

CURRICULUM VITAE

Anna A. Shenderova Schwendeman, Ph. D.

Current Position

2021 – present William I Higuchi Collegiate Professor of Pharmacy
2021 – present Professor, Department of Pharmaceutical Sciences, University of Michigan, Ann Arbor, MI
2012 – present Member, Biointerfaces Institute, University of Michigan
2013 – present Member, University of Michigan Alzheimer's Center
2013 – present Member, Frankel Cardiovascular Center, University of Michigan
2013 – present Member, Michigan Center for Integrative Research in Critical Care
2020 – present Director of Center for Research in Complex Generics

Previous Experience

2018 – 2021 Associate Professor, Department of Pharmaceutical Sciences, University of Michigan, Ann Arbor, MI
2015 – 2018 Assistant Professor, Department of Pharmaceutical Sciences, University of Michigan, Ann Arbor, MI
2012 – 2015 Research Assistant Professor, Department of Medicinal Chemistry College of Pharmacy, University of Michigan, Ann Arbor, MI
2009 – 2011 Head of Protein Manufacturing, Cerenis Therapeutics, Ann Arbor, MI
2006 – 2011 Sr. Director, Pharmaceutical Sciences, Cerenis Therapeutics, Ann Arbor, MI
2007 – 2008 Sr. Director (international assignment), Pharmaceutical Sciences, Cerenis Therapeutics, Toulouse, France
2004 – 2005 Associate Research Fellow (R7), Pfizer Global Research and Development, Ann Arbor, MI
2003 – 2004 Director, Pharmaceutical Sciences, Esperion Therapeutics, Ann Arbor, MI
2002 – 2003 Research Investigator, Pharmaceutical Sciences, Esperion Therapeutics, Ann Arbor, MI
2000 – 2002 Scientist, Formulations, Esperion Therapeutics, Ann Arbor, MI

Education

1990 – 1994 Moscow Institute of Physics and Technology, Moscow, Russia
B.S. in Chemical Physics
1995 – 2000 The Ohio State University, Columbus, OH
Ph.D. in Pharmaceutical Chemistry

Honors and Awards

1994 Dean's List at Moscow Institute of Physics and Technology
1998 Second Place Podia Presentation, PGSR Meeting, Lawrence, KS
1999 – 2000 Presidential Fellowship, The Ohio State University
2013 – pres. Editorial Advisory Board of *J. Pharm. Sci.*

2013 American Heart Association, Scientist Development Award
2014 Upjohn Research Award, College of Pharmacy, University of Michigan
2015 Winner of “Biomedical Innovation Shark Tank” hosted by Michigan
Economic Development Corporation
2013 – pres. Associate Editor, Nanomedicine NBM
2019 – pres. Associate Editor, Eur J Pharm and Biopharm
2019 Winner of Michigan Innovation Cup awarded to EVOQ Therapeutics, a
company co-founded by me.

Professional Societies

American Cancer Association
American Association of Pharmaceutical Scientists
Controlled Release Society
American Heart Association
American Chemical Society
American Society for Biochemistry and Molecular Biology

Professional Service

Associate Editor:

Nanomedicine: nanotechnology biology and medicine (2016 – present)
Eur. J Pharm. and Biopharm. (2018 – present)

Journal advisory boards:

J. Pharm. Sci. (2013 – present)

Journal reviewer for:

AAPS J
ACS Nano
Acta Biomaterialia
Advanced Drug Delivery Reviews
Advanced Materials
Angewandte Chemie
ATVB
BBA Biomembranes
Bioengineering
Biomaterials
Eur. J Pharm. and Biopharm.
Drug Deliv Transl Res.
Gastroenterology
International J. Pharmaceutics
JAMA
JAMA Open
JAHA
J. Controlled Release
J. Lipid Res.
JoVE
J. Pharm. Sci.
Lipids
mAbs

Nanomedicine NBM
Nano Letters
Nature Biotech
Nutrients
Nutrition Journal
Macromolecules
Molecular Pharmaceutics
Open Nano
Pharm. Res.
PLOS ONE
RSC Advances
Science Advances
Theranostics
Therapeutic Advances in Gastroenterology
Trends in Biotechnology

Grant reviewer for:

