

## Electronic supplementary information (ESI)

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<i>Patient</i>	$\bar{f} \pm \sigma$			
	<i>KM</i>	<i>MC</i>	<i>GKA</i>	<i>GABC</i>
#6	10.2551 $\pm$ 0.4134	<b>9.8608</b> $\pm$ 0.0198	9.886 $\pm$ 0.0123	11.2873 $\pm$ 0.4531
#7	4.3107 $\pm$ 0.0521	<b>4.226</b> $\pm$ 0.0001	4.2282 $\pm$ 0.0027	4.8626 $\pm$ 0.1131
#8	7.4039 $\pm$ 0.2042	<b>7.1419</b> $\pm$ 0.00003	7.1425 $\pm$ 0.0006	8.1197 $\pm$ 0.1988
#9	12.9793 $\pm$ 0.2487	<b>12.7084</b> $\pm$ 0.0001	12.7099 $\pm$ 0.0013	14.5747 $\pm$ 0.6804
#10	8.4715 $\pm$ 0.0795	<b>8.3419</b> $\pm$ 0.0047	8.3488 $\pm$ 0.0189	9.3445 $\pm$ 0.1793
#11	18.9947 $\pm$ 0.489	<b>18.2972</b> $\pm$ 0.0097	18.3225 $\pm$ 0.0215	21.5243 $\pm$ 0.5589
#12	6.2882 $\pm$ 0.1504	<b>6.0691</b> $\pm$ 0.005	6.0723 $\pm$ 0.0001	7.3884 $\pm$ 0.365
#13	7.6362 $\pm$ 0.0824	<b>7.558</b> $\pm$ 0.00004	7.558 $\pm$ 0.00003	8.7269 $\pm$ 0.2127
#14	21.8311 $\pm$ 0.1574	<b>21.6353</b> $\pm$ 0.0002	21.6363 $\pm$ 0.0009	25.12 $\pm$ 0.755
#15	6.1889 $\pm$ 0.1068	<b>6.0319</b> $\pm$ 0.0008	6.0329 $\pm$ 0.0016	6.8544 $\pm$ 0.2361

Table S1: Mean  $\bar{f}$  and standard deviation  $\sigma$  of the partition quality measures computed over 100 replicates for KM, and 10 for MC, GKA and GABC. For each patient, bold values represent the smallest  $\bar{f}$  among the four tested clustering methods.

