Updated 4/26/2010

David Oupický

Department of Pharmaceutical Sciences
Wayne State University
Detroit, MI 48202
USA

tel.: 313-993-7669
fax: 313-577-2033
e-mail: oupicky@wayne.edu
www.oupickylab.org

PROFESSIONAL EXPERIENCE

2007–present	Associate Professor with tenure, Department of Pharmaceutical Sciences, Wayne State University
2006–present	Scientific Member, Barbara Ann Karmanos Cancer Institute
2004–present	Adjunct Professor, Department of Biomedical Engineering, Wayne State University
2002–2007	Assistant Professor, Department of Pharmaceutical Sciences, Wayne State University
1996	Visiting Scientist, Department of Organic Chemistry, University of Gent, Belgium
1994	Research Assistant, Department of Chemistry, Polytechnic University, New York

EDUCATION

1999–2002	Post-Doctoral Research Fellow CRC Institute for Cancer Studies, University of Birmingham, UK Advisor: Prof. Leonard W. Seymour
1999	*Ph.D.*, Macromolecular Chemistry Institute of Macromolecular Chemistry, Academy of Sciences of the Czech Republic, Prague, Czech Republic Advisor: Prof. Karel Ulbrich
1993	*M.Sc.*, Polymer Engineering Institute of Chemical Technology, Prague, Czech Republic

MEMBERSHIP ON FEDERAL PANELS

- Gene and Drug Delivery Systems (GDD) NIH study section (2009-2013 standing member)
- Cancer Drug Development and Therapeutics (ZRG1 ONC-L (10)), SBIR/STTR NIH study section (*ad hoc*)
- ZRG1 F14-G(20)L NIH Fellowships study section (*ad hoc*)
- NSF Grant Review panel (Technologies for Cellular Analyses, 2007)

AWARDS AND HONORS

2006	Faculty Research Recognition Award, College of Pharmacy, WSU
2004–present	College representative to the United States Pharmacopeia
2004	Teacher of the Year, College of Pharmacy, WSU
2003	American Foundation for Pharmaceutical Education Faculty New Investigator
1999	Ministry of Education of the Czech Republic Award for Outstanding Young Scientists
1998	Wichterle Fellowship, Institute of Macromolecular Chemistry
1995	Votocek Fellowship, Institute of Chemical Technology

RESEARCH INTERESTS

- Drug and gene delivery
- Stimuli-responsive biomaterials
- Stimulus-controlled gene delivery

- Polymer synthesis
- Light scattering

RESEARCH FUNDING

Current funding

09/2007–08/2010	R21 EB008164, "Hollow porous silica nanoparticles for targeted drug delivery" National Institute of Biomedical Imaging and Bioengineering, NIH, Role: PI
06/2005–06/2010	R01 CA109711, "Gene Delivery Modulated by Redox Potential Gradients" National Cancer Institute, NIH, Role: PI

Past funding

05/2007–11/2008	Wayne State University OVPR Grant in Nanomaterials, "Synthesis of biodegradable block copolymer prodrug DNA micelles." Role: PI
01/2005–08/2007	R21 EB004388, National Institute of Biomedical Imaging and Bioengineering, NIH, Role: PI
10/2005–09/2006	Wayne State University Initiative in Nanotechnology, Role: Co-I
04/2004–04/2005	The Susan G. Komen Breast Cancer Foundation, Role: Co-I
01/2004–12/2004	Pre-Clinical Research Grant, Bristol-Myers Squibb Medical Imaging, Inc. Role: PI
12/2003–11/2004	American Association of Colleges of Pharmacy New Investigators Program grant, Role: PI
05/2003–04/2004	Wayne State University Research Grant, Role: PI

MEMBERSHIP IN PROFESSIONAL SOCIETIES

- Controlled Release Society
- American Chemical Society
- American Association of Pharmaceutical Scientists
- American Society of Gene Therapy
- Rho Chi Society