American Heart Association, Lipid Clinical (2015, 2016, 2017)
Univ. Michigan Biointerfaces Institute B-EYE Challenge (2015)
Peking University-University of Michigan Partnership (2015)
Univ. of Michigan, Cell & Developmental Biology IDEA Awards in Stem Cell Biology (2015)
NIH Atherosclerosis and Inflammation of the Cardiovascular System Study Section Ad-Hoc (2016, 2019)
NIH NHLBI SBIR Topic 99 (2017)
Center of Discovery of New Medicine, University of Michigan (2017, 2021)
King Abdulaziz City for Science and Technology (KACST), Nanotechnology Study Section, Saudi Arabia (2018)
Austrian Science Fund, Biological and Medical Sciences (2018)
Mitacs Inc, Canadian Research Grant Agency (2018)
MICHR (2019)
NIH Nanotechnology Study Section Ad-Hoc (2020)
Swiss National Science Foundation (2021)
NIH Nanotechnology Study Section permanent member (2021-2025)
NIH Nanotechnology NANO Study Section Member (2021-2026)

Patents

1. Dasseux, J.-L., Schwendeman, A., and Rea, T. J, Method of treatment for dyslipidemic disorders, US Patent, 10/440,213, 2003.
2. Schwendeman, S. P., Zhu, G., Bentz, H., Hubbell, J., Jiang, W., Shenderova, A., and Kang, J., Methods for stabilizing biologically active agents encapsulated in biodegradable controlled-release polymers, US Patent no. 6,743,446, 2004.
3. Dasseux, J.-L., Schwendeman, A., and Rea, T. Method of treatment for dyslipidemic disorders. WO 03096983, 2005.
4. Dasseux, J.-L., Schwendeman, A., and Rea, T. Method of treatment for dyslipidemic disorders, EP Patent 1,511,508, 2005.

5. Schwendeman, S. P., Zhu, G., Bentz, H., Hubbell, J., Jiang, W., Shenderova, A., and Kang, J., Methods for stabilizing biologically active agents encapsulated in biodegradable controlled-release polymers, US Patent App. 11/863,088, 2007.
6. Dasseux, J.-L., Schwendeman, A., and Zhu, L, Apolipoprotein A-I Mimics, EP Patent 2,396,017, 2010.
7. Oniciu, D. C., Dasseux, J.-L., Schwendeman, A. S., Sy, G. A. and Ackermann, R. M. Lipoprotein complexes manufacturing and uses thereof. US Provisional Patent Application Serial no. 61/487263, 2011.
8. Dasseux, J.-L., Schwendeman, A., and Zhu, L, Apolipoprotein A-I Mimics, US Patent 8,378,068, 2013.
9. Schwendeman, S. P., Doty, A. C., Shah, R. B., Giles, M. B., Chang, R. S., Schwendeman, A. S. Efficient aqueous encapsulation and controlled release of bioactive agents, Application No. PCT/US2014/064872, 2014.
10. Schwendeman, A. S., Cohen, M. S., Moon, J. J., Kuai, R., Subramanian, C. Compositions and methods for disease treatment using nanoparticle delivered compounds. US Provisional Patent, 2014. US Application No.: 62/024,223, 2014.
11. Schwendeman, A. S., Besirli, C., Lee, K. Chang, R. S., Zacks, D., Biologically active, aqueous formulation of MET-12 peptide. US Application No.: 62/053,586, 2014.
12. Schwendeman, A., Turner, S., Remaley, A. T. The effect of phospholipid composition of reconstituted HDL on its cholesterol efflux and anti-inflammatory properties, US Provisional Patent Application No. 62/031,705, 2014.
13. Schwendeman, A. S., Li, X.-A., Nemzek, J. Composition of synthetic HDL nanoparticles and optimized treatment regimen for sepsis. Invention disclosure, UM OTT file number 6268, 2014.
14. Chen, Y. E., Schwendeman, A. S., Guo, Y., Zhang, J., Yuan, W., Morin, E. Compositions and methods for treating cardiovascular related disorders. U.S. Provisional Patent Application No. 62/138,193, 2015.
15. Moon, J., Kuai, R., Schwendeman, A. S. Compositions and methods for delivery of biomacromolecule agents. U.S. Provisional Patent Application No. 62/138,186, 2015.
16. Dasseux, J.-L., Schwendeman, A., and Zhu, L, Apolipoprotein AI Mimics, US Patent 20,150,141,330, 2015.
17. Dasseux, J.-L., Schwendeman, A., and Zhu, L, Apolipoprotein AI Mimics, US Patent 8,993,597, 2015.
18. Moon, J. J., Schwendeman, A. A., Kuai, R., and Nam J., Compositions and methods for delivery biomacromolecule agents, US Provisional Patent Application No. 62/352,182, 2016.

