

Laird Forrest, Ph.D.

Professor
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Education

Post-doctoral fellow, Pharmaceutical Sciences, University of Wisconsin, Madison, WI	2006
Ph.D. Chemical and Biomolecular Engineering, University of Illinois, Urbana, IL	2003
M.S. Chemical Engineering, University of Illinois, Urbana, IL	2001
B.S. Chemical Engineering, Auburn University, Auburn, AL (<i>Summa Cum Laude</i>)	1998

Academic Professional Experience

Full Professor, Department of Pharmaceutical Chemistry, University of Kansas, 3/2017-present (primary appointment)
Adjunct/Courtesy Appointments:
Bioengineering Center, University of Kansas, 6/2011-present
Department of Chemical and Petroleum Engineering (courtesy), University of Kansas, 6/2023-present
Department of Medicinal Chemistry (courtesy), University of Kansas, 12/2015-3/2018
Department of Chemistry (courtesy), University of Kansas, 11/2013-11/2016
Associate Professor, Department of Pharmaceutical Chemistry, University of Kansas, 8/2013-2/2017
Research Associate Professor (volunteer), Department of Internal Medicine, Division of Dermatology, University of Kansas Medical Center, 6/2011-6/2015 (listed appointments were at Asst. Prof. level prior to 8/2013)
Assistant Professor, Department of Pharmaceutical Chemistry, University of Kansas, 1/2007-8/2013
Adjunct Assistant Professor, Dept. of Pharmaceutical Sciences, Washington State University, Pullman, 11/2006-11/2013
Postdoctoral Fellow, Division of Pharmaceutical Sciences, University of Wisconsin, Madison, 2004-2006
Graduate Research Assistant (under Daniel Pack), Department of Chemical Engineering, UIUC, 1998-2003
Undergraduate Research Assistant (under Bruce Tatarchuck), Chemical Engineering, Auburn University, 1996-1997

Other Professional Experience

Hylapharm LLC, co-founder, 2011-present
HylaPharm is developing injected and locally administered anti-cancer therapeutics.
Aerobyx LLC, co-founder, Chief Operating Officer, 2017-present
Aerobyx is developing oral drugs for neurodegenerative diseases.
Vesarex LLC, co-founder, Chief Operating Officer, 2018-present
Veserax is developing devices and treatments for vascular disease.
Ferroximend, LLC, co-founder, 2020-present
Ferroximend is developing medical devices to enhance bone fracture healing.
Exogenesis Corporation, Member of Scientific and Medical Advisory Board, 2009-present
Exogenesis is developing and commercializing nanoscale surface modification for improving the safety and efficacy of implantable medical devices. A device I assisted in the development of is entering market in 2020.
Patent Writer, Beem Patent Law Firm, Chicago, IL, 2003-2004
Drafting and prosecution of patent applications, provided in-house scientific expert support.
Software Engineer/Consultant, Packaging Corporation of America (multiple sites), 1994-2023
Developed and managed custom software for real-time analysis of plant manufacturing quality control data and integration with business data systems. Platform was in use across multiple plant sites, with >99.98% uptime over 19+ years of operation. (C++/.NET/VB/SQL/DB2/Pascal(Honeywell)/Fortran on AS400/Linux/Win86, embedded Arduino/Microchip, various PLC platforms)
Expert witness in pharmaceutical litigations. *Experience and current litigation conflicts are available upon request.*
Scientific consulting experience. *List of recent non-confidential clients available upon request.*

Awards and Honors

Baxendale Innovation Award, 2016
University of Kansas Leading Light award, 2014
Japan Society for Promotion of Science (JSPS) Visiting Scholar Fellow, 2010
American Cancer Society Research Scholar, 2008-2012
American Association of Colleges of Pharmacy, New Investigators Award, 2007
PhRMA Foundation Postdoctoral Fellow, 2006

Controlled Release Society Annual Meeting, Glasgow, Scotland.
Student poster abstract award (unable to attend), 2003
American Institute of Chemical Engineers Annual Conference, Reno, NV
Pharmaceutical and Biotechnology Program Student Paper Award, 2001
Carriers in Gene Therapy Session Speaker Award, 2001
Auburn P&P Foundation Scholarship; Tenneco Engineering Scholarship, 1994-1998

Teaching

Full courses

Biopharmaceutics and Drug Delivery (PharmD professional course), PHCH 626, yearly Spring 2011-present, *Course coordinator and instructor*
Physical Chemistry of Pharmaceutical Solutions, Solids and Surfaces (graduate course) (3 credit hrs), PHCH862/3, yearly Fall 2018-present, *Course instructor*
Drug Delivery (graduate course), PHCH 715/716, BIOE/C&PE 715 (3 credit hrs, 4 credit hours after 2024; Fall 2007-2015 odd years, yearly Spring 2016-present, *Course instructor and coordinator*
Introduction of Clinical Chemistry (PharmD professional course) PHCH 667 (2 credit hrs); Spring 2007-2010, *Course coordinator and instructor*
Pharmaceutical Equilibria (graduate course) (3 credit hrs), PHCH 862/863; yearly Fall 2008-Fall 2017, *Course coordinator and instructor*
Emerging Trends in Pharmaceutical Chemistry PHCH 511 (1 credit hr); Fall 2007, Fall 2008 – 2020, every even year, *Course lecturer*

Short courses

Short course on Drug Delivery (15 lectures / 1 credit hr), *Course developer and instructor*
Shandong University, China (July 2009)
Tsukuba University, Japan (July 2009)
Short course on Drug Formulation and Basic Pharmacokinetics (15 lecture hours/1 credit hr), *Couse developer and instructor*
Tsukuba University, Japan (August 2010)

Partial courses and invited course lectures

Introduction to Nanotechnology, C&PE 656; Spring/Fall 2009-2014 (guest lecturer)
Sigma Xi Continuing Education series, KUMC Fall 2007 (guest lecturer).

Patents and Applications

1. X. Yang, M.L. Forrest, A. Samaddar. "Roughened Guidewires, Systems, Methods of Manufacture, and Methods of Use.". (US Provisional 63/703,877, filed 10/4/2024).
2. C. Berkland, L. Forrest, B. Dekosky. "Compositions Including Tumor-binding GMCSF Fusion Proteins and Methods of Using the Same to Treat Solid Tumors" (PCT/US2022/048755, US App. 18/705,86, filed 4/23/2024; EU App. 22890744.0, filed 5/2/24)
3. X. Yang, L. Forrest. "Devices, Systems, and Methods for Ultrasound Therapy". PCT/US2023/022119 (filed 5/12/2023)
4. X. Yang, L. Forrest. "Systems And Methods For Treating Plaque In A Body Lumen". US Provisional App. 63/341,624 (Filed 5/13/22). Non-provisional (filed 5/12/23).
5. C. Berkland, B. DeKosky, L. Forrest. "Design of a novel tumor-binding cytokine immunotherapy for the intratumoral (it) treatment of solid tumors". US Provisional App. 63/275,224 (Filed: 11/3/2021).
6. X. Yang, L. Forrest. "Ultrasound-enhanced laser thrombolysis with endovascular laser and high-intensity focused ultrasound." US Provisional App. 63074798 (9/4/2020); Non-provisional 17466780 (Filed 9/3/2021)
7. Buchman SR, Cohen M, Donneys A, Nelson N, Forrest ML, Zhang T, Yang Q. "Devices, compositions and related Methods for accelerating and enhancing bone repair." Continuation 17/354,514 (filed 6/23/21, accepted 1/3/2025)
8. Buchman SR, Cohen M, Donneys A, Nelson N, Forrest ML, Zhang T, Yang Q. "Devices, compositions and related Methods for accelerating and enhancing bone repair." (filed, 12/17/2015), WO2017/106744, PCT/US2016/067320. US Patent issued 6/30/2021.
9. Rowe PSN, Martin A, David NV, Forrest ML, KR Moulder, S. Cai, DJ Aires. "Compounds and methods for increasing hair growth." US Patent 10,857,199 (granted 12/8/2020).
10. L. Forrest, D. Aires, R. Moulder, R. Lu, J. Hunt, P. Kleindl, T. Zhang, C. Groer, S. Cai. "Platinum(IV) Conjugates and Methods of Use." US Non-Provisional App. 16/850,748 (filed 4/16/20)
11. L. Forrest, D. Aires, R. Moulder, R. Lu, J. Hunt, P. Kleindl, T. Zhang, C. Groer, S. Cai. "Imidazoquinoline Compounds and Prodrugs Thereof." PCT/US2020/028468 (filed 4/16/20)

12. Rowe PSN, Martin A, David NV, Forrest ML, Moulder KR, Cai S, DJ Aires. "Compounds and methods for increasing hair growth." US Patent 10,350,263 (granted 7/16/2019)
13. Forrest ML Hunt J, Aires DH, Cai S, Lu R, Groer C, Moulder R, Kleindl P. "Investigations of the phenyl ring of imidazoquinolines." US Provisional 62/835,408 (filed 4/17/2019).
14. Swerdlow R, Forrest ML, Michaelis E, Hunt J, Wilkins H. "Bioenergetically active esters for health and disease." US Nonprovisional Application (international app. PCT/US19/53901 filed 9/30/2019, US application 17/280,235 filed 3/26/2021, allowed 1/26/2022 and issued. Also issued 11,952,337.
15. Forrest ML, Cai S, Zhang T, Senadheera SPSN, Groer C, Aires D, "Drug delivery compositions and methods." Continuation-in-part 16/067,630 filed 7/2/2018
16. Forrest ML, Cai S, Zhang T, Senadheera SPSN, Groer C, Aires D, "Drug delivery compositions and methods." US Pat. Prov. Application 62/274,508 (filed 1/4/2016), non-provisional patent filed 1/3/2017
17. Forrest ML, Kleindl P, Senadheera SPSN, "Immunosuppressive compositions" US Pat. Prov. Application (filed 3/3/2016).
18. Forrest ML, Cai S, Zhang T, Senadheera SPSN, Duan S, Groer C, Aires D, Zhao Y, "Targeted mTOR Inhibitor." US Pat. Non-provisional Application 15/052,302 (filed 2/24/2016) (priority to Prov. Application 62/120,215, 2/24/2015).
19. Kwon, G.S. and M.L. Forrest, "Micelle composition of polymer and passenger drug." US Pat 9,107,814 (granted 8/18/2015).
20. Forrest ML, Cai S, Duan S, Zhang T, Yang Q, "Drug and imaging agent delivery compositions and methods" US Pat. 8,802,235. (granted 4/4/2014)
21. Rowe P, Forrest ML, Moulder R, Cai S, Martin A, Aires D. "Preparations for enhancement of hair growth" US Pat. 10,213,479 (granted 2/26/2019).
22. Rowe P, Forrest ML, Moulder R, Cai S, Martin A, Aires D. "Preparations for enhancement of hair growth" US Divisional application (filed 2/13/2019) (priority to PCT/US2015/012691, filed 1/23/2015 16/275,069)
23. Forrest ML, Cohen MS, Cai S, "Intralymphatic chemotherapy drug carriers" US Pat. 8,088,412 (granted 1/3/2012) (International filings 1/30/2009)
24. Forrest ML, Cohen MS, Cai S, "Intralymphatic chemotherapy drug carriers" Korean Patent 10-1224711 (granted 2/18/2013)
25. Forrest ML, Cohen MS, Cai S, "Intralymphatic chemotherapy drug carriers" Japanese Patent 5,302,340 (granted 6/28/2013)
26. Forrest ML, Cohen MS, Cai S, "Intralymphatic chemotherapy drug carriers" Chinese Patent 101965201 B (granted 10/23/2013)
27. Forrest ML, Cohen MS, Cai S, "Intralymphatic chemotherapy drug carriers" Canada Application 2,713,813
28. Forrest ML, Cohen MS, Cai S, "Intralymphatic chemotherapy drug carriers" CIP 13/341,282 (filed 1/3/2012)
29. Forrest ML, Cohen MS, Cai S, "Intralymphatic chemotherapy drug carriers" France Brevet No. 2242514 (granted 9/30/2015)
30. Forrest ML, Cohen MS, Cai S, "Intralymphatic chemotherapy drug carriers" Germany DBP No. 60 2009 033 907 (granted 9/30/2015)
31. Forrest ML, Cohen MS, Cai S, "Intralymphatic chemotherapy drug carriers" U.K. Patent No. 2242514 (granted 9/30/2015)
32. Kwon, G.S. and M.L. Forrest, "Micelle composition of polymer and passenger drug." US Pat. 8,173,167 (granted 5/11/12)
33. Kwon, G.S., M.L. Forrest, and N.M. Davies. "Micelle encapsulation of therapeutic agents." US App 20100203114

