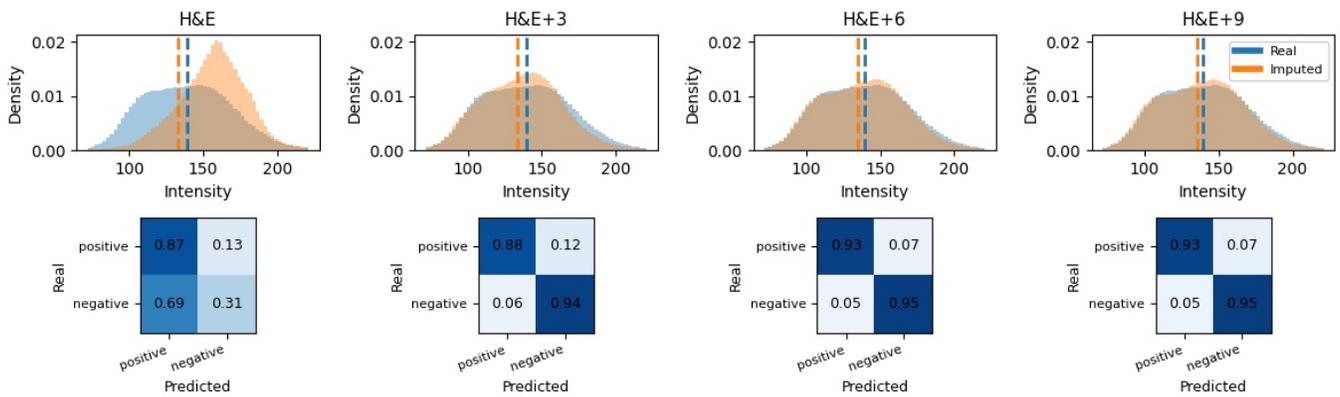
## CD45



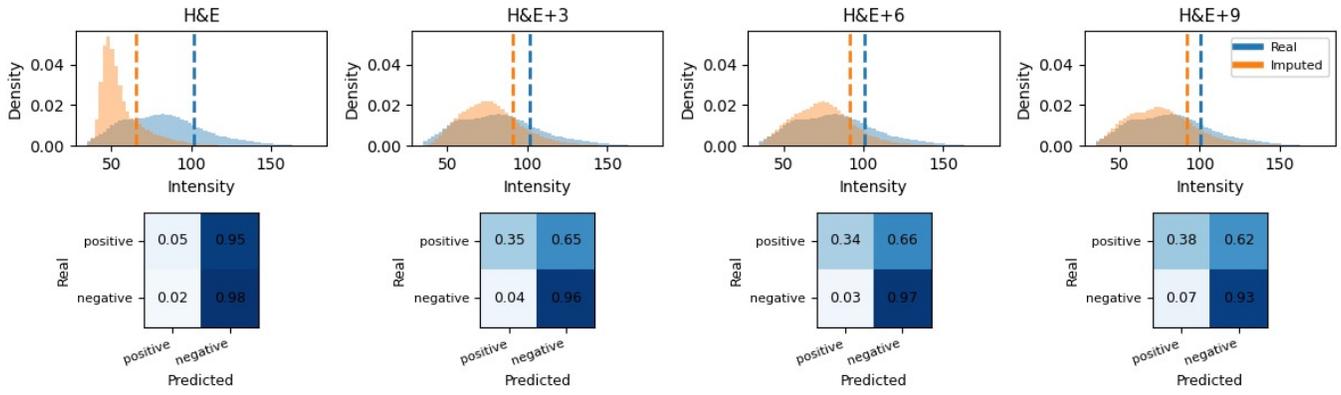
## CD56



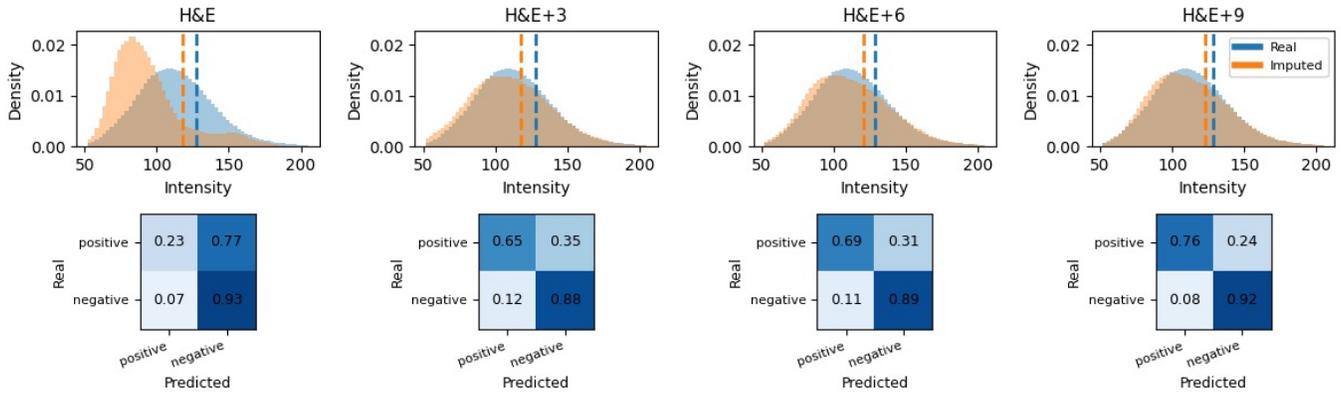
## CD8



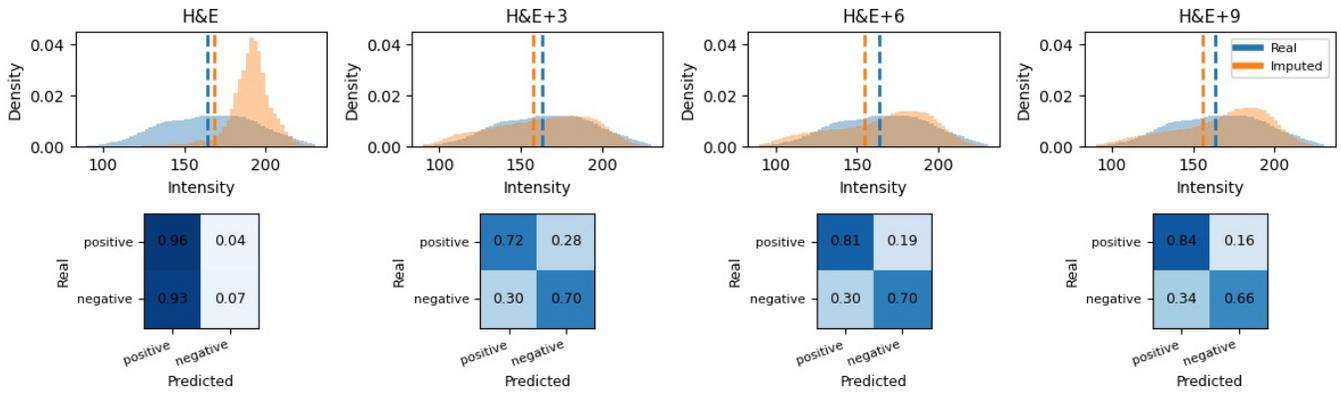
## CD90



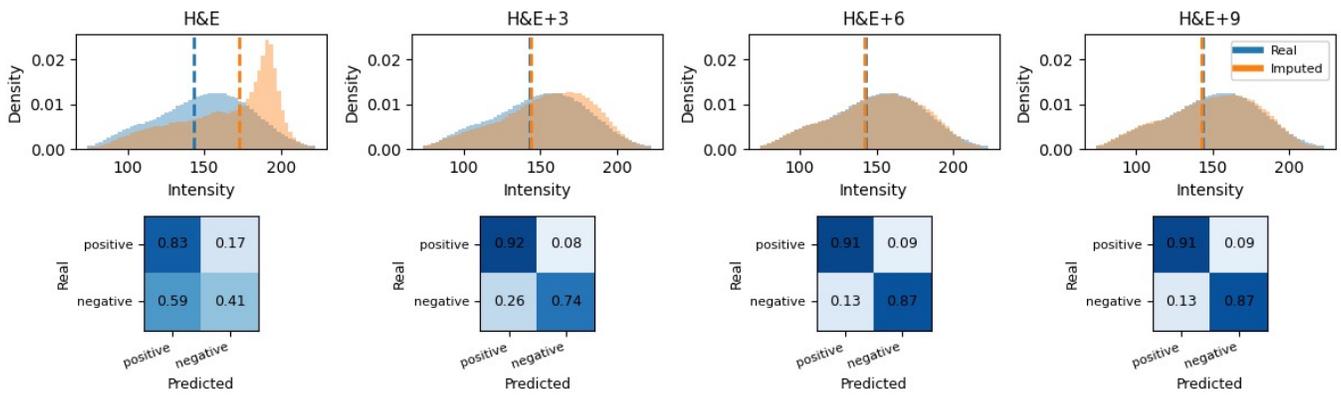
