

## CURRICULUM VITAE

### **Vladimir P. Torchilin, Ph.D., D.Sc.**

University Distinguished Professor and Director, Center for Pharmaceutical Biotechnology and Nanomedicine, School of Pharmacy, Bouve College of Health Sciences, Northeastern University

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### **Education:**

M.S. in Polymer Chemistry from Moscow State University, Moscow, Russia, 1968  
Ph.D. in Chemical Kinetics and Catalysis from Moscow State University, Moscow, Russia, 1971  
D.Sc. in Bioorganic Chemistry from Moscow State University, Moscow, Russia, 1980  
Since 1985 - Professor in Bioorganic Chemistry, Chemistry of Natural and Physiologically Active Compounds

### **Academic Appointments:**

1971-1973 Junior Scientist, Moscow State University  
1974-1980 Senior Scientist, Academy of Medical Sciences of the USSR  
1985-1991 Professor of Biochemistry, Academy of Medical Sciences of the USSR  
1989-1991 Professor in Biotechnology, Lomonosov Institute of Fine Chemical Technology, Moscow, USSR  
1991 Visiting Professor of Biochemistry, University of Tennessee  
1991 Visiting Professor, University of California, San Diego  
1993-1999 Associate Professor of Radiology, Harvard Medical School  
1998- Professor of Pharmaceutical Sciences, Northeastern University  
1998-2008 Chair, Department of Pharmaceutical Sciences, Northeastern University  
2004- Distinguished Professor of Pharmaceutical Sciences, Northeastern University  
2005- Director, Center for Pharmaceutical Biotechnology and Nanomedicine, Northeastern University  
2010- Director, Center for Translational Cancer Nanomedicine (NIH-funded CCNE)  
2012- University Distinguished Professor

### **Hospital Appointments:**

1974-1980 Senior Researcher, USSR Cardiology Research Center, Moscow  
1981-1991 Head, Laboratory of Enzyme Engineering, USSR Cardiology Research Center, Moscow  
1985-1991 Professor, Laboratory of Enzyme Engineering, USSR Cardiology Research Center, Moscow  
1991-1993 Associate Chemist, Massachusetts General Hospital (MGH), Boston, MA  
1993-1998 Head, Chemistry Program, Center for Imaging and Pharmaceutical Research (CIPR), MGH, Boston, MA  
1998 Associate Director, CIPR, MGH, Boston, MA

### **Awards and Honors:**

1982 Lenin Prize of the USSR in Science and Technology (the highest

scientific award in the former USSR)  
 1978, 82, 85 Exchange Scientist, US/USSR Exchange Program in Cardiovascular  
 87,89, 90 Research - Myocardial Metabolism  
 1991 Full member (Academician), Russian Academy of Biotechnology  
 1994,1993 Outstanding Pharmaceutical Paper Award, Controlled Release Society  
 1994,1993 Outstanding Paper Award from the *Journal of Controlled Release*  
 1995-1998 Board of Governors, Controlled Release Society  
 1999 Co-Chair, 26<sup>th</sup> International Symposium on Controlled Release of  
 Biologically Active Materials  
 2001,03,04,07 Creativity Awards from Northeastern University  
 2002 Co-Chair, Gordon Research Conference on Drug Carriers in Biology and  
 Medicine  
 2002 Fellow, American Institute for Medical and Biological Engineering  
 2002 Innovation Award from Northeastern University  
 2002 Member, European Academy of Sciences  
 2003 Vice President, Controlled Release Society  
 2003 Fellow, American Association of Pharmaceutical Scientists (AAPS)  
 2003 ATOMS Research Excellence in Mentorship Award, National Institute of  
 General Medical Sciences  
 2004 Distinguished Northeastern University Professor of Pharmaceutical Sciences  
 2004 Member, Board of Directors, International Liposome Society  
 2005 President, Controlled Release Society  
 2005 Research Achievements Award in Pharmaceutics and Drug Delivery, AAPS  
 2005 The Joy Goodwin Lecturer, Auburn University  
 2005 Member, Research and Graduate Affairs Committee, AACP  
 2006 2006 CRS-Baxter Healthcare Outstanding Parenteral Drug Delivery Award  
 2006 The Massachusetts Technology Transfer Center 2006 Investigation Award  
 2007 Research Achievements Award from the World Pharmaceutical Congress, Amsterdam  
 2007 Phi Beta Delta  
 2007 Chair, International Symposium on Nanomedicine and Drug Delivery Systems  
 2008 Prestige Lectureship, University of Montreal  
 2008 The Massachusetts Technology Transfer Center 2008 Investigation Award  
 2008 Co-Chair, 2008 NCI/NSTI Special Symposium on Nanotechnology for Cancer  
 2008 Horizons in Nanotechnology Lectureship, Emory University  
 2008 Key-note speaker, International Conference on NanoBio Technologies, St.Petersburg  
 2009 Key-note speaker, Indo-US Summit on Cancer Nanotechnology, New Delhi, India  
 2009 University of North Carolina-Eisai Distinguished Lectureship in Drug Delivery  
 2009 Key-note speaker, International Symposium on Microencapsulation, Japan  
 2009 The Meritorius Paper AAPS Journal 2008 Award  
 2009 Key-note speaker, American Society for Nanomedicine Conference, Potomac  
 2009 2009 International Journal of Nanomedicine Distinguished Scientist Award  
 2010 Key-note speaker, Nanomedicine: Visions for the Future, Amsterdam, The Netherlands  
 2010 Avis Distinguished Visiting Professor Lectureship, University of Tennessee, Memphis  
 2010 Key-note speaker, International Conference on Biological Barriers, Saarbrucken, Germany  
 2010 Founders Award, Controlled Release Society  
 2010 Key-note speaker, 3<sup>rd</sup> European Conference on Clinical Nanomedicine, Basel, Switzerland  
 2010 Fellow, Controlled Release Society  
 2010 Plenary speaker, Advances in Drug Delivery Conference, Aix-en-Provence, France  
 2011 Key-note Speaker, UKICRS Meeting, Belfast, UK  
 2011 Excellence in Research and Creative Activity Award, Northeastern University  
 2011 Chair, Nanotechnology Focus Group, AAPS

2012 University Distinguished Professor, Northeastern University  
 2012 Alec Bangham Life Achievement Award  
 2012 Plenary speaker, European Conference and School on Nanomedicine and Nanotoxicology, Crete, Greece  
 2012 Plenary speaker, Controlled Release Society Annual meeting, Quebec City, Canada  
 2012 Plenary speaker, Israeli Controlled Release Society Meeting, Israel  
 2012 Plenary speaker, International Pharmaceutical Technology Conference, Antalya, Turkey  
 2012 Plenary speaker, Liposome Research Days, Hangzhou, China  
 2012 Plenary speaker, International Pharmaceutical Technology Conference, Kuala Lumpur, Malaysia  
 2013 Journal of Drug Targeting Life Time Achievement Award  
 2013 Plenary speaker, World Pharma Congress, Philadelphia  
 2013 Blaise Pascal Medal in Biomedicine from the European Academy of Sciences  
 2013 Plenary speaker, 19<sup>th</sup> International Symposium on Microencapsulation, Pamplona, Spain  
 2013 Plenary speaker, Pharmaceutical Congress, Cape Town, South Africa  
 2013 Plenary speaker, International Conference on Nanotechnology for Health, Belo Horizonte, Brazil  
 2014 Co-President and plenary speaker, International Congress on Biomaterials, Greece  
 2014 Plenary speaker, Drug Discovery and Therapy World Congress, Boston  
 2015 Co-President and plenary speaker, International Congress on Biomaterials, Greece  
 2015 Plenary speaker, International Conference on Pharmaceutical Technology, Istanbul, Turkey  
 2015 Chair, XX International Symposium on Microencapsulation, Boston  
 2015 European Journal of Pharmaceutics and Biopharmaceutics best paper award for 2014  
 2016 Co-President and plenary speaker, BIONANOTOX, Greece  
 2016 International Chair of Therapeutic Innovation, LabEx LERMIT, France  
 2016 Highly Cited Researcher from Thomson Reuters  
 2017 Outstanding Excellence Award from Pharmaceutica 2017, London, UK  
 2017 Key-note Speaker, Nanodelivery 2017, Osaka, Japan  
 2017 Co-President and plenary speaker, BIONANOTOX, Greece  
 2017 Co-Program Chair, Annual Controlled Release Society Meeting, Boston  
 2017 Plenary Speaker, Drug Discovery and Therapy World Congress, Boston  
 2017 Plenary Speaker, Drug Delivery and Formulation Summit, Boston  
 2017 Plenary Speaker, YUCOMAT 2017, Montenegro  
 2017 Plenary Speaker, 21<sup>st</sup> International Symposium on Microencapsulation, Faro, Portugal  
 2017 Key-note Speaker, World Congress on Pharmacology and Chemistry of Natural Compounds, Tbilisi, Georgia  
 2017 Key-note Speaker, 4<sup>th</sup> European Biopharma Congress, Vienna, Austria  
 2017 Albert Nelson Marquis Lifetime Achievement Award  
 2018 Plenary Speaker, 9<sup>th</sup> Global Drug Delivery and Formulation Summit, Berlin, Germany  
 2018 Key-note Speaker, 16<sup>th</sup> International Conference on Pharmaceutics and Novel Drug Delivery Systems, Berlin, Germany  
 2018 Key-note Speaker, AAPS-NERDG Meeting, Farmington, CT  
 2018 Co-President and plenary speaker, BIONANOTOX, Greece  
 2018 Key-note speaker, Global Conference on Pharmaceutics and Drug Delivery Systems, Rome, Italy  
 2018 Plenary speaker, Frontiers in Delivery of Therapeutics, Tartu, Estonia  
 2018 Plenary speaker, YUCOMAT 2018, Montenegro  
 2018 Conference Chair and Plenary speaker, Material Science-2018, Amsterdam, The Netherlands  
 2018 Key-note speaker, 21<sup>st</sup> European Biotechnology Congress, Moscow, Russia