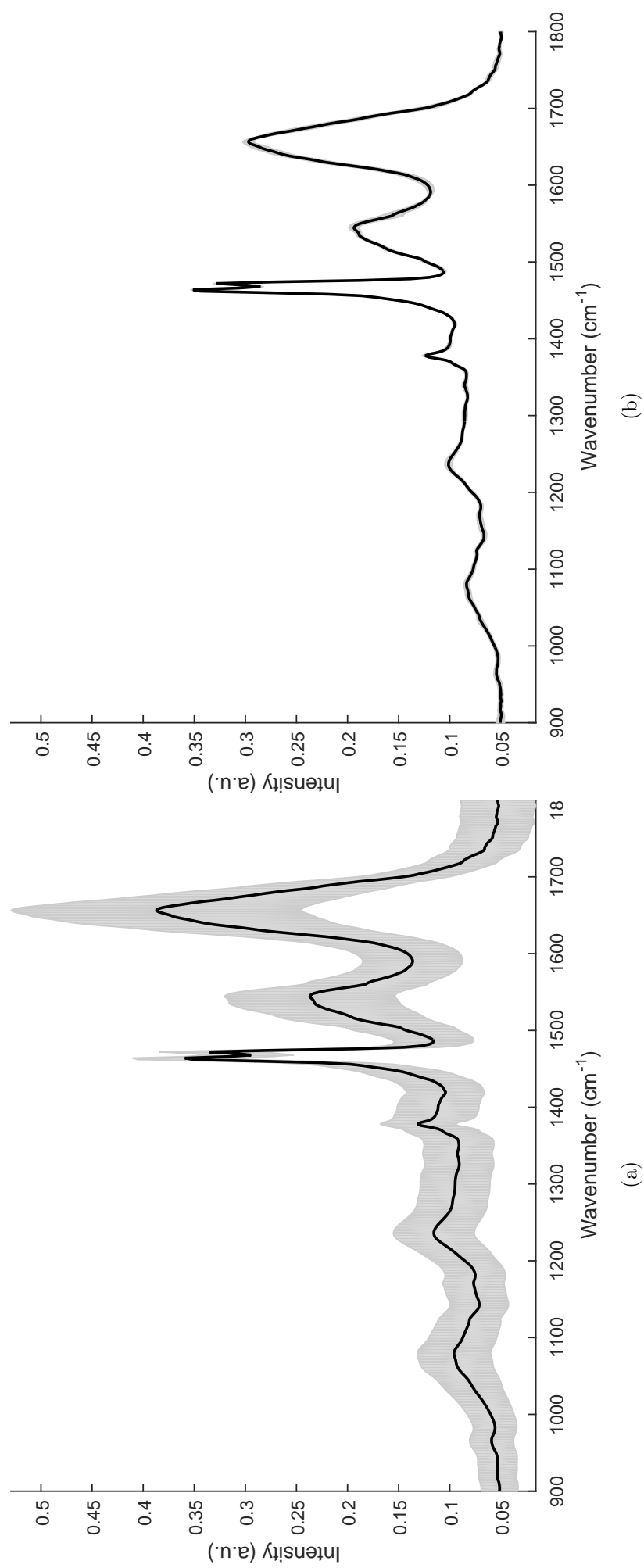


Figure S1: Comparison of raw (a) and EMSC preprocessed (b) spectra acquired on patient #1. Standard deviations (shaded area) are shown overlaying the mean spectra (black solid lines).