## ChromA



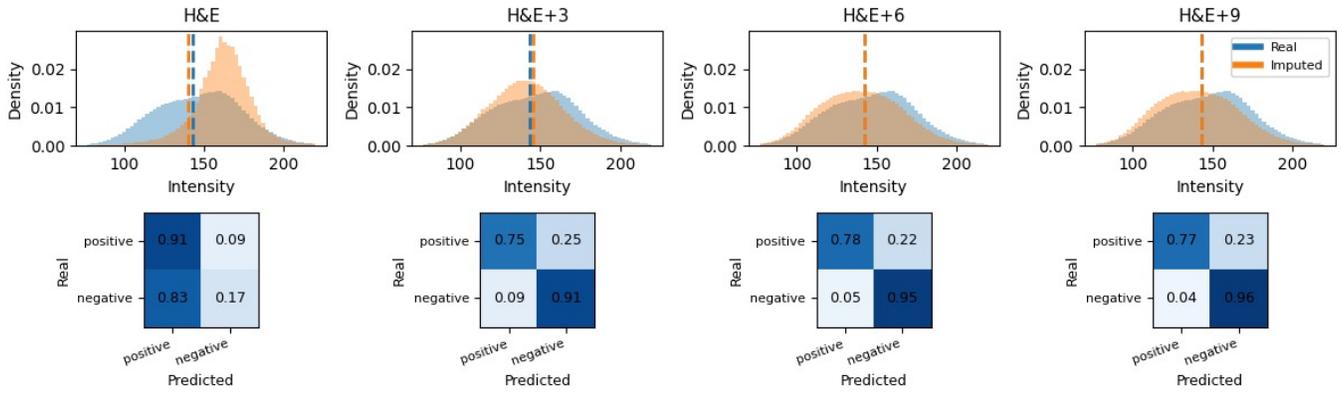
## DCX



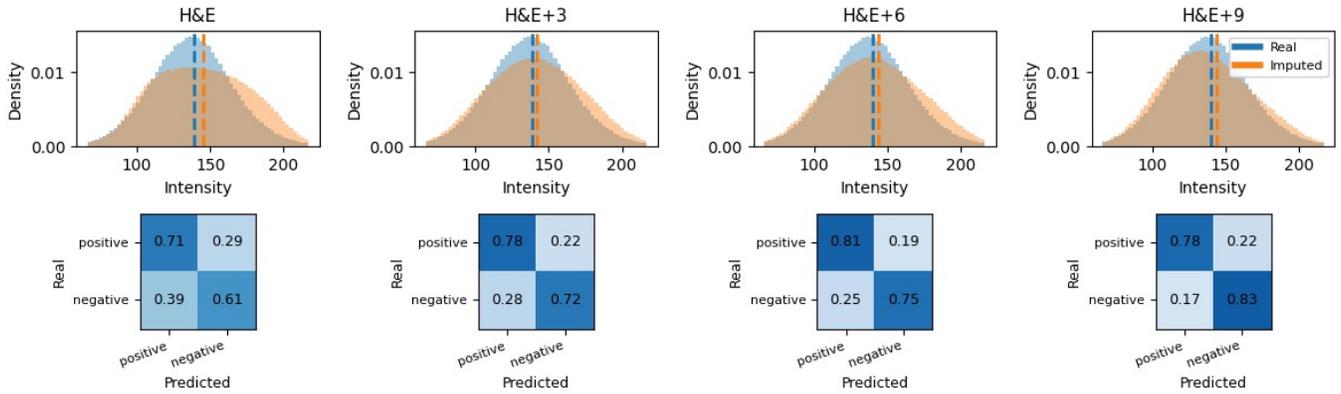
## Ecad



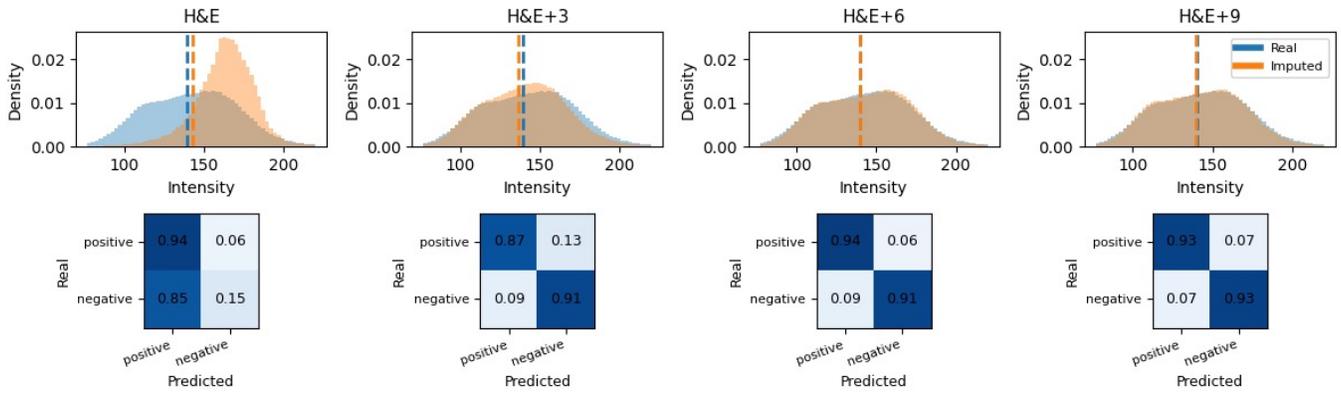
## H3K27ac



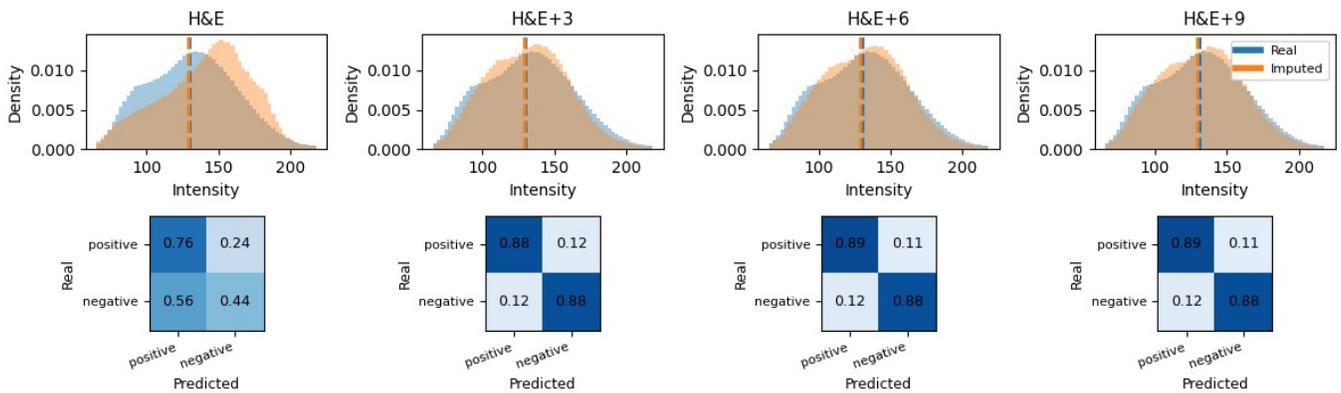
