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Education

Moscow State University, Moscow, Russia MS Biochemistry 1967-1973
Thesis: *"Isolation and characterization of lysozyme from T-even phages"*.
(Virology)

USSR Cardiology Research Center PhD Biochemistry 1980
Academy of Medical Sciences, Moscow, Russia
Thesis: *"Isolation and characterization of calcium pump system from heart muscle"*.

Positions and Honors

1973 - 1980 Scientist, USSR Cardiology Research Center, Moscow, Russia
1981 - 1986 Senior Research Scientist, USSR Cardiology Research Center, Moscow, Russia
1991 - 1998 Leading Research Scientist, USSR Cardiology Research Center, Moscow, Russia
1999 - 2000 Visiting Scientist, Department of Pharmaceutical Sciences, Northeastern University, Boston, MA
2001-2004 Research Associate, Department of Pharmaceutical Sciences, Northeastern University, Boston, MA
2005- present Research Assistant Professor, Department of Pharmaceutical Sciences, Northeastern University, Boston MA

Other Experience

1976-1985 Exchange Scientist, Central Institute of Heart and Circulatory Regulation Research, Berlin-Buch, Germany
2005 - present Reviewer – *Biomacromolecules, CRC review in Therapeutic Drug Carrier systems, Langmuir, J Pharmaceutical Sciences, Journal of Liposome Research, Drug Delivery, International Journal of Pharmaceutics, Expert Opinion on Drug Delivery, British Journal of Pharmacology, CRS, Clinical and Experimental Pharmacology and Physiology.*
2010 - present Member of NCI CCNE Working Group "Nanoformulation and Nanosynthesis".
2014 Grant Reviewer for Dutch Technology Foundation STW.
2010 - 2015 Member of NCI CCNE Working Group "Nanoformulation and Nanosynthesis".
2015 Reviewer of Abstracts for the 42nd CRS Annual Meeting, 2015.
2016-2018 TIR-1 Evaluation Committee Member

Teaching PSCG411 Directed Study 2008 - 2016

PhD Thesis Co-director of PhD Thesis proposal, Juan Sebastian Pappalardo, Institute of Virology, 2010-2003
University of Buenos Aires, INTA, Argentina

Professional Memberships

1985 – present Member, International Society for Heart Research (Russian Section, American Section)
1983-1986 Chairman, Council of Young Investigators, USSR Cardiology Research Center, Moscow
1992-1998 Secretary of Russian Section of the International Society for Heart Research.
1998-2004 Council on Cellular and Molecular Cardiology of the International Society and Federation of Cardiology

1993-2003	Member of the Editorial Board of "Heart News and Views"
1998	Moderator, World Congress of International Society for Heart Research
2001-present	Controlled Release Society
2003-present	Member, Liposome Research Society
2005-present	Phi Beta Delta

Publications (in chronological order)

