

JILL M. STEINBACH-RANKINS

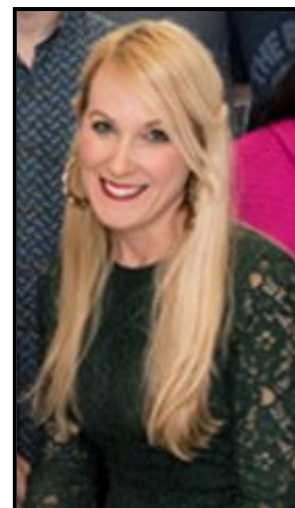
Assistant Professor of Bioengineering
Associate Appointment, Pharmacology & Toxicology
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**Education:**

- 2003-2009 **Ph.D. in Biomedical Engineering**, Arizona State University, Tempe, AZ.
Dissertation: "Optimizing the delivery of multivalent polymer constructs for glioblastoma detection and treatment."
- 1998-2001 **M.S.E. in Materials Science Engineering**, Arizona State University, Tempe, AZ.
Completed part-time while working full-time in industry.
- 1993-1997 **B.S. in Materials Science Engineering**, University of Illinois, Champaign-Urbana, IL.

Experience:

- 10/2013 – Present** Assistant Professor – **Tenure Track**, Department of Bioengineering, Speed School of Engineering, University of Louisville, Louisville, KY.
- 08/2009 – 05/2013** Postdoctoral Fellow and Associate, Department of Biomedical Engineering, Yale University, New Haven, CT.
- 05/2009 – 07/2009** Postdoctoral Associate (Interim Position), Department of Biomedical Engineering, Arizona State University, Tempe, AZ.
- 05/2008 – 05/2009** Student Research Associate, Barrow Neurological Institute, Phoenix, AZ.
- 01/2004 – 05/2009** Graduate Research Fellow/Assistant, Department of Biomedical Engineering, Arizona State University, Tempe, AZ.
- 08/1997 – 04/2001** Engineer, Motorola Computer Group & Semiconductor Product Sector, Tempe, AZ.
- 06/1995 – 05/1997** Undergraduate Research Assistant, Department of Materials Science Engineering, University of Illinois Champaign-Urbana, Dr. Abelson's Group.

AWARDS & RECOGNITIONS

	Steinbach-Rankins Awards and Recognitions	Awards and Recognition of Students Advised
2003-2013	17	N/A
2013-2018	1	30
Total	18	30

Awards and Recognitions:

- 1. Inaugural Oral Delivery Focus Group Young Investigator Award**, Controlled Release Society, **July 2018** (NYC).
- While President of CRS Student Chapter, Tri-University Consortium, **Awarded Student Chapter of the Year**, CRS Conference, Quebec City, Canada, **July 2012**.
- Established, managed, and organized the inaugural and second year CRS Drug Delivery Symposiums at Yale University, 2011 and 2012.**
- President of Connecticut Controlled Release Society (CRS) Student Chapter, 2011 - 2012.**
- NRSA NIH Ruth Kirschstein F32 NIAID Fellowship Award (scored 10 on scale of 10-90), 2011-2013.**
- Yale Proteomics and Genomics Fellowship Award, 2010-2011.**
- Vice President** of Inaugural Connecticut Controlled Release Society Student Chapter, **2010 – 2011.**
- Runner up for Yale Global Health Fellowship (3rd of 50 applicants), 2010.**
- 1 of 2 selected for **BBC interview** of Global Health Prospects in Developing Nations, **2010.**
- NSF and National Academy of Sciences, Turkey Advanced Study Institute on Global Healthcare Grand Challenges and Engineering Challenges Trip Award and Invitation to Speak: 1 of 10 Students/Postdocs selected nationally; Antalya, Turkey, 2010.**
- Team Lead** of Nanoparticle Optimization Team, Yale University, **2009 – 2010.**
- NSF IGERT Individual Research Highlight, 2009.**
- NSF Fellowship** for Biocomplexity and Systems Biology (Istanbul, Turkey), **2009.**
- Akay Leadership Award/Bioengineering Department Award, 2009.**
- Society for Biomaterials (SFB) Student Travel Achievement Recognition Award** - Honorable Mention for Presentation: “Economical Synthesis and Evaluation of Cancer Targeting Constructs”, Society for Biomaterials Conference, Atlanta, GA, **2008.**
- Selected attendee to represent ASU IGERT Fellows for 2008 at NSF IGERT conference in Washington D.C., 2008.**
- ASU Graduate and Professional Student Association Travel Awards, 2007 & 2008.**
- NSF IGERT Biomolecular Nanotechnology Fellowship, 2003 – 2006.**

Awards and Recognition of Students Advised (Faculty-Mentored):

1. **2018: Bhargav Ramesh** (duPont Manual High School), Intel International Science and Engineering Fair 2018 Special Award Winners, 3-D Printing with Modified Biocompatible Polymers for Tissue Regeneration and Drug Delivery.
2. **2018: Lee Sims** (Bioengineering, Master's), Fulbright Postgraduate Award at Imperial College London, for Master's of Science in Epidemiology.
3. **2018: Julie Nguyen** (James Graham Brown High School, Senior), GE-Reagan Foundation Scholarship, 1 of 20 national scholars, Summer 2018.
4. **2018: Sindhu Parupalli** (Bioengineering, Junior), SROP Fellowship, Summer 2018.
5. **2018: Lee Sims** (Bioengineering, Master's), Speed School of Engineering Bennett M. Brigman award, April 2018. Recognizes one student across all engineering departments. Criteria include GPA, Speed School activities (research, organizations, and publications) and extracurricular activities.
6. **2018: Keegan Curry** (Biochemistry, Junior), Cancer Education Program award, Summer 2018.
7. **2018: Lee Sims** (Bioengineering, Master's), ARVO Conference Travel award (Honolulu), May 2018.
8. **2017: Sonali Sapare** (Dental School, Master's Program), 3rd place Master's Dental School award – Research!Louisville, 2017.
9. **2017: Julie Nguyen** (James Graham Brown High School, Junior), Health Research Youth Academy award, Summer 2017.
10. **2017: Julie Nguyen**, Governor's Scholars Program, Summer 2017.
11. **2017: Hung Vuong** (Chemistry, Senior), Fulbright Scholar Award at University of Geneva, Switzerland, April 2017.
12. **2017: Lee Sims** (Bioengineering, Senior), Mickey Wilhelm Bioengineering Dept. award, April 2017.
13. **2017: Sindhu Parupalli** (Bioengineering, Sophomore), Cancer Education Program award, Summer 2017.
14. **2016: Maya Huss**, 3rd place Undergraduate Research award – Research!Louisville, 2016.
15. **2016: Ankita Jain** (Dental School, Master's Program), 2nd place Master's Dental School award – Research!Louisville, 2016.
16. **2016: Maya Huss** (Bioengineering, Sophomore), Cancer Education Program award, Summer 2016.
17. **2016: Allison Tu** (duPont Manual High School), Kentucky Junior Academy of Science (KJAS): 1st place in High School Biological Topics and Botany Group 3, and 3rd Place Life Sciences Overall Grand Prize. Resulted in invitation to American Junior Academy of Science in Boston (Feb. 2017), Spring 2016.
18. **2016: Allison Tu** (duPont Manual High School), 1st Place Bioengineering Intel Science Fair, Small Packages: Nanomaterials as Novel Drug Delivery Vehicles to Prevent Viral STIs, 2016.
19. **2016: Hung Vuong** (Chemistry, Junior), awarded Stanford Genetics Scholar Program, Summer 2016.
20. **2015: Lee Sims** (Bioengineering, Junior), awarded DAAD German Exchange Program, Fall 2015.
21. **2015: Hung Vuong** (Chemistry, Sophomore), SROP Fellowship, Summer 2018.
22. **2015: Ranjith Radhakrishnan**, Hinman award in Atlanta, 2015.
23. **2015: Ranjith Radhakrishnan** (Dental School, Master's Program), 1st place Master's Dental School award – Research!Louisville, 2015.
24. **2015: Paridhi Kalia**, 3rd place Master's Dental School award – Research!Louisville, 2015.
25. **2015: Lee Sims** (Bioengineering, Sophomore), Cancer Education Program award, Summer 2015.
26. **2015: Justin Heidel** (Bioengineering, Freshman), Cancer Education Program award, Summer 2015.

27. **2014: Lee Sims** (Bioengineering, Freshman), 1st place Undergraduate Research!Louisville, 2014.
28. **2014: Paridhi Kalia**, 3rd place Master's Dental School award – Research!Louisville, 2014.
29. **2014: Paridhi Kalia** (Dental School, Master's Program), Hinman award in Atlanta, 2014.
30. **2014: Lee Sims** (Bioengineering, Freshman), Cancer Education Program award, Summer 2014.