## H3K4



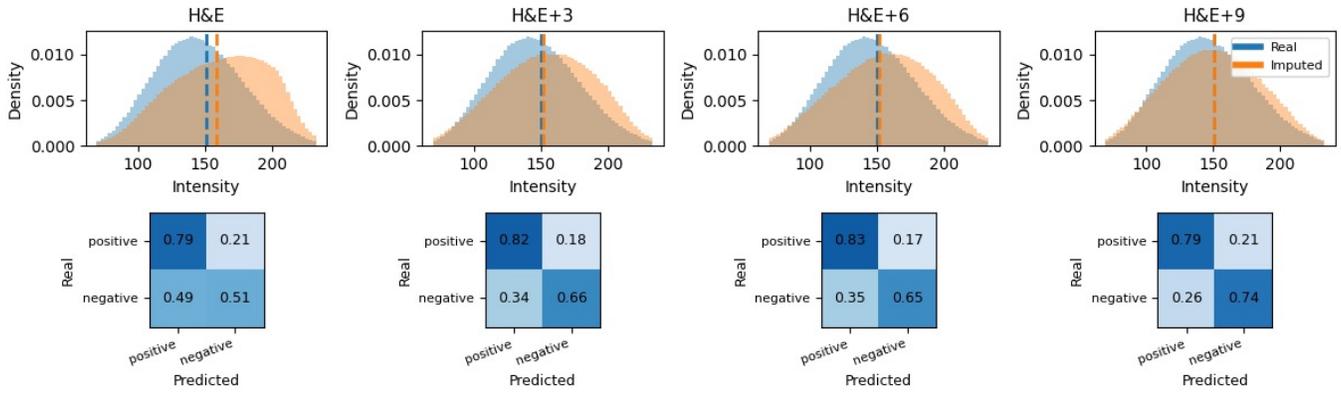
## HIF-1



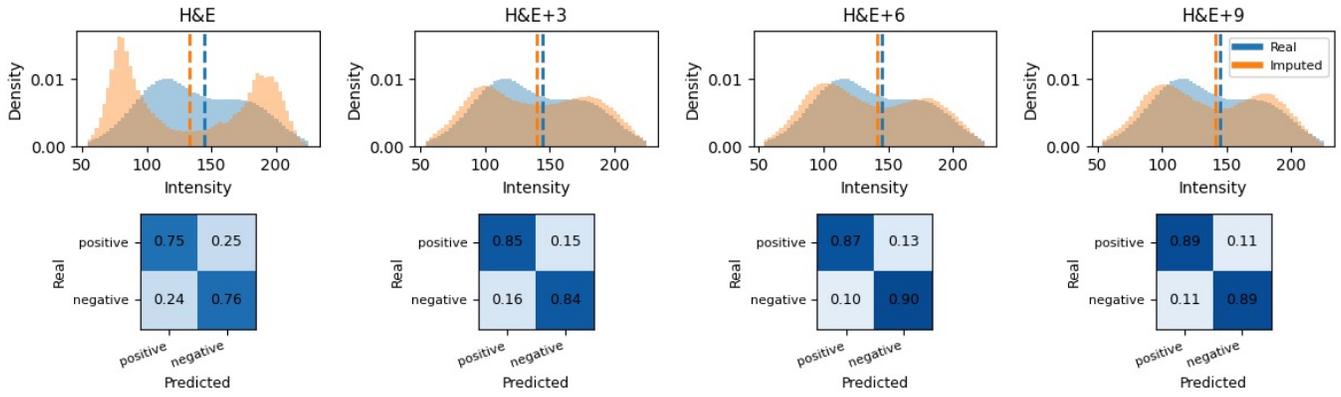
## HLA-DR



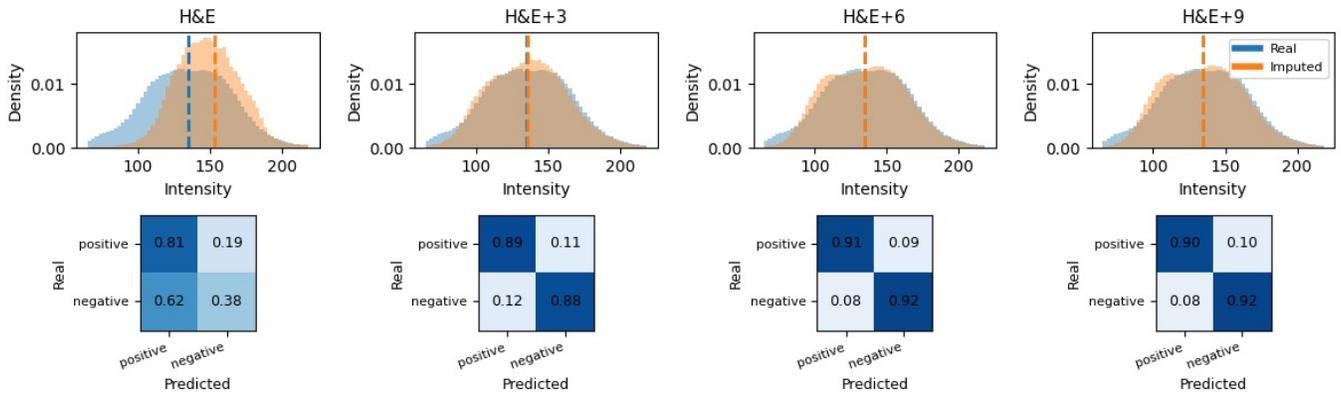
## Ki67



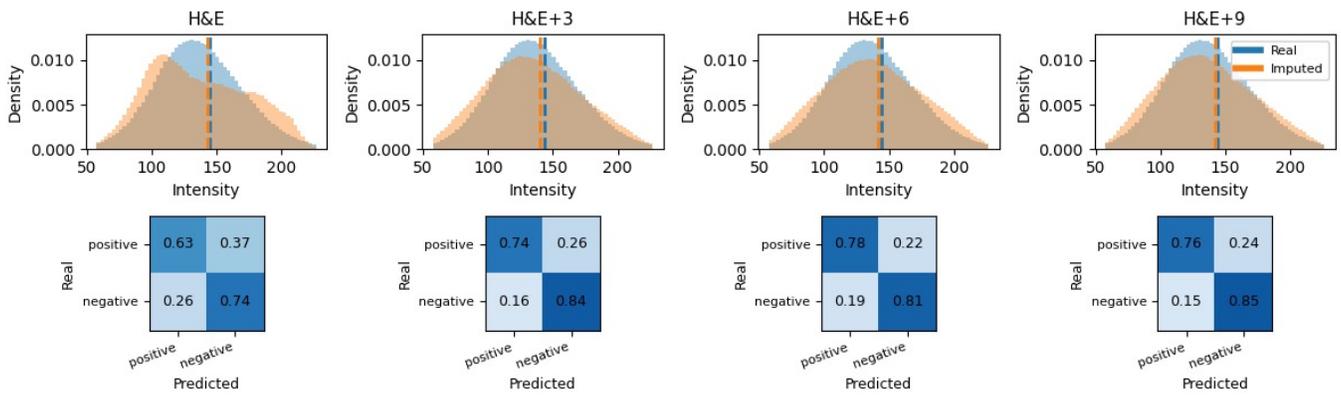