1. Levitski DO, Aliev MK, Levchenko YS, Lipitskaia IY, Smirnov V.N. Isolation of highly active preparations of sarcoplasmic reticulum and Ca²⁺-dependent ATPase from cardiac muscle. *Biochemistry*, 41:854-63, 1976 (In Russian)
2. Levitskiy DO, Aliev MK, Kuzmin AV, Levchenko TS, Smirnov VN, Chazov EI. Isolation of calcium pump system and purification of calcium ion-dependent ATPase from heart muscle. *Biochim Biophys Acta*, 443:468-484, 1976.
3. Levitskiy DO, Levchenko TS, Saks VA, Sharov VG, Smirnov VN. The functional coupling between Ca²⁺-ATPase and creatine phosphokinase in heart muscle sarcoplasmic reticulum. *Biochemistry*, 42:1766-1773, 1977. (In Russian)
4. Levitskiy DO, Saks VA, Smirnov VN, Levchenko TS, Will H, Wollenberger A. Proteins of the calcium pump system. Porch. 3-rd US-USSR Sump. On Myocardial Metabolism, DUEW Pub. 78-1457, 117-131, 1978.
5. Levitskiy DO, Levchenko TS, Saks VA, Sharov VG, Smirnov VN. The role of creatine phosphokinase in supplying energy for the calcium pump system of heart sarcoplasmic reticulum. *Membr Biochem*, 2:81-96, 1978.
6. Will H, Levchenko TS, Levitskiy DO, Smirnov VN, Wollenberger A. Partial characterization of protein kinase-catalyzed phosphorylation of low molecular weight proteins in purified preparations of pigeon heart sarcolemma and sarcoplasmic reticulum. *Biochim Biophys Acta*, 543:175-193,
7. Will H, Levchenko TS, Misselwitz H-J, Wollenberger A. Some characteristics of low molecular weight phosphoprotein const of cardiac sarcoplasmic reticulum and sarcolemma. In: *Advances in Pharmacology and Therapeutics* 1979, 3, p.161-170.
8. Will H, Levchenko TS, Wollenberger A, Levitskiy DO. Protein Kinase-catalysed phosphorylation of low molecular weight proteins in isolated cardiac sarcoplasmic reticulum and sarcolemma. In: *Cyclic Nucleotides and Protein Phosphorylation in Cell Regulation*. Ed by EG Krause etc. Perg Press, Oxford and New York, 1979, 54, p. 135-146.
9. Levitskiy DO, Denevolensky DS, Levchenko TS. Quantitative estimate of the calcium-transporting capacity of the sarcoplasmic reticulum of the heart. In: *Energy Transport, Protein Synthesis and Hormonal Control of Heart Metabolism*, 1980, p. 27-40.
10. Karczewski P, Levchenko TS, Levitskiy DO, Krause E-G. Species differences in the subcellular distribution of guanylate cyclase activity in muscle. *J Mol Cell Cardiol*, 12(S1):68, 1980.
11. Levitskiy DO, Benevolensky DS, Levchenko TS. Functional properties of heart sarcoplasmic reticulum and the process of calcium accumulation. *J Mol Cell Cardiol*, 12(S1):93, 1980.
12. Levitskiy DO, Benevolensky DS, Levchenko TS, Smirnov VN, Chazov EI. Calcium-binding rate and capacity of cardiac sarcoplasmic reticulum. *J Mol Cell Cardiol*, 13:785-796. 1981.
13. Levitskiy DO, Benevolensky DS, Levchenko TS, Kuzmin AV. The cardiac relaxing system Its nature, calcium ion capacity, and influence of hydrogen and magnesium ions on initial velocity of calcium binding. *Adv Myocardiol*, 393-405, 1982.
14. Will H, Levchenko TS, Kemsies C. Subunit analysis and cross-linking of phospholamban in cardiac sarcoplasmic reticulum and sarcolemma. In: *Cellular and Molecular Aspects of the Regulation of the Heart*, Akademie-Ferlag, Berlin 1984, p.121-130.
15. Levitskiy DO, Aliev KA, Levchenko TS, Denevolensky DS. Properties of Ca²⁺-ATPase in Cardiac Sarcoplasmic reticulum. Proc. Symp. Cellular. & Molecular Aspects of Heart Regulation, Berlin, 1984.
16. Levitskiy DO, Loginov VL, Lebedev AV, Levchenko TS, Leytin VL. Ca²⁺ binding and charge movements in membranes of platelets and sarcoplasmic reticulum. *FEBS Lett*, 171:89-93, 1984.
17. Aliev KA, Levitskaia EL, Levchenko TS, Levitskiy DO. Fractionation of fragments of skeletal muscle sarcoplasmic reticulum according to their sensitivity to caffeine. *Biochemistry*, 50:911-918, 1985.

