Table S1. Composition of Untreated Corn Stover Samples.

% Composition of Untreated Corn Stover	
Glucan	34.0
Xylan	22.0
Arabinan	3.1
Galactan	1.6
Acetyl	2.9
Lignin	12.3
Sucrose	4.0
Structural Organics	4.5
Non-Structural Organics	1.2
Water Extractable Others	6.1
Ethanol Extractives	2.2
Total Ash	5.8
Total	99.1

Table S2. Summary of Qualitative Imaging Observations.

Summary of Qualitative Imaging Observations

	Tissues			*Cells*			*Cell Walls*		
Sample	**color**	**aggregation**	**moisture**	**morphology**	**dislocation**	**lignin**	**thickness**	**delamination**	**fibrillation**
untreated	tan	loose	dry	control	none	diffuse	control	none	none
ZC	brown	loose	moist	altered	minor	relocalized	swollen	minor	none
SG	brown	clumped	wet	collapsed	extensive	relocalized	swollen	extensive	extensive
HS	brown	clumped	wet	fractured	extensive	relocalized	fractured	extensive	extensive

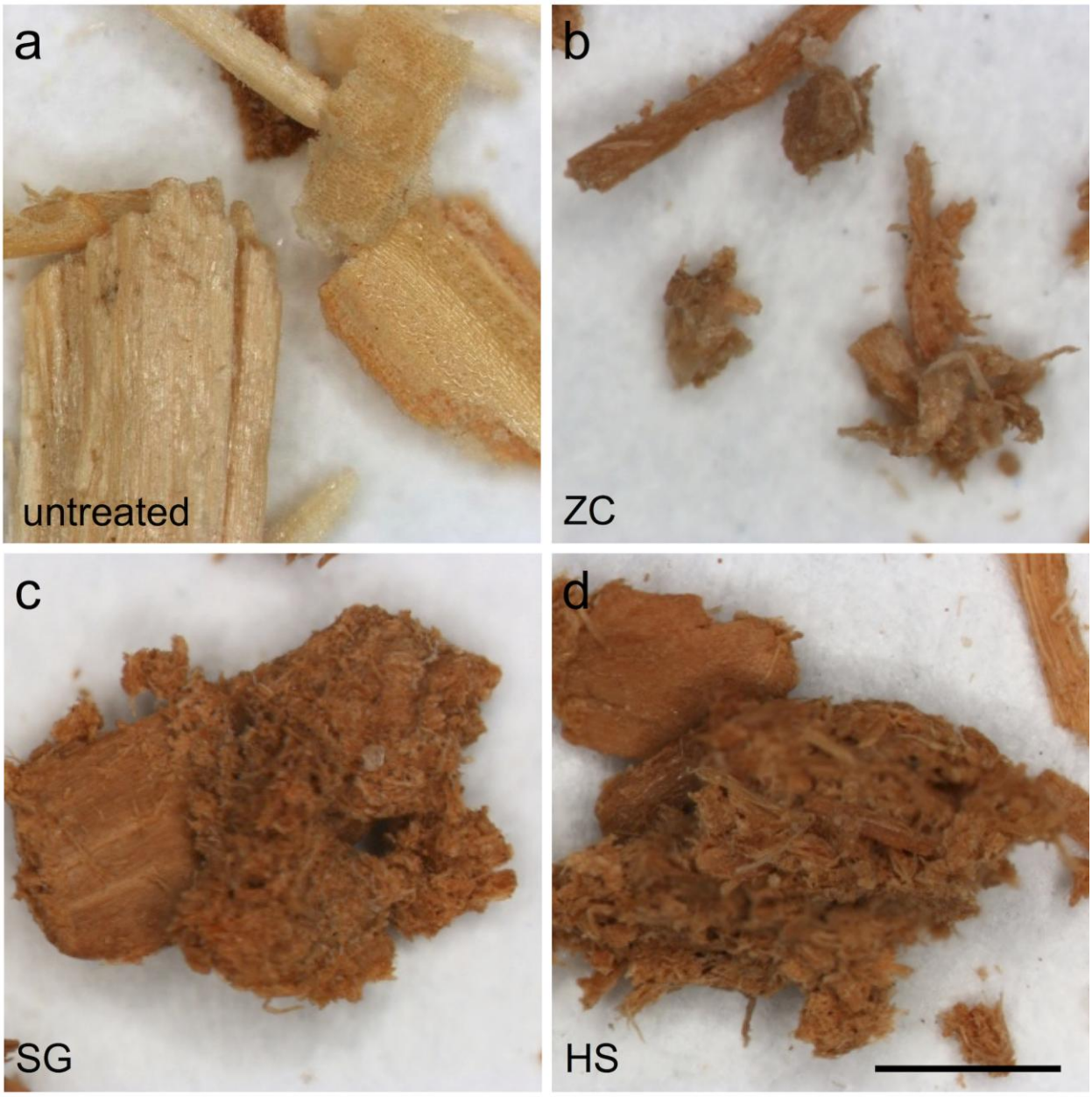

Figure S1. Stereo micrographs of freeze dried samples show that particles from the SG (c) and HS (d) reactors remain clumped even after drying. Bar = 1 mm.