List of publications

A. Peer-reviewed publications

1. J. Blacklock, G. Mao, D. Oupicky, H. Möhwald. “DNA release dynamics from bioreducible layer-by-layer films.” *Langmuir*, **2010**, in press
2. J. Blacklock, T. K. Sievers, H. Handa, Y. Z. You, D. Oupicky, G. Mao, H. Möhwald. “Cross-Linked Bioreducible Layer-by-Layer Films for Increased Cell Adhesion and Transgene Expression.” *Journal of Physical Chemistry B*, **2010**, in press
3. M. O. Andersen, A. Lichawska, A. Arpanaei, S. M. Rask Jensen, H. Kaur, D. Oupicky, F. Besenbacher, P. Kingshott, J. Kjems, K. A. Howard. “Surface Functionalisation of PLGA Nanoparticles for Gene Silencing” *Biomaterials,* **2010**, in press
4. D. S. Manickam, J. Li, D. A. Putt, Q. H. Zhou, C. Wu, L. H. Lash, D. Oupicky. "Effect of innate glutathione levels on activity of redox-responsive gene delivery vectors." *Journal of Controlled Release*, **2010**, 141, 77-84.
5. J. Chen, C. Wu, D. Oupicky. "Bioreducible Hyperbranched Poly(amido amine)s for Gene Delivery." *Biomacromolecules*, **2009**, 10(10), 2921-2927.
6. L. Wan, Y. Z. You, Y. Zou, D. Oupicky, G. Mao. “DNA release dynamics from bioreducible poly(amido amine) polyplexes.” *Journal of Physical Chemistry B*, **2009**, 113(42), 13735-41.
7. L. Shin, N. Basi, J. S. Lee, W. J. Cho, Z. Chen, R. Abu-Hamdah, D. Oupicky, B. P. Jena. “Involvement of vH+-ATPase in synaptic vesicle swelling.” *Journal of Neuroscience Research*, **2009**, 88(1), 95-101.
8. Q. H. Zhou, C. Wu, D. S. Manickam, D. Oupicky. “Evaluation of pharmacokinetics of bioreducible gene delivery vectors by real-time PCR.” *Pharmaceutical Research*, **2009**, 26(7), 1581-1589.
9. Q. H. Zhou, Y. Z. You, C. Wu, Y. Huang, D. Oupicky. “Cyclic RGD-targeted reversibly-stabilized nanoparticles enhance cell uptake and transfection in vitro.” *Journal of Drug Targeting*, **2009**, 17(5), 364-373.
10. J. Blacklock, Y. Z. You, Q. H. Zhou, G. Mao, D. Oupicky. “Gene delivery in vitro and in vivo from bioreducible multilayered polyelectrolyte films of plasmid DNA.” *Biomaterials*, **2009**, 30(5), 939-950.
11. S. Kakade, D. S. Manickam, H. Handa, G. Mao, D. Oupicky. “Transfection activity of layer-by-layer plasmid DNA/poly(ethylenimine) films deposited on PLGA microparticles.” *International Journal of Pharmaceutics*, **2009**, 365, 44-52.
12. L. Wan, D. S. Manickam, D. Oupicky, G. Mao. “DNA Release Dynamics from Reducible Polyplexes by Atomic Force Microscopy” *Langmuir*, **2008**, 24, 12474-12482.
13. D. S. Manickam, A. Hirata, D. A. Putt, L. H. Lash, F. Hirata, D. Oupicky. “Overexpression of Bcl-2 as a proxy redox stimulus to enhance activity of non-viral redox-responsive delivery vectors.” *Biomaterials*, **2008**, 29, 2680-2688.
14. Y. Z. You, K. Kalebaila, S. L. Brock, D. Oupicky. “Temperature-Controlled Uptake and Release in PNIPAM-modified Porous Silica Nanoparticles.” *Chemistry of Materials*, **2008,** 20, 3354-3359.
15. U. L. Rahbek, K. A. Howard, D. Oupicky, D. S. Manickam, M. Dong, A. F. Nielsen, F. Besenbacher, J. Kjems. “Intracellular siRNA and Precursor miRNA Trafficking Using Bioresponsive Copolypeptides.” *Journal of Gene Medicine*, **2008**, 10, 81-93.