## NFKB



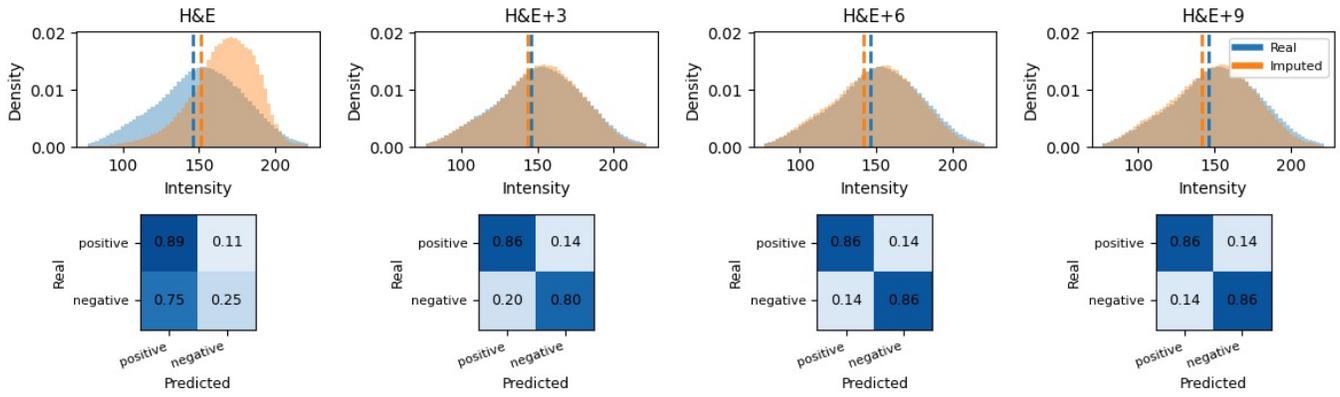
## NLGN4X



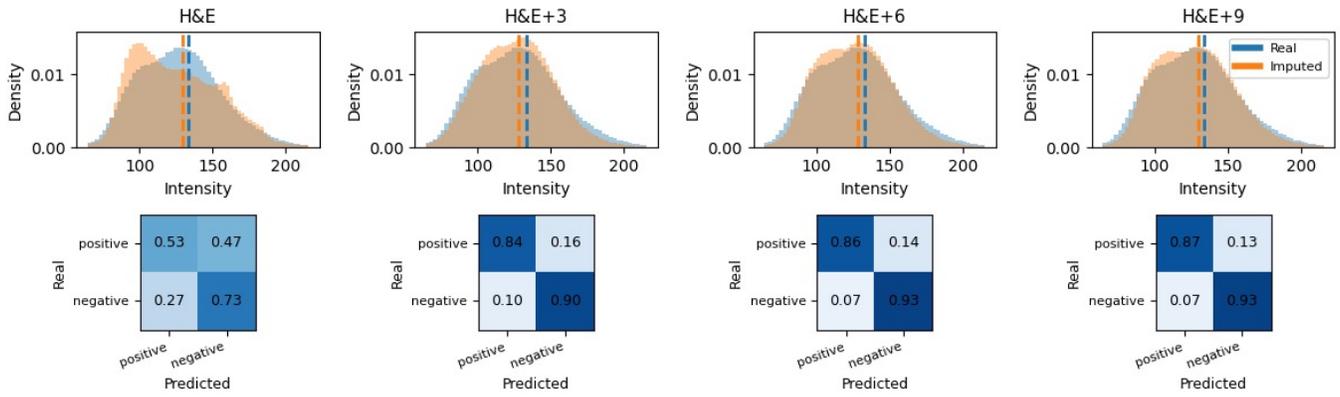
## NRXN1



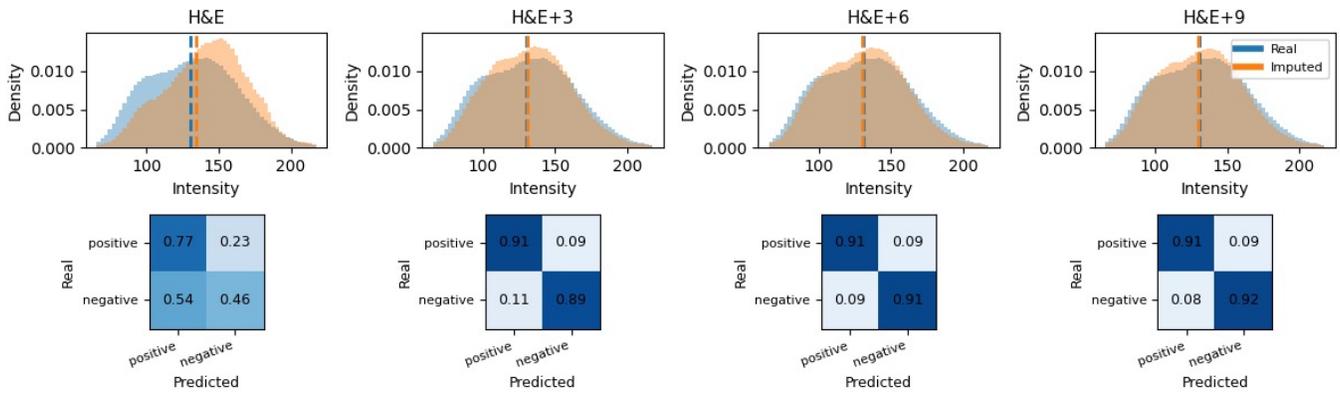
## TOMM20



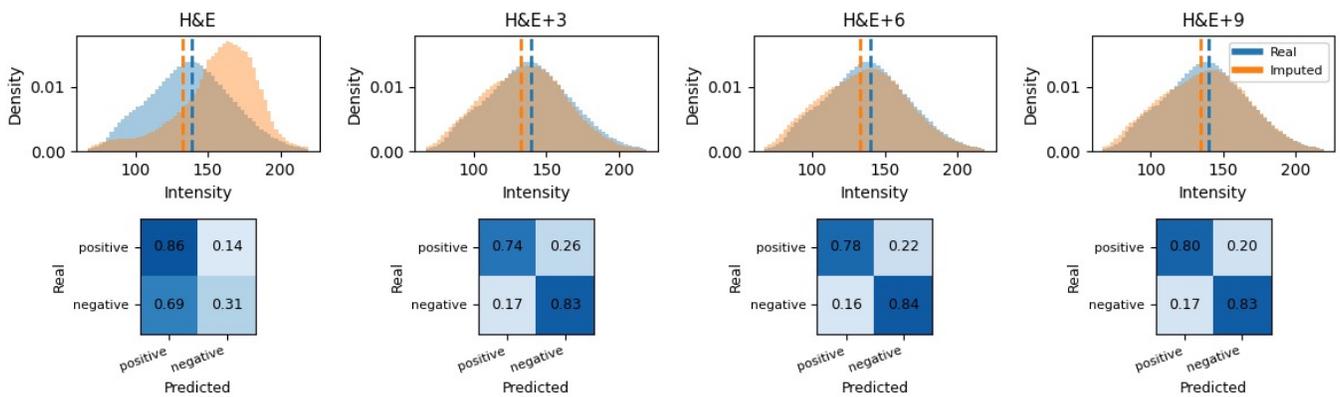
