Supplementary Table 1. Complete list of studies using biomaterials to promote vascular repair after spinal cord injury identified by the systematic literature search

Species	SCI model	Method	Time & duration (day)	Outcome	References
Rat, Wistar, M	C6 Lateral hemisection (2×2×2 mm)	rGO scaffold	Acute (0)	*Morphology*: Functional blood vessels were observed in inner parts of the scaffold at 30 days; blood vessels were identified in close relation with regenerated axons inside the scaffold at 30 days; no significant alterations indicating toxicity *Function*: / *Survival*: 10, 30 days	López-Dolado et al.[74] (2016)
Rat, Wistar, F	T8, 9 Transection	Ployethylene glycol (PEG 600), mechanical microconnector system (mMS)	Acute (0) and chronic (5)	*Morphology*: After acute implantation of mMS blood vessels in close proximity with axonal structures could be detected in the mMS lumen at 5 wk; after scar resection and PEG 600 implantation the injury site was invaded by endothelial cells *Function*: Significant improvement at 10 and 30 days with mMS (BBB) and with PEG (mBBB) *Survival*: 30 days (mMS), 39 wk (PEG)	Brazda et al.[88] (2016)
Rat, Long Evans, F	T9, 10 Lateral hemisection (4 mm long)	VEGF165, FGF2 (in microspheres) PLGA multiple channel bridge	Acute (0)	*Morphology*: VEGF-levels at injury site were significantly (20-fold) greater than without VEGF-treatment at 1 week; significantly more blood vessels inside bridges with 2-μg VEGF and 1-μg FGF2 at 6 wk; the number of blood vessels was significantly increased; neurite growth was 1,7-fold greater at 6 wk in bridges with VEGF and FGF2 *Function*: / *Survival*: 1, 6 wk	De Laporte et al.[32] (2011)
Rat, Sprague-Dawley, F	T10 Transection	DPSCs PLLA/PLGA-scaffold	Acute (0)	*Morphology*: Angiogenesis was significantly abundant at the injury site in rats treated with prevascularized scaffolds compared to DPSC-scaffolds, empty scaffolds and untreated rats; the mean diffusivity (indicator of molecular diffusion rate and demyelination) was significantly lower in prevascularized scaffolds at 8 wk, total vessel volume and vessel density in the lesion site were significantly higher in prevascularized scaffolds (increased vessel density in the rubrospinal tract, spinothalamic tract, dorsal column and spinocerebellar tract, but not in corticospinal tract) *Function*: Significant improvement at 2 and 4 wk (BBB) *Survival*: 8 wk	Guo et al.[84] (2020)
Rat, Wistar, F	T7 Transection, (5 mm long)	FGF2 Hyaluronate collagen scaffold (CRS)	Acute (0)	*Morphology*: The number of blood vessels was significantly increased caudal, rostral and at the injury site in the FGF2-CRS and CRS groups compared to the control group at 12 wk as well as the FGF2-CRS group compared to the CRS group *Function*: Significant improvement after 4 wk (BBB) *Survival*: 12 wk	Shang et al.[40] (2019)
Mice, C57BL/6, M	T9 Hemisection	HUVECs Fibrous porous silk scaffold (FPSS)	Acute (0)	*Morphology*: Microvessel density and microvessel count in the FPSS-cells group were significantly higher at 28 days; significantly more regenerating axons formed along the blood vessels in the white matter at the injury site at 4 wk *Function*: Significant improvement after 4 wk (BBB) *Survival*: 4 wk	Zhong et al.[85] (2020)
Rat, Sprague-Dawley, F	T9, 10 Transection (4 mm long)	Oxygen-generating scaffold (CPO/PLGA-microspheres in hydrogel)	Acute (0)	*Morphology*: Oxygen-generating scaffolds had a significantly oxygen level up to 21 days than hydrogel; blood vessels were observed in the scaffold and neovascularization was significantly greater than in control groups *Function*: Significant improvement after 2 wk (BBB) *Survival*: 12 wk	Liu et al.[75] (2020)
Rat, Fischer, F	T9 Transection (2 mm long)	OPF+ hydrogel scaffold SCs, SCs + RAPA (PLGA-microspheres)	Acute (0)	*Morphology*: Mean length density (Lv) of blood vessels was lowest in RAPA channels; blood vessel surface area was significantly larger in SC group; significantly larger mean vessel volumes in the SC group; mean diameter of blood vessels in SC channels was significantly greater; mean cross-sectional area per blood vessel in SC channels was significantly larger; number of axons regenerating had positive correlations to the surface and volume area densities of vessels and to the diameter of blood vessels; for SC channels significant negative correlations were shown between peak axonal density of total axon amplitudes and vessel cross-sectional area for total axons → SCs in hydrogel channels supported neurovascular bundle regeneration significantly in axon and vessel density and in physiologic parameters of vessel diameter and radial diffusion distances *Function*: / *Survival*: 6 wk	Siddiqui et al.[83] (2021)
Rat, Sprague-Dawley, F	T8 Transection (2 mm long)	Hydrogel scaffold with CBD-SDF1a + Taxol liposomes	Acute (0)	*Morphology*: The number of blood vessels was significantly higher in the full treatment group at 10 days; axonal fibers with a regenerative length longer than 1 mm at the lesion site were always close to regenerated blood vessels *Function*: Significant improvement after 3 wk (BBB) *Survival*: 5, 10 days, 6 wk	Liu et al.[89] (2021)