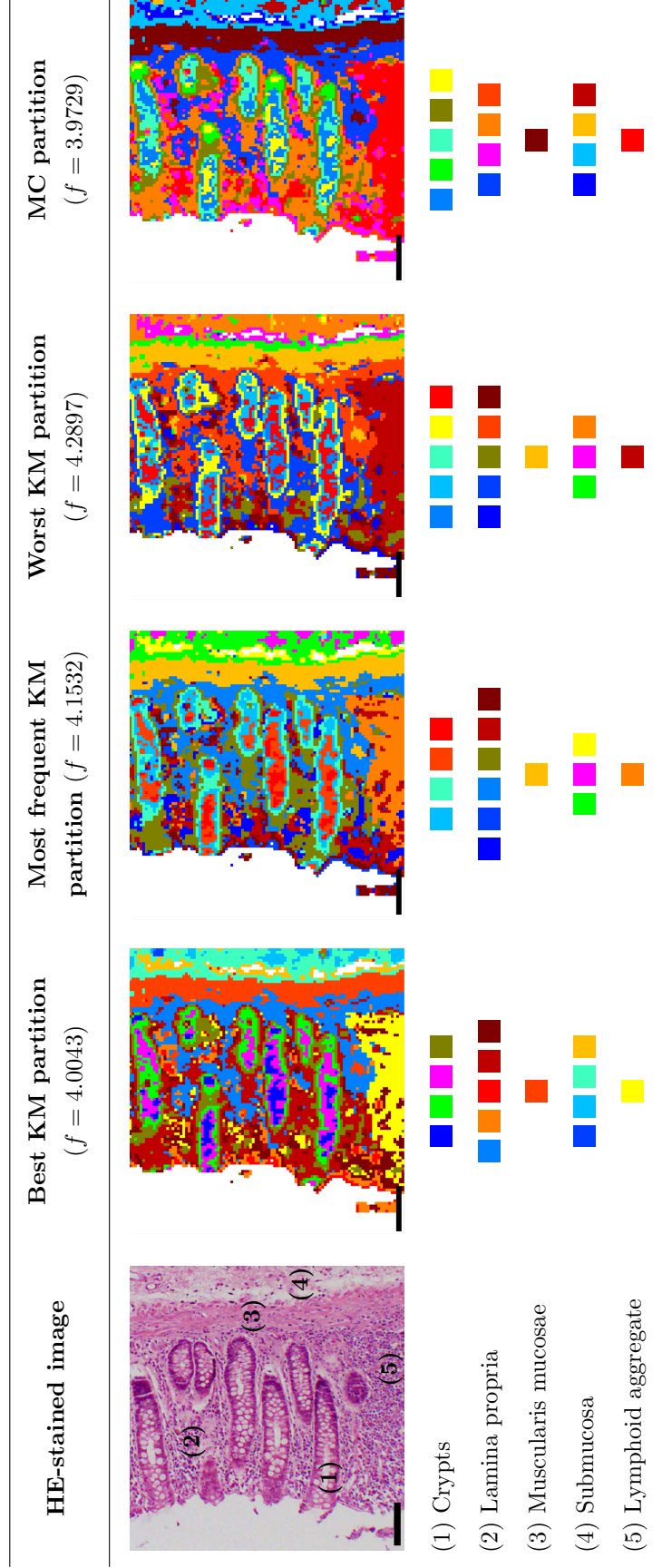


Figure S2: Comparison between conventional histology and pseudo-color-coded images reconstructed from KM and MC partitions for patient #2. Scale bars indicate 100  $\mu\text{m}$ . The quality measure  $f$  of each partition is provided above each pseudo-color-coded image. The cluster assignments are detailed below each pseudo-color-coded image.