Teaching

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|------------------|-------|------------------------------------------------------------------------------------------------------------------------------------------|
| PharmSci 400 | 3 cr. | Physical Chemistry of Drug Products, 2018-2020 (9 contact Hours per year) |
| ChE/PharmSci 519 | 3 cr. | Modern Pharmaceutical Engineering Biopharmaceutical Products Manufacturing and Regulatory, 2013, 2014, 2015 (4.5 contact per year) |
| MedChem 740 | 3 cr. | Original Research Proposal (course coordinator) 2013/14, 2014/2015 (10 contact hours per year) |
| ChE 696 | 1 cr. | Career Strategies (guest lecturer), 2014 (3 contact hours) |
| MedChem 532 | 3 cr. | Bioorganic Principles of Medicinal Chemistry, 2014 (6 contact hours) |
| PharmSci 705 | 2 cr. | Nanotechnology and Drug Delivery, 2015 (2 contact hours) 2017 (1.5 contact hours) |
| CheE 504 | 3 cr. | Cellular Biotechnology, 2016, 2018 (3 contact hours) |
| Chem 290 | 3 cr. | Twenty Two Ways to Think About Drugs, 2016 (1.5 contact hours) |
| PharmSci 706 | 2 cr. | Biopharmaceutical Products, 2016-2020 (20 contact hours) |
| MedChem 550 | 2 cr. | PSTP Flagship Course, 2016 (1.5 contact hours) |
| Biophysics 440 | 3 cr. | Biophysical Analysis, 2016, 2017, 2018 (1.5 contact hours) |
| Pharm Sci 518 | 3 cr. | Dispersed and Solid Forms, 2017-2021, course coordinator (19 contact hours) |
| Pharm Sci 704 | 2 cr. | Analytical Methods, 2017, 2019 (2 contact hours) |
| Pham Sci 701 | 2 cr. | Equilibria and Dosage Forms, 2017 (2 contact hours) |
| Pharm Sci 212 | 1 cr. | Contemporary Research in Pharmaceutical Sciences, 2018 (1 contact hour) |
| ChE 696 | 3 cr. | BioMEMS and Nanotechnology, 2018 (1.5 contact hours) |
| Pharm Sci 101 | 2 cr. | From Molecules to Drugs and Drug Products, 2018 (1 contact hour) |
| Pharm Sci 211 | 2 cr. | Introduction to Pharmaceutical Sciences, 2018 (1 contact hour) |

Graduate Students, Postdocs, Visiting Scholars, Staff

Ph.D. Advisor for:

Karthik Pisupati (2012 – 2016, AFPE fellow, co-advised with Steve Schwendeman)
Rui Kuai (2013 – 2017, AHA fellow, co-advised with James Moon)
Dan Li (2014 – 2018, Barbour fellow)
Emily Morin (2014 – 2019, CBTP and CVRE fellow)
Jukyung Jay Kang (2015 – 2019)
Sang Yeop Kim (2015 – 2019)
Maria Fawaz (2016 – 2020, PSTP, AFPE and CVRE fellow, AHA fellow (declined))
Lindsey Scheetz (2016 – 2020, PSTP fellow, co-advised with James Moon)
Alexander Benet (2015 – 2021)
Minzhi Yu (AHA fellow, Helen Wu award, co-advised with Steve Schwendeman)
Kristen Hong (PSTP fellow, AFPE fellow)
Jill Coghlan (CBTP fellow)
Troy Halseth (PhRMA fellow)
Ziyun Xia
Antonella Rodriguez (Rackham Minority Fellowship)
Adaeze Eneli (Rackham Minority Fellowship, PSTP fellow)
Vivian Juang
Shuying Wang (co-advised with Steve Schwendeman)

Postdoctoral Advisor for:

Gwangseong Kim, Ph.D. (2012 – 2013)
Hiren Patel, Ph.D. (2014 – 2015)
Wenmin Yuan, Ph.D. (AHA fellow, 2014 – 2018)
Jie Tang, Ph.D. (2014 – 2016)
Yayuan Liu, Ph. D. (2017 – present)
Hongliang He, Ph.D. (2018 – 2021)
Ling Mei, Ph.D. (2018 – present)
Lisha Liu, Ph.D. (2019 – 2021)
Sergey Salamevich, Ph.D. (2021 – present)

