

Materials List for:

# Simple and Effective Administration and Visualization of Microparticles in the Circulatory System of Small Fishes Using Kidney Injection

Ekaterina Borvinskaya<sup>1,2</sup>, Anton Gurkov<sup>1,3</sup>, Ekaterina Shchapova<sup>1</sup>, Dmitry Karnaukhov<sup>1</sup>, Anton Sadovoy<sup>4</sup>, Igor Meglinski<sup>1,5</sup>, Maxim Timofeyev<sup>1</sup>

<sup>1</sup>Institute of Biology at Irkutsk State University

<sup>2</sup>Institute of Biology at Karelian Research Centre of Russian Academy of Sciences

<sup>3</sup>Baikal Research Centre

<sup>4</sup>Institute of Materials Research and Engineering, Agency for Science, Technology, and Research (A\*STAR)

<sup>5</sup>University of Oulu, Optoelectronics and Measurement Techniques Laboratory

Correspondence to: Maxim Timofeyev at [m.a.timofeyev@gmail.com](mailto:m.a.timofeyev@gmail.com)

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## Materials

Name	Company	Catalog Number	Comments
SNARF-1-dextran, 70000 MW	Thermo Fisher Scientific	D3304	Fluorescent probe. Any other appropriate polymer-bound fluorescent dye can be used as a microcapsule filler
Albumin-fluorescein isothiocyanate conjugate (FITC-BSA)	SIGMA	A9771	Fluorescent probe
Rhodamine B isothiocyanate-Dextran (RITC-dextran)	SIGMA	R9379	Fluorescent probe
Calcium chloride	SIGMA	C1016	CaCO <sub>3</sub> templates formation
Sodium carbonate	SIGMA	S7795	CaCO <sub>3</sub> templates formation
Poly(allylamine hydrochloride), MW 50000 (PAH)	SIGMA	283215	Cationic polymer
Poly(sodium 4-styrenesulfonate), MW 70000 (PSS)	SIGMA	243051	Anionic polymer
Poly-L-lysine [20 kDa] grafted with polyethylene glycol [5 kDa], g = 3.0 to 4.5 (PLL-g-PEG)	SuSoS	PLL(20)-g[3.5]-PEG(5)	Final polymer to increase the biocompatibility of microcapsules
Sodium chloride	SIGMA	S8776	To dissolve applied polymers
Water Purification System	Millipore	SIMSV0000	To prepare deionized water
Magnetic stirrer	Stegler		For CaCO <sub>3</sub> templates formation
Eppendorf Research plus pipette, 1000 µL	Eppendorf		Dosing solutions
Eppendorf Research plus pipette, 10 µL	Eppendorf		Dosing solutions
Pipette tips, volume range 200 to 1000 µL	F.L. Medical	28093	Dosing solutions
Pipette tips, volume range 0.1-10 µL	Eppendorf	Z640069	Dosing solutions
Mini-centrifuge Microspin 12, High-speed	BioSan		For microcapsule centrifugation-washing procedure
Microcentrifuge tubes, 2 mL	Eppendorf	Z666513	Microcapsule synthesis and storage
Shaker Intelli-mixer RM-1L	ELMY Ltd.		To reduce microcapsule aggregation
Ultrasonic cleaner			To reduce microcapsule aggregation

Head phones			To protect ears from ultrasound
Ethylenediaminetetraacetic acid	SIGMA	EDS	To dissolve the CaCO <sub>3</sub> templates
Monosodium phosphate	SIGMA	S9638	Preparation of pH buffers
Disodium phosphate	SIGMA	S9390	Preparation of pH buffers
Sodium hydroxide	SIGMA	S8045	To adjust the pH of the EDTA solution and buffers
Thermostat chamber			To dry microcapsules on glass slide
Hemocytometer blood cell count chamber			To investigate the size distribution and concentration of the prepared microcapsules
Fluorescent microscope Mikmed 2	LOMO		In vivo visualization of microcapsules in fish blood
Set of fluorescent filters for SNARF-1 (should be chosen depending on the microscope model; example is provided)	Chroma	79010	Visualization of microcapsules with fluorescent probes
Fiber spectrometer QE Pro	Ocean Optics		Calibration of microcapsules under microscope
Optical fiber QP400-2-VIS NIR, 400 μm, 2 m	Ocean Optics		To connect spectrometer with microscope port
Collimator F280SMA-A	Thorlabs		To connect spectrometer with microscope port
Glass microscope slide	Fisherbrand	12-550-A3	Calibration of microcapsules under microscope
Coverslips, 22 x 22 mm	Pearl	MS-SLIDCV	Calibration of microcapsules under microscope
Glass microcapillaries Intra MARK, 10 μL	Blaubrand	BR708709	To collect fish blood
Clove oil	SIGMA	C8392	Fish anesthesia
Lancet No 11	Apexmed international B.V.	P00588	To cut the fish tail and release the steel needle from the tip of insulin autoinjector
Heparin, 5000 U/mL	Calbiochem	L6510-BC	For treating all surfaces that come in contact with fish blood during fish blood collection
Seven 2 Go Pro pH-meter with a microelectrode	Mettler Toledo		To determine fish blood pH
Insulin pen needles Micro-Fine Plus, 0.25 x 5 mm	Becton, Dickinson and Company		For injection procedure. Any thin needle (Ø 0.33 mm or less) is appropriate
Glass capillaries, 1 x 75 mm	Hirschmann Laborgeräte GmbH & Co	9201075	For injection procedure
Gas torch			To solder steel needle to glass capillary
Microinjector IM-9B	NARISHIGE		For precise dosing of microcapsules suspension
Petri dishes, 60 mm x 15 mm, polystyrene	SIGMA	P5481	For manipulations with fish under anesthesia
Plastic spoon			For manipulations with fish under anesthesia
Damp sponge			For manipulations with fish under anesthesia
Dissection scissors	Thermo Scientific	31212	To remove the gill cover from the fish head

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Pasteur pipette, 3.5 mL	BRAND	Z331767	To moisten fish gills
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