Curriculum vitae: Elena Markvicheva

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IBCh positions

2019–to date	Principal research fellow
	Leading research fellow

Scientific interests

Her scientific interests are focused on elaboration of novel polymer biomaterials for biomedical applications (controlled drug delivery systems, nanoencapsulation of bioactive peptides; immobilized mammalian cells, biodegradable scaffolds (fibers, hydrogels, microcarriers) for tissue repair.

Scientific societies' membership

She is a member of several scientific international societies and Coordinator (Head of Russian branch of Bioencapsulation Research Group) in Russia as well as an expert in international COST programs (840 *и* 865).

Titles

Doctor of Science (Chemistry)

Grants and projects

2021–2023	New multitarget fusion proteins based on highly specific mutant variant TRAIL DR5-B with effector peptides targeted to various signaling pathways affecting tumor development
2018–2020	-

Publications

1. Akasov R, Selina O, Tolstova T, Gileva A, Burov S, Klyachko N, **Markvicheva E** (2026). Three-dimensional mesenchymal stromal cells spheroids generated by RGD-induced self-assembly technique for tissue engineering. *Cytotechnology* 78 (3), 80, 10.1007/s10616-026-00951-7
2. Afanasyeva KA, Budanova UA, Sebyakin YL, Gileva AM, Drozdova MG, **Markvicheva EA** (2025). Fluorescently Labelled Cationic Liposomes with Sunitinib and the BODIPY-FL/L-Carnitine Conjugate for Theranostics. *Russ. J. Bioorganic Chem.* 51 (6), 2812–2822, 10.1134/S1068162025603660
3. Trushina D, Gileva A, Yagolovich A, Gasparian M, Kurbanova L, Burov S, Bukreeva T, Pallaeva T, Artemov V, Oleinikov V, **Markvicheva E** (2025). Synergistic effect of DR5-targeted capsules loaded with doxorubicin in drug-resistant 3D tumour spheroids. *J Microencapsul* , 1–16, 10.1080/02652048.2025.2570651
4. Yagolovich AV, Isakova AA, Artykov AA, Vorontsova YV, Mazur DV, Antipova NV, Pavlyukov MS, Shakhparonov MI, Gileva AM, **Markvicheva EA**, Plotnikova EA, Pankratov AA, Kirpichnikov MP, Gasparian ME, Dolgikh DA (2024). Correction: Yagolovich et al. DR5-Selective TRAIL Variant DR5-B Functionalized with Tumor-Penetrating iRGD Peptide for Enhanced Antitumor Activity against Glioblastoma. 2022, , 12687. *Int J Mol Sci* 25 (10), , 10.3390/ijms25105334
5. Drozdova M, Makhonina A, Gladkikh D, Artyukhov A, Bryukhanov L, Mezhuev Y, Lozinsky V, **Markvicheva E** (2024). Hydroxyapatite-loaded macroporous calcium alginate hydrogels: Preparation, characterization, and in vitro evaluation. *Biopolymers* 115 (4), e23583, 10.1002/bip.23583
6. Yagolovich AV, Kuskov AN, Kulikov PP, Bagrov DV, Petrova PA, Kukovyakina EV, Isakova AA, Khan II,

Pokrovsky VS, Nosyrev AE, Stamati PC, **Markvicheva EA**, Gasparian ME, Spandidos DA, Tsatsakis AM (2024). Assessment of the effects of amphiphilic poly (N-vinylpyrrolidone) nanoparticles loaded with bortezomib on glioblastoma cell lines and zebrafish embryos. *Biomed Rep* 20 (3), 37, 10.3892/br.2024.1725