Peer Reviewed Publications (chronological order)

List also available as:

<http://www.ncbi.nlm.nih.gov/myncbi/browse/collection/41384976/?sort=date&direction=ascending>

1. Forrest, M.L., D.W. Pack. "On the Kinetics of Polyplex Endocytic Trafficking: Implications for Gene Delivery Vector Design." *Mol. Ther.* 6: 57-66 (2002). PMID: 12095304
2. Forrest, M.L., J.T. Koerber, and D.W. Pack. "A Degradable Polyethylenimine Derivative with Low Toxicity for Highly Efficient Gene Delivery." *Bioconjug. Chem.* 14: 934-940 (2003). PMID: 13129396
3. Forrest, M.L., G.E. Meister, J.T. Koerber, D.W. Pack. "Polyethylenimine Derivatives with Reduced Buffering Capacity and Enhanced Transfection Efficiency." *Pharm. Res.* 21: 365-371 (2004). PMID: 15032320
4. Forrest, M.L., N. Gabrielson, D.W. Pack. "Cyclodextrin-polyethylenimine conjugates for targeted in vitro gene delivery." *Biotechnol. Bioeng.* 89: 416-423 (2005). PMID: 15627256
5. Kwon, G.S. and M.L. Forrest. "Amphiphilic Block Copolymer Micelles for Nanoscale Drug Delivery." *Drug Dev. Res.* 67: 15-22 (2006).

6. Forrest, M.L., C.-Y. Won, A.W. Waseem, G.S. Kwon. "In vitro Release of the mTOR Inhibitor Rapamycin from Poly(ethylene glycol)-b-Poly(ϵ -caprolactone) Micelles." *J. Control. Release* 110:370-377 (2006). PMID: 16298448
Highest cited paper in this journal for 2006.
7. Forrest, M.L., A. Zhao, C.-Y. Won, A.W. Waseem, G.S. Kwon. "Lipophilic prodrugs of Hsp90 inhibitor geldanamycin for nanoencapsulation in poly(ethylene glycol)-beta-poly(sigma-caprolactone) micelles." *J. Control. Release* 116:139-149 (2006). PMID: 16926059
8. Xiong, M.P., M.L. Forrest, A.L. Karls, G.S. Kwon. "Biotin-triggered release of PEG-avidin from biotinylated-PEI enhances in vitro gene expression." *Bioconjug. Chem.* 18:746-753 (2007). PMID: 17375897
9. Yáñez, J.A., M.L. Forrest, Y. Ohgami, G.S. Kwon, N.M. Davies. "Pharmacometrics and Delivery of Novel Nanoformulated PEG-b-Poly(ϵ -caprolactone) Micelles of Rapamycin." *Cancer Chemo. Pharmacol.* 2007 61(1):133-144 (2008). PMID: 17393166 PMCID: PMC2259393
10. Xiong, M.P., Y. Bae, S. Fukushima, M.L. Forrest, N. Nishiyama, K. Kataoka, G.S. Kwon. "pH-Responsive Multi-PEGylated Dual Cationic Nanoparticles Enable Charge Modulations for Safe Gene Delivery." *ChemMedChem* 2(9): 1321-1327 (2007). PMID: 17579918
11. Xiong, M.P., M.L. Forrest, N.M. Davies, G.S. Kwon. "Poly(Aspartate-g-PEI800), a polyethylenimine analogue of low toxicity and high transfection efficiency for gene delivery." *Biomaterials* 28:4889-4900 (2007). PMID: 17692910.
12. Forrest, M.L., J.A. Yáñez, C.M. Remsberg, Y. Ohgami, G.S. Kwon, N.M. Davies. "Paclitaxel prodrugs with sustained release and high solubility in poly(ethylene glycol)-b-poly(ϵ -caprolactone) micelle nanocarriers: pharmacokinetic disposition, tolerability and cytotoxicity." *Pharm. Res.* 25:194-206 (2008). PMID:17912488.
13. M.L. Forrest, G.S. Kwon. "Clinical developments in drug delivery nanotechnology." *Adv. Drug Deliv. Rev.* 60(8): 861-862 (2008). PMID: 18358557.
14. S. Cai, Y. Xie, T. Bagby, M.S. Cohen, M.L. Forrest. "Intralymphatic chemotherapy using a hyaluronan-cisplatin conjugate." *J. Surg. Res.* 147(2): 247-252 (2008). PMID: 18498877. **Featured on issue cover.** PMCID: PMC2430723.
15. M.P. Xiong, J.A. Yáñez, C.M. Remsberg, Y. Ohgami, G.S. Kwon, N.M. Davies, M.L. Forrest. "Formulation of a geldanamycin prodrug in mPEG-b-PCL micelles greatly enhances tolerability and pharmacokinetics in rats." *J. Control. Rel.* 129(1):33-40 (2008). PMID: 18456363 PMCID: PMC2492396
16. K.R. Vega-Villa, J.A. Yáñez, C.M. Remsberg, M.L. Forrest, N.M. Davies. "Clinical Toxicities of Nanocarrier Systems." *Adv. Drug Deliv. Rev.* 60(8):929-938 (2008). PMID: 18313790
17. K.L. Aillon, Y. Xie, N. El-Gendy, C.J. Berkland, M.L. Forrest. "Effects of nanomaterial physicochemical properties on in vivo toxicity." *Adv. Drug. Deliv. Rev.*, 61(6):457-66 (2009). PMID 19386275. PMCID: PMC2743376
18. M.P. Xiong, J.A. Yáñez, G.S. Kwon, N.M. Davies, M.L. Forrest. "A cremophor-free formulation for tanespirmycin (17-AAG) using PEO-b-PDLLA micelles: characterization and pharmacokinetics in rats." *J. Pharm. Sci.* 98(4):1577-86 (2009). PMID 18752263 PMCID: PMC2649998
19. Xie, Y, M.S. Cohen, M.L. Forrest. "Drug Delivery to the Lymphatic System: Importance in Future Cancer Diagnosis and Therapies." *Expert Opin. Drug Deliv.*, 6:785-92 (2009). PMID: 19563270. PMCID: PMC3102644.
20. S.K. Nune, P. Gunda, P.K. Thallapally, Y.Y. Lin, M.L. Forrest, C.J. Berkland. "Nanoparticles for biomedical imaging." *Expert Opin. Drug Deliv.* 6(11):1175-94 (2009). PMID: 19743894. PMCID: PMC3097035.
21. M.S. Cohen, S. Cai, M.L. Forrest. "A Novel Intralymphatic Nanocarrier-Delivery System for Cisplatin Therapy in Breast Cancer with Improved Tumor Efficacy and Lower Systemic Toxicity In Vivo." *Am. J. Surg.*, 198(6):781-6 (2009). PMID 19969129. PMCID: PMC2791715.
22. S. Cai, Y. Xie, N.M. Davies, M.S. Cohen, M.L. Forrest. "Pharmacokinetics and disposition of a localized lymphatic polymeric hyaluronan conjugate of cisplatin in rats." *J. Pharm. Sci.*, 99(6):2664-71 (2010). PMID: 19960530
23. R. Ndolo, M.L. Forrest, J.P. Krise. "The role of lysosomes in limiting drug toxicity in mice." *J. Pharmacol. Exp. Ther.* 333(1):120-8 (2010). PMID: 20056778 PMCID: PMC2846018
24. D.A. Rao, M.L. Forrest, A.W. Alani, G.S. Kwon, J.R. Robinson. "Biodegradable PLGA based nanoparticles for sustained regional lymphatic drug delivery." *J. Pharm. Sci.*, 99(4):2018-31 (2010). PMID: 19902520
25. Y. Xie, K.L. Aillon, S. Cai, J.M. Christian, N.M. Davies, C.J. Berkland, M.L. Forrest. "Pulmonary delivery of cisplatin-hyaluronan conjugates via endotracheal instillation for the treatment of lung cancer." *Intl. J. Pharm.* 392(1-2):156-63 (2010). PMID: 20363303 PMCID: PMC2873163
26. S. Cai, S. Thati, T.R. Bagby, H-M. Diab, N.M. Davies, M.S. Cohen, M.L. Forrest. "Localized doxorubicin chemotherapy with a biopolymeric nanocarrier improves survival and reduces toxicity in xenografts of human breast cancer." *J. Control. Rel.* 146(2):212-218 (2010). PMID: 20403395 PMCID: PMC2918704
27. Y. Xie, S. Duan, M.L. Forrest. "Alkyne- and 1,6-elimination- succinimidyl carbonate- terminated heterobifunctional poly(ethylene glycol) for reversible "click" PEGylation." *Drug Discov. Ther.* 4(4):240-245 (2010). PMID: 21949558 PMCID: PMC3178183
28. S. Cai, N.M. Davies, M.S. Cohen, M.L. Forrest. "Carried-based intralymphatic cisplatin chemotherapy for the treatment of metastatic squamous cell carcinoma of the head & neck." *Ther. Deliv.* 1(2):237-245 (2010). PMID: 21339844 PMCID: PMC3039877