GRANT FUNDING

Grant Summary of Research Productivity (Direct + Indirect Costs, DIC):

Grant Funding Generated as Principal Investigator or Project Lead	: \$1,766,139
Grant Funding Generated as Co-PI	: \$65,000
Total DIC Grant Funding Generated	: \$1,831,139

Grant Summary of Research Productivity (Direct Costs, DC):

Grant Funding Generated as Principal Investigator	: \$1,262,038
Grant Funding Generated as Co-PI	: \$65,000
Total DC Grant Funding Generated	: \$1,327,038

Ongoing Research Support:

1. **NIH P20 COBRE: Functional Microbiomics, Inflammation and Pathogenicity**
My Project (score 10 of 90): "Understanding the Host-Microbiome-Therapeutic Triad: Implications for Designing Alternative Intravaginal Delivery Platforms to Treat Bacterial Vaginosis"
Project Lead: Dr. Jill Steinbach-Rankins (50% Effort)
03/01/2018-02/28/2023
2. **R21: NIH National Institute of Dental and Craniofacial Research (NIDCR)**
"Nanoparticle Delivery Vehicles Targeting *P. gingivalis*"
PI: Dr. Donald Demuth; (10% Effort, 50% Collaboration); \$275,000 Direct Costs
Co-PI: Dr. Jill Steinbach-Rankins; (15% Effort, 50% Collaboration);
09/01/2016-08/31/2019, *1-yr no-cost extension.
3. **Jewish Heritage Foundation of Excellence (JHFE)**
"Griffithsin-Based Nanocarriers for the Prevention of Viral Infections"
PI: Dr. Steinbach-Rankins; (30% Effort); \$300,000 Direct Costs
Co-I: Dr. Kenneth Palmer; (2 hr/month Effort)
08/01/2016-07/31/2018
4. **Jewish Heritage Foundation of Excellence Competitive Enhancement Grant**
"Understanding the Host-Microbiome-Therapeutic Triad: Implications for Designing Alternative Intravaginal Delivery Platforms to Treat Bacterial Vaginosis"
Partial funding for post-doc (\$33,410)
08/01/2018-07/31/2019

Completed Research Support:

1. **University of Louisville IRIG**
"Design and Delivery of Novel Ultra-Small Nanoparticles for Retrograde Transport"
PI: Steinbach-Rankins: \$10,000
Co-PI: Dr. McCall

06/01/2014 - 02/28/2016

2. Knight's Templar Foundation

“Nanoparticle Melphalan for Intravitreal Injections in Retinoblastoma”

PI: Dr. Ramasubramanian (10% Effort, 50% Collaboration); \$65,000 Direct Costs

Co-PI: Steinbach-Rankins (10% Effort, 50% Collaboration);

07/01/2016-06/30/2018

Borderline Funding (Resubmitted 07/2018): NSF CAREER award, “A Mechanistic Study of Hybrid Polymeric Nanoparticle-Electrospun Fiber Platforms for Biologic Delivery to the Female Reproductive Tract”, (1st submission, July 2017, \$1,034,127).

Pending End-of-Year Funding: R61/R33 AI136003-01, “Assessment of Griffithsin-containing nanoparticles and electrospun fibers as multipurpose formulations for the prevention of sexually transmitted infections and unplanned pregnancies.” JTT requested 081018.

Pending End-of-Year Funding: R01 A1139671-01, “Understanding the Host-Microbiome-Therapeutic Triad to Treat Bacterial Vaginosis.” Was suggested for year-end funding, declined, *resubmitting Nov. 2018.

Planned Submissions: Additionally plan two other R01 submissions for Fall 2018/Winter 2019, based on our R21 oral biofilm and ovarian cancer projects.

Grant Publicity: WFPL (Louisville Public Media): <http://wfpl.org/u-of-l-researchers-get-huge-grant-to-study-microbiome/>

INTELLECTUAL PROPERTY

Patents and Disclosures (please note: order has no significance):

1. **J. M. Steinbach** and K. Palmer, “Design and Development of a “Virus Trap Plus Safety Net” Microbicide to Combat Sexually Transmitted Infections”, **US Patent Application 62/174,346, non-provisional patent application filed, June 2016.**
2. **J. M. Steinbach-Rankins**, J. A. Chesney, H. Guo, “Development of CNS-Penetrating PLGA Nanoparticles to Deliver a Novel Metabolic Inhibitor to Glioblastomas *In Vivo*”, **Research Disclosure**, 2013.
3. **J. M. Steinbach-Rankins**, H. Kaplan, and M. McCall, “Nanoparticle Mediated Ocular Delivery of siRNA for Treatment of Retinal Disease”, **Research Disclosure**, 2013.
4. **J. M. Steinbach-Rankins**, M. Hughes, S. K. Williams II, “Nanoparticle-Embedded Fibers for Islet Delivery and Transplant”, **Research Disclosure**, 2013.
5. **J. M. Steinbach-Rankins**, C. Jones, R. Keynton, and A. Keynton, “Electrospun endografts/stents for treatment of biliary complications post liver transplant”, **Research Disclosure**, December 2014, updated December 2015 and April 2016 (Title changed to Molded Stents).
6. **J. M. Steinbach-Rankins**, H. Kaplan, D. Dean, and M. McCall, “Retinal-penetrating miRNA nanoparticles to prevent photoreceptor degeneration”, **Research Disclosure**, December 2015.
7. **J. M. Steinbach-Rankins**, D. Demuth, “Targeted Therapeutics and Drug Delivery Systems to Modulate the Oral Microbiome to Prevent Periodontitis”, **Research Disclosure**, 2016.

8. **J. M. Steinbach-Rankins**, C. Jones, R. Keynton, and A. Keynton, “Externally Applied Biodegradable or Non-Biodegradable Stents for the Treatment of Biliary Complications”, **Research Disclosure**, 2016.
9. **J. M. Steinbach-Rankins** and K. Kate, “3D Printed Intravaginal Drug Delivery Device”, **Research Disclosure**, November 2017.
10. **J. M. Steinbach-Rankins** and L. Zhang, “Understanding the host-microbiome-therapeutic triad: implications for designing alternative intravaginal delivery platforms to treat bacterial vaginosis”, **Research Disclosure**, April 2018.

RESEARCH PUBLICATIONS

	Journal Articles	Books	Book Chapters	Peer-reviewed Conferences	Abstracts	Patents and Disclosures
2013-2018	16 + 2 revised + 1 submitted as of 07/2018 (4.75 yr)		1			10
Total	18 (+ 1 submitted) = 19 total		1			10

Citation Indices (Source: Google Scholar & Research Gate):

<http://www.ncbi.nlm.nih.gov/myncbi/browse/collection/47574621/?sort=date&direction=ascending>
https://scholar.google.com/citations?hl=en&user=bAljxLwAAAAJ&view_op=list_works&sortby=pubdate

	Google Scholar	
	All	2013-Present
Citations	261	211
h-index	8	7
i10-index	8	7
Research Gate		
Research Gate Score	27.25	
Impact Points	62.78	
Read	822	



Summary of 5-yr Impact Factor for Peer Reviewed Journal Articles

Journal	Factor
Journal of Controlled Release	8.10
Acta Biomaterialia	6.59
Biomacromolecules	6.43
Cellular and Molecular Life Sciences	6.01
Molecular Cancer Therapeutics	5.90
International Journal of Nanomedicine	5.03 (5 yr)/4.30
Expert Opinion on Drug Delivery	5.02

European Journal of Pharmaceutics and Biopharmaceutics	4.506 (5 yr)
Antimicrobial Agents and Chemotherapy	4.61
Molecular Pharmaceutics	4.44
Journal of Nanobiotechnology	4.12 (2014/2015 only)
International Journal of Pharmaceutics	4.23 (5 yr)/3.70 (2016)
Materials Science and Engineering C	3.93 (5 yr)/4.16
European Journal of Pharmaceutical Sciences	3.75
Annals of Biomedical Engineering	2.99
Journal of Drug Targeting	2.85
Journal of Microencapsulation	1.59 (2014)
Journal of Visual Experiments	1.1

Peer-Reviewed Journal Publications Submitted (*: Co-First Authors, §: Co-Senior Authors):

1. Lee B. Sims, Keegan C. Curry, Sindhu Parupalli, Gwynneth Horner, Hermann B. Frieboes§, **Jill M. Steinbach-Rankins§**. “Efficacy of Surface-Modified PLGA Nanoparticles to Treat Cervical Cancer”, April 2018.

