

**CURRICULUM VITAE**

**NAME:** Alexander Victorovich Kabanov

**CITIZENSHIP:** Russian citizen, Naturalized US citizen

**DATE OF BIRTH:** March 27, 1962 (Moscow, USSR)

**HOME ADDRESS:** 85420 Dudley,  
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**WORK ADDRESS:** University of North Carolina at Chapel Hill  
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**EDUCATION:**

<b>Institution</b>	<b>Years</b>	<b>Degree</b>	<b>Field</b>	<b>Thesis and advisor(s)</b>
Faculty of Chemistry, M.V. Lomonosov Moscow State University, Moscow, Russia	1979 – 1984	Diploma with distinction  (M.S. equivalent)	Chemistry	"Modification of proteins (enzymes) with water-insoluble reagents. Study of interaction of partially hydrophobized proteins with lipid membranes", Dr. A.V. Levashov
Department of Chemical Enzymology, M.V. Lomonosov Moscow State University, Moscow, Russia	1984 - 1987	"Candidate of Chemical Sciences"  (Ph.D. equivalent)	Chemical Kinetics and Catalysis	"Chemical modification of water- soluble proteins (enzymes) for imparting them the membrane- active properties" Dr. K. Martinek and Dr. A.V. Levashov

**SPECIAL DEGREE (Dr.Sc.)<sup>1</sup>**

Specialized Scientific Council at Moscow State University recommended granting the Doctor of Chemical Sciences (Dr.Sc.) degree as a result of the defense of the dissertation entitled "*Micellar systems for engineering of conjugates and complexes of biologically active polymers*" (December 4, 1990). The Highest Attestation Commission of the USSR Counsel of Ministers granted the degree on April 19, 1991 (one of the youngest Doctors of Chemical Sciences ever granted in the nation).

<sup>1</sup> This is the highest scientific degree in Russia/USSR, which qualifies individual for a rank of Professor.

**SUMMARY:**

Dr. Kabanov is a Mescal Swaim Ferguson Distinguished Professor, Director, Center for Nanotechnology in Drug Delivery, and Co-Director, Carolina Institute for Nanomedicine, University of North Carolina at Chapel Hill since July 2012. Prior to this appointment he served for nearly 18 years at the University of Nebraska Medical Center where he was a Parke-Davis Professor of Pharmaceutical Sciences and Director of the Center for Drug Delivery and Nanomedicine, which he founded in 2004. Dr. Kabanov received Ph.D. degree in chemical kinetics and catalysis in 1987 at Moscow State University, USSR. He has conducted pioneering research on polymeric micelles, DNA/polycation complexes, block ionomer complexes and nanogels for delivery of small drugs, nucleic acids and proteins that considerably influenced current ideas and approaches in drug delivery and nanomedicine. His work led to first-in-man polymeric micelle drug (SP1049C) to treat cancer, which successfully completed Phase II clinical trial and is under further evaluation. He co-founded Supratek Pharma, Inc. (Montreal, Canada), which develops therapeutics for cancer and Neuro10<sup>-9</sup>, Inc. (Omaha, NE and Chapel Hill, NC) focusing on diseases of the central nervous system. Dr. Kabanov published over 250 scientific papers, and has over 100 patents worldwide. His work was cited over 17,800 times (Hirsh index 73). His cumulative research support in academia as Principal Investigator has been over \$45 M (and over \$95 M total). His inventions attracted nearly \$60M in private, foundation, and company-sponsored R&D funding in industry. He founded Nanomedicine and Drug Delivery Symposium series (2003-) and co-chaired Gordon Research Conference on Drug Carriers in Medicine and Biology (2006). He is a recipient of Lenin Komsomol Prize (1988), NSF Career Award (1995), University of Nebraska ORCA Award (2007), UNMC Scientist Laureate (2009), and Russian "Megagrant" (2010), elected member *Academia Europaea* (2013), among other distinctions. He was a director of US NIH Center of Biomedical Research Excellence (CoBRE) "Nebraska Center for Nanomedicine" (2008-2012), and is a Director of Laboratory of Chemical Design of Bionanomaterials, which he founded at Moscow State University in 2010 with the Megagrant support.

**HONORS AND AWARDS:**

- Elected *Academia Europaea* (The Academy of Europe), 2013
- Winner of the first open public competition for the grants of the Government of Russian Federation to conduct research under direction of leading scientists in institutions of highest education ("MegaGrant"), 2010<sup>2</sup>
- Professor of Changhai Hospital, Second Military Medical University, Shanghai, China, 2010
- 2009 University of Nebraska Medical Center Scientist Laureate<sup>3</sup>
- Visiting Professor of Tongji Medical School, HUST, China, 2008
- 2007 University of Nebraska Outstanding Research and Creative Activity Award (ORCA)<sup>4</sup>
- 2006 University of Nebraska Medical Center Distinguished Scientist

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<sup>2</sup> The largest scientific award in Russia to date ("Megagrant"), the only chemist among 40 winners including Fields Medal and Nobel Prize Laureates.

<sup>3</sup> The highest honor to a researcher in the UNMC.

<sup>4</sup> The highest University-wide award honoring excellence and distinction in research.

- 2004 University of Nebraska Pioneer
- NSF Special Creativity Award, 2002
- NSF CAREER Award, 1995
- USSR Medal "For Valiant Labor", signed by President Mikhail Gorbachev, 1991
- 1988 Lenin Komsomol Prize<sup>5</sup> for the cycle of work entitled "Physicochemical studies of regulation of membrane biocatalysts and receptors", 1988
- Lenin scholar (graduate), M.V. Lomonosov Moscow State University, 1984-1987
- Lenin scholar (undergraduate), M.V. Lomonosov Moscow State University, 1983-1984
- Morozov scholar (undergraduate), M.V. Lomonosov Moscow State University, 1982-1983

### **ACADEMIC APPOINTMENTS:**

Mescal Swaim Ferguson Distinguished Professor, Division of Molecular Therapeutics, UNC Eshelman School of Pharmacy, University of North Carolina at Chapel Hill, NC, 2012-.

Director, Center for Nanotechnology in Drug Delivery, UNC Eshelman School of Pharmacy, University of North Carolina at Chapel Hill, NC, 2012-.

Co-Director, Carolina Institute for Nanomedicine, University of North Carolina at Chapel Hill, NC, 2012-.

Professor (adjunct), College of Pharmacy, University of Nebraska Medical Center, Omaha, NE, 2012-.

Director (visiting), Laboratory of Chemical Design of Bionanomaterials, Faculty of Chemistry, M.V. Lomonosov Moscow State University, Moscow, Russia, 2010-.

Professor (adjunct), Russian State Medical University, Moscow, Russia, 2009-.

Professor (adjunct), Faculty of Chemistry, M.V. Lomonosov Moscow State University, Moscow, Russia, 2002-.

Director, National Institutes of Health Center for Biomedical Research Excellence (CoBRE) Nebraska Center for Nanomedicine, 2008-2012

Co-Director, Center for Clinical and Translational Research, University of Nebraska Medical Center, Omaha, NE, 2008-2012.

Professor (courtesy), Department of Genetics, Cell Biology and Anatomy, University of Nebraska Medical Center, Omaha, NE, 2005-2012.

Director, Center for Drug Delivery and Nanomedicine, University of Nebraska Medical Center, Omaha, NE, 2004-2012.

Parke-Davis Endowed Chair in Pharmaceutics, Department of Pharmaceutical Sciences, College of Pharmacy, University of Nebraska Medical Center, Omaha, NE, 2004-2012.

Professor (courtesy), Eppley Institute for Cancer Research, University of Nebraska Medical Center, Omaha, NE, 2001-2012.

Professor, Department of Pharmaceutical Sciences, College of Pharmacy, University of Nebraska Medical Center, Omaha, NE, 2001-.

Member, UNMC/Eppley Institute Cancer Center, Omaha, NE, 1995-.

Graduate College Faculty Fellow, University of Nebraska, Omaha, NE, 1995-.

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<sup>5</sup> The highest award for young scientists in the former USSR.

Associate Professor, Department of Pharmaceutical Sciences, College of Pharmacy, University of Nebraska Medical Center, Omaha, NE, 1994-2001, tenured 1998.  
Leading Research Fellow, Department of Chemical Enzymology, Faculty of Chemistry, M.V. Lomonosov Moscow State University, Moscow, Russia, 1991-1998.  
Head (half-time), Department of Biopolymer Chemistry, All-Russia Research Center of Molecular Diagnostics and Therapy, Moscow, Russia, 1992-1994.  
Head (half-time), Department of Bioregulation, Institute of Applied Molecular Biology, All-Union Research Center of Molecular Diagnostics and Therapy, USSR Ministry of Health, Moscow, USSR, 1991.  
Senior Research Fellow, Department of Chemical Enzymology, Faculty of Chemistry, M.V. Lomonosov Moscow State University, Moscow, USSR, 1990-1991.  
Head (half-time), Laboratory of Biopolymer Chemistry, Institute of Applied Molecular Biology, USSR Ministry of Health, Moscow, USSR, 1988-1991.  
Research Fellow, Department of Chemical Enzymology, Faculty of Chemistry, M.V. Lomonosov Moscow State University, Moscow, USSR, 1988-1990.  
Junior Research Fellow, Department of Chemical Enzymology, Faculty of Chemistry, M.V. Lomonosov Moscow State University, Moscow, USSR, 1987-1988.

#### **OTHER PROFESSIONAL EXPERIENCE:**

Neuro10<sup>9</sup>, Inc., Omaha, NE & Chapel Hill, NC, scientific founder (2011-present).  
InnovaForm Technologies, LLC, Philadelphia, PA, scientific founder, partner, chief science officer, board of directors member (2005-2012).  
Supratek Pharma Inc., Montreal, Canada ([www.supratek.com](http://www.supratek.com)), scientific co-founder and co-inventor of the core technology (1994); vice president, technology (1994); vice president intellectual property (1995-1998), chairman of the scientific advisory board (1995-present), board of directors member (1994, 1996-1997, 2008-present).  
Moscow Institute of Biotechnology Inc., Moscow, Russia and Montreal, Canada (co-founder), director of research (1992-1993); board of directors member, vice president, technology transfer (1992-1994).

#### **PROFESSIONAL SOCIETIES:**

American Society for Nanomedicine (ASNM), 2009-2011  
Controlled Release Society (CRS), 2001-  
American Society of Gene Therapy (ASGT), 2001-  
American Association of Pharmaceutical Scientists (AAPS), 1996-  
American Chemical Society (ACS), 1994- (Polymer Division, 1996-; Division of Polymer Materials Science and Engineering, 1997-)  
American Association of Colleges of Pharmacy (AACP), 1994-1995  
The New York Academy of Sciences, 1994-1995  
Russian Immunology Society, 1989-1993  
Russian Biochemical Society (Moscow section), 1986-1993  
D.I. Mendeleev Chemical Society, 1980-1993

## **CONSULTING, EDITORIAL DUTIES AND REVIEW PANELS:**

### **a. Consulting and advisory activities:**

#### **Industry**

Mersana Therapeutics, Inc., Boston, MA, USA, consultant, 2009.  
 FMC Corporation, Philadelphia, PA, USA, consultant, 2005-2011.  
 Infoscitex Corp., Waltham, MA, USA, consultant, 2005-2009.  
 EIC Laboratories, Inc., Norwood, MA, USA, consultant, 2001-2005, 2009.  
 Hunton & Williams, LLP, New York, NY, USA, consultant, 2006  
 Supratek Pharma, Inc., Montreal, Canada, consultant, 1994-2003.

#### **Scientific Societies**

Controlled Release Society, Board of Scientific Advisors, 2003-2006 (elected).  
 American Society of Gene Therapy, Non-Viral Gene Transfer Vectors Committee, 2003-2006.

#### **Academia**<sup>6</sup>

Chair and Member, External Advisory Board, National Institutes of Health Center for Biomedical Research Excellence (CoBRE) “Nebraska Center of Nanomedicine” (2012-)  
 Member, Scientific Advisory Board, Center for Drug Delivery Research (CDDR) at Polytechnic University-SUNY/Downstate, New York, 2006.  
 Member, Scientific Council and Board of Directors, Russian Research Center of Molecular Diagnostics and Therapy, Moscow, Russia, 1992-1994.

### **b. Grant review and study sections:**

Site visits of the World Premier International Research Center initiative (WPI Program) for Kyoto University Institute for Integrated Cell-Material Sciences (iCeMS), Japan Society for Promotion of Science, July 14-15, 2011; July 25-26, 2012, September, 2013.  
 Science Foundation Ireland site visit for the Irish Drug Delivery Network (IDDN) Strategic Research Cluster (SRC), Sep. 6-8, 2010.  
 NCI Special Emphasis Panel for NCI Centers of Cancer Nanotechnology Excellence I, ZCA1 GRB-S (M1), Feb. 24-26, 2010.  
 NIH Biomaterials and Biointerfaces Study Section, Chair (2006-2008), Member (2004-2006), ad-hoc (2003-2004).  
 NIH Special Emphasis Panel (U19), ZAI1-LR-A-S1 (50), 2004 (ad-hoc).  
 NIH Special Emphasis Panel for Drug Delivery (RO1/R21), ZRG1 SSS2 (50), 2003 (Chair).  
 NSF Biotechnology and Biochemical Engineering panel for CAREER awards, 2003 (ad-hoc).  
 NIH Special Emphasis Panel for Research Resource (P41), ZRG1 SSS-5 (01), 2002 (ad-hoc).  
 NSF Division of Material Research/Polymers panel for CAREER awards, 2001 (ad-hoc).  
 NIH Hematology-1 panel for SBIR/STTR grant review, ZRG1 CVB, 1999 (ad-hoc).  
 NIH Hematology-1 panel for SBIR/STTR grant review, 1998 (ad-hoc).  
 NSF Biochemical Engineering and Biotechnology panel for CAREER awards, 1998 (ad-hoc).

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<sup>6</sup> See also administrative service below.

Grant reviewer to NSF (Division of Material Research, Division of Bioengineering and Environmental Systems) (1995-), Petroleum Research Fund (1998, 2000, 2002), Israel Science Foundation (2002), European Science Foundation (2002), French Association Against Myopathies (2003), Australian Research Council (2005), Canada Foundation for Innovation (2006).  
UNMC Seed Grant Review, 1996, 1997.