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Supplementary Table 1. Complete list of studies using biomaterials to promote vascular repair after spinal cord injury identified by the systematic literature search (Continued)

Species	SCI model	Method	Time & duration (day)	Outcome	References
Rat, Sprague-Dawley, F	T9 Contusion, (175 kDyne)	Nanofiber-hydrogel composite (NHC) (Injection into injury site)	Subacute (3)	*Morphology*: The blood vessel density increased in time in the injury with NHC or HA but decreased in the control group; the blood vessel density was significantly higher at 28 days *Function*: No significant improvement (BBB) *Survival*: 3, 7, 28, 56 days	Li et al.[61] (2020)
Rat, Sprague-Dawley, F	T9 Lateral hemisection (3 mm long)	Microsol electrospun oriented fiber scaffold pDNA/aLiposome (NGF) + IL-4	Acute (0)	*Morphology*: The number of blood vessels was significantly higher; neovascularization was significantly higher at 4 and 8 wk → polarized M2 subtypes possibly secreted VEGF which promotes blood vessel formation *Function*: Significant improvement after 3 wk (BBB) and 4 wk (Inclined Plane Test) *Survival*: 4, 8 wk	Xi et al.[90] (2020)
Rat, Wistar, M	T10 Lateral hemisection	VEGF/PDGF Hydrogel patch Mini-pump At injury site	Acute (0) For 2 days (patch)/7 days (pump)	*Morphology*: The blood vessel density 200 μm from the lesion cavity was not significantly affected by VEGF/PDGF treatment *Function*: No significant improvement (BBB) *Survival*: 1, 3 mo	Lutton et al.[91] (2012)
Rat, Sprague-Dawley, F	T9–11 Lateral hemisection	VEGF, NT-3, BMSCs PLGA-nanoparticles with acellular spinal cord scaffold (ASCS)	Acute (0)	*Morphology*: The levels of VEGF and NT-3 were significantly increased at the injury site 1 and 4 wk in the VEGF/NT-3-ASCS- and BMSC-treatment groups; the blood vessel density was significantly higher; more intensive blood vessels are ordinarily accompanied with lower infiltration of macrophages and vice versa at the lesion site *Function*: Significant improvement at all timepoints (BBB) *Survival*: 1, 4, 8 wk	Xu et al.[92] (2020)
Rat, Sprague-Dawley, F	T9 Contusion injury	VEGF, Ang-1, FGF2 PLGA-microspheres Injection into injury site	Acute (0)	*Morphology*: The levels of VEGF, Ang-1 and FGF2 were significantly higher at the injury site at 2, 4, and 8 wk in animals treated with angiogenic microspheres; the numbers of blood vessels at the injury site at 4 and 8 wk were significantly higher; the numbers of cells positive for nestin or ßIII-tubulin (marker of neural precursor recruitment) at the injury site were significantly higher and mostly associated with blood vessels; the density of neurofilament (NF)-positive fibers was significantly greater at the injury site at 8 wk in treated animals often aligned with blood vessels; serotonergic (5-HT) fibers were associated with blood vessels and significantly longer in treated rats; the numbers of MBP-positive mature oligodendrocytes were significantly higher in treated rats and aggregated around blood vessels in the white matter region; most axons in treated animals were myelinated and followed blood vessels at 12 wk *Function*: Significant improvement after 14d (BBB) *Survival*: 2, 4, 8, 12 wk	Yu et al.[33] (2016)
Rat, Sprague-Dawley, F	T9, 10 Lateral hemisection (4 mm long)	NPCs, ECs Hydrogel + PLGA-scaffold	Acute (0)	*Morphology*: Significantly more vessels in the implant + NPCs/ECs treated rats in the lesion epicenter at 8 wk; only implant + NPCs/ECs treated rats had EBA-positive vessels (marker of functional BSCB) at the injury epicenter; the vessel density was significantly increased at the injury epicenter *Function*: / *Survival*: 3, 8 wk	Rauch et al.[73] (2009)
Rat, Fischer F344, F	T9, 10 Lateral hemisection	NSCs, EPCs Hydrogel	Acute (0)	*Morphology*: Infiltration of native NSCs into lesion area and formation of blood vessels appeared in NSC/EPC hydrogel group, the acellular hydrogel group and in the control group with connective tissue formation *Function*: significant improvement after 2 wk (BBB) *Survival*: 4 wk	Marrotte et al.[54] (2021)
Rat, Sprague-Dawley, F	T2 Clip compression (26 g for 60 s)	FGF2 HAMC, PLGA-nanoparticles, (Intrathecal injection)	Acute (0)	*Morphology*: The number of blood vessels was significantly higher 300 μm rostral and caudal to the lesion site at 4 wk in HAMC/PLGA/FGF2-treated rats in the dorsal horn *Function*: No significant improvement (BBB) *Survival*: 4 wk	Kang et al.[39] (2013)
Rat	Cervical hemisection	BDNF PHEMA-scaffold	Acute (0)	*Morphology*: Blood vessels grew into the entire PHEMA-scaffold within 2 wk and persisted until 4 wk *Function*: / *Survival*: 1, 2, 4 wk	Bakshi et al.[93] (2004)
Rat, Sprague-Dawley, F	T9, 10 Dorsal hemisection, (3 mm × 1,5 mm)	VEGF, BDNF PLGA-microspheres, HA-antiNgR -scaffold	Acute (0)	*Morphology*: The number of blood vessels and axonal fibers were significantly higher in HA + PLGA scaffolds treated rats at 8 wk; more myelinated axons were found in HA + PLGA scaffolds at 14 wk compared to HA scaffolds and they often had contact with blood vessels *Function*: Significant improvement after 2 wk (BBB, CatWalk) *Survival*: 4, 8, 14 wk	Wen et al.[34] (2016)