7. Mishchenko EV, Gileva AM, **Markvicheva EA**, Koroleva MY (2023). Nanoemulsions and Solid Lipid Nanoparticles with Encapsulated Doxorubicin and Thymoquinone. *Colloid Journal of the USSR (English Translation of Kolloidnyi Zhurnal)* 85 (5), 736–745, 10.1134/S1061933X23600707
8. Afanasyeva KA, Gileva AM, **Markvicheva EA**, Budanova UA, Sebyakin YL (2023). Glycolipotripeptide (N-Lactitol-Gly)2-LysC16 and Its Fluorescently Labeled Analog for Visualizing Vector Systems for the Delivery of Biologically Active Substances to Target Cells. *Moscow University Chemistry Bulletin* 78 (5), 283–291, 10.3103/S0027131423050036
9. Kildeeva N, Sazhnev N, Drozdova M, Zakharova V, Svidchenko E, Surin N, **Markvicheva E** (2023). Approaches to Obtaining Water-Insoluble Fibrous Matrices from Regenerated Fibroin. *Technologies (Basel)* 11 (5), 146, 10.3390/technologies11050146
10. Agapova OI, Efimov AE, Mochalov KE, Solovyeva DO, Gileva AM, **Markvicheva EA**, Yakovlev DV, Lyundup AV, Oleinikov VA, Agapov II, Gautier SV (2023). Correlative Fluorescent Scanning Probe Nanotomography Used to Study the Intracellular Distribution of Doxorubicin in MCF-7 Human Breast Adenocarcinoma Cells. *Dokl Biol Sci* 509 (1), 103–106, 10.1134/S0012496623700266
11. Drozdova M, Vodyakova M, Tolstova T, Chernogortseva M, Sazhnev N, Demina T, Aksenova N, Timashev P, Kildeeva N, **Markvicheva E** (2023). Composite Hydrogels Based on Cross-Linked Chitosan and Low Molecular Weight Hyaluronic Acid for Tissue Engineering. *Polymers (Basel)* 15 (10), 2371, 10.3390/polym15102371
12. Gileva A, Trushina D, Yagolovich A, Gasparian M, Kurbanova L, Smirnov I, Burov S, **Markvicheva E** (2023). Doxorubicin-Loaded Polyelectrolyte Multilayer Capsules Modified with Antitumor DR5-Specific TRAIL Variant for Targeted Drug Delivery to Tumor Cells. *Nanomaterials (Basel)* 13 (5), , 10.3390/nano13050902
13. Tolstova T, Drozdova M, Popyrina T, Matveeva D, Demina T, Akopova T, Andreeva E, **Markvicheva E** (2023). Preparation and In Vitro Evaluation of Chitosan-g-Oligolactide Based Films and Macroporous Hydrogels for Tissue Engineering. *Polymers (Basel)* 15 (4), 907, 10.3390/polym15040907
14. Drozdova MG, Demina TS, Dregval OA, Gaidar AI, Andreeva ER, Zelenetskii AN, Akopova TA, **Markvicheva EA** (2022). Macroporous Hyaluronic Acid/Chitosan Polyelectrolyte Complex-Based Hydrogels Loaded with Hydroxyapatite Nanoparticles: Preparation, Characterization and In Vitro Evaluation. *Polysaccharides* 3 (4), 745–760, 10.3390/polysaccharides3040043
15. Yagolovich AV, Isakova AA, Artykov AA, Vorontsova YV, Mazur DV, Antipova NV, Pavlyukov MS, Shakhparonov MI, Gileva AM, **Markvicheva EA**, Plotnikova EA, Pankratov AA, Kirpichnikov MP, Gasparian ME, Dolgikh DA (2022). DR5-Selective TRAIL Variant DR5-B Functionalized with Tumor-Penetrating iRGD Peptide for Enhanced Antitumor Activity against Glioblastoma. *Int J Mol Sci* 23 (20), , 10.3390/ijms232012687
16. Sazhnev NA, Kildeeva NR, Drozdova MG, **Markvicheva EA** (2022). Fibrous Scaffolds for Tissue Engineering Electrospun from Fibroin-Containing Solutions. *FIBRE CHEM+* 53 (6), 370–372, 10.1007/s10692-022-10303-8
17. Yagolovich A, Kuskov A, Kulikov P, Kurbanova L, Bagrov D, Artykov A, Gasparian M, Sizova S, Oleinikov V, Gileva A, Kirpichnikov M, Dolgikh D, **Markvicheva E** (2021). Amphiphilic Poly(N-vinylpyrrolidone) Nanoparticles Conjugated with DR5-Specific Antitumor Cytokine DR5-B for Targeted Delivery to Cancer Cells. *Pharmaceutics* 13 (9), , 10.3390/pharmaceutics13091413
18. Kuskov A, Selina O, Kulikov P, Imatdinov I, Balysheva V, Kryukov A, Shtilman M, **Markvicheva E** (2021). Amphiphilic Poly(N-Vinylpyrrolidone) Nanoparticles Loaded with DNA Plasmids Encoding Gn and Gc Glycoproteins of the Rift Valley Fever Virus: Preparation and in Vivo Evaluation. *ACS Applied Bio Materials* 4 (8), 6084–6092, 10.1021/acsabm.1c00426
19. Borodina T, Gileva A, Akasov R, Trushina D, Burov S, Klyachko N, González-Alfaro Y, Bukreeva T, **Markvicheva E** (2020). Fabrication and evaluation of nanocontainers for lipophilic anticancer drug delivery in 3D in vitro model. *J Biomed Mater Res B Appl Biomater* 109 (4), 527–537, 10.1002/jbm.b.34721
