

BIOGRAPHICAL SKETCH

NAME Mumper, Russell J.	POSITION TITLE John A. McNeill Distinguished Professor Director, Center for Nanotechnology in Drug Delivery		
eRA COMMONS USER NAME RUSSELL.MUMPER			
EDUCATION/TRAINING <i>(Begin with baccalaureate or other initial professional education, such as nursing, and include postdoctoral training.)</i>			
INSTITUTION AND LOCATION	DEGREE <i>(if applicable)</i>	YEAR(s)	FIELD OF STUDY
University of Kentucky, Lexington, KY	B.A.	1984-1988	Chemistry
University of Kentucky, Lexington, KY	Ph.D.	1988-1991	Pharmaceutics
University of Washington, Seattle, WA	Post-Doc	1991-1992	Bioengineering

A. Positions and Honors

Positions and Employment

1992 – 1994	Development Scientist III, Burroughs Wellcome Co., Greenville, North Carolina
1994 – 1998	Senior Scientist and Program Leader, Infectious Disease Product Discovery GeneMedicine, Inc., The Woodlands, TX
1998 – 1999	Director of Product Development, ViroTex Corporation, The Woodlands, TX
1999 – 2003	Assistant Director, Center for Pharmaceutical Science and Technology, College of Pharmacy, University of Kentucky
1999 – 2003	Assistant Professor of Pharmaceutical Sciences, College of Pharmacy, University of Kentucky
2003 – 2006	Associate Director, Center for Pharmaceutical Science and Technology, College of Pharmacy, University of Kentucky
2004 – 2007	Vice Chair, Department of Pharmaceutical Sciences, College of Pharmacy, Univ. of Kentucky
2004 – 2007	Associate Professor of Pharmaceutical Sciences, College of Pharmacy, Univ. of Kentucky
2000 – Present	Founder and Chief Scientific Officer, NanoMed Pharmaceuticals, Inc., Lexington, Kentucky
2004 – Present	Founder and Chief Scientific Officer, Four Tigers LLC, Paris, Kentucky
6/1/07 – Present	John A. McNeill Distinguished Professor, Division of Molecular Pharmaceutics, School of Pharmacy, University of North Carolina at Chapel Hill
6/1/07 – Present	Director, Center for Nanotechnology in Drug Delivery, University of North Carolina at Chapel Hill
2007 – Present	Full Member, UNC Lineberger Comprehensive Cancer Center

Other Experience and Professional Memberships

1999 – Present	<i>Ad hoc</i> Member of >20 NIH Review Panels including: Biophysical and Chemical Sciences, Microbicide Preclinical Development Program, Brain Disorders and Clinical Neurosciences, Biophysics and Chemistry, Medical Imaging, and PAR-03-045 (Nanoscience and Nanotechnology in Biology and Medicine)
2000	Nanoscale Modeling and Simulation Panel, National Science Foundation

Honors

1999	New Investigator Award, American Association of Colleges of Pharmacy
2000 – Present	Editorial Advisory Board, <i>Drug Development and Industrial Pharmacy</i>
2000	PhRMA Foundation 2001 Fellowship to Support Undergraduate Research in Pharmaceutics
2003	Advisory Scientific Panel, Modern Vaccine Adjuvants & Delivery Systems. International Conference. Dublin, Ireland. June 4-6, 2003
2004 – Present	Editorial Advisory Board, <i>Journal of Biomedical Nanotechnology</i>
2004	Best Paper Award 2003 – <i>European Journal of Pharmaceutics and Biopharmaceutics</i>

- 2004 VivaGel™, a topical dendrimer-based microbicidal gel developed by the CPST for Starpharma, was named one of the Top 5 Nanotech Breakthroughs of 2004 in the Forbes/Wolfe Nanotech Report (December 2004).
- 2006 Scientific Advisory Panel. International Conference on Modern Vaccines: Adjuvants & Delivery Systems. The Royal Society of Medicine, London, United Kingdom. September 12-14, 2006.
- 2006 Co-sponsor, Scientific Advisory Board and Invited Speaker. Nanotechnology in Advanced Drug Delivery. Sponsored by National Institute of Pharmaceutical Education and Research (NIPER), Punjab, India. February 17-18, 2006.
- 2006 2006 AAPS Lipid-Based Drug Delivery Systems Award sponsored by Gattefossé Corporation
- 2007 Co-Editor of Special Issue in the *Journal of Biomedical Nanotechnology*
- 2007 2007 Great Teacher Award sponsored by the UK Alumni Association
- 2007 Peer-reviewed papers published in *Eur. J. Pharm. Biopharm* (2005) and *J. Con. Rel.* (2004) listed as top-ten most cited papers in the journals.