### **c. Editorial boards and journal peer-review:**

Associate Editor/Expert Review Panel, Nanomedicine, Future Medicine, 2009-.  
Section Editor in Drug Delivery and Developmental Therapeutics, Journal Neuroimmune Pharmacology, 2006-.  
Member, Honorary Editorial Board, Nanomedicine: Nanotechnology Biology and Medicine, Elsevier, 2009-.  
Member, Honorary Editorial Board, International Journal of Nanomedicine, 2005-.  
Member, Editorial Advisory Board, Journal of Pharmaceutical Sciences, 2004-2009.  
Member, Editorial Advisory Board, Bioconjug. Chem., 2002-.  
Member, Editorial Advisory Board, Advanced Drug Delivery Reviews, 2000-.  
Member, Editorial Advisory Board, PharmSci, 1999-2004.  
Member, Editorial Board, Journal of Bioactive and Compatible Polymers, 1998-.  
Member, Editorial Board, Journal of Controlled Release, 1997-.  
Reviewer for Angewandte Chemie, Antisense and Nucleic Acid Drug Development, Biochemical Pharmacology, Biochimica et Biophysica Acta, Bioconjug. Chem., Biomacromolecules, Biopolymers, BioTechniques, British Journal of Pharmacology, Critical Reviews in Therapeutic Drug Carrier Systems, Gene Therapy, Human Gene Therapy, Industrial and Engineering Chemistry Research, Langmuir, Macromolecules, Molecular Pharmacology, Molecular Therapy and Genomics, Nature Biotechnology, Pharmaceutical Research, Pharmaceutical Science and Technology Today, Proceedings of National Academy of Sciences USA, Journal of American Chemical Society, Journal of Bioactive and Compatible Polymers, Journal of Biomaterials Science, Journal of Biomedical Materials Research, Journal of Colloid and Interface Science, Journal of Controlled Release, Journal of Drug Targeting and Journal of Pharmaceutical Sciences.

### **d. Conference organizing committees and advisory boards:**

Vice-chair, Gordon Research Conference “Cancer Nanotechnology”, Mt. Snow Resort, VT, Aug. 2015 (upcoming).  
Co-chair, 12<sup>th</sup> International Nanomedicine and Drug Delivery Symposium (NanoDDS’14), Chapel Hill, NE, Oct., 2014 (upcoming).  
Co-chair, 10<sup>th</sup> International Symposium on Frontiers in Biomedical Polymers, Vancouver, Canada, June 3-6, 2013.  
Organizing committee, 9<sup>th</sup> International Nanomedicine and Drug Delivery Symposium (NanoDDS’11), Salt Lake City, UT, Oct. 14-16, 2011.  
Co-chair (with Tatiana Bronich), 8<sup>th</sup> International Nanomedicine and Drug Delivery Symposium (NanoDDS’10), Omaha, NE, Oct. 5-6, 2010.  
Organizing committee, 7<sup>th</sup> International Nanomedicine and Drug Delivery Symposium (NanoDDS’09), Indianapolis, IN, Oct. 5-6, 2009.

Organizing committee: 1<sup>st</sup> International Summer School - Nano2009. Nanomaterials and Nanotechnologies in Living Systems. Moscow Region, Russia, June 29 – July 4, 2009.

International Advisory Board: 2<sup>nd</sup> European Summer School in Nanomedicine, Quinta Da Marinha Hotel, Lisbon, Portugal, June 12-16, 2009.

Co-chair (with Christine Allen and Kazunori Kataoka), 6<sup>th</sup> International Nanomedicine and Drug Delivery Symposium (NanoDDS'08), Toronto, Canada, 2008.

Organizer, Special Course in Nanopharmacology and Nanomedicine, University of Nebraska Medical Center, Omaha, NE, June 4-5, 2008.

Organizer, USA - Japan Mini-Symposium on Materials Medicine and Nanopharmacology, University of Nebraska Medical Center, Omaha, NE, March 25, 2008.

Scientific Advisory Board, 7<sup>th</sup> International Symposium on Frontiers in Biomedical Polymers, Ghent, Belgium, 2007.

Bioactive Materials Program Chair for the 34<sup>th</sup> Controlled Release Society Annual Meeting, 2007.

Chair, 4<sup>th</sup> International Nanomedicine and Drug Delivery Symposium (NanoDDS'06), Omaha, NE, 2006.

Co-chair (with Thomas Kissel), Gordon Research Conference "Drug Carriers in Medicine and Biology", Big Sky, MT, August 20-25, 2006.

Co-chair (with Hamid Ghandehari), 3<sup>rd</sup> International Nanomedicine and Drug Delivery Symposium, Baltimore, MD, 2005.

Co-chair (with Kalle Levon), 2<sup>d</sup> Annual Symposium on Nanomedicine and Drug Delivery, Brooklyn, NY, 2004.

Chair, US-Japan Minisymposium on Nanomedicine and Drug Delivery, Omaha, NE, 2003.<sup>7</sup>

Organizational Committee, 5<sup>th</sup> International Symposium on Polymer Therapeutics: from Laboratory to Clinical Practice, Cardiff, UK, 2002.

Scientific Advisory Board, International Symposium on Polymer Therapeutics, Nara, Japan, 2001.

Scientific Advisory Committee, 4<sup>th</sup> International Symposium on Polymer Therapeutics, From Laboratory to Clinical Practice, London, UK, 2000.

Co-organizer, Symposium on "Materials Design and Formulation for Drug and Gene Delivery" at the ACS 219<sup>th</sup> National Meeting, San Francisco, CA, 2000.

Co-organizer, 4<sup>th</sup> International Biorelated Polymers Symposium, at the ACS 220<sup>th</sup> National Meeting, Washington, D.C, 2000.

International Scientific Advisory Board 3<sup>rd</sup> International Symposium on Frontiers in Biomedical Polymers Including Polymer Therapeutics, Lake Biwa, Shiga, Japan, 1999.

## **ADMINISTRATIVE SERVICE: COLLEGE AND UNIVERSITY COMMITTEES:**

### **UNMC College of Pharmacy:**

Chair, Nanomedicine Faculty Search Committee, 2008-2009.

Chair, Search Committee for Genomics Senior Faculty Recruitment, 2003-2004.

Member, Educational Technology Committee, 1999-2002.

Member, Pharmaceutical Sciences Graduate Program Committee, 1999-2003 (reelected 2000).

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<sup>7</sup> Initiated the International Nanomedicine and Drug Delivery Symposium series (NanoDDS): [nanodds.org](http://nanodds.org).

Member, Search Committee for Pharmaceutical Sciences Department Chair, 1999-2002.  
 Member, Search Committee for faculty position in Membrane Protein Biophysics, 1999.  
 Chair, Search Committee for faculty position in Drug Delivery, 1997-1998.  
 Member, Search Committee for faculty position in Pharmaceutics, 1996-1997.  
 Member, Search Committee for faculty position in Drug Delivery, 1996-1997.  
 Member, Grade Appeals, 1995-1999.  
 Member, Equipment Committee, 1995-1996.  
 Member, Student Discipline Committee, 1995-1996.

### **UNMC:**

Member, Search Committee for UNMC Vice Chancellor for Research, 2010-2011.  
 Member, Search Committee for College of Pharmacy Dean, 2007.  
 Member, Internal Advisory Board for Center of Neurovirology and Neurodegenerative Disorders, 2004.  
 Member, Internal Advisory Board for UNMC-Eppley Cancer Center, 2003-2012.  
 Member, UNMC Faculty Senate Intellectual Property Committee, 2003-2006.  
 Member, UNMC Core Facility Advisory Council, 2002 - 2006.  
 Member, UNMC Research Development Board, 1999 - 2003.  
 Member, UNMC Technology Evaluation and Protection Committee, 1999 - 2003.  
 Member, UNMC Faculty Senate, August 1997 - 2003 (reelected 2000).  
 Member, UNMC Senate Membership & Elections Committee, 1998-1999.  
 Member, UNMC Senate Faculty Recruitment and Retention Committee, 1999.  
 Ad-hoc, UNMC Faculty Senate Committee for Conflict of Interest Policy Review, 2002.

### **University of Nebraska:**

Member, University of Nebraska Outstanding Research and Creative Activity (ORCA) Award Committee, 2009-2011.

### **UNC Eshelman School of Pharmacy:**

Member, Faculty Search Committee, 2013.  
 Member, Full Professors Committee, 2012-  
 Member, Scholarship Committee, 2013  
 HELPRx Committee and Global Research Subcommittee, 2013-.

### **UNC-Chapel Hill:**

Member, Task Force on the Commercialization of Technology, 2012.

### **National/International:**

Member, Directors for SkolTech Biomedical Centers for Research Education and Innovation (CREI) search, 2012.

### **PUBLICATIONS:<sup>8</sup>**

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<sup>8</sup> Times cited: "Google Scholar" - over 17,800, *h*-index 73, *i*10-index 193 (over 9,100, *h*-index 55, *i*10-index 153 since 2009).



**Articles published:**

1. Levashov, A.V., Kabanov, A.V., Khmel'nitskii, Y.L., Berezin, I.V., Martinek, K. (1984) Chemical modification of proteins (enzymes) with water-insoluble reagents. Dokl. Acad. Nauk SSSR, Ser. Biokhimiya (Russian) 278 (1), 246-248 (English edition: Doklady Biochemistry 278, 295-297 (1985)).
2. Kabanov, A.V., Nametkin, S.N., Levashov, A.V., Martinek, K. (1985) Transmembrane transport of artificially hydrophobized proteins (enzymes). Biol. Membrany (Russian) 2, 985-995 (English edition: Arch. Sov. Sci., Biol. Membranes 2, 1769-1785 (1989)).
3. Levashov, A.V., Kabanov, A.V., Nametkin, S.N., Martinek K., Berezin, I.V. (1985) Translocation of hydrophobized proteins (enzymes) into liposomes. Dokl. Acad. Nauk SSSR, Ser. Biokhimiya (Russian) 284 (3), 755-758 (English edition: Doklady Biochemistry 284, 306-309 (1985)).
4. Kabanov, A.V., Levashov, A.V., Martinek K. (1986) Giving of membrane active properties to water soluble enzymes via their artificial hydrophobization - a new approach to regulation of the kinetic parameters of enzymatic reactions in the systems "Surfactant-water-organic solvent". Vestnik MGU, Ser. II, Khimiya (Russian) 27, 591-594.
5. Klyachko, N.L., Levashov, A.V., Pshezhetskii, A.V., Bogdanova, N.G., Kabanov, A.V., Berezin I.V., Khmel'nitskii, Y.L., Zharinova, I.N., Martinek, K. (1986) Enzyme catalysis in aggregates of surfactants with different structure: micellar, lamellar, cylindrical (hexagonal). Dokl. Acad. Nauk SSSR, Ser. Biokhimiya (Russian) 289, 1266-1270 (English edition: Doklady Biochemistry 289, 275-278 (1987)).
6. Rakhimov, M.M., Tuichibaev, M.U., Gorbataya, O.N., Kabanov, A.V., Levashov, A.V., Martinek, K. (1986) Phospholipase A2 from the venom of big hornet *Vespa Orientalis* in the system of hydrated reversed micelles of Triton X-100 and phosphatidylcholine in benzene. Biol. Membrany (Russian) 3, 1030-1036 ((English edition: Arch. Sov. Sci., Biol. Membranes 3, 1644-1657 (1990)).
7. Kabanov, A.V., Levashov, A.V., Martinek, K. (1987) Transformation of water-soluble enzymes into membrane active form by chemical modification. Ann NY Acad Sci 501, 63-66.
8. Kabanov, A.V., Klivanov, A.L., Torchilin V.P., Martinek K., Levashov, A.V. (1987) Efficiency of protein amino group acylation with fatty acid chlorides in reversed micelles of Aerosol OT in octane. Bioorg. Khim. (Russian) 13, 1321-1324.
9. Kabanov, A.V., Klyachko, N.L., Pshezhetskii, A.V., Nametkin, S.N., Martinek, K., Levashov, A.V. (1987) Kinetic regularities of enzymatic catalysis in systems of surfactant reversed micelles in organic solvents. Mol. Biol. (Moscow) 21, 275-286 (English edition: 21, 231-241 (1987)).
10. Klyachko, N.L., Bogdanova, N.G., Levashov, A.V., Kabanov, A.V., Pshezhetskii, A.V., Khmel'nitskii, Y.L., Martinek, K., Berezin, I.V. (1987) Enzymatic catalysis in colloid solution of glycerol in organic solvent. Dokl. Acad. Nauk SSSR, Ser. Biokhimiya (Russian) 297, 483-487.
11. Alakhov, V.Y., Arzhakov, S.A., Vasilenko, O.V., Voloshiuk, S.G., Glaskova-Stepanenko, I.S., Duvakin, I.A., Ishkov, A.G., Kabanov, A.V., Kabanov, V.A., Klinskii, E.Y., Kravtsova,

T.N., Petrov, R.V., Sveshnikov, P.G., Severin, E.S. (1988) A new principle for the creation of immunotherapeutic compounds with targeted action. Physiologically active substances reversibly shielded by target recognizing macromolecules. Dokl. Acad. Nauk SSSR, Ser. Biokhimiya (Russian) 303, 1494-1497 738 (English edition: Doklady Biochemistry 303, 423-426 (1989)).

12. Kabanov, A.V., Alakhov, V.Y., Klinskii, E.Y., Khrutskaya, M.M., Rakhnyanskaya, A.A., Polinskii, A.S., Yaroslavov, A.A., Severin, E.S., Levashov, A.V., Kabanov, V.A. (1988) Construction of conjugates of natural and synthetic macromolecules using inverted micelles as microreactors. Dokl. Acad. Nauk SSSR (Russian) 302, 735-738 (English edition: Doklady Biochemistry 302 (3), 315-317 (1988)).

13. Kabanov, A.V., Nametkin, S.N., Matveeva, E.G., Klyachko, N.L., Martinek, K., Levashov, A.V. (1988) Relaxation phenomena in systems of protein-containing reverse micelles of surfactants in organic solvents. Mol. Biol. (Moscow) 22 (2), 473-484 (English edition: Molecular Biology (Moscow) 22, 382-391 (1988)). [[Abstract](#)]

14. Kabanov, A.V., Levashov, A.V., Klyachko, N.L., Nametkin, S.N., Pshezhetskii, A.V., Martinek, K. (1988) Enzymes entrapped in reversed micelles of surfactants in organic solvents: A theoretical treatment of the catalytic activity regulation. J. Theor. Biol. 133, 327-348. [Times Cited: 98](#)

15. Lukyanov, A.N., Klibanov, A.L., Kabanov, A.V., Torchilin V.P., Levashov, A.V., Martinek, K. (1988) Phospholipids covalent binding with proteins in system of reverse micelles. Bioorg. Khim. (Russian) 14 (5), 670-674. [[Abstract](#)]

16. Pshezhetskii, A.V., Kabanov, A.V., Klyachko, N.L., Berezin I.V., Martinek K., Levashov, A.V. (1988) A test for membrane-activity of enzymes: regulation of their catalytic activity by the matrix structure in a system surface-active agent-water-organic solvent. Dokl. Acad. Nauk SSSR, Ser. Biokhimiya (Russian) 298 (5), 1263-1266 (English edition: Doklady Biochemistry 328, 44-46 (1988)).

17. Alakhov, V.Y., Kabanov, A.V., Kravtsova, T.N., Levashov, A.V., Severin E.S. (1989) The role of carbohydrate binding site of the Staphylococcus aureus enterotoxin A in its interaction with lymphoid cells and the effects of hydrophobic modification on the toxin biological activity. Biol. Membrany (Russian) 6, 582-586.

18. Kabanov, A.V., Levashov, A.V., Alakhov, V.Y., Kravtsova, T.N., Martinek, K. (1989) Hydrophobized proteins penetrating lipid membranes. Coll. Czech. Chem. Commun. 54, 835-837.