## TRYP



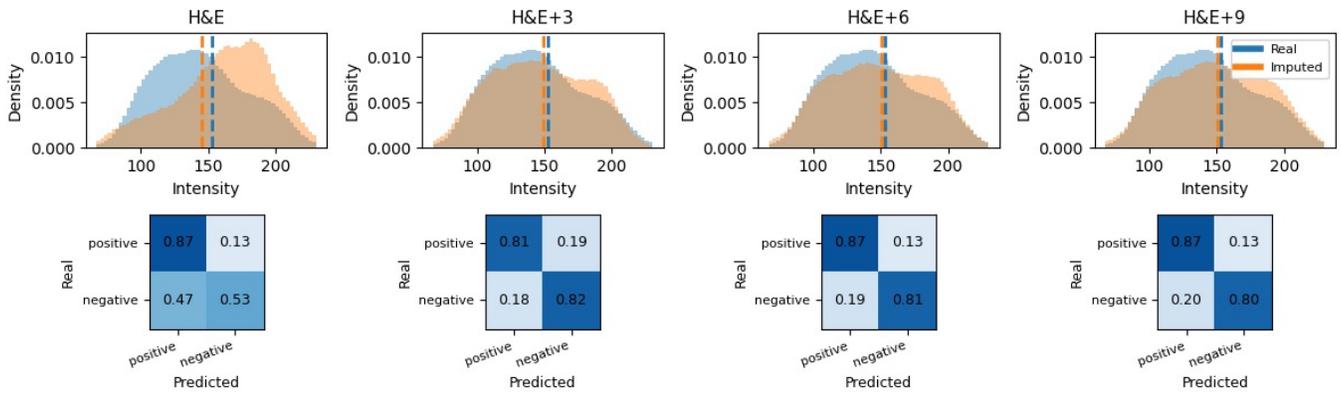
## TUBB3



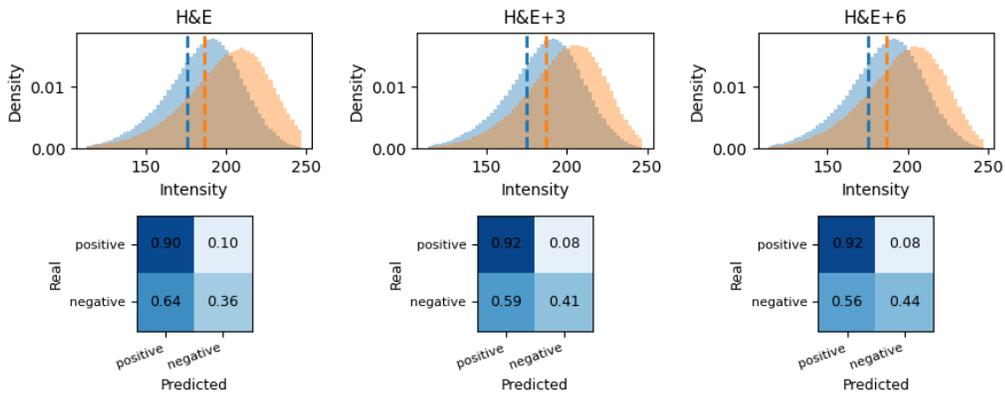
## VIM



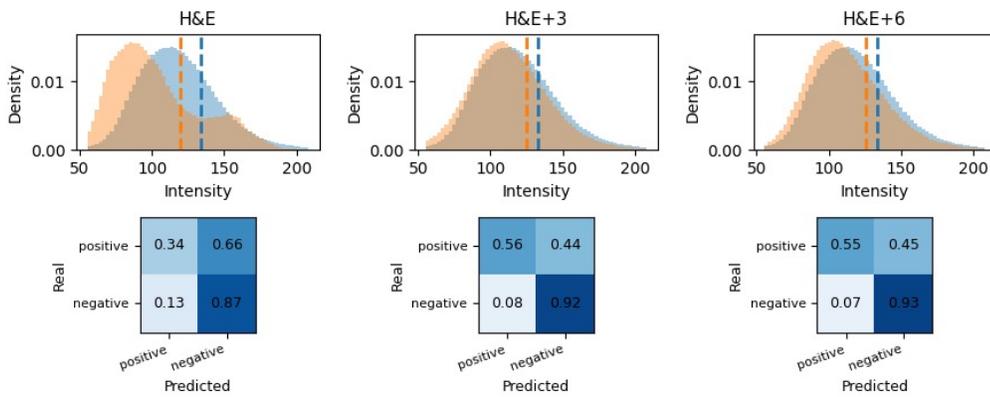
## aSMA



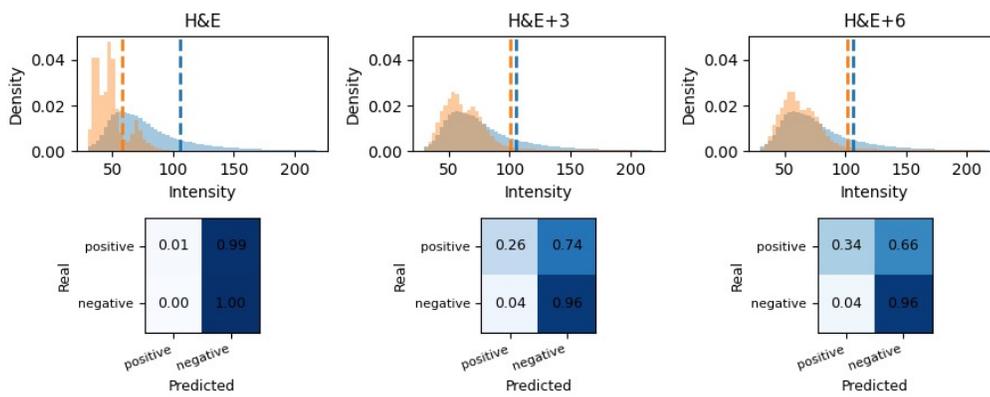
## DAPI



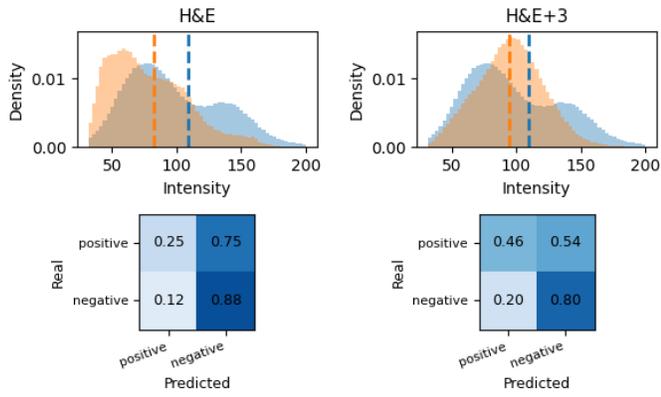