29. R. A. Ndolo, D.T. Jacobs, M.L. Forrest, J.P. Krise. "Intracellular distribution-based anticancer drug targeting: exploiting a lysosomal acidification defect associated with cancer cells." *Mol. Cell Pharmacol.* 2(4):131-126 (2010). PMID: 21274418 PMCID: PMC3026327
30. J.A. Yáñez, C.M. Remsberg, C.L. Sayre, M.L. Forrest, N.M. Davies. "Flip-flop pharmacokinetics – reversal of disposition. Challenges and opportunities during drug development." *Ther. Deliv.* 2(5):643-672 (2011). PMID: 21837267 PMCID: PMC3152312
31. S.K. Nune, P. Gunda, B.K. Majeti, P.K. Thallapally, M.L. Forrest. "Advances in lymphatic imaging and drug delivery." *Adv. Drug. Deliv. Rev.* 63(10-11):867-85 (2011). PMID: 21718728. PMCID: 3164439.
32. S. Cai, Q. Yang, M.L. Forrest. "Lymphatic drug delivery using engineered liposomes and solid lipid nanoparticles." *Adv. Drug. Deliv. Rev.* 63(10-11):901-908 (2011). PMID: 21712055. PMCID: PMC3164476.
33. M.S. Cohen, M.L. Forrest. "Lymphatic drug delivery: Therapy, Imaging and Nanotechnology." *Adv. Drug. Deliv. Rev.* 63(10-11):865-866 (2011). PMID: 21669240
34. S.M. Cohen, R. Mukerji, S. Cai, I. Damjanov, M.L. Forrest*, M.S. Cohen*. "Subcutaneous delivery of nanoconjugated doxorubicin and cisplatin for locally advanced breast cancer demonstrate improved efficacy and decreased toxicity at lower doses than standard systemic combination therapy in vivo." *Am. J. Surg.* 202(6):646-653 (2011) * co-corresponding authors PMID: 21982998.
35. V. Shum, N. Gabrielson, M.L. Forrest, D.W. Pack. "The effects of PVP(Fe(III)) Catalyst on polymer molecular weight and gene delivery via biodegradable cross-linked polyethylenimine." *Pharm. Res.* 29(2):500-10 (2011). PMID: 21892707 PMCID: PMC3465843
36. S. Cai, T. Bagby, M.L. Forrest. "Development of regional chemotherapies: feasibility, safety and efficacy in clinical use and preclinical studies." *Ther. Deliv.* 2(11):1467-1484 (2011). PMID: 22229080 PMCID: PMC3249754
37. Q. Yang, H. Cui, S. Cai, X. Yang, M.L. Forrest. "In vivo photoacoustic imaging of chemotherapy-induced apoptosis in squamous cell carcinoma using a near-infrared caspase-9 probe" *J. Biomed. Optics.* 16(11):116026 (2011) PMID: 22112131 PMCID: PMC3221716
Included in: Virtual Journal of Biological Physics, 22(9) (2011).
38. Y. Luan, Q. Yang, Y. Xie, S. Duan, S. Cai, M.L. Forrest. "A Sensitive Near-Infrared Fluorescent Probe for Caspase: Synthesis and Application in Cell Imaging." *Drug Discov. Ther.* 5(5):220-226 (2011). PMID: 22282719 PMCID: PMC3265084
39. S. Sharifi, S. Behzadi, S. Laurent, M.L. Forrest, P. Stroeve, M. Mahmoudi. "Toxicity of Nanomaterials." *Chem. Soc. Rev.* 41: 2323-2343 (2012). PMID: 22170510 **Featured as most read article in Dec11 and Jan12.**
40. S. Duan, S. Cai, Q. Yang, M. L. Forrest. "Multi-arm polymeric nanocarrier as a nitric oxide delivery platform for chemotherapy of head and neck squamous cell carcinoma" *Biomaterials* 33(11):3243-3253 (2012). PMID: 22281420 PMCID: PMC3572206
41. S. Duan, S. Cai, Y. Xie, T.R. Bagby, M.L. Forrest. "Synthesis and characterization of a multi-arm poly(acrylic acid) star polymer for application in delivery of cisplatin and a nitric oxide." *J. Polym. Sci. A Polym. Chem.* 50(13): 2715-24 (2012).
42. Y. Zhao, S. Duan, X. Zeng, C. Liu, B. Li, M.L. Forrest. "Prodrug strategy for PSMA-targeted delivery of TGX-221 to prostate cancer cells" *Mol. Pharm.* 9(6):1705-16 (2012). PMID: 22494444 PMCID: PMC3601665
43. T. R. Bagby, S. Cai, S. Thati, S. Duan, D.J. Aires, M.L. Forrest. "Impact of Molecular Weight on Lymphatic Drainage of a Biopolymer-Based Imaging Agent." *Pharmaceutics* 4, 276-295 (2012). PMID: 24300232 PMCID: PMC3834911
44. E.A. Mohamed, M. M. Meshali, C.M. Remsberg, Yunqi Zhao, T.M. Borg, A. Monem, M. Foda, N.M. Davies, M.L. Forrest. "Vorinostat with Sustained Release and High Solubility in Poly(ethylene glycol)-b-poly(DL-lactic acid) Micelle Nanocarriers: Characterization and Effects on Pharmacokinetics in Rat Serum and Urine" *J. Pharm. Sci.* 101(10):3787-98 (2012). PMID: 22806441
45. R. Ndolo, Y. Luan, S. Duan, M.L. Forrest, J. Krise. "Lysosomotropic Properties of Weakly Basic Anticancer Agents Promote Cancer Cell Selectivity" *PLoS One* 7(11):e49366 (2012). PMID 23145164 PMCID: PMC3492287
46. C. Remsberg, Y. Zhao, J. Takemoto, R. Bertram, N. Davies, M.L. Forrest. "Pharmacokinetic Evaluation of a DSPE-PEG2000 Micellar Formulation of Ridaforolimus in Rat." *Pharmaceutics* 5(1):81-91 (2012)
47. R. Venable, D. Worley, D. Gustafson, R. Hansen, E.J. Ehrhart, D. Aires, S. Cai, M. Cohen, M.L. Forrest. "Hyaluronan cisplatin conjugate in five dogs with soft tissue sarcomas." *Am. J. Vet. Res.* 73(12):1969-76 (2012). PMID: 23176425 PMCID: PMC3778682
48. T.R. Bagby, S. Duan, S. Cai, S. Thati, C. Berkland, D. Aires, M.L. Forrest. "Lymphatic trafficking kinetics and near-infrared imaging using star polymer architectures with controlled anionic character". *Eur. J. Pharm. Sci.* 47(1):287-94 (2013). PMID 22546180 PMCID: PMC4301975
49. A.J. Mellot, M.L. Forrest, M.S. Detamore. "Physical non-viral gene delivery methods for tissue engineering." *Ann. Biomed. Eng.* 41(3):446-68 (2013) PMID: 23099792
50. K. Devarajan, M.L. Forrest, M.S. Detamore, H. Staecker. "Adenovector Mediated Delivery to Human Umbilical Cord Mesenchymal Stromal Cells Induces Inner Ear Cell Phenotype." *Cellular Reprogramming* 15(1):43-54 (2013). PMID: 23379581 PMCID: PMC4298749

51. S. Cohen, N. Rockefeller, R. Makerji, D. Durham, M. Forrest, S. Cai, M. Cohen, Y. Shnayder. "Efficacy and Toxicity of Peritumoral Delivery of Nanoconjugated Cisplatin in an In Vivo Murine Model of Head and Neck Squamous Cell Carcinoma." *JAMA Otolaryngology-Head & Neck Surgery* 139(4):382-7 (2013). PMID: 23599074 PMCID: PMC4306558
52. T. Zhang, H. Cui, H-C. Chang, X. Yang, M.L. Forrest. "Photoacoustic imaging of biological tissues with radiation damaged nanodiamonds as a near infrared optical contrast agent." *Journal of Biomedical Optics*. 18(2):26018 (2013). PMID: 23400417 PMCID: PMC3569583
53. J. Sestak, M. Mullins, L. Northrup, S. Thati, M.L. Forrest, T. Siahaan, C. Berkland. "Single-step grafting of aminooxy-peptides to hyaluronan: A simple approach to multifunctional therapeutics for experimental autoimmune encephalomyelitis." *Journal of Controlled Release*. 168(3):334-40 (2013). PMID: 23541930 PMCID: PMC3672265
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2. Mark Francis Seán Craven, Allison Jo Brachtenbach, Kenneth Ryan Moulder, Greta Van Slyke, Nicholas Larson, Nicholas J. Mantis, C. Russell Middaugh, Marcus Laird Forrest, "Synthesis and Characterization of Modified Nanodiamonds for Use as a Potential Vaccine Adjuvant Delivery Platform for a Candidate Ricin Toxin Vaccine" Submitted to J. Pharm. Sci.
3. A. Samaddar, M. Laird Forrest, X. Yang. "An in vivo study on the feasibility of catheter-assisted pulsed focused ultrasound ablation of atherosclerotic plaques" Submitted to Ultrasound in Medicine & Biology.

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15. Yáñez, J.A., M.L. Forrest, Y. Ohgami, G.S. Kwon, N.M. Davies. "Pharmacometrics and Delivery of Novel Nanoformulated PEG-b-Poly(ϵ -caprolactone) Micelles of Rapamycin." Poster at American Association of Pharmaceutical Scientists Annual Meeting, San Antonio, TX, October 2006.
16. Forrest, M.L., J.A. Yáñez, C.M. Remsberg, G.S. Kwon, N.M. Davies. "Nanocarrier Formulation of a Geldanamycin Prodrug in ABC Micelles: Pharmacokinetics and Tolerability in Rats." Poster at Utah 13th Drug Delivery Symposium, Salt Lake City, UT, February 2007.
17. Forrest, M.L., J.A. Yáñez, C.M. Remsberg, G.S. Kwon, N.M. Davies. "Pharmacokinetics of Nanoencapsulated Paclitaxel Hexonate Prodrug in Poly(ethylene glycol)-block-poly(epsilon-caprolactone) Micelles." Poster at 34th Annual Meeting of the Controlled Release Society, Long Beach, CA, July 2007.
18. Xiong, M.P., J.A. Yáñez, G.S. Kwon, N.M. Davies, M.L. Forrest. "A Cremophor-free Formulation for 17-AAG (tanespimycin) using PEO-b-PDLA Micelles: Characterization and Pharmacokinetics in Rats." Poster at 34th Annual Meeting of the Controlled Release Society, Long Beach, CA, July 2007.
19. Forrest, M.L., J.A. Yáñez, C.M. Remsberg, G.S. Kwon, N.M. Davies. "Pharmacokinetics of Nanoencapsulated Paclitaxel Hexonate Prodrug in Poly(ethylene glycol)-block-poly(epsilon-caprolactone) Micelles." Poster at 34th Annual Meeting of the Controlled Release Society, Long Beach, CA, July 2007.
20. M.S. Cohen, H. Diab, S. Cai, Y. Xie, M.L. Forrest, "Intralymphatic delivery system for treatment of breast cancer." Presented at American Society of Clinical Oncology – 2007 Breast Cancer Symposium, San Francisco, CA, September 7-8, 2007.