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Supplementary Table 1. Complete list of studies using biomaterials to promote vascular repair after spinal cord injury identified by the systematic literature search (Continued)

Species	SCI model	Method	Time & duration (day)	Outcome	References
Rat, Sprague-Dawley, F	T9, 10 Transection, (4 mm long)	NGF, ChABC Alginate beads, electrospun PDS scaffold	Acute (0)	*Morphology*: Many parallel-aligned blood vessels in contact with regenerating axons were present in the implant; some endothelial cells were in close association with electrospun monofilaments at 7 days, after 2–3 wk blood cells were observed in this lumen *Function*: Significant improvement at 21 days (BBB) *Survival*: 7, 21 days	Colello et al.[94] (2016)
Rat, Sprague-Dawley, F	T10 Transection, (1,5 mm long)	MSCs PLGA, GS-scaffold	Acute (0)	*Morphology*: The number of blood vessels was significantly increased in GS+MSCs treated rats at the injury site at 1 wk; only MSCs surrounding blood vessels expressed VEGF *Function*: / *Survival*: 1, 8 wk	Zeng et al.[69] (2011)
Rat, Sprague-Dawley, M	T9 Clip compression	pSV-VEGF PLGA/DC-Chol-nanospheres Injection into injury site	Acute (0)	*Morphology*: Arteriole density was significantly higher in VEGF-loaded PLGA/DC-Chol nanosphere treated rats at 4 wk *Function*: Significant improvement after 2 wk (BBB) *Survival*: 2, 4, 6 wk	Gwak et al.[95] (2016)
Rat, Sprague-Dawley, F	T8, 9 Lateral hemisection, (3 mm long) antiNgR HA-PLL hydrogel	Acute (0)	Acute (0)	*Morphology*: antiNgR was detectable for 8 wk; some blood vessels and axons were seen in the edge and epicenter of HA-PLL/antiNgR and HA-PLL treated rats at 8 wk *Function*: / *Survival*: 2, 4, 8, 12 wk	Wei et al.[96] (2010)
Rat, Wistar, F	T12 Transection, (3 mm long)	PDWHF, NGF Collagen-I	Acute (0)	*Morphology*: Axonal regrowth and number of blood vessels were significantly greater in PDWHF and NGF groups; the number of vessels was significantly greater in PDWHF group compared to NGF group *Function*: No significant improvement observed *Survival*: 4, 8, 12 wk	Hiraizumi et al.[43] (1996)
Rat, Sprague-Dawley, M	T9–11 Lateral hemisection, (3 mm long)	VEGF165 PLGA-nanospheres, ASCS	Acute (0)	*Morphology*: Vessel branches increased significantly at 1 wk in V-ASCS group compared with control and B-ASCS groups but in the following weeks the density of vessel branches decreased in B-and V-ASCS groups, vessel volume/tissue volume (VV)/(TV) were significantly increased in B-and V-ASCS groups at 1wk and VV/TV were significantly greater in V-ASCS compared with B-ASCS; VV/TV was not significantly different between V-ASCS and B-ASCS groups at 8 