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Supplemental information

**Transplantable human motor
networks as a neuron-directed
strategy for spinal cord injury**

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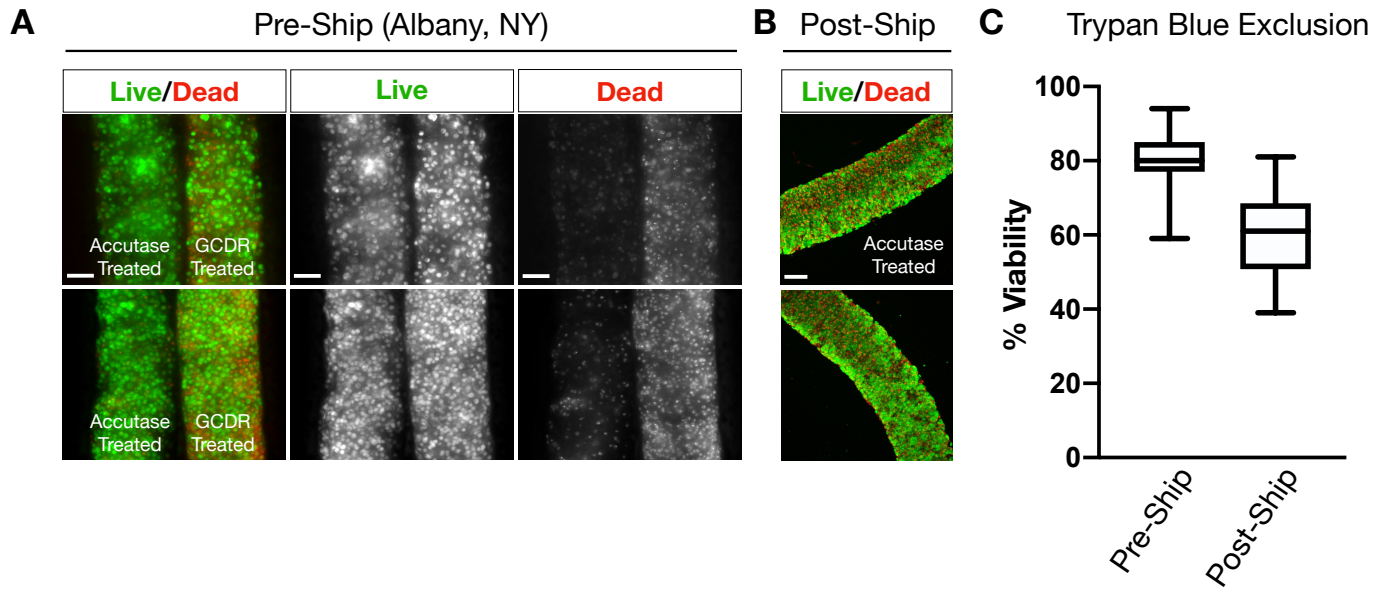


Figure S1. Encapsulated neural cell viability before and after long-distance shipping, related to Figure 7. A, Post-encapsulation Live/Dead stain of two neural ribbons manually placed to be adjacent prior to shipping on ice (Albany, NY). The leftmost neural ribbon was generated by encapsulating cells lifted using the 1:1 diluted Accutase method, and the rightmost neural ribbon was generated by encapsulating cells lifted using the Gentle Cell Dissociation Reagent (GCDR) method. Two fields are shown. Given the higher viability, we used Accutase at this stage for the *in vivo* studies and viability. **B,** Live/Dead stain of encapsulated neural cells after shipping on ice (Houston, TX). Two fields are shown. **C,** Trypan Blue exclusion assay of neural cells collected from neural ribbons pre- and post-shipment. Scale bars are 50 microns.

Supplemental Tables

Table S1. Biomarker Significance for This Study Related to STAR Methods

Target	Significance
SOX2	Pluripotency, neuromesodermal progenitors (with Bra), neuroectoderm (without Bra)
Brachyury (Bra)	Neuromesodermal progenitors (with SOX2)
CDX2	Hox gene collinear inducer in spinal cord, neuromesodermal progenitors, neuroectoderm
Nestin	Neural stem cell intermediate filaments
NCAM1	Neural cell adhesion
PAX6	Neuroectoderm
TUJ1 (β -III-tubulin, <i>TUBB3</i>)	Neuron-specific β -tubulin isotype
MAP2	Somatodendritic neuronal compartment
SMI312	Pan-axonal antibody cocktail
Synapsin 1 (<i>SYN</i>)	Pre-synaptic terminals
GAP-43	Growth associated neuron protein
NKX6-1	Motor neuron ventral progenitor domain (SMN, OPC lineages)
OLIG2	Motor neuron ventral progenitor domain (SMN, OPC lineages)
ISL1	Motor neuron progenitors, dl3 interneurons with TLX3
HB9 (<i>MNR2/MNX1</i>)	Motor neurons
FOXP1	Lateral motor column
ChAT	Cholinergic neurotransmission in motor neurons
PSD-95	Excitatory post-synaptic density

Peripherin	Peripheral neuron projection intermediate filaments (motor neurons)
NKX2-2	OPC lineage, ventral spinal cord
O4	OPC surface sulfatide
CD44	Astrocyte surface protein
GFAP	Astrocyte intermediate filaments
CHX10	V2a excitatory ventral spinal interneurons
GATA3	V2b inhibitory ventral spinal interneurons
PAX2	V0, V1 ventral spinal interneurons dI4, dI6 dorsal-intermediate spinal interneurons
LBX1	V0, V1 ventral spinal interneurons dI4, dI6 dorsal-intermediate spinal interneurons
TLX3	dI3 dorsal spinal interneurons with ISL1
LHX9	dI1 dorsal spinal interneurons
BRN3A	Sensory neurons, dorsal spinal interneurons
STEM121	Anti-human cytoplasm (graft)
GFP	GFP immunofluorescence detection in OPCs (in vitro)

Table S2. Electrophysiology Current Clamp Samples Related to Figure 4

Days in differentiation	Medium	PLGA neurotrophic factor beads	Neural ribbon (Y/N)	Cells patched (n =)	Differentiations (N =)
33-35	CVPM ^a	None	No	10	3
32-34	TDM ^b	5 μ l/ml BDNF, GDNF	No	9	3
32-34	TDM	5 μ l/ml BDNF, GDNF	Yes	13	3
45-51	CVPM	None	No	11	3
51-52	TDM	5 μ l/ml BDNF, GDNF	No	11	4
51-52	TDM	5 μ l/ml BDNF, GDNF	Yes	13	3

^a Caudo-Ventral Patterning Medium (N2B27 + RA, Hh-Ag1.5)

^b Terminal Differentiation Medium (N2B27 + BDNF, GDNF, dbcAMP)