2018 Key-note speaker, Pharmaceuticals and Novel Drug Delivery Systems, Moscow, Russia  
 2018 Key-note speaker, Applied Pharmaceutical Nanotechnology, Boston  
 2018 Co-Chair and Plenary speaker, 12th International Conference "Medical Applications of Advanced Biomaterials and Nano-biotechnology", Perugia, Italy  
 2019 Key-note speaker, 2<sup>nd</sup> International Conference on Pharmaceutical Nanotechnology and Nanomedicine, New York  
 2019 Plenary speaker, 6<sup>th</sup> World Summit on Cancer Research and Therapy, Dubai, UAE  
 2019 Honorary President and Plenary speaker, BIONANOTOX, Greece  
 2019 Sigma Xi  
 2019 Plenary speaker, YUCOMAT 2018, Montenegro  
 2019 Key-note speaker, 3<sup>rd</sup> Global Conference on Pharmaceuticals and Drug Delivery Systems, Paris, France  
 2019 Key-note speaker, International Cancer Conference, London, UK  
 2019 Highly Cited Researcher from Thomson Reuters  
 2022 Key-note speaker, INVITE Conference, Germany  
 2022 Plenary speaker, Global Summit on Pharmaceuticals and Drug Delivery Systems, Munich, Germany  
 2022 Plenary speaker, Global Summit and Expo on Materials Science and Engineering, Munich, Germany  
 2022 Invited speaker, Liposome Research Days, Vancouver, Canada  
 2022 Plenary speaker, CIMTEC, Perugia, Italy  
 2022 Plenary speaker, 2022 YUCOMAT, Montenegro  
 2022 Plenary speaker, ENDOCYTE conference, Berlin, Germany  
 2023 Plenary speaker, 2023 YUCOMAT, Montenegro  
 2023 2023 Citation Laureat by Clarivate

#### Major Committee Assignments:

1982-1991 The Highest Certifying Commission of the USSR (VAK)  
 1986-1991 International Commission on Pharmaceutical Enzymes.

#### Editorial Boards:

Editor-in-Chief *Drug Delivery*  
 Editor-in-Chief *Current Drug Discovery Technologies*  
 Co-Editor *Current Pharmaceutical Biotechnology*  
 Associate Editor *Biomedical Microdevices*  
 Review Editor *Journal of Controlled Release*  
 1979-1986 *Enzyme Microbial Technology*  
 1984-1995 *Journal of Controlled Release*  
 1987- *Advanced Drug Delivery Reviews*  
 1988-1996 *Hemostasis*  
 1989-1992 *Biokhimia* (Russian)  
 1989- *Journal of Microencapsulation*  
 1990- *Bioconjugate Chemistry*  
 1992- *Journal of Liposome Research*  
 1995- *Journal of Drug Targeting*  
 1999- *Journal of Controlled Release*  
 1999- *European Journal of Pharmaceutics and Biopharmaceutics*  
 2002- *Journal of Bioactive and Compatible Polymers*  
 2003- *Molecular Pharmaceutics*

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| 2003- | <i>Current Drug Delivery</i>  |
| 2003- | <i>Drug Discovery Today</i>   |
| 2004- | <i>Chinese Journal of Interventional Imaging and Therapy</i>                          |
| 2004- | <i>Journal of Biomedical Nanotechnology</i>   |
| 2004- | <i>Expert Opinion on Drug Delivery</i>  |
| 2004- | <i>Current Protein and Peptide Science</i>  |
| 2005- | <i>International Journal of Nanomedicine</i>  |
| 2005- | <i>Journal of Biopharmaceutics and Biotechnology</i>                                  |
| 2005- | <i>Nanotechnology, Diagnostics, and Therapeutics</i> (web journal from BioMedCentral) |
| 2007- | <i>Recent Patents on Drug Delivery and Formulation</i>                                |
| 2011- | <i>Journal of Pharmaceutical Technology and Drug Research</i>                         |
| 2011- | <i>Pharmacum Consequat</i>  |
| 2012- | <i>Biomedical Microdevices</i>  |
| 2014- | <i>Journal of Nanotechnology in Diagnosis and Treatment</i>                           |
| 2014- | <i>NanoDrugs</i>  |

**Referee for the Following Journals:**

- *Proceedings of the National Academy of Sciences of the USA*
- *Nature Biotechnology*
- *Trends in Biotechnology*
- *Biochimica et Biophysica Acta*
- *Cancer Research*
- *Journal of Nuclear Medicine*
- *Bioconjugate Chemistry*
- *Biotechnology and Bioengineering*
- *Biophysical Journal*
- *Journal of Lipid Research*
- *Pharmaceutical Research*
- *Journal of Pharmaceutical Sciences*
- *Journal of Controlled Release*
- *International Journal of Pharmacology*
- *Hemostasis*
- *Biopolymers*
- *Journal of Drug Targeting*
- *Drug Delivery*
- *Gene Therapy*
- *Journal of Liposome Research*
- *Journal of Microencapsulation*
- *Journal of Molecular Recognition*
- *Designed Monomers and Polymers*
- *Colloids and Surfaces B: Biointerfaces*
- *Reactive and Functional Polymers*
- *European Journal of Pharmaceutics and Biopharmaceutics*
- *European Journal of Pharmaceutical Sciences*
- *Biotechnology Progress*
- *Journal of Bioactive and Compatible Polymers*
- *Langmuir*
- *Nanomedicine*

- *Expert Opinion in Drug Delivery*

**Grant and Proposal Reviews for:**

Academy of Sciences of the USSR  
 Academy of Medical Sciences of the USSR  
 Scientific Council on Medical Biotechnology (USSR)  
 International Science Foundation  
 United States Army Medical Research  
 University of British Columbia, Canada  
 North Carolina Biotechnology Center  
 Natural Sciences and Engineering Research Council of Canada  
 The Israel Science Foundation  
 National Institutes of Health  
 Fund for Scientific Research, Austria  
 The Dutch Cancer Society  
 The Canadian Institutes of Health Research  
 Swiss National Science Foundation  
 United States-Israel Binational Science Foundation  
 Ireland Foundation Science  
 Italian Scientific Council

**Ph.D. and D.Sc. Thesis Committees:**

The Highest Certifying Commission of the USSR  
 Scientific Council of the USSR Cardiology Research Center, Academy of Medical Sciences of the USSR  
 Scientific Council of the Institute of Experimental Cardiology, Academy of Medical Sciences of the USSR  
 Scientific Council of the Institute of Petrochemical Synthesis, Academy of Sciences of the USSR  
 Massachusetts Institute of Technology  
 Northeastern University  
 University of Massachusetts  
 Harvard Medical School  
 Massachusetts General Hospital

**Own students** – more than 50 PhDs and more than 100 MS are trained

**Professional Societies:**

1968-1992 USSR Mendeleev Chemical Society  
 1975-1992 USSR Biochemical Society  
 1991-1995 Society of Nuclear Medicine  
 1991- Controlled Release Society (1995-1998 – Board of Governors; member of the following committees: Strategic Planning, Young Investigator Award, Best Pharmaceutical Paper Award; 2003-2007 – Board Member as Vice President, President-Elect, President and Immediate Past President)  
 1992- American Chemical Society  
 2000- International Liposome Society  
 2001- American Association of Pharmaceutical Scientists  
 2010- American Association of Colleges of Pharmacy

**Co-founder:**

Oncologic Biopharmaceuticals

MitoVec Inc.  
Encapsulation Inc.  
Nemucore Medical Innovations  
Blue Ocean  
Immix LLC  
Mechanical Drugs

**SAB member and/or Consultant for:**

Labopharm Inc.  
Genzyme Corp.  
Procyon Biopharma Inc.  
Boston Life Sciences Inc.  
Endorex Inc.  
Oncologic  
MitoVec Inc.  
PureTech  
Nanopharma  
CellGate Inc.  
LigoCyte Inc.  
Eurand  
Oral Vaccine Institute  
Encapsulation  
Solubest  
Nemucore Medical Innovations  
Blue Ocean

**Organizing, Steering, Advisory, and Program Committees for:**

- International Symposium “Advances in Enzyme Engineering”, Tbilisi 1978.
- Conference of CMEA countries, Warsaw, Poland 1980.
- I All-Union Symposium “Liposomes in Biology and Medicine”, Moscow 1980.
- VI All-Union Symposium on Synthetic Polymers of Medical Application, Alma-Ata 1983.
- VIII All-Union Symposium “Synthetic Polymers of Medical Application”, Kiev 1989.
- International Symposium “Liposomes in Biology and Medicine”, Tashkent 1990.
- International Liposome Conference, St. Petersburg, Russia 1993.
- 1st International Conference on Polymer Therapeutics, London, UK 1996.
- 10th International Symposium on Radiopharmacology, Rapallo, Italy 1997.
- Symposium on Targeting the Cardiovascular System, Boston 1997.
- 3rd Symposium on Polymer Therapeutics, London, UK, 1998.
- 26th International Symposium on Controlled Release of Bioactive Materials, Boston, 1999 (Co-Chairman, Program Committee).
- 3rd International Symposium on Frontiers in Biomedical Polymers, Shiga, Japan, 1999.
- 4th International Symposium on Polymer Therapeutics, London, UK, 2000.
- 4th International Symposium on Frontiers in Biomedical Polymers, Virginia Beach, 2001.
- 28th International Symposium on Controlled Release of Bioactive Materials, San Diego, 2001.
- 5th International Symposium on Polymer Therapeutics, Cardiff, UK, 2002.
- Gordon Research Conference on Drug Carriers in Biology and Medicine, Ventura (2000 – Co-Vice-Chairman; 2002 – Co-Chairman).
- 7th International Symposium on Pharmaceutical Sciences, Ankara, Turkey, 2003.
- 3<sup>rd</sup> Symposium on Nanomedicine and Drug Delivery, Baltimore, 2005.

