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Адрес

Федеральное государственное бюджетное учреждение науки Институт биоорганической химии им. академиков М.М. Шемякина и Ю.А. Овчинникова Российской академии наук, Москва, Россия

Контакты

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Работа в ИБХ

2019–наст.вр.	Главный научный сотрудник
	Ведущий научный сотрудник

Научные интересы

Ее научные интересы связаны с получением новых биоматериалов для биомедицины (системы с контролируемой доставкой лекарств, нано-капсулирование биоактивных пептидов и белков, микрокапсулирование животных клеток, биодеградируемые матриксы (скаффолды) для репарации тканей и др..

Членство в сообществах

Участвует в работе русских научных и зарубежных обществ. Является представителем и главным координатором международного общества Bioencapsulation Research Group в России, представляет Россию (является экспертом и входит в координационный комитет) в международных программах COST (840 и 865).

Степени и звания

Доктор наук (Химические науки, 03.00.04 — Биохимия)

Гранты и проекты

2021–2023	Новые мультитаргетные гибридные белки на основе высокоспецифичного мутантного варианта цитокина TRAIL DR5-B с эффекторными пептидами для параллельного воздействия на различные сигнальные пути, влияющие на развитие опухолей
2018–2020	Опухолевые сфероиды, полученные с помощью RGD-пептидов, как новые 3D in vitro модели для изучения цитотоксичности наноносителей с лекарствами

Публикации

1. 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. *Biospectroscopy* , e23583, 10.1002/bip.23583
2. 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
3. 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
4. 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

5. 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
6. 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
7. 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
8. 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
9. 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
10. 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
11. 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
12. 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
13. 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
14. 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
15. 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
16. Gretskaya NM, Gamisonia AM, Dudina PV, Zakharov SS, Sherstyanykh G, Akasov R, Burov S, Serkov IV, Akimov MG, Bezuglov VV, **Markvicheva E** (2020). Novel bexarotene derivatives: Synthesis and cytotoxicity evaluation for glioma cells in 2D and 3D in vitro models. *Eur J Pharmacol* 883, 173346, 10.1016/j.ejphar.2020.173346
17. Demina TS, Drozdova MG, Sevrin C, Compère P, Akopova TA, **Markvicheva E**, Grandfils C (2020). Biodegradable Cell Microcarriers Based on Chitosan/Polyester Graft-Copolymers. *Molecules* 25 (8), , 10.3390/molecules25081949
18. 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

19. 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
20. 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
21. Ryabaya OO, Prokofieva AA, Khochenkov DA, Akasov RA, Burov SV, **Markvicheva EA**, Stepanova EV (2019). The role of epithelial-to-mesenchymal transition and autophagy in antitumoral response of melanoma cell lines to target inhibition of mek and mtor kinases. *Siberian Journal of Oncology* 18 (3), 54–63, 10.21294/1814-4861-2019-18-3-54-63
22. Trushina DB, Akasov RA, Khovankina AV, Borodina TN, Bukreeva TV, **Markvicheva EA** (2019). Doxorubicin-loaded biodegradable capsules: Temperature induced shrinking and study of cytotoxicity in vitro. *J Mol Liq* 284, 215–224, 10.1016/j.molliq.2019.03.152
23. Ryabaya O, Prokofieva A, Akasov R, Khochenkov D, Emelyanova M, Burov S, **Markvicheva E**, Inshakov A, Stepanova E (2019). Metformin increases antitumor activity of MEK inhibitor binimetinib in 2D and 3D models of human metastatic melanoma cells. *Biomed Pharmacother* 109, 2548–2560, 10.1016/j.biopha.2018.11.109
24. 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
25. 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
26. 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
27. 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
28. **(конференция)** 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.
29. 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
30. Haq S, Samuel V, Haxho F, Akasov R, Leko M, Burov SV, **Markvicheva E**, Szewczuk MR (2017). Sialylation facilitates self-assembly of 3D multicellular prostaspheres by using cyclo-RGDFK(TPP) peptide. *Onco Targets Ther* 10, 2427–2447, 10.2147/OTT.S133563
31. Demina TS, Zaytseva-Zotova DS, Akopova TA, Zelenetskii AN, **Markvicheva EA** (2017). Macroporous hydrogels based on chitosan derivatives: Preparation, characterization, and in vitro evaluation. *J Appl Polym Sci* 134 (13), , 10.1002/app.44651
32. Akasov R, Gileva A, Zaytseva-Zotova D, Burov S, Chevalot I, Guedon E, **Markvicheva E** (2017). 3D in vitro co-culture models based on normal cells and tumor spheroids formed by cyclic RGD-peptide induced cell self-assembly. *Biotechnol Lett* 39 (1), 45–53, 10.1007/s10529-016-2218-9
33. Kildeeva NR, Kasatkina MA, Drozdova MG, Demina TS, Uspenskii SA, Mikhailov SN, **Markvicheva EA** (2016). Biodegradablescaffolds based on chitosan: Preparation, properties, and use for the cultivation of animal cells. *APPL BIOCHEM MICRO+* 52 (5), 515–524, 10.1134/S0003683816050094
34. 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