19. Kabanov, A.V., Khrutskaya, M.M., Budavari, M.I., Eremin, S.A., Klyachko, N.L., Levashov, A.V. (1989) Homogeneous immunoenzyme analysis in reverse micelle systems of surface-active compounds in organic solvents. Dokl. Acad. Nauk SSSR, Ser. Biokhimiya (Russian) 305 (5), 1253-1256.

20. Kabanov, A.V., Kiselev, V.I., Chikindas, M.L., Astafieva I.V., Glukhov, A.I., Gordeev, S.A., Izumrudov, V.A., Zezin, A.B., Levashov, A.V., Severin, E.S., Kabanov, V.A. (1989) Increasing of transforming activity of plasmid DNA by incorporating it into an interpolyelectrolyte complex with a carbon chain polycation. Dokl. Akad Nauk SSSR (Russian) 306 (1), 226-229 (English edition: Doklady Biochemistry 306, 133-136 (1989)).

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### **Articles accepted for publication:**

Not recorded.

### **Articles submitted for publication:**

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### **Book chapters:**

1. Khmel'nitskii, Y.L., Kabanov, A.V., Klyachko, N.L., Levashov, A.V., Martinek, K. (1989) Enzymatic catalysis in reversed micelles. In *Structure and Reactivity in Reverse Micelles* (MP Pileni, ed). Elsevier. Amsterdam, Oxford, NY, Tokyo. pp. 230-361.
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7. Polymer compositions for chemotherapy and methods of treatment using the same, U.S. Patent # [6,060,518](#).
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64. Nanogel networks and biological compositions thereof, International Application No.: PCT/US1999/019690 (Pub. No. WO/2000/013677); National patents: AU5789699.
65. Copolymer compositions for treating viral infections, International Application No.: PCT/US1999/027299 (Pub. No. WO/2000/028994); National patents: AU017333
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67. Compositions and methods for inducing activation of dendritic cells, International Application No.: PCT/US2001/013921 (Pub. No. WO/2001/083698).
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69. Nanogel networks including polyion polymer fragments and biological agent compositions thereof, International Application No.: PCT/US2002/036988 (Pub. No. WO/2003/082348)
70. Pesticide delivery system, International Application No.: PCT/US2007/000552 (Pub. No. WO/2007/081961).
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73. Compositions for protein delivery and methods of use thereof, International Application No.: PCT/US2008/063213 (Pub. No. WO/2008/141155).
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78. Water-soluble fullerene formulations and methods of use thereof, International Application No.: PCT/US2012/021234 (Pub. No. WO/2012/097245).
79. Drug delivery compositions and methods, International Application No.: PCT/US2012/032128 (Pub. No. WO/2012/138730).
80. Nanozyme compositions and methods of synthesis and use thereof, International Application No.: PCT/US2012/039325 (Pub. No. WO/2012/162490).
81. Method of decreasing intra-ocular pressure. Russian Patent Application 2011147704. Patent approved 07.08.2012.
82. Nanosized enzyme biocatalyst for detoxification of phosphororganic compounds *in vivo*. Russian Patent Application 2012139201.
83. Pharmaceutical composition for local administration during inflammatory diseases of the eye and methods of its use. Russian Patent Application 2012130852.
84. A hydrolase of petidoglycane, expression vector containing DNA fragment encoding a hydrolase of petidoglycane, producing bacteria and method of microbiological synthesis of hydrolase of petidoglycane, Russian Patent Application 2012152156).
85. A method for imaging of gliomas using magnetic nanoparticles of iron oxide conjugated to the antibodies to the vascular endothelium growth factor using MRI in SWI mode. Russian Patent Application 2012153952.
86. A method of control of biochemical reactions. Russian Patent Application 2012155425.

### **ORAL PRESENTATIONS:**

#### **Gordon Research Conferences (GRC)**

1. Nucleotide-polymer complexes, GRC Drug Carriers in Biology and Medicine, Ventura, CA, Feb. 26, 1996. Chairs Randall J. Mersny & Theresa M. Allen
2. Block ionomer complexes for controlled drug delivery, GRC Ion Containing Polymers, Salve Regina University, Newport, RA, June 23, 1999. Chairs Robert K. Prud'Homme & William M. Risen.
3. Pluronics as CNS drug delivery systems, GRC Barriers of the CNS, Tilton School, Tilton, NH, June 27, 2002. Chair David J. Begley.
4. Polymer genomics, GRC Drug Carriers in Biology and Medicine, Big Sky Resort, Big Sky, MT, Sep. 6, 2004. Chairs Peter D. Senter & Jindrich Kopecek.
5. Charge-driven self assembly of nanoformulations, GRC Drug Carriers in Biology and Medicine, Big Sky Resort, Big Sky, MT, Aug. 21, 2006. Chairs Thomas Kissel & Alexander V. Kabanov.

6. Polyion complexation and delivery, GRC Macromolecular Materials, Ventura, CA, Jan. 12, 2009. Chair Darrin J. Pochan.
7. Polymer micelles from bench to bedside, GRC Drug Carriers in Biology and Medicine, Waterville Valley Resort, Waterville Valley, NH, Aug. 16, 2010. Chairs Patrick S. Stayton & Philip S. Low.
8. Nanozymes for protein delivery to the brain, GRC Barriers of the CNS. Bridging Barriers to Treat CNS Disease, Colby-Sawyer College, New London, NH, June 20, 2012. Chair Q. Smith.

### **Plenary and Invited Lectures at National and International Meetings:**

9. Chemical engineering of biopolymers, 14-th IUB Congress, Prague, 1988.
10. Enhancement of biomacromolecule translocation across biomembranes, **Plenary Lecture**, 6<sup>th</sup> Conference of young scientists on Organic and Bioorganic Chemistry, Bechyne, Czechoslovakia, 1989.
11. Attachment to biomacromolecules the ability for transmembrane transport, XIV Mendeleev Congress on Pure and Applied Chemistry, Tashkent, Uzbekistan, Sept. 1989.
12. Modification of biomacromolecules for their translocation across biological membranes, 1<sup>st</sup> German-Soviet Symposium "Mechanisms of regulation of the cell activity", Tashkent, Uzbekistan, Sept. 1989.
13. Reversed micelles as matrix microreactors for chemical processing of macromolecules, 4<sup>th</sup> German-Soviet Symposium "Modern developments of physics and chemistry of polymers", Bishofgrun, FRG, Sept.-Oct. 1990.
14. A new approach for creation of antiviral compounds: antibodies and oligonucleotides, modified with hydrophobic substituents, UNESCO Conference "Immunology, Virology and Society", Kiev, Ukraine, Sept. 1991.
15. Drug transport through cell membrane and hematoencephalitic barrier, 2<sup>nd</sup> Conference "Biomedical Research Strategy on AIDS", Crans-Montana, Switzerland, Oct. 1991.
16. Engineering of protein functional complexes in reversed micelles, Modern enzymology: problems and trends (in Commemoration of the 90<sup>th</sup> Anniversary of Prof. AE Braunstein (1902-1986), St. Petersburg, Russia, June 1992.
17. Site specific drug targeting, International Exhibition and Conference on Pharmaceutical Ingredients and Intermediates, Wiesbaden, FRG, Nov. 1992.
18. New approaches to targeting of bioactive compounds, Sixth International symposium on recent advances in drug delivery systems, Salt Lake City, UT, Feb. 1993.
19. Block ionomer complexes from poly(ethylene oxide)-block-polymethacrylate anions and cetylpyridinium cations, 213<sup>th</sup> ACS National Meeting, San Francisco, CA, Apr. 1997.
20. Novel lyophilic colloids and soluble complexes in drug delivery: an overview, 213<sup>th</sup> ACS National Meeting, San Francisco, CA, Apr. 1997.

21. Polycations and cationic block copolymers as DNA delivery vectors, Scanning Microscopy 1997 Meeting, Chicago, IL, May 14, 1997.
22. Polyelectrolyte complexes for DNA delivery, Workshop on Polymeric Recognition of Biological Molecules at Polytechnic University, Brooklyn, NY, June 17, 1997.
23. Amphiphilic block copolymers in drug delivery, 214<sup>th</sup> ACS National Meeting, Las Vegas, NV, Sep. 10, 1997.
24. Vesicles from block ionomer complexes. 214<sup>th</sup> ACS National Meeting, Las Vegas, NV, Sep. 11, 1997.
25. Polyelectrolyte complexes for DNA delivery, 3<sup>rd</sup> International Symposium on Polymer Therapeutics, London, Jan. 9, 1998.
26. Effects of Pluronic block copolymers on drug transport at the blood-brain barrier, 1998 Conference on Pharmaceutical Sciences and Technology, Dallas, TX, Apr. 4, 1998.
27. Block ionomer complexes, XVI Mendeleev Congress on General and Applied Chemistry, Sankt-Petersburg, Russia, May 26, 1998.
28. Block ionomer complexes, 216<sup>th</sup> ACS National Meeting, Boston, NV, Aug. 23, 1998.
29. Taking polycation gene delivery systems from in vitro to in vivo, 1998 AAPS Annual Meeting, San Francisco, CA, Nov. 18, 1998.
30. Self-assembly and activity of polyplexes, Conference "Structure & Design of Synthetic Gene Carriers", UCSF, San Francisco, CA, Feb. 5, 1999.
31. DNA/Polycation complexes for gene delivery, 3<sup>rd</sup> International Symposium on Frontiers in Biomedical Polymers Including Polymer Therapeutics, Lake Biwa, Shiga, Japan, May 25, 1999.
32. Block ionomer complexes, 3<sup>rd</sup> International Conference "Advanced Polymers via Macromolecular Engineering" Colonial Williamsburg, VA, Aug. 2, 1999.
33. Novel polymers for drug delivery, International Symposium "Biomedical Polymers for 21<sup>st</sup> Century – Molecular Design and dynamics", on the occasion of Prof. V.A. Kabanov's 65<sup>th</sup> birthday, Sapporo, Japan, Nov. 4, 1999.
34. Selective energy depletion and sensitization of MDR cells by Pluronic block copolymers, 33<sup>rd</sup> Annual Higuchi Research Seminar, Lake of the Ozarks, MO, March 13, 2000.
35. Recognition of DNA topology in reactions between plasmid DNA and cationic copolymers, 219<sup>th</sup> ACS National Meeting, San Francisco, CA, March 29, 2000.
36. Novel polymers for drug delivery, 219<sup>th</sup> ACS National Meeting, San Francisco, CA, March 30, 2000.
37. Novel nanocomposite materials based on block ionomer complexes, 219<sup>th</sup> ACS National Meeting, San Francisco, CA, March 30, 2000.
38. Block ionomer complexes, 2<sup>nd</sup> All-Russian Kargin Symposium, Chernogolovka, Russia, May 29, 2000.
39. Selective energy depletion and sensitization of multiple drug resistant cells by Pluronic block copolymers, 40<sup>th</sup> IUPAC Microsimposium Polymers in Medicine, in honor of 60<sup>th</sup> birthday of Prof. Jindřich Kopeček, Prague, Czech Republic, July 18, 2000.



40. Selective energy depletion and sensitization of MDR cells by Pluronic block copolymers, 4<sup>th</sup> International Biorelated Polymers Symposium, 220<sup>th</sup> ACS National Meeting, Washington, DC, Aug. 21, 2000.
41. Self-assembly of block ionomers and surfactants of opposite charge, International Conference on Amphiphilic Polymers and Gels, Sintra, Portugal, Jan. 10, 2001.
42. Latest in Pluronic block copolymers for drug delivery to the brain, 34<sup>rd</sup> Annual Higuchi Research Seminar, Lake of the Ozarks, MO, March 13, 2001.
43. Pluronic block copolymers for drug delivery, 2001 AAPS Annual Meeting, Denver, CO, Oct. 25, 2001.
44. What hinders and how to achieve effective gene therapy with polycations? 4<sup>th</sup> International Symposium on Frontiers in biomedical Polymers, Williamsburg, VA, May 18, 2001.
45. What hinders and how to achieve effective gene therapy with polycations? 4<sup>th</sup> Annual Meeting, American Society of Gene Therapy, Seattle, WA, June 1, 2001.
46. Current challenges in polymer therapeutics (general discussion), International Symposium on Polymer Therapeutics, Nara, Japan, July 14, 2001.
47. Pluronic block copolymers as novel polymer therapeutics for drug and gene delivery, 223<sup>rd</sup> ACS National Meeting, Orlando, FL, Apr. 9, 2002.
48. Polycations for systemic gene delivery, FASEB Meeting 2002, New Orleans, LA, Apr. 23, 2002.
49. Nanogel networks for macromolecular delivery across BBB, 35<sup>th</sup> Annual Higuchi Research Seminar, Lawrence, KS, May 7, 2002.
50. Nanogels: novel materials for drug delivery of macromolecules to the brain, 29<sup>th</sup> Annual Meeting of the Controlled Release Society, Seoul, Korea, July 25, 2002.
51. Polycations for gene delivery: Problems and solutions, 5<sup>th</sup> International Biorelated Polymers Symposium, 224<sup>th</sup> ACS National Meeting, Boston, MA, Aug. 21, 2002.
52. Pluronic block copolymers for overcoming drug resistance in cancer, 2<sup>nd</sup> International Symposium on Tumor Targeted Delivery Systems, National Cancer institute, Rockville, MD, Sep. 23, 2002.
53. Pluronic block copolymers as novel polymer therapeutics in drug and gene delivery: fundamentals and clinical applications, 2002 AAPS Annual Meeting, Toronto, Ontario, Canada, Nov. 11, 2002.
54. Nanogels: novel materials for drug delivery of macromolecules to the brain, US-Japan Minisymposium on Nanomedicine and Drug Delivery, Omaha, NE, Jan. 6, 2003.
55. Polymers for gene delivery – Where we stand? Where we go? 36<sup>th</sup> Annual Higuchi Research Seminar, Lawrence, KS, May 6, 2003.
56. Pluronic block copolymers enhance local transgene expression in skeletal muscle and solid tumor, 30<sup>th</sup> Annual Meeting of the Controlled Release Society, Glasgow, UK, July 20, 2003.
57. Novel strategies for drug and macromolecule delivery to the brain, 5<sup>th</sup> International Symposium on Frontiers in Biomedical Polymers, Ischia, Italy, Sep. 10<sup>th</sup>, 2003.