- Holtzhauer M, Sydow H, Levchenko TS. The putative role of phospholamban in the regulation of the heart muscle. *Biomed Biochim Acta*, 45:233-236, 1986.
18. Levitsky DO, Benevolensky DS, Levchenko TS, Lebedev AV, Loginov VL, Petrov VV, Timonin IM. Charge redistribution and Ca²⁺ transfer in sarcoplasmic reticulum membranes. In: Myocardial Metabolism, Ed. Smirnov V.N, Katz A.M, Harwood Academic Publishers, 1987, 2, p.155-176.
 19. Torchilin VP, Levchenko TS, Whiteman KR, Shtilman MI, Tsatsakis AM. Liposome surface modification with amphiphilic derivatives of poly-N-vinylpyrrolidone: A comparative study, Abstracts of the 7th Liposome Research Days Conference, 52, Napa Valley, CA, April 2000.
 20. Torchilin VP, Klibanov AL, Huang L, Levchenko TS, Whiteman KR. p-Nitrophenylcarbonyl-PEG-liposomes: surface charge modification and biodistribution, Proceedings of the 27th International Symposium on Controlled Release of Bioactive Materials, Paris, Controlled Release Society, Inc, 33-34, July 2000.
 21. Whiteman KR, Levchenko TS, Shtilman MI, Michailova EV, Yaroslavov AA, Tsatsakis AM, Rizos AK, Torchilin VP. Amphiphilic poly-N-vinylpyrrolidones: synthesis, properties and liposome surface modification, Proceedings of the 27th International Symposium on Controlled Release of Bioactive Materials, Paris, Controlled Release Society, Inc, 1160-1161, July 2000.
 22. Torchilin VP, Levchenko TS, Lukyanov AN, Khaw BA, Klibanov AL, Rammohan R, Samokhin GP, Whiteman KR. p-Nitrophenylcarbonyl-PEG-PE-liposomes: fast and simple attachment of specific ligands, including monoclonal antibodies, to distal ends of PEG chains via p-nitrophenylcarbonyl groups, *Biochim. Biophys. Acta - Biomembranes*, 1511, 397-411, 2001.
 23. Whiteman K, Mackie S, Levchenko TS, Hoffmann P, Torchilin V, Long-circulating liposomes with phosphatidyl-(oligo)-glycerols, Proceedings of the 28th International Symposium on Controlled Release of Bioactive Materials, San Diego, Controlled Release Society, Inc, 466-467, June 2001.
 24. Lukyanov A, Whiteman K, Levchenko T, Weissig V, Singhal A, Ray R, Torchilin V. Long-circulating therapeutic micelles from PE-PEG, Proceedings of the 28th International Symposium on Controlled Release of Bioactive Materials, San Diego, Controlled Release Society, Inc, 482-483, June 2001.
 25. Rammohan R, Levchenko T, Weissig V, Chaklam A, Torchilin VP. Immunomicelles: attachment of specific ligands including monoclonal antibodies to polymeric micelles, Proceedings of the 28th International Symposium on Controlled Release of Bioactive Materials, San Diego, Controlled Release Society, Inc, 484-485, June 2001.
 26. Torchilin V, Rammohan R, Weissig V, Levchenko T. TAT-peptide attached to the liposome surface strongly facilitates the internalization of liposomes at various conditions, Proceedings of the 28th International Symposium on Controlled Release of Bioactive Materials, San Diego, Controlled Release Society, Inc, 486-487, June 2001.
 27. Ilenchuk TT, Torchilin VP, Mongayt DA, Levchenko TS, Iakoubov LZ, Samokhin GP. Negatively charged polymers protect anti-cancer antibody against inactivation by acylating agents, Proceedings of 92nd Annual Meeting of American Association for Cancer Research, New Orleans, March 2001, Proceedings of AACR, 42, 286-287, #1540, 2001.
 28. Torchilin VP, Rammohan R, Weissig V, Levchenko TS. TAT peptide on the surface of liposomes affords their efficient intracellular delivery even at low temperature and in the presence of metabolic inhibitors. *Proc Natl Acad Sci USA*, 98, 8786-8791, 2001.
 29. Torchilin VP, Levchenko TS, Whiteman KR, Yaroslavov AA, Tsatsakis AM, Rizos AK, Michailova EV, Shtilman MI. Amphiphilic poly-N-vinylpyrrolidones: synthesis, properties and liposome surface modification. *Biomaterials*, 22, 3035-3044, 2001.
 30. Samokhin GP, Mongayt DA, Iakoubov LZ, Levchenko TS, Torchilin VP. Negatively charged polymers protect antinuclear antibody against inactivation by acylating agents. *Anal Biochem*, 292 (2), 245-249, 2001.
 31. Levchenko TS, Rammohan R, Lukyanov AN, Whiteman KR, Torchilin VP. Liposome clearance in mice: the effect of a separate and combined presence of surface charge and polymer coating, *Int J Pharm*, 240, 95-102, 2002.
 32. Levchenko TS, Rammohan R, Volodina N, Torchilin VP. Efficient *in vitro* transfection with non-toxic complexes of TAT peptide-liposomes and DNA, Proceedings of the 29th Annual Meeting of the Controlled Release Society, Seoul, Korea, Controlled Release Society, 48-49, July 2002.
 33. Lukyanov A, Mazzola L, Gao Z, Levchenko T, Torchilin VP. PE-PEG micelles demonstrate an efficient