wk and data in V-ASCS group was significantly lower than in Sham group; vessel density (VDn) was significantly highest in V-ASCS group, higher in B-ASCS group and the lowest in control group at 1wk; VDn was significantly higher in V-ASCS group compared with B-ASCS at 8 wk; average vessel diameter was significantly greater in V-ASCS and B-ASCS groups compared with control group at 1wk but there was no significant difference at 4 and 8 wk, density of vessel branches (VBDn) was significantly higher in V-ASCS group compared with control group and B-ASCS groups at 1, 4 and 8 wk *Function*: Significant improvement after 3d (BBB) *Survival*: 1, 4, 8 wk	Xu et al.[97] (2017)
Cat	L2 Incomplete cord injury (5 mm longitundinal insertion of teflon scheaths)	PDWHF Hydron (coated on Teflon catheter sheaths)	Acute (0)	*Morphology*: The number of vessels was significantly greater in PDWHF-treated animals and the number of vessels appeared significantly more 1 mm from the lesion site *Function*: No significant improvement observed *Survival*: 3 wk	Hiraizumi et al.[44] (1993)
Rat, Sprague-Dawley, M	T9 Transection, (3 mm long)	VEGF Collagen scaffold (CS)	Acute (0)	*Morphology*: The microvessel density and microvessel count in the CS/VEGF group were significantly higher at 12 wk *Function*: Significant improvement after 7 wk *Survival*: 4, 10, 12 wk	Wang et al.[105] (2018)
Rat, Long Evans, F	T9, 10 Lateral hemisection, (4 mm long)	VEGF164 Alginate/fibrinogen-hydrogel, chitosan-nanoparticles	Acute (0)	*Morphology*: Endothelial, ß-III tubulin and growing neurites staining intensity were significantly greater in rats treated with VEGF-loaded hydrogels at 4 wk *Function*: No significant improvement (CatWalk) *Survival*: 4 wk	des Rieux et al.[82] (2014)
Rat, Sprague-Dawley, F	T5, Transection, (3 mm long)	NeuroGel (PHPMA)-hydrogel	Acute (0)	*Morphology*: Vascular response with proliferating capillary sprouts into the hydrogel at 7 days as well as glial cells; extensive ingrowth of sinusoidal capillaries *Function*: Significant improvement observed after 2 wk *Survival*: 2, 4 mo	Woerly et al.[98] (2001)
Rat, Fischer, F	T9, 10 Transection, (4 mm long)	BDNF, FGF1 PLA-foam scaffold, fibrin glue	Acute (0)	*Morphology*: The number of blood vessels was significantly higher in fibrin only group at 2, 4, and 8 wk and in BDNF + foam group at 8 wk *Function*: No significant improvement (BBB) *Survival*: 2, 4, 8 wk	Patist et al.[38] (2004)

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Supplementary Table 1. Complete list of studies using biomaterials to promote vascular repair after spinal cord injury identified by the systematic literature search (Continued)