B. Selected peer-reviewed publications (in chronological order): out of >65 total

1. **RJ Mumper** and M Jay. Biodegradable Radiotherapeutic Polyester Microspheres: Optimization and In-Vitro/In-Vivo Evaluation. *J. Controlled Rel.* 1991; 18:193-204.
2. **RJ Mumper**, UY Ryo, and M Jay. Neutron Activated Holmium-166 Poly(L-lactic Acid) Microspheres: A Potential Agent for the Internal Radiation Therapy of Hepatic Tumors. *J. Nucl. Med.* 1991; 32:2139-2143.
3. **RJ Mumper**, BJA Mills, UY Ryo, and M Jay. Polymeric Microspheres for Radionuclide Synovectomy Containing Neutron Activated Holmium-166. *J. Nucl. Med.* 1992; 33:398-402.
4. **RJ Mumper** and M Jay. The Formation and Stability of Lanthanide Complexes and Their Encapsulation into Polymeric Microspheres. *J. Physical Chem.* 1992; 96:8626-8631.
5. **RJ Mumper**, JG Duguid, K Anwer, MK Barron, H Nitta, and AP Rolland. Polyvinyl Derivatives as Novel Interactive Polymers for Controlled Gene Delivery to Muscle. *Pharm. Res.* 1996; 13:701-709.
6. **RJ Mumper**, J Wang, SL Klakamp, H Nitta, K Anwer, F Tagliaferri, and AP Rolland. Protective Interactive Non-Condensing (PINC) Polymers for Enhanced Plasmid Distribution and Expression in Rat Skeletal Muscle. *J. Controlled Rel.* 1998; 52:191-203.
7. Z Cui and **RJ Mumper**. Chitosan-Based Nanoparticles for Topical Genetic Immunization. *J. Controlled Rel.* 2001; 75:409-419.
8. Z Cui and **RJ Mumper**. Genetic Immunization Using Nanoparticles Engineered From Microemulsion Precursors. *Pharm. Res.* 2002; 19:939-946.
9. Z Cui and **RJ Mumper**. Topical Immunization Using Nanoengineered Genetic Vaccines. *J. Controlled Rel.* 2002; 81:173-184.
10. Z Cui and **RJ Mumper**. Coating of Cationized Protein on Engineered Nanoparticles Results in Enhanced Immune Responses. *Inter. J. Pharm.* 2002; 238:229-239.
11. Z Cui and **RJ Mumper**. Intranasal Administration of Plasmid DNA-Coated Nanoparticles Results in Enhanced Immune Responses. *J. Pharm. Pharmacol.* 2002; 54:1195-1203.
12. Z Cui and **RJ Mumper**. Plasmid DNA Entrapped Nanoparticles Engineered from Microemulsion Precursors: In-Vitro and In-Vivo Evaluation. *Bioconj. Chem.* 2002; 13:1319-1327.
13. MO Oyewumi and **RJ Mumper**. Engineering Tumor-Targeted Gadolinium Hexanedione Nanoparticles for Potential Application in Neutron Capture Therapy. *Bioconj. Chem.* 2002; 13:1328-1335.
14. MO Oyewumi and **RJ Mumper**. Influence of Formulation Parameters on Gadolinium Entrapment and Tumor Cell Uptake Using Folate-Coated Nanoparticles. *Inter. J. Pharm.* 2003; 251:85-97.
15. Z Cui and **RJ Mumper**. The Effect of Co-Administration of Adjuvants with a Nanoparticle-Based Genetic Vaccine Delivery System on the Resulting Immune Responses. *Eur. J. Pharm. Biopharm.* 2003; 55:11-18.
16. MO Oyewumi, S Liu, JA Moscow, and **RJ Mumper**. Specific Association of Thiamine-Coated Gadolinium Nanoparticles with Human Breast Cancer Cells Expressing Thiamine Transporters. *Bioconj. Chem.* 2003; 14:404-411.
17. Z Cui, L Baizer, and **RJ Mumper**. Intradermal Immunization with Novel pDNA-Coated Nanoparticles Via a Needle-Free Injection Device. *J. Biotechnology.* 2003; 102:105-115.

