

Additional Table 1 Summary of source of cells, method of purification, reported purity, method of estimating/ quantification, cells in the mix, key structural and functional outcomes

Authors	Title	Source of cells			Reported purity	Method of purity estimation/ quantification	Cells in the mix	Key structural outcomes	Key functional outcomes
		Animal	Site	Method of purification					
Thornton et al., 2018	Evidence of axon connectivity across a spinal cord transection in rats treated with epidural stimulation and motor training combined with olfactory ensheathing cell transplantation	SD rats	OB	Immunopurification, p75	n/m	n/m	n/m	+ injury repair	- motor recovery
Zheng et al., 2017	Olfactory ensheathing cell transplantation inhibits P2X4 receptor overexpression in spinal cord injury rats with neuropathic pain	SD rats	OB	n/m	> 95%	p75NTR, GFAP	n/m	+ injury repair, + inflammation reduction	+ sensory recovery
Zhang et al., 2017	The Effects of Co-transplantation of Olfactory Ensheathing Cells and Schwann Cells on Local Inflammation Environment in the Contused Spinal Cord of Rats	SD rats	OB	n/m	> 95%	anti-S100 and anti-P75	SCs	+ cell survival, + migration, + inflammation reduction	+ motor recovery, + electrophysiological recovery
Tsai et al., 2017	Improving the regenerative potential of olfactory ensheathing cells by overexpressing prostacyclin synthetase and its application in spinal cord repair	SD rats	OB	Differential adhesion	> 90% (90.8±4%, 91.3±2.9%, 97.0±1.3%)	p75, S100, GFAP	n/m	+ injury repair	+ motor recovery
Tang et al., 2017	Ginsenoside Rg1 Promotes the Migration of Olfactory Ensheathing Cells via the PI3K/Akt Pathway to Repair Rat Spinal Cord Injury	SD rats	OB	Purified using cytosine arabinoside at different adherent velocities	97.70%	p75 flowcytometry	n/m	+ injury repair, + degeneration mitigation, + inflammation reduction	+ motor recovery
Liu et al., 2017	Intrathecal transplantation of olfactory ensheathing cells by lumbar puncture for thoracic spinal cord injury in mice	C57BL/6 mice	OB	Differential adhesion	“OECs were all marked by p75”	p75 immunostaining	n/m	+ migration, + injury repair, + degeneration mitigation	+ motor recovery
Gu et al., 2017	Conditioned medium of olfactory ensheathing cells promotes the functional recovery and axonal regeneration after contusive spinal cord injury	SD rats	OB	Differential adhesion	93±3.54%	p75NTR	n/m	+ injury repair	+ motor recovery
Feng et al., 2017	Effect of transplantation of olfactory ensheathing cell conditioned medium induced bone marrow stromal cells on rats with spinal cord injury	SD rats	OB	Differential adhesion	n/m	n/m	Fibroblasts (indirectly mentioned)	+ injury repair, + degeneration mitigation, + inflammation reduction	+ motor recovery
Gu et al., 2017	Feasibility of Diffusion Tensor Imaging for Assessing Functional Recovery in Rats with Olfactory Ensheathing Cell Transplantation After Contusive Spinal Cord Injury (SCI)	SD rats	OB	Differential adhesion	91±2.66%	p75 immunostaining	n/m	+ degeneration mitigation	+ motor recovery
Collins et al., 2017	Transplantation of Cultured Olfactory Bulb Cells Prevents Abnormal Sensory Responses During Recovery From Dorsal Root Avulsion in the Rat	SD rats	OB	n/m	~50%	n/m	Olfactory nerve fibroblasts	+ migration, + injury repair, + degeneration mitigation	+ sensory recovery
Nategh et al., 2016	Subarachnoid Space Transplantation of Schwann and/or Olfactory Ensheathing Cells Following Severe Spinal Cord Injury Fails to Improve Locomotor Recovery in Rats	female Wistar rats	OB	Differential adhesion	n/m	n/m	Fibroblasts, with Schwann cells, not OECs	Not mentioned	- motor recovery
Li et al., 2016	Functional Repair of Rat Corticospinal Tract Lesions Does Not Require Permanent Survival of an Immunoincompatible Transplant	C57BL/6 mice	OB	n/m	60–70%	p75 and fibronectin immunostaining	Fibroblasts (30–40%)	+ injury repair, - cell survival	+ motor recovery