- tumor accumulation in different tumor models in mice, Proceedings of the 29th Annual Meeting of the Controlled Release Society, Seoul, Korea, Controlled Release Society, 230-231, July 2002.
34. Torchilin VP, Levchenko TS, Rammohan R, Volodina N. TAT peptide-bearing liposomes: Mechanism of internalization and intracellular fate, Proceedings of the 29th Annual Meeting of the Controlled Release Society, Seoul, Korea, Controlled Release Society, 320-321, July 2002.
 35. Torchilin VP, Lukyanov A, Gao Z, Levchenko T, Rammohan R, Mazzola L. PEG-PE-based immunomicelles: New family of targeted drug carriers, Proceedings of the 29th Annual Meeting of the Controlled Release Society, Seoul, Korea, Controlled Release Society, 497-498, July 2002.
 36. Volodina N, Rammohan R, Levchenko T, Torchilin VP. TAT peptide-mediated DNA delivery with non-toxic liposome/DNA complexes, Proceedings of the 5th AAPS Northeast Regional Group Meeting, Rocky Hill, Connecticut, April 2002.
 37. Torchilin VP, Levchenko TS, Rammohan R, Volodina N, Papahadjopoulos-Sternberg B, D'Souza GG. Cell transfection in vitro and in vivo with non-toxic TAT peptide-liposome-DNA complexes, *Proc Natl Acad Sci USA*, 100, 1972-1977, 2003.
 38. V.P. Torchilin, T.S. Levchenko, TAT-liposomes: A novel intracellular drug carrier, *Curr Protein Pept Sci*, 4, 133-140, 2003.
 39. Levchenko TS, Rammohan R, Volodina N, Torchilin VP. Tat peptide-mediated intracellular delivery of liposomes, *Meth Enzymol*, 372, 339-349, 2003.
 40. Liang W, Levchenko T, Khaw BA, Torchilin VP. ATP-containing immunoliposomes specific for cardiac myosin, *Curr Drug Deliv*, 1, 1-7, 2004.
 41. Wang J, Mongayt DA, Lukyanov AN, Levchenko TS, Torchilin VP. Preparation and in vitro synergistic anticancer effect of Vitamin K₂ and 1,8-diazabicyclo[5,4,0]undec-7-ene in poly(ethylene glycol)-diacyllipid micelles, *Int J Pharm*, 272, 129-135, 2004.
 42. Liang W, Levchenko TS, Torchilin VP. Encapsulation of ATP into liposomes by different methods: optimization of the procedure, *J Microencapsul*, 21, 151-161, 2004.
 43. Torchilin VP, Lukyanov AN, Gao Z, Wang J, Levchenko TS. Polymeric micelles as targetable pharmaceutical carriers, In: "Carrier-Based Drug Delivery" (S.Svenson, ed.), *ACS Symposium Series* 879, American Chemical Society, Washington, DC, Chapter 9, pp. 120-129, 2004.
 44. Wang J, Mongayt D, Levchenko TS, Torchilin VP. Micelles as carriers for poorly soluble drugs: preparation and anticancer activity in vitro of paclitaxel in mixed micelles of PEG-PE and positively charged lipids, Transactions of the 31th Annual Meeting of the Controlled Release Society, Honolulu, Controlled Release Society, #153, June 2004.
 45. 350. Verma DD, Levchenko TS, Bernstein EA, Torchilin VP. ATP-loaded liposomes: effective protection of myocardium from global ischemia in isolated rat heart, Transactions of the 31th Annual Meeting of the Controlled Release Society, Honolulu, Controlled Release Society, #572, June 2004.
 46. Gupta B, Levchenko TS, Mongayt DA, Torchilin VP. Monoclonal antinuclear antibody (monANA) 2C5-based immunoliposomes effectively target brain tumor cells in vitro, Transactions of the 31th Annual Meeting of the Controlled Release Society, Honolulu, Controlled Release Society, #585, June 2004.
 47. Verma DD, Levchenko TS, Bernstein EA, Torchilin VP. ATP-loaded liposomes effectively protect mechanical functions of the myocardium from global ischemia in an isolated rat heart model. *J Control Release*, 108,460-471, 2005.
 48. Gupta B, Levchenko T, Torchilin VP. Intracellular delivery of large molecules and small particles by cell-penetrating proteins and peptides, *Adv. Drug Deliv. Rev*, 57, 637-651, 2005.
 49. Gupta B, Levchenko TS, Mongayt DA, Torchilin VP. Monoclonal antibody 2C5-mediated binding of liposomes to brain tumor cells in vitro and in subcutaneous tumor model in vivo. *J Drug Target*,13, 337-343, 2005
 50. Stroh M, Zimmer JP, Duda DG, Levchenko TS, Cohen KS, Brown EB, Scadden DT, Torchilin VP, Bawendi MG, Fukumura D, Jain RK. Quantum dots spectrally distinguish multiple species within the tumor milieu in vivo. *Nat Med*. 11, 678-682, 2005.
 51. Verma DD, Hartner WC, Levchenko TS, Bernstein EA, Torchilin VP. ATP-loaded liposomes effectively protect the myocardium in rabbits with an acute experimental myocardial infarction. *Pharm Res*, 22(12):2115-2120, 2005.
 52. Leevy WM, Gammon ST, Levchenko TS, Daranciang DD, Murillo OM, Torchilin VP, Pivnica-Worms D, Huettner JE, Gokel GW. Structure-activity relationship, kinetics, selectivity, and mechanistic studies of