- Indo-Japanese Conference on Drug Delivery, Mumbai, India, 2005.
- 13<sup>th</sup> International Pharmaceutical Technology Symposium, Antalya, Turkey, 2006.
- 4<sup>th</sup> International Symposium on Nanomedicine and Drug Delivery, Omaha, Nebraska, 2006.
- Symposium on Nanomedicine, Brooklyn Polytechnic, 2006.
- Symposium on Cancer Nanomedicine, Santa Clara, 2007 (Co-Chairman).
- 5<sup>th</sup> International Symposium on Nanomedicine and Drug Delivery, Boston, 2007 (Chairman).
- 7<sup>th</sup> International Symposium on Polymer Therapeutics, Valencia, Spain, 2008.
- Symposium on Nanomedicine in Cancer, Boston, 2008.
- International Conference on Smart Materials, Aceriale, Italy, 2008.
- International Conference NanoBio'08, St. Petersburg, Russia, 2008.
- 17<sup>th</sup> International Conference on Microencapsulation, Japan, 2009.
- 19<sup>th</sup> International Microencapsulation Symposium, Pamplona, Spain, 2013.
- International Congress on Biomaterials, Greece, 2014.
- Liposome Research Days, Copenhagen, Denmark, 2014.
- 20<sup>th</sup> International Microencapsulation Symposium, Boston, USA, 2015 (Chairman).
- BIONANOTOX, Greece, 2016
- International Symposium on Controlled Release of Bioactive Materials, Boston, 2017 (Co-Chairman, Program Committee).
- BIONANOTOX, Greece, 2017.
- 4<sup>th</sup> European Biopharma Congress, Austria, 2017.
- 16<sup>th</sup> International Conference on Pharmaceutics and Novel Drug Delivery Systems, Germany, 2018
- BIONANOTOX, Greece, 2018
- Conference Chair, Material Science-2018, Amsterdam, The Netherlands

#### **MAJOR RESEARCH INTERESTS:**

1. Physiologically active polymers and their use as drug carriers. Polymeric drugs. Slow release systems. Pharmacokinetics and biodistribution of slow release drugs.
2. Engineering of various systems for controlled delivery of pharmaceuticals including macromolecular drugs, DNA, and imaging agents.
3. Targeted delivery of therapeutic and diagnostic agents. Tumor targeting and targeting within the cardiovascular system.
4. Physico-chemical aspects of enzyme stabilization and immobilization on polymeric carriers. Therapeutic enzymes. Experimental thrombolytic therapy.
5. Artificial phospholipid membranes. Liposomes, their physico-chemical and biological properties. Long-circulating and polymer-modified liposomes as drug carriers. Immunoliposomes. Protein binding with liposomes. Liposome-cell interactions. Pharmacokinetics of liposomes.
6. Micellar solubilization of poorly soluble drugs. Polymeric micelles. Targeted micelles. Immunomicelles. Micellar tumor targeting.
7. Experimental diagnostic imaging. Contrast agents for gamma-imaging, magnetic resonance imaging and computed tomography. Labeling of polymers, proteins (antibodies and their fragments), and microparticulates (liposomes, nanoparticles, micelles) with diagnostic metal isotopes via chelating groups. Chelating polymers for heavy loading antibodies with metal isotopes. Amphiphilic chelating polymers as key components of liposomal and micellar imaging agents. Iodine-containing long-circulating micelles for computed tomography.
8. Experimental tumor immunology and therapy. Intratumor delivery of drugs and imaging agents. Tumoricidal antibodies. Accumulation of long-circulating drugs in tumors.

#### **Funding History (as PI unless noted):**

1988-1989, from the USSR Academy of Medical Sciences: "Immobilized 60,000 rub.

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| thrombolytic enzymes"   |              |
| 1988-1989 from the USSR Academy of Medical Sciences: "Liposomes for drug targeting"   | 50, 000 rub. |
| 1989-1990 from the USSR Scientific Council on Biotechnology: "Chelating polymers for antibody modification"                         | 75, 000 rub. |
| 1989-1990 from the USSR Academy of Medical Sciences: "Targeted visualization of thrombi"  | 45, 000 rub. |
| 1992-1993 from Sterling Winthrop: "Chelating polymer-modified antibodies for the delivery of imaging agents"                        | \$ 70, 000   |
| 1992-1993 from Sterling Winthrop: "Micellar imaging agents for CT"  | \$ 90, 000   |
| 1995 from Biogen: "Biodistribution of antibodies"   | \$ 10, 000   |
| 1996-1997 from RSNA "Iodine-containing micellar carriers for CT"  | \$ 20, 000   |
| 1996-1997 from Boston Life Sciences "Targeted drug delivery into tumors"  | \$ 72, 500   |
| 1996-1997 from Boston Life Sciences "Delivery of PEGylated drugs into tumors"   | \$ 205, 000  |
| 1997-2000 from NIH "Long-circulating polymer-modified liposomes" direct   | \$ 370,000   |
| 1998 from Boston Life Sciences "Delivery of micellar drugs into tumors"   | \$ 105,000   |
| 1998-1999 from Biostream "Polychelating polymers for imaging"   | \$ 33,000    |
| 1999 from Procyon Biopharma "Experimental tumor therapy"  | \$ 13,500    |
| 1999-2000 from Biogen "Antibody biodistribution"  | \$ 22,000    |
| 1999-2003 from NIH: "Micellar carriers for sparingly soluble pharmaceuticals" direct  | \$ 585,000   |
| 2000 from Procyon Biopharma "Experimental tumor therapy"  | \$ 225,000   |
| 2000-2005 from NIH "Bioengineering of artificial blood" direct  | \$ 740,000   |
| 2001 from Biogen "Antibody biodistribution"   | \$ 19,000    |
| 2001-2005 from NIH: "Long-circulating polymer-modified liposomes" direct  | \$600,000    |
| 2001-2002 from Procyon Biopharma "Imaging with anticancer antibodies"   | \$ 94,000    |
| 2002-2003 from Center for Disease Control: "A liposome-based hepatitis-B vaccine" (sub-contract from Oral Vaccine Institute) direct | \$125,000    |
| 2003-2004 from The Medical Foundation: "Antibody-mediated drug delivery to astrocytic tumors" direct                                | \$100,000    |
| 2003-2007 from NIH "Antibody-targeted polymeric systems for tumor imaging" direct   | \$765,000    |
| 2003-2008 from NIH "Micellar carriers for sparingly soluble drugs" direct   | \$1,125,000  |
| 2005-2009 from NIH "Long-circulating polymer-modified liposomes" direct   | \$700,000    |
| 2005 from Biogen "Protein biodistribution"  | \$39,000     |
| 2006-2012 from NIH "Multifunctional pharmaceutical nanocarriers" direct   | \$875,000    |
| 2007-2009 from Keck Foundation "Nanochip" (co-PI) direct  | \$1,200,000  |
| 2007-2012 from NIH "Phage-protein modified nanopharmaceuticals for breast cancer therapy" (subcontract PI) direct                   | \$500,000    |
| 2008-2008 from DSM Corporation "liposomes from glycolipids"   | \$90,000     |
| 2008-2013 from NIH "Nanocarriers for intracellular targeting" direct  | \$1,000,000  |
| 2008-2009 from Samyang Corp. "siRNA delivery" direct  | \$150,000    |

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| 2009-2011 from NIH Supplement for Intracellular targeting grant                   | direct \$200,000   |
| 2010-2013 from NIH “Layer-by-layer technology for poorly soluble drugs”           | direct \$1,000,000 |
| 2010-2015 from NIH “Center for Cancer Nanotechnology Excellence”                  | direct \$8,500,000 |
| 2011-2013 from US-Israel Binational Science Foundation                            | direct \$65,000    |
| 2010-2013 from Manganaro Fund   | direct \$360,000   |
| 2012-2013 from Immix Co   | direct \$45,000    |
| 2014-2015 from NIH “MMP-2-sensitive nanopreparations”                             | direct \$250,000   |
| 2015-2017 from NSF “Novel Nanoprinting for Oral Delivery of Poorly Soluble Drugs” | direct \$198,000   |
| 2015-2021 from NIH “Lipid-dendrimer conjugates for siRNA and drug delivery”       | direct \$1,130,000 |
| 2015-2016 from Immix Co   | direct \$35,000    |
| 2015-2016 from Tufts University   | direct \$30,000    |
| 2016-2017 from Immix Co   | direct \$25,000    |
| 2016-2021 from NIH “Mechanical Drugs”   | direct \$440,000   |
| 2017-2018 TIER 1 grant from NEU   | direct \$50,000    |
| 2020 Small COVID-19 grant from NEU  | direct \$28,000    |

## **BIBLIOGRAPHY (Google Scholar gives >80,000 citations with H index of 130)**

### **Original Papers:**

1. Kirsh YE, Bessmertnaya LY, **Torchilin VP**, Papisov MI, Kabanov VA. Structural transformations of poly-4-vinylisamylpyridinium-bromide macromolecules. *DAN USSR* (Russ.) 1970; 191:603-606.
2. **Torchilin VP**, Il'ina EV, Streltsova ZA, Smirnov VN, Chazov EI. Enzyme immobilization on heparin. *J Biomed Mater Res.* 1973; 12:685-690.
3. **Torchilin VP**, Litvak ZM, Esina GN, Makarova SB, Gryaznov GV. Immobilization of some enzymes on modified styrenedivinylbenzene matrixes. *Bioorganicheskaya Khimia* (Russ.) (Bioorganic Chemistry) 1975; 1:1231-1235.
4. **Torchilin VP**, Bobkova AS, Smirnov VN, Chazov EI. Immobilization of enzymes on biocompatible carriers. I. Immobilization of  $\alpha$ -chymotrypsin on modified Sephadexes. *Bioorganicheskaya Khimia* (Russ.) (Bioorganic Chemistry) 1976; 2:116-124.
5. **Torchilin VP**, Tischenko EG, Smirnov VN, Chazov EI. Immobilization of enzymes on biocompatible carriers. II. Immobilization of  $\alpha$ -chymotrypsin on polyvinylpyrrolidone. *Bioorganicheskaya Khimia* (Russ.) (Bioorganic Chemistry) 1976; 2:399-405.
6. **Torchilin VP**, Reyzer IL, Tischenko EG, Smirnov VN, Chazov EI. Immobilization of enzymes on biocompatible carriers. III. Immobilization of  $\alpha$ -chymotrypsin on soluble dextrans. *Bioorganicheskaya Khimia* (Russ.) (Bioorganic Chemistry) 1976; 2:1252-1253.
7. **Torchilin VP**, Reyzer TL, Tischenko EG, Il'ina EV, Smirnov VN, Chazov EI. Immobilization of enzymes on biocompatible carriers. IV. Modification of  $\alpha$ -chymotrypsin with water soluble vinylic copolymers. The evaluation of immobilized chymotrypsin accessibility for protein inhibitor. *Bioorganicheskaya Khimia* (Russ.) (Bioorganic Chemistry) 1976; 2:1687-1694.
8. Martinek K, Goldmacher VS, Klibanov AM, **Torchilin VP**, Smirnov VN, Chazov EI, Berezin IV. Main principles of enzyme stabilization. Increased thermostabilization of  $\alpha$ -chymotrypsin upon covalent coupling to complimentary surface of polymer carrier. *DAN USSR* (Russ.) 1976; 228:1468-1471.