Khankan et al., 2016	Olfactory Ensheathing Cell Transplantation after a Complete Spinal Cord Transection Mediates Neuroprotective and Immunomodulatory Mechanisms to Facilitate Regeneration	SD rats	OB	Immunopurification, p75NGFR	89%	immunostaining 89% p-75-NGFR; 96% S100; 100% Sox10	n/m	+ cell survival, + injury repair, + degeneration mitigation, + inflammation reduction	Not studied
Gomes et al., 2016	Combination of a peptide-modified gellan gum hydrogel with cell therapy in a lumbar spinal cord injury animal model	Wistar rats	OB	Differential adhesion	n/m	p75-NGFR	n/m	+ injury repair, + inflammation reduction	+ motor recovery

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Kang et al., 2015	Effectiveness of muscle basal lamina carrying neural stem cells and olfactory ensheathing cells in spinal cord repair	SD rats	OB	Differential adhesion	90%	p75-NGFR	n/m	+ cell survival, + migration	+ motor recovery
Torres-Espin et al., 2014	Bone marrow mesenchymal stromal cells and olfactory ensheathing cells transplantation after spinal cord injury – a morphological and functional comparison in rats	SD rats	OB	MACS - p75NGFR	75%	p75, S100	n/m	+ cell survival, + degeneration mitigation, + inflammation reduction	x motor recovery, x sensory recovery, x electrophysiological recovery
Torres-Espin et al., 2013	Gene expression changes in the injured spinal cord following transplantation of mesenchymal stem cells or olfactory ensheathing cells	SD rats	OB	MACS - p75NGFR	75%	p75, S100	n/m	N/A	N/A
Sun et al., 2013	Cotransplantation of olfactory ensheathing cells and schwann cells combined with treadmill training promotes functional recovery in rats with contused spinal cords	SD rats	OB	n/m	“most of the cultured cells”	p75 immunostaining	n/m	+ cell survival, + migration, + injury repair, + inflammation reduction	+ motor recovery
Mayeur et al., 2013	Potential of Olfactory Ensheathing Cells from Different Sources for Spinal Cord Repair	Fischer rats	OB	Differential adhesion	70% unpurified, 97% purified	Flowcytometry p75	n/m	+ injury repair, + degeneration mitigation, + inflammation reduction	+ motor recovery, + electrophysiological recovery
Lang et al., 2013	OECs transplantation results in neuropathic pain associated with BDNF regulating ERK activity in rats following cord hemisection	GFP transgenic mice	OB	Differential adhesion	> 95%	Immunochemical staining p75	n/m	Not studied	- sensory recovery
Deumens et al., 2013	Motor outcome and allodynia are largely unaffected by novel olfactory ensheathing cell grafts to repair low-thoracic lesion gaps in the adult rat spinal cord	GFP transgenic Lewis rats	OB	MACS - p75NGFR	n/m	n/m	n/m	Not studied	x motor recovery, x sensory recovery
Coutts et al., 2013	Embryonic-derived olfactory ensheathing cells remyelinate focal areas of spinal cord demyelination more efficiently than neonatal or adult-derived cells	Fischer rats	OB	Immunopanning with p75 NTR	97-99% (embryonic, neonatal, adult origin cells)	p75 NTR, Thy-1.1, S100 β , GFAP, Fibronectin, Calponin	meningeal, FB-like cells, Astrocytes	+ cell survival, + injury repair	Not studied
Barbour et al., 2013	Tissue sparing, behavioral recovery, supraspinal axonal sparing/regeneration following sub-acute glial transplantation in a model of spinal cord contusion	Fischer rats	OB	Immunoaffinity to p75 receptor	n/m	n/m	n/m	+ migration, + injury repair, + degeneration mitigation, + inflammation reduction	+ motor recovery
Yazdani et al., 2012	A comparison between neurally induced bone marrow derived mesenchymal stem cells and olfactory ensheathing glial cells to repair spinal cord injuries in rat	Wistar rats	OB	Immunopanning with p75 NTR	> 95%	p75 immunostaining	n/m	+ cell survival, -injury repair	- motor recovery
Roet et al., 2012	Noninvasive Bioluminescence Imaging of olfactory ensheathing glia and schwann cells following transplantation into the lesioned rat spinal cord	Fischer rats	OB	Immunopanning with p75 NTR	99.70%	p75 expression (also found in 100% SCs)	n/m	+ cell survival	Not studied
Li et al., 2012	Differing schwann cells and olfactory ensheathing cells behaviors, from interacting with astrocyte, produce similar improvements in contused rat spinal cord's motor function	GFP transgenic rats	OB	n/m	95%	p75 and s100	n/m	+ migration, + injury repair, + inflammation reduction	+ motor recovery, + electrophysiological recovery