58. Novel strategies for delivery of small molecules and macromolecules to the brain, 2003 AAPS Annual Meeting, Salt Lake City, UT, Oct. 29, 2003.
59. Polymer genomics for polymer therapeutics, 6<sup>th</sup> International Symposium on polymer therapeutics, Cardiff, UK, Jan. 8<sup>th</sup>, 2004.
60. Polymer Genomics, 3<sup>rd</sup> Russian Kargin Conference “Polymers - 2004”, Moscow, Russia, Jan. 28<sup>th</sup>, 2004.
61. Polymer genomics: shifting the drug and gene delivery paradigm, 8<sup>th</sup> European Symposium on Controlled Drug Delivery, Noordwijk aan Zee, Netherlands, Apr. 9<sup>th</sup>, 2004.
62. Charge driven nanoparticle self-assembly, A William I. Fine Theoretical Physics Institute Workshop Electrostatic Interactions and Biophysics. Minneapolis, MN, May 1, 2004.
63. Polymer genomics: shifting the drug and gene delivery paradigm, “Pharmaceutical Perspectives of Nucleic Acid Based Therapeutics”, Controlled Release Society, 31<sup>st</sup> Annual Meeting, Honolulu, HI, June 12, 2004.
64. Polymer genomics: shifting the drug and gene delivery paradigm, 2004 FASEB Summer Research Conferences, Molecular Biophysics of Cellular Membranes, Tucson, AZ, June 24, 2004
65. Polymer genomics: shifting the drug and gene delivery paradigm, Second Meeting on Nanomedicine and Drug Delivery, Brooklyn, NY Aug. 19, 2004.
66. Soluble nanoparticles from block ionomer micelles and oppositely charged polyions, 228<sup>th</sup> ACS Meeting, Philadelphia, PA, Aug. 24, 2004.
67. Polymer genomics: A paradigm shift in drug delivery, 228<sup>th</sup> ACS Meeting, Philadelphia, PA, Aug. 25, 2004.
68. Effect of pluronic block copolymers on gene expression, 228<sup>th</sup> ACS Meeting, Philadelphia, PA, Aug. 25, 2004.
69. Charge driven self-assembly of nanoparticles, Biomedical Application of Nanostructures, Lincoln, NE, Oct. 8, 2004.
70. Polymer genomics: shifting the drug and gene delivery paradigm, 7<sup>th</sup> New Jersey Symposium on Biomaterials Science, New Brunswick NJ, Oct. 22, 2004.
71. Polymer genomics, Nebraska Research Expo, MINI TRACt Session on Bioinformatics, Omaha, NE, Apr. 20, 2005.
72. Polymer genomics: a shift in gene and drug delivery paradigms, The 5<sup>th</sup> Anniversary International Symposium for Gene Design and Delivery, Tokyo, Japan, May 20, 2005.
73. Transcriptional activation of gene expression by pluronic, 8<sup>th</sup> Annual Meeting of American Society for Gene Therapy, Saint-Louis, MO, June 3, 2005.
74. Drug delivery and nanomedicine, AAPS National Biotechnology Conference, San Francisco, CA, June 8, 2005.
75. Polymer science to life science, **Plenary Lecture** (with Prof. V.A Kabanov), European Polymer Congress, Moscow, Russia, June 26, 2005.

76. Charge driven self-assembly of nanomaterials, European Polymer Congress, Moscow, June 27, 2005.
77. Polymer genomics: a shift in gene and drug delivery paradigms, Advances in Science for Drug Discovery, Moscow-Kiji-Valaam-St. Petersburg, July 13, 2005.
78. Polymer nanomaterials for drug delivery, 1<sup>st</sup> Annual Meeting of American Academy of Nanomedicine, Baltimore, MD, Aug. 14, 2005.
79. Nanomedicine: the United States Perspective, Third International Nanomedicine and Drug Delivery Symposium, Baltimore, MD, Sep. 27, 2005.
80. Sensitization of MDR cancers by Pluronic, 2005 AAPS Annual Meeting, Nashville, TN, Nov. 9, 2005.
81. Polymer nanomaterials for diagnostics and therapeutics, 33<sup>rd</sup> Annual Meeting of the Controlled Release Society, Young Scientists Workshop, Vienna, Austria, July 22, 2006.
82. Get Up; Get Educated - Nanogel Networks and Their Application in Drug Delivery, 33<sup>rd</sup> Annual Meeting of the Controlled Release Society, Vienna, Austria, July 24, 2006.
83. Pharmacology and genomics of polymers and nanomaterials, 33<sup>rd</sup> Annual Meeting of the Controlled Release Society, Vienna, Austria, July 26, 2006.
84. Structure and dynamics of block ionomer complexes, International Symposium on Polyelectrolytes, Dresden, Germany, Sep. 6, 2006.
85. Nanomedicine: New frontiers in pharmacology and therapeutics, North American Congress of Clinical Toxicology 2006, San Francisco, CA, Oct. 6, 2006.
86. Charge-driven self-assembly of nanomedicines, 2006 AAPS Annual Meeting, San Antonio, TX, Oct. 31, 2006.
87. CNS drug delivery, Symposium on "Drug Delivery and Translational Research", Brooklyn, NY, Dec. 4, 2006.
88. Structure and dynamics of block ionomer complexes, 4<sup>th</sup> Kargin Conference "Polymer science 21-st century", Moscow, Russia, Jan. 30, 2007.
89. Therapy of MDR cancers using pluronic: molecular targets and future prospects, International Symposium on Polymer Therapeutics, Berlin, Germany, Feb. 19, 2007.
90. CNS drug delivery. International Symposium on Drug Research and Development "From Chemistry to Medicine" (DRD 2007). Antalya, Turkey, May 20, 2007.
91. Polymer genomics, Polymers in medicine and biology, Sonoma Valley, CA, June 18, 2007.
92. Polymer nanomaterials for CNS drug delivery, 7<sup>th</sup> International Symposium on Frontiers in Biomedical Polymers, Ghent, Belgium, June 26, 2007.
93. SP1049C: Clinical product development, 34<sup>th</sup> Annual Meeting of the Controlled Release Society, Long Beach, CA, July 11, 2007 (with V.Y. Alakhov).
94. Polymer genomics: pharmacology and toxicology of nanomaterials for drug delivery, 16<sup>th</sup> International Symposium on Microencapsulation, Lexington, KY, Sep. 10, 2007.

95. Polymer nanomaterials for drug delivery, 2<sup>nd</sup> International Symposium on Atomic Technology, Awaji, Japan, Oct. 1, 2007.
96. Nanomaterials for CNS drug delivery, Fifth International Nanomedicine and Drug Delivery Symposium (NanoDDS'07), Boston, MA, Nov. 3, 2007.
97. Nanomaterials for drug delivery to the brain, US-Russian Workshop "Towards health in 21<sup>st</sup> century: nanomedicine and self-organization of biological systems", Moscow, Moscow State University, Russia, Dec. 10, 2007.
98. Block ionomer complexes for nanomedicine and drug delivery, "Self-assembled structures of amphiphilic copolymers and biopolymers" Joint workshop of the Marie Curie Research and Training Networks POLYAMPHI and BIOPOLYSURF and the ESF EUROCORES project BIOSONS, Biarritz, France, Feb. 12, 2008.
99. Polymer materials for nanomedicine, Nanomedicine symposium, Industry of Health Forum, Russian Academy of Medical Sciences, Moscow, Russia, Feb. 14, 2008.
100. Translational and clinical nanomedicine, USA - Japan Mini-Symposium on "Materials Medicine and Nanopharmacology", University of Nebraska Medical Center, Omaha, NE, March 25, 2008.
101. Block ionomer complexes for nanomedicine and drug delivery, The 42<sup>nd</sup> World Polymer Congress, MACRO 2008, Taipei, Taiwan, July 2, 2008.
102. Black Swan and Nanomedicine, ESF-UB Conference in Biomedicine "Nanomedicine 2008", Hotel Eden Rock, Saint Feilu de Guixols, Spain, Sep. 22, 2008.
103. Polymer micelles: from bench to bedside, 1st Joint US-China Symposium on Nanobiology and Nanomedicine, The 331<sup>st</sup> Xiangshan Science Conference, Fragrant Hill, Beijing, China, Oct. 23, 2008.
104. Polymer micelles for drug delivery - from bench to bedside, Materials Medicine Mini-symposium, Virginia Tech, Blacksburg, VA, Nov. 21, 2008.
105. Polymer micelles: from bench to bedside, RUSNANOTECH Nanotechnology International Forum, Moscow, Russia, Dec. 4, 2008.
106. Polymer micelles: from bench to bedside, 8th International Symposium on Frontiers in Biomedical Polymers, Mishima, Japan, May 22, 2009.
107. Polymers: from plastics to innovative drug delivery systems, Nanomedicine 2009 – 2<sup>nd</sup> European Summer School in Nanomedicine, Quinta Da Marinha Hotel, Lisbon, Portugal, June 13, 2009.
108. Polymer micelles: from bench to bedside, 1<sup>st</sup> International Summer School - Nano2009. Nanomaterials and Nanotechnologies in Living Systems. Moscow Region, Russia, June 30, 2009.
109. Polymer nanomaterials for CNS drug delivery, 34<sup>th</sup> FEBS Congress, Prague, Czech Republic, July 7, 2009.
110. Polymers: From plastics to innovative drug delivery systems, ChinaNANO 2009: International Conference on Nanoscience & Technology, Beijing, China, Sep. 2, 2009.

111. Polymer micelles: from bench to bedside, 6th International Key Symposium Nanomedicine, The Journal of Internal Medicine and The Royal Swedish Academy of Sciences, Grand Hôtel Saltsjöbaden, Stockholm, Sweden, Sep. 10, 2009.
112. Polymer micelles: from bench to bedside, 2009 American Society for Nanomedicine (ASNM) Conference, Bolger Center, MD, Oct. 23, 2009.
113. Polymer based drug and gene delivery, XXIV Meeting of the Groupe Thematique de Recherche sur la Vectorisation, Paris, France, Dec. 8, 2009.
114. Polymeric micelles from bench to bedside, Symposium on Biomedical Polymers for Drug Delivery, In honor of 70<sup>th</sup> Birthday of Jindřich Kopeček, Salt Lake City, UT,
115. Nanomedicines for polypeptide delivery to CNS, Society on Neuroimmune Pharmacology (SNIP) Symposia, Manhattan Beach, CA, Apr. 15, 2010.
116. Polymer genomics – 10 years on..., Plenary Lecture, 8<sup>th</sup> International Symposium on Polymer Therapeutics: From Laboratory to Clinical Practice, Valencia, Spain, May 25, 2010.
117. Polymeric micelles from bench to bedside, Spanish-Portuguese Local Chapter of the Controlled Release Society, Valencia, Spain, May 28, 2010.
118. Polymer nanomaterials for drug delivery, Nanomedicine: from Materials Design to Clinical Applications, Workshop 37<sup>th</sup> Annual Meeting of the Controlled Release Society, Portland, OR, July 10, 2010.
119. Pluronic block copolymers – beyond polymeric micelles, Nanomedicines Roundtable, 37<sup>th</sup> Annual Meeting of the Controlled Release Society, Portland, OR, July 11, 2010.
120. Beyond PEGylation – protein modification with block copolymers for CNS delivery, 37<sup>th</sup> Annual Meeting of the Controlled Release Society, Portland, OR, July 13, 2010.
121. Polymeric micelles from bench to bedside, 1<sup>st</sup> International Workshop on Nanomedicine, European Medicines Agency, London, Sep. 3, 2010.
122. Polymeric micelles from bench to bedside, Plenary Lecture, 24<sup>th</sup> Conference of the European Colloid and Interface Society, Prague, Czech Republic, Sep. 6, 2010.
123. Polymer nanomaterials for therapeutic drug delivery, 6<sup>th</sup> International Conference on the Thin Film and Ocular Surface: Basic Science and Clinical Relevance, Florence, Sep. 25, 2010.
124. Polymer complexes for drug delivery, XiangShan Science Conference on Functional Supramolecular Systems, Beijing, China, Oct. 27, 2010.
125. New nanoconstructs for delivery of polypeptides to the brain, III Nanotechnology International Forum, Rusnanotech 2010, Nov. 1, 2010.
126. Polymer nanomaterials for therapeutic drug delivery, Targeted Drug Delivery, Food and Drug Administration, Washington, DC, Dec. 6, 2010.
127. Polymer Genomics... 10 years on, Pacifichem 2010. The International chemical Congress of the Pacific Basin Societies, Honolulu, Hawaii, USA, Dec. 16, 2010.
128. Polymeric micelles: From bench to the bedside, Pacifichem 2010. The International chemical Congress of the Pacific Basin Societies, Honolulu, Hawaii, USA, Dec. 18, 2010

129. Novel nanomedicine approaches for protein delivery to the brain, 2011 Nanomedicine and Drug Delivery Research Conference For Scientific and Healthcare Professionals, Cedars-Sinai Medical Center, Los Angeles, CA, March 5, 2011.
130. Polymeric nanomedicines for therapeutic applications, XVIII Regional Kargin readings, Tver, Russia, March 25, 2011.
131. Biomedical polymers for delivery of polypeptides to the brain, 9<sup>th</sup> International Symposium on Frontiers in Biomedical Polymers (FBPS 2011), Madeira, Portugal, May 9, 2011.
132. Polymeric micelles from bench to the bedside, Triggered Nanoparticles: 6th Annual Cancer Nanobiology Think Tank, CCR Nanobiology Program. NCI-Frederick Center for Cancer Research Nanobiology, Frederick, MD, May 17, 2011.
133. Polymeric micelles from bench to the bedside, 3<sup>rd</sup> European Science Foundation Summer School Nanomedicine 2011, Lutherstadt Wittenberg, Germany, June 23, 2011.
134. Polymeric micelles from bench to the bedside, 1<sup>st</sup> All-Russian symposium on surfactants "From Colloidal Systems to Nanochemistry", Kazan, Russia, June 29, 2011.
135. Nanomedicine: Crossing biological barriers for drug delivery, 2<sup>nd</sup> International School - Nano2011: Nanomaterials and Nanotechnologies in Living Systems. Safety and Nanomedicine, Moscow Region, Russia, Sept. 19, 2011.
136. Polymeric micelles for nanomedicine: From laboratory to clinics, **Plenary Lecture**, XIX Mendeleev Congress on General and Applied Chemistry, Volgograd, Russia, Sept. 28, 2011.
137. Polymeric micelles from bench to the bedside, NanoUtah 2011, Salt-Lake City, UT, Oct. 14, 2011.
138. Polymer materials for medicine, Scientific session of the Division of Chemistry and Materials Science, Russian Academy of Sciences, Moscow, Russia, Nov. 7, 2011.
139. Latest advances in block copolymers for therapeutic use, **Plenary Lecture**, The 2011 Global COE International Symposium on Future Molecular Systems, Fukuoka, Japan, Nov. 26.
140. Nanomedicines for polymer delivery to the brain, Global COE Satellite Symposium on Nanobioscience, Nanobiotechnology and Nanomedicine, Ito Campus, Kyushu University, Fukuoka, Japan, Nov. 28, 2011.
141. Polymeric materials for Nanomedicine, 9<sup>th</sup> International Conference and Workshop on Biological Barriers – *in vitro* and *in silico* Tools for Drug Delivery and Nanosafety Research, Saarland University, Saarbrücken, Germany, March 7, 2012.
142. Nanomedicines for polymer delivery to the brain, The 18th Annual Blood-Brain Barrier Consortium Meeting "Novel Approaches for Translational Blood-Brain Barrier Research", Skamania Lodge, Stevenson, WA, March 23, 2012.
143. Polymeric micelles and polyion complexes for drug delivery, 13<sup>th</sup> Dresden Polymer Discussion and 8th Max Bergmann Symposium "Molecular bioengineering meets polymer science", Meissen, Germany, April 2, 2012.
144. Nanozymes as potential bioscavengers for prevention and reparation of damage caused by OP agents, 11<sup>th</sup> International Meeting on Cholinesterases, Kazan, Russia, June 7, 2012.
145. Nanomedicine and drug delivery, 2012 IDeA Symposium, Washington, DC, June 27, 2012.