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22. Selina O, Imatdinov I, Balysheva V, Akasov R, Kryukov A, Balyshev V, **Markvicheva E** (2020). Microencapsulated plasmids expressing Gn and Gc glycoproteins of Rift Valley Fever virus enhance humoral immune response in mice. *Biotechnol Lett* 42 (4), 529–536, 10.1007/s10529-020-02816-1
23. Sambi M, Samuel V, Qorri B, Haq S, Burov SV, **Markvicheva E**, Harless W, Szewczuk MR (2020). A triple combination of metformin, acetylsalicylic acid, and oseltamivir phosphate impacts tumour spheroid viability and upends chemoresistance in triple-negative breast cancer. *Drug Des Devel Ther* 14, 1995–2019, 10.2147/DDDT.S242514
24. Gileva A, Sarychev G, Kondrya U, Mironova M, Sapach A, Selina O, Budanova U, Burov S, Sebyakin Y, **Markvicheva E** (2019). Lipoamino acid-based cerasomes for doxorubicin delivery: Preparation and in vitro evaluation. *Mater Sci Eng C Mater Biol Appl* 100, 724–734, 10.1016/j.msec.2019.02.111
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28. Sazhnev NA, Drozdova MG, Rodionov IA, Kildeeva NR, Balabanova TV, **Markvicheva EA**, Lozinsky VI (2018). Preparation of Chitosan Cryostructurates with Controlled Porous Morphology and Their Use as 3D-Scaffolds for the Cultivation of Animal Cells. *APPL BIOCHEM MICRO*+ 54 (5), 459–467, 10.1134/S0003683818050162
29. Li X, Sambi M, Decarlo A, Burov SV, Akasov R, **Markvicheva E**, Malardier-Jugroot C, Szewczuk MR (2018). Functionalized folic acid-conjugated amphiphilic alternating copolymer actively targets 3D multicellular tumour spheroids and delivers the hydrophobic drug to the inner core. *Nanomaterials (Basel)* 8 (8), , 10.3390/nano8080588
30. Koloskova OO, Gileva AM, Drozdova MG, Grechihina MV, Suzina NE, Budanova UA, Sebyakin YL, Kudlay DA, Shilovskiy IP, Sapozhnikov AM, Kovalenko EI, **Markvicheva EA**, Khaitov MR (2018). Effect of lipopeptide structure on gene delivery system properties: Evaluation in 2D and 3D in vitro models. *Colloids Surf B Biointerfaces* 167, 328–336, 10.1016/j.colsurfb.2018.04.003
31. Akasov R, Drozdova M, Zaytseva-Zotova D, Leko M, Chelushkin P, Marc A, Chevalot I, Burov S, Klyachko N, Vandamme T, **Markvicheva E** (2017). Novel doxorubicin derivatives: Synthesis and cytotoxicity study in 2D and 3D in vitro models. *Adv Pharm Bull* 7 (4), 593–601, 10.15171/apb.2017.071
32. **(conference)** Trushina DB, Bukreeva TV, Borodina T, Khovankina AV, Akasov RA, **Markvicheva EA** (2017). Biodegradable containers based on nanostructured polycrystals obtained by controlled crystallization. *Acta Crystallogr A Found Adv* 73, C1286.
33. Drozdova MG, Zaytseva-Zotova DS, Akasov RA, Golunova AS, Artyukhov AA, Udartseva OO, Andreeva ER, Lisovyy DE, Shtilman MI, **Markvicheva EA** (2017). Macroporous modified poly (vinyl alcohol) hydrogels with charged groups for tissue engineering: Preparation and in vitro evaluation. *Mater Sci Eng C Mater Biol Appl* 75, 1075–1082, 10.1016/j.msec.2017.03.017
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38. Akasov R, Zaytseva-Zotova D, Burov S, Leko M, Dontenwill M, Chiper M, Vandamme T, **Markvicheva E** (2016). Formation of multicellular tumor spheroids induced by cyclic RGD-peptides and use for anticancer drug testing in vitro. *Int J Pharm* 506 (12), 148–157, 10.1016/j.ijpharm.2016.04.005
39. Attia MF, Anton N, Akasov R, Chiper M, **Markvicheva E**, Vandamme TF (2016). Biodistribution and Toxicity of X-Ray Iodinated Contrast Agent in Nano-emulsions in Function of Their Size. *Pharm Res* 33 (3), 603–614, 10.1007/s11095-015-1813-0
40. Demina TS, Akopova TA, Vladimirov LV, Zelenetskii AN, **Markvicheva EA**, Grandfils C (2016). Polylactide-based microspheres prepared using solid-state copolymerized chitosan and d,l-lactide. *Mater Sci Eng C Mater Biol Appl* 59, 333–338, 10.1016/j.msec.2015.09.094
41. Akasov R, Haq S, Haxho F, Samuel V, Burov SV, **Markvicheva E**, Neufeld RJ, Szewczuk MR (2016). Sialylation transmogrifies human breast and pancreatic cancer cells into 3D multicellular tumor spheroids using cyclic RGD-peptide induced self-assembly. *Oncotarget* 7 (40), 66119–66134, 10.18632/oncotarget.11868
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63.