16. H. Zhang, R. Thomas, D. Oupicky, F. Peng. "Synthesis and characterization of new copper thiosemicarbazone complexes with an ONNS quadridentate system: cell growth inhibition, S-phase cell cycle arrest and proapoptotic activitieson cisplatin-resistant neuroblastoma cells." *Journal of Biological Inorganic Chemistry*, **2008**, 13, 47-55.
17. Y. Z. You, Q. H. Zhou, D. S. Manickam, L Wan, G. Mao, D. Oupicky. "Dually Responsive Multiblock Copolymers via Reversible Addition-Fragmentation Chain Transfer Polymerization: Synthesis of Temperature- and Redox-Responsive Copolymers of Poly(N-isopropylacrylamide) and Poly(2-(dimethylamino)ethyl methacrylate)." *Macromolecules*, **2007**, 40, 8617-8624.
18. L. Wan, H. S. Bist, Y. Z. You, D. Oupicky, G. Mao. "Temperature-Reversible Ultrathin Films of N-Isopropylacrylamide Terpolymer Adsorbed at the Solid-Liquid Interface." *Langmuir*, **2007**, 23, 12159-12166.
19. Y. Z. You, D. S. Manickam, Q. H. Zhou, D. Oupický. "A versatile approach to reducible vinyl polymers via oxidation of telechelic oligomers prepared by RAFT polymerization." *Biomacromolecules*, **2007**, 8, 2038-2044.
20. Y. Z. You, D. S. Manickam, Q. H. Zhou, D. Oupický. "Reducible poly(2-dimethyl aminoethyl methacrylate): Synthesis, cytotoxicity, and gene delivery activity." *Journal of Controlled Release*, **2007**, 122, 217-225.
21. M. Dong, K. A. Howard, D. Oupický, H. Bisht, J. Kjems, F. Besenbacher. "Visualisation of thermal activated nanocarriers using in situ atomic force microscopy." *Nanotechnology*, **2007**, 18, 185501 (5pp).
22. Y. Z. You, D. Oupický. "Synthesis of temperature-responsive heterobifunctional block copolymers of PEG and PNIPAM." *Biomacromolecules*, **2007**, 8, 98-105.
23. J. Blacklock, H. Handa, D. S. Manickam, G. Mao, A. Mukhopadhy, D. Oupický. "Disassembly of Layer-by-Layer Films of Plasmid DNA and Reducible TAT Polypeptide." *Biomaterials*, **2007**, 28, 117-124.
24. K. A. Howard, M. Dong, D. Oupický, H. S. Bisht, C. Buss, F. Besenbacher, J. Kjems. "Nanocarrier Stimuli-Activated Drug Delivery." *Small*, **2007**, 3, 54-57.
25. J. Yuan, Y. Z. You, X. Lu, O. Muzik, D. Oupický, F. Peng. "Synthesis of Poly(APMA)-DOTA-64Cu conjugates for interventional radionuclide therapy of prostate cancer: Assessment of intra-tumoral retention by microPET imaging." *Molecular Imaging*, **2007**, 6, 10-17.
26. D. S. Manickam, D. Oupický. "Multiblock reducible copolypeptides containing histidine-rich and nuclear localization sequences for gene delivery." *Bioconjugate Chemistry*, **2006**, 17, 1395-1403.
27. H. S. Bisht, D. S. Manickam, Y. Z. You, D. Oupický. "Temperature-Controlled Properties of DNA Complexes with Poly(ethylenimine)-graft-poly(*N*-isopropylacrylamide)." *Biomacromolecules*, **2006**, 7, 1169-1178.
28. H. S. Bisht, L. Wan, G. Mao, D. Oupický. "pH-Controlled association of PEG-containing terpolymers of *N*-isopropylacrylamide and 1-vinylimidazole." *Polymer*, **2005**, 46, 7945-7952.
29. Q. H. Zhou, D. L. Miller, R. C. Carlisle, L. W. Seymour, D. Oupický. "Ultrasound-enhanced transfection activity of HPMA-stabilized DNA polyplexes with prolonged plasma circulation." *Journal of Controlled Release*, **2005**, 106, 416-427.
30. M. L. Read, S. Singh, Z. Ahmed, M. Stevenson, S. Briggs, D. Oupický, L. Barrett, U. Tirlapur, M. Berry, J. Preece, A. Logan, L. W. Seymour. "A versatile reducible polycation-based system for efficient delivery of a broad range of nucleic acids." *Nucleic Acids Research*, **2005**, 33, e86.