Undergraduates

Frances M Acevedo Mariani (REU summer 2013, UM PREP, 2015-2016)
William Miller (LSA, UROP, 2013-2014)
Courtney Reid (LSA, UROP, 2014- 2015)
Eled Brehau Gebrehiwot (REU summer 2014)
Ruta Raulickis (BME, UROP, 2014-2015)
Oluwatosin Olojo (LSA, UROP, 2014-2015)
Rebecca Myers (LSA, UROP, 2014-2015)
Alexander Benet (Pharmaceutics, 2014 – 2015)
Kelsey Ernst (LSA, UROP, AHA Undergraduate Fellow, 2014 – 2017)
Gregory Nazarian (LSA, 2015 – 2016)
Sara Deschaine (REU, summer 2015, Clarkson University)
Sunni Lee (UROP, 2015 – 2016)
Divya Vemulapalli (2016 – 2017)
Ran Ming (BSPS, 2017 – 2018)
LeDarius Whitley (REU, summer 2017)
Whitney Sourey (CVC Undergraduate Research Fellow, summer 2017)
Ziyun Xia (BSPS, Honors Thesis, 2017 – 2019)
Zihan Mei (BSPS, Honors Thesis, 2017 – 2019)

Ava Dalton (BSPS Ohio State University, summer 2018)
Yingyue Ding (BSPS, 2018 – current)
April Kim (REU, summer 2019)
Preethi Kumaran (BS, pre-Pharmacy, 2020 – current)
Julia Crowther (BSPS, 2021 – current)

High School Students:

Varshini Kashup (2020 – current)
Sunni Lee (summer 2014)
Divya Vemulapalli (summer 2015)

Visiting Scholars:

Yue Yuan, Ph.D. (2013 – 2014)
Jenny Shenkar Capua, D.V.M. (2014 – 2016)
Xueming Li, Ph. D. (2015 – 2016)
Li Li, Ph. D. (2016 – 2017)
Zeynab Izadi Najaf Abadi, B. S. (2018)

Staff Supervisor for:

Karl Olsen, B.S.
Rose Ackerman, M.S.
Vishalakshi Krishnan, Ph.D. (Center for Research in Complex Generics, manager)

Ph.D. and Candidacy Committees:

Hyuck Jin Lee (U of M, Chemistry)
Kyle Kourshavn (U of M, Chemistry)
Shasha Li (U of M, Med Chemistry)
Rae Sung Chang (U of M, Pharm Sciences)
Will Kaplan (U of M, Med Chemistry)
Yuwei Tian (U of M, Chemistry)
Brandt Huddle (U of M, Med Chemistry)
Alexandra Sowa (U of M, Med Chemistry)
Mikhail Murashov (U of M, Pharm Sciences)
Jenna Walker (U of M, Pharm Sciences)
Alirezza Hassani Najafabadi (U of M, Pharm Sciences)
Katie Cavanaugh (U of M, Pharm Sciences)
Duy Luong (U of M, Pharm Sciences)
Lina Wu (U of M, Chem Eng)
Manali Sawant (U of M, Pharm Sciences)
Siyuan Sun (U of M, Chemistry)
Daniel Vallejo (U of M, Chemistry)
Colleen Riordan (U of M, Chemistry)
Alec Desai (U of M, Chem Eng)

Current:

Jason Albert (U of M, Pharm Sciences)
Justin Hong (U of M, Pharm Sciences)
Yulei Zhang (U of M, Chem Eng)
Marissa Akins (U of M, Pharm Sciences)
Ghasidit (Meu) Pornnoppadol (U of M, Pharm Sciences)
Emily Makowski (U of M, Pharm Sciences)

Mery Vet George De la Rosa (U of M, Pharm Sciences)
 LeeAnn Wang (U of M, Chemistry)
 Jin Xu (U of M, Pharm Sciences)
 Cameroon White (U of M, Pharm Sciences)
 Luchen Zhang (U of M, Pharm Sciences)
 Fan Xie (U of M, Pharm Sciences)