146. Polymeric micelles and polyion complexes for drug delivery: When colloids become nanomedicines, Colloids and Nanomedicines 2012, Amsterdam, Netherlands, July 16, 2012.
147. The potential of doubly-amphiphilic poly(2-oxazolines) to solubilize extremely hydrophobic drugs, NCI Alliance for Nanotechnology in Cancer, Annual Principal's Investigators Meeting, Houston, TX, Nov. 15, 2012.
148. Polymer micelles and polyion complexes: state of the art and future of drug delivery, Tenth International Nanomedicine and Drug Delivery Symposium (NanoDDS'12), Atlantic City, NJ, Dec. 6, 2012.
149. Nanomedicine – time to collect stones. From science fiction to clinical practice, Mendeleev – 2013, Sankt-Petersburg, Russia, Feb. 2013.
150. Nanomedicine – Time to Collect Stones. From science fiction to clinical practice,, 2<sup>nd</sup> International Conference on Biomaterials Science (ICBS2013), Tsukuba, Japan, Mar. 20, 2013.
151. Polymeric Micelles for Drug Delivery – From Idea to Clinics, 10<sup>th</sup> International Symposium on Frontiers in Biomedical Polymers, Vancouver, Canada, June. 3, 2013.
152. Polymeric micelles for drug delivery: From idea to clinics, Nanotechnologies in Cancer Diagnosis, Therapy, and Prevention. The New York Academy of Sciences, New York, NY, June. 12, 2013.
153. A very high capacity polymeric micelles for drug delivery, 2013 Annual Principal Investigators Meeting, NCI Alliance for Nanotechnology in Cancer, Bethesda, MD, Sep. 19, 2013.
154. Very high capacity polymeric micelles for drug delivery, Polymers in Medicine and Biology 2013, Sonoma Valley, CA, Oct. 11, 2013.

### **Special Lectures:**

155. Polymer science to life science. A phenomenal contribution of Prof. V.A Kabanov (1934-2006), European Polymer Congress, Portoroz, Slovenia, July 2, 2007.
156. Polymer science to life science. Memorial conference dedicated to Prof. V.A Kabanov 75<sup>th</sup> birthday. Moscow State University, Moscow, Jan. 15, 2009.
157. Nanomedicine – time to collect stones. From science fiction to clinical practice, Festival of Science (Festival Nauki), Moscow, Oct. 14, 2012 (<http://www.festivalnauki.ru/video/13494>).
158. Work of V.A. Kabanov as precursor of polymer therapeutics and nanomedicine. 6<sup>th</sup> All Russian Kargin Conference “Polymers 2014”, Jan. 28, 2014

### **Regional and state meetings and seminars:**

159. High Capacity Nanocarriers for Cancer Chemotherapeutics, CCNE - NCI Site Visit, Chapel Hill, NC, May 7, 2013.
160. Polymeric Micelles and Drug Delivery, Triangle Center for Excellence for Materials Research and Innovation: Programmable Assembly of Soft Matter Duke, NC, May 13, 2013.

161. A very high capacity polymeric micelles for drug delivery, 2013 Annual Principal Investigators Meeting, Specialized Program of Research Excellence (SPORE) in Breast Cancer, Chapel Hill, NC, Oct. 11, 2013.

#### **Short Courses and other Educational Lectures:**

162. Self-assembling systems for drug delivery, ACS Short Course on “Chemistry, Biology and Applications of Bioconjugates” (Peter Senter, org.), San Diego, CA, March 30-31, 2001.

163. Novel polymer materials for drug and gene delivery (5-lectures), Short Course at Moscow State University Faculty of Chemistry, Moscow, Russia, Feb. 17-21, 2003.

164. Polymer Nanomaterials for Drug Delivery, AAPS Webinar, Funded by a grant from AstraZeneca. Feb. 29, 2008.

165. Nanomedicine from bench to bedside, ACS Omaha Chapter, Omaha, NE, Apr. 8, 2008.

166. Nanomedicine from bench to bedside, Special Course in Nanopharmacology and Nanomedicine, Omaha, NE, June 4, 2008.

#### **Industrial Meetings:**

167. CombiForm™: A new approach to increase efficacy in drug development, 6<sup>th</sup> International Drug Delivery Technologies & Deal Making Summit, Princeton, NJ, July 26, 2001.

168. Pluronic block copolymers for overcoming Pgp, Oral Drug Delivery Summit 2003 in Philadelphia, PA, Sept. 29, 2003.

#### **Oral Posters and Panels:**

169. Block polycations for DNA delivery, 1<sup>st</sup> International Symposium on Polymer Therapeutics, London, England, Jan. 1996.

170. Effects of Pluronic block copolymers on drug transport in blood brain barrier, GRC on Drug Carriers in Biology and Medicine, Ventura, CA, Feb. 1998.

171. Pluronic block copolymers for drug delivery to the brain, 4<sup>th</sup> International Symposium on Polymer Therapeutics, London, England, Jan. 2000.

172. Recognition of DNA topology in reactions between plasmid DNA and cationic copolymers, 4<sup>th</sup> International Symposium on Polymer Therapeutics, London, England, Jan. 2000.

173. Nanopharmacology and molecular simulation (panel), IASTED International Conference on “Nanotechnology and Applications: NANA 2008, Crete, Greece, Sep. 29, 2008.

#### **Lectures and seminars at academic institutions:**



174. Structure and function of biopolymers in reversed micelles, Physico-Chemical Faculty, Pierre and Marie Curie University, Paris, Jan. 16, 1990 (M. Pileni)<sup>11</sup>.
175. Membrane active biopolymers in model systems and cells, Medical Faculty, Renes Descartes University, Paris, Jan. 18, 1990 (M. Waks).
176. Chemical engineering of biopolymers, Institute of Chemistry, Louis Pasteur University, Strasbourg, Jan. 19, 1990 (J.M. Lehn).
177. Chemical engineering of biopolymers: Drug targeting and mimetic studies, Immunology Department, Institute Pasteur, Paris, Jan. 22, 1990 (G. Buttin).
178. Structure and function of biopolymers in reversed micelles, Ibaraki University, Mito, Japan, Aug. 6, 1990 (Y. Osada).
179. Enhancement of biopolymer penetration into a cell, Department of Polymer Chemistry, Waseda University, Tokyo, Aug. 7, 1990 (E. Tsuchida).
180. Enhancement of biopolymer penetration into a cell, Tokyo Women's Medical College, Tokyo, Aug. 8, 1990 (T. Okano).
181. Enhancement of biopolymer penetration into a cell, Ibaraki University, Mito, Japan, Aug. 9, 1990 (Y. Osada).
182. Enhancement of biopolymer penetration into a cell, Research Institute for Biosciences, Science University of Tokyo, Yamazaki, Aug. 10, 1990 (T. Tsuruta).
183. Enhancement of biopolymer penetration into a cell and nontraditional drug delivery systems, Institute for Physiological Chemistry, Physical Biochemistry and Cell Biology, Munchen University, Munchen, Oct. 8, 1990 (W. Neupert).
184. Enzymatic catalysis in reversed micelles, Institute of Organic Chemistry, Johannes Gutenberg University, Mainz, Oct. 9, 1990 (H. Ringsdorf).
185. Micelles of polymeric surfactants as microcontainers for drug targeting, Polymer Institute, ETH, Zurich, Sep. 30, 1991 (P. Luisi).
186. Membrane active biopolymers as a tool for regulation of cell activity and drug delivery, The Center for Controlled Chemical Delivery and Department of Pharmaceutics, University of Utah, Salt Lake City, UT, Nov. 8, 1991 (SW Kim).
187. Micelles of polymeric surfactants as microcontainers for drug targeting, Department of Pharmaceutics, University of Utah, Salt Lake City, UT, Nov. 11, 1991 (SW Kim).
188. Reversed micelles as matrix microreactors for chemical processing of biomacromolecules, Department of Chemistry, Emory University, Atlanta, GA, Nov. 18, 1991 (F.M. Menger).
189. Potential antivirals based on hydrophobized antibodies and oligonucleotides, ACS Georgia Section, Atlanta, GA, Nov. 19, 1991.
190. New approaches for drug targeting across cell membranes and blood/brain barrier, Department of Microbiology and Immunology, University of Miami, Miami, FL, Nov. 21, 1991 (J. Peacock).

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<sup>11</sup> The name of inviting scientist is given in brackets

191. New macromolecular systems for targeting of bioactive compounds, Department of Chemistry, Northwestern University, Evanston, IL, Nov. 23, 1991 (R. Letsinger).
192. New macromolecular systems for targeting of bioactive compounds, Department of Chemical Engineering, Virginia Polytechnic Institute and State University, Blacksburg, VA, Dec. 2, 1991 (R. Davis).
193. New macromolecular systems for targeting of bioactive compounds, School of Medicine, University of Connecticut Health Center, Farmington, CT, Dec. 4, 1991 (G.Y. Wu).
194. New polymeric systems for targeting of bioactive compounds, Department of Polymer Science and Engineering, University of Massachusetts, Amherst, MA, Dec. 5, 1991 (D. Tirrel).
195. New polymeric systems for targeting of bioactive compounds, Medical Faculty, Rene Descartes University, Paris, France, Feb. 21, 1992 (M. Waks).
196. New polymeric systems for targeting of bioactive compounds, Laboratory of Biophysics, National Museum of Natural History, Paris, France, Feb. 28, 1992 (C. Helene).
197. Site-specific drug targeting, Wuppertal University, Wuppertal, Germany, Nov. 10, 1992 (M. Schneider).
198. Structure and function of biopolymers in reversed micelles, Polymer, McGill University, Montreal, PQ, Canada, March 4, 1993 (A. Eisenberg).
199. Self-assembling polymer complexes for drug delivery, College of Pharmacy, University of Nebraska Medical Center, Omaha, NE, Apr. 13, 1994.
200. Self-assembling polymer complexes for drug delivery, College of Pharmacy, University of Illinois at Chicago, Chicago, IL, Apr. 18, 1994.
201. Self-assembling polymer complexes for drug delivery, School of Pharmacy, The University of North Carolina at Chapel Hill, Chapel Hill, NC, Apr. 25, 1994 (G.M. Pollack).
202. Self-assembling polymer complexes for drug delivery, School of Pharmacy, University of Wisconsin-Madison, Madison, WI, May 19, 1994.
203. Self-assembling polymer complexes for drug delivery, School of Pharmacy, Wayne State University, Detroit, MI, June 15, 1994.
204. Self-assembling polymer complexes for drug delivery, Eppley Institute for Research in Cancer and Allied Diseases, University of Nebraska Medical Center, Omaha, NE. Feb. 16, 1995 (B. Gold).
205. Block ionomer complexes, Material Research Program and Department of Chemistry, University of Nebraska at Lincoln, Lincoln, NE, Dec. 19, 1997 (D. Selmeyer).
206. Block ionomer complexes, Department of Polymer Science, Moscow State University, Moscow, Russia, Jan. 16, 1998 (V.A. Kabanov).
207. Block ionomer complexes, Department of Chemistry, Purdue University, Lafayette, IN, March 5, 1998 (I. Szleifer).
208. Amphiphilic block copolymers in drug delivery, Division of Pharmaceutics, College of Pharmacy, Ohio State University, Columbus, OH, Oct. 16, 1998 (W. Hayton).

209. Polycations as carriers for gene delivery, Bioengineering, University of Washington, Seattle, WA, Nov. 13, 1998 (A. Hoffman).
210. Non-viral gene delivery: taking polyplexes from in vitro to in vivo, Department of Material Science, University of Tokyo, Tokyo, Japan, May 17, 1999 (K. Kataoka).
211. Amphiphilic block copolymers in drug delivery: from micellar microcontainers to combinatorial formulation, Institute of Biomedical Engineering, Tokyo Women's Medical University, Tokyo, Japan, May 18, 1999 (T. Okano, M. Yokoyama).
212. Non-viral gene delivery: taking polyplexes from in vitro to in vivo, Tokyo Institute of Technology, Yokohama, Japan, May 19, 1999 (T. Akaike).
213. Self-assembly of block ionomers and surfactants of opposite charge, KYshu University, Division of Supramolecular Chemistry, Institute for Fundamental Research of Organic Chemistry, Fukuoka, Japan, May 20, 1999 (A. Takahara).
214. Amphiphilic block copolymers in drug delivery: from micellar microcontainers to combinatorial formulation, KYshu University, Graduate School of Engineering, Department of Chemistry and Biochemistry, Fukuoka, Japan, May 21, 1999 (N. Kimizuka).
215. Non-viral gene delivery: taking polyplexes from in vitro to in vivo, Kyoto University, Graduate School of Pharmaceutical Sciences, Kyoto, Japan, May 28, 1999 (Y. Takakura).
216. Interactions of amphiphilic block copolymers with drug efflux systems in blood brain and intestinal barriers: implications in drug delivery, Kyoto Pharmaceutical University, Kyoto, Japan, Nov. 8, 1999 (Akira Yamamoto).
217. Polycations for gene delivery, Institute of Biomedical Engineering, Tokyo Women's Medical University, Tokyo, Japan, Nov. 10, 1999 (T. Okano).
218. Novel polymers for drug delivery, Science University of Tokyo, Noda, Japan, Nov. 11, 1999 (Y. Nagasaki).
219. Novel polymers for drug delivery, Tokyo Institute of Technology, Yokohama, Japan, Nov. 12, 1999 (T. Akaike).
220. Novel polymers for drug delivery, Dow Lecture in Polymer Science, University of Detroit Mercy, Nov. 30, Detroit, MI, 1999 (S. Schlick).
221. Pluronic block copolymers: novel sensitizers of cells expressing efflux proteins, University of Minnesota, Drug Delivery Center Open House/Advanced Therapies Seminar Series Speaker, Minneapolis, MN, Oct. 5, 2000 (D. Grant).
222. Block ionomer complexes: self-assembly and applications in drug delivery, Polytechnic University, Brooklyn, NY, Nov. 6, 2000 (R. Gross).
223. What hinders and how to achieve effective gene therapy with polycations? Department of Material Science, University of Tokyo, Tokyo, Japan, July 9, 2001 (K. Kataoka).
224. What hinders and how to achieve effective gene therapy with polycations? Osaka University, Osaka, Japan, July 10, 2001 (Y. Suda).
225. What hinders and how to achieve effective gene therapy with polycations? Department of Physics, Kyoto University, Kyoto, Japan, July 12, 2001 (K. Yoshikawa).