Ziegler et al., 2011	Further evidence of olfactory ensheathing glia facilitating axonal regeneration after a complete spinal cord transection	Wistar rats	OB	Immunopurification with p75 receptor	n/m	n/m	n/m	Not studied	+ motor recovery, + electrophysiological recovery
Takeoka et al., 2011	Axon regeneration can facilitate or suppress hindlimb function after olfactory ensheathing glia transplantation	Wistar rats	OB	Immunopurification with p75	95 \pm 1%	p75, S100, GFAP	n/m	+ cell survival, + injury repair, + degeneration mitigation	+ motor recovery, + sensory recovery, + electrophysiological recovery

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Novikova et al., 2011	Efficacy of olfactory ensheathing cells to support regeneration after spinal cord injury is influenced by method of culture preparation	SD rats	OB	2 methods: differential adhesion (a-OEC), and immunomagnetic bead (b-OEC)	93–95% (a-OEC) and 80% (b-OEC)	p75, s100 immunostaining, And GFAP immunostaining	Fibroblasts, endothelial cells (as Thy 1.1 + cells)	+ injury repair, + degeneration mitigation	Not studied
Li et al., 2011	Olfactory ensheathing cell transplantation into spinal cord prolongs the survival of mutant SOD1G93A ALS rats through neuroprotection and remyelination	GFP transgenic Lewis rats	OB	NT3, repeated passages (5)	> 95%	GFP (Ubiquitously expressed) and p75 co-staining	n/m	+ cell survival, + migration, + injury repair, + degeneration mitigation	Not studied
Li et al., 2011	Olfactory ensheathing cells can reduce the tissue loss but not the cavity formation in contused spinal cord of rats	GFP transgenic rats	OB	n/m	> 95%	p75 and S100 immunostaining	n/m	+ migration, + injury repair, + degeneration mitigation	+ motor recovery, + electrophysiological recovery
Wang et al., 2010	Synergistic effect of neural stem cells and olfactory ensheathing cells on repair of adult rat spinal cord injury	SD rats	OB	Differential adhesion	92.3±6.8%, (Pre purification: < 70%)	p75, S100β	n/m	+ injury repair	x motor recovery
Takeoka et al., 2010	Noradrenergic innervation of the rat spinal cord caudal to a complete spinal cord transection: effects of olfactory ensheathing glia	Wistar rats	OB	Immunopurified with p75	n/m	n/m	n/m	N/A	N/A
Ma et al., 2010	Effect of neurotrophin-3 genetically modified olfactory ensheathing cells transplantation on spinal cord injury	SD rats	OB	Immunopanning with p75	> 95%	p75 immunostaining	n/m	+ injury repair	+ motor recovery
Liu et al., 2010	Analysis of olfactory ensheathing glia transplantation-induced repair of spinal cord injury by electrophysiological, behavioral, and histochemical methods in rats	SD rats	OB	n/m	n/m	n/m	n/m	+ injury repair	+ motor recovery, + electrophysiological recovery
Li et al., 2010	Survival and number of olfactory ensheathing cells transplanted in contused spinal cord of rats	GFP transgenic rats	OB	n/m	> 95%	p75 NGFR and S100 double immunostaining	n/m	+ cell survival	+ motor recovery
Takeoka et al., 2009	Serotonergic innervation of the caudal spinal stump in rats after complete spinal transection: effect of olfactory ensheathing glia	Wistar rats	OB	Immunopurification with p75 receptor	n/m	n/m	n/m	N/A	N/A
Su et al., 2009	Reactive astrocytes in glial scar attract olfactory ensheathing cells migration by secreted TNF-α in spinal cord lesion of rat	GFP transgenic SD rats	OB	Differential adhesion	> 95%	S100 immunostaining	n/m	+ migration	Not studied
Salehi et al., 2009	Repair of spinal cord injury by co-transplantation of embryonic stem cell-derived motor neuron and olfactory ensheathing cell	Wistar rats	OB	Differential adhesion	95%	p75 immunostaining	n/m	+ degeneration mitigation	+ motor recovery
Munoz-Quiles et al., 2009	Chronic spinal injury repair by olfactory bulb ensheathing glia and feasibility for autologous therapy	Wistar rats	OB	Purified using p75 receptor expression	n/m	n/m	n/m	+ injury repair	+ motor recovery