- synthetic hydraphile channels in bacterial and mammalian cells. *Org. Biomol. Chem*, 3:3544-2550, 2005.
53. Verma DD, Levchenko TS, Hartner WC, Bernstein EA, Torchilin VP. Adenosine triphosphat-loaded liposomes for myocardium preservation under ischemic condition. In: *Liposome Technology. Interactions of Liposomes with the Biological Milieu*, Third Edition, Vol. III, Informa Healthcare, 2006.
 54. Verma DD, Levchenko TS, Bernstein EA, Mongayt D, Torchilin VP. ATP-loaded immunoliposomes specific for cardiac myosin provide improved protection of the mechanical functions of myocardium from global ischemia in an isolated rat heart model. *J Drug Target*, 14(5):273-280, 2006.
 55. Sawant RM, Hurley JP, Salmaso S, Kale A, Tolcheva E, Levchenko TS, Torchilin VP. "SMART" drug delivery systems: double-targeted pH-responsive pharmaceutical nanocarriers. *Bioconjug Chem*, 17(4):943-949, 2006.
 56. Verma DD, Hartner WC, Thakkar V, Levchenko TS, Torchilin VP. Protective effect of coenzyme Q10-loaded liposomes on the myocardium in rabbits with an acute experimental myocardial infarction. *Pharm Res*, 24(11):2131-2137, 2007.
 57. Gupta B, Levchenko TS, Torchilin VP. TAT peptide-modified liposomes provide enhanced gene delivery to intracranial human brain tumor xenografts in nude mice. *Oncol. Res*, 16(8):351-359, 2007.
 58. Verma DD, Hartner WC, Levchenko TS, Torchilin VP. Coenzyme Q10-loaded liposomes effectively protect the myocardium in rabbits with an acute experimental myocardial infarction. *J Mol Cell Card*, 42, Suppl.1, S214, 2007.
 59. Yang K, Whalen BJ, Tirabassi RS, Selin LK, Levchenko TS, Torchilin VP, Kislauskis EH, Guberski DL. A DNA vaccine prime followed by a liposome-encapsulated protein boost confers enhanced mucosal immune responses and protection. *J Immunol*, 180(9):6159-67, 2008.
 60. Papagiannaros A, Levchenko T, Hartner W, Mongayt D, Torchilin V. Quantum dots encapsulated in phospholipid micelles for imaging and quantification of tumors in the near-infrared region. *Nanomedicine*; 5(2): 216-24, 2009.
 61. Pappalardo JS, Quattrocchi V, Langellotti C, Di Giacomo S, Gnazzo V, Olivera V, Calamante G, Zamorano PI, Levchenko TS, Torchilin VP. Improved transfection of spleen-derived antigen-presenting cells in culture using TATp-liposomes. *J Control Release*, 134(1):41-6, 2009.
 62. Hartner WC, Verma DD, Levchenko TS, Bernstein EA, Torchilin VP. ATP-loaded liposomes for treatment of myocardial ischemia. *Wiley Interdiscip Rev Nanomed Nanobiotechnol*, 1(5):530-9, 2009. Review.
 63. Papagiannaros A, Kale A, Levchenko TS, Mongayt D, Hartner WC, Torchilin VP. Near infrared planar tumor imaging and quantification using nanosized Alexa 750-labeled phospholipid micelles. *Int J Nanomedicine*, 4:123-31, 2009.
 64. Solazzo SA, Ahmed M, Schor-Bardach R, Yang W, Girnun GD, Rahmanuddin S, Levchenko T, Signoretti S, Spitz DR, Torchilin V, Goldberg SN. Liposomal doxorubicin increases radiofrequency ablation-induced tumor destruction by increasing cellular oxidative and nitrate stress and accelerating apoptotic pathways. *Radiology*, 255 (1):62-74, 2010.
 65. Levchenko TS, Hartner WC, Verma DD, Bernstein EA, Torchilin VP. ATP-loaded liposomes for targeted treatment in models of myocardial ischemia. *Methods Mol Biol*, 605:361-75, 2010.
 66. Yang W, Ahmed M, Elian M, Hady E.S, Levchenko T, Sawant R.R, Signoretti S, Collins M, Torchilin V.P, Goldberg S.N. Do liposomal apoptotic enhancers increase tumor coagulation and end-point survival in percutaneous radiofrequency ablation of tumors in a rat tumor model? *Radiology*, 257:685-96, 2010.
 67. Papagiannaros A, Upponi J, Hartner WC, Mongayt D, Levchenko TS, Torchilin VP. Quantum dot-loaded immunomicelles for tumor imaging. *BMC Med Imaging*, 10:22, 2010.
 68. Tirabassi RS, Ace CI, Levchenko T, Torchilin VP, Selin LK, Nie S, Guberski DL, Yang K. A mucosal vaccination approach for herpes simplex virus type 2. *Vaccine*, 29(5):1090-8, 2011.
 69. Top-down and Bottom-up Approach in Production Aqueous Nanocolloids of Paclitaxel. P. Pattekari, Z. Zheng, X. Zhang, T. Levchenko, V. Torchilin, Y. Lvov. *Phys Phys Chem Chem Phys*, 13(19):9014-9, 2011.
 70. Yang W, Ahmed M, Tasawwar B, Levchenko T, Sawant RR, Collins M, Signoretti S, Torchilin V, Goldberg SN. Radiofrequency ablation combined with liposomal quercetin to increase tumour destruction by modulation of heat shock protein production in a small animal model. *Int J*

