

# Modeling Chemotherapy-Induced Peripheral Neuropathy Using a Nerve-on-a-Chip Microphysiological System

## Supplementary Data

Tab. S1: Calculated values of nerve conduction velocity (NCV) and amplitude (AMP) presented as mean  $\pm$ SEM

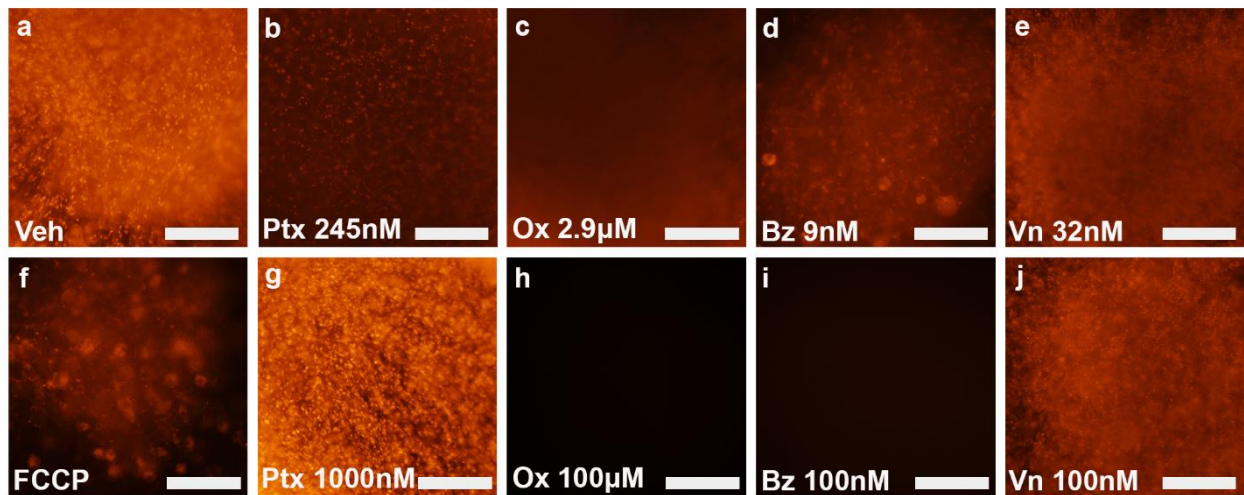
	Vehicle				
NCV (m/s)	0.303 $\pm$ 0.017				
AMP ( $\mu$ V)	104.9 $\pm$ 13.5				
	Paclitaxel				
	1 nM	10 nM	100 nM	200 nM	300 nM
NCV (m/s)	0.288 $\pm$ 0.016	0.320 $\pm$ 0.018	0.221 $\pm$ 0.013	0.237 $\pm$ 0.014	0 $\pm$ 0
AMP ( $\mu$ V)	103.8 $\pm$ 12.7	87.2 $\pm$ 10.9	69.1 $\pm$ 6.5	54.6 $\pm$ 3.80	0 $\pm$ 0
	Oxaliplatin				
	0.01 $\mu$ M	0.1 $\mu$ M	1 $\mu$ M	10 $\mu$ M	100 $\mu$ M
NCV (m/s)	0.323 $\pm$ 0.026	0.404 $\pm$ 0.022	0.304 $\pm$ 0.041	0.042 $\pm$ 0.013	0 $\pm$ 0
AMP ( $\mu$ V)	84.0 $\pm$ 7.9	100.4 $\pm$ 15.8	94.2 $\pm$ 19.8	25.8 $\pm$ 8.4	0 $\pm$ 0
	Bortezomib				
	1 nM	2 nM	5 nM	10 nM	100 nM
NCV (m/s)	0.357 $\pm$ 0.018	0.412 $\pm$ 0.022	0.367 $\pm$ 0.011	0.022 $\pm$ 0.013	0 $\pm$ 0
AMP ( $\mu$ V)	108.5 $\pm$ 12.5	96.7 $\pm$ 10.3	115.0 $\pm$ 13.1	6.7 $\pm$ 3.7	0 $\pm$ 0
	Vincristine				
	0.1 nM	1 nM	5 nM	10 nM	100 nM
NCV (m/s)	0.293 $\pm$ 0.017	0.307 $\pm$ 0.017	0.286 $\pm$ 0.016	0.223 $\pm$ 0.027	0 $\pm$ 0
AMP ( $\mu$ V)	103.5 $\pm$ 9.5	113.8 $\pm$ 10.5	94.2 $\pm$ 8.5	64.4 $\pm$ 7.6	0 $\pm$ 0
	Acetaminophen				
	0.5 $\mu$ M	5 $\mu$ M	50 $\mu$ M	500 $\mu$ M	5000 $\mu$ M
NCV (m/s)	0.358 $\pm$ 0.032	0.282 $\pm$ 0.013	0.258 $\pm$ 0.014	0.336 $\pm$ 0.026	0.328 $\pm$ 0.028
AMP ( $\mu$ V)	107.5 $\pm$ 11.6	97.3 $\pm$ 19.1	94.2 $\pm$ 9.2	86.7 $\pm$ 14.2	87.5 $\pm$ 9.2
	Amoxicillin				
	0.5 $\mu$ M	5 $\mu$ M	50 $\mu$ M	500 $\mu$ M	5000 $\mu$ M
NCV (m/s)	0.285 $\pm$ 0.039	0.286 $\pm$ 0.008	0.261 $\pm$ 0.029	0.273 $\pm$ 0.018	0.228 $\pm$ 0.041
AMP ( $\mu$ V)	93.3 $\pm$ 10.8	124.2 $\pm$ 20.0	100.0 $\pm$ 17.1	78.3 $\pm$ 9.3	42.5 $\pm$ 5.2