Awards to Trainees

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| Kristen Hong | AFPE Fellowship, 2021 – 2023 |
| Troy Halseth | PhRMA Foundation Predoctoral Fellowship in Drug Discovery, 2021 – 2023 |
| Minzhi Yu | Rackham Helen Wu Predoctoral Fellowship, 2021 |
| Ling Mei | American Heart Association Postdoctoral Fellowship, 2020 – 2022 |
| Minzhi Yu | AAPS Conference Best Poster Award, 2019 |
| Lindsay Scheetz | AAPS Conference Best Poster Award, 2019 |
| Maria Fawaz | European Atherosclerosis Society HDL Workshop, Best Poster Award Finalist, 2019 |
| Jill Coghlan | NIH T32 Cellular Biotechnology Training Program, 2019 – 2021 |
| Kristen Hong | NIH T32 Pharmacological Sciences Training Program, 2019 - 2021 |
| Emily Morin | Rackham Shapiro/Malik/Forrest Award, 2018 |
| Maria Fawaz | American Heart Association Predoctoral Fellowship, 2019-2021 (declined) |
| Minzhu Yu | American Heart Association Predoctoral Fellowship, 2019-2021 |
| Jukyung Kang | AAPS Conference Travel Award, 2018 |
| Jukyung Kang | AAPS Conference Best Poster Award, 2018 |
| Sang Yeop Kim | AAPS Conference Best Poster Award, 2018 |
| Maria Fawaz | NIH T32 Training Program in Translational Cardiovascular Research and Entrepreneurship, 2018 - 2020 |
| Lindsay Scheetz | 3 rd Place Poster Award, Society for Biomaterials Conference, 2018 |
| Maria Fawaz | 2 nd Place Poster Award, Biointerfaces Institute, 2018 |
| Dan Li | Speaker at College of Pharmacy Science Day, 2018 |
| Maria Fawaz | AFPE Fellowship, 2018 – 2020 |
| Dan Li | Barbour Fellowship, 2018 – 2019 |
| Maria Fawaz | ASPET Conference Travel Award, 2018 |
| Emily Morin | Rackham Shapiro/Malik/Forrest Award, 2017 |
| Dan Li | 1 st Place Poster Award, NanoDDS, 2017 |
| Rui Kuai | Excellent Poster, Nanomedicine Gordon Research Conference, 2017 |
| Rui Kuai | American Association of Pharmaceutical Scientists Innovation in Biotechnology Award, 2017 |
| Rui Kuai | Speaker at College of Pharmacy Science Day, 2017 |
| Maria Fawaz | NSF Graduate Fellowship Honorable Mention, 2017, 2016 |
| Kelsey Ernst | American Heart Association Undergraduate Fellowship, Summer 2016 |
| Maria Fawaz | NIH T32 Pharmacological Science Training Program, 2016 - 2018 |
| Emily Morin | NIH T32 Training Program in Translational Cardiovascular Research and Entrepreneurship, 2016- 2018 |
| Emily Morin | Outstanding Poster Award, CBTP Symposium, 2016 |
| Rui Kuai | 2nd Place Poster Award, PSTP Symposium, 2016 |
| Wenmin Yuan | American Heart Association Postdoctoral Fellowship, 2015 - 2017 |
| Rui Kuai | American Heart Association Predoctoral Fellowship, 2015 - 2017 |
| Emily Morin | NIH T32 Cellular Biotechnology Training Program, 2014 - 2016 |
| Eled Gebrehiwot | ABRCMS Travel Award, 2014 |
| Dan Li | ORISE Summer Fellow, FDA, 2014 |

Dan Li Broomfield International Student Fellowship, 2014
Rui Kuai Broomfield International Student Fellowship, 2013

Consulting

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|--------------|-------------------------------------------|
| 2011 – 2015 | KineMed, Emeryville, CA |
| 2011 – 2012 | CohBar Pharmaceutical, Los Angeles, CA |
| 2012 | Citizen Oncology Foundation, Chicago, IL |
| 2012 – 2013 | AcuPlaq, St Louis, MO |
| 2013 – 2014 | ONL Therapeutics, Ann Arbor, MI |
| 2013 – 2014 | Rgenix, New York, NY |
| 2015 – 2016 | TSRL, Ann Arbor, MI |
| 2015 – 2016 | DeMatteo Monness Consulting, New York, NY |
| 2016 – pres. | SygPath Inc, Bolder, CO |
| 2016 – pres. | GLG Healthcare Councils, Austin, TX |
| 2017 – pres. | Capstone Development, Chicago, IL |

Research Support

Current

Center for Complex Generic Drugs Research, 8/1/20-7/30/25, FDA U18 FD007054, co-PI (10%) with James Polli (U. Maryland), \$ 4,000,000 total direct (\$1,937,985 allocated).

Characterization of Exparel®, understanding of critical manufacturing process parameters and characterization of drug release mechanisms in vitro and in vivo, 9/1/2020 – 8/31/2023, FDA BBA, PI (20%), \$639,492 total direct (\$639,492 allocated).

Synthetic HDL – a potential sepsis therapy, 1/1/15 – 12/31/21 NCXT, R01GM113832, total direct cost \$2,054,073, PI (30%), multiple PI grant with Xiang-An Li, (\$782,210 allocated).

Cellular Biotechnology Training Program, 07/01/17 – 06/30/22, NIH T32 GM008353-23, total direct costs 2,356,495, PI (10%) dry.