Published Peer-Reviewed Journal Publications (*: Co-First Authors, §: Co-Senior Authors):

1. Lee B. Sims, Hunter A. Miller, Michael E. Halwes, **Jill M. Steinbach-Rankins§**, Hermann B. Frieboes§. “Modeling of nanoparticle transport through the cervicovaginal mucosa for the treatment of infectious diseases”, revisions submitted August 2018.
2. Mohamed Y. Mahmoud, Donald R. Demuth§, **Jill M. Steinbach-Rankins§**. “BAR-Encapsulated Nanoparticles for the Inhibition and Disruption of *Porphyromonas gingivalis*-*Streptococcus gordonii* Biofilms”, revisions submitted July 2018.
3. Kevin M. Tyo*, Jinghua Duan*, Pravallika Kollipara, Kenneth E. Palmer, **Jill M. Steinbach-Rankins** (2018). “pH-Responsive Delivery of Griffithsin from Electrospun Fibers”, European Journal of Pharmaceutics and Biopharmaceutics, epub ahead of press, doi: 10.1016/j.ejpb.2018.04.013.
4. Darryl T. Martin, Hongliang Shen, **Jill M. Steinbach-Rankins**, Katelyn K. Johnson, W. Mark Saltzman, and Robert M. Weiss (2018). “Glycoprotein-130 expression is associated with aggressive bladder cancer and is a potential therapeutic target”, Molecular Cancer Therapeutics, revisions submitted.
5. Lee B. Sims, Hermann B. Frieboes, **Jill M. Steinbach-Rankins** (2018). “Nanoparticle-Mediated Drug Delivery to Treat Infections in the Female Reproductive Tract: Evaluation of Experimental Systems and the Potential for Mathematical Modeling”, International Journal of Nanomedicine, 13:2709-2727, doi: 10.2147/IJN.S160044.
6. Michael E. Halwes, Kevin M. Tyo, **Jill M. Steinbach-Rankins§**, Hermann B. Frieboes§ (2018). “Computational Modeling of PLGA Fiber Degradation and Resultant Multicompartment Tenofovir Pharmacokinetics in the Female Reproductive Tract”, Molecular Pharmaceutics, 15(4): 1534-47, doi: 10.1021/acs.molpharmaceut.7b01089.
7. Lee B. Sims, Maya K. Huss, Hermann B. Frieboes§, **Jill M. Steinbach-Rankins§** (2017). “Distribution of PLGA-modified Nanoparticles in 3D Cell Culture Models of Hypo-Vascularized Tumors”, Journal of Nanobiotechnology, 15(1):67, doi: 10.1186/s12951-017-0298-x.
8. Kevin M. Tyo, Hung R. Vuong, Danial A. Malik, Lee B. Sims, Houda Alatassi, Jinghua Duan, Walter H. Watson, **Jill M. Steinbach-Rankins** (2017). “Multipurpose Tenofovir Disoproxil Fumarate Electrospun

- Fibers for the Prevention of HIV-1 and HSV-2 Infections”, Intl. Jnl. of Pharmaceutics, 531(1):118-133, doi: 10.1016/j.ijpharm.2017.08.061.
9. Hung R. Vuong*, Kevin M. Tyo*, **Jill M. Steinbach-Rankins** (2017). “Fabrication and Characterization of Griffithsin-Modified Fiber Scaffolds for STI Prevention”, Journal of Visual Experiments, (128), e56492, doi:10.3791/56492.
 10. Paridhi Kalia, Ankita Jain, Ranjith Radha Krishnan, Donald R. Demuth, **Jill M. Steinbach-Rankins** (2017). “Peptide Modified Nanoparticles Inhibit *Porphyromonas gingivalis* Adherence to *Streptococcus gordonii*”, International Journal of Nanomedicine, 12:4553-4562, doi: 10.2147/IJN.S139178.
 11. Stella E. Aniagyei, Lee B. Sims, Danial A. Malik, Kevin M. Tyo, Keegan C. Curry, Woihan Kim, Daniel A. Hodge, Jinghua Duan, **Jill M. Steinbach-Rankins** (2017). “Evaluation of Poly(Lactic-co-Glycolic Acid) and Poly(DL-Lactide-co- ϵ -Caprolactone) Electrospun Fibers for the Treatment of HSV-2 Infection”, Materials Science and Engineering C, 1(72C):238-51, doi: 10.1016/j.msec.2016.11.029.
 12. Michael Halwes, **Jill M. Steinbach-Rankins**§, Hermann B. Frieboes§ (2016). “Pharmacokinetic Modeling of a Gel-Delivered Dapivirine Microbicide in Humans”, European Journal of Pharmaceutical Sciences, 93:410-418, doi: 10.1016/j.ejps.2016.08.037.
 13. Tiffany N. Grooms, Hung R. Vuong, Kevin M. Tyo, Danial A. Malik, Lee B. Sims, Kenneth E. Palmer, Nobuyuki Matoba, **Jill M. Steinbach-Rankins** (2016). “Griffithsin-Modified Electrospun Fibers as a Delivery Scaffold to Prevent HIV Infection”, Antimicrobial Agents and Chemotherapy, 60(11): 6518-31, doi: 10.1128/AAC.00956-16.
 14. Luis F.F. Neves, Jinghua Duan, Adrienne Voelker, Anil Khanal, Lacey McNally, **Jill M. Steinbach-Rankins**, Brian P. Ceresa (2016). “Preparation and Optimization of anionic liposomes for delivery of small peptides to human corneal epithelial cells”, Journal of Microencapsulation, 33(4):391-9, doi: 10.1080/02652048.2016.1202343.
 15. Lee B. Sims, Louis T. Curtis, Hermann B. Frieboes§, **Jill M. Steinbach-Rankins**§ (2016). “Enhanced Uptake and Transport of PLGA-modified Nanoparticles in Cervical Cancer”, Journal of Nanobiotechnology, 14(33), doi: 10.1186/s12951-016-0185-x.
 16. **Jill M. Steinbach** (2015). “Protein and oligonucleotide delivery systems for vaginal microbicides against viral STIs”, Cellular and Molecular Life Sciences, 72(3):469-503, doi: 10.1007/s00018-014-1756-3.
 17. **Jill M. Steinbach**, Young Eun-Seo, W. Mark Saltzman (2016). “CPP-Modified PLGA Nanoparticles for Enhanced Cell Internalization”, Acta Biomaterialia, 30:49-61, doi: 10.1016/j.actbio.2015.11.029.
 18. Darryl T. Martin, **Jill M. Steinbach**, Jingchun Liu, Shogo Shimizu, Hristos Z. Kaimakliotis, Marcia A. Wheeler, Adam B. Hittelman, W. Mark Saltzman, Robert M. Weiss (2014). “Surface Modified Nanoparticles Enhance Transurothelial Penetration and Delivery of Survivin siRNA in Treating Bladder Cancer”, Molecular Cancer Therapeutics, 13(1):71-81, doi: 10.1158/1535-7163.MCT-13-0502.
 19. **Jill M. Steinbach**, Caroline E. Weller, Carmen J. Booth, W. Mark Saltzman (2012). “Polymer Nanoparticles Encapsulating siRNA for Treatment of HSV-2 Genital Infection”, Journal of Controlled Release, 162(1):102-110, doi: 10.1016/j.jconrel.2012.06.008.
 20. **Jill M. Stukel**, Ronald Li, Heather Maynard, Michael R. Caplan (2010). “Two-Step Synthesis of Multivalent Cancer Targeting Constructs”, Biomacromolecules, 11(1): 160-7, doi: 10.1021/bm9010276.
 21. **Jill M. Stukel**, Michael R. Caplan (2009). “Targeted Drug Delivery for Treatment and Imaging of Glioblastoma Multiforme”, Expert Opinion on Drug Delivery, 6(7):705-718, doi:

10.1517/17425240902988470.

22. **Jill M. Stukel**, Jeffrey J. Heys, Michael R. Caplan (2008). “Optimizing Delivery of Multivalent Targeting Constructs for Detection of Secondary Tumors”, *Annals of Biomedical Engineering*, 36(7):1291-1304, doi: 10.1007/s10439-008-9498-8.
23. **Jill M. Stukel**, Jason Parks, Michael R. Caplan, Stephen I. Helms-Tillery (2008). “Temporal and Spatial Control of Neural Effects Following Intracerebral Microinfusion”, *Journal of Drug Targeting*, 16(3): 198-205, doi: 10.1080/10611860801886695.
24. Elena V. Rosca, **Jill M. Stukel**, Robert Gillies, Joseph Vagner, Michael R. Caplan (2007). “Specificity and Mobility of Polymeric Multivalent Constructs for Cellular Targeting”, *Biomacromolecules*, 8 (12):3830-3835, doi: 10.1021/bm700791a.

Book Chapters:

1. **Jill M. Steinbach-Rankins**, Michael R. Caplan. “Convective Wash Required to Achieve Specific Targeting of Glioma Cells”, *Methods in Molecular Biology, Targeted Drug Delivery: Methods and Protocols*.