226. Complexes of block ionomers with oppositely charged surfactants, Department of Applied Chemistry, Kansai University, Osaka, Japan, July 16, 2001 (T. Ouchi).
227. Polycations for DNA delivery into a cell, Department of Chemistry and Chemical Biology, Stevens Institute of Technology, Hoboken, NJ, Apr. 3, 2002 (S. Sukhishvili).
228. Pluronic block copolymers for drug and gene delivery, Department of Pharmaceutical Sciences, SUNY Buffalo, Buffalo, NY June 21, 2002 (W. Jusko).
229. Polymers for gene delivery, Korea Institute of Science and Technology, Seoul, Korea, July 26, 2002 (S. Y. Jeong).
230. Pluronic block copolymers for drug delivery in cancer, Eppley Cancer Center Grand Rounds, University of Nebraska Medical Center Omaha, NE, Sep. 11, 2002.
231. Polymers for gene delivery, University of Wisconsin-Madison, Madison, WI, Sep. 13, 2002 (G. Kwon).
232. Polymers for gene delivery, University of Minnesota, Department of Biomedical Engineering, Minneapolis, MN, Oct. 28, 2002 (R.T. Tranquillo).
233. Pluronic block copolymers for drug and gene delivery, Department of Pharmaceutical Sciences, University of Southern California, Los Angeles, CA, Nov. 1, 2002 (V. Lee).
234. Pluronic block copolymers for drug delivery in cancer, Roswell Park Cancer Center, Buffalo, NY, Nov. 7, 2002 (C.W. Porter).
235. Polymers for gene delivery, University of Pennsylvania, Department of Bioengineering, Philadelphia, PA, Nov. 12, 2002 (D. Hammer).
236. Polymers for gene delivery, Polytechnic University, Brooklyn, NY, Nov. 15, 2002 (C. Georgakis).
237. Pluronic block copolymers for overcoming drug resistance in cancer, University of Wisconsin-Madison, Madison, WI, Feb. 27, 2003 (J. Robinson).
238. Polymers for gene delivery, University of Illinois at Chicago, Chicago, IL, March 26, 2003 (H. Onyksel).
239. Pluronic block copolymers for drug and gene delivery, Leslie-Dan School of Pharmacy, University of Toronto, Toronto, Canada, June 19, 2003 (K.W. Hindsmarsh).
240. Polymers for gene delivery: Where do we stand? Where do we go? Department of Chemical Engineering, Iowa State University, Ames, IA, Oct. 2, 2003 (S.K. Mallapragada)
241. Polymers for gene delivery: Where do we stand? Where do we go? Department of Biomedical Engineering Rutgers University, New Brunswick, NJ, Oct. 27, 2003 (M.L. Yarmush).
242. Polymer genomics, Macromolecular Therapeutics Seminar, University of North Carolina Chapel Hill, Chapel Hill NC, Nov. 17, 2004 (R. Juliano).
243. Polymer genomics, Department of Pharmacology Seminar, UNMC, Omaha NE, Jan. 28, 2005 (H. Gendelman).
244. Polymer genomics: Shifting the gene and drug delivery paradigms, Macromolecules and Interfaces Institute, Virginia Tech, Blacksburg, VA, Apr. 27, 2005 (J. Riffle).

245. Polymer genomics: Shifting the gene and drug delivery paradigms, Tsukuba University, Tsukuba, Japan, May 16, 2005 (Y. Nagasaki).
246. Polymer genomics: Shifting the gene and drug delivery paradigms, Tokyo Women's Medical University, Tokyo, Japan, May 17, 2005 (T. Okano).
247. Polymer genomics: Shifting the gene and drug delivery paradigms, Tokyo Institute of Technology, Yokohama, Japan, May 18, 2005 (T. Akaike).
248. Polymer genomics: Shifting the gene and drug delivery paradigms, University of Tokyo, Tokyo, Japan, May 19, 2005 (K. Kataoka).
249. Advances in polymer therapeutics, Department of Chemical Engineering, Princeton University, Princeton, NJ, Sep. 21, 2005 (R.K. Prud'homme).
250. Advances in polymer therapeutics, Department of Materials Science and Engineering, Whiting School of Engineering Johns Hopkins University, Baltimore, MD, Sep. 28, 2005 (H-Q. Mao).
251. Advances in polymer therapeutics and nanomedicine, Department of Pharmaceutical Sciences, University of Tennessee Health Science Center, Memphis, TN, Nov. 14, 2005 (R. Mahato).
252. Polymeric nanomaterials for drug delivery, Department of Pharmaceutical Sciences, University of Michigan, Ann Arbor, MI, Dec. 6, 2006 (D. Smith).
253. Polymeric nanomaterials for drug delivery, Department of Pharmaceutical Sciences, University of Nebraska Medical Center, Omaha, NE, Feb. 9, 2007.
254. Polymeric nanomaterials for drug delivery, Department of Biomedical Engineering & Chemistry, Duke University, Durham, NC, March 1, 2007 (W.M. Reichert).
255. Polymeric nanomaterials for drug delivery, Cedars-Sinai Medical Center Grand Rounds, Los Angeles, CA, March 8, 2007.
256. Polymeric nanomaterials for drug delivery, Department of Pharmaceutical Sciences, College of Pharmacy, Nursing and Allied Science, North Dakota State University, Fargo, ND, Apr. 19, 2007 (J. Singh).
257. Drug delivery and nanomedicine research, UNMC Eppley Cancer Center, University of Nebraska Medical Center, Omaha, NE, 2007.
258. Nanomedicine: from bench to the bedside, UNMC Center for Clinical and Translational Research, University of Nebraska Medical Center, Omaha, NE, Sep. 24, 2007 (J. Larsen).
259. Nanopharmacology, Moscow State University Department of Chemical Enzymology, Moscow, Russia, Dec. 8, 2007 (N. Klyachko).
260. Nanomedicine: from bench to bedside, University Paris-South, Chatenay Malabry, France, Feb. 19, 2008 (R. Gref).
261. Nanomedicine: from bench to bedside, Emory-Georgia Tech Frontiers of Cancer Nanotechnology Seminar Series, Emory University, Atlanta, GA, Feb. 25, 2008 (S. Nie).
262. Nanomaterials for CNS drug delivery, Cedars-Sinai Medical Center, Los Angeles, CA, March 1, 2008 (J. Ljubimova).

263. Polymer Nanomaterials for Drug Delivery, School of Pharmacy, HUST, Wuhan, China, Oct. 27, 2008 (Gao Li).
264. Polymer Nanomaterials for Drug Delivery, Department of Chemistry, SHJTU, Shanghai, China, Oct. 29, 2008 (C.-M. Dong).
265. Polymer Nanomaterials for Drug Delivery, Department of Chemistry, Tsinghua University, Beijing, China, Oct. 30, 2008 (Xi Zhang).
266. Polymer micelles for drug delivery: from bench to bedside, Virginia Tech, Nov. 21, 2008.
267. Polymer Nanomaterials for Drug Delivery, Kurchatov Institute, Moscow, Russia, Dec. 2, 2008 (Y.M. Kagan).
268. Polymer micelles for drug delivery: from bench to bedside, Department Pathology and Microbiology Grand Rounds, UNMC, Omaha, NE, March 3, 2009.
269. Polymer micelles for drug delivery: from bench to bedside, RedoxBiology Center Annual Retreat, UNL, Nebraska City, NE, Apr. 4, 2009 (V. Gladyshev).
270. Polymer micelles for drug delivery: from bench to bedside, Roswell Park Cancer Institute, Buffalo, NY, MA, Aug. 12, 2009 (A. Gudkov).
271. Polymers: From plastics to innovative drug delivery systems, Department of Chemistry, Tsinghua University, Beijing, China, Aug. 31, 2009 (Xi Zhang).
272. Block Copolymers: from self-assembly to nanomedicine, 33<sup>rd</sup> Annual Symposium "Polymers and Biomedical Applications", Department of Macromolecular Science and Engineering, University of Michigan, MI, Oct. 29, 2009.
273. Block Copolymers: from self-assembly to nanomedicine, Department of Pharmacology, Institute for Translational Medicine and Therapeutics, University of Pennsylvania School of Medicine, Philadelphia, PA, Nov. 18, 2009 (V. Muzykantov).
274. Block Copolymers: from self-assembly to nanomedicine, Department of Medicine, Yonsei University, Seoul, South Korea, Nov. 25, 2009.
275. Block Copolymers: from self-assembly to nanomedicine, College of Pharmacy, Youngnam University, Daegu, South Korea, Nov. 26, 2009.
276. Block Copolymers: from self-assembly to nanomedicine, College of Pharmacy, Pusan University, Pusan, South Korea, Nov. 27, 2009.
277. Block Copolymers: from self-assembly to nanomedicine, College of Pharmacy, Chung-Ang University, Seoul, South Korea, Dec. 1, 2009.
278. Polymer based drug and gene delivery, Faculté de Pharmacie, University Paris V, Paris, France, Dec. 9, 2009 (N. Mignet).
279. Block Copolymers: from self-assembly to nanomedicine, Department of Biochemistry, Delhi University South Campus, New Delhi, India, Feb. 11, 2010 (A. Nag).
280. Block Copolymers: from self-assembly to nanomedicine, Center for Biomedical Engineering, Indian Institute of Technology, New Delhi, India, Feb. 12, 2010 (A.R. Ray).
281. Block Copolymers: from self-assembly to nanomedicine, All India Institute of Medical Sciences, New Delhi, India, Feb. 12, 2010 (S. Singha).

282. Polymer nanomaterials for therapeutic drug delivery, Department of Pharmacy, Changhai Hospital, Second Military Medical University, Shanghai, China, Oct. 25, 2010 (S. Gao).
283. Polymer nanomaterials for therapeutic drug delivery, Department of Chemical Enzymology, Faculty of Chemistry, Moscow State University, Moscow, Russia, Nov. 11, 2010 (N.L. Klyachko).
284. Polymeric micelles: From bench to the bedside, Division of Molecular Pharmaceutics, Center for Nanotechnology in Drug Delivery, University of North Carolina Eshelman School of Pharmacy, North Carolina, Chapel Hill, Feb. 21, 2011 (L. Huang).
285. Polymeric micelles: From bench to the bedside, School of Pharmacy, University of California San Diego, Los Angeles, CA, March 2, 2011 (Adah Almutairi),
286. Polymeric micelles: From bench to the bedside, School of Pharmacy, University of Southern California, Los Angeles, CA, March 3, 2011 (Sarah Hamm-Alvarez).
287. Polymeric micelles: From bench to the bedside, Kazan State Medical University, Kazan, Russia, March 22, 2011 (A.P. Kiassov).
288. How to translate innovative ideas to products without compromising ingenuity, Kazan State Medical University, Kazan, Russia, March 22, 2011 (A.P. Kiassov).
289. Polymeric micelles: From bench to the bedside, A.E. Arbuzov Institute of Organic and physical Chemistry, Kazan Science Center of Russian Academy of Sciences, Kazan, Russia, March 23, 2011 (Oleg G. Sinyashin).
290. Recent developments in polymeric micelles for drug therapies, University Paris-South, Chatenay Malabry, France, Sep. 13, 2011 (K. Bouchemal).
291. Polymeric micelles: From bench to the bedside, Department of Pharmaceutical Sciences, Wayne State University, Detroit, MI, Oct. 18, 2011 (O. Merkel).
292. Polymeric micelles and polyion complexes for drug delivery. When colloids become nanomedicines, Department of Pharmaceutical and Biomedical Sciences South, Carolina College of Pharmacy University of South Carolina, Columbia, SC, Nov. 5, 2012 (I. Roninson)
293. Polymeric micelles and polyion complexes for drug delivery: state-of-art and future directions, Nanotechnology seminar series, Stanford University, Stanford, CA, Dec. 13, 2012 (S.S. Gambhir).
294. Polymeric Micelles and Polyion Complexes for drug delivery: State of the art of a future drug delivery, Winship Cancer Institute of Emory University, Atlanta, GA, Jan. 25, 2013 (Dong M. Shin).
295. Polymeric Micelles for Drug Delivery – From Idea to Clinics, Massachusetts Institute of Technology, Boston, MA, May 21, 2013 (R. Langer).
296. Nanomedicine – time to collect stones. From science fiction to clinical practice, Southern Federal University, Rostov at the Don, Russia, Jun. 19, 2013 (A.I. Minkin).

#### **Lectures at companies (partial):**

297. Membrane active biopolymers and their supramolecular complexes as tools for regulation of cell activity and drug delivery, Tanox Biosystem, Inc., Houston, TX, Nov. 13, 1991.

298. New polymeric systems for targeting of bioactive compounds, Rhone-Poulenc Rorer, Paris, France, Feb. 24, 1992.
299. New drug delivery systems, Hercules Inc., Wilmington, DE, March 1, 1993.
300. Interpolyelectrolyte gene delivery systems, Ribozyme Pharmaceuticals Inc., Boulder, CO, March 11, 1996.
301. Block copolymers in gene delivery, Hybridon Inc., Worcester, MA, Nov. 1996.
302. Block copolymers in gene delivery, Nextar Pharmaceuticals Inc., Boulder, CO, Dec. 1996
303. Block copolymers in gene delivery, Bristol Myers Squibb, Princeton, NJ, Feb. 1997.
304. Amphiphilic block copolymers in drug delivery, Emisphere Technologies, Inc., Hawthorne, NY, Sep. 22, 1997.
305. Polyelectrolyte and block ionomer complexes for gene delivery, Johnson & Johnson, New Brunswick, NJ, Oct. 8, 1997.
306. Amphiphilic block copolymers in drug delivery, Eli Lilly, Indianapolis, IN, Nov. 1997.
307. Block copolymer based drug delivery systems, Mitsubishi-Tokyo Pharmaceuticals, Inc., Yokohama, Japan, July 10, 2001.
308. Pluronic block copolymers for improved drug delivery, NaPro Biopharmaceutics, Inc., Denver, CO, March 6, 2002.
309. Delivery of oligonucleotides using polycations, ISIS Pharmaceuticals, Carlsbad, CA, Apr. 19, 2002.
310. Polymers for delivery of nucleic acids, Sirna Therapeutics, Boulder, CO, May 26, 2004.
311. Nanomedicines for delivery of biologically active compounds, Keynote Lecture, National Starch Company, Bridgewater, NJ, Apr. 23, 2004.
312. Charge driven self-assembly at the nanoscale, FMC Corporation, Princeton, NJ, May 31, 2005.
313. Polymer genomics: pharmacology and toxicology of nanomaterials for drug delivery, Lilly Nanotechnology Symposium, Lilly Corporate Center, Indianapolis, IN, Oct. 12, 2007.
314. Polymer Micelles: From bench to bedside, 2Y-Chem, Shanghai, China, Oct. 29, 2008.
315. Polymer Micelles: From bench to bedside, Mersana Therapeutics, Inc., Boston, MA, Nov. 9, 2009.
316. SP1049C: Drug discovery through formulation, Taiho, Tokyo, Japan, Dec. 21, 2010.

#### **Lectures for community:**

317. College of Pharmacy Research Initiative: Drug Delivery to Targeted Sites, Chancellor's Board of Counselors, Lincoln, NE, Oct. 11, 2000.
318. Drug delivery to targeted sites, Mini-Medical School "Genes and Chips", Omaha, NE April 19, 2001.



319. College of Pharmacy: Drug Delivery Research Program, University of Nebraska Board of Regents, Omaha, NE, Jan. 18, 2002.

320. Drug delivery and nanomedicine, KIWANIS, Omaha, NE, March 31, 2003.

321. New drug developments: Nanotechnology for cancer therapy, Mini-Medical School "Cancer: Discovery, Development and Delivery: From the Laboratory to the Community" Omaha, NE, Apr. 5, 2005.