9. **Torchilin VP**, Tischenko EG, Smirnov VN, Chazov, EI. Immobilization of enzymes on slowly soluble carriers. *J Biomed Mater Res.* 1977; 11:223-235.
10. **Torchilin VP**, Tischenko EG, Smirnov VN. Covalent immobilization of enzymes on ionogenic carriers. Effect of electrostatic complex formation prior to immobilization. *J Solid-Phase Biochem.* 1977; 2:19-29.
11. **Torchilin VP**, Galka M, Ostrowski W. Comparative studies on immobilization of human prostatic acid phosphatase. *Biochim Biophys Acta.* 1977; 488:331-336.
12. Chazov EI, Mazaev AV, **Torchilin VP**, Lebedev BS, Il'ina EV, Smirnov VN. Experimental study of biosoluble drugs. Thrombus lysis with biosoluble immobilized fibrinolysin in experiment. *Thrombosis Res.* 1978; 12:809-816.
13. **Torchilin VP**, Il'ina EV, Mazaev AV, Lebedev BS, Smirnov VN, Chazov EI. Study of modified Sephandex-bound insulin in dog experiments. *J Solid-Phase Biochem.* 1978; 2:187-193.
14. **Torchilin VP**, Maksimenko AV, Smirnov VN, Martinek K, Klibanov AM, Berezin IV. Principles of enzyme stabilization. III. The effect of the length of intramolecular linkage on thermostability of enzymes. *Biochim Biophys Acta* 1978; 522:277-283.
15. Martinek K, **Torchilin VP**. Main principles of enzyme stabilization. *Biologicheskaya Khimia* (Russ.) (Biological Chemistry) 1978; 12:17-48.
16. **Torchilin VP**. Enzyme immobilization on biocompatible carriers. *Bioorganicheskaya Khimia* (Russ.) (Bioorganic Chemistry) 1978; 4:566-568.
17. **Torchilin VP**, Goldmacher VS, Smirnov VN. Comparative study on covalent and noncovalent immobilization of enzymes on the surface of liposomes. *Biochem Biophys Res Commun.* 1978; 85:983-990.
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#### **Books and Special Journal Issues:**

1. **Torchilin VP**. *Immobilizovannye Fermenty v Medicine*. Moscow: Znanie, 1986.
2. **Torchilin VP**, ed. *Chemical Modification and Design of the New Formulations of Biologically Active Substances*. Moscow: VINITI Publishers, 1988.
3. **Torchilin VP**. *Immobilized Enzymes in Medicine*. Berlin-Heidelberg: Springer Verlag, 1991.
4. **Torchilin VP**, Trubetskoy VS, eds. *Liposomes in Diagnostic Imaging*, Special Issue, *J Liposome Res*. 1994:4.
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6. **Torchilin VP**, ed. *Long-Circulating Drugs and Drug Carriers*, Special Issue, *Advanced Drug Delivery Reviews*, 1995:16 (2/3).
7. **Torchilin VP**, N.Oku, eds. *Carriers for Delivery of Imaging Agents*, Special Issue *Advanced Drug Delivery Reviews*, 1999:37 (1-3).

8. Weissig V, **Torchilin VP**, eds. *Drug Delivery to Mitochondria*, Special Issue, Advanced Drug Delivery Reviews, 2001:49 (1/2).
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13. **Torchilin VP**, ed. *Nanoparticulates as Pharmaceutical Carriers*, Imperial College Press, London, 2006.
14. **Torchilin VP**, ed. *Nanomedicine for Cancer*, Special Issue, Anti-Cancer Agents in Medicinal Chemistry, 2006:6(6).
15. **Torchilin VP**, ed. *Multifunctional Pharmaceutical Nanocarriers*, Springer, New York, 2008.
16. **Torchilin VP**, Amiji M, eds. *Handbook of Materials for Nanomedicine*, Pan Stanford, Singapore, 2011.
17. Grodzinski P, **Torchilin VP**, eds. *Cancer Nanotechnology*, Special Issue, Adv Drug Deliv Rev, 2014:66.
18. Vandamme TF, Anton N, **Torchilin VP**, eds. *Targeted Imaging*, Special Issue, Adv Drug Deliv Rev, 2014.
19. **Torchilin VP**, ed. *Handbook of Nanobiomedical Research*, vol 1-4, World Scientific, Singapore, 2014.
20. **Torchilin VP**, ed. *Smart Pharmaceutical Nanocarriers*, Imperial College Press, London, 2016.
21. **Torchilin VP**, ed. *Handbook of Materials for Nanomedicine*, vol 1-3, Stanford Publishing, Singapore, 2020.
22. Nayak AK, Hasnain MS, Aminabhavi TM, **Torchilin VP**, eds. *Systems of Nanovesicular Drug Delivery*, Academic Press, 2022.
23. Nayak AK, Hasnain MS, Aminabhavi TM, **Torchilin VP**, eds. *Applications of Nanovesicular Drug Delivery*, Academic Press, 2022.

**Visiting Professor to:**

1. Institute of Medical Biochemistry, Copernik Academy, Krakov, Poland, 1977.
2. Assoreni Co., Rome, Italy, 1979, 1981.

3. Institute of Physiological Chemistry, Martin Luter University, Halle, Germany, 1980, 1982.
4. Department of Organic Chemistry, University of Mainz, Germany, 1986.
5. Cardiac Unit and Department of Nuclear Medicine, Massachusetts General Hospital, Boston, Massachusetts, 1978, 1982 1985, 1987, 1989, 1990.
6. Department of Biochemistry, University of Tennessee, Knoxville, Tennessee, 1991.
7. University of South Paris, 2016.
8. Moscow State University, 2017.

**Invited Lectures at Conferences:**

1. II Soviet-American Symposium "Myocardial Metabolism", Sochi, May 1975.
2. VII European Cardiology Congress, Amsterdam, June, 1976.
3. Soviet-American Symposium on Protein Chemistry and Physics, Riga, August, 1976.
4. III Soviet-American Symposium "Myocardial Metabolism" USA, May 1977.
5. IV All-Union Symposium on Protein Physics and Chemistry, Minsk, September 1977.
6. II All-Union Symposium on Preparation and Application of Immobilized Enzymes, Erevan, October 1977.
7. Soviet-American Conference "Methods for Production and Application of Enzymes in Industry and Analytical Studies", Tallin, November, 1977.
8. International Symposium on Biomedical Engineering, Delhi, India, February, 1978.
9. XII FEBS Congress, Dresden, July, 1978.
10. 18 Symposium on macromolecules, Prague, July 1978.
11. International Symposium "Advances in Enzyme Engineering", Tbilisi, June 1978.
12. IV Soviet-American Symposium "Myocardial Metabolism", Tashkent, September 1979.
13. IV All-Union Biochemical Congress, Leningrad, September 1979.
14. V Soviet-American Conference on Enzyme Engineering, Yurmaia, September 1979.
15. Conference of CMEA countries, Warsaw, Poland, May 1980.
16. IV All-Union Symposium on Immobilized Enzymes, Leningrad, October 1980.
17. I All-Union Symposium "Liposomes in Biology and Medicine", Moscow, November 1980.
18. All-Union Symposium "Magnetic Resonance in Biology and Medicine", Chernogolovka, March 1981.
19. II Soviet-French Symposium "Mechanisms of Pathogenesis of Artherosclerosis and Thrombosis", Nalchik, September 1981.
20. III Soviet-Swedish Symposium on Physico-Chemical Biology, Tbilisi, September 1981.
21. VI International Conference on Enzyme Engineering, Japan, September 1981.
22. I All-Union Biophysical Congress, Moscow, August 1982.
23. IV All-Union Symposium on Immobilized Enzymes, Kiev, May 1983.
24. IV All-Union Symposium on Biochemistry of Lipids, Kiev, July 1983.
25. IV All-Union Symposium on Medical Enzymology, Alma-Ata, October 1983.
26. VI All-Union Symposium on Synthetic Polymers of Medical Application, Alma-Ata, October 1983.
27. International Symposium on Polymers in Biology and Medicine, Prague, June 1984.
28. VI Soviet-American Symposium "Myocardial Metabolism", Baku, September 1984.
29. II International Symposium on Recent Advances in Drug Delivery Systems, Salt Lake City, Utah, February 1985.
30. V All-Union Conference on Enzyme Engineering, Kobuleti, May 1985.
31. Course on Drug Targeting at Volgograd Medical Institute, 1985.
32. V All-Union Biochemical Congress, Kiev, 1986.
33. V All-Union Symposium on Medical Enzymology, Makhachkala, 1986.
34. Course on Liposomes at the Institute of Biochemistry, Tashkent, 1986.
35. FEBS Congress, Ljubljana, Yugoslavia, 1987.
36. Liposome Symposium, Halle, Germany 1987.