Tab. S2: Summary of all experimental metrics measured at the NCV IC<sub>50</sub> concentration

	Ptx (245 nM)	Ox (2.9 $\mu$ M)	Bz (9.0 nM)	Vn (32 nM)
NCV	0.153 m/s	0.179 m/s	0.176 m/s	0.149 m/s
AMP	34 $\mu$ V	90 $\mu$ V	57 $\mu$ V	39 $\mu$ V
CCK-8	—	—	—	—
LDH	↑	—	—	—
MBP staining	↓↓↓	—	—	↓↓
Myelinated fiber density	↓	↓	↓	↓↓↓
Nonmyelinated fiber density	↓↓	↓	↓	↓↓↓
G-Ratio	—	—	—	↓↓↓
% Irregular myelin	↑	↑	—	↑
% Eccentric nuclei	↑↑↑	↑↑↑	↑↑	↑
% Degenerated fibers	↑	—	—	↑↑↑
Nonmyelinated fiber diameter	↑↑↑	↑	↑↑	↑
Myelinated fiber diameter	↑↑	—	↑	—
TMRE dye	—	—	—	—

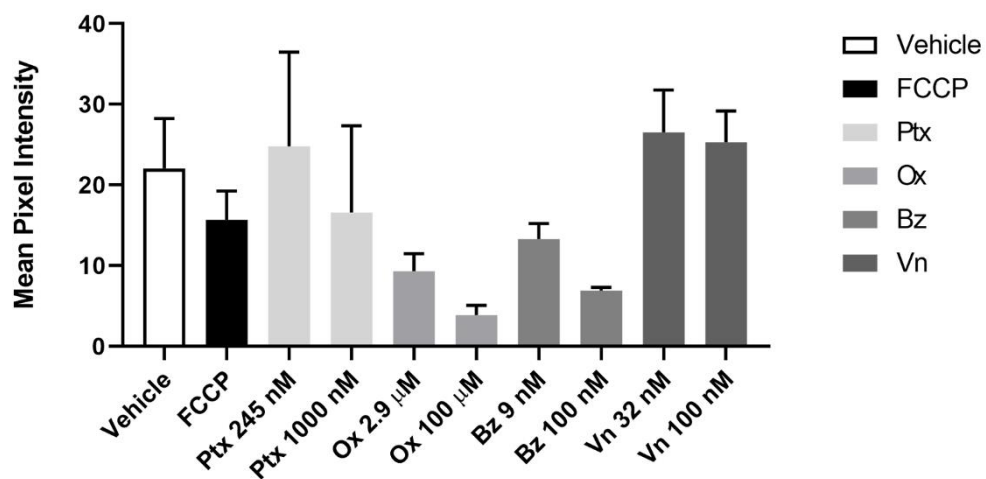
“—” indicates similar values. Three arrows indicate dramatic, readily apparent deviations from vehicle controls. Two arrows point to a moderately appreciable deviation, while one arrow shows a trend away from control values.

A



B

Ganglion



**Fig. S1: Changes in mitochondrial membrane polarization in the DRG/bulb region after exposure to drugs**  
 A) Live cells stained with TMRE mitochondrial membrane potential dye demonstrate changes in mitochondrial membrane polarization after exposure to vehicle control (a), Ptx (b, g), Ox (c, h), Bz (d, i), Vn (e, j), or positive control FCCCP (f). Representative images taken from the DRG/bulb region of the construct. Scale bar: 100 μm. B) Mean pixel intensity calculated from N = 4 TMRE images. Data are mean + SEM.