Fouad et al., 2009	Transplantation and repair: Combined cell implantation and chondroitinase delivery prevents deterioration of bladder function in rats with complete spinal cord injury	Fischer rats	OB (n/m)	n/m	n/m	n/m	n/m	N/A	Autonomic functions
Negredo et al., 2008	Slow- and fast-twitch rat hind limb skeletal muscle phenotypes 8months after spinal cord transection and olfactory ensheathing glia transplantation	Wistar rats	OB	Immunopurification with p75 receptor	n/m	p75	n/m	Not studied	+ motor recovery, + sensory recovery
Lankford et al., 2008	Olfactory ensheathing cells exhibit unique migratory, phagocytic, and myelinating properties in the x-irradiated spinal cord not shared by schwann cells	GFP transgenic rats	OB	n/m	n/m	n/m	n/m	+ cell survival, + migration, + injury repair	Not studied

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Kubasak et al., 2008	OEG implantation and step training enhance hindlimb-stepping ability in adult spinal transected rats	Wistar rats	OB		Immunopurification with p75 receptor	n/m	n/m	n/m	+ injury repair, + degeneration mitigation	+ motor recovery
Voronova et al., 2018	Survival and migration of rat olfactory ensheathing cells after transplantation into posttraumatic cysts in the spinal cord	Wistar rats	OM		n/m	n/m	P75NTR+ and GFAP+ cells were counted in 10 fields of view	n/m	+ cell survival, + migration	Not studied
Stepanova et al., 2018	Isolation of rat olfactory ensheathing cells and their use in the therapy of posttraumatic cysts of the spinal cord	Wistar rats	OM		n/m	95–97%	P75NTR+ and GFAP+ cells were counted in 10 fields of view	n/m	+ injury repair	+ motor recovery
Muniswami et al., 2018	Therapeutic effect of cell transplantation and chondroitinase in rat spinal cord injury	Wistar rats	OM		n/m	n/m	n/m	n/m	+ degeneration mitigation	+ motor recovery
Muniswami et al., 2018	Functional recovery following the transplantation of olfactory ensheathing cells in rat spinal cord injury model	Wistar rats	OM		n/m	n/m	41% p75NTR, 35% Fibronectin, 75% S100 β , 83% GFAP, immunostaining	Olfactory nerve fibroblasts	+ cell survival	+ motor recovery, + electrophysiological recovery
Cloutier et al., 2016	Olfactory ensheathing cells but not fibroblasts reduce the duration of autonomic dysreflexia in spinal cord injured rats	Wistar rats	OM		NT3	n/m	n/m	n/m	+ cell survival	Autonomic functions
Ibrahim et al., 2014	Comparison of olfactory bulbar and mucosal cultures in a rat rhizotomy model	AS Rats	OM		None used	5%	p75, S100 β , nestin for OECs; and Thy-1, fibronectin for fibroblasts	FBS	+ cell survival, - migration, - injury repair	- motor recovery
Toft et al., 2013	A Comparative study of glial and non-neural cell properties for transplant-mediated repair of the injured spinal cord	Fischer rats	OM		FACS (O4 +, GalC-)	97%	p75NTR, OECs also found to express TUJ-1 (50%) and fibronectin	n/m	+ injury repair, + degeneration mitigation, + inflammation reduction	Not studied
Mayeur et al., 2013	Potential of olfactory ensheathing cells from different sources for spinal cord repair	Fischer rats	OM		Repeated passages	15% unpurified, 98% purified	Flowcytometry p75	n/m	+ cell survival, + migration, + injury repair, + degeneration mitigation, + inflammation reduction	+ motor recovery, + electrophysiological recovery
Centenaro et al., 2013	Implications of olfactory lamina propria transplantation on hyperreflexia and myelinated fiber regeneration in rats with complete spinal cord transection	Wistar rats	OM		n/m	n/m	n/m	n/m	x Injury repair	x sensory recovery
Toft et al., 2012	Transplant-mediated repair properties of rat olfactory mucosal OM-I and OM-II sphere-forming cells	Fischer rats	OM		Purified by surface marker expression of p75 and CD90 to isolate MSCs from OECs in OM-I (EasySep Magnetic)	n/m	p75 for OECs (in OM-I), with SMA, CD90, nestin; and Cytokeratin for OM-II	MSCs and OECs are mixed in OM-I type, not specified clearly otherwise	+ cell survival, + injury repair, - inflammation reduction	Not studied