## CD4



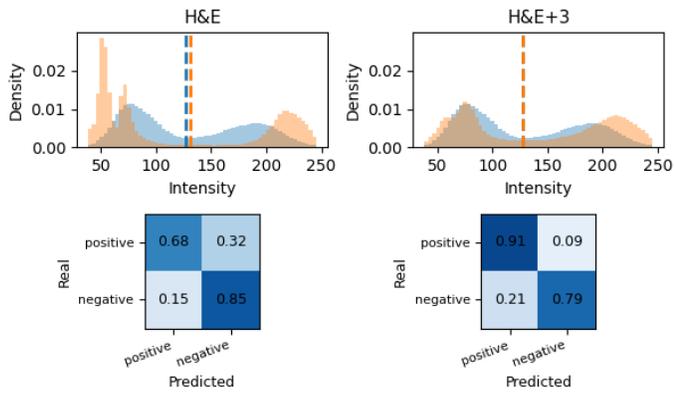
## CK5



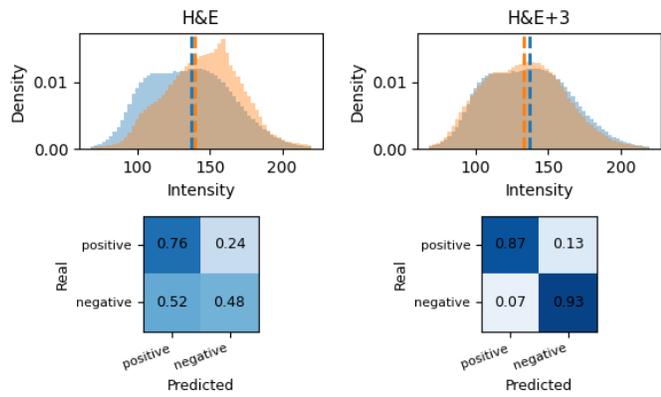
## GZMB



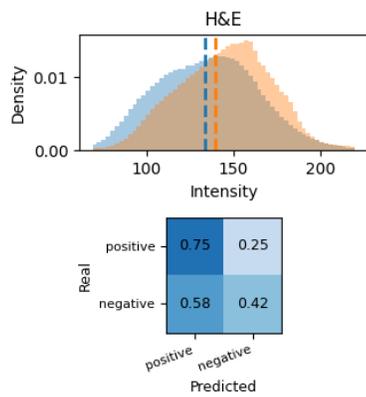
## CK8



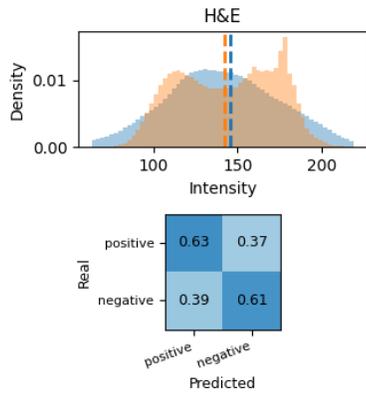
