

## **Description of Additional Supplementary Files**

File Name: Supplementary Data 1

Description: Clinical information of the participants and specimen information.

File Name: Supplementary Data 2

Description: Marker genes used for cell-type annotation.

File Name: Supplementary Data 3

Description: Tumor-specific markers and differentially expressed genes and differentially accessible peaks and TF motifs.

File Name: Supplementary Data 4

Description: Selected pathways, epithelial, and EMT scores among tumor clusters.

File Name: Supplementary Data 5

Description: BAP1/PBRM1-associated differentially expressed genes and accessible peaks.