31. A. L. Parker, K.D. Fisher, D. Oupický, M. L. Read, S. A. Nicklin, A. H. Baker, L. W. Seymour. "Enhanced gene transfer activity of peptide-targeted gene-delivery vectors." *Journal of Drug Targeting*, **2005**, 13, 39-51.

32. D. S. Manickam, H. S. Bisht, L. Wan, G. Mao, D. Oupický. "Influence of TAT-peptide polymerization on properties and transfection activity of TAT/DNA polyplexes." *Journal of Controlled Release*, **2005**,102, 293-306.

33. D. Oupický, T. Reschel, C. Konak, L. Oupicka. "Temperature controlled behavior of self-assembly gene delivery vectors based on complexes of DNA with poly(L-lysine)-*graft*-poly(*N*-isopropylacryl amide)." *Macromolecules*, **2003**, 36, 6863-6872.

34. M. L. Read, K. H. Bremner, D. Oupický, N. K. Green, P. F. Searle, L. W. Seymour. "Vectors based on reducible polycations facilitate intracellular release of nucleic acids." *Journal of Gene Medicine*, **2003**, 5, 232-245.

35. D. Oupický, A. L. Parker, L. W. Seymour. "Laterally stabilized complexes of DNA with linear reducible polycations: Strategy for triggered intracellular activation of DNA delivery vectors." *Journal of the American Chemical Society*, **2002**, 124, 8-9.

36. D. Oupický, M. Ogris, K. A. Howard, P. R. Dash, K. Ulbrich, and L. W. Seymour. "Importance of lateral and steric stabilization of polyelectrolyte gene delivery vectors for extended systemic circulation." *Molecular Therapy*, **2002**, 5, 463-472.

37. C. Konak, T. Reschel, D. Oupický, K. Ulbrich. "Thermally controlled association in aqueous solutions of poly(L-lysine) grafted with poly(N-isopropylacrylamide)." *Langmuir*, **2002**, 18, 8217-8222.

38. C. M. Ward, M. Pechar, D. Oupický, K. Ulbrich and L. W. Seymour. "Modification of pLL/DNA complexes with a multivalent hydrophilic polymer permits folate-mediated targeting in vitro and prolonged plasma circulation in vivo." *Journal of Gene Medicine*, **2002**, 4, 536–547.

39. T. Reschel, C. Konak, D. Oupický, L.W. Seymour , K. Ulbrich. "Physical properties and in vitro transfection efficiency of gene delivery vectors based on complexes of DNA with synthetic polycations." *Journal of Controlled Release*, **2002**, 81 201-217.

40. A. L. Parker, D. Oupický, P. R. Dash, L. W. Seymour. "Methodologies for monitoring particle formation by self-assembly of DNA with poly(L-lysine)." *Analytical Biochemistry*, **2002**, 302, 75-80.

41. D. Oupický, R. C. Carlisle, L.W. Seymour. "Triggered intracellular activation of disulfide crosslinked polyelectrolyte gene delivery complexes with extended systemic circulation in vivo." *Gene Therapy*, **2001**, 8(9), 713-724.