## NLGN1



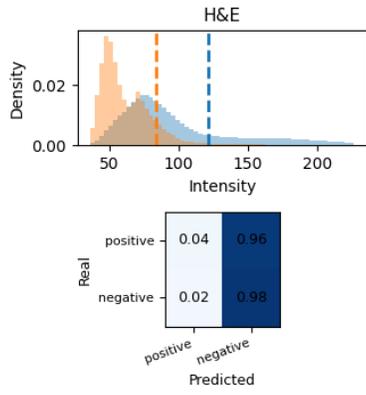
## CD68



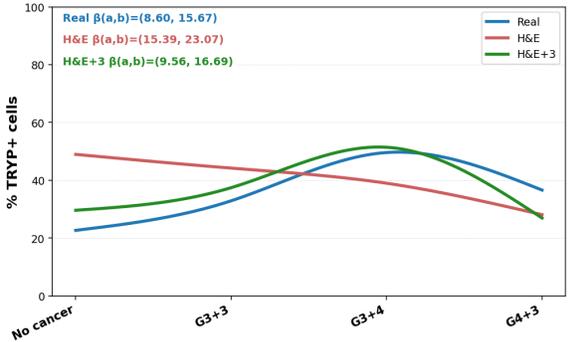
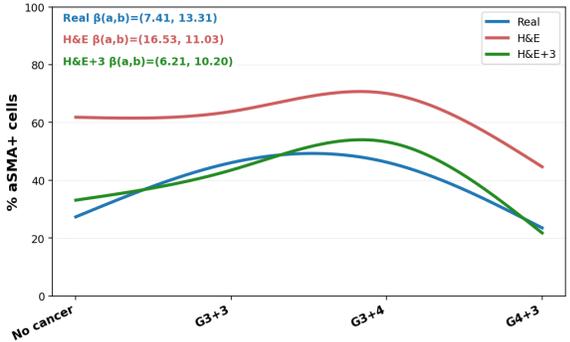
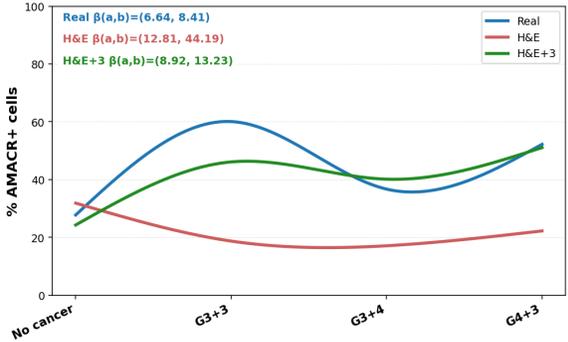
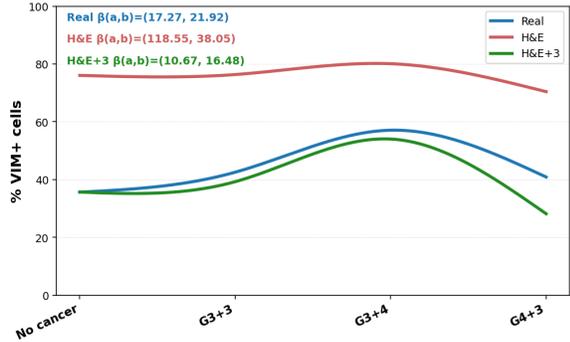
**TH**