21. Yáñez, J.A., C.M. Remsberg, G.S. Kwon, N.M. Davies, M.L. Forrest. "Pharmacokinetics, Delivery, and Tolerability of Novel Nanoencapsulated PEG-b-Poly(epsilon-caprolactone) Micelles of Geldanamycin Prodrugs in Rats." Presented at American Association of Pharmaceutical Scientists Annual Meeting, San Diego, CA, November, 2007.
22. Remsberg, C.M., J.A. Yáñez, G.S. Kwon, N.M. Davies, M.L. Forrest. "Pharmacokinetic and Tissue Distribution Analysis of a Paclitaxel Prodrug Nanoencapsulated in PEG-b-Poly(epsilon-caprolactone) Micelles." Presented at American Association of Pharmaceutical Scientists Annual Meeting, San Diego, CA, November, 2007.
23. Forrest, M.L., J.A. Yáñez, M.P. Xiong, G.S. Kwon, N.M. Davies. "Pharmacokinetics and Characterization of 17-AAG Geldanamycin Analogue (Tanespimycin) in a Poly(ethylene oxide)-b-Poly(D-lactic acid) Micelle Nanocarrier." Presented at American Association of Pharmaceutical Scientists Annual Meeting, San Diego, CA, November, 2007.
24. Cai, S., Y. Xie, H. Diab, M.S. Cohen, M.L. Forrest. "Nanocarrier delivery of cisplatin to the lymphatics: In vitro and in vivo evaluation in rodents." Presented at KUMC Masonic Cancer Center Annual Meeting, December 1, 2007.
25. Cai, S., Y. Xie, T. Bagby, M.S. Cohen, M.L. Forrest. "A Hyaluronan nanocarrier for intralymphatic drug delivery: synthesis, characterization, and pharmacokinetics in rats." Presented at American Association for Cancer Research Annual Meeting, San Diego, April 14, 2008.
26. Cai, S., M.S. Cohen, M.L. Forrest. "Intralymphatic treatment of breast cancer: synthesis, characterization and pharmacokinetics in rodents." Presented at Abbott Labs, Abbott Park, IL, June 13, 2008.
27. M.S. Cohen, S. Cai, M.L. Forrest. "Intralymphatic nanocarrier chemotherapy for breast cancer: Improved delivery to locoregional lymph nodes." Presented at AACR Translational Cancer Medicine: Cancer Clinical Trials and Personalized Medicine conference, Monterey, CA, July 21, 2008.
28. T. Bagby, M.L. Forrest. "Development of Stable Melphalan Formulations for Melanoma." Presented at KU Cancer Center Research Symposium, Kansas City, November 7, 2008.
29. Y. Xie, K.L. Aillon, C.J. Berkland, M.L. Forrest. "Pulmonary Delivery of Cisplatin-Hyaluronan Conjugates for the Treatment of Lung Cancer: Synthesis, Pharmacokinetics, and Tissue Distribution in Rats." Presented at 2008 Cancer Center Research Symposium, Kansas City, November 7, 2008.
30. S. Cai, Y. Xie, T.R. Bagby, M.S. Cohen, M.L. Forrest. "Intralymphatic drug delivery for treatment of breast cancer and head and neck cancer" Presented at The University of Kansas Cancer Center Symposium at the University of Kansas Medical Center, Kansas City, November 7, 2008.
31. S. Thati, S. Cai, T.R. Bagby, M.S. Cohen, M.L. Forrest. "Intralymphatic drug delivery for treatment of breast cancer: Synthesis, characterization, pharmacokinetics and anti-cancer activity in rodents" Presented at The University of Kansas Cancer Center Symposium at the University of Kansas Medical Center, Kansas City, November 7, 2008.
32. S. Cai, Y. Xie, T.R. Bagby, M.S. Cohen, M.L. Forrest. "Intralymphatic drug delivery for treatment of breast cancer: Synthesis, characterization, and pharmacokinetics in rodents." Presented at Higuchi Bioscience Talks 2008 at University of Kansas, Lawrence, December 5, 2008.
33. T.R. Bagby, Y. Xie, M.L. Forrest. "Reversible Shielding of Viruses for Cancer Gene Therapy." Presented at the 14th International Symposium on Recent Advances in Drug Delivery Systems: Drug Carriers-Progress Beyond Delivery, Salt Lake City, UT, February 16, 2009.
34. Y. Xie, K.L. Aillon, C. Berkland, M.L. Forrest. "Nanocarrier delivery system for chemotherapeutic treatment of lung cancer." Presented at the 14th International Symposium on Recent Advances in Drug Delivery Systems: Drug Carriers-Progress Beyond Delivery, Salt Lake City, UT, February 16, 2009.
35. S. Cai, Y. Xie, T.R. Bagby, S. Thati, B.J. Johnston, M.S. Cohen, M.L. Forrest. "Intralymphatic drug delivery for treatment of breast cancer and head and neck cancer: synthesis, characterization, pharmacokinetics and anti-cancer activity in rodents." Presented at 14th international symposium on recent advances in drug delivery systems, Salt Lake City, UT, February 16, 2009.
36. Forrest, M.L. "Drug nanocarriers for intralymphatic chemotherapy of breast cancer." Presented at INBRE Conference, Oklahoma City, OK, May 28, 2009.
37. T.R. Bagby and M.L. Forrest. "Lymphatic Imaging of Mice." Presented at The University of Kansas Department of Pharmaceutical Chemistry Fall Retreat, Lawrence, KS, October 15, 2009.
38. T.R. Bagby, S. Cai, S. Thati, Y. Xie, N.M. Davies, M.S. Cohen and M.L. Forrest. "Localized Doxorubicin Chemotherapy with a Biopolymeric Nanocarrier Improves Survival and Reduces Toxicity in Xenografts of Human Breast Cancer." Presented at the Faculty Research Day at the University of Kansas Medical Center, Kansas City, KS, November 3, 2009.
39. Remsberg, C.M., J.K. Takemoto, R.M. Bertram, M.L. Forrest, N.M. Davies. "Development of a novel micelle formulation and pharmacometrics of the mTOR inhibitor, deforolimus." Presented at Canadian Society for Pharmaceutical Sciences in Richmond, British Columbia, June 2-5, 2010.

40. Remsberg, C.M., J.K. Takemoto, R.M. Bertram, M.L. Forrest, N.M. Davies. "Nanoformulation development and pharmacometrics of the histone deacetylase inhibitor vorinostat." Presented at Canadian Society for Pharmaceutical Sciences in Richmond, BC, June 2-5, 2010.
41. S. Cai, S. Duan, Q. Yang, M.L. Forrest. "Lymphatic Delivery of Cisplatin and Nitric Oxide Prodrug JS-K for the Treatment of Metastatic Head and Neck Squamous Cell Cancer." Presented at Department of Pharmaceutical Chemistry Fall Retreat Symposium, University of Kansas, Baldwin City, Kansas, October 14, 2010
42. S. Cai, M.L. Forrest. "Lymphatic Drug Delivery for the Treatment of Metastatic Cancers." Presented at School of Pharmacy Graduate Honors Symposium, University of Kansas, Lawrence, Kansas, April 15, 2010
43. T.R. Bagby, S. Thati, S. Cai, and M.L. Forrest. "Effect of Molecular Weight on Lymphatic Drainage Patterns and Kinetics of Localized Drug Carriers." Presented at Pharmaceutics Graduate Student Research Meeting, Columbus, Ohio, June 18, 2010.
44. Q. Yang, S. Cai, T.R. Bagby, S. Duan, M.L. Forrest. "Encapsulation of anticancer drugs and imaging agents in nanoparticles for lymphatic cancer treatment." Presented at Department of Pharmaceutical Chemistry Fall Retreat Symposium, Baldwin city, KS, October 14, 2010
45. T.R. Bagby, S. Thati, S. Duan, S. Cai, and M.L. Forrest. "Effect of Molecular Weight and Charge on Lymphatic Drainage Patterns and Kinetics of Localized Drug Carriers Using Whole Body Fluorescent Imaging." Presented at the Fourth Annual University of Kansas Department of Pharmaceutical Chemistry Fall Retreat, Lawrence, KS, October 15, 2010.
46. Y. Zhao, S. Duan, M.L. Forrest. "PSMA-targeted Nanocarriers for Delivery of TGX-221 to Prostate Cancer Cells." Presented at Department of Pharmaceutical Chemistry Fall Retreat Symposium, Baldwin city, KS, October 14, 2010
47. Duan, S.; S. Cai; T.R. Bagby; M.L. Forrest. "Synthesis of sugar and carbonate star polymers for localized chemotherapy". Presented at the 45th Midwest Regional Meeting of the American Chemical Society, Wichita, KS, October 27-30, 2010.
48. Takemoto, J.K., C.M. Remsberg, M.L. Forrest, N.M. Davies. "Nanomicellar delivery pharmacokinetics and pharmacodynamics of the histone deacetylase inhibitor suberoylanilide hydroxamic acid." Presented at the American Association of Pharmaceutical Scientists Annual Meeting and Exposition, New Orleans, LA, November 13-14, 2010.
49. Remsberg, C.M., M.L. Forrest, N.M. Davies. "Quantitative determination of ridaforolimus, a mTOR inhibitor, in rat plasma using LC/ESI/MS." Presented at the FIP Pharmaceutical Sciences 2010 World Congress, American Association of Pharmaceutical Scientists Annual Meeting and Exposition, New Orleans, LA, November 13-14, 2010.
50. Cai, S., Y. Xie, S. Thati, T.R. Bagby, M.S. Cohen, M.L. Forrest. "Lymphatic delivery of cisplatin for the treatment of metastatic head and neck squamous cell cancer." Presented at Globalization of Pharmaceutics Education Network (GPEN), University of North Carolina, Chapel Hill, NC, November 10-12, 2010.
51. Bagby, T.R., S. Thati, S. Duan, S. Cai, M.L. Forrest. "Effect of Molecular Weight and Charge on Lymphatic Drainage Patterns and Kinetics of Localized Drug Carriers." Presented at Globalization of Pharmaceutics Education Network (GPEN), University of North Carolina, Chapel Hill, NC, November 10-12, 2010.
52. S. Cai, S. Duan, Q. Yang, M.L. Forrest. "Targeted Drug Platform for Combination Nitric Oxide and Platinum Chemotherapy of Head and Neck Cancer." Presented at Chemical Biology NIH Training Grant Symposium, University of Kansas, Lawrence, Kansas, December 7, 2010
53. S. Cai, S. Duan, M.S. Cohen, M.L. Forrest. "Targeted Drug Platform for Combination Nitric Oxide and Platinum Chemotherapy of Head and Neck Cancer." Presented at Kansas IDEa Network of Biomedical Research Excellence Symposium, Kansas City, Kansas, January 15, 2011
54. S. Cai, M.L. Forrest. "Development of Drug Delivery Platforms for Locoregional Treatment of Carcinomas." Presented at Kansas IDEa Network of Biomedical Research Excellence Symposium, Kansas City, Kansas, January 15, 2011.
55. S. Cohen, M. Cohen, R. Mukerji, S. Cai, I. Damjanov, M.L. Forrest. "Subcutaneous Delivery of Nanoconjugated Doxorubicin/Cisplatin for Locally Advanced Breast Cancer Demonstrates Improved Efficacy and Decreased Toxicity Over Standard Systemic." Resident, Postdoc, Fellows Research Day, Kansas City, Kansas, May 5, 2011.
56. M.L. Forrest, S. Cai, S. Duan, M.S. Cohen, Q. Yang. "Nitric oxide-releasing nanoparticle combination therapy to overcome drug resistance in platinum-resistant breast cancers." Presented at American Society of Clinical Oncology Breast Symposium, San Francisco, CA, September 9, 2011.
57. S. M. Cohen, R. Mukerji, S. Cai, I. Damjanov, M.L. Forrest (presenter), M.S. Cohen. "Evaluation of complete pathologic response and histologic toxicity using a subcutaneous delivery system with combination nanoconjugated doxorubicin and cisplatin for locally advanced breast cancer in vivo." Presented at American Society of Clinical Oncology Breast Symposium, San Francisco, CA, September 9, 2011.