Development of analytical characterization methods for liposomal doxorubicin, 04/20/21-04/19/22, Nexus Pharmaceuticals, PI (10%), \$85,812 total direct costs (\$85,812 allocated).

Development of in vitro release assay for liposomal cyclosporine, 05/01/2020 – 04/30/22, Breath Therapeutics, PI (10%), 136,650 total direct costs (\$136,650 allocated).

Synthetic HDL to combat cytokine storm in COVID-19, 9/1/19 – 8/31/20, Biointerfaces Institute, total direct costs \$25,000 (\$25,000 allocated), PI (0%).

Optimization of synthetic HDL nanoparticles for treatment Niemann-Pick Type C, NIH R21 NS111191, 4/1/19 – 3/30/22 NCXT, total direct cost \$275,000 PI (10%), (\$137,500 allocated).

Technological Innovations in Brain Cancer, 1/1/20-12/31/24, U-M BioScience Initiative \$15,708,396 total, co-I and director of translational core (5%), PIs: Steven Schwendeman, Maria Castro (\$755,932 allocated in personnel/supplies and \$855,100 in equipment).

Synthetic high-density lipoprotein mediated delivery of bioactive lipids for the treatment of cardiovascular disease, 1/1/2020-12/31/2021, AHA 20POST3521818, sponsor, fellowship for Ling Mei, (\$131,356 allocated).

Chemoimmunoprevention of EGFR-driven non-small cell lung cancer, 9/1/2017 – 8/31/2022, NIH R01, \$475,000, co-I (5%), PI: M. You, (\$302,611 allocated).

Past

KL-14 and Atherosclerosis, 4/1/17 – 3/30/21, R01HL134569, total direct cost \$1,812,532, PI (20%), multiple PI grant with Eugene Y. Chen, (\$820,675 allocated).

Structure and function of the LPLA2/LCAT acyltransferase family, 1/1/15 – 12/31/18, no cost extension, NIH R01HL122416, total direct cost \$1,296,861, co-I (10%), PI: John Tesmer (\$146,275 allocated).

BiOneCure: Herceptin-Abraxane Formulation, 7/1/2018 – 5/31/2020, BiOneCure Corporation, \$100,000, PI (5%), (\$100,000 allocated).

Development of analytical characterization methods for bupivacaine liposome injectable suspension, 9/15/2017 – 9/14/2019, Amneal Pharmaceuticals, \$155,000, PI (5%), (\$155,000 allocated).

Characterization of AmBisome and generic Amphotericin B liposomal products, 1/10/2018 – 1/9/2020, Amneal Pharmaceuticals, \$180,000, PI (5%), (\$180,000 allocated).

Biomimetic lipid micelles for atherosclerosis treatment, 3/1/2019 – 2/28/2021, AHA 19PRE34400017, sponsor, fellowship for Minzhi Yu (\$52,000 allocated).

Synthetic HDL as a novel therapeutic approach for the treatment of thrombotic thrombocytopenic purpura, 1/1/2020 – 12/31/2021, co-I (0%) with Raymond Adili, McKay Award, (\$36,000 allocated).

HDL nanomedicine for abdominal aortic aneurysm, Biointerfaces Institute, 9/1/2019 – 8/31/2020, \$50,000, PI (0%), (\$25,000 allocated).

Effect of a multipeptide KRAS vaccine in the prevention of pancreatic cancer driven by KRAS oncoprotein, 5/1/2017-10/31/2019, NIH E01, \$134,610, co-I (1%), PI: M. You, (\$67,416 allocated).

An injectable Resolvin delivery system for periodontal reconstruction, 9/1/18-12/31/20, Mcubed, \$60,000, co-PI (0%) with Marco Bottino and Steven Schwendeman, (\$20,000 allocated).

Optimization of sHDL nanoparticles for the treatment of Niemann-Pick type C1 disease, 7/1/2017 – 12/31/2018, Ara Parseghian Medical Research Foundation, total direct cost \$100,000, Co-PI (5%) with Andrew Liebermann, (\$40,000 allocated).

Influence of raw materials, manufacturing variables, and storage conditions on release performance of long-acting release microsphere products, 10/1/15-9/30/18, Food and Drug Administration, grant number HHSF223201510170C, total direct cost \$645,161, co-I (3%), PI: Steven Schwendeman (dry).

Method establishment method and animal study sample analysis for retinol palmitate plasma concentration, 11/1/2017 – 1/24/2019, Gemphire Therapeutics, \$48,360, PI (0%), (\$48,360 allocated).

Characterization of Neupogen and generic filgrastim, 5/27/16 - 12/20/17, grant number 108255-OP, Theraproteins Inc., total direct cost \$254,961, PI (2%), (\$254,961 allocated).

