

## Supplementary Materials

**Supplementary Table S1a. Dataset distribution of patients and corresponding images in the SSL-CLAM model.**

		Total	Grade-0	Grade-1	Grade-2	Grade-3	Grade-4
	Patients	images	images	images	images	images	images
TCGA Cohort	504	764	199	14/70*	218	203	74
CPTAC Cohort	188	445	138	28	130	114	35

\* The number of Gade-1 images from TCGA after data argumentation.

**Supplementary Table S1b. Dataset distribution of images in the training, internal validation, and external validation sets.**

	TCGA Cohort		CPTAC Cohort
	Training set	Internal validation set	External validation set
SSL-CLAM	611	153	445