Hyperthermia, 27(6):527-38, 2011.

71. Yang W, Ahmed M, Tasawwar B, Levchenko T, Sawant RR, Torchilin V, Goldberg SN. Combination radiofrequency (RF) ablation and IV liposomal heat shock protein suppression: Reduced tumor growth and increased animal endpoint survival in a small animal tumor model. *J Control Release*, 160(2):239-44, 2012.
72. Levchenko TS, Hartner WC, Torchilin VP. Liposomes in diagnosis and treatment of cardiovascular disorders. *Methodist Debaque Cardiovasc J*, 8(1):36-41, 2012. PMC3405779.
73. Levchenko TS, Hartner WC, Torchilin VP. Liposomes for cardiovascular targeting. *Ther Deliv*, 3(4):501-14, 2012. Review.
74. Sarisozen C, Vural I, Levchenko T, Hincal AA, Torchilin VP. PEG-PE-based micelles co-loaded with paclitaxel and cyclosporine A or loaded with paclitaxel and targeted by anticancer antibody overcome drug resistance in cancer cells. *Drug Deliv*, 19(4):169-76, 2012.
75. Xing C, Levchenko T, Guo S, Stins M, Torchilin VP, Lo EH. Delivering minocycline into brain endothelial cells with liposome-based technology. *J Cereb Blood Flow Metab*, 32(6):983-8, 2012. PMC3367232.
76. Sarisozen C, Vural I, Levchenko T, Hincal AA, Torchilin VP. Long-circulating PEG-PE micelles co-loaded with paclitaxel and elacridar (GG918) overcome multidrug resistance. *Drug Deliv*, 19(8):363-70, 2012.
77. Moussa M, Goldberg SN, Tasawwar B, Sawant RR, Levchenko T, Kumar G, Torchilin VP, Ahmed M. Adjuvant liposomal doxorubicin markedly affects radiofrequency ablation-induced effects on periablation microvasculature. *J Vasc Interv Radiol*, 24(7):1021-33, 2013.
78. Parekh G, Pattekari P, Joshi C, Shutava T, Decoster M, Levchenko T, Torchilin V, Lvov Y. Layer-by-layer nanoencapsulation of camptothecin with improved activity. *Int J Pharm*, 465(1-2):218-27, 2014.
79. Pappalardo JS, Langellotti CA, Di Giacomo S, Olivera V, Quattrocchi V, Zamorano PI, Hartner WC, Levchenko TS, Torchilin VP. In vitro transfection of bone marrow-derived dendritic cells with TATp-liposomes. *Int J Nanomedicine*, 13(9):963-73, 2014.
80. Moussa M, Goldberg SN, Kumar G, Sawant RR, Levchenko T, Torchilin V, Ahmed M. Radiofrequency ablation-induced upregulation of hypoxia-inducible factor-1 α can be suppressed with adjuvant bortezomib or liposomal chemotherapy. *J Vasc Interv Radiol*, 25(12):1972-82, 2014. PMC4269608.