Chemical stability of exenatide solution depending on peptide concentration and formulation composition, 7/7/2017 - 7/31/2018, Amneal Pharmaceuticals, total direct cost \$60,000, PI (0%), (\$60,000 allocated).

A novel nano-vaccine technology for cancer immunotherapy application, 1/1/2017 – 4/1/2018, MTRAC, total direct cost \$449,806, PI (0%) multiple PI grant with James Moon, (\$227,118 allocated).

Toward precision cancer immunotherapy, 1/3/2017 – 2/28/2018, Forbes Research Institute, total direct cost \$200,000, co-I (1%), (\$15,000 allocated).

Synthetic HDL-mediated atheroma targeted delivery of LXR agonists for regression of atherosclerosis, 1/1/2016 – 12/31/2017, American Heart Association, 16POST27760002, total direct cost \$99,112, PI (0%), (\$99,112 allocated).

Development of synthetic HDL nanoparticles for treatment of abdominal aortic aneurism, 1/1/2017 – 12/31/2017, CVC Aikens Aortic Discovery Research Program, total direct cost \$50,000, PI (0%), (\$25,000 allocated).

Characterization of Byetta and generic exenatide, 12/10/16 – 12/09/17, Amneal Pharmaceuticals, total direct cost \$93,500, PI (0%), (\$93,500 allocated).

HDL nanoparticles to treat Neimann-Pick C disease, 8/1/16 – 7/30/17, Protein Folding Disease Initiative, total direct cost \$25,000, co-PI (0%) with Andrew Lieberman, (\$12,500 allocated).

Characterization of Forteo and generic teriparatide, 4/29/16 - 4/28/17, Amneal Pharmaceuticals, PI (0%), N021463, total direct cost \$46,250, PI (0%), (\$46,250 allocated).

Drug loaded HDL nanoparticles for glioma therapy, 4/1/15 – 3/31/2017, NIH R21NS091555, total direct cost \$275,000, co-I (10%), PI: Maria Castro, (\$137,500 allocated).

Structure and HDL interaction of LCAT, 1/1/2015 – 12/31/16, MedImmune Corporation, \$232,260, PI (5%), (\$119,000 allocated).

The role of lipid composition on synthetic HDL efficacy, 7/1/13 – 6/30/16, American Heart Association 13SDG17230049, total direct cost \$195,000, PI (15%), (\$195,000 allocated).

In vitro release methods for parenteral long-acting liposomal products, 9/1/14 – 8/31/16, FDA U01FD005249-01, total direct cost 370,000, co-I (10%), PI: Peter Working, (\$107,500 allocated).

Protein folding diseases initiative, 4/30/15 – 3/30/16, Fast Forward Medical Innovation, Medical School, University of Michigan, co-I (0%), (\$40,000 allocated).

Sustained immune checkpoint therapy for treatment of brain cancer, 1/1/2016 -1/1/2017, Mcubed, total direct cost \$60,000, co-PI (0%) with Steven Schwendeman and Maria Castro, (\$20,000 allocated).

Analytical comparison of parent and follow-on biologics to aid biosimilars regulatory guidelines development, 4/1/2014 – 3/30/2015, NIPTE/FDA, total direct cost \$82,122, co-PI (5%) with Steven Schwendeman, (\$82,122 allocated).

Optimizing synthetic HDL potency through phospholipid composition, 6/1/16 – 8/15/16, AHA Undergraduate Fellowship for Kelsey Ernst, total direct cost \$4,000, PI (0%), (\$4,000 allocated).

Novel long-circulating HDL nanomedicines, 11/1/2013 – 6/1/2014, College of Pharmacy Upjohn Fund, total direct cost \$25,000, PI (0%), (\$25,000 allocated).

Novel delivery platforms for glioma therapeutics, 1/1/14-12/31/14, Biointerfaces Nanomedicine Challenge, \$80,000, co-I (0%), PI: Maria Castro.

Development of a liposome doxorubicin product drug release assay, 9/15/2014 – 9/14/2015, FDA, U01FD004893-01S1, total direct cost \$249,996, co-I (10%), PI: Peter Working, (\$54,072 allocated).

In vitro-In vivo correlations of parenteral microsphere drug products, 9/15/2013 – 9/14/2016, FDA, co-I (10%), PI: Steve Schwendeman, (\$75,000 allocated).

SR-BI targeted withanolide nanoconjugates for improved endocrine cancers therapy, 1/1/14 – 1/1/15, Michigan Translation and Commercialization (MTRAC), \$188,278, co-PI (0%) with Mark Cohen, (\$39,000 allocated).