18. PR Lockman, J Koziara, KE Roder, J Paulson, TJ Abbruscato, **RJ Mumper**, and DD Allen. In-Vivo and In-Vitro Assessment of Baseline Blood-Brain Barrier Parameters in the Presence of Novel Nanoparticles. *Pharm. Res.* 2003; 20:705-713.
19. PR Lockman, **RJ Mumper**, and DD Allen. Evaluation of Blood-Brain Barrier Thiamine Efflux Using the In-Situ Rat Brain Perfusion Methods. *J. Neurochemistry.* 2003; 86:627-634.
20. **RJ Mumper**, and Z Cui. Genetic Immunization by Jet Injection of Targeted pDNA-Coated Nanoparticles. *Methods.* 2003; 31:255-262.
21. JM Koziara, PR Lockman, DD Allen, and **RJ Mumper**. In-Situ Blood-Brain Barrier Transport of Nanoparticles. *Pharm. Res.* 2003; 20:1772-1778.
22. Z Cui and **RJ Mumper**. Microparticles and Nanoparticles as Delivery Systems for DNA Vaccines. *Crit. Rev. Ther. Drug Carrier Sys.* 2003; 20(2&3):103-137.
23. JC Weekley, S Wuenschel, PE Rosentiel, **RJ Mumper**, and M Jay. Aqueous Liquid Scintillation Counting with Fluor-Containing Nanosuspensions. *Appl. Rad. Isotop.* 2004; 60:887-891.
24. Z Cui, J Patel, M Tuzova, P Ray, R Phillips, JG Woodward, A Nath, and **RJ Mumper**. Strong T-Cell Type-1 Immune Responses to HIV-1 Tat (1-72) Protein-Coated Nanoparticles. *Vaccine.* 2004; 22:2631-2640.
25. MO Oyewumi, RA Yokel, M Jay, T Coakley, and **RJ Mumper**. Comparison of Cell Uptake, Biodistribution, and Tumor Retention of Folate-Coated and PEG-Coated Gadolinium Nanoparticles in Tumor-Bearing Mice. *J. Controlled Rel.* 2004; 95:613-626.
26. PR Lockman, JM Koziara, **RJ Mumper**, and DD Allen. Nanoparticle Surface Charges Alter Blood-Brain Barrier Integrity and Uptake. *Journal of Drug Targeting.* 2004; 12:635-41.
27. JM Koziara, PR Lockman, DD Allen, and **RJ Mumper**. Paclitaxel Nanoparticles for the Potential Treatment of Brain Tumors. *J. Controlled Rel.* 2004; 99:259-269.
28. Z Cui, PR Lockman, CS Atwood, CH Hsu, A Gupte, DD Allen, and **RJ Mumper**. Novel D-Penicillamine Carrying Nanoparticles for Metal Chelation Therapy in Alzheimer's and other CNS Diseases. *European Journal of Pharmaceutics and Biopharmaceutics.* 2005; 59:263-272
29. JM Koziara, JJ Oh, WS Akers, SP Ferraris, and **RJ Mumper**. Blood Compatibility of Cetyl Alcohol/Polysorbate-Based Nanoparticles. *Pharm. Res.* 2005; 22:1821-1828.
30. J Patel, D Galey, J Jones, P Ray, JG Woodward, A Nath, and **RJ Mumper**. HIV-1 Tat-Coated Nanoparticles Result in Enhanced Immune Responses and Tat-Neutralizing Antibodies Compared To Alum Adjuvant. *Vaccine.* 2006; 24:3564-3573.
31. JM Koziara, TR Whisman, MT Tseng, and **RJ Mumper**. In-Vivo Efficacy of Novel Paclitaxel Nanoparticles in Paclitaxel-Resistant Human Colorectal Tumors. *J. Controlled Rel.* 2006; 112:312-319
32. X Dong and **RJ Mumper**. The Metabolism of Fatty Alcohols in Lipid Nanoparticles by Alcohol Dehydrogenase. *Drug Dev. Ind. Pharm.* 2006; 32:973-980.
33. JD Patel, J Jones, JG Woodward, and **RJ Mumper**. Preparation and Characterization of Nickel Nanoparticles for Binding to His-tag Proteins and Antigens. *Pharm. Res.* 2007; 24:343-352.
34. J Dai, JD Patel, and **RJ Mumper**. Characterization of Blackberry Extract and Its Anti-proliferative and Anti-inflammatory Properties. *J. Medicinal Food.* 2007; 10:258-265.
35. A Gupte and **RJ Mumper**. An Investigation into Copper Catalyzed D-Penicillamine Oxidation and Subsequent Hydrogen Peroxide Generation. *J. Inorganic Biochemistry.* 2007; 101:594-602.
36. JD Patel, S Gandhapudi, R O'Carra, J Jones, JG Woodward, and **RJ Mumper**. Cationic Nanoparticles for Delivery of CpG Oligodeoxynucleotide and Ovalbumin: In-Vitro and In-Vivo Assessment. *J. Biomed. Nanotech.* 2007; 3:97-106.
37. SR Mallery, GD Stoner, PE Larsen, HW Fields, KA Rodrigo, SJ Schwartz, Q Tian, J Dai and **RJ Mumper**. Formulation and In-Vitro and In-Vivo Evaluation of a Mucoadhesive Gel Containing Freeze Dried Black Raspberries: Implications for Oral Cancer Chemoprevention. *Pharm. Res.* 2007; 24:728-737.
38. A Gupte and **RJ Mumper**. Copper Chelation by D-penicillamine Generates Reactive Oxygen Species that are Cytotoxic to Human Leukemia and Breast Cancer Cells. *Free Radical Biology & Medicine.* 2007; 43:1271-8.
39. BS Shumway, LA Kresty, PE Larsen, JC Zwick, B Lu, HW Fields, **RJ Mumper**, GD Stoner, SR Mallery, Effects of a Topically Applied Bioadhesive Berry Gel on Loss of Heterozygosity Indices in Premalignant Oral Lesions. *Clinical Cancer Research.* In Press.