35. 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
36. 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
37. 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
38. Akasov R, Borodina T, Zaytseva E, Sumina A, Bukreeva T, Burov S, **Markvicheva E** (2015). Ultrasonically Assisted Polysaccharide Microcontainers for Delivery of Lipophilic Antitumor Drugs: Preparation and in Vitro Evaluation. *ACS Appl Mater Interfaces* 7 (30), 16581–16589, 10.1021/acsami.5b04141
39. Privalova AM, Uglanova SV, Kuznetsova NR, Klyachko NL, Golovin YI, Korenkov VV, Vodovozova EL, **Markvicheva EA** (2015). Microencapsulated multicellular tumor spheroids as a tool to test novel anticancer nanosized drug delivery systems in vitro. *J Nanosci Nanotechnol* 15 (7), 4806–4814, 10.1166/jnn.2015.10508
40. Privalova A, **Markvicheva E**, Sevrin C, Drozdova M, Kottgen C, Gilbert B, Ortiz M, Grandfils C (2015). Biodegradable polyester-based microcarriers with modified surface tailored for tissue engineering. *J Biomed Mater Res B Appl Biomater* 103 (3), 939–948, 10.1002/jbm.a.35231
41. Demina TS, Zaytseva-Zotova DS, Timashev PS, Bagratashvili VN, Bardakova KN, Sevrin C, Svidchenko EA, Surin NM, **Markvicheva EA**, Grandfils C, Akopova TA (2015). Chitosan-g-lactide copolymers for fabrication of 3D scaffolds for tissue engineering. *IOP Conference Series: Materials Science and Engineering* 87 (1), , 10.1088/1757-899X/87/1/012074
42. Demina TS, Drozdova MG, Yablokov MY, Gaidar AI, Gilman AB, Zaytseva-Zotova DS, **Markvicheva EA**, Akopova TA, Zelenetskil AN (2015). DC discharge plasma modification of chitosan films: An effect of chitosan chemical structure. *Plasma Process Polym* 12 (8), 710–718, 10.1002/ppap.201400138
43. Sukhanova TV, Artyukhov AA, Gurevich YM, Semenikhina MA, Prudchenko IA, Shtilman MI, **Markvicheva EA** (2014). Delta-sleep inducing peptide entrapment in the charged macroporous matrices. *Mater Sci Eng C Mater Biol Appl* 42, 461–465, 10.1016/j.msec.2014.05.059
44. Sonina AN, Vikhoreva GA, Veleshko IE, Veleshko AN, Drozdova MG, **Markvicheva EA**, Galbraikh LS (2013). Structure and properties of chitosan-containing nanofibers. *FIBRE CHEM*+ 45 (2), 79–84, 10.1007/s10692-013-9484-2
45. Demina T, Zaytseva-Zotova D, Yablokov M, Gilman A, Akopova T, **Markvicheva E**, Zelenetskii A (2012). DC discharge plasma modification of chitosan/gelatin/PLLA films: Surface properties, chemical structure and cell affinity. *Surf Coat Technol* 207, 508–516, 10.1016/j.surfcoat.2012.07.059
46. Sukhanova TV, Artyukhov AA, Prudchenko IA, Golunova AC, Semenikhina MA, Shtilman MI, **Markvicheva EA** (2012). Entrapment and in vitro release of delta-sleep inducing peptide from polymer hydrogels based on modified polyvinyl alcohol. *Biochemistry (Moscow) Supplement Series B: Biomedical Chemistry* 6 (2), 149–155, 10.1134/S1990750812020126
47. **Марквичева ЕА**, Дроздова МГ, Акасов РА, ЗайцеваЗотова ДС (2011). Биосовместимые материалы в тканевой инженерии, В кн: Клеточные технологии для регенеративной медицины / под ред.: Г.П.Пинаева, М.С.Богдановой, А.М.Кольцовой. – СПБ.: Изд-во Политехн.ун-та. , 103–126.
48. Zaytseva-Zotova D, Balysheva V, Tsoy A, Drozdova M, Akopova T, Vladimirov L, Chevalot I, Marc A, Goergen JL, **Markvicheva E** (2011). Biocompatible smart microcapsules based on chitosan-poly(vinyl alcohol) copolymers for cultivation of animal cells. *Adv Eng Mater* 13 (12), B493–B503, 10.1002/adem.201180014
49. Балабашин Д, ЗайцеваЗотова Д, Топорова В, Панина А, **Марквичева Е**, Свирщевская Е, Алиев Т (2011). Способы увеличения продукции рекомбинантных антител в клеточных линиях CHO DG44. (5), .
50. Zaytseva-Zotova DS, Udartseva OO, Andreeva ER, Bartkowiak A, Bezdetnaya LN, Guillemin F, Goergen JL, **Markvicheva EA** (2011). Polyelectrolyte microcapsules with entrapped multicellular tumor spheroids as a