Zhang et al., 2011	Scar ablation combined with LP/OEC transplantation promotes anatomical recovery and P0-positive myelination in chronically contused spinal cord of rats	Long Evans rats	OM		Not specified, only mentioned as removal of fibroblasts	n/m	immunostaining with p75 and GFAP	SCs and FBS	+ cell survival, + injury repair, + inflammation reduction	x motor recovery
Wu et al., 2011	Delayed olfactory ensheathing cell transplants reduce nociception after dorsal root injury	Wistar rats	OM		NT3	> 90%	p75, GFAP (and - for HNK1)	n/m	Not studied	- motor recovery, - sensory recovery
Tharion et al., 2011	Motor recovery following olfactory ensheathing cell transplantation in rats with spinal cord injury	Wistar rats	OM		None used	n/m	p75, fibronectin	FBS	+ cell survival	+ motor recovery, + electrophysiological recovery
Stamenga et al., 2011	Nasal OEC transplantation promotes respiratory recovery in a subchronic rat model of cervical spinal cord contusion	SD rats	OM		NT3	> 90%	p75, GFAP (and - for HNK1)	HNK1 - SCs	+ injury repair	Autonomic functions

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Centenaro et al., 2011	Olfactory and respiratory lamina propria transplantation after spinal cord transection in rats: Effects on functional recovery and axonal regeneration	Wistar rats	OM	n/m	n/m	p75, S100, GFAP	n/m	x Injury repair	Not studied
Kalincik et al., 2010b	Selected changes in spinal cord morphology after T4 transection and olfactory ensheathing cell transplantation	Wistar rats	OM	NT3	> 90%	p75 immunostaining	n/m	+ injury repair, + degeneration mitigation	Not studied
Kalincik et al., 2010a	Olfactory ensheathing cells reduce duration of autonomic dysreflexia in rats with high spinal cord injury	Wistar rats	OM	NT3	> 90%	p75 and GFAP immunostaining	Non myelinating SCs	+ cell survival	Autonomic functions
Bretzner et al., 2010	Combination of olfactory ensheathing cells with local versus systemic cAMP treatment after a cervical rubrospinal tract injury	GFP transgenic mice	OM	Anti-Thy1.1-mediated complement lysis	> 75%	p75 and GFAP immunostaining	Fibroblasts (not confirmed)	+ degeneration mitigation, + inflammation reduction, -injury repair	+ sensory recovery
Aoki et al., 2010	Limited functional recovery in rats with complete spinal cord injury after transplantation of whole-layer olfactory mucosa	Wistar rats	OM	None used	Not applicable	None used	n/m	+ injury repair, + degeneration mitigation	+ motor recovery
Amemori et al., 2010	Co-transplantation of olfactory ensheathing glia and mesenchymal stromal cells does not have synergistic effects after spinal cord injury in the rat	Wistar rats	OM	n/m	> 80%	p75, S100 Immunostaining	n/m	+ degeneration mitigation	+ motor recovery, + electrophysiological recovery
Yamamoto et al., 2009	Transplanted olfactory mucosal cells restore paw reaching function without regeneration of severed corticospinal tract fibres across the lesion	AS Rats	OM	None used	5%	p75 immunostaining	FBs (assumed)	- migration, - injury repair	+ motor recovery
Iwatsuki et al., 2008	Transplantation of olfactory mucosa following spinal cord injury promotes recovery in rats	SD rats	OM	None used	Not applicable	None used	n/m	+ cell survival, + injury repair	+ motor recovery
Bretzner et al., 2008	Undesired effects of a combinatorial treatment for spinal cord injury – transplantation of olfactory ensheathing cells and BDNF infusion to the red nucleus	GFP transgenic mice	OM	Anti-Thy1.1-mediated complement lysis	>75%	p75 and GFAP immunostaining	FBs (assumed)	+ degeneration mitigation, + inflammation reduction	+ motor recovery, + sensory recovery
Luo et al., 2013	Transplantation of NSCs with OECs alleviates neuropathic pain associated with NGF downregulation in rats following spinal cord injury	SD rats	n/m	n/m	95%	p75 immunostaining	n/m	Not studied	- sensory recovery

For outcome description: +: positive/desirable outcome; -: poor/undesirable outcome, x: outcome was not statistically significant; GFAP: glial fibrillary acidic protein; MACS: magnetic cell sorting; N/A: not applicable for the given study/irrelevant to the research question of the study; OB: olfactory bulb; OEC: olfactory ensheathing cell; n/m: not mentioned; OM: olfactory mucosa; SD: Sprague-Dawley.