37. Symposium on Biomedical Engineering, Alma-Ata 1987.
38. Natterman Symposium on Lipids, Cologne, West Germany, May 1988.
39. Interbiotech '88, Bratislava, Czechoslovakia, June 1988.
40. IUB Congress, Prague, Czechoslovakia 1988.
41. VIII All-Union Symposium "Synthetic Polymers of Medical Application", Kiev 1989.
42. All-Union Symposium "Reconstruction, Stabilization and Reparation of Biomembrane, Blagoveschensk 1989.
43. Vth International Pharmaceutical Technology Symposium, Ankara, September 1990.
44. International Symposium on Innovations in Pharmaceutical Sciences Technology, India, October 1990.
45. International Symposium "Liposomes in Biology and Medicine", Tashkent, November 1990.
46. International Conference on Thrombosis, The Netherlands, October 1991.
47. European Conference on Controlled Drug Release, The Netherlands, April 1992.
48. Gordon Research Conference on Polymers in Biosystems, Oxnard, February 1992.
49. 2nd Liposome Research Days, Leiden, The Netherlands, June 1992.
50. IUPAC Conference on Macromolecules, Prague, Czechoslovakia, July 1992.
51. American Chemical Society Meeting, San Francisco, March 1992.
52. AAAS Meeting, Boston, February 1993.
53. 6th International Symposium on Recent Advances in Drug Delivery Systems, Salt Lake City, Utah, February 1993.
54. International Liposome Conference, St. Petersburg, Russia, June 1993.
55. Second International Symposium on Polymers for Advanced Technologies, Oxford, United Kingdom, September 1993.
56. International Conference, "Liposomes in Drug Delivery," London, United Kingdom, December 1993.
57. 3rd Liposome Research Days Conference, Vancouver, Canada, June 1994.
58. Sapporo Symposium on Intelligent Polymer Gels, Sapporo, Japan, October, 1994.
59. 11th International Symposium on Affinity Chromatography and Biological Recognition, San Antonio, May 1995.
60. 22st International Symposium on Controlled Release of Bioactive Materials, Seattle, Washington, July-August 1995.
61. Fourth Liposome Research Days Conference, Freiburg, Germany, August-September 1995.
62. Current Concepts in Cardiovascular Diseases, New Dehli, India, December 1995.
63. 1st International Conference on Polymer Therapeutics, London, UK, January 1996.
64. New Drug Delivery Systems, Ahmedabad, India, March 1996.
65. 5th Liposome Research Days Conference, Shizuoka, Japan, July 1996.
66. 23rd International Symposium on Controlled Release of Bioactive Materials, Kyoto, Japan, July 1996.
67. 8th International Pharmaceutical Technology Symposium, Ankara, Turkey, September 1996.
68. Conference on Liposome Advances: Progress in Drug and Vaccine Delivery, London, UK, December 1996.
69. Blood Substitute Conference, San Diego, March 1997.
70. Chemistry and Biology of Polyethylene Glycol, ACS Meeting, San Francisco, April 1997.
71. 10th International Symposium on Radiopharmacology, Rapallo, Italy, May 1997.
72. 6th International Symposium on the Synthesis and Application of Isotopes and Isotopically Labeled Compounds, Philadelphia, September 1997.
73. International Symposium on Targeting the Cardiovascular System, Boston, September 1997.
74. 2nd Central European Symposium on Pharmaceutical Technology, Portoroz, Slovenia, September 1997.
75. 3rd International Symposium on Polymer Therapeutics, London, UK, January 1998.
76. Gordon Research Conference on Drug Carriers in Biology and Medicine, Ventura, February 1998.

77. Conference on Medical Imaging, Barcelona, Spain, May 1998.
78. 1998 Meeting of Brazilian Society of Biochemistry and Molecular Biology, Caxambu, Brazil, May 1998.
79. 216<sup>th</sup> American Chemical Society National Meeting, Boston, August 1998.
80. European Meeting on Frontiers in Pharmaceutical Sciences, Zermatt, Switzerland, October 1998.
81. American Chemical Society Meeting, Polymer Therapeutics, Anaheim, March 1999.
82. 3rd International Symposium on Frontiers in Biomedical Polymers, Shiga, Japan, May 1999.
83. 3rd International Conference on Advanced Polymers via Macromolecular Engineering, Williamsburg, August 1999.
84. 2<sup>nd</sup> International Symposium on Pharmaceutical Chemistry, Ankara, Turkey, September 1999.
85. International Symposium on Lipid and Dispersed Systems, Moscow, Russia, September 1999.
86. Meeting of American College of Clinical Pharmacy, Kansas City, October 1999.
87. International Symposium on Biomedical Polymers in 21<sup>st</sup> Century, Sapporo, Japan, November 1999.
88. Fourth International Conference on Liposome Advances, London, UK, December 1999.
89. 34<sup>th</sup> Gattefosse Conference on Frontiers in Biopharmacy, Saint-Remy, France, June 2000.
90. Gene Delivery Conference, Brooklyn Politechnic University, Brooklyn NY, June 2000.
91. 27<sup>th</sup> International Symposium on Controlled Release of Bioactive Materials, Paris, France, July 2000.
92. International Symposium on Biomaterials and Drug Delivery Systems, Cheju, Korea, August 2000.
93. Annual AAPS Meeting, Indianapolis, November 2000.
94. 28<sup>th</sup> International Symposium on Controlled Release of Bioactive Materials, San Diego, June 2001.
95. European Symposium on Peptides, Krakow, Poland, September 2001.
96. 5<sup>th</sup> International Conference on Liposome Advances, London, UK, December 2001.
97. 1<sup>st</sup> NIH Meeting on TAT-mediated cancer treatment, Rockville, MD, February 2002.
98. American Chemical Society Meeting, Orlando, FL, April 2002.
99. International Symposium Particles 2002, Orlando, FL, April 2002.
100. International Conference Liposomes. From Models to Applications, Wroclaw, Poland, May 2002.
101. American Chemical Society Meeting, Boston, MA, August 2002.
102. 11<sup>th</sup> International Pharmaceutical Technology Symposium, Istanbul, Turkey, September 2002.
103. 2<sup>nd</sup> IBC's International Conference on Protein and Peptide Drug Delivery, Boston, MA, September 2002.
104. Transitioning Biomaterials in the 21<sup>st</sup> Century, Maui, December 2002.
105. Challenge in Drug Delivery for the New Millenium, Saint-Remy de Provence, France, June 2003.
106. 7<sup>th</sup> International Symposium on Pharmaceutical Sciences, Ankara, Turkey, June 2003.
107. Liposomes Revisited, Groningen, The Netherlands, June 2003.
108. 5<sup>th</sup> International Symposium on Frontiers in Biomedical Polymers, Ischia, Italy, September 2003.
109. Annual AAPS Meeting, Salt Lake City, November 2003.
110. International Conference on Advanced Materials, Singapore, December 2003.
111. 6<sup>th</sup> International Conference on Liposome Advances, London, UK, December 2003.
112. International Conference in Nanomaterials, Dallas, January 2004.
113. International Symposium on Nano-Biotechnology, Okayama, Japan, February 2004.
114. AAPS – Northeast Regional Meeting, Rocky Hill, Conn, April 2004.
115. 9<sup>th</sup> Liposome Research Days Conference, Hsinchu, Taiwan, May 2004.
116. International Conference on Pharmaceutics, Huanzhou, China, May 2004.
117. Israeli Chapter of Controlled Release Society Meeting, Haifa, Israel, September 2004.
118. AAPS Annual Meeting, Baltimore, November 2004.
119. Nanotechnology Conference. Nanotechnology for Cancer, Anaheim, May 2005.
120. Amphiphiles and Their Aggregates in Basic and Applied Science, Wroclaw, Poland, May 2005.
121. Cell-Penetrating Peptides and Applications, Stockholm, Sweden, May 2005.

122. Advances in Drug Discovery and Delivery, Moscow, Russia, July 2005.
123. 2005 AAPS Meeting, Nashville, November 2005.
124. Indo-Japanese Conference on Drug Delivery, Mumbai, India, November 2005.
125. Course on Nanomedicine, Helsinki, Finland, February 2006.
126. International Conference on Biotechnology and Nanomedicine, Moscow, Russia, March 2006.
127. Material Research Society Meeting, San Francisco, April 2006.
128. G.O.T.Summit, Boston, April 2006.
129. Particles 2006 Conference, Orlando, May 2006.
130. Nanomedicine for Cancer Conference, Boston, May 2006.
131. Annual Controlled Release Society Meeting, Vienna, Austria, July 2006.
132. Gordon Research Conference in Drug Carriers in Medicine and Biology, Big Sky, Montana, August 2006.
133. 13<sup>th</sup> International Pharmaceutical Technology Symposium, Antalya, Turkey, September 2006.
134. 4<sup>th</sup> International Symposium on Nanomedicine and Drug Delivery, Omaha, Nebraska, October 2006.
135. New Jersey Symposium on Biomaterials, Rutgers University, November 2006.
136. Symposium on Nanomedicine, Brooklyn Polytechnic, December 2006.
137. International Conference on Liposome Advances, London, UK, December 2006.
138. Conference on Nanomedicine, University of Kansas, Kansas City, February 2007.
139. Controlled Release Society Meeting, Mumbai, India, February 2007.
140. International Conference on Recent Advances in Drug Delivery Systems, Sal Lake City – February 2007.
141. International Symposium on Cell-Penetrating Peptides, Telford, UK – May 2007.
142. Symposium on Cancer Nanomedicine, Santa Clara – May 2007.
143. International Symposium on Drugs and Targets, Berlin, Germany – June 2007.
144. IUPAC Meeting on Biomedical Polymers, New York – June 2007.
145. International Symposium on Frontiers in Biomedical Polymers, Ghent, Belgium – June 2007.
146. Symposium on Cancer Nanomedicine, Paris, France – June 2007.
147. 34<sup>th</sup> Annual Controlled Release Society Meeting, Long Beach – July 2007.
148. 2007 American Chemical Society Meeting, Boston – August 2007.
149. 16<sup>th</sup> International Meeting on Microencapsulation, Lexington, KY – September 2007.
150. 2<sup>nd</sup> International Symposium on Intracellular Delivery of Therapeutic Molecules, Grenoble, France – September 2007.
151. International Peptide Symposium, Cairns, Australia – October 2007.
152. Liposome Advances, London, UK – December 2007.
153. BIROW-5, NIH – January 2008.
154. Symposium on Nanotechnology in Medicine, Boston University – April 2008.
155. American Chemical Society Annual Meeting, New Orleans – April 2008.
156. Symposium on Nanomedicine in Cancer, Boston – June 2008.
157. International Conference on Smart Materials, Aceriale, Italy – June 2008.
158. International Conference NanoBio'08, St. Petersburg, Russia – June 2008.
159. Gordon Research Conference on Barriers in CNS, Tilton, NH – June 2008.
160. Annual ACS meeting, Philadelphia – August 2008.
161. International Pharmaceutical Technology Symposium, Antalya, Turkey – September 2008.
162. 2008 Nanomedicine and Drug Delivery Symposium, Toronto, Canada – October 2008.
163. Nanotechnology Congress, Moscow, Russia – December 2008.
164. Indo-US Summit on Cancer Nanotechnology, New Delhi, India – February, 2009.
165. Annual ACS meeting, Salt Lake City – March 2009.
166. Liposome research Conference, Itaparica, Brazil – April 2009.
167. Phospholipid Conference, Heidelberg, Germany – May 2009.
168. Nanomedicine Symposium, Moscow, Russia – June 2009.