Species	SCI model	Method	Time & duration (day)	Outcome	References
Cat	T6, 7 Transection, (3 mm long)	NeuroGel	Acute (0)	*Morphology*: At 17 months large capillaries crossed the injury site and a profuse network of blood vessels in proximity of the spinal stumps were seen *Function*: Improvement observed (treadmill test) *Survival*: 6, 9, 17 mo	Woerly et al.[78] (2004)
Rat, Sprague-Dawley, F	T9 Transection, (2 mm long)	Chitosan – graphene oxide (CS/GO) scaffold	Acute (0)	*Morphology*: Regenerating neurons and erythrocytes were seen inside the GS/GO scaffold *Function*: Significant improvement after 7 wk (BBB) and 10 wk (SSEP) *Survival*: 10 wk	Yang et al.[99] (2021)
Rat, Sprague-Dawley, F	T9 Transection, (2 mm long)	NeuroGel (PHPMA hydrogel)	Acute (0)	*Morphology*: Blood vessels, processes of astrocytes and myelinated and unmyelinated axons were observed arranged inside the porous hydrogel implant at 5 mo *Function*: / *Survival*: 5 months	Woerly et al.[100] (1999)
Rat, Sprague-Dawley, F	T9, 10 Lateral hemisection, (5 mm long)	AFG/fSAP hydrogel (aligned fibrin hydrogel/functionalized self-assembling peptide nanofiber hydrogel)	Acute (0)	*Morphology*: Blood vessels were found in the lesion site in AFG/fSAP-treated rats with larger diameter compared with AFG-treated rats at 12 wk; the microvessel density was significantly greater in AFG/fSAP-treated rats at the lesion site compared with AFG-treated rats and control group at 12 wk; regenerating blood vessels and axons showed colocalization *Function*: Significant improvement after 3 wk (BBB) and at 12 wk (Catwalk, MEP) *Survival*: 1, 8, 12 wk	Man et al.[101] (2021)
Rat, Fischer, F	T9 Transection, (2 mm long)	SC, RAPA OPF+ hydrogel (MG), PLGA-microspheres (MS)	Acute (0)	*Morphology*: Vessel length and vessel surface area were significantly greater in SC + Empty-MS treated rats compared with MG + Empty-MS at 6 wk but not different to SC + Low or medium RAPA-MS; vessel length and surface area in SC-loaded scaffolds with high doses RAPA was not different from MG-only scaffolds without RAPA; the mean blood vessel diameter in SC + Empty-MS was greater than in MG-only scaffolds; the number of vessels with Pericytes (PC)/ Endothelial cells (EC) was greatest in SC + Empty-MS treated rats; PC/EC decreased with increasing RAPA concentration and was significantly lower in MG + Empty-MS treated rats; the number of blood vessels with normal PC/EC ratio was highest in SC + Low RAPA-MS treated rats; surface area of functionals was significantly higher in RAPA treated rats compared to MG + Empty-MS group indicating an improved vascular connectivity to the systemic circulation *Function*: Significant improvement after 4 wk (BBB) *Survival*: 6 wk	Hakim et al.[102] (2019)
Rat, Sprague-Dawley, F	C3, 4 Lateral funiculotomy, (2 mm long)	Collagen-I scaffold	Acute (0)	*Morphology*: At 10 wk blood vessels were seen inside the scaffold but most of them were not associated with ZO-1-immunoreactive tight junctions, ZO-1-immunoreactivity was intensive at the transition zones, density of blood vessels was significantly greater at the transition zone of the scaffold compared to the contralateral non-lesioned white matter but staining within the scaffold was not significantly greater than that of the contralateral white matter; the number of functional vessels was significantly lower within the scaffold at 10 wk than the total number of vessels and most functional vessels within the scaffold were not positive for ZO-1 tight junction → delayed or slowed maturation *Function*: / *Survival*: 10 wk	Altinova et al.[80] (2020)
Rat, Sprague-Dawley, F	T9, 10 Dorsal hemisection, (4 mm long)	Aligned fibrin hydrogel (AFG)	Acute (0)	*Morphology*: The number of blood vessels was significantly greater in AFG-treated rats at 2 and 4 wk *Function*: Significant improvement after 2 wk (BBB) *Survival*: 1, 2, 4, 8 wk	Yao et al.[79] (2018)
Canine, Beagle, F	T10 Lateral hemisection, (4 mm long)	Gelatin sponge (GS), NT-3/fibroin particles (NF)	Acute (0)	*Morphology*: Blood vessels or capillaries were identified only in the NF-GS group at 4 wk *Function*: Significant improvement after 3 wk (Olby score test) and at 4 wk *Survival*: 4 wk	Li et al.[103] (2018)
Rat, Sprague-Dawley, F	T9, 10 Lateral hemisection, (4 mm long)	MSCs, PLGA-scaffold	Acute (0)	*Morphology*: The umber of blood vessels was significantly increased around the lesion site at 6 wk in the transplant group *Function*: Significant improvement after 7d (BBB), 2 wk (inclined plane downward, righting reflex) and 4 wk (at level allodynia) *Survival*: 6 wk	Ropper et al.[86] (2017)
Rat, Sprague-Dawley, F	T10 Compression injury, (35 g, 5 min)	CORM-2-SLNs (Carbon monoxide-releasing molecule-2 solid lipid nanoparticle) (i.p. injection)	Acute (0) For 8 days	*Morphology*: The fluorescence intensity of Evan´s Blue dye was significantly lower in the treatment group at the injury site at 1d indicating reduced BSCB permeability; the number of blood vessels was significantly greater in the treatment group at 21 days *Function*: Significant improvement after 7d (BBB, withdrawal test) *Survival*: 1, 3, 14, 21 days	Joshi et al.[76] (2020)