58. K. Devarajan, M.L. Forrest, H. Staecker, M.S. Detamore. "Adenoviral mediated gene delivery to human umbilical cord mesenchymal stem cells for inner ear hair cell differentiation." Biomedical Engineering Society, Hartford, CT, October, 2011.
59. C.L. Sayre, S.E. Martinez, E.A. Mohamed, M.M. Meshali, C.M. Remsberg, Y. Zhao, T. M. Borg. A.M.M. Foda, J.K. Takemoto, M.L. Forrest, N.M. Davies. "Vorinostat with sustained released and high solubility in poly(ethylene glycol)-b-poly(DL-lactic acid) micelle nanocarriers: characterization and effects on pharmacokinetics in rat serum and urine." Canadian Society for Pharmaceutical Sciences Annual Symposium, Toronto, June 2012.
60. S. Cai, Q. Yang, S. Siller, D. Worley, L. Schneider, D. Aires, M. Cohen, M.L. Forrest. "A safe and efficacious approach to cisplatin chemotherapy: loco-regional injection of HylaPlat in canines." American Association of Pharmaceutical Scientists Annual Meeting, Chicago, IL, October, 2012.
61. Ashleigh Steckly, Ming Li Tan, Laird Forrest, Prajnaparamita Dhar. "Time Dependent effects of Engineered Nanoparticles on the Biophysical Function of a Model Lung Surfactant". Biophysical Society Annual Meeting. Philadelphia, PA, February 6, 2013.
62. Forrest, M.L. "Formulation development and pharmacokinetics of subcutaneously injected HylaPlat in spontaneous canine cancers" International Society for Hyalurnan Sciences. Oklahoma City, OK. June 3, 2013.
63. T. Zhang, Forrest, M.L. "Nanodiamond-based contrast agents for photoacoustic imaging." SPIE International Society for optics and photonics. San Diego, CA. August 25, 2013.
64. S. Cai, D. Vartia, M. Forrest, J. Bryan, D. Aires, M.L. Forrest. "A safe and efficacious approach to cisplatin chemotherapy: loco-regional injection of HylaPlat in canines." American Association of Cancer Research Annual Meeting, San Diego, CA, April 2014.
65. S. Cai, W.C. Forrest, J. Bryan, D. Aires, M.L. Forrest. "Development of Locoregional Polymeric Cisplatin Chemotherapy: Clinical Trials in Canines with Spontaneous Cancers" Controlled Release Society Annual Meeting, Chicago, IL, June 2014.
66. M. L. Forrest, S. Cai, W.C. Forrest, T. Zhang, M. Cohen, J. Bryan, D. Aires. "Development of Locoregional Polymeric Cisplatin Chemotherapy: Clinical Trials in Canines with Spontaneous Cancers," American Association for Pharmaceutical Sciences (AAPS) Annual Conference, San Diego, CA, November 2014
67. P.T. White, C. Subramanian, P.T. Grogan, S. Cai, M.L. Forrest, M.S. Cohen. "Nanoparticle-targeting of breast cancer stem cells improves efficacy and durability of chemotherapy." Association for Academic Surgery Congress, Las Vegas, NV, February 2015.
68. S. Ishiguro, D. Uppalapati, S. Cai, J. Hodge, L. Forrest, M. Tamura. "A local chemotherapy with hyaluronan-cisplatin conjugate significantly attenuates growth of lung adenocarcinoma xenografts in mouse model," American Association for Cancer Research (AACR) Annual Conference, Philadelphia, PA, April 22, 2015.
69. Samaa Alrushaid, Casey L. Sayre, Zaid Al Maayh, Yunqi Zhao, M Laird Forrest, Sanjeeva Senadheera, Kevin Chaboyer, Hope D Anderson, Ayman El-Kadi and Neal M. Davies "Mechanistically Elucidating the *In-Vitro* Safety and Efficacy of a Novel Doxorubicin Derivative." American Association for Pharmaceutical Sciences (AAPS) Annual Conference, Denver, CO, November 2016.
70. Peter Kleindl, S. P. Sanjeeva Nilendra Senadheera, Samantha Farb, M. Laird Forrest. "Development of novel immunosuppressant prodrugs for treatment of ulcerative colitis." Federation of American Societies for Experimental Biology (FASEB) Gastrointestinal Tract XVII: Current Biology of the GI Tract, Mucosa, Microbiota, and Beyond. Steamboat Springs, CO. July 30-Aug 4, 2017.
71. Ninad Varkhede, Christian Schoeneich, Laird Forrest. "Pre-systemic In Vitro Metabolism of Therapeutic Proteins After Subcutaneous Administration and Its Utility for a Semi-PBPK Model" American Association for Pharmaceutical Sciences (AAPS) Annual Conference, San Diego, CA, November 2017
72. K. R. Moulder, F. J. Martinez-Becerra, W. L. Picking, M. L. Forrest. "Enhancing immunological response towards Shigella spp. through a multivalent subunit vaccine" American Association for Pharmaceutical Sciences (AAPS) Annual Conference, San Diego, CA, November 2017
73. R. Lu, C. Groer, K.R. Moulder, P.A. Kleindl, M.L. Forrest. "An extended release formulation of toll like receptor 7 agonist analogs." KU Pharm Chem. Fall Retreat. Oct. 2018
74. Peter A. Kleindl, S. P. Sanjeeva Nilendra Senadheera, M. Laird Forrest. (October 2018) "Targeted delivery of potent immunosuppressants for treatment of ulcerative colitis." Department of Pharmaceutical Chemistry Annual Fall Retreat, Lawrence, Kansas.
75. Peter A. Kleindl, S. P. Sanjeeva Nilendra Senadheera, M. Laird Forrest. (September 2018) "Targeted delivery of potent immunosuppressants for treatment of ulcerative colitis." Globalization of Pharmaceuticals Education Network (GPEN) 2018 Conference, Singapore.

76. Peter A. Kleindl, Jian Xiong, Asha Hewarathna, Maulik K. Nariya, Olivier Mozziconacci, Jae Hyun Kim, Sangeeta B. Joshi, C. Russell Middaugh, Christian Schöneich, Eric J. Deeds, David B. Volkin, M. Laird Forrest. (January 2018) “Physicochemical and biological characterization of crofelemer for identification of critical quality attributes using a machine learning approach,” 33rd Graduate Honors Symposium, Lawrence, Kansas.
77. Moulder KR, Zhang T, Forrest ML, “Development and biophysical characterization of a sustained release formulation for Coversin, a C5 Complement Inhibitor.” *Department of Pharmaceutical Chemistry Annual Fall Retreat, 2018*
78. Hunt, J; Kleindl, P; Forrest, L. “Further exploration of the SAR of imidazoquinolines; Identification of potent C7 substituted imidazoquinolines” *Department of Pharmaceutical Chemistry Annual Fall Retreat, 2018*
79. Brachtenbach A, Moulder KR, Forrest ML, “Development and characterization of a novel nanoparticle for the sustained release of antigens following subcutaneous injection.” *Undergraduate Research Symposium, University of Kansas, 2018*
80. Brachtenbach A, Moulder KR, Forrest ML, “Development of nanodiamonds as a vaccine delivery system.” *Summer Undergraduate Research Poster Session, University of Kansas, 2018*
81. Liu R, Mull D, Forrest ML. Structural features that impede purification and characterization: isolating diesters of oxaloacetic acid to investigate the role of mitochondrial dysfunction in Alzheimer’s disease, *Undergraduate Research Poster Session, University of Kansas, 2022*
82. Huan Gong, J. Daniel Griffin, Chad E. Groer, Xiaoqing Wu³, Moustafa M. Abdelaziz, Sa Wu¹, Liang Xu, M. Laird Forrest¹, and Cory J. Berkland. “Glatiramer Acetate Enhances Tumor Retention and Mitigates Systemic Toxicity of TLR9 Agonists as Intratumoral Immunotherapy” *Fall retreat, University of Kansas, Oct. 17, 2023.*
83. Moustafa Abdelaziz, Yilue Zhang, David Richards, Chad Groer, Christian Schoeneich, Laird Forrest. “Studying the Impact of Oxidative Modifications on the Bioavailability of Subcutaneously Administered Biotherapeutics – Assay Development and Validation” *Fall retreat, University of Kansas, Oct. 17, 2023.*
84. Huan Gong, J. Daniel Griffin, Chad E. Groer, Xiaoqing Wu, Sa Wu, Moustafa M. Abdelaziz, Liang Xu, M. Laird Forrest, and Cory J. Berkland. “Glatiramer acetate enhances tumor retention and mitigates systemic toxicity of TLR9 agonists as intratumoral immunotherapy” *American Association for Cancer Research National Meeting, San Diego, CA. Apr. 8, 2024.*
85. Moustafa Abdelaziz, Yilue Zhang, David Richards, Huan Gong, Chad Groer, Christian Schoeneich, Laird Forrest. “The impact of oxidative modifications on the bioavailability of subcutaneously administered therapeutic monoclonal antibodies” *Fall retreat, University of Kansas, Oct. 15, 2024.*
86. Prakash Adhikari, Abhirup Samaddar, Dalin Wang, Jinxi Wang, M. Laird Forrest, and Xinmai Yang. “Minimally Invasive Catheter-assisted Focused Ultrasound for Ablation of Atherosclerosis in a Rabbit Model.” *Acoustical Society of America Annual Meeting. Chicago, IL. Nov. 19, 2024.*
87. Chioma J. Okereke, Abhirup Samaddar, M. Laird Forrest, and Xinmai Yang. “An in vitro study on the feasibility of surface modified catheter-assisted pulsed focused ultrasound ablation of deep vein thrombus” *National Society of Black Physicists Conference, Houston, TX. Nov. 13, 2024.*
88. Rong X. Liu, Sa Wu, M. Abdelaziz, M. Craven, M. L. Forrest. “Establishing an in vivo patient-derived xenograft model for studying renal cell carcinoma.” *Mossberg Honors Symposium, Lawrence, KS. Jan. 15, 2025.*

Invited Lectures and Conference Podium Presentations (chronological order)

1. M.L. Forrest, D.W. Pack. “Quantitative assay for polyplex release from endolysosomes: implications for design of gene delivery vehicles.” *AICHE Annual Meeting, Los Angeles, CA, November 13, 2000.*
2. M.L. Forrest, D.W. Pack. “Quantitation of endolysosomal trafficking of polyplex gene delivery vehicles.” 28th International Symposium on Controlled Release of Bioactive Materials, San Diego, California, June 27, 2001.
3. Forrest, M.L. and D.W. Pack. “Intelligent Design of Gene Delivery Vehicles: Is Endosomal Buffering Necessary?” *American Institute of Chemical Engineering National Meeting, Reno, NV, November 2001.*
4. Forrest, M.L. and D.W. Pack. “A Degradable Derivative of Polyethylenimine that Provides Higher Gene Transfer Efficiency and Negligible Cytotoxicity.” *American Institute of Chemical Engineering Annual National Meeting, Indianapolis, IN, November 2002.*
5. M.L. Forrest, J.T. Koerber, D.W. Pack. “Non-viral gene delivery vectors based on modified polyethylenimine.” 30th International Symposium on Controlled Release of Bioactive Materials, Glasgow, Scotland, June 22, 2003.
6. M.L. Forrest, J.T. Koerber, D.W. Pack. “Highly efficient, biodegradable polyethylenimine gene delivery vehicles.” 30th International Symposium on Controlled Release of Bioactive Materials, Glasgow, Scotland, June 22, 2003.
7. M.L. Forrest, J.T. Koerber, and D.W. Pack. “Enhancement of PEI-mediated gene delivery by acetylation of primary and secondary amines.” *AICHE Annual Meeting, San Francisco, CA, November 20, 2003.*