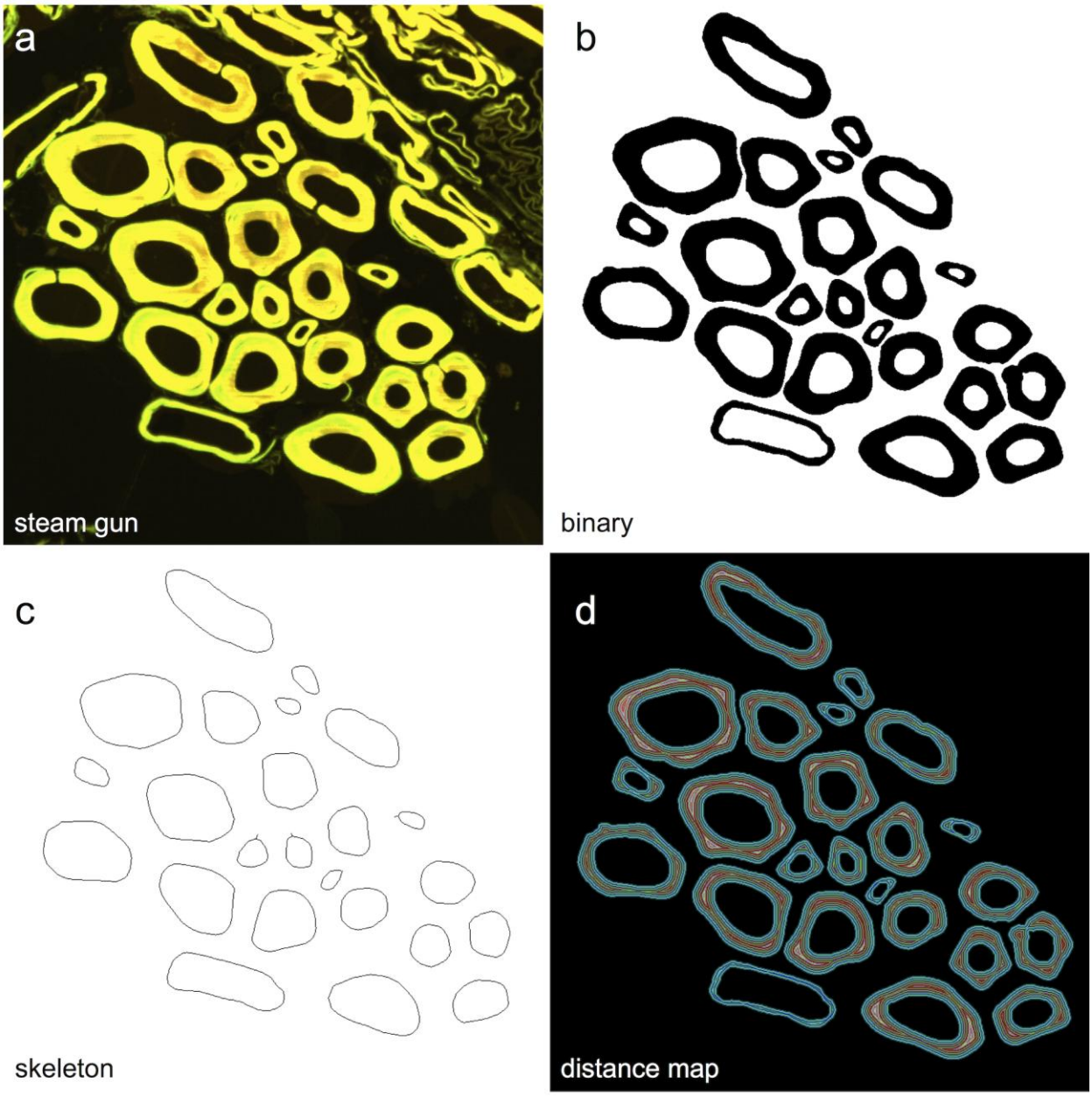

Figure S2. Measurements of cell wall thickness were extracted directly from confocal light microscopy image data (a) by first converting a region of interest within the image to binary format (b). The binary is then converted to a skeleton by a medial axis transform (c) and distance map (d) to derive a distance measurement from the centerline of the cell walls. For connected cells, this measurement reports the distance between the cell lumen and the midpoint of the compound middle lamella. For dislocated cells, it reports one half that distance.