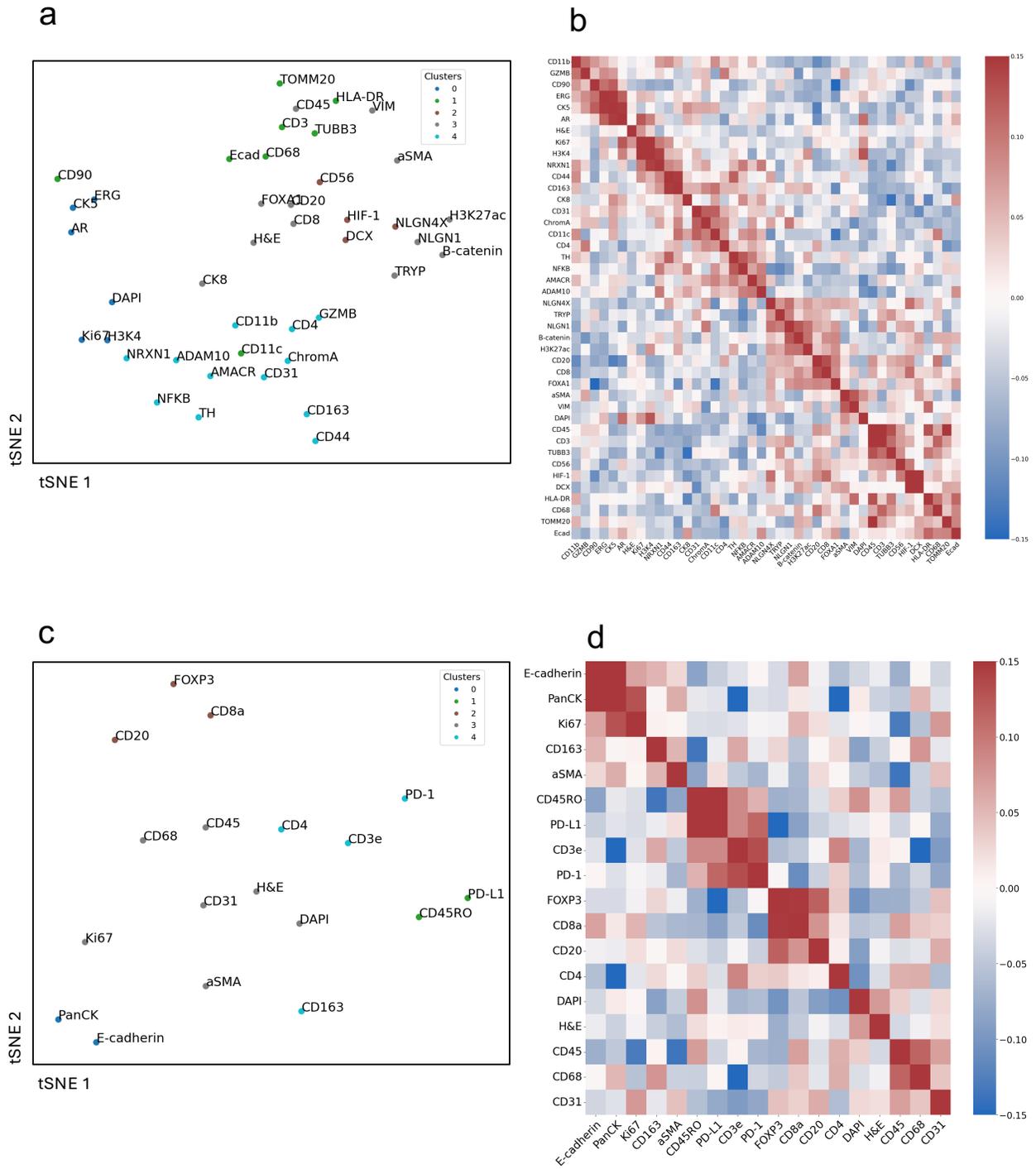
**ERG**



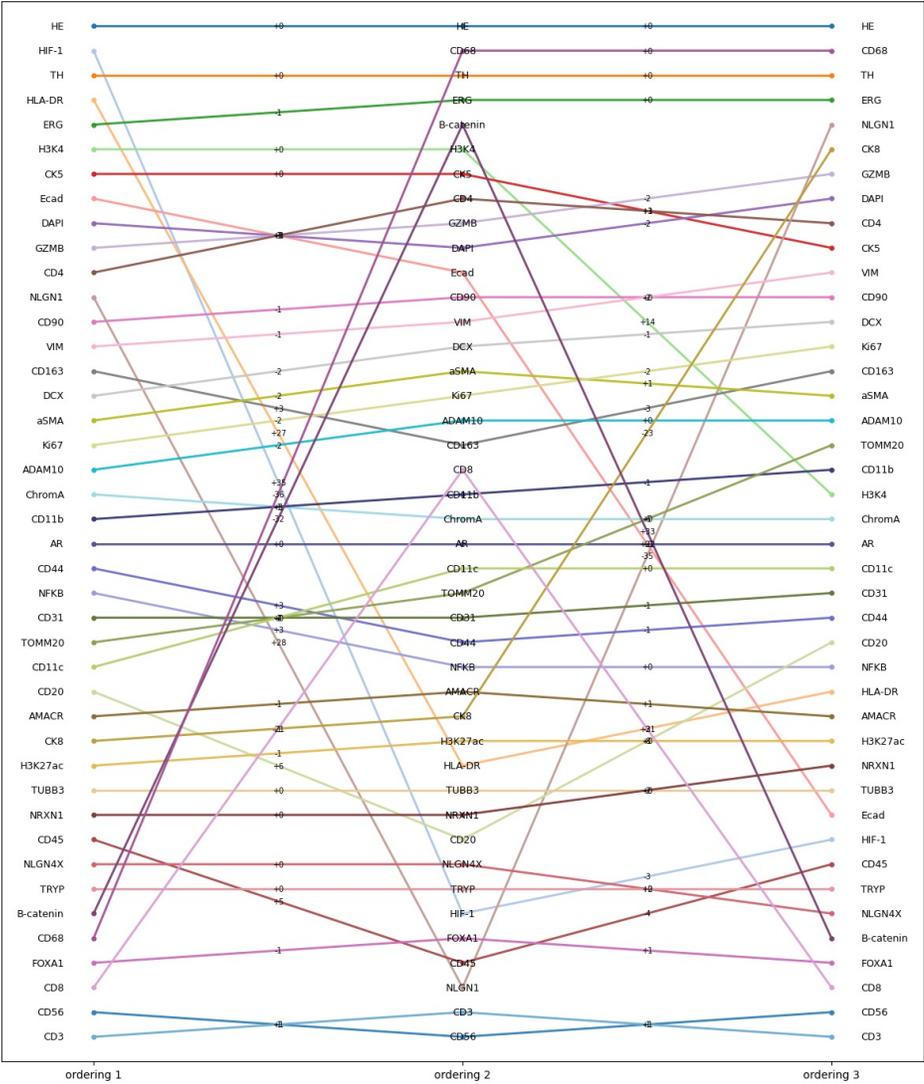
# Supplementary Figure 5



# Supplementary Figure 6



# Supplementary Figure 7



# Supplementary Table 1

Model	Spearman	SSIM
IF-256	0.98	0.77
IF-1024	0.95	0.82
IF-HE-1024	0.98	0.8
IF-HE-256	0.98	0.78
IF-HE-256,256	0.96	0.87
IF-HE-128,256	0.94	0.84
IF-HE-128,128	0.52	0.78

CHANNEL WISE SPEARMAN																				
Model	DAPI	CD31	CD45	CD68	CD4	FOXP3	CD8A	CD45RO	CD20	PD-L1	CD3e	CD163	E-Cadherin	PD-1	Ki67	PanCK	αSMA	E	H	Average
IF HE 256,256	0.8949	0.9947	0.9220	0.9715	0.9929	0.9813	0.9863	0.9963	0.9937	0.9970	0.9932	0.9895	0.9015	0.9941	0.9896	0.7037	0.9714	0.9714	0.9772	0.97
IF HE 128, 256	0.9609	0.9884	0.9835	0.9797	0.9859	0.9770	0.9757	0.9910	0.9838	0.9903	0.9876	0.9891	0.7695	0.9895	0.9862	0.6945	0.9574	0.9553	0.8050	0.94
IF HE 128,128	0.0388	0.0588	0.6588	0.5388	0.0892	0.492	0.9892	0.715	0.1584	0.9888	0.5693	0.8222	0.6470	0.5126	0.9823	0.1584	0.9892	0.1745	0.2735	0.52