PRESENTATIONS

Abstracts in Proceedings and Other Conference Presentations (§: Co-Senior Authors):

1. Sonali Sopare, D. M. Demuth§, **J. M. Steinbach-Rankins**§. *Development of Blended Polymeric Fibers to Alter the Release of Peptide Targeting Porphyromonas Gingivalis*. International Association of Dental Research (IADR), Fort Lauderdale, FL, March 22, 2018.
2. Lauren G Poole, Juliane I. Beier, Shanice V. Hudson, Jamie L. Young, Jesse Roman, **Jill M. Steinbach-Rankins**, and Gavin E. Arteel. *A Novel Nanoparticle-based Approach to Study Axes between the Liver and other Organs*. American Association for the Study of Liver Diseases (AASLD) 68th Meeting, accepted October 2017.
3. Paridhi Kalia, Ranjith Radhakrishnan, **Jill M. Steinbach-Rankins**, Donald Demuth. *Nanoparticle Drug Delivery Vehicles Targeting Porphyromonas gingivalis*. IADR/ADDR/CADR, March 2017.
4. Jinghua Duan and **Jill M. Steinbach-Rankins**. *Adaptable Griffithsin Delivery from Polymer Blend Nanoparticles and Electrospun Fibers*. *AIDS Research and Human Retroviruses* 32, 218-218, 2016.
5. Kevin M. Tyo and **Jill M. Steinbach-Rankins**. *Electrospun Polymer Nanofibers for Long-term Protection against HIV and HSV-2*. *AIDS Research and Human Retroviruses* 32, 223-223, 2016.
6. Darryl T. Martin¹, **Jill M. Steinbach**², Marcia A. Wheeler¹, Cayce Nawaf³, W. Mark Saltzman³, and Robert M. Weiss¹. *Knockdown of Glycoprotein-130 Inhibits Bladder Cancer Progression and Migration*. Departments of ¹Urology and ³Biomedical Engineering, Yale University, CT and ²Department of Bioengineering, University of Louisville, KY. *The Journal of Urology* 193(4) 2015.
7. Darryl T. Martin¹, **Jill M. Steinbach**², W. Mark Saltzman³, and Robert M. Weiss¹. *Blocking Glycoprotein-130 Pathway Decreases Bladder Cancer Growth*. Departments of ¹Urology and ³Biomedical Engineering, Yale University, CT and ²Department of Bioengineering, University of Louisville, KY. *The FASEB Journal*, 29(1 Supplement) 2015.
8. Stella E. Aniageyi, **Jill M. Steinbach**. *Engineering a “Virus Trap and Safety Net” Microbicide*. *AIDS*

Research and Human Retroviruses, 30(S1) 2014.

9. Valerie L. Sexton, Vida L. Hodara, Laura M. Parodi, Lisa M. Smith, Erwin Goldberg, **Jill Steinbach**, Mark Saltzman, Luis D. Giavedoni. *Delivery of Anti-SIV siRNAs to Rhesus Macaques via PLGA Nanoparticles*. Journal of Medical Primatology 42(5) 2013.
10. Darryl T. Martin¹, **Jill M. Steinbach**², Hristos Z. Kaimakliotis¹, Jingchun Liu¹, Marcia A. Wheeler¹, Adam B. Hittelman¹, W. Mark Saltzman², and Robert M. Weiss¹. *Surface Modifications of Poly(Lactide-co-Glycolide) Nanoparticles Can Increase Its Uptake by Bladder Cancer Cells*. Departments of ¹Urology and ²Biomedical Engineering, Yale University, CT. The Journal of Urology, 184(4) 2011.
11. R. Weiss¹, D. Martin¹, **Jill M. Steinbach**², J. Liu¹, H. Kaimakliotis¹, M. Wheeler¹, A. Hittelman¹, W. Saltzman². *Uptake of Surface Modified Poly(Lactide-co-Glycolid) Nanoparticles in Bladder Cancer Cells and in Human Ureter and Mouse Bladder*. Departments of ¹Urology and ²Biomedical Engineering, Yale University, CT. Urology, 78(3) 2011.

Invited or Peer-Reviewed Accepted Talks (§: Co-Senior Authors):

1. M. Mahmoud*, D. Demuth§, **Steinbach-Rankins, Jill M.** § “*BAR-Encapsulated Nanoparticles for Oral Biofilm Applications*”, KY Nano + AM symposium, *student presented, Aug. 2, 2018.
2. **Steinbach-Rankins, Jill M.** “*Setting the BAR*” with alternative delivery platforms to improve the delivery of biologics targeted against oral biofilms”, Controlled Release Society conference, NYC, invited oral focus group awardee, July 24, 2018.
3. M. Mahmoud*, D. Demuth§, **Steinbach-Rankins, Jill M.** § “*BAR-Encapsulated and BAR-Modified Nanoparticles for Oral Biofilm Applications*”, Controlled Release Society conference, NYC, *student presented, July 24, 2018.
4. **Steinbach-Rankins, Jill M.** “*Overcoming Transport Barriers to Achieve Therapeutic Potential for Reproductive and Ocular Cancers*”, University of Louisville JGBCC Seminar, June 13, 2018.
5. L. B. Sims, A. Ramasubramanian§, **Steinbach-Rankins, Jill M.** § “*Novel PLGA Nanoparticles Encapsulating Melphalan for the Treatment of Retinoblastomas*”, ARVO Conference, Honolulu HI; *student presented, May 2018.
6. **Steinbach-Rankins, Jill M.** “*Microenvironment-Inspired Nanoscale Delivery Vehicles for Localized Delivery to Reproductive Cancers, Viral Infections, and Bacterial Biofilms*”, Arizona State University, School of Biological and Health Systems Engineering; March 12, 2018.
7. **Steinbach-Rankins, Jill M.** “*The Design and Application of Next-Generation Nanotechnology Platforms for Localized Viral, Bacterial, and Cancer Delivery*”, Univ. of Louisville Chemical Engineering Seminar, Louisville KY; Feb. 9, 2018.
8. **Steinbach-Rankins, Jill M.** “*Multipurpose Delivery Vehicles to Enhance the Efficacy and Transport of Active Agents for Viral, Bacterial, and Cancer Applications*”, Anatomical Sciences and Neurobiology Dept., University of Louisville; Nov. 9, 2017.
9. **Steinbach-Rankins, Jill M.** “*Designing Drug Delivery Vehicles to Inhibit Tumors, Viruses, and Bacteria*”, Beer with a Lots of Scientists, Against the Grain Brewery; 091317.
10. P. Kalia, A. Jain, R. Radhakrishnan, D. Demuth, **Steinbach-Rankins, Jill M.** “*Raising the BAR: Functional and Mechanistic Evaluation of Multivalent BAR Nanoparticles to Inhibit Oral Biofilms*”, BMES, Tempe, Arizona; October 2017.
11. **Steinbach-Rankins, Jill M.** “*Designing Targeted Nanoparticles to Inhibit Tumor Progression and 3D*