## TEACHING ACTIVITIES:

### **a. Lectures in team-taught courses:**

#### Undergraduate/Professional

##### UNMC

PHSC 570/870 "Pharmaceutics", required, 4 cr., 1996-1998 (S)

PHSC 550 "Introduction to Pharmacy", required, 4 cr., 1999-2001 (F)

PHSC 570 "Pharmaceutical Sciences 1", required, 5 cr., 1999-2006 (S)

##### UNC

PHCY 411 Basic Pharmaceutics II, 3 cr., 2014 (S).

#### Graduate

##### UNMC

PHSC 830 "Advanced Medicinal Chemistry", graduate, 3 cr., 1998 (F)

PHSC 845 "Quantitative Pharmaceutical Analysis", graduate, 4 cr., 2000 (S,F)

PHSC 851 "Innovative Drug Delivery Systems", 1997, 1999, 2001, 2004 (S).

PHSC 852 "Pharmaceutical Chemistry", 2008 (S).

PHSC 885 "Advanced Pharmaceutics I", 1996, 1998, 2000, 2002 (F).

PHSC 885 "Physical Pharmacy", 2008 (F), 2011 (S).

PHSC 886 "Advanced Pharmaceutics II", 3 cr., 1997, 1999 (F).

PHSC 960 "Current Topics in the Pharmaceutical Sciences", 1 cr, 1998 (F,S), 2001 (S), 2006 (S)

PHAR 905 "Molecular Pharmacology", 2 cr. 1997, 1999, 2000 (S)

##### UNC-Chapel Hill

MOPH 738 "Nanomedicine", 3 cr., 2012 (F).

MOPH 864 "Advances in Drug Delivery", 3 cr., 2013 (F).

### **b. Coordinated/supervised courses:**

##### UNMC

PHSC 886 "Advanced Pharmaceutics II", graduate, 3 cr., 1997, 1999 (F).

PHSC 970 "Seminar in Pharmaceutical Sciences", graduate, 1 cr, 1999-2001 (F,S).

PHSC 890 "Polymer Therapeutics", graduate, 3 c. 2003, 2005, 2007, 2010 (S).

**c. Computer software/Internet:**

Advanced Pharmaceutics II course (syllabus)

"[www.unmc.edu/PharmSciences/advancedpharma/AdvancedPharmaceuticsII.html](http://www.unmc.edu/PharmSciences/advancedpharma/AdvancedPharmaceuticsII.html)".

Internet Course on Physicochemical Principles of Pharmaceutics (undergraduate and graduate versions): "[www.unmc.edu/PharmSciences/wwwcourse/Pharmsyll.html](http://www.unmc.edu/PharmSciences/wwwcourse/Pharmsyll.html)".

**d. Other:**

UNMC College of Pharmacy class 2005 student advisor, 2002-2005.

UNMC College of Pharmacy class 2002 student advisor, 1998-2002.

UNMC Mini-Medical School, 2001.

UNMC Mini-Medical School, 2005.

**e. Graduate supervisory/advisory committees (other than advised students):**

- 1996-2000 Sriramakamal Jonnalagadda, Ph.D.
- 1998-1999 Aimee Beth Schreiner (Kratina), M.S.
- 1998-2003 Bandi Nagesh, Ph.D.
- 1998-2000 Sinjan De
- 1998-2002 Ana Maria Soto, Ph.D., Zhang Yan, Ph.D.
- 1998-2004 Haiqing Dai, Ph.D., Tim Spitzinberger, Ph.D.
- 2000-2004 Surya P. Ayalasomayajula, Ph.D.
- 2000-2005 Corbin Bachmeier, William J. Trickler, Ronald Shinkya
- 2002- Manjori Ganguly
- 2003-2004 Jian Zhang, M.S.

**LABORATORY:**

**Graduate students:**

- 1986-1989 Sergey N. Nametkin, Candidate of Chemical Sciences<sup>12</sup>, MSU<sup>13</sup> 1989 "Modulation of catalytic activity of enzymes by altering their supramolecular organization in reverse micelle systems"; A.V. Levashov, A.V. Kabanov, co-advisors.
- 1987-1990 Maria M. Khrutskaya, Candidate of Chemical Sciences, MSU November 1990 "Design of conjugates of synthetic and natural macromolecules using reverse micelles as template-microreactors"; V.A. Kabanov, A.V. Kabanov, co-advisors.
- 1989-1992 Vladimir I. Slepnev, Candidate of Chemical Sciences, RCMDT<sup>14</sup> April 1992 "Modification of proteins for transport of biologically-active compounds into a cell"
- 1989-1993 Ylia G. Suzdaltseva, Candidate of Biological Sciences<sup>15</sup>, RCMDT April 1993 "Effect of artificially hydrophobized antiviral antibodies on reproduction of influenza virus in cell culture"

<sup>12</sup> Ph.D. equivalent

<sup>13</sup> M.V. Lomonosov Moscow State University

<sup>14</sup> All-Russian Research Center of Molecular Diagnostics and Therapy

<sup>15</sup> Ph.D. equivalent

- 1990-1994 Irina R. Nazarova, Candidate of Chemical Sciences, MSU 1994 “Physico-chemical properties of micelles of block copolymer of polyoxyethylene and polyoxypropylene and their interactions with model membranes”
- 1990-1996 Tatiana Dorodnykh, Candidate of Chemical Sciences, RCMDT 1994
- 1997-2002 Andrew Nehls, M.S., UNMC<sup>16</sup>
- 1999-2005 Sergey Viacheslavovich Solomatin, Ph.D., UNMC February 2005 “Study of self-assembly and environmental response properties of block ionomer complexes” (*PostDoc at Stanford University, Sand Hill Foods, Melno Park, CA*)
- 2001-2006 Kyng ("Kevin") T. Oh, Ph.D., UNMC May 2006 “Environmentally responsive materials based on block-, graft-, and cross-linked copolymers for pharmaceutical applications” (*Employed as assistant professor at Chung-Ang University, Seoul, South Korea*)
- 2001-2007 Srikanth ("Sri") Sriadibhatla, Ph.D., UNMC February 2007 “Effects of pluronic block copolymers on gene delivery and expression” (*Employed at FMC Corp.*)
- 2003-2004 Jian Zhu, M.S., UNMC August 2004 “Effect of Pluronic P85 on transgene expression in skeletal muscle and potential use of this agent for antitumor DNA vaccination” (*PhD student at Yale University*)
- 2003-2007 Pavel Sergeevich Chelushkin, Candidate of Chemical Sciences, MSU May 2007 “Interpolyelectrolyte complexes of amphiphilic ionogenic block copolymers and oppositely charged polyelectrolytes”
- 2004-2008 Amit Sharma (not completed)<sup>17</sup>
- 2004-2009 Zaguit Gaimalov, Ph.D., UNMC November 2009 “Pluronic block copolymers for non-viral gene delivery” (*Employed at UNMC*)
- 2005-2009 Gaurav Sahay, Ph.D., UNMC October 2009 “Mechanism(s) of endocytosis for cellular entry of nanomaterials” (*PostDoc at MIT*)
- 2005-2010 Xiang Yi, Ph.D., UNMC November 2010 “Protein modification by Pluronic block copolymer for brain delivery” (*Employed at UNMC*)
- 2006-2010 Natalia Nukolova, Candidate of Chemical Sciences, MSU November 2010 “Modified polymer nanogels: Synthesis, properties and application” (*Employed at RSMU<sup>18</sup>, Moscow, Russia*)
- 2006-2012 Daria (Dasha) Y. Alakhova, Ph.D., UNMC July 2012 “Protein modification by Pluronic block copolymer for brain delivery” (*Employed at UNC-Chapel Hill*)
- 2007-2008 Michele Gasko (not completed)
- 2007 Dasha Kovaleva (not completed)
- 2007-2013 Anna Brynskikh, Ph.D., UNMC, February 2013 “Block ionomer complexes of antioxidant enzymes (Nanozymes) as therapeutics for neurologic disorders” (*Employed at UNMC*)
- 2008-2013 Yi Zhao, Ph.D., UNMC, September 2013 “Amphiphilic block copolymers for enhancing Doxorubicin and Doxil based chemotherapy by sensitizing cancer stem cells and promoting drug release within tumors” (*Employed at UNC*)
- 2009-2013 Jing Tong, Ph.D., UNMC, January 2013 “Poly(2-oxazoline) as a polymer carrier for cellular and brain delivery of therapeutic proteins and fullerene” (*Employed at Pharmaceutical Product Development, LLC (PPD)*)

<sup>16</sup> University of Nebraska Medical Center

<sup>17</sup> Switched to 2009 MBA candidate, Owen Graduate School of Management, Vanderbilt University.

<sup>18</sup> Russian State Medical University

2009- Philise Williams  
 2009-2010 Marc Ueda (not completed)  
 2010-2012 Maxim Abakumov, Candidate of Chemical Sciences, MSU May 2012 “Systems for targeted visualization of gliomas based iron nanoparticles”, V.P. Chekhonin, A.V. Kabanov, co-advisors (*Employed at RSMU, Moscow, Russia*)  
 2010-2013 **Poornima Suresh, M.S., UNMC**  
 2010- Hemant M. Vishwasrao  
 2010- Zhijian (Jimmy) He  
 2010- Vivek Mahajan  
 2011- Yuhang Jiang  
 2011- Yongee Seo  
 2011- Dongfen Yuan  
 2011- Xiaomeng Wan

#### **Undergraduate visiting/summer students:**

1997 Timothy Cherry, Cornell University, U.S.A.  
 1998 Alexei Popov, Moscow State University, Russia  
 1998 Sergey Solomatin, Moscow State University, Russia  
 1998-1999 Mikhail Kozlov, Moscow State University, Russia  
 1999 Patrick Halpin, University of Sherbrooke, Canada  
 1999-2000 Milena Otdelnova, Moscow State University, Russia  
 2000 Steve Stroeger, UNMC College of Pharmacy, U.S.A.  
 2001 Kimi Ueda, UNMC College of Pharmacy, U.S.A.  
 2001 Brent J. Night, Creighton University, U.S.A.  
 2004, 2005 Daria (Dasha) Y. Alakhova, Moscow State University, Russia

#### **Visiting graduate students:**

Matteo Gazzari, University of Pisa, Italy (2008)  
 Anita Schulz, Technical University of Munich, Germany (2008, 2009)  
 Morten Østergaard Andersen, Aarhus University, Denmark (2009)

#### **Postdoctoral trainees and visiting scientists:<sup>#</sup>**

##### UNMC

Sergey Vinogradov, Ph.D., Visiting scientist (1994-1997)  
 Elena Batrakova, Ph.D., Research Associate (1995-2003)  
 Tatiana Bronich, Ph.D., Postdoctoral Research Assistant (1995-1997)  
 Hong Khanh Nguyen, Ph.D. Postdoctoral Research Assistant (1997-1998)  
 Eugenie Lysenko, Ph.D., Visiting Scientist (1997, 2000, 2002, 2004, 2006, 2007, 2009)  
 Catherine Gebhart, Ph.D., Postdoctoral Research Assistant, Research Associate (1998-2000)  
 Li Zhang, Ph.D., Postdoctoral Research Assistant (2004-2005)  
 Zhihui Yang, M.D., Research Associate (2004-2007)  
 Xiaobin Zhang, Ph.D., Postdoctoral Research Assistant (2004-2008)  
 Yuan Li, Ph.D., Postdoctoral Research Assistant (2005-2008)  
 Motoi Oishi, Ph.D., Visiting Assistant Professor (2007-2008)  
 Tatiana Panova, Ph.D., Visiting Scientist (2008)

Robert Luxenhofer, Ph.D., Visiting Scientist, Postdoctoral Research Assistant (2007-2008)  
 Carolyne Roques, Ph.D., Postdoctoral Research Assistant (2008-2009), Research Associate (2010)  
 Zigang Yang, Ph.D., Postdoctoral Research Assistant (2008-2010)  
 Devika Manichkam, Ph.D., Postdoctoral Research Assistant (2008-2010), Research Instructor (2011-), Leader, Biopolymer Nanoformulations Group (2011-2012)  
 Natalia Klyachko, Ph.D., Visiting Professor (2008, 2009, 2010, 2011)  
 Wenguang Zhang, M.D., Research Instructor (2008-2009)  
 Svetlana Romanova, Ph.D., Postdoctoral Research Assistant (2009-)\*  
 Marina Sokolsky, Ph.D., Postdoctoral Research Assistant (2009-2012), Research Associate (2011-), Leader, Magnetic Nanomaterials Group (2011-2012)  
 Zaguit Gaimalov, Ph.D., Research Manager and Deputy Director of CDDN for Translational Research (2010-2012)  
 Shaheen Ahmed, Ph.D., Postdoctoral Research Assistant (2009-2012)\*  
 Yingchao Han, Ph.D., Postdoctoral Research Assistant (2010-2012)  
 Xiang Yi, Ph.D., Postdoctoral Research Assistant (2010-2012), Leader, Protein Therapeutics Group (2010-2012)

#### UNC-Chapel Hill

Alexander Piroyan, Postdoctoral Research Assistant (2012-)  
 Jing Gao, Postdoctoral Research Assistant (2013-)

<sup>#</sup> Not including scientists supervised at MSU (2010-)

\* Continued scientific supervision along with Prof. T. Bronich after reallocation to UNC in 08.12

#### **Mentored faculty and research fellows<sup>19</sup>:**

##### RCMDT

1988-1991 Irina Astafieva, Ph.D., Junior Scientist  
 1988-1993 Nikolai Melik Nubarov, Ph.D., Senior Scientist  
 1988-1993 Elena Batrakova, Ph.D., Senior Scientist  
 1988-1993 Sergey Vinogradov, Ph.D., Leading Scientist

##### UNMC

2003-2008\* Elena Batrakova, Ph.D., Research Assistant Professor (Current - Associate Professor, UNC-Chapel Hill)  
 1997-2006\* Tatiana Bronich, Ph.D., Research Assistant/Associate Professor (Current – Parke Davis Professor and Director, CoBRE Nebraska Center for Nanomedicine, UNMC).  
 1997-2004\* Sergey Vinogradov, Ph.D., Research Assistant Professor (Current – Research Professor, UNMC).  
 2004-2012 Joseph A. Vetro, Ph.D., Research Assistant Professor, Assistant Professor  
 2005-2007\* Dong Wang, Ph.D., Assistant Professor

<sup>19</sup> Position of mentees is shown as of time of training.

UNC-Chapel Hill

2012- Devika Manickam, Ph.D., Research Assistant Professor  
2012- Marina Sokolsky, Ph.D., Research Assistant Professor  
2012- Xiang Yi, Ph.D., Research Assistant Professor

\* Indicates obtaining major research funding (e.g. NIH RO1) as independent principal investigator.