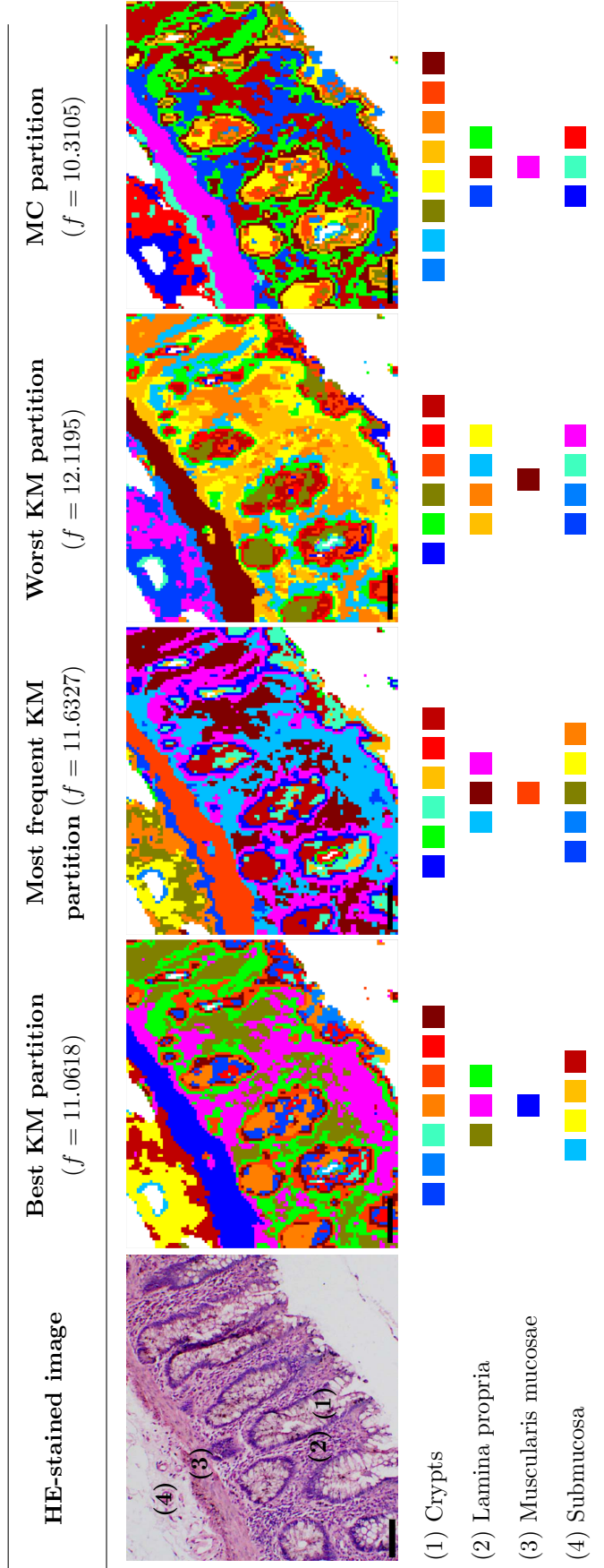


Figure S3: Comparison between conventional histology and pseudo-color-coded images reconstructed from KM and MC partitions for patient #3. Scale bars indicate 100  $\mu\text{m}$ . The quality measure  $f$  of each partition is provided above each pseudo-color-coded image. The cluster assignments are detailed below each pseudo-color-coded image.

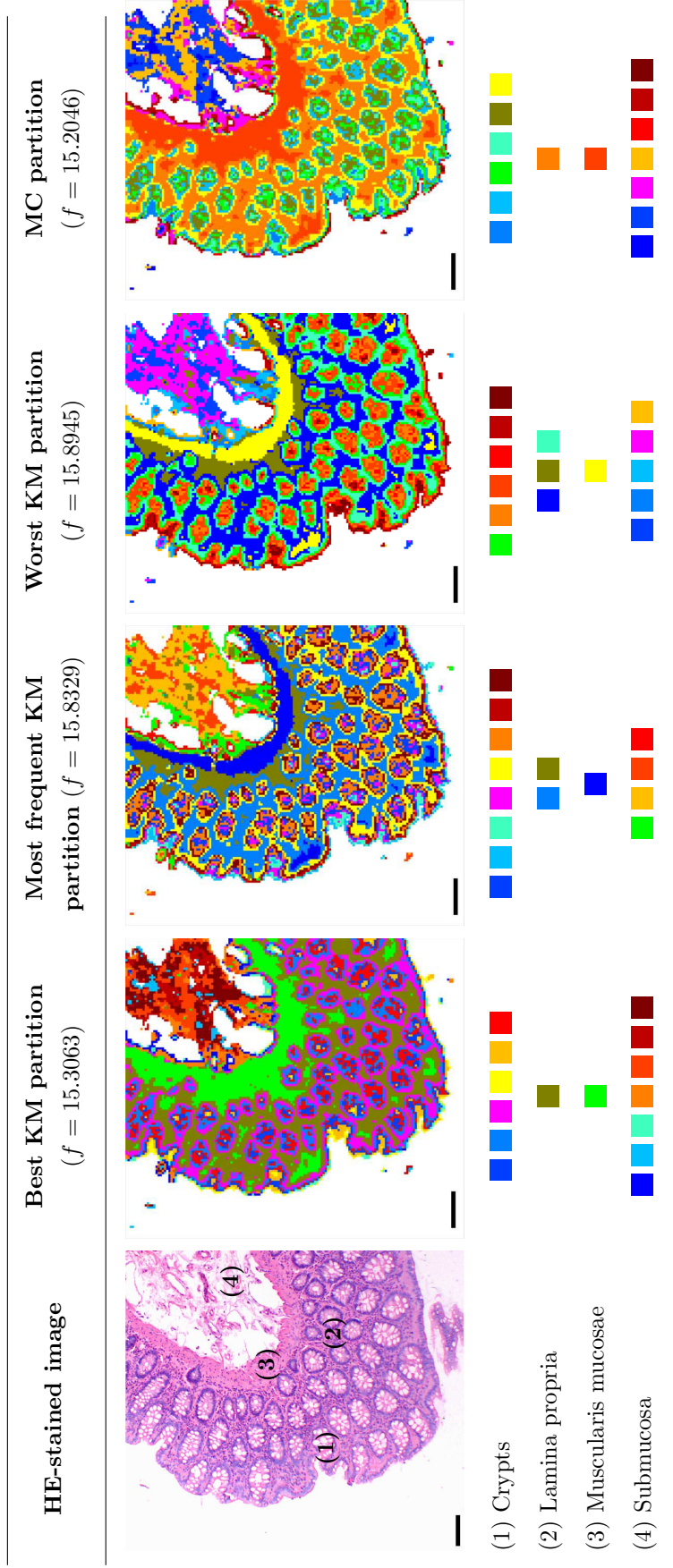


Figure S4: Comparison between conventional histology and pseudo-color-coded images reconstructed from KM and MC partitions for patient #4. Scale bars indicate 100  $\mu\text{m}$ . The quality measure  $f$  of each partition is provided above each pseudo-color-coded image. The cluster assignments are detailed below each pseudo-color-coded image.