- Biofilms*”, Cairo University, Safer Environment for a Better Future: Environmental and Global Health Conference, Sharm El Sheikh, Egypt; Nov. 13, 2016. Presented in panel discussion format.
12. **Steinbach-Rankins, Jill M.** “*Gene, Protein, and Antiviral-Based Nanotechnologies to Combat Global STIs*”, Cairo University, Safer Environment for a Better Future: Environmental and Global Health Conference, Cairo, Egypt; Nov. 10, 2016.
 13. **Steinbach-Rankins, Jill M.** “*Designing Nanotechnologies to combat Viruses and Virus-Initiated Cancers*”, Univ. of Louisville Chemical Engineering Seminar, Louisville KY; Sept 2, 2016.
 14. **Steinbach-Rankins, Jill M.** “*Designing Nanotechnologies to combat Viruses and Virus-Initiated Cancers*”, Univ. of Louisville Dental School Seminar, Louisville KY; Apr 15, 2016.
 15. **Steinbach, Jill M. and Tyo, Kevin M.** “*A Multipurpose Prevention Technology for the Delivery of Antivirals, Proteins, & Oligonucleotides against STIs*”, BMES Conference, Tampa, FL; October 9, 2015.
 16. **Steinbach, Jill M. and Arnold, Forest.** “*Infectious Diseases*”, BMES and Med School Engineer-Clinician Med Talk Symposium, Louisville, KY; April, 14, 2015.
 17. **Steinbach, Jill. M.** “*Design and Development of a “Virus Trap and Safety Net” Microbicide for STI Prevention*”, Cincinnati Children’s Hospital – Division of Infectious Diseases, Cincinnati, OH; January, 13, 2015.
 18. **Steinbach, Jill M.** “*Engineering a Multipurpose “Virus Trap and Safety Net” Microbicide*”, HIV R4P Conference, Cape Town, South Africa; October 30, 2014.
 19. **Steinbach Jill M.** “*Engineering a Multipurpose “Virus Trap and Safety Net” Microbicide*”, Biomedical Engineering Society Meeting, San Antonio, TX; October 23, 2014.
 20. **Steinbach, Jill M.** “*Design of a Multipurpose Delivery and Virus-Trapping Platform for STI Prevention*”, Department of Microbiology & Immunology, Louisville, KY; June 19, 2014.
 21. **Steinbach, Jill M.** “*They’re Catchy; So How Can We Combat Virus Infection with Nanotechnology?*”, Louisville Underground Science – Against the Grain Brewery, Louisville, KY; June 18, 2014.
 22. **Steinbach, Jill M.** “*Designing and Engineering a Multipurpose Delivery Platform for Prevention and/or Treatment of Sexually Transmitted Infections*”, Canadian Controlled Release Society, Montreal, QC; June 12, 2014.
 23. **Steinbach, Jill M.** “*Design and Development of Nanomaterials for STI Prevention and Treatment*”, Introduction to Bioengineering Course, Louisville, KY; March 27, 2014.
 24. **Steinbach, Jill M.** “*DNA Virus: Herpes Simplex Virus*”, Univ. of Louisville – Virology Lecture, Louisville, KY; February 19, 2014.
 25. **Steinbach, Jill M.** “*Design of siRNA Nanoparticles for Enhanced Cellular Internalization and Treatment of HSV-2 Infection*”, Univ. of Louisville – Ophthalmology and Visual Sciences, Louisville, KY; January 31, 2014.
 26. **Steinbach, Jill M.** “*Design of siRNA Nanoparticles for Enhanced Cellular Internalization and Treatment of HSV-2 Infection*”, Univ. of Louisville – Department of Microbiology & Immunology, Louisville, KY; November 5, 2013.
 27. **Steinbach, Jill M.** “*Design of siRNA Nanoparticles for Enhanced Cellular Internalization and Treatment of HSV-2 Infection*”, Univ. of Louisville – Department of Pharmacology & Toxicology, Louisville, KY; October 24, 2013.
 28. **Steinbach, Jill M.** “*Design of siRNA Nanoparticles for Enhanced Cellular Internalization and Treatment of*

- HSV-2 Infection*”, Cincinnati Children’s Hospital – Division of Infectious Diseases, Cincinnati, OH; October 15, 2013.
29. **Steinbach, Jill M.** “*Polymer Nanoparticles with siRNA for Treatment of HSV-2 Infection*”, Biomedical Engineering Society (BMES) Conference, Hartford, CT; October 2011.
 30. **Steinbach, Jill M.** “*Polymer Nanoparticles with siRNA for Treatment of HSV-2 Infection*”, Controlled Release Society Conference, Baltimore, MD; August 2011.
 31. **Steinbach, Jill M.** “*Drug and Gene Delivery*”, Turkey Summer Session, Istanbul, Turkey; July 2011.
 32. **Steinbach, Jill M.** “*Polymer Nanoparticles with siRNA for Treatment of HSV-2 Infection*”, Turkey Summer Session, Istanbul, Turkey; July 2011.
 33. **Steinbach, Jill M.** “*Drug Delivery and Engineering Challenges for Prevention and Treatment of Sexually Transmitted Diseases*”, Yale Global Health Institute; Feb 2011.
 34. **Steinbach, Jill M.** “*Delivery of siRNA Nanoparticles for Inhibition of HSV-2 Infection*”, U.S.-Turkey Advanced Study Institute on Global Healthcare Grand Challenges, Antalya, Turkey; July 2010.
 35. **Stukel, Jill M.** “*Synthesis and Delivery Optimization of Multivalent Targeting Constructs for Detection of Secondary Tumors*”, Bioengineering Departmental Seminar, Tempe, AZ; December 2008.
 36. **Stukel, Jill M.** “*Economical Synthesis and Evaluation of Cancer Targeting Constructs*”, Society for Biomaterials Conference, Atlanta, GA; September 2008.
 37. **Stukel, Jill M.** “*Optimizing Delivery of Multivalent Targeting Constructs for Detection of Secondary Tumors*”, Bioengineering Departmental Seminar, Tempe, AZ; March 2006.
 38. **Stukel, Jill M.** “*A Mathematical Modeling Analysis of Optimizing Delivery of Multivalent Targeting Constructs for Detection of Secondary Tumors*”, Mass Transport Lecture, Tempe, AZ; November 2006.

Students Mentored (37 to-date during faculty position, as: ¹supervisor, ²committee, ³co-advisor, *manuscript(s) published):

Post-Doctoral

1. Longyun Zhang, Ph.D.¹, March 2017-Present.
2. *Jinghua Duan, Ph.D.¹, June 2015-June 2016, industry placement.
3. *Stella Aniagyei, Ph.D.¹, Jan. 2014-May 2014, start-up placement.

Doctoral

In Progress:

1. *Kevin Tyo¹ (Pharmacology and Toxicology, Spring 2014), “Electrospun Fibers as a Novel Drug Delivery System for the Prevention of STIs”, successfully defended Master’s Thesis for Ph.D. Candidacy, July 2016.
2. Mohamed Mahmoud^{1,3} (Pharmacology and Toxicology, Fall 2016), “Delivering Surface-Modified Nanoparticles to Prevent and Disrupt Biofilm Formation”, Ph.D. Candidate as of Spring 2017.
3. Farnaz Minoie^{1,3} (Chemical Engineering, Fall 2017), “Mechanistic Evaluation of Virus and Nanoparticles through NP-Fiber Composites”, started in lab Spring 2018.

*Master's or MEng****In Progress:***

1. Alex Keynton¹ (Bioengineering, Master's of Eng.), Topic: "Polymer Molded Biodegradable Stents for Bile Duct Transplants", Master's Committee (in progress).

Completed:

2. *Lee Sims¹ (Bioengineering, Master's of Eng.) "Cervical Tumor Uptake and Transport".
3. Sonali Sapare^{1,3} (Dental School Master's), Topic: "Electrospun Fibers for the Delivery of BAR Peptide", began Fall 2016.
4. *Paridhi Kalia^{1,3}, "Synthesis and Functional Evaluation of Peptide Modified Poly(Lactic-co-Glycolic Acid) Nanoparticles to Inhibit Porphyromonas Gingivalis Biofilm Formation, Dental School Master's Thesis, December 2015 (Graduated).
5. *Ankita Jain^{1,3} (Dental School Master's), "Mechanism of Peptide-Modified Nanoparticle Interaction with Porphyromonas Gingivalis", Dental School Master's, Thesis Defended December 2016 (Graduated).
6. *Ranjith Radhakrishnan^{1,3} (Dental School Master's), "Synthesis and Characterization of Targeted Sustained Release BAR PLGA Nanoparticles to Inhibit Porphyromonas Gingivalis Biofilm Formation, Dental School Master's, Thesis Defended April 2017 (Graduated).
7. Sarah NeCamp¹ (Bioengineering, MEng non-thesis), "Fabrication and Characterization of L. Acidophilus in Hydrophilic Polymeric Fibers", Bioengineering Non-Thesis Committee.

Undergraduate

1. Ruta Patwardhan¹ (Bioeng. Undergraduate), "Fabrication of Hydrophilic Probiotic Fibers", Summer 2017 - Present.
2. Sindhu Parupalli¹ (Bioeng. Undergraduate), "Assessing Nanoparticle Transport in Ovarian Cancer Spheroids", Summer 2017 (CEP), Spring 2018 - Present.
3. Daniel Graves¹ (Bioeng., then Biochemistry Undergraduate), "Review of Fiber-Nanoparticle Composites", Spring 2017 - Fall 2017.
4. *Pravallika Kollipara¹ (Bioeng. Undergraduate), "pH-Responsive GRFT Fibers", Summer 2016-Spring 2017.
5. *Maya Huss¹ (Bioeng./Industrial Eng. Undergraduate), "Transport and Distribution of Stealth and Cell Penetrating Nanoparticles in Cervical Cancer Tissue Mimics", Summer 2015 and Summer 2016 Cancer Education Program.
6. *Lee Sims¹ (Bioeng. Undergraduate Researcher and Co-op (Spring 2016)) "Tumor Uptake and Transport", October 2013 – Present (completing Master's).
7. *Michael Halwes³ (Bioeng. Undergraduate Researcher) "Modeling of Active Agents from Nanoparticles and Fibers in the Female Reproductive Tract", October 2014 – Fall 2017.
8. *Hung Vuong¹ (Chemistry Undergraduate), "GRFT-Modified Fibers against HIV", Spring 2014 – Spring 2016.
9. Sarah NeCamp¹ (Bioeng. Undergraduate) "Protein-based Electrospun Fibers", Fall/Spring 2014/2015.
10. *Keegan Curry¹ (Bioeng. Undergraduate), "Development of Electrospayed Core-Shell Lipid Nanoparticles for Evaluation in Ovarian and Cervical Cancer Spheroids", late Spring 2016 - Present.