42. J. Kriz, D. Kurková, J. Dybal, D. Oupický. "Cooperative interactions of unlike macromolecules: NMR study of ionic coupling of poly[2-(trimethylammonio)ethyl methacrylate chloride]-block-poly(N-(2-hydroxypropyl) methacrylamide) polycation with oligophosphates in D2O." *Journal of Physical Chemistry A*, **2000**, 104, 10972-10985.

43. C. Konak, D. Oupický, V. Chytrý, K. Ulbrich, M. Helmstedt. "Thermally controlled association in aqueous solutions of diblock copolymers of poly[N-(2-hydroxypropyl)methacrylamide] and poly(N-isopropylacryl-amide)." *Macromolecules*, **2000**, 33, 5318-5320.

44. D. Oupický, K. A. Howard, C. Konak, P. R. Dash, K. Ulbrich, L.W. Seymour. "Steric stabilization of poly-L-lysine/DNA complexes by covalent attachment of semitelechelic poly[N-(2-hydroxypropyl) methacrylamide]." *Bioconjugate Chemistry*, **2000**, 11, 492-501.

45. P. R. Dash, M. Read, K. Fisher, K. Howard, M. Wolfert, D. Oupický, M. Šubr, J. Strohalm, K. Ulbrich and L. W. Seymour. "Decreased binding to proteins and cells of polymeric gene delivery

vectors surface-modified with a multivalent hydrophilic polymer." *Journal of Biological Chemistry*, **2000**, 275, 3793-3802.

46. D. Oupický, C. Konak, K. Ulbrich, M. A. Wolfert, L. W. Seymour. "DNA delivery systems based on complexes of DNA with synthetic polycations and their copolymers." *Journal of Controlled Release*, **2000**, 65, 149-171.
47. M. L. Read, P. Dash, A. Clark, K. Howard, D. Oupický, V. Toncheva, O. Alpar, E. H. Schacht, K. Ulbrich and L. W. Seymour. "Physicochemical and biological characterisation of an antisense oligonucleotide targeted against the bcl-2 mRNA complexed with cationic-hydrophilic copolymers." *European Journal of Pharmaceutical Sciences*, **2000**, 10, 169-177.
48. K. Ulbrich, J. Strohalm, D. Plocová, D. Oupický, V. Šubr, J. Soucek, P. Poucková, J. Matoušek. "Poly[N-(2-hydroxypropyl)methacrylamide] conjugates of bovine seminal ribonuclease. Synthesis, physicochemical, and preliminary biological evaluation." *Journal of Bioactive and Compatible Polymers*, **2000**, 15, 4-26.
49. D. Oupický, C. Konak, P. R. Dash, L. W. Seymour, K. Ulbrich. "Effect of albumin and polyanions on the structure of DNA complexes with polycation containing hydrophilic nonionic blocks." *Bioconjugate Chemistry*, **1999**, 10(5), 764-772.
50. M. A. Wolfert, P. R. Dash, O. Nazarova, D. Oupický, L. W. Seymour, S. Smart, J. Strohalm, K. Ulbrich. "Polyelectrolyte vectors for gene delivery: Influence of cationic polymer on biophysical properties of complexes formed with DNA." *Bioconjugate Chemistry*, **1999**, 10, 993-1004.
51. D. Oupický, C. Konak, K. Ulbrich. "DNA complexes with block and graft copolymers of N-(2-hydroxypropyl)methacrylamide and 2-(trimethylammonio)ethyl methacrylate." *Journal of Biomaterials Science: Polymer Edition*, **1999**, 10, 573-590.
52. D. Oupický, C. Konak, K. Ulbrich. "Preparation of DNA complexes with diblock copolymers of poly[N-(2-hydroxypropyl) methacrylamide] and polycations." *Materials Science & Engineering C-Biomimetic and Supramolecular Systems*, **1999**, 7, 59-65.
53. D. Oupický, K. Ulbrich, B. Rihova. "Conjugates of semitelechelic poly[N-(2-hydroxypropyl)methacrylamide] with enzymes for protein delivery." *Journal of Bioactive and Compatible Polymers*, **1999**, 14, 213-231.
54. V. Toncheva, M. A. Wolfert, P. R. Dash, D. Oupický, K. Ulbrich, L. W. Seymour, E. H. Schacht. "Novel vectors for gene delivery formed by self-assembly of DNA with poly(L-lysine) grafted with hydrophilic polymers." *Biochimica et Biophysica Acta*, **1998**, 1380, 354-368.
55. G. Chen, R. G. Cooks, S. K. Jha, D. Oupický, M. M. Green. "Block microstructural characterization of copolymers formed from fluorinated and non-fluorinated alkyl polyisocyanates using desorption chemical ionization mass spectrometry." *International Journal of Mass Spectrometry and Ion Processes*, **1997**, 165/166, 391-404.
56. P. Sysel, D. Oupický. "Polyimide-polysiloxane block copolymers synthesized from 3-amino phenoxy terminated poly[oxy(dimethylsilyl)-2,4-phenylene(dimethylsilylene)]s." *Polymer International*, **1996**, 40, 275-279