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Supplementary Table 1. Complete list of studies using biomaterials to promote vascular repair after spinal cord injury identified by the systematic literature search (Continued)

Species	SCI model	Method	Time & duration (day)	Outcome	References
Rat, Wistar, F	T8 Complete transection of CST	VEGF165, Ad.CMV. VEGF165 (Injection in lesion site, controlled release via Matrigel)	Acute (0) For 30 days	*Morphology*: The number of vessels in VEGF-treated rats was significantly higher (ca. 300%), retrograde axonal degeneration was significantly reduced in VEGF-treated rats, regenerating CST axons (HRP-labeled) where located mostly in the ventral gray matter *Function*: / *Survival*: 0, 3, 7, 10, 16, 18, 30 days	Facchiano et al.[104] (2002)
Rat, Sprague-Dawley, M	T7 Contusion injury	VEGF165 Gelfoam placed on injury site	Acute (0)	*Morphology*: Significant increase in BSCB permeability after VEGF-treatment in non-enhancing-areas (magnetic resonance imaging) in the epicenter in the subacute (7–14 days) and chronic (28–56 days) periods *Function*: Significant improvement at 28 days, but not at 56 days (BBB) *Survival*: 56 days	Patel et al.[30] (2009)

/, not assessed; AFG, aligned fibrin hydrogel; fSAP, functionalized self-assembling peptides; CORM-2, carbon monoxide-releasing molecule-2; rGO, reduced graphene oxide; DPSCs, dental pulp stem cells; PLGA, polylactide-co-glycolide acid; PLLA, poly-L-lactic acid; PEG 600 - polyethylene glycol, PLG(A) - polylactide-co-glycolide (acid), PLLA - poly-l-lactic acid; mMS, mechanical microconnector system; BBB, Basso, Beattie and Bresnahan score; VEGF, vascular endothelial growth factor; FGF2, fibroblast growth factor 2; DPSCs, dental pulp stem cells; CRS, hyaluronate collagen scaffold; HUVECs, human umbilical vein endothelial cells; FPSS, fibrous porous silk scaffold; CPO, calcium peroxide; OPF, oligopolyethylene-glycol-fumarate; SCs, Schwann cells; RAPA, rapamycin; CBD-SDF-1a, collagen-binding domain-stromal cell-derived factor-1a; NHC, nanofiber-hydrogel composite; MSaP-aL/p, microsol electrospun fiber scaffold with pDNA-loaded liposomes; NGF, nerve growth factor; IL-4, interleukin-4; PDGF, platelet-derived growth factor; NT-3, neurotrophin-3; BMSCs, bone mesenchymal stem cells; ASCS, acellular spinal cord scaffold; Ang-1, angiopoietin-1; NPCs, neural progenitor cells; EPCs, endothelial progenitor cells; HAMC, biopolymer blend of hyaluronan and methylcellulose; BDNF, brain derived neurotrophic factor; PHEMA, poly-2-hydroxyethylmethacrylate hydrogel; HA, hyaluronic acid; AntiNgR, anti-Nogo receptor antibody; ChABC, chondroitinase ABC; PDS, polydioxinone; MSCs, bone marrow-derived mesenchymal stem cells; pSV-VEG, encapsulated plasmid DNA of VEGF; DC-Chol, 3à-[N-(N0,N0- dimethylaminoethane) carbamoyl] cholesterol; PDWHF, platelet-derived wound healing formula; PHPMA, Poly [iV-(2-hydroxypropyl) methacrylamide]; GS, gelatin sponge; BSCB, blood-spinal cord barrier; CST, corticospinal tract; Ad.CMV.VEGF, replication-defective adenovirus coding for VEGF.

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