8. N. Gabrielson, M.L. Forrest, and D.W. Pack. "Reduction of polyethylenimine buffering capacity enhances in-vitro gene delivery activity." American Society of Gene Therapy 7th Annual Meeting, Minneapolis, MN, June 4, 2004.
9. Forrest, M.L. and G.S. Kwon. "Phospholipid Micelles for Chemotherapeutic Drug Delivery." Invited lecture for Engineering Seminar Series, University of Kansas, Lawrence, KS, March 10, 2005.
10. Forrest, M.L. and G.S. Kwon. "Nanoencapsulation of Chemotherapeutics." Invited lecture for Pharmaceutical Sciences Seminar Series, Washington State University, Pullman, WA, September 9, 2005.
11. Forrest, M.L. and G.S. Kwon. "Development of Nanotechnologies for Drug and Gene Delivery." Invited lecture for Chemical Engineering, Florida State University, April 25, 2006.
12. Forrest, M.L. "Stability of Sirolimus in oxidative environments." Invited lecture for Exogenesis Inc., Cambridge, MA, April 25, 2007.
13. Forrest, M.L. "Emerging nanotherapeutics for cancer." Invited lecture for Sigma Xi Seminar Series, School of Medicine, University of Kansas Medical Center, Kansas City, KS, September 3, 2007.
14. Forrest, M.L. "Nanocarrier technologies for cancer imaging and treatment." Invited lecture for Engineering Seminar Series, University of Kansas, Lawrence, KS, October 19, 2007.
15. Forrest, M.L. "Nanocarrier technology in the treatment and diagnosis of cancer." Invited lecture for Department of Chemistry, Missouri State University, Springfield, MO, October 29, 2007.
16. Forrest, M.L. "New routes for chemotherapeutic intervention using nanotechnology." Invited lecture for Department of Molecular and integrative physiology, University of Kansas Medical Center, Kansas City, MO, February 4, 2008.
17. Forrest, M.L. "Trailblazing new pathways in cancer therapy", Invited lecture for Department of Chemical Engineering, Oklahoma State University, Stillwater, OK, October 7, 2008.
18. Forrest, M.L. "Lymphatic chemotherapy for localized cancers", Invited lecture for Department of Oral Biology, University of Missouri, Kansas City, KS, December 6, 2008.
19. Forrest, M.L. "Drug delivery technology and new treatments in cancer." Invited lecture for Department of Chemistry, University of Central Arkansas, Conway, AR, November 20, 2008.
20. Forrest, M.L. "Design of nanocarriers for novel routes of therapy." Invited lecture for Department of Bioengineering, University of Kansas, KS, April 10, 2009.
21. Forrest, M.L. "Drug nanocarriers for intralymphatic chemotherapy of breast cancer." INBRE Conference, Oklahoma City, OK, May 28, 2009.
22. Forrest, M.L. "Targeted Nanopharmaceuticals for Localized Carcinomas", Tsukuba University, Tsukuba City, Japan, July 15, 2009.
23. Forrest, M.L. "Nanotechnology Treatments for Cancer", Shandong University, Jinan, China, July 27, 2009.
24. Forrest, M.L. "Nanotechnology and Future Therapeutics in Cancer Treatment", Washington State University, Pullman, WA, August 3, 2009.
25. Forrest, M.L., "Development of Nanocarrier Platforms for Locally Advanced Carcinomas", Washington State University, Pullman, WA, August 7, 2009.
26. Forrest, M.L. "Localizing drug delivery to reduce toxicity and improve efficacy." NSF IUCRC, Atlanta, GA, November 20, 2009.
27. Forrest, M.L. "Nanoconjugate Formulation for Localized Chemotherapy." Invited speaker for NanoDDS, Indianapolis, IN, October 6, 2009.
28. Forrest, M.L. "Star Polymers for Lymphatic Delivery." Invited speaker for American Chemical Society Midwest Regional Annual Meeting, Iowa City, IA, October 23, 2009.
29. Forrest, M.L. "Engineered nanomaterials in drug delivery." Department of Materials Science Technology, Graduate School of Industrial Science and Technology, Tokyo University of Science, Tokyo, Japan, June 9, 2010.
30. Forrest, M.L. "Nanoconjugate formulation for treatment of locally advanced cancers." Department of Biomolecular Engineering, Graduate School of Bioscience and Biotechnology, Tokyo Institute of Technology, Tokyo, Japan, June 11, 2010.
31. Forrest, M.L. "Nanoconjugate formulation for treatment of locally advanced cancers." Bioengineering Laboratory, RIKEN Institute, Wako, Japan, June 15, 2010.
32. Forrest, M.L. "Engineered nanomaterials in drug delivery." Bioengineering Department, Tokyo University of Agriculture, Tokyo, Japan, June 22, 2010.
33. Forrest, M.L. "Star polymers for localized drug delivery." Graduate School of Medicine, University of Tokyo, Tokyo, Japan, June 23, 2010.

34. Forrest, M.L. "Lymphatic drug targeting systems." Biomaterials Engineering Research Institute, Tokyo Medical and Dental, Tokyo, Japan, June 28, 2010.
35. Forrest, M.L. "Localized chemotherapy using polymeric nanocarriers." Department of Translational Medicine, National Cancer Center, Tokyo, Japan, July 1, 2010.
36. Forrest, M.L. "Nanoparticle engineering for targeted drug delivery." School of Engineering, Tsukuba University, Tsukuba City, Japan, July 6, 2010.
37. Forrest, M.L. "Hyaluronan nanocarriers in drug delivery." Department of Biophysical Chemistry, Kyoto Pharmaceutical University, Kyoto, Japan, July 8, 2010.
38. Forrest, M.L. "Star polymers for localized drug delivery." Department of Drug Delivery Research and Institute for Innovative NanoBio Drug Delivery and Development, Graduate School of Pharmaceutical Sciences, Kyoto University, Kyoto, Japan, July 9, 2010.
39. Forrest, M.L. "Localized chemotherapy using polymeric nanocarriers." Department of Applied Chemistry, Graduate School of Engineering, Osaka University, Osaka, Japan, July 12, 2010.
40. Forrest, M.L. "Nanoparticle strategies for treatment of head and neck and breast cancers." Department of Biomedical Engineering, National Cerebral and Cardiovascular Center Research Institute, Osaka, Japan, July 13, 2010.
41. Forrest, M.L. "Star polymers for localized drug delivery." Department of Chemistry and Materials Engineering, Faculty of Chemistry, Materials and Bioengineering, Kansai University, Osaka, Japan, July 14, 2010.
42. Forrest, M.L. "Localized chemotherapy using polymeric nanocarriers." Osaka Prefecture University, Osaka, Japan, July 15, 2010.
43. Forrest, M.L. "Localized chemotherapy using polymeric nanocarriers." Department of Applied Chemistry and Bioengineering, Graduate School of Engineering, Osaka City University, Osaka, Japan, July 16, 2010.
44. Forrest, M.L. "Multi-branched polymer design for drug delivery." Department of Applied Chemistry, Hiroshima University, Hiroshima, Japan, July 17, 2010.
45. Forrest, M.L. "Localized nanoparticle chemotherapy." Institute for Materials Chemistry and Engineering." Kyushu University, Fukuoka, Japan, July 20, 2010.
46. Forrest, M.L. "Targeted chemotherapy in the lymphatic system." Hokkaido University, Sapporo, Japan, July 27, 2010.
47. S. Cai, M.L. Forrest. "Development of Drug Delivery Platforms for Locoregional Treatment of Carcinomas." Presented at Kansas IDEa Network of Biomedical Research Excellence Symposium, Kansas City, Kansas, January 15, 2011
48. Forrest, M.L. "Targeted drug delivery to the lymphatics and functional imaging of tumor response." Affiliated Hospital of Guangdong Medical College, Zhanjiang, China, June 3, 2011.
49. Forrest, M.L. "Targeted chemotherapy platform for veterinarian oncology." University of Missouri, Rolla, October 7, 2011.
50. Forrest, M.L. "Localized chemotherapy for anti-cancer treatment and rapid in vivo imaging of therapeutic response." University of Kentucky, Dept. Pharmaceutics Sciences, Lexington, KY, November 4, 2011.
51. Forrest, M.L. "Development of localized cancer treatments and measurement of therapeutic response." University of Manitoba, School of Pharmacy, Winnipeg, Canada, April 11, 2012.
52. Forrest, M.L. "Localized anti-cancer treatment via lymphatic targeting." Midwest Regional Meeting of the American Chemical Society (MWMB), Omaha, Nebraska, October 25, 2012.
53. Forrest, M.L. "Localized anti-cancer treatment via lymphatic targeting." KINBRE External Advisory Committee, Kansas City, KS, April 17, 2013.
54. Forrest, M.L. "Localized anti-cancer chemotherapy." International Advanced Drug Delivery Symposium. Taipei, Taiwan, May 2, 2013.
55. Forrest, M.L. "Formulation development and pharmacokinetics of subcutaneously injected HylaPlat in spontaneous canine cancers" International Society for Hyalurnan Sciences. Oklahoma City, OK. June 3, 2013.
56. Forrest, M.L., T. Zhang. "Nanodiamond-based contrast agents for photoacoustic imaging." Invited speaker for International Society for Optics and Photonics (SPIE), San Diego, CA, August 27, 2013.
57. Forrest, M.L. "Locally targeted anti-cancer therapy." University of Missouri – Kansas City. Kansas City, MO. April 27, 2014.
58. Forrest, M.L. "Locally targeted platinum chemotherapy." Kansas State University, Manhattan, KS. October 5, 2015.
59. Forrest, M.L. "Particle-based Lymphatic targeted chemotherapy." University of Alberta, Edmonton, Alberta, Canada. October 12, 2016.
60. Forrest, M.L. "Particle Therapy in the Treatment of Lymphatic Cancers" Globalization of Pharmaceutics Education Network (GPEN) Conference, Lawrence, KS. November 12, 2016.

61. Forrest, M.L. "Particle based lymphatic cancer treatment: Preclinical and canine clinical studies" University of Kansas Cancer Center seminar series, Kansas City, KS. December 2, 2016.
62. Peter A. Kleindl, Jian Xiong, Asha N. Hewarathna, Maulik K. Nariya, Olivier Mozziconacci, Jae Hyun Kim, Sangeeta B. Joshi, C. Russell Middaugh, Christian Schöneich, Eric J. Deeds, David B. Volkin, M. Laird Forrest. *Characterization of the oligomeric proanthocyanidin crofelemer toward development of an integrated mathematical model for comparison of complex therapeutics*. Presented at 32nd Graduate Honors Symposium, Lawrence, KS. (January 11, 2017)
63. Forrest, M.L. "Targeting the lymphatics to improve cancer treatment." Tokyo, Japan. May 10, 2017.
64. Ninad Varkhede, C. Russell Middaugh, Christian Schöneich, M. Laird Forrest. *Effect of iron oxide nanoparticles on secondary structure and oxidation of rat growth hormone*. Presented at 33rd Graduate Honors Symposium, Lawrence, KS (January 17, 2018)
65. Forrest, M.L. "Development of localized drug delivery systems." University of Missouri, Columbia, MO, August 28, 2018.
66. Forrest, M.L. "Development and pre-clinical testing of localized drug delivery systems in canines with spontaneous cancers." Invited speaker, NanoDDS Annual Conference, Portland, OR, Sept. 23, 2018.
67. Forrest, M.L. "Development of localized therapies for cancer." University of Wisconsin, Madison, WI, October 12, 2018.
68. Forrest, M.L. "Development of localized immunochemotherapy in canines with spontaneous cancers", Controlled Release Society Annual Conference (Canadian Chapter) invited speaker, Vancouver, BC, May 22, 2019.
69. Forrest, ML, Peter Rowe. "Conception of evolution of bioenergetic medicine." KU-CTC Meet the Entrepreneur. Lawrence, KS, Sept. 8, 2021.