Molecular structure and function of paraoxonase-HDL particles, 11/1/2013 – 10/30/2014, University of Michigan - Israel Partnership for Research, \$50,000, co-PI (0%) with Dan Tawfik, Weizmann Institute of Science, (\$25,000 allocated).

Development of a liposome doxorubicin product drug release assay, 9/15/2013 – 9/14/2014, FDA, U01FD004893, total direct costs \$340,000, co-I (17.5%), PI: Peter Working, (\$128,777 allocated).

University of Michigan Institute for Manufacturing Leadership – pilot phase, 7/1/13 – 6/30/14, UM Provost Office GCTC, co-I (8.3%), PI: Shridar Kota (dry).

Therapeutic application of synthetic HDL for treatment of autoimmune diseases, 4/1/2013 - 3/30/2014, Mcubed, \$60,000, co-PI (0%) with James Moon and Mariana Kaplan, (\$20,000 allocated).

Development of long circulating gold nanoparticles for targeting of atherosclerotic plaque, 9/1/2012 – 8/31/2013, IMRA North America, \$80,000, co-PI (0%) with Xueding Wang, (\$40,000 allocated).

Publications

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Invited Presentations

1. PLGA implants for protein and peptide delivery, Biotechnology of new materials workshop, Krasnoyarsk, Russia, May 2011.
2. Development of high-density lipoprotein therapeutics, Siberian Federal University, Krasnoyarsk, Russia, June 2011.
3. Synthetic HDL nanoparticles for treatment of atherosclerosis, Medicinal Chemistry, University of Michigan, Ann Arbor, June 2012.
4. Microencapsulation of biomacromolecules in PLGA without organic solvents, IBC Bioprocess Conference for Protein Formulation and Delivery, Boston, October 2012.
5. Synthetic HDL – nature’s nanomedicine, Nanomedicine Challenge, Biointerfaces Institute, University of Michigan, Ann Arbor, November 2013.
6. Synthetic HDL – a potential sepsis treatment, Pediatric Critical Care, University of Michigan, Ann Arbor, March 2014.
7. Role of HDL in protein folding diseases. Amyloid and Human Disease Symposium, University of Michigan, Ann Arbor, May 2014.
8. Development of USP-4 drug release assay for liposomal doxorubicin, Sotax Corporation, Boston, MA, June 2014.
9. Synthetic HDL – a mimic of nature’s nanomedicine, Nanotek Conference, San Francisco, CA, November 2014.
10. Synthetic HDL – a mimic of nature’s nanomedicine, Department of Biomedical Engineering, University of Michigan, Ann Arbor, MI, January 2015.
11. Synthetic HDL – a mimic of nature’s nanomedicine, Department of Pharmaceutical Sciences, University of Michigan, Ann Arbor, MI, January 2015.
12. Physicochemical characterization of Remicade® and its biosimilar Remsima™, National Institute for Pharmaceutical Technology and Education Conference, Rockwell, MD, April 2015.
13. The need to fund biosimilar research. Remicade and Remsima case study, FDA Public Forum, Silver Spring, MD, June 2015.
14. Synthetic HDL and neurodegenerative diseases. Protein Folding Diseases Meeting, Life Science Institute, University of Michigan, Ann Arbor, MI, July 2015.
15. Physicochemical characterization of Remicade® and its biosimilar Remsima™, PQRI Conference, Silver Spring, MD, October 2015.
16. Characterization and quantitative comparison of Remicade® and its biosimilar Remsima™, IBC Bioprocess Conference, Boston, MA, October 2015.

17. Characterization and quantitative comparison of Remicade® and its biosimilar Remsima™, MedImmune Corporation, Rockville, MD, January 2016.
18. High density lipoproteins – nanomedicine and drug delivery carrier, Biological E. Limited, Hyderabad, India, February 2016.
19. Complex generic products. Biological E. Limited, Hyderabad, India, February 2016.
20. Complex generic products. Dr. Reddy's, Hyderabad, India, February 2016.
21. Design and development synthetic HDL nanomedicines, Saha Cardiovascular Center, University of Kentucky, Lexington, KY, March 2016.
22. How similar are Remicade® and Remsima™? Biosimilar Process Development, ACS Meeting, San Diego, CA, March 2016.
23. Are biosimilars like snowflakes? Multifunctional analytical comparison of Remicade® and Remsima™. Cellular Biotechnology Training Program Annual Symposium, Ann Arbor, MI, April 2016.
24. Are biosimilars like