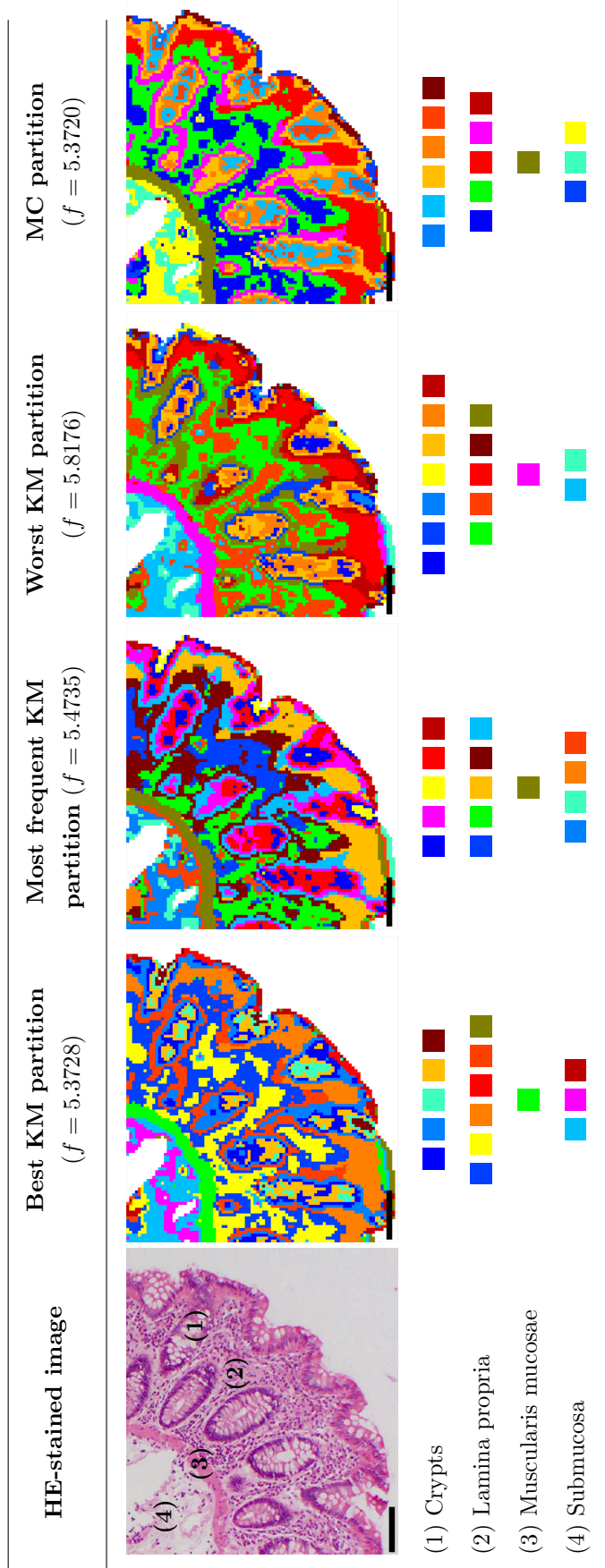


Figure S5: Comparison between conventional histology and pseudo-color-coded images reconstructed from KM and MC partitions for patient #5. Scale bars indicate 100  $\mu\text{m}$ .

The quality measure  $f$  of each partition is provided above each pseudo-color-coded image. The cluster assignments are detailed below each pseudo-color-coded image.