Thesis Committees, Past Students

Thesis committee chair:

PhD: Moustafa Abdelaziz (Pharm Chem, expected 2025), Taryn Bagby (Pharm Chem, 2012), Shuang Cai (Pharm Chem, 2011), Mark Craven (Pharm Chem, 2024), Ahmed Fahad (co-chair, Pharm Chem, 2021), Jordan Hunt (Pharm Chem, 2020), Peter Kleindl (Pharm Chem, 2020), Rolin Lu (Pharm Chem, 2021), Ryan Moulder (Pharm Chem, 2019), Derek Mull (Pharm Chem, expected 2024), Xiaoli Pan (co-chair, Pharm Chem, 2024), Matheus Oliveira De Sousa (chair, Pharm Chem, 2023), Ninad Varkhede (Pharm Chem, 2018), Qiuhong Yang (Pharm Chem, 2014), Ti Zhang (Pharm Chem, 2015), Yunqi Zhao (Pharm Chem, 2013)

MS: Moustafa Abdelaziz (BioEngineering, 2022), Adel Alhowyan (Pharm Chem, 2014), Allie Bratchenburg (BioEngineering, 2019), David Hart (Pharm Chem, 2007), Jordan Hunt (Medicinal Chem, 2018), Peter Kleindl (Bioengineering, 2016), Ryan Moulder (Bioengineering, 2016), Abby Petrulis (Pharm Chem, 2018), Alisha Simonian (Pharm Chem), Evelyn Yanez (Pharm Chem, 2018)

Thesis committee member:

PhD: Rosemary Ndolo (Pharm Chem, 2012), Julian Kissman (Pharm Chem, 2009), Chuda Chittasupho (Pharm Chem, 2012), Ryan Funk (Pharm Chem), Supang Kondee (Pharm Chem, 2011), Kwame Nti-Addae (Pharm Chem, 2008), Zahra Mohammadi (Chem Engr), Erik Vankampen (Chem Engr), Tiffany Suckama (Bioengineering, 2014), Jacob Staley (Bioengineering), Amir Fakhari (Bioengineering, 2011), Huizhong Cui (Bioengineering, 2012), Janggun Jo (Bioengineering, 2014), Lindsey Ott (Bioengineering, 2014), Anahita Khanlari (Chem Engr, 2014), Adam Mellott (Chem Engr, 2014), Saba Ghazvini (Bioengineering, 2020), Shara Thati (Pharm Chem, 2016), Thora Whitmore (Bioengineering 2016), Nick Larson (Pharm Chem 2020), Abhirup Samaddar, Mechanical Engineering 2026 est), Subramanian Karthikes Madhumithra (Bioengineering, 2024), Siddharth Subham (Bioengineering, KUMC, 2025 est), Rohit Singh (Mechanical Engineering, 2023), Kyle Apley (Pharm. Chem, 2022), Malaz Yousef (Pharmaceutics, U. Alberta, 2024)

MS: Mark Bailey (Bioengineering, 2010), Vivian Robertson (Pharm Chem, 2013), Keerthana Devarajan (Bioengineering, 2011)

Student advising (undergraduate researchers)

Pharmacy: Lei Cheung, Kristen Fischer, Rong Liu, Abby Petrulis, Grace Ulrich, Hollie Wickam,

Chemical Engineering: He Li, Shara Thati, Connor Bybee, Jason Christian, Hanny Sawaf, Benjamin Johnston, Brian Kim, Francis Pamatmat, Carolyn Stone, Ryan Moulder, Sebastian Bohn, Vignish Raghuraman, John Gerber, Joe

Rasmussen, Michael Choi, Eva Mohr (Mechanical), Hannah Leiker , Apexa Shah, Jacob Thompson, David Rope, Kendal Bloom, Sungin Huh

Chemistry: Zachary Nicolay, Reese Willis

Biochemistry: Navya Singh, Victoria Thomas (pre-med)

Summer URP: Grace Ulrich, Yomna Badawi, Shih-Hsuan Huang, Rachel Seo

Highschool: Samantha Farb

Postdoctoral Scientists (includes visiting scientists and research associates)

Shuang Cai, Padmaja Gunda, Yumei Xie, Yepeng Luan, Shaofeng Duan, Sanjeeva Senadheera, Jaden Jungho Jin, Ti Zhang, Chad Groer, Sasha Wu (MD)

Employment of graduates (includes persons employed but have not yet completed all degree requirements):

Adel Alhowyan, MS (lecturer, King Saud University)
Taryn Bagby, PhD (Product Development Scientist II, Recro Gainesville)
Allie Bratchenburg (Pfizer, Research Associate Scientist, St. Louis)
Shuang Cai, PhD (Senior Compliance Director, Pegasus Laboratories)
Mark Cravens, PhD (UMKC, postdoc in immunology)
Shaofeng Duan, PhD (Full Professor, Henan University, China)
Padmaja Gunda, PhD (Associate Professor, Chemistry, Columbia Basin College)
David Hart, MS (Research & Development Manager, PhytoTechnology Laboratories)
Jordan Hunt, PhD (Formulation Scientist, Azurity)
Peter Kleidl, PhD (Process Development Scientist, Amgen, Thousand Oaks)
Jaden Jungho Jun, PhD (Assistant Professor, University of Pittsburg)
Rolin Lu, PhD (Research Scientist in Preformation, Pfizer, Massachusetts)
Yepeng Luan, PhD (Instructor, Medicinal Chemistry, Qingdao University, Qingdao, China)
Ryan Moulder, PhD (Research Scientist in Preformulation, Amgen, Thousand Oaks)
Abby Petrusis, MS/PharmD (Pharmacist, U. S. Public Health Service Phoenix Indian Medical Center)
Sanjeeva Senadheera, PhD (Research Scientist, Merck)
Alisha Simonian, MS (Senior Product Development Scientist, Nitto Avecia Pharma Services)
Ninad Varkhede, PhD (Senior Scientist, Merck Pharmaceuticals)
Yumei Xie, PhD (Research Associate, Pacific Northwest National Laboratory)
Evelyn Yanez, MS (Senior Research Associate, Genentech)
QiuHong Yang, PhD (Clinical/Regulatory, Astex Pharmaceuticals)
Ti Zhang, PhD (Clinical CRO, China)
Yunqi Zhao, PhD (Associate Professor of Biotechnology at Wenzhou-Kean University, China)

Professional Activities

Peer review (Funding Agencies, ad-hoc unless noted otherwise):

American Cancer Society, Drug development study section *ad hoc* reviewer (2012-2014), full member (2014-2019)
National Institutes of Health (NIH), *NCI RC1* 2009, *NCI R43(SBIR)* 2011, *NIGMS(MBRS)* 2010-2013, *NIGMS(SCORE)* 2016, *NCI SBIR* 2014, *R15* 2014, *NCI SBIR* 2015, *NIH UH2/3* 2015, *NIH R01/R21 Bioengineering Sciences and Technologies (BST)* 2015, *NIH R01/R21 Developmental Therapeutics* (2017, 2018, 2019), *NCI R03/R21 Clinical and Translational Review Panel* (2019)
National Science Centre (NARODOWE CENTRUM NAUKI), Poland, 2013
United Kingdom Association for International Cancer Research (AICR), 2010
Canadian National Sciences and Engineering Research Council (NSERC), 2008
Netherlands Technology Foundation (STW), 2009
Hong Kong Innovation and Technology Support Programme (ITSP), 2008
University of Houston Gear Program, 2007

Peer review (Publications):

Ad hoc Editor for issue of Advanced Drug Delivery Reviews (2 issues, 2008 and 2011)
Ad hoc reviewer for: Advanced Drug Delivery Reviews, Biomacromolecules, Biomaterials, Biomedical Chromatography, Biopharmaceutics & Drug Disposition, Biophysical Chemistry, Clinical Pharmacokinetics, Drug Development and Industrial Pharmacy, European Journal of Pharmaceutics and Biopharmaceutics, International

Journal of Pharmaceutics, Journal of Biomaterials Research, Journal of the American Chemical Society, Journal of Biomaterials Science: Polymer Edition, Journal of Biomedical Materials Research Part A, Journal of Chromatography B, Journal of Controlled Release, Journal of Pharmaceutical Sciences, Journal of Pharmacy and Pharmaceutical Sciences, Phytotherapy Research

Member: American Association of Pharmaceutical Scientists (active), American Association for Cancer Research (inactive), American Institute of Chemical Engineers (inactive)

Service

DEPARTMENT

Graduate student admissions committee, Spring 2007-present
Coordinator for Higuchi Awards to pharmacy students, Spring 2007-present
Coordinator for Enz Awards to pharmacy students, Spring 2007-present
Graduate student recruiting at Midwest American Chemical Society meeting, October 2009, 2010, 2012
Presenter in Atlanta NSF-industry meeting for I/UCRC CPMF (Industry/University Cooperative Research Center for Center for Pharmaceutical Manufacturing and Formulation), November 2009
Graduate student recruiting at Central Arkansas University, November 2008
Faculty retreat planning committee member, Spring 2007
Graduate student recruiting at Missouri State University, October 2007

SCHOOL

PharmD admissions committee member, Spring 2010-present
PharmD and MBA dual degree admissions committee member, Spring 2008-present
PharmD and Masters in Health Informatics dual admissions committee member, Fall 2019-present
Pharmaceutical Chemistry Chair 5-year review committee, November 2014 – February 2015

UNIVERSITY

University Office of Research internal review panel for Life Sciences, August 2024-present
Restricted Research Committee, April 2023-present
IACUC member, January 2007-August 2013, March 2021-present
American Care Unit Director Search Committee, Spring 2021
University Conflict of Interest Committee, October 2019-present
University Senate Judicial Board, October 2017-present
BioEngineering Center Director Search Committee, June 2018
Animal Care Advisory Council, November 2013 - June 2017
Vice-Chair of Institutional Animal Care and Use Committee (IACUC) (October 2011 – August 2013)
Chair of IACUC protocol development subcommittee, July 2009 – August 2013
Interviewer for University Assessment of General Education, Spring 2007 and 2008
Student recruiter for KU at Annual Biomedical Research Conference for Minority Students (ABRCMS), St. Louis, 2011; Nashville, TN, 2013
Japan Alumni Outreach Seminars, on behalf of KU Endowment Association and Department of Pharmaceutical Chemistry, Tokyo, Japan, May 2017

LOCAL, STATE, REGIONAL

Invited speaker at Kansas City Chapter of American Cancer Society fundraising dinner, August 2009
Judge at PSGRM Annual Conference, Kansas City, June 2007
Judge at Annual Biomedical Research Conference for Minority Students (ABRCMS), November 2011, 2013

NATIONAL

Reviewer for American Cancer Society (ACS), Cancer Drug Development panel, standing member 2015-2018, ad hoc 2012-2015 and 2018-2020
Reviewer National Institutes of Health (NIH), R01/R21/R03 proposal review: Developmental Therapeutics, ad hoc, 2016-2019
Reviewer National Institutes of Health (NIH), R01/R21 proposal review: Bioengineering Sciences and Technologies (BST) study section, ad hoc, 2015.
Reviewer National Institutes of Health (NIH), NCI proposal review: cancer detection, diagnosis, and treatment technologies for global health (UH phase 2 and 3), ad hoc, 2015
Reviewer National Institutes of Health (NIH), SBIR contract review: cancer stem cell culture systems (Phase 1 and Phase 2), ad hoc, 2015-2018

Reviewer National Institutes of Health (NIH), SBIR contract review: cancer stem cell treatments(Phase 1 and Phase 2), ad hoc, 2014
 Reviewer for National Institutes of Health (NIH) R15, ad hoc, 2014
 Reviewer for National Institutes of Health (NIH), SBIR contract review panel: anticancer antibodies, ad hoc 2011
 Reviewer for National Institutes of Health (NIH), MBRS review panel, ad hoc 2010, 2012
 Reviewer for National Institutes of Health (NIH), RC1 grants, ad hoc 2009
 Member of Scientific and Medical Advisory Board, Exogenesis Corporation, Billerica, MA, 2009-present
 Member and participant in national meetings – American Chemical Society, 2009-present
 Member and participant in national meetings – American Association of Pharmaceutical Sciences, 2005-present
 Member and participant in national and international meetings, abstract reviewer – Controlled Release Society, 2002-2014
 Member and participant in national meetings – American Institute of Chemical Engineers, 2000-2005
 Reviewer for Advanced Drug Delivery Reviews, Biomacromolecules, Biomaterials, Biomedical Chromatography, Biopharmaceutics & Drug Disposition, Biophysical Chemistry, Clinical Pharmacokinetics, Drug Development and Industrial Pharmacy, European Journal of Pharmaceutics and Biopharmaceutics, International Journal of Pharmaceutics, Journal of Biomaterials Research, Journal of Biomaterials Science: Polymer Edition, Journal of Biomedical Materials Research Part A, Journal of Chromatography B, Journal of Controlled Release, Journal of Pharmaceutical Sciences, Journal of Pharmacy and Pharmaceutical Sciences, Phytotherapy Research, Nanomaterials
 Reviewer for University of Houston Gear Program, ad hoc 2007

INTERNATIONAL

Reviewer for National Science Centre (NARODOWE CENTRUM NAUKI), Poland, ad hoc 2013
 Editorial Board member, Journal of Pharmaceutics, 2012-2013
 Reviewer for Icelandic Research Fund, ad hoc 2012
 Reviewer for Association for International Cancer Research (AICR), United Kingdom; ad hoc 2010
 Developed, organized and taught short course (1 full credit hour) “Drug Delivery systems”
 Tsukuba University, Tsukuba, Japan (July 2009 and 2010)
 Shandong University, Jinan, China (July 2009)
 Reviewer for Hong Kong Innovation and Technology Support Programme (ITSP), ad hoc 2008
 Theme issue editor for Advanced Drug Delivery Reviews, 2 theme issues, 2008 and 2009
 Reviewer for Canadian National Sciences and Engineering Research Council (NSERC), ad hoc 2007
 Reviewer for Netherlands Technology Foundation (STW), ad hoc 2007 and 2008

Grants

Active and Recently completed (items from 2012 through 2022)

National Institute of Aging (NIH/NIA). R21
 Title: Bioenergetic molecules for treatment of Alzheimer’s disease
 Role: PI
 2/1/2021-11/31/2024

U01HL152410 (PI: Berkland) 10/1/21-9/30/22
 Midwest Biomedical Accelerator Consortium: MBarC
 Tumor-retentive immunostimulation as safe combination therapy with immune checkpoint inhibitors
 Role: Co-I; Goal: Toxicology study of combination of immunostimulates in tumors.

