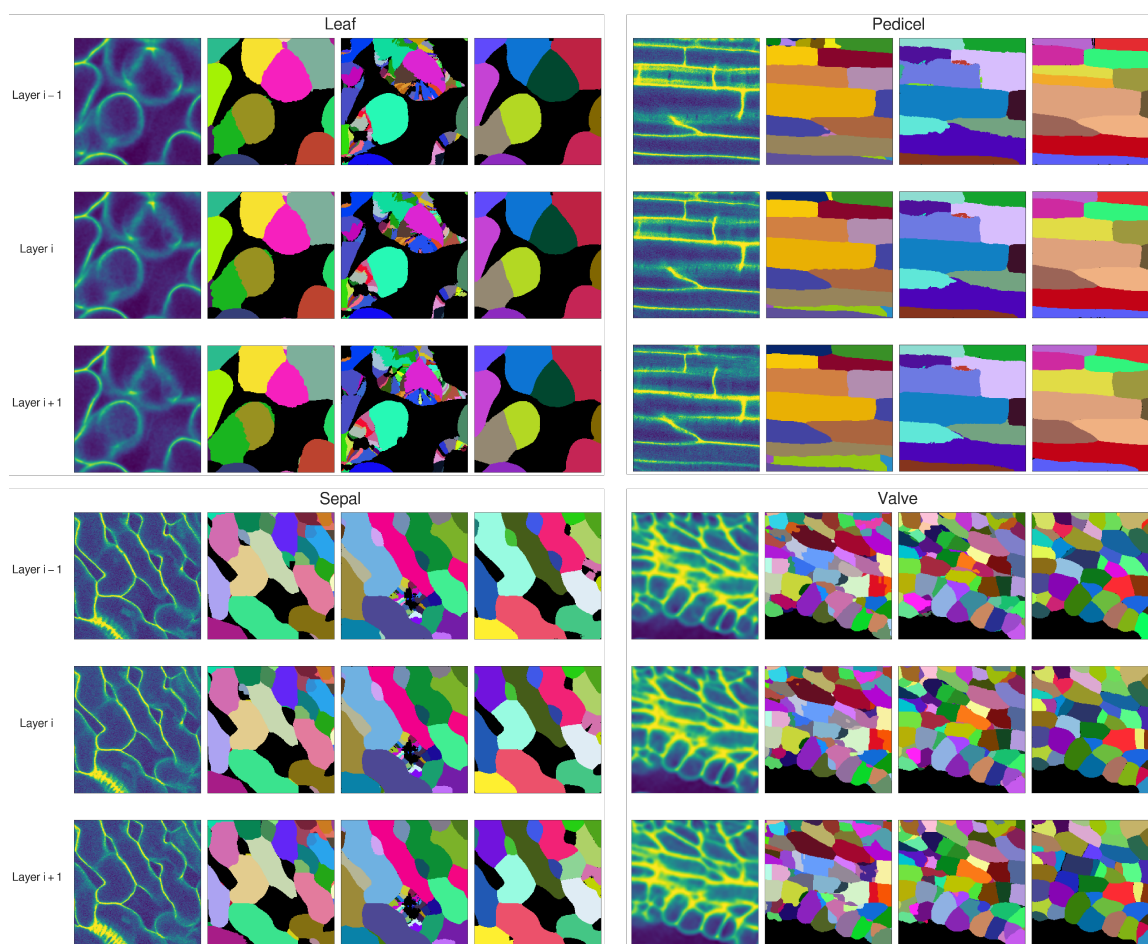


Supplementary Materials - CellStitch: 3D Cellular Anisotropic Image Segmentation via Optimal Transport

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Supplementary Figure 1: Extended visualization of raw image, ground-truth annotations, Cellpose3D & CellStitch (left to right) on various regions of Arabidopsis 3D Digital Tissue Atlas.

Dataset	Method	Precision	Recall	AP	mAP
Ovules	CellStitch*	0.64 ± 0.08	0.64 ± 0.14	0.48 ± 0.11	0.51 ± 0.09
	3D Watershed	0.07 ± 0.08	0.20 ± 0.18	0.06 ± 0.06	0.06 ± 0.06
ATAS	CellStitch*	0.79 ± 0.08	0.77 ± 0.04	0.64 ± 0.07	0.70 ± 0.07
	3D Watershed	0.07 ± 0.08	0.07 ± 0.08	0.01 ± 0.01	0.02 ± 0.01
Anther	CellStitch*	0.66 ± 0.10	0.53 ± 0.11	0.42 ± 0.10	0.41 ± 0.08
	3D Watershed	0.03 ± 0.04	0.03 ± 0.05	0.01 ± 0.02	0.03 ± 0.03
Filament	CellStitch*	0.74 ± 0.14	0.53 ± 0.12	0.46 ± 0.13	0.46 ± 0.11
	3D Watershed	0.04 ± 0.02	0.15 ± 0.09	0.04 ± 0.02	0.05 ± 0.01
Leaf	CellStitch*	0.83 ± 0.17	0.75 ± 0.19	0.68 ± 0.21	0.66 ± 0.18
	3D Watershed	0.00 ± 0.00	0.00 ± 0.00	0.00 ± 0.00	0.00 ± 0.00
Pedicel	CellStitch*	0.57 ± 0.23	0.44 ± 0.16	0.35 ± 0.16	0.36 ± 0.13
	3D Watershed	0.03 ± 0.03	0.04 ± 0.05	0.02 ± 0.02	0.02 ± 0.02
Sepal	CellStitch*	0.51 ± 0.12	0.43 ± 0.16	0.31 ± 0.12	0.33 ± 0.09
	3D Watershed	0.03 ± 0.05	0.02 ± 0.00	0.01 ± 0.00	0.02 ± 0.00
Valve	CellStitch*	0.71 ± 0.07	0.47 ± 0.04	0.40 ± 0.05	0.41 ± 0.11
	3D Watershed	0.00 ± 0.00	0.00 ± 0.00	0.00 ± 0.00	0.00 ± 0.00

Supplementary Table 1: Benchmark between CellStitch and 3D Watershed; the **best** performance (within 0.03) is in bold. The method that achieves the best performance under the majority of the metric is marked with *.

Dataset	Method	Precision	Recall	AP	mAP
Ovules	CellStitch*	0.64 ± 0.08	0.64 ± 0.14	0.48 ± 0.11	0.51 ± 0.09
	Cellpose3D	0.08 ± 0.11	0.56 ± 0.22	0.08 ± 0.11	0.08 ± 0.10
	PlantSeg	0.38 ± 0.05	0.32 ± 0.07	0.21 ± 0.03	0.22 ± 0.03

Supplementary Table 2: Benchmark between competing methods on isotropic upsampled images (Z-axis) and CellStitch on anisotropic images; the **best** performance (within 0.03) is in bold. The method that achieves the best performance under the majority of the metric is marked with *.