11. Alex Keynton¹ (Bioeng. Undergraduate Co-op), Topic: “Polymer Molded Biodegradable Stents for Bile Duct Transplants”, Spring 2016.
12. Justin Heidel¹ (Bioeng. Undergraduate) “siRNA Electrospun Fibers against Cancer”, Spring 2015 – Fall 2015).
13. *Louis Curtis^{1,3} (Bioeng. Undergraduate) “Binding and Internalization of Surface-Modified Nanoparticles in Cervical Tumor Monolayers”, Spring 2015 – Fall 2015).
14. *Danial Malik¹ (Temporary Lab Manager/Student), Summer 2014 – Summer 2015.
15. *Daniel Hodge¹ (Bioeng. Undergraduate) “Assessment of Polymeric Fiber Mechanical Properties”, Spring 2015.
16. Amos Zoeller¹ (Bioeng. Undergraduate and Co-op (Fall 2015)) “Electrospun Fibers for Bile Duct Transplant”, Summer 2015 – Fall 2015.
17. Jacob Beal¹ (Bioeng. Undergraduate) “Antiviral Electrospun Fibers”, Spring/Summer 2014.

Orthodontic Resident

1. Carly Warden¹ (Resident) “A Novel Nitric Oxide-Releasing Elastomeric Chain: Development of an Antimicrobial Orthodontic Ligature”, Summer 2018.

Medical Rotation Students

2. Stephen Winter¹ (Medical Student) “Determinants of Ovarian Cancer Spheroid Microenvironmental Mimics”, Summer 2018.
3. *Gwynneth Horner¹ (Medical Student) “siRNA Nanoparticles against CCR5”, Summer 2015.
4. *Carli Whittington¹ (Medical Student) “EpiVaginal Tissue Model Cytotoxicity”, Summer 2015.
5. *Woihan Kim¹ (Medical Student) “ACV Fibers against HSV-2 Infection”, Summer 2014.

High School

1. Julie Nguyen¹ (High School Student, J. Graham Brown School), “Quantification of Stealth and Cell Penetrating Nanoparticle Transport in Cervical Cancer Tissue Mimics”, Summer/Fall 2016 JBCC Summer co-Mentor.
2. Allison Tu¹ (High School Student, DuPont Manual), “Small Packages to Prevent HIV”, Fall 2015 – Spring 2016.
3. Sadie Lawrence¹ (High School Student, DuPont Manual), general mentoring, Fall 2017 – Present.
4. Bhargav Ramesh³ (High School Student, DuPont Manual), “3D Printing, HIV Devices”, Summer/Fall 2018.

Other Dissertation and Thesis Committees:

1. Chris England², “Study of Novel Nanoparticle Transport and Drug Release for Cancer Treatment”, Pharmacology and Toxicology Ph.D. Dissertation, December 2014 (Graduated).
2. Louis Curtis³, “Modeling the Effect of Drug-Releasing Nanotherapy Based on Tumor Microenvironment Characteristics”, Bioengineering Master’s Thesis, April 2016 (Graduated).
3. Grace Mahlbacher², “Examining the Effects of Macrophage Populations on Cancerous Tumor Growth”, Bioengineering Master’s Committee (Graduated).
4. Daniel Hodge², “The Effectiveness of Localized Ultrasound and Aptamer Surface Modification on

- Nanoemulsions for Drug Delivery to Spheroids”, Bioengineering Master’s Thesis, May 2018 (Graduated).
- Hunter Miller², “Evaluation of Drug-Loaded Gold Nanoparticle Cytotoxicity as a Function of Tumor Tissue Heterogeneity”, Pharmacology and Toxicology Master’s Thesis and Ph.D. Proposal, July 2018.
 - Nagwa El-Baz², “A Cancer-Targeted Gold Nanoparticle-Based MRI Contrast Agent”, Pharmacology and Toxicology Master’s Thesis and Ph.D. Proposal, July 2018.

Qualifying Exam Committee:

- Neal Bhutiani², “Assessing Immunomodulatory Effects of Irreversible Electroporation in Locally Advanced Pancreatic Adenocarcinoma”, Microbiology and Immunology Qualifying Exam, March 2016.

Independent Student Oral Presentations:

- Hung Vuong, **Jill M. Steinbach-Rankins**. “*Griffithsin Surface-Modified Nanoparticles as Prophylactics for HIV-1*”, 2016 ACC Meeting of the Minds Conference, Syracuse NY; April 9, 2016.
- Hung Vuong, **Jill M. Steinbach-Rankins**. “*Development of a Next-Generation Topical Pre-Exposure Prophylactic (PrEP) Technology using siRNA-Encapsulated, Surface-Modified Nanoparticles*”, SROP Undergraduate Summer Program Oral Presentation, 073115.
- Lee B. Sims, Louis Curtis, **Jill M. Steinbach-Rankins**. “*Effects of PLGA Nanoparticle Surface Modification on Tumor Penetration and Distribution*”, Cancer Education Program Oral Presentation, 062615.

Student Poster Presentations:

- Longyun Zhang and **Jill M. Steinbach-Rankins**. “*Fabrication and Characterization of Probiotic Electrospun Fibers against Bacterial Vaginosis*”, CRS, New York City, NY; July 22, 2018.
- Bhargav Ramesh, Kevin Tyo, **Jill Steinbach-Rankins**, Kunal Kate. “*3-D Printing with Modified Biocompatible Polymers for Tissue Regeneration and Drug Delivery*”, Intel International Science and Engineering Fair 2018, May 2018.
- Sonali Sapare, Donald Demuth§, **Jill Steinbach-Rankins§**. “*BAR-Encapsulated Electrospun Fibers Inhibit Porphyromonas gingivalis Biofilm Formation*”, IADR, Fort Lauderdale, FL; March 22, 2018
- Sindhu Parupalli, Lee Sims, **Jill Steinbach-Rankins**. “*Quantification and Correlation of Surface-Modified Polymer Nanoparticle Binding and Internalization to Nanoparticle Efficacy and 3D Spheroid Distribution*”, Speed School Research Exposition, University of Louisville; March 2, 2018.
- Sonali Sapare, Donald Demuth§, **Jill Steinbach-Rankins§**. “*BAR-Encapsulated Electrospun Fibers Inhibit Porphyromonas gingivalis Biofilm Formation*”, Graduate Student Regional Research Conference (GSRRC); March 2-3, 2018.
- Sindhu Parupalli, Lee Sims, **Jill Steinbach-Rankins**. “*Quantification and Correlation of Surface-Modified Polymer Nanoparticle Binding and Internalization to Nanoparticle Efficacy and 3D Spheroid Distribution*”, Kentucky Honors Roundtable, Morehead State University; Feb. 2018.
- Sindhu Parupalli, Lee Sims, **Jill Steinbach-Rankins**. “*Quantification and Correlation of Surface-Modified Polymer Nanoparticle Binding and Internalization to Nanoparticle Efficacy and 3D Spheroid Distribution*”, Research Louisville; Sept. 2017.
- Mohamed Mahmoud, Donald Demuth§, **Jill Steinbach-Rankins§**. “*Assessing BAR-Peptide Nanoparticle Effectiveness against P. gingivalis Biofilm Formation*”, Research Louisville; Sept. 2017.
- Sonali Sapare, Donald Demuth§, **Jill Steinbach-Rankins§**. “*BAR-Encapsulated Electrospun Fibers*

Inhibit Porphyromonas gingivalis Biofilm Formation”, Research Louisville; Sept. 2017.