U01HL152410 (PI: Forrest) 10/1/21-9/30/22
 Midwest Biomedical Accelerator Consortium: MBarC
 ImmunAdvisor: High-Throughput T Cell Receptor Discovery for Affordable Commercial Personalized Cancer Therapies
 Role: PI; Goal: Development of personalized T cell based therapeutics for cancer.

Antibody discovery (PI: Forrest) 01/01/2019-12/31/2022
 Sanofi (Paris, France)
 Role: PI; Goal: This is an industrial contract sponsored to analyze antibody repertoire to the sponsor’s vaccine in patients.

R21AI143407, NIAID (PI: L. Forrest) 12/01/2018-11/30/2021 (NCE)
 Comprehensive molecular and functional analyses of anti-HIV-1 broadly neutralizing antibody repertoires

Role:PI; Goal: This was to analyze antibodies developed that have broad neutralizing abilities for HIV1 isolated from multiple patients.

BioNEXUS KCALSI Title: Development of cancer vaccines using dogs as a translational model Role PI	12/1/2018-11/30/2019	
KUADC (PI: L Forrest) calendar KUMC Title: <i>Bioenergetic prodrugs for treatment of Alzheimer's</i> Goal: To develop a pilot library of bioenergetic drugs Role: PI	07/01/2018 – 06/30/2019	0.24
SBIR Phase 1 (PI: Michaelis) effort Aerobyx LLC/NIH flowthru Title: Targeting Bioenergetic Flux for Alzheimer's Disease Management Goal: Scale up and production of a bioenergetic prodrug, preliminary animal testing Role: co-investigator	09/01/2018 – 03/30/2019	0.1
Industrial Contract (PI: Forrest) HylaPharm LLC Translation development of intralymphatic chemotherapy Role: Principal investigator	05/01/12- 02/28/20	
IAMI Frontiers (PI: Swerdlow) effort KUMC Title: Pharmacokinetic Analysis of a Novel Bioenergetic Medicine Esters Goal: Synthesis and preliminary PK testing of new bioenergetic prodrugs. Role: co-investigator	05/15/2018 – 06/30/2019	0.1
1R01CA173292-01 (PI:Forrest) National Institute of Health/National Cancer Institute Title: Biomaterials for treatment of head and neck cancers Role: PI	03/01/13 – 2/28/19 (no cost)	
R01AI138970 (PI: W.L. Picking) calendar National Institutes of Health Title: <i>Vaccines to counter emerging antibiotic resistance</i> Pursue our hypothesis that Haf-Fusions from <i>Pseudomonas aeruginosa</i> , <i>Salmonella enterica</i> and <i>Shigella</i> spp. will provide serotype-independent protection against all strains of these pathogen including MDR species/strains Role: Co-Investigator National Institutes of Health (NIH) / National Institute for Allergy and Infection Disease (PI:Cai) Generating synergy between protein and non-protein macromolecular adjuvants Role: co-investigator	06/01/2018 – 05/31/2023 7/1/2017-6/30/2018	1.2
Kansas State University – College of Veterinary Medicine & Veterinary Health Center Proof-of-concept study locoregionally administering a nanotherapeutic formulation of hyaluronan conjugated cisplatin to dogs with naturally-occurring metastatic apocrine gland anal sac adenocarcinoma Role: co-investigator	6/1/15-12/31/17	
1U01FD005285 (lead PI: Volkin, Co-PI:Forrest) FDA (Food and Drug Administration) Title: Development of an Integrated Mathematical Model for Comparative Characterization of Complex Molecules	10/1/14-9/30/17	

Industrial Contract (PI: Forrest) Akari Pharmaceuticals Formulation of Coversin for subcutaneous sustained release Role: Principal Investigator	8/15/2016-1/15/2018
National Institutes of Health (NIH) / National Cancer Institute (PI: Groer) SBIR 1R43CA203142-01A1 Aerosolized platinum nanoparticle chemotherapy for lung cancer Role: co-investigator	2/1/2017-1/31/2018
National Institutes of Health (NIH) / National Cancer Institute (NCI) Contract Number: HHSN261201500047C (NCI control # N43-CO-2015-0047) Targeted nanoparticle treatment for breast cancer stem cells Role: co-investigator/PI subaward	9/10/2015-10/1/2016
KINBRE: Local immunosuppressive treatment of ulcerative colitis NIH P20GM103418 (PI P20: Wright) Kansas IDeA Network of Biomedical Research Excellence (K-INBRE), Translational Partnership Award Role: PI (project)	05/01/2016 – 04/30/2017
Proof of Concept Award (PI: Forrest) University of Kansas Commercialization and Technology Center Development of therapy for triple negative breast cancer Role: PI	5/1/2015-6/30/2016
Proof of Concept Jay Award (PI: Forrest) Higuchi Biosciences Center Mechanistic understanding of oxidation of therapeutic proteins after subcutaneous administration Role: PI	7/1/2015-6/30/2016
Proof of Concept Award (PI: Rowe) University of Kansas Commercialization and Technology Center Formulation for enhanced hair growth Role: Co-PI	4/1/2014-6/30/2015
1R56AI091996 (PI: Berkland) Targeted nanoscale antigen arrays for treating autoimmune diseases NIH	08/15/12 – 07/31/15

CASES INVOLVING TESTIMONY AT DEPOSITION OR TRIAL IN PAST FOUR YEARS

1. Horizon Medicines LLC, and Nuvo Pharmaceutical (Ireland) v. Dr. Reddy's Laboratories Inc.; Civ. No. 2:15-cv-03324-MLC-DEA (D. NJ) (2019).
2. Mylan Institutional LLC v. Novo Nordisk A/S; PTAB IPR2020-00324. (2019); Pfizer Inc. v. Novo Nordisk; PTAB IPR2020-01252 (2020).
3. Merck Sharp & Dohme Corp., v. Sun Pharmaceutical Industries Ltd; Civ. No. 19-md-2902-RGA (D. DE) (2019)
4. Indivior Inc., Indivior UK Limited, Aquestive Therapeutics, Inc., v. Dr. Reddy's Laboratories; Civ. No. 18-5288-KM-CLW (D. NJ).
5. Orexo AB and Orexo US, Inc., v. Sun Pharmaceutical Industries, Ltd, Sun Pharma Global FZE, Sun Pharma Global, Inc., and Sun Pharmaceutical Industries, Inc. Civ. No. 20-cv-12588 (D.NJ). (2020).
6. Novartis Pharmaceuticals Corp., v. Alembic Pharmaceuticals Limited and Alembic Pharmaceuticals, Inc.; Alkem Laboratories, Ltd.; Aurobindo Pharma USA Inc. and Aurobindo Pharma Ltd.; Biocon Pharma Limited, Biocon Limited, and Biocon Pharma, Inc.; Crystal Pharmaceutical (Suzhou) Co., Ltd.; Dr. Reddy's Laboratories, Inc. and Dr. Reddy's Laboratories, Ltd. ("DRL"); Hetero USA Inc., Hetero Labs Limited, and Hetero Labs Limited Unit III; Laurus Labs Ltd. and Laurus Generics Inc.; Lupin Atlantis Holdings, S.A., Lupin Limited, Lupin Inc., and Lupin Pharmaceuticals, Inc.; Macleods Pharmaceuticals Ltd. and Macleods Pharma USA, Inc.; MSN Laboratories Private Limited, MSN Life Sciences Private Limited, and MSN Pharmaceuticals Inc.; Mylan Pharmaceuticals Inc.; Teva Pharmaceuticals USA, Inc.; Torrent Pharma Inc. and Torrent Pharmaceuticals Ltd.; and Zydus Pharmaceuticals (USA) Inc. and Cadila Healthcare Limited. Civ. No. Dd 20-2930-LPS (D. DE).
7. Tris Pharma, Inc. v. Teva Pharmaceuticals USA, Inc. Civ. No. 20-cv-0521-KM-ESK (D. NJ).
8. Janssen Pharmaceuticals, Inc. v. Mylan Laboratories Limited, Civ. No. 3:20-cv-13103-ZNQ-LHG (D. NJ).
9. Merck Sharp & Dohme, B.V. v. Mylan API US LLC, D.N.J., Civil Action No. 20-cv-2576 (consolidated); Merck Sharp & Dohme, B.V. v. Mylan Pharmaceuticals, Inc., N.D.W.Va., Civil Action No. 20-cv-61.
10. Eagle Pharmaceuticals, Inc. v. Slayback Pharma LLC, Apotex Inc. et al, Civil Action No. 1-21-01256-CFC-JLH (D. Del.)
11. Azurity Pharmaceuticals, Inc., v. Alkem Laboratories Ltd. Civ. Action No. 20-1094 (MSG). (D. Del).
12. Intercept Pharmaceuticals, Inc., and Intercept Pharma Europe Ltd. v. Apotex Inc., Amneal EU, Limited and Amneal Pharmaceuticals New York, LLC, Lupin Limited and Lupin Pharmaceuticals., MSN Laboratories Private Limited and MSN Pharmaceuticals, Optimus Pharma Pvt. Ltd. and Optimus Drugs Private Ltd. Civ Action No. 20-1105-MN (Consolidated) (D. Del.)
13. Certain Bio-Layer Interferometers. (Sartorius v. Gator Bio). US International Trade Commission. 37-TA-1344.
14. Azurity Pharmaceuticals, Inc. v. Annora Pharma Private Limited, Camber Pharmaceuticals. C.A. No. 21-cv-196-MSG (D. Del.)
15. Neuroderm Ltd. v. Abbvie Inc. Post Grant Review PGR2022-00040.
16. Amgen Inc. and Kai Pharmaceuticals, Inc. v. Aurobindo Pharma Limited, MSN Pharmaceuticals Private Limited, USV Private Ltd. C.A. No. 21-662 (MN) (D. Del.)

17. Arbor Pharmaceuticals, LLC and Takeda Pharmaceutical v. Saba Ilac Sanayii Ve Ticaret C.A. No. 22-353-MN. (D. Del.)
18. Regeneron Pharmaceuticals, Inc., v. Formycon AG. C.A. No. 23-cv-97 (TSK) (D. WV)
19. Radius Health, Inc. f/k/a Nuvios, Inc. et al. v. Orbicular Pharmaceutical Technologies Pvt. Ltd., 22-11546 (D. Mass.)
20. La Jolla Pharma LLC v. Katherine Vidal, in capacity of Director of the USPTO, 1:24-cv-00951 (LMB/WBP) (D.E. VA)