**Research Technologists:**

1998- Shu Li, Research Technician, Research Technologist  
2002-2004 Yi Li Li, Research Technician  
2008 Stacey Tatman, Research Technician  
2008-2010 Yudong Li, Research Technician  
2008-2010 Sheila M Higginbotham, Research Technician

- FURTHER INFORMATION CONCERNING THE LABORATORY CAN BE FOUND AT: <http://nanomedicine.unmc.edu>
- FURTHER INFORMATION CONCERNING THE CENTER FOR DRUG DELIVERY AND NANOMEDICINE CAN BE FOUND AT: <http://cddn.unmc.edu>

- **RESEARCH SUPPORT:**

**A. Combined past and current support (since October 1994)\***

Role	Direct Cost US \$						Total Direct & Indirect Costs US \$
	NIH	NSF	Other Federal	Industry <sup>#</sup>	Other sources <sup>&amp;</sup>	Total	
PI	16,007,919	1,354,612	5,783,245	1,282,482	11,686,300	36,144,558	45,111,312
Co-I	3,239,063	-0-	7,668,613	-0-	37,051,701	47,959,377	51,454,767
Total	19,246,982	1,354,612	13,451,858	1,282,482	48,738,001	84,073,935	96,566,079

\* Not including grants consulted or support received in the Soviet Union/Russia before 1994.

& Including grants received from foreign sources, not including university start up and other seed funds.

# Not including funding raised and/or spent outside of academic institutions by private entities.

**B. Listing of grants**

**Current/Active:**

- Center for RNA Therapeutics and Biology, SkolTech Center for Research Education and Innovation (CREI), Skolkovo Foundation, 01/01/14 – 12/31/18, \$39,983,701 {Rub 175,000,000 = approx. \$ 5,000,000 to Moscow State University}, D. Anderson (PI non-Russian Institution/Center Co-Director), A.V. Kabanov (PI Russian Institution/Center Co-Director), V. Kotelianski (SkolTech Center Director), P. Sharp, R. Langer, O. Dontsova, N. Klyachko, V. Chekhonin, M. Gelfand, T. Jacks, J. Horton, J. Goldstein, M. Brown, (Co-Is).
- Triangle Center for Excellence for Materials Research and Innovation: Programmable Assembly of Soft Matter, Seed Project, 9/1/2013-8/31/2014, \$59,653 (\$42,999) G. Lopez (PI MSERC), A. Kabanov (PI Seed).
- PRINT Butyrylcholinesterase (BuChE) Delivery, DTRA/DoD, 07/01/2013-06/30/2017 \$4,900,000 (\$3,300,000) [\$304,000 (\$200,000)], J. DeSimone (PI), A. Kabanov (Co-PI).
- Chemical Design of Bionanomaterials for Medical Applications, Government of Russian Federation, Ministry of Education and Science of Russian Federation, 11.G34.31.0004, 11/01/10-12/31/12, Rub 135,000,000 {= approx. \$ 4,500,000 to Moscow State University}, A.V. Kabanov (PI). Competitively renewed, 01/01/12-12/31/14 Rub 57,000,000 {approx. \$ 1,893,000, Moscow State University}.

- High Capacity Nanocarriers for Cancer Chemotherapeutics, NIH NCI, UO1 CA151806, 9/02/10-7/31/15, \$ 2,208,752 (\$ 1,685,918)<sup>20</sup>, A.V. Kabanov (PI), H. Band, T.K. Bronich, R. Jordan, R. Luxenhofer, S. Raja (Co-I).
- Polypeptide Modification for Enhanced Brain Delivery, NIH NINDS, RO1 NS051334, 5/05/10-3/31/15, \$ 1,870,852 (\$ 1,586,782), A.V. Kabanov (PI), W. Banks (co-PI), E.V. Batrakova, S.V. Vinogradov (Co-Is).
- NanoART Manufacture, Delivery and Pharmacokinetics for Optimizing Drug Adherence, Project 1, NIH/NIDA, 1PO1 DA028555-01A1, 07/15/10-04/30/15, \$4,905,704 (\$3,314,665) [\$546,000 (\$368,500)]<sup>21</sup>, H. Gendelman (PO1 PI), A.V. Kabanov (Project 1 PI, consultant, EAC member, after reallocation to UNC on 08.12).
- INNS: Integrated Neuroprotective and Neuroregenerative Strategies, DoD, W81XWH-11-1-0700, 08/29/11- 08/28/14, \$4,195,000 (\$2,800,000) {\$1,700,000 (\$1,144,782)}<sup>22</sup>, S. Mallapragada (PI), A.V. Kabanov (Co-PI, consultant after reallocation to UNC on 08.12), T.K. Bronich (Co-PI after 08.12), H. Gendelman (Co-PI).

### **Pending:**

- Development of Intranasal Modified Leptins for Treatment of Alzheimer's Disease, NIH UO1, 07/01/2013-06/30/2018, \$5,832,372 (\$3,900,000). W. Banks, A. Kabanov (multiple PIs).
- Ferrogels for remote diagnostics and therapy, Research Triangle MRSEC/NSF, 09/01/2013-08/31/2014, \$251,870, A. Kabanov (Co-PI), S. Sheiko (Co-PI), M. Sokolsky (Co-I), M. Rubinshtein (Co-I).

### **Past:**<sup>23</sup>

- Targeted Nanovaccines Against Respiratory Pathogens (TANARP), DoD Award No. W81XWH-10-1-0806, 9/01/10 - 8/31/13, \$3,502,000 (\$ 2,913,395) [\$850,000 (\$572,391)]<sup>24</sup>, S. Mallapragada (PI), A.V. Kabanov (Co-PI, consultant after reallocation to UNC on 08.12), T.K. Bronich (Co-PI after 08.12), S. Hinrichs, B. Narasimhan, and M.J. Wannemuehler (Co-Is).
- Synthetic Nanovaccines Against Respiratory Pathogens (SYNARP), DoD Award No. W81XWH-09-1-0386; Log No. 08141006, 7/01/09 - 6/30/13, \$3,394,000 (\$ 2,913,395), A.V. Kabanov (PI, Co-I after reallocation to UNC on 08.12), T.K. Bronich (PI after 08.12), S. Hinrichs, S. Mallapragada, B. Narasimhan, and M.J. Wannemuehler (Co-Is).
- Nebraska Center for Nanomedicine, NIH COBRE P20GM103480 (originally 1P20RR021937) 09/26/08-06/30/13, \$ 10,660,000 (\$ 7,500,000), A.V. Kabanov (PI, consultant after reallocation to UNC on 08.12), T.K. Bronich (PI after 08.12).

<sup>20</sup> Unless it is stated different the total cost and direct cost (in brackets) are presented.

<sup>21</sup> Project 1.

<sup>22</sup> UNMC subcontract.

<sup>23</sup> Dr. Kabanov had obtained successfully funds necessary to conduct his research in Russia before October 1994 through grants and contracts. This section presents only the research projects funded since his appointment in the United States.

<sup>24</sup> UNMC subcontract.



- Polymer Micelles and Polycomplexes of Biomacromolecules as Functional Bionanomaterials, Ministry of Education and Science of Russian Federation, 02.740.11.5231, 7/01/10-6/31/12, Rub. 2,800,000 {approx. \$ 93,300, to Moscow State University}, A.V. Kabanov (PI).
- Interactions of Pluronic Block Copolymers in Drug Resistant Cancer, NIH NCI, 2R01 CA89225, 5/01/07-4/30/12, \$ 1,223,277 (\$ 860,343), A.V. Kabanov (PI), J. Riffle (Co-I).
- Non-invasive Nanodiagnostics of Cancer (NINOC), 4/01/07-03/31/10, DoD USAMRMC 06108004, \$ 1,760,000 (\$ 1,525,068). A.V. Kabanov (PI), S. Batra, M. Boska, T.K. Bronich (Co-Is).
- Polymer Based Gene Delivery, NIH NCI 1 R01 CA116591, 5/01/06 – 4/30/11, \$ 1,365,258 (\$ 1,006,513), A.V. Kabanov (PI), Jedd Wolchok (Co-I).
- Polypeptide Modification for Enhanced Brain Delivery, NIH NINDS, RO1 NS051334, 2/15/06 - 1/31/10, \$ 933,955 (\$ 761,524), A.V. Kabanov (PI), W. Banks, S.V. Vinogradov (Co-Is).
- InnovaForm Technologies, LLC, Philadelphia, PA, Nebraska research component, Nov. 2005 to Dec. 2009, \$700,000 (UNMC Lab. only), A.V. Kabanov (Chief Science Officer).
- Interactions of Block Copolymers in Blood Brain Barrier, NIH NINDS, RO1 NS36229-09, 9/01/02 - 7/30/09, \$ 1,745,625 (\$ 1,187,500), A.V. Kabanov (PI), W.F. Elmquist, D.W. Miller, Y. Persidsky (Co-Is).
- Structure and Dynamics of Block Ionomer Complexes, NSF DMR 0513699, 6/01/05-5/31/08, \$ 345,000 (\$ 233,900) A.V. Kabanov (PI), T.K. Bronich (Co-I).
- Sixth International Nanomedicine and Drug Delivery Symposium, NIH 1R13EB009301-01, November 18-19, 2008, \$ 10,000, A.V. Kabanov (PI).
- Seed Program in Nanotechnology for Pancreatic Cancer, UNMC-ISU, July 2006 to June 2008, \$ 100,000, A.V. Kabanov (PI-UNMC), S. Mallapragada (PI-ISU).
- Retention fund, UNMC/State of Nebraska Tobacco settlement funds, July 2004 to June 2008, \$ 600,000, A.V. Kabanov (PI).
- Interactions of Pluronic Block Copolymers in Drug Resistant Cancer, NIH NCI, RO1 CA89225-05, July 2001 to June 2006, \$ 887,091 (\$ 664,000), A.V. Kabanov (PI), B. Leyland-Jones (Co-I).
- Interactions of Pluronic Block Copolymers in Drug Resistant Cancer, UNMC Eppley Cancer Center bridge support, Nov. 2005 to Feb. 2007, \$ 50,000, A.V. Kabanov (PI).
- Fourth International Nanomedicine and Drug Delivery Symposium, NIH 1R13EB006720-01, October 8-10, 2006, \$ 13,000, A.V. Kabanov (PI).
- Third International Nanomedicine and Drug Delivery Symposium, NIH 1R13EB005534-01, October 8-10, 2005, \$ 10,000, H. Ghandehari (PI), A.V. Kabanov (Co-I).
- Synthesis and Characterization of Carriers for Gene and Drug Delivery, Supratek Pharma Inc., July 1997 to June 2006, \$ 600,000 (\$ 492,000), A.V. Kabanov (PI).

- Complexes of Block Ionomers with Oppositely Charged Surfactants, NSF DMR-0071682, Special Creativity Extension, June 2003 to May 2005, \$ 196,000 (\$ 133,333), A.V. Kabanov (PI).
- Enhancement of T Cell Responses Against Survivin, NIH RO1 CA84106 (supplement), Aug. 2002 to July 2004, \$ 350,400 (\$ 240,000), S. Sherman (PI), A.V. Kabanov and D. Gabrilovich (Co-I).
- Gene Therapy Program, Nebraska Research Initiative, July 1988 to July 2004, Direct cost award amount \$ 1,418,000 [Kabanov's group portion \$ 350,000], P.-W. Cheng (PI), J. Talmadge, A.V. Kabanov, V. Labhasetwar (Co-Is).
- Soluble Complexes of DNA with Cationic Polymers for Gene Delivery, NSF BES-9907281, June 2000 to May 2004, \$ 349,524 (\$ 239,400), A.V. Kabanov (PI).
- Complexes of Block Ionomers with Oppositely Charged Surfactants, NSF DMR-0071682, June 2000 to May 2003, \$ 262,800 (\$ 180,000), A.V. Kabanov (PI).
- International Collaboration: Complexes of Block Ionomers with Oppositely Charged Homopolymers and Surfactants, NSF DMR-9617837, Feb. 1997 to Jan. 2002, \$ 40,780 (\$ 38,250), A.V. Kabanov (PI).
- Dispersed Cationic Networks (Nanogels) as Carriers for Drug Delivery, NSF BES-9986393, Jan. 2000 to Dec. 2001, \$ 100,000 (\$ 68,494), A.V. Kabanov (PI), T.K. Bronich (Co-PI).
- Interactions of Block Copolymers in Blood Brain Barrier, NIH RO1 NS36229, Sep.1997 to July 2001, \$ 516,605 (\$ 353,839), A.V. Kabanov (PI), W.F. Elmquist, D.W. Miller (Co-Is).
- Star Polymer Unimolecular Micelles for Drug Delivery (Phase I), NIH R43 GM62054, July 2000 to Dec. 2000, \$ 99,961 (\$ 52,898), [UNMC subcontract \$ 21,500 (\$17,622)], F. Wang (PI), A.V. Kabanov (Co-I).
- Water-soluble Block Ionomer Complexes, NSF DMR-9502807 (CAREER Award), June1995 to May 2000, \$ 312,500 (\$ 281,250), A.V. Kabanov (PI).
- Soluble Complexes of DNA with Cationic Block Copolymers, NSF BES-9712657, Sep. 1997 to Aug. 1999, \$ 200,000 (\$ 136,986), A.V. Kabanov (PI).
- Self-assembly of ETANA Compounds, Emisphere Technologies Inc., June to October 1998, \$ 20,000 (\$ 16,400), A.V. Kabanov (PI)
- Synthesis and Characterization of Block-copolymeric Carriers for Nucleic Acids and Antineoplastic Agents, Supratek Pharma Inc., Apr. 1997 to June 1997, \$ 25,400 (\$ 20,820), A.V. Kabanov (PI)
- Synthesis and Characterization of Block-Copolymeric Carriers for Nucleic Acids and Antineoplastic Agents, Supratek Pharma Inc., Feb. 1996 to Jan. 1997, \$ 55,000 (\$ 45,082), A.V. Kabanov (PI).
- Synthesis and Characterization of Fluoroorganic Block Copolymers, Supratek Pharma Inc., May 1996 to Nov. 1997, \$ 4,950 (\$ 4,090), A.V. Kabanov (PI).

- Synthesis of Polymeric Carrier for Oligonucleotides, Supratek Pharma Inc., Nov. 1994 to Dec. 1994, \$ 4,990 (\$ 4,090), A.V. Kabanov (PI).

**C. Listing of grants consulted:**

- Bioengineering of the blood-brain permeability, NIH R01 NS050660-01A1, July 2005 to June 2009, S.V. Vinogradov (PI), R.K. Singh (Co-I), A.V. Kabanov (consultant).
- Polymer-nucleotide complexes with cytotoxic activity, NIH R01 CA102791-01A1, Apr. 2004 to March 2008, S.V. Vinogradov (PI), W. G. Chaney (Co-I), A.V. Kabanov (consultant).
- Star polymer unimolecular micelles for drug delivery (Phase II), NIH R44 EB000551, Sept. 2003 to Aug. 2005, F. Wang (PI), T.K. Bronich (Co-PI), A.V. Kabanov (consultant).
- Star polymer micelles as targeted drug delivery system (Phase I), Jan. to June 2003, NSF SBIR DMI-0230108, F. Wang (PI), A.V. Kabanov (consultant).
- Acoustically activated micellar drug delivery, NIH R01 EB001033, Sep. 2002 to July 2006, N.Y. Rapoport (PI), A.V. Kabanov (consultant).
- Improving the CNS delivery of anti-retroviral compounds, NIH R01 NS042549, Apr. 2002 to March 2007, W.F. Elmquist, (PI), D.W. Miller, Y. Persidsky (Co-Is); H. Gendelman, A.V. Kabanov (consultants).