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Supplementary Material

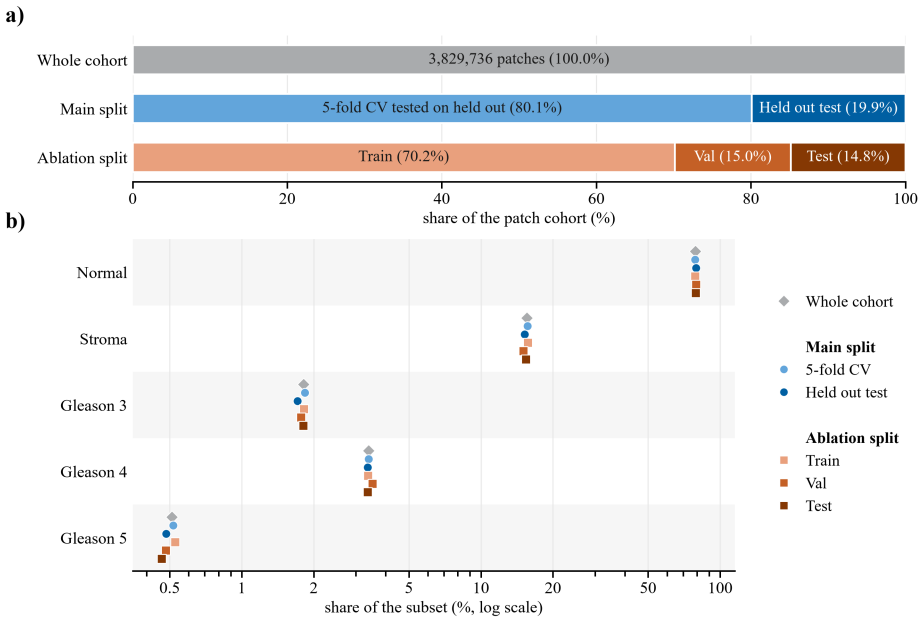

Fig. S1. Data splits and their class distribution. (a) The main split, used for the 5-fold cross-validation experiments presented in Sec. 3.2 and tested on held-out test split. The ablation split, the single 70/15/15 train/validation/test split used in Sec. 3.4. (b) Class distribution within each split, relative to the whole cohort, on a log scale.

Table S1. Evaluation metrics across foundation models, base classifiers, and input scales. Results report the mean held-out test performance across 5-fold cross-validation experiments. BA is balanced accuracy, MF1 is macro F1, and G5 is the F1 of Gleason 5. Since CONCH requires an input size of at least 512 px, results are reported only for patch sizes of 512 px and above. No multi-scale fusion is applied in these experiments.

		256 px			512 px			1024 px		
FM	Base classifier	BA	MF1	G5	BA	MF1	G5	BA	MF1	G5
Virchow2	Single-layer MLP	0.869	0.753	0.622	0.897	0.754	0.613	0.917	0.767	0.658
	3-layer MLP	0.872	0.741	0.600	0.898	0.760	0.646	0.915	**0.776**	**0.683**
	Mamba	**0.916**	**0.794**	**0.636**	0.922	**0.796**	0.661	**0.929**	0.768	0.626
	Mamba3	0.912	0.772	0.572	0.923	0.780	0.636	0.928	0.725	0.565
	Patch-level attention	0.909	0.775	0.623	**0.925**	0.794	**0.684**	0.928	0.771	0.681
UNI	Single-layer MLP	0.853	0.719	0.546	0.887	0.747	0.605	0.905	**0.763**	0.638
	3-layer MLP	0.857	0.708	0.544	0.891	0.731	0.588	0.910	0.756	**0.651**
	Mamba	0.911	**0.781**	**0.607**	**0.920**	0.776	0.628	0.925	0.734	0.582
	Mamba3	**0.913**	0.774	0.597	0.917	**0.777**	**0.641**	**0.928**	0.744	0.585
	Patch-level attention	0.900	0.755	0.581	**0.920**	0.768	0.613	0.926	0.707	0.522
UNI2	Single-layer MLP	0.863	0.729	0.578	0.893	0.736	0.586	0.911	**0.758**	**0.655**
	3-layer MLP	0.866	0.721	0.554	0.895	0.738	0.609	0.914	0.757	0.626
	Mamba	**0.913**	**0.780**	0.596	**0.921**	0.763	0.629	**0.928**	0.741	0.627
	Mamba3	0.911	0.779	**0.616**	0.917	**0.772**	0.622	0.924	0.750	0.636
	Patch-level attention	0.901	0.765	0.608	0.920	0.765	**0.634**	0.926	0.710	0.575
Virchow	Single-layer MLP	0.855	0.727	0.573	0.885	0.729	0.579	0.907	0.721	0.557
	3-layer MLP	0.861	0.723	0.574	0.889	0.743	0.620	0.911	0.750	0.616
	Mamba	**0.910**	0.760	0.577	**0.918**	**0.768**	**0.623**	**0.923**	0.730	0.608
	Mamba3	0.906	**0.770**	**0.586**	0.915	0.764	0.617	0.919	**0.776**	**0.661**
	Patch-level attention	0.899	0.744	0.582	0.917	0.751	0.602	0.920	0.739	0.602
CONCH	Single-layer MLP	—	—	—	0.884	0.711	0.530	0.904	0.723	0.561
	3-layer MLP	—	—	—	0.874	0.707	**0.540**	0.897	**0.738**	0.576
	Mamba	—	—	—	0.903	0.715	0.508	**0.911**	0.735	**0.580**
	Mamba3	—	—	—	0.903	**0.717**	0.536	0.904	0.733	0.577
	Patch-level attention	—	—	—	**0.921**	0.716	0.481	0.910	0.721	0.503