81. Moussa M, Goldberg SN, Kumar G, Sawant RR, Levchenko T, Torchilin VP, Ahmed M. Nanodrug-enhanced radiofrequency tumor ablation: effect of micellar or liposomal carrier on drug delivery and treatment efficacy. *PLoS One*, 9(8):e102727, 2014. PMC4136708.
82. Ahmed M, Kumar G, Navarro G, Wang Y, Gourevitch S, Moussa MH, Rozenblum N, Levchenko T, Galun E, Torchilin VP, Goldberg SN. Systemic siRNA nanoparticle-based drugs combined with radiofrequency ablation for cancer therapy. *PLoS One*, 10(7):e0128910, 2015. PMC4495977.
83. Mussi SV, Parekh G, Pattekari P, Levchenko T, Lvov Y, Ferreira LA, Torchilin VP. Improved pharmacokinetics and enhanced tumor growth inhibition using a nanostructured lipid carrier loaded with doxorubicin and modified with a layer-by-layer polyelectrolyte coating. *Int J Pharm*, 495(1):186-93, 2015. PMC4609627.
84. Moussa M, Goldberg SN, Kumar G, Levchenko T, Torchilin V, Ahmed M. Effect of thermal dose on heat shock protein expression after radio-frequency ablation with and without adjuvant nanoparticle chemotherapies. *Int J Hyperthermia*, 32(8):829-841, 2016. PMC5135289.
85. Kumar G, Goldberg SN, Gourevitch S, Levchenko T, Torchilin V, Galun E, Ahmed M. Targeting STAT3 to suppress systemic pro-oncogenic effects from hepatic radiofrequency ablation. *Radiology*, 286(2):524-536, 2018. PMC5790305.
86. Ahmed M, Kumar G, Gourevitch S, Levchenko T, Galun E, Torchilin V, Goldberg SN. Radiofrequency ablation (RFA)-induced systemic tumor growth can be reduced by suppression of resultant heat shock proteins. *Int J Hyperthermia*, 34(7):934-942, 2018

Patents

1. USSR Patent #934375 "(1985) Characterisation of Ca-transporting System in sarcoplasmic reticulum of heart muscle. Levitsky D.O, Benevolensky D.O, Levchenko T.S.
2. Provisional application: 60/356,526 (2002) Intracellular delivery of drugs and DNA. V.P.Torchilin, R.Rammohan, T.Levchenko, N.Volodina

3. Patent Application PCT US/08/08326 (2006) Mixed micelles including amphipathic conjugates of RNA agent, and uses thereof. T. S. Levchenko, V.P. Torchilin.
4. Man α 1-2Man-PEGylated derivative as a tool for *in vitro* and *in vivo* Dendritic Cell targeting. J.S.Pappalardo, V.Torchilin, T.Levchenko, T.Musacchio, M.Toniutti, S.Salmaso (2012)

List of presentations

3rd USA-USSR Joint Symposium on Miocardial Methabolism, 1976

Levitsky D.O, Saks V.A, Smirnov V.N, Levchenko T.S, Will H, Wollenberger A. Proteins of the calcium pump system.