Other Support

ACTIVE

- R01 CA115197-2 (Mumper, PI) 4/12/06 – 2/28/10 Effort: 1.8 calendar month
NIH-NCI
EGF-Receptor Targeted Nanoparticles to Overcome Paclitaxel Resistant Breast Cancer
The goal of this project to develop paclitaxel nanoparticles targeted to the epidermal growth factor receptor on breast cancer cells using transforming growth factor-alpha to overcome multi-drug resistance.
- R01 AI058842 (Mumper, PI) 4/15/05 – 12/31/09 Effort: 2.4 calendar month
NIH-NIAID
Nanoparticle HIV Protein Vaccines for Cellular Responses
The goal of this project to develop nanoparticle-based HIV-1 vaccines to elicit enhanced CTL and humoral immune responses to recombinant Tat (1-72) and gag p24 proteins
- Mumper (PI) 10/1/07 – 9/30/08 Effort: 0.6 calendar month
NanoMed Pharmaceuticals, Inc.
In-Vitro and In-Vivo Evaluation of Idarubicin Nanoparticle Formulations
The goal of this project is to develop and test idarubicin nanoparticle formulations in-vitro and in resistant mouse tumor models.
- U19AI60958 Mumper (PI) 9/1/04 – 8/31/09 Effort: 1.2 calendar month
NIH-NIAID-NICHD via subcontract from Starpharma Ltd.
Core C: Formulation Sciences – Development of Dendrimer and Combination Microbicides
The overall goal of this program is to develop combination topical microbicide candidates with a dual mode of action against the sexually transmission of HIV. Core C will contribute to the overall Program Project Grant by developing prototype formulations to support preclinical animal efficacy studies, and manufacturing for GLP safety/toxicity studies and human clinical trials.
- Mumper (PI) 10/1/07 – 9/30/08 Effort: 0.24 calendar month
Four Tigers / University of Kentucky
Evaluation of Blackberry Extract and Blackberry Extract Lotion in UV-radiation Induced Skin Damage.
The goal of this project is to develop and test blackberry extract for its ability to protect or treat UV-induced damage to skin in-vitro and in-vivo.
- Mumper (PI, subcontract) 12/1/07 – 11/30/09 Effort: 0.6 calendar month
NIH (R21) / Ohio State
Evaluation of Bioadhesive Berry Gels for Oral Cancer Chemoprevention.
The goal of this project is to develop and test freeze-dried black raspberry (FDBR) gels and berry extract (RO-ET) gels in-vitro and ex-vivo to understand the mechanism of action.