169. FEBS Meeting, Prague, Czech Republic – July 2009.
170. Annual CRS Meeting, Copenhagen, Denmark – July 2009.
171. Key Symposium, Stockholm, Sweden – September 2009.
172. International Symposium on Microencapsulation, Nagoya, Japan – September 2009.
173. International Conference on Nanotechnology, Rusnanotech, Moscow, Russia – October 2009.
174. International Nanotechnology in Oncology Conference, Moscow, Russia – October 2009.
175. NanoUtah Conference, Salt Lake City – October 2009.
176. American Society for Nanomedicine Conference, Potomac – October 2009.
177. Material Research Society Meeting, Boston – December 2009.
178. International Conference on Liposome Advances, London – December 2009.
179. International Conference on Biological Barriers, Saarbrücken, Germany – March 2010.
180. International Symposium on Biomedical Polymers for Drug Delivery, Salt Lake City – March 2010.
181. Russian-Greek Conference on Nanobiomedicine, Heraklion, Greece, May 2010.
182. 3<sup>rd</sup> European Conference on Clinical Nanomedicine, Basel, Switzerland, May 2010.
183. Symposium on Cancer Nanomedicine, Anaheim, CA, June 2010.
184. International Meeting on Liposomes, Vancouver, Canada, August 2010.
185. Round Table on Clinical Nanomedicine, Nuremberg, Germany, September 2010.
186. Conference on Cell Penetrating Peptides, Copenhagen, Denmark, September 2010.
187. 2<sup>nd</sup> US-China Meeting on Cancer Nanomedicine, Washington DC, September 2010.
188. Conference on Nanomedicine, Los Angeles, March 2011.
189. UKICRS Meeting, Belfast, UK, April 2011.
190. AVRO Annual Meeting, Fort Lauderdale, FL, May 2011.
191. Liposome Meeting, Jerusalem, Israel, May 2011.
192. Cell-penetrating Peptides in Therapeutic Delivery, Tallinn, Estonia, May 2011.
193. Pharmaceutical Technology Conference, Antalya, Turkey, September 2011.
194. International Liposome Society meeting, London, UK, December 2011.
195. Arden House Conference on Nanomedicine, West Point, March 2012.
196. European Conference and School on Nanomedicine and Nanotoxicology, Crete, Greece, May 2012.
197. Material Research Society Meeting, Montecatini Terme, Italy, June 2012.
198. Controlled Release Society Annual meeting, Quebec City, Canada, July 2012.
199. Israeli Controlled Release Society Meeting, Israel, September 2012.
200. International Pharmaceutical Technology Conference, Antalya, Turkey, September 2012.
201. Liposome Research Days, Hangzhou, China, October 2012.
202. AAPS Annual Meeting, Chicago, October 2012.
203. International Pharmaceutical Technology Conference, Kuala Lumpur, Malaysia, November 2012.
204. International Conference on Biopolymers, Maui, December 2012.
205. Nanomedicine Conference, Los Angeles, March 2013.
206. International Biotechnology Congress, Moscow, Russia, March 2013.
207. 19<sup>th</sup> International Meeting on Microencapsulation, Pamplona, Spain, September 2013.
208. AAPS Annual Meeting, San Antonio, October 2013.
209. International Conference on Pharmaceuticals, Ribeirao Preto, Brazil, November 2013.
210. International Conference on Nanotechnology for Health, Belo Horizonte, Brazil, November 2013.
211. International Meeting on Liposome Advances, London, UK, December 2013.
212. Nanotechnology for Health Care Conference, Little Rock, April 2014.
213. International Congress on Biomaterials, Heraklion, Greece, May 2014.
214. Drug Discovery and Therapy World Congress, Boston, June 2014.
215. Liposome Research Days, Copenhagen, Denmark, July 2014.
216. Nanotechnology Meeting, Buenos Aires, Argentina, September 2014.
217. Nanomedicine Conference, Los Angeles, March 2015.
218. Annual AACR Meeting, Philadelphia, April 2015.

219. International Congress on Biomaterials, Greece, May 2015.
220. International Conference on Pharmaceutical Technology, Istanbul, Turkey, May 2015.
221. France Nanotech, Paris, June 2015.
222. EVONIK Meets Science Conference, New Jersey, September 2015.
223. OMICS Conference on Cancer Therapy, Valencia, November 2015.
224. Liposome Advances Conference, London, December 2015.
225. BIONANOTOX, Greece, May 2016.
226. Canadian Society of Pharmaceutical Scientists Conference, Vancouver, Canada, May 2016.
227. CIMIT Meeting, Perugia, Italy, June 2016.
228. Central European Biomedical Congress, Krakow, Poland, June 2016.
229. Nanomedicien Meeting, Viterbo, Italy, September 2016.
230. Meeting on Nanocontainers, Tarragona, Spain, October 2016.
231. Pharmaceutica 2017, London, UK, March 2017.
232. BIONANOTOX, Heraklion, Greece, May 2017.
233. Nanodelivery 2017, Osaka, Japan, May 2017.
234. Drug Discovery and Therapy World Congress, Boston, July 2017.
235. Drug Delivery and Formulation Summit, Boston, August 2017.
236. YUCOMAT 2017, Montenegro, September 2017.
237. Liposome Advances, Athens, September, 2017.
238. 21<sup>st</sup> International Symposium on Microencapsulation, Faro, Portugal, September 2017.
239. World Congress on Pharmacology and Chemistry of Natural Compounds, Tbilisi, Georgia, October 2017.
240. 4<sup>th</sup> European Biopharma Congress, Vienna, Austria, November 2017.
241. 9<sup>th</sup> Global Drug Delivery and Formulation Summit, Berlin, Germany, March 2018.
242. 16<sup>th</sup> International Conference on Pharmaceutics and Novel Drug Delivery Systems, Berlin, Germany, March 2018.
243. AAPS-NERDG Meeting, Farmington, CT, April 2018.
244. BIONANOTOX, Greece, May 2018.
245. Global Conference on Pharmaceutics and Drug Delivery Systems, Rome, Italy, June 2018.
246. 8<sup>th</sup> Forum on New Materials, Perugia, Italy, June 2018.
247. World Preclinical Congress, Boston, June 2018.
248. 12<sup>th</sup> International Conference on Nanopharmaceutics and Advanced Drug Delivery, Dublin, Ireland, August 2018.
249. Frontiers in Delivery of Therapeutics, Tartu, Estonia, August 2018.
250. YUCOMAT 2018, Montenegro, September 2018.
251. Material Science-2018, Amsterdam, The Netherlands, October 2018.
252. 21<sup>st</sup> European Biotechnology Congress, Moscow, Russia, October 2018.
253. Pharmaceutics and Novel Drug Delivery Systems, Moscow, Russia, October 2018.
254. Applied Pharmaceutical Nanotechnology, Boston, October 2018.
255. 2<sup>nd</sup> International Conference on Pharmaceutical Nanotechnology and Nanomedicine, New York, March 2019
256. 6<sup>th</sup> World Summit on Cancer Research and Therapy, Dubai, UAE, April 2019
257. BIONANOTOX, Greece, May 2019
258. 3<sup>rd</sup> Global Conference on Pharmaceutics and Drug Delivery Systems, Paris, France, June 2019
259. International Cancer Conference, London, UK, June 2019.
260. INVITE Conference, March 2022, Germany
261. Global Summit on Pharmaceutics and Drug Delivery Systems, Munich, Germany, May 2022.
262. Global Summit and Expo on Materials Science and Engineering, Munich, Germany, May 2022
263. Liposome Research Days, Vancouver, Canada, June 2022.
264. CIMTEC, Perugia, Italy, June 2022.
265. 2022 YUCOMAT, Montenegro, August 2022.

266. ENDOCYTE conference, Berlin, Germany, September 2022.
267. Applied Science, Paris, France, October 2022.
268. 2023 YUCOMATE, Montenegro, September 2023.