10. Longyun Zhang, Ruta Patwardhan, Sarah NeCamp, **Jill Steinbach-Rankins**. “*Hydrophilic Electrospun Fibers for the Incorporation of Probiotics against Bacterial Vaginosis*”, Research Louisville; Sept. 2017.
11. Kevin Tyo, Kenneth Palmer, **Jill Steinbach-Rankins**, “*Griffithsin-Based Nanocarriers for the Prevention of Viral Infections*”, Research Louisville; Sept. 2017.
12. Brandon Nguyen-Ho, Kimberly Head, Lauren Poole, Juliane Beier, **Jill Steinbach-Rankins**, Gavin Arteel. “*Analysis of Organ and Cell-Specific Gene Manipulation with Nanoparticles*”, Research Louisville; Sept. 2017.
13. Lee B. Sims, Maya Huss, **Jill M. Steinbach-Rankins**. “*Penetration and Distribution of Hybrid-Modified Nanoparticles in Cervical Tumor Mimics*”, CRS, Boston, MA; July 18, 2017.
14. Kevin M. Tyo, **Jill M. Steinbach-Rankins**. “*Electrospun Nanofibers as a Novel Drug Delivery System for the Prevention of STIs*”, HIVR4P Conference, Chicago, IL; October 19, 2016.
15. Pravallika Kollipara, Jinghua Duan, and **Jill M. Steinbach-Rankins**. “*Adaptable Griffithsin Delivery from Electrospun Fibers*”, HIVR4P Conference, Chicago, IL; October 19, 2016.
16. Kevin M. Tyo, **Jill M. Steinbach-Rankins**. “*Electrospun Nanofibers as a Novel Drug Delivery System for the Prevention of STIs*”, Research Louisville; October 2016.
17. Julie T. Nguyen, Lee B. Sims, **Jill M. Steinbach-Rankins**§, Hermann B. Frieboes§. “*Quantification of Stealth and Cell Penetrating Nanoparticle Transport in Cervical Cancer Tissue Mimics*”, Research Louisville; October 2016.
18. Maya K. Huss, Lee M. Sims, Julie T. Nguyen, **Jill M. Steinbach-Rankins**. “*Transport and Distribution of Stealth and Cell Penetrating Nanoparticles in Cervical Cancer Tissue Mimics*”, Research Louisville; October 2016.
19. Ankita Jain, Kenneth Palmer, **Jill M. Steinbach-Rankins**§, Donald R. Demuth§. “*Mechanism of Interaction of Peptide Modified Nanoparticles with Porphyromonas gingivalis*”, Research Louisville; October 2016.
20. R. Radha Krishnan, **J. M. Steinbach-Rankins**§, D. R. Demuth§. “*Synthesis and Characterization of Targeted BAR-modified Sustained Release PLGA Nanoparticles to Inhibit Porphyromonas gingivalis Biofilm Formation*”, Research Louisville; October 2016.
21. Maya K. Huss, Lee B. Sims, Julie T. Nguyen, **Jill M. Steinbach-Rankins**. “*Transport and Distribution of Stealth and Cell Penetrating Nanoparticles in Cervical Cancer Tissue Mimics*”, Summer 2016 Cancer Education Program Undergraduate Presentations; August 3, 2016.
22. Julie T. Nguyen, Lee B. Sims, **Jill M. Steinbach-Rankins**§, Hermann B. Frieboes§. “*Quantification of Stealth and Cell Penetrating Nanoparticle Transport in Cervical Cancer Tissue Mimics*”, Summer 2016 JBCC Program; August 3, 2016.
23. Allison Tu and **Jill M. Steinbach-Rankins**. “*Small Packages: Nanomaterials as Novel Drug Delivery Vehicles to Prevent Viral STIs*”, Allison Tu (Freshman at Manual du Pont High School), Intel Science Fair, 1st Place in BE Division.
24. Hung Vuong and **Jill M. Steinbach-Rankins**. “*Development of a Next-Generation Topical Pre-Exposure Prophylactic (PrEP) Technology Using siRNA-Encapsulated, Surface-Modified Nanoparticles*”, Posters-at-the-Capitol, Frankfort, KY; February 25, 2016.

25. Ranjith Radhakrishnan, Donald Demuth§, **Jill M. Steinbach§**. “*Synthesis and Characterization of Targeted BAR modified Sustained Release PLGA Nanoparticles to Inhibit Porphyromonas gingivalis Biofilm Formation*”, Hinman Conference; Memphis, TN; October 30, 2015.
26. Justin S. Heidel, **Jill M. Steinbach**. “*Design and Synthesis of Polymer Blend Electrospun Fibers for Sustained Release of siRNA to the Female Reproductive Tract*”, Research Louisville; October 28, 2015.
27. Hung Vuong, **Jill M. Steinbach**. “*Development of a Next-Generation Topical Pre-Exposure Prophylactic (PrEP) Technology using siRNA-Encapsulated, Surface-Modified Nanoparticles*”, Research Louisville; Louisville, KY; October 28, 2015.
28. Lee B. Sims, **Jill M. Steinbach**. “*Effects of Hybrid Surface-Modified Nanoparticles on HPV 18 E6 Knockdown In Vitro*”, Research Louisville; October 28, 2015.
29. Carli P. Whittington, Jinghua Duan, **Jill M. Steinbach**. “*Assessing the Safety of ‘Virus Trap and Safety Net’ Electrospun Fibers in an EpiVaginal Tissue Model*”, Research Louisville; October 28, 2015.
30. Gwynneth K. Horner, **Jill M. Steinbach**. “*Using siRNA Nanoparticles to Modulate CCR5 Host Cell Receptor Expression as an HIV Prevention Strategy*”, Research Louisville; October 27, 2015.
31. Tyo, Kevin, **Jill M. Steinbach**. “*Electrospun Nanofibers as a Novel Drug Delivery System for the Prevention of STIs*”, Research Louisville; October 27, 2015.
32. Ranjith Radhakrishnan, Donald Demuth§, **Jill M. Steinbach§**. “*Synthesis and Characterization of Targeted BAR modified Sustained Release PLGA Nanoparticles to Inhibit Porphyromonas gingivalis Biofilm Formation*”, Research Louisville; October 27, 2015.
33. Paridhi Kalia, Donald Demuth§, **Jill M. Steinbach§**. “*Synthesis and Functional Evaluation of Peptide-Modified Poly(Lactic-co-Glycolic Acid) Nanoparticles to Inhibit Porphyromonas gingivalis Biofilm Formation*”, Research Louisville; October 27, 2015.
34. Justin S. Heidel, **Jill M. Steinbach**. “*Design and Synthesis of Polymer Blend Electrospun Fibers for Sustained Release of siRNA to the Female Reproductive Tract*”, BMES; Tampa, FL; October 10, 2015.
35. Hung Vuong, **Jill M. Steinbach**. “*Development of a Next-Generation Topical Pre-Exposure Prophylactic (PrEP) Technology using siRNA-Encapsulated, Surface-Modified Nanoparticles*”, BMES; Tampa, FL; October 10, 2015.
36. Justin S. Heidel, **Jill M. Steinbach**. “*Design and Synthesis of Polymer Blend Electrospun Fibers for Sustained Release of siRNA to the Female Reproductive Tract*”, Eastern Kentucky University Conference, September 2015.
37. Hung Vuong, **Jill M. Steinbach**. “*Development of a Next-Generation Topical Pre-Exposure Prophylactic (PrEP) Technology using siRNA-Encapsulated, Surface-Modified Nanoparticles*”, Eastern Kentucky University Conference, September 2015.
38. Lee B. Sims, **Jill M. Steinbach**. “*Effects of Hybrid Surface-Modified Nanoparticles on HPV 18 E6 Knockdown In Vitro*”, Cancer Education Summer Program Oral Presentation; 073115.
39. Justin S. Heidel, **Jill M. Steinbach**. “*Design and Synthesis of Polymer Blend Electrospun Fibers for Sustained Release of siRNA to the Female Reproductive Tract*”, Cancer Education Summer Program Oral Presentation; 073115.
40. P. Kalia, D.R. Demuth§, **J.M. Steinbach§**. “*Synthesis and Functional Evaluation of Peptide-Modified Poly(Lactic-co-Glycolic Acid) Nanoparticles to Inhibit Porphyromonas gingivalis Biofilm Formation*”, IADR/AADR/CADR Conference, Boston, MA; March 2015.
41. NanoDays Kentucky Science Center. Presented 3 group posters from below. April 2015.

42. P. Kalia, D.R. Demuth, **J.M. Steinbach**. *"Synthesis and Functional Evaluation of Peptide Modified Poly(Lactic-co-Glycolic Acid) Nanoparticles to Inhibit Porphyromonas gingivalis Biofilm Formation"*, 20th Hinman Student Research Symposium, Memphis, Tennessee; March 27-29, 2014.
43. Lee B. Sims, Hermann Frieboes, **Jill M. Steinbach**. *"Effects of Nanoparticle Morphology and Surface Modification on Tumor Penetration and Distribution"*, Cancer Education Program; 2014.
44. Lee B. Sims, Hermann Frieboes, **Jill M. Steinbach**. *"Effects of Nanoparticle Morphology and Surface Modification on Tumor Penetration and Distribution"*, BMES, San Antonio TX; Oct. 25, 2014.
45. Jacob A. Beal, Lee B. Sims, Woihwan Kim, Danial A. Malik, Tiffany W. Grooms-Williams, Nobuyuki Matoba, and **Jill M. Steinbach**. *"Engineering a "Virus Trap and Safety Net" Microbicide against Multiple STIs"*, Research Louisville; 091614.
46. Lee B. Sims, Hermann Frieboes, **Jill M. Steinbach**. *"Effects of Nanoparticle Morphology and Surface Modification on Tumor Penetration and Distribution"*, Research Louisville; 091614.
47. Woihwan Kim and **Jill M. Steinbach**. *"Electrospun Fibers: A Virus Ensnaring Next-Generation Microbicide Platform"*, Research Louisville; 091614.
48. P. Kalia, D.R. Demuth, **J.M. Steinbach**. *"Synthesis and Functional Evaluation of Peptide-Modified Poly(Lactic-co-Glycolic Acid) Nanoparticles to Inhibit Porphyromonas gingivalis Biofilm Formation"*, Research Louisville; 091614.
49. Paridhi Kahlia, Donald Demuth, **J.M. Steinbach**. *"Synthesis and Functional Evaluation of Peptide-Modified Poly(Lactic-co-Glycolic Acid) Nanoparticles to Inhibit Porphyromonas gingivalis Biofilm Formation"*, IADR (Maryland) and AADR (Boston) and CADR.
50. Stella Aniagyei and **Jill M. Steinbach**. *"Engineering a "Virus Trap and Safety Net" Microbicide against Multiple STIs"*, Bioengineering Day, Louisville, KY; 090514.
51. Lee B. Sims, Hermann Frieboes, **Jill M. Steinbach**. *"Effects of Nanoparticle Morphology and Surface Modification on Tumor Penetration and Distribution"*, Bioengineering Day, Louisville, KY; 090514.