B. Reviews

57. D. Oupicky. "Design and development strategies of polymer materials for drug and gene delivery applications (Editorial)" *Advanced Drug Delivery Reviews*, **2008**, 60, 957.
58. D. S. Manickam, D. Oupický. "Polyplex gene delivery modulated by redox potential gradients." *Journal of Drug Targeting*, **2006**, 14, 519-526.

59. D. Oupický, H. S. Bisht, D. S. Manickam, Q. H. Zhou. "Stimulus-controlled delivery of drugs and genes." *Expert Opinion on Drug Delivery*, **2005**, 2, 653-665.

60. D. Oupický, V. Diwadkar. "Stimuli-responsive gene delivery vectors." *Current Opinion in Molecular Therapeutics*, **2003**, 5, 345-350.

61. D. Oupický, M. Ogris, L. W. Seymour. "Development of long-circulating polyelectrolyte complexes for systemic delivery of genes." *Journal of Drug Targeting*, **2002**, 10, 93-98.

C. Book chapters

62. D. Oupický, Y. Z. You, D. S. Manickam. "Redox-responsive polymer-based gene delivery systems." In Gene and Cell Therapy: Therapeutic Mechanisms and Strategies (3rd edition), N. Smyth Templeton, Ed., Taylor&Francis, **2008**.

63. D. Oupický. "Subcellular Fate of Proteins and Nucleic Acids." In Biomaterials-based Delivery and Biocompatibility of Proteins and Nucleic Acids, R. I. Mahato, Ed.,CRC Press, **2005**.

64. D. Oupický. "Use of HPMA Copolymers in Gene Delivery." In Polymeric Gene Delivery: Principles and Applications, M. M. Amiji, Ed., CRC Press, **2005**.

65. L. W. Seymour, K. D. Fisher, N. K. Green, S. J. Hale, M. Lyons, V. Mautner, S. Nicum, D. Onion, D. Oupický, M. Stevenson, K. Ulbrich "Adenovirus Retargeting and Systemic Delivery" In Human Gene Therapy: Present opportunities and future trends, G. M. Rubanyi and S. Yla-Herttuala, Eds., Ernst Schering Research Foundation Workshop Series, Volume 43, Springer Verlag, Heidelberg, **2003**.

66. D. Oupický, M. L. Read, T. Bettinger. "Stabilization of polycation/DNA complexes by surface modification with hydrophilic polymers." In Nonviral Vectors for Gene Therapy (Methods in Molecular Medicine series), M. A Findeis, Ed., Humana Press, Totowa, Vol. 65, 61-78, **2001**.

67. M. L. Read, T. Bettinger, D. Oupický. "Methods for studying the formation and stability of polycation-DNA complexes." In Nonviral Vectors for Gene Therapy (Methods in Molecular Medicine series), M. A. Findeis, Ed., Humana Press, Totowa, Vol. 65, 131-148, **2001**.