**Invited Lectures and Seminars at:**

1. University of California, San Francisco - 1977
2. University of Florida, Gainesville - 1978
3. Medical Institute, Vladimir (Russia) - 1979
4. Assoreni, Rome (Italy) - 1979
5. Martin Luther University, Halle (Germany) - 1980
6. University of Rome (Italy) - 1981
7. Assoreni, Rome (Italy) - 1981
8. Institute of Biochemistry, Tashkent (Uzbekistan) - 1981
9. Institute of Biochemistry, Kiev (Ukraine) - 1981
10. Institute of Biochemistry, Minsk (Belorussia) - 1981
11. Martin Luther University, Halle (Germany) - 1982
12. Iozef Stefan Institute, Ljubljana (Slovenia) - 1983
13. Belgrade University (Yugoslavia) - 1983
14. University of Bombay (India) - 1984
15. Volgograd Medical Institute (Russia) - 1985
16. Institute of Biochemistry, Kiev (Ukraine) - 1986
17. Institute of Organic Chemistry, Mainz (Germany) - 1986
18. Institute of Chemistry, Alma-Ata (Kazakhstan) - 1987
19. ORIS, Paris (France) - 1988
20. Far East Center of USSR Academy of Sciences, Vladivostok - 1988
21. University of Frunze (Kirgizia) - 1988
22. Institute of Macromolecular Chemistry, Prague (Czech Republic) - 1988
23. University of Groningen (Netherlands) - 1988
24. Institute of Physics, Havana (Cuba) - 1989
25. Academy of Medical Sciences, Havana (Cuba) - 1989
26. Royal Free Hospital, London (UK) - 1990
27. University of Voronez (Russia) - 1990
28. University of Illinois, Chicago - 1991
29. University of Texas M.D.Anderson Cancer Center - 1991
30. University of Utah - 1991
31. CEADEN, Havana (Cuba) - 1991
32. University of Washington, Seattle - 1992
33. University of California, San Francisco - 1992
34. Amgen - 1992
35. University of Alberta, Edmonton (Canada) - 1993
36. Northeastern University, Boston - 1993
37. University of Pittsburgh - 1994
38. University of Shizuoka (Japan) - 1994
39. Daiichi Corporation, Tokyo (Japan) - 1994
40. Suffolk University, Boston - 1994
41. Nextar - 1995
42. Technical University of Munich (Germany) - 1995
43. Mallinkrodt - 1995
44. Amgen - 1995
45. Center of Pharmaceutical Education, Akhmedabad (India) - 1996

46. Northeastern University, Boston - 1996
47. Centocor - 1997
48. MIT, Department of Chemical Engineering - 1997
49. Procyon (Canada) - 1997
50. MGH, Department of Radiation Oncology - 1997
51. University of Rio de Janeiro (Brazil) - 1997
52. Institute of Macromolecules, Rio de Janeiro (Brazil) - 1997
53. University of Padova (Italy) - 1997
54. Northeastern University, Boston - 1997
55. Aronex - 1998
56. University of Texas M.D.Anderson Cancer Center - 1998
57. University of Campinas, Department of Chemistry (Brazil) - 1998
58. University of Campinas, Department of Pharmacology (Brazil) - 1998
59. University of San Paulo in San Carlos, Institute of Chemistry (Brazil) - 1998
60. University of Utah - 1998
61. IDEXX - 1998
62. MIT, Department of Chemical Engineering - 1998
63. Martin Luther University, Halle (Germany) - 1998
64. University of Marburg (Germany) - 1998
65. Baxter – 1999
66. University of Nebraska Medical Center – 1999
67. University of Pennsylvania Medical Center – 1999
68. BASF – 2000
69. M.D.Anderson Cancer Center – 2001
70. Roxbury Community College – 2001
71. Department of Biology, Northeastern University – 2002
72. University of Minnesota Medical Center – 2002
73. Department of Pharmaceutics, Rutgers, University of New Jersey – 2002
74. Tufts University – 2003
75. Department of Physics, Northeastern University – 2004
76. Washington University – 2004
77. Institute of Biophysics, Academia Sinica – 2004
78. University of Utah – 2004.
79. University of Massachusetts, Lowell – 2004.
80. M.D.Anderson Cancer Center, Houston – 2005.
81. Auburn University, Auburn – 2005.
82. University of Wisconsin, Madison – 2006.
83. University of North Carolina, Chapel Hill – 2006.
84. University of Nebraska, Omaha – 2006.
85. University of Pennsylvania, Philadelphia – 2006.
86. University of Iowa, Iowa City – 2006.
87. Abbott – 2007
88. Biogen Idec – 2007.
89. Stevens Institute of Technology, New Jersey – 2007.
90. Institute of Molecular Pharmacology, Berlin, Germany – 2007.
91. University of Montreal – 2008.
92. Albany College of Pharmacy – Albany, 2008.
93. University of Barcelona, Spain – 2008.
94. University of Washington, Seattle – 2008.
95. Enzon Corp. – 2008.
96. Emory University, Atlanta – 2008.

97. Purdue University, West Lafayette – 2008.
98. Tempo Pharmaceuticals, Boston – 2008.
99. University of North Dakota, Fargo – 2008.
100. Wolfe Laboratories, Boston – 2008.
101. CIMIT (Beth Israel Deaconess Hospital), Boston – 2009.
102. University of Maryland – 2009.
102. University of North Carolina – 2009.
103. Eisai Co. – 2009.
104. University of Pennsylvania – 2010.
105. University of Tennessee, Memphis – 2010.
106. Pfizer – 2010.
107. Roche – 2010.
108. MIT – 2010.
109. Ben Gurion University, Beer Sheba, Israel – 2011.
110. RTI, North Carolina – 2013.
111. University of Kentucky – 2013.
112. University of Missouri, Kansas City – 2014.
113. King Abdulla University of Science and Technology, Saudi Arabia – 2014.
114. Technion, Israel – 2015.
115. King Abdulaziz University, Saudi Arabia – 2015.
116. York University, Toronto, Canada - 2015.
117. Catalan University, Barcelona, Spain – 2015.
118. University of South Paris, France – 2016.
119. Center for Atomic Energy, France – 2016.
120. Shubnikov Crystallography Institute, Russian Academy of Sciences, Russia – 2017.
121. Russian Cardiology Center, Russia – 2018.
122. University of Pennsylvania – 2019.
123. University of Massachusetts Lowell – 2022.
124. University of Texas Health Rio Grande Valley – 2022.
125. Georgia State University – 2022.

#### **Patents:**

1. USSR Patent #568662 (1977)  
Method for the preparation of encapsulated ionites.  
Inventors: **V.P. Torchilin**, A.V. Smirnov, O.N. Mertvyzhina, G.V. Gryaznov,  
A.M. Klibanov, K. Martinek, I.V. Berezin
2. USSR Patent #586182 (1977)  
Method for the preparation of immobilized amylase.  
Inventors: **V.P. Torchilin**, S.B. Makarova
3. USSR Patent #677415 (1977)  
Method for the preparation of polysaccharide derivatives of heparin.  
Inventors: **V.P. Torchilin**, E.G. Tischenko, R.A. Markosyan, V.N. Smirnov
4. UK Patent #2003603 (1978)  
Method and apparatus for producing by ultrasonics a visible image of an object.  
Inventors: I.V. Berezin, V.S. Goldmacher, K. Martinek, A.A. Mishin, G.P. Samokhin,  
V.N. Smirnov, **V.P. Torchilin**, E.I. Chazov, A.M. Klibanov
5. France Patent #7821419 (1979)  
Procédé d'obtention de l'image visible d'un objet et dispositif pour sa mise en oeuvre.  
Inventors: I.V. Berezin, V.S. Goldmakher, A.M. Klibanov, K. Martinek, A. A. Mishin,  
G.P. Samokhin, V.N. Smirnov, **V.P. Torchilin**, E.I. Chazov

6. USSR Patent #671285 (1979)  
Method for the preparation of water soluble compounds of proteolytic enzymes.  
Inventors: **V.P. Torchilin**, E.V. Il'ina, V.N. Smirnov, E.I. Chazov
7. USSR Patent #722124 (1979)  
Method for the preparation of polymeric derivatives of insulin.  
Inventors: **V.P. Torchilin**, E.G. Tischenko, E.V. Il'ina, V.N. Smirnov
8. USSR Patent #824053 (1980)  
Method for determining the rate of fibrin clot lysis.  
Inventors: E.V. Il'ina, E.G. Tischenko, **V.P. Torchilin**
9. USSR Patent #759947 (1980)  
Method and device for obtaining the visible imaging of an object.  
Inventors: I.V. Berezin, V.S. Goldmakher, K. Martinek, A.M. Klivanov, A.A. Mishin, G.P. Samokhin, **V.P. Torchilin**, V.N. Smirnov, E.I. Chazov
10. USSR Patent #798660 (1980)  
Radiation detector.  
Inventors: I.V. Berezin, V.S. Goldmakher, K. Martinek, A.M. Klivanov, A.A. Mishin, G.P. Samokhin, **V.P. Torchilin**, V.N. Smirnov, E.I. Chazov
11. USSR Patent #770495 (1980)  
Method for the treatment of thromboses.  
Inventors: A.V. Mazaev, **V.P. Torchilin**, B.S. Lebedev, V.N. Smirnov E.I. Chazov
12. USSR Patent #946038 (1980)  
Thrombin derivatives possessing coagulative activity, and method for their preparation.  
Inventors: **V.P. Torchilin**, E.V. Il'ina, A.V. Mazaev, V.N. Smirnov
13. USSR Patent #790785 (1980)  
Method for the preparation of immobilized streptokinase.  
Inventors: E.I. Chazov, V.N. Smirnov, **V.P. Torchilin**, B.V. Moskvichev, G.M. Grinberg, A.Sh. Skuya, G.I. Kleiner
14. USSR Patent #892971 (1981)  
Stabilized cholesteroloxidase - thermostable biocatalyst of cholesterol transmutation.  
Inventors: A.V. Maksimenko, E.G. Tischenko, **V.P. Torchilin**, V.N. Smirnov
15. USSR Patent #822551 (1981)  
Immobilized streptokinase possessing thrombolytic activity.  
Inventors: E.I. Chazov, V.N. Smirnov, **V.P. Torchilin**, B.V. Moskvichev, I.M. Tereshin, B.V. Moskvichev
16. US Patent #4257269 (1981)  
Method and apparatus for producing by ultrasonics a visible image of an object.  
Inventors: I.V. Berezin, V.S. Goldmacher, K. Martinek, A.A. Mishin, G.P. Samokhin, V.N. Smirnov, **V.P. Torchilin**, E.I. Chazov, A.M. Klivanov
17. FRG Patent #3032606 (1981)  
Polysaccharidderivat der streptokinase, verfahren zu dessen hersiellung und anwendung.  
Inventors: E.I. Chazov, V.N. Smirnov, **V.P. Torchilin**, I.M. Tereshin, B.V. Moskvichev
18. FRG Patent #3033030 (1981)  
Thermostabiles derivat der urokinase und verfahren zu dessen herstellung.  
Inventors: A.V. Maksimenko, **V.P. Torchilin**, E.I. Chazov
19. Sverige Patent #78079688 (1982)  
Forfarande och anordning for astadkommande av en synlig bild av ett foremal.  
Inventors: I.V. Berezin, V.S. Goldmakher, A.M. Klivanov, K. Martinek, A.A. Mishin, G.P. Samokhin, V.N. Smirnov, **V.P. Torchilin**, E.I. Chazov
20. FRG Patent #2831782 (1982)  
Verfahren zur erzeugung eines sichtbaren bildes von einem objekt und anlage zu desse realisierung.