Posters Prior to Faculty Position:

1. **Steinbach, Jill M.** *"Surface Modified Polymer Nanoparticles for Enhanced Delivery of Microbicidal siRNAs"*, Controlled Release Society Annual Meeting, Quebec City, Canada; July 2012.
2. **Steinbach, Jill M.** *"Surface Modified siRNA Nanoparticles for Inhibition of HSV-2 Infection"*, Yale Controlled Release Society CT Chapter Symposium; January 2012.
3. **Steinbach, Jill M.** *"Delivery of siRNA Nanoparticles for Inhibition of HSV-2 Infection"*, Yale Controlled Release Society CT Chapter Symposium; December 2010.
4. **Stukel, Jill M.** *"Synthesis and Delivery Optimization of Multivalent Targeting Constructs for Detection of Secondary Tumors"*, NSF IGERT Project Conference (Selected Attendee), VA; May 2008.
5. **Stukel, Jill M.** *"Optimizing Delivery of Multivalent Targeting Constructs for Detection of Secondary Tumors"*, BMES Conference, Los Angeles, CA; September 2007.
6. **Stukel, Jill M.** *"Optimizing Delivery of Multivalent Targeting Constructs for Cancer Detection and Treatment"*, WestBEC Phoenix, AZ; November 2006.
7. **Stukel, Jill M.** *"Optimizing Delivery of Multivalent Targeting Constructs for Cancer Detection and Treatment"*, Biomedical Engineering Society (BMES) Conference, Chicago, IL; October 2006.

TEACHING AND SCHOLARSHIP OF TEACHING

Courses Developed and Taught:

Instructor for Undergraduate Level Courses:

1. Introduction to Bioengineering (BE 101): **Spring: 2014, 2015, 2016, 2017, 2018**
2. Introduction to Bioengineering (BE 101) Online: **Spring 2017, Fall 2017, Spring 2018, Summer 2018, Fall 2018**

Instructor for Graduate Level Courses:

1. Advanced Biomaterials (BE 650): **Fall: 2014, 2015, 2016, 2017, 2018**
2. Gene and Drug Delivery (BE 551): **Fall: 2018**

Guest Lectures:

MBIO 618-02: Cell Biology of Viruses (Spring: 2014, 2015, 2016)

BIOL 571/671: Graduate Virology Course Lecture (Spring 2016)

ENGR 110: Present the BE Dept. Overview Lecture to Incoming Engineering Students (Nov. 2016, Aug. 2017)

Yearly Effectiveness Summary from Student Course Evaluations:

Course	2014	2015	2016	2017	2018	Mean
BE 101	3.75	3.8	4.04	3.85 (in-class) 4.25 (online)	3.96 (in-class)	
BE 650	4	3.45	4.53	3.58		

Teaching Publicity:

BE101 2017 Crutch Project: UofL Institute for Product Realization: <https://www.uoflpr.com/success-stories/building-better-crutches>, May 2017.

Prior Teaching Experience (Teaching Assistant):

Mass Transport Phenomena and Fluid Dynamics with Dr. Michael Caplan Fall 2005

Intro. to Molecular, Cellular, and Tissue Engineering with Dr. Brent Vernon Fall 2006

SERVICE

Professional:

- Member, ARVO Society (2018)
- Member, Controlled Release Society (Since 2010)
- Member, Biomedical Engineering Society (Since 2014)
- Co-Editor for Drug Delivery and Translational Research (DDTR) Special Issue, planned Fall 2018.
- Young Scientist Committee, Controlled Release Society (2014 and 2015)

- Co-chair Controlled Release Society (CRS) Annual Meeting, Chicago, IL: siRNA Delivery, 2014
- Co-chair Biomedical Engineering Society (BMES) Annual Meeting, San Antonio, TX: Targeted Drug Delivery, 2014
- Reviewer for the following journals:
 - AIDS Research and Human Retroviruses
 - Acta Biomaterialia
 - American Chemical Society (ACS) Applied Biomaterials
 - American Society of Microbiology
 - Bioengineering
 - Drug Delivery and Translational Research
 - European Journal of Pharmaceutics and Biopharmaceutics
 - IEEE Transaction on Nanotechnology
 - Journal of Controlled Release
 - Journal of Pediatrics and Pediatric Medicine
 - Medical Virology
 - Molecular Pharmaceutics
 - Reviews in Medical Virology
 - International Journal of Nanomedicine
 - International Journal of Pharmaceutics
 - Nanomedicine: Nanotechnology, Biology, and Medicine
 - Nature: Scientific Reports
- Grant Reviews
 - Canadian Institutes of Health Research (CIHR)/Natural Sciences and Engineering Research Council of Canada (NSERC)
 - Canadian Institutes of Health (CIHR) Grant Review Panel for Spring 2017.
 - Mitacs Elevate Postdoctoral Fellowship Program, April 2018.
- BMES Abstract Reviewer 2015, 2016, 2017, 2018

University:

- BMES Faculty Advisor: Fall 2014 – Current
- Chair Bioeng. and Life Sciences Panel, KY Nano + AM Symposium, August 2018
- Publishing Academy Tenure Track Faculty Panel: Spring 2016
- Owensboro Cancer Center Faculty Search Committee: Spring 2015
- Dental Decanal Dean Search Committee: Summer/Fall/Spring 2015-2016
- SWE Industry/Faculty Panel 06/2014
- Office of Technology Transfer: Committee Chair of Engineering Tech. Manager search
- Research Louisville Poster Session Judge: October 2013, 2014, 2015, 2016, 2017
- Cancer Education Program Poster Session Judge: August 2014, 2015, 2016, 2017

- R25 Cancer Education Program: Navigating Careers in Cancer Research Table: Women in Science: 2015, 2016, 2017, 2018

Department:

- Department Continuous Improvement Committee ABET: Oct. 2013 - Current
- Department Prospective Student Committee Bioengineering: Oct. 2013 - Current
- Department Faculty Search Committee: Spring 2015
- Univ. of Louisville Pharmacology and Toxicology KC Huang Graduate Award Committee: July 2017
- Annual organizer of the 1st and 2nd Bioengineering/BMES Department 5k Run. 10/21/16 and 11/03/17 (44 and 38 registrants and ~15-20 volunteers).
- Student/Faculty BMES career panel, Nov. 28, 2017.

Community:

- High School Outreach (Invited): Steinbach-Rankins, J.M., Presentation at duPont Manual, “Design and Development of Novel Nanomaterials against Infectious Disease and Cancer”, Feb. 5, 2017.
- High School Outreach (Invited): Steinbach-Rankins, J.M., JBCC Collaboration for NSF, April, 2017.

External to Work:

- Although non-professional, my two-time completion of Ironman Arizona: 2.4 mi swim, 112 mi bike, and 26.2 mi run exemplifies my dedication to, and perseverance of passions and interests (April 2006, April 2007).
- Blade forging: applying the art of metalworking and blacksmithing, to design and coal-forged knives. This work stemmed from my undergraduate interest (and initial major) in metallurgy. The art of forging embodies patience and meticulousness to produce a functional and aesthetically pleasing product. Produced 8 pieces from initial metal rods during weekly open-shed workshops (2010-2013).
- To gain new skills when there is a moment, I enjoy: weight lifting (maintain/increase ability to do pull-ups), morning cardio workouts (also serve as an efficient way to integrate/rehearse most course lectures), boxing (do not rehearse course lectures here), flamenco (a slowly developing skill that I am most challenged by), beer brewing (“want-to-be/wish there was more time” brewer), and Native American beading (such a beautiful art, attempting to learn myself) (2013-2018).