11th FEBS Meeting, Copenhagen, 1977

Wollenberger A, Will H, Levchenko T.S, Misselwitz H.-J, Levitsky D.O, Smirnov V.N. substrates of cyclic AMP- dependent protein kinase in purified cardiac membrane fractions.

7th International Congress of Pharmacology, Paris 1978

Wollenberger A, Will H, Levchenko T.S, Misselwitz H.-J, Levitsky D.O. Cyclic AMP, cardiac membrane phosphorylation, and calcium.

12th FEBS Meeting, Dresden 1978

1. Levitsky D.O, Levchenko T.S, Smirnov V.N. Interaction between creatine phosphokinase and calcium-dependent ATPase in the membranes of heart sarcoplasmic reticulum.
2. Will H, Levchenko T.S, Levitsky D.O, Smirnov V.N, Wollenberger A. Protein-kinase-catalized phosphorylation of low molecular weight proteins in isolated cardiac sarcoplasmic reticulum and sarcolemma.

4th USA-USSR Joint Symposium on Miocardial Methabolism, Tashkent 1979

Levitsky D.O, Benevolensky D.S, Levchenko T.S. Quantitative estimate of the calcium-transporting capacity of the sarcoplasmic reticulum of the heart.

10th World Congress of ISHR, Moscow 1980.

1. Karczewski P, Levchenko T.S, Levitsky D.O, Krause E.-G. Species differences in the subcellular distribution of guanylate cyclase activity in muscle.
2. Levitsky D.O, Benevolensky D.S, Levchenko T.S. Functional properties of heart sarcoplasmic reticulum and the process of calcium accumulation.

14th Meeting on Cyclic Nucleotides 1980

1. Krause E.-G, Karczewski P, Levchenko T.S, Schulse W, Levitsky D.O. Biochemical and cytochemical studies on localization of guanylate cyclase in cardiac muscle.

12 Jarestagung der Biochemische Gesellschaft der DDR, Berlin 1982

Karczewski P, Krause E.-G, Schulse W, Levchenko T.S, Levitsky D.O. Biochemische und zytochemische Studien zur Localisation der Guanylatzyklase im Herzmuskel.

13 Jarestagung der Biochemische Gesellschaft der DDR, Berlin 1983

Will H, Levchenko T.S, Kemsies K. Ca²⁺-Calmodulin- Abhangige und Zyclo-AMP-Abhangige Proteinphosphorylierungen in Plasmembranen aus Herzmuskel

16th FEBS Meeting, Moscow 1984

1. Loginov V.A , Levitsky D.O. Levchenko T.S, Lebedev A.V, Lejtin V.L.Charge movements in membranes of activated platelets and sarcoplasmic reticulum. 16th FEBS Meeting, 1984 Moscow
2. Aliev M.K. Levchenko T.S, Levitskaia E.V. Separation of cofeine-dependent and cofeine-resistant fragments of sarcoplasmic reticulum from skeletal muscle.

Cellular. and Molecular Aspects of Heart Regulation, Berlin 1984.

Levitsky D.O, Aliev M.K, Levchenko T.S, Benevolensky D.S. Properties of Ca²⁺-ATPase in cardiac sarcoplasmic reticulum.

6th USA-USSR Joint Symposium on Myocardial Metabolism, Baku 1986

1. Levitsky D.O, Benevolensky D.S, Levchenko T.S. Lebedev A.V, Loginov V.A, Petrov V.V, Timonin I.M.

Charge redistribution and Ca²⁺ transfer in sarcoplasmic reticulum membranes.

2. Will H, Levchenko T.S, Levitsky D.O. Subunit analysis and cross-linking of phospholamban in cardiac sarcoplasmic reticulum and sarcolemma.

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Lipid-dendrimer micellar nanocarriers for siRNA/drug co-delivery in MDR cancer

The goal of this proposal is to prepare unique nanopreparations based on dendrimer-lipid conjugates, which can form polymeric micelles, entrap both, drugs and siRNA, and provide better cellular delivery. We suggest the in-depth study of such preparations in various *in vitro* and *in vivo* models to create a novel family of dendrimer-based nanopreparations with combined action, which will be effective against MDR tumors

Role: Co-investigator