- Inventors: I.V. Berezin, V.S. Goldmacher, K. Martinek, A.A. Mishin, G.P. Samokhin, V.N. Smirnov, **V.P. Torchilin**, E.I. Chazov, A.M. Klibanov
21. FRG Patent #3150318 (1982)  
Verfahren zur herstellung eines polysaccharaidderivats des fibrinolysins.  
Inventors: E.I. Chazov, V.N. Smirnov, **V.P. Torchilin**, I.M. Tereshin, B.V. Moskvichev, G.M. Grinberg, A.Z. Skuya, G.I. Kleiner
22. US Patent #4349630 (1982)  
Heat-resistant water soluble urokinase derivative.  
Inventors: A.V. Maksimenko, **V.P. Torchilin**, V.N. Smirnov, E.I. Chazov
23. USSR Patent #938617 (1982)  
Stabilized urokinase possessing thrombolytic activity.  
Inventors: A.V. Maksimenko, **V.P. Torchilin**, V.N. Smirnov, E.I. Chazov
24. USSR Patent 1002356 (1982)  
Method for the preparation of immobilized fibrinolysin possessing prolonged thrombolytic activity.  
Inventors: E.I. Chazov, V. N. Smirnov, **V.P. Torchilin**, I.M. Tereshin, B.V. Moskvichev, G.M. Grinberg, A.Sh. Skuya, G.I. Kleiner
25. USSR Patent #1022988 (1983)  
Urokinase stabilized derivatives possessing thrombolytic activity and method for their preparation.  
Inventors: A.V. Maksimenko, **V.P. Torchilin**, V.N. Smirnov, E.I. Chazov
26. USSR Patent # 1018634 (1983)  
Method for the treatment of eye haemorrhage.  
Inventors: R.A. Gundorova, A.D. Romaschenko, V.P. Makarova, **V.P. Torchilin**, A.V. Mazaev, V.N. Smirnov, E.I. Chazov
27. USSR Patent #1037633 (1983)  
Method for the preparation of modified urokinase.  
Inventors: A.V. Maksimenko, **V.P. Torchilin**, V.V. Kukhartchuk, O.S. Medvedev, P.M. Leschinsky, G.G. Arabidze, V.N. Smirnov
28. USSR Patent #1137760 (1983)  
Urokinase immobilized on heparin.  
Inventors: A.V. Maksimenko, **V.P. Torchilin**, E.G. Tischenko, V.N. Smirnov
29. USSR Patent #1141336 (1984)  
Method for the determination of antibodies to glycolipids.  
Inventors: G.P. Vlasov, **V.P. Torchilin**, T.A. Gremyahkova, V.G. Likhoded, M.D. Korosteleva, N.N. Ivanov
30. USSR Patent #1128601 (1984)  
Urokinase immobilized on fibrinogen.  
Inventors: A.V. Maksimenko, E.G. Tischenko, **V.P. Torchilin**, V.N. Smirnov, E.I. Chazov
31. US Patent #4446316 (1984)  
Dextran derivative of fibrinolysin.  
Inventors: E.I. Chazov, V.N. Smirnov, **V.P. Torchilin**, I.M. Tereshin, B.V. Moskvichev, G.M. Grinberg, A.Z. Skyua, G.I. Kleiner
32. USSR Patent #1309980 (1985)  
Method for the treatment of eye haemorrhage.  
Inventors: R.A. Gundorova, A.D. Romaschenko, N.S. Khodzhaev, A.V. Mazaev, **V.P. Torchilin**, V.P. Bykov
33. USSR Patent #1301406 (1986)  
Liposomal vesicle for drug targeting of biologically active compounds.  
Inventors: S.A. Burkhanov, **V.P. Torchilin**, G.A. Ermolin, V.E. Kotelyansky, E.E. Efremov, I.N. Trakht, A.L. Klibanov, A.N. Lukyanov

34. US Patent #4564596 (1986)  
Urokinase derivatives covalently bound to fibrogen.  
Inventors: **V.P. Torchilin**, A.V. Maksimenko, E.G. Tischenko, V.N.Smirnov, E.I. Chazov
35. Sverige Patent #85000933 (1986)  
Urokinas derivat bestående av urokonas bundet till fibrinogen.  
Inventors: A.V. Maximenko, E.G. Tischenko, **V.P. Torchilin**, V.N. Smirnov, E.I. Chazov
36. USSR Patent #1371004 (1987)  
Method for the preparation of immobilized urokinase.  
Inventors: B.V. Moskvichev, T.M. Taratina, G.P. Ivanova, E.D. Kostin, **V.P. Torchilin**
37. US Patent #5223242 (1993)  
Negatively charged specific affinity reagents.  
Inventors: B.A. Khaw, **V.P. Torchilin**, A.L.Klibanov
38. US Patent #5534241 (1996)  
Amphipathic polychelating compounds and method of use.  
Inventors: **V.P.Torchilin**, V.S.Trubetskoy, G.L.Wolf
39. US Patent #5567410 (1996)  
Compositions and methods for radiographic imaging.  
Inventors: **V.P.Torchilin**, V.S.Trubetskoy, S.Gazell, G.L.Wolf
40. US Patent #5780033 (1998)  
Use of autoantibodies for tumor therapy and prophylaxis.  
Inventors: **V.P.Torchilin**, L.Z.Iakoubov
41. US Patent #5746998 (1998)  
Targeted co-polymers for radiographic imaging.  
Inventors: **V.P.Torchilin**, V.S.Trubetskoy, S.Gazell, G.L.Wolf
42. US Patent #5756069 (1998)  
Amphipathic polychelating compounds and method of use.  
Inventors: **V.P.Torchilin**, V.S.Trubetskoy, G.L.Wolf
43. US Patent #5780052 (1998)  
Compositions and methods useful for inhibiting cell death and for delivering an agent into cell.  
Inventors: B.A.Khaw, **V.P.Torchilin**, J.Narula, I.Vural
44. US Patent #5993818 (1999)  
Use of antibodies for tumor therapy and prophylaxis  
Inventors: **V.P.Torchilin**, L.Z.Iakoubov
45. US Patent #6875423 (2005)  
Methods for increasing peripheral blood circulation  
Inventors: M.Intaglietta, **V.P.Torchilin**, V.S.Trubetskoy, A.G.Tsai
45. US Patent #7,279,326 (2007)  
Composition for delivery of a mitochondrial genome to a cell  
Inventors: V.Weissig, **V.P.Torchilin**
47. Application 60/368,913 (2002)  
Micelles from polymer-lipid conjugates with incorporated anti-cancer drugs  
Inventors: **V.P.Torchilin**, A.N.Lukyanov, Z.Gao
48. Application 60/368,546 (2002)  
Targeted micelles for delivery of pharmaceuticals  
Inventors: **V.P.Torchilin**, A.N.Lukyanov, Z.Gao
49. Application 60/356,526 (2002)  
Intracellular delivery of drugs and DNA  
Inventors: **V.P.Torchilin**, R.Rammohan, T.Levchenko, N.Volodina
50. Application 60/403,797 (2002)  
Cell organelle transplantation  
Inventors: **V.P.Torchilin**, V.Weissig

51. Application 11/885,491 (2004)  
Mitochondriotropic Phospholipid Vesicles  
Inventors: V.Weissig, S.Boddapati, R.Hanson, **V.P.Torchilin**
52. Application 10/503,776 (2005)  
Intracellular delivery of therapeutic agents  
Inventors: **V.P.Torchilin** et al.
53. Application 10/553612 (2005)  
Micelle delivery system loaded with a pharmaceutical agent  
Inventors: **V.P.Torchilin** et al.
54. Application PCT US/08/08326 (2006)  
Mixed micelles and uses thereof  
Inventors: **V.P.Torchilin**
55. Application 60/832,085 (2007)  
Immunotherapy with microparticles  
Inventors: **V.P.Torchilin**, D.Mongayt, L.Iakoubov
56. Application 11/879,017 (2007)  
Condition-dependent, multiple target delivery system  
Inventors: **V.P.Torchilin**
57. Application (2007)  
Delivery of siRNA  
Inventors: **V.P.Torchilin** et al.
58. Application 60/959,728 (2007)  
Stable nanocolloids of poorly soluble drugs  
Inventors: **V.P.Torchilin**, Yu.Lvov, et al.
59. Application 61/163.145 (2008)  
Stable aqueous nanocolloids of paclitaxel and atavouquone  
Inventors: Yu.Lvov, **V.P.Torchilin**, et al.
60. Application PC/US08/012660  
Self-assembling micelle-like nanoparticles for DNA delivery  
Inventors: Y.Ko, A.Kale, **V.P.Torchilin**
61. Application 61/225,298 (2009)  
siRNA-phospholipid conjugate  
Inventors: **V.P.Torchilin**, T.Musacchio
62. Application 61/225,298 (2009)  
Ascorbate-decorated nanosystems for targeted brain delivery  
Inventors: S.Salmaso, **V.P.Torchilin**, et al.
63. Application 61/239,145 (2009)  
Multi-biomarker biosensor  
Inventors : A.Busnania, **V.P.Torchilin**, et al.
64. US Patent 8,685,538 as of 4/1/2014  
Stable polyelectrolyte coated nanoparticles  
Inventors : **V.P.Torchilin** et al.

Updated 09/22/23