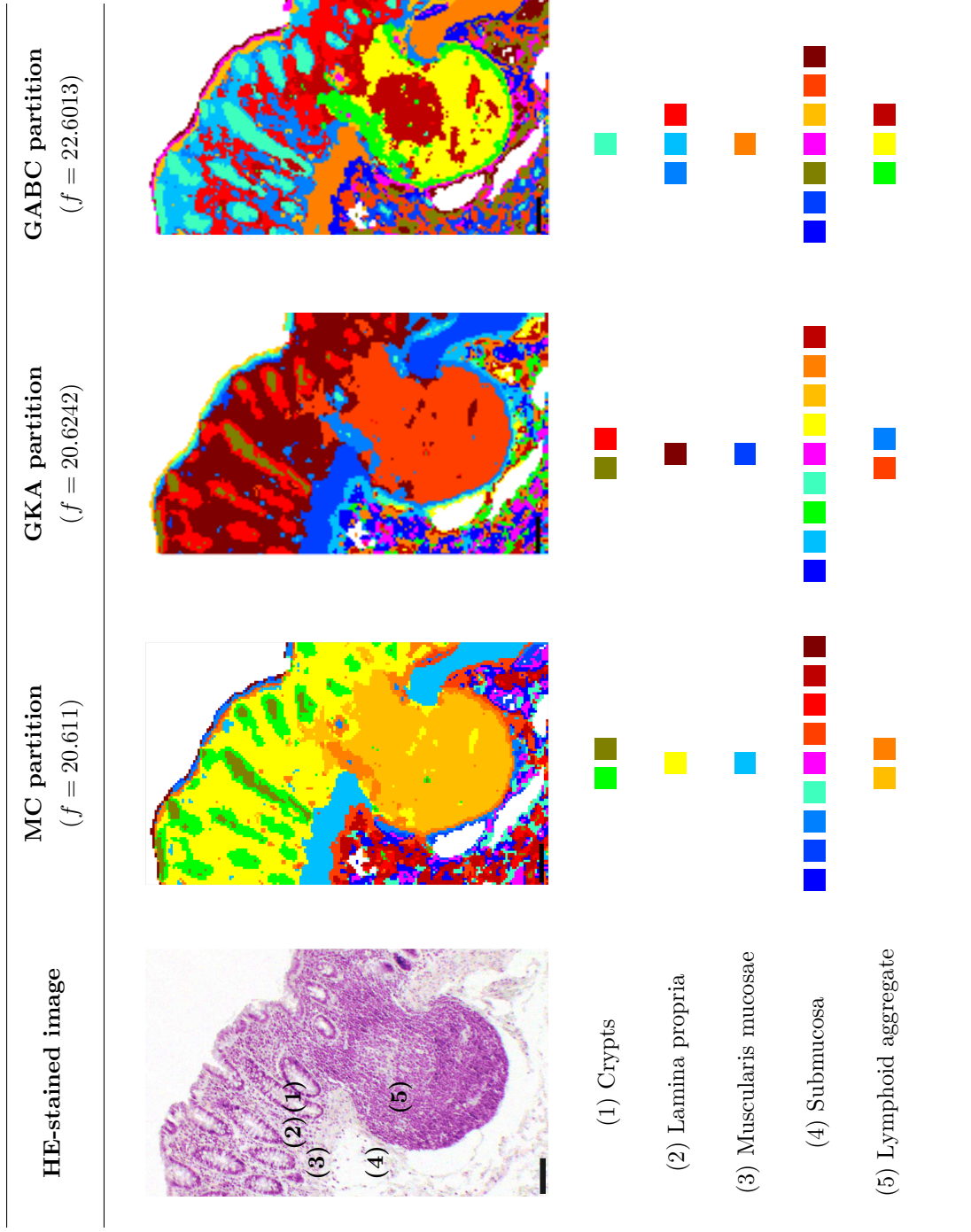


Figure S6: Comparison between conventional histology and pseudo-color-coded images reconstructed from MC, GKA and GABC partitions for patient #1. Scale bars indicate 100  $\mu\text{m}$ . The quality measure  $f$  of each partition is provided above each pseudo-color-coded image. The cluster assignments are detailed below each pseudo-color-coded image.