novel tool to study the effects of photodynamic therapy. *J Biomed Mater Res B Appl Biomater* 97 (2), 255–262, 10.1002/jbm.b.31808

51. Borodina T, Grigoriev D, **Markvicheva E**, Möhwald H, Shchukin D (2011). Vitamin e microspheres embedded within a biocompatible film for planar delivery. *Adv Eng Mater* 13 (3), , 10.1002/adem.201080047
52. Borodina TN, Grigoriev DO, **Markvicheva EA**, Mohwald H, Shchukin DG (2010). Vitamin E microcontainers embedded within a biodegradable film for planar delivery. , .
53. Sukhanova TV, Prudchenko IA, Efremov ES, Uglanova SV, Filatova LY, **Markvicheva EA**, Klyachko NL (2010). Biomolecules in Colloid Nanocontainers for Drug Delivery: Entrapment and Properties of the Delta Sleep-Inducing Peptide. *Moscow University Chemistry Bulletin* 65 (3), 175–179, 10.3103/S0027131410030132
54. Tsoy AM, Zaytseva-Zotova DS, Edelweiss EF, Bartkowiak A, Goergen JL, Vodovozova EL, **Markvicheva EA** (2010). Microencapsulated multicellular tumor spheroids as a novel in vitro model for drug screening. *Biochemistry (Moscow) Supplement Series B: Biomedical Chemistry* 4 (3), 243–250, 10.1134/S1990750810030054
55. Tsoy AM, Zaytseva-Zotova DS, Edelweiss EF, Bartkowiak A, Goergen JL, Vodovozova EL, **Markvicheva EA** (2010). Microencapsulated multicellular tumor spheroids: Preparation and use as a novel in vitro model for drug screening. *Biomed Khim* 56 (6), 674–685, 10.18097/pbmc20105606674
56. Бовин НВ, **Марквичева ЕА**, Селина ОЕ (2009). Сорбент для удаления антител из цельной крови и способ его получения. Патент RU 2360707. , .
57. Selina OE, Belov SY, Vlasova NN, Balysheva VI, Churin AI, Bartkoviak A, Sukhorukov GB, **Markvicheva EA** (2009). Biodegradable microcapsules with entrapped DNA for development of new DNA vaccines. *Russ. J. Bioorganic Chem.* 35 (1), 103–110, 10.1134/S1068162009010130
58. **Markvicheva EA**, Antonov EN, Popova AV, Bogorodsky SE, Likhareva VV, Feldman BM, Strukova SM, Popov VK, Rumsh LD (2009). Biodegradable polymer microparticles with entraped herbal extracts: Preparation with supercritical carbon dioxide and use for tissue repair. *Biomed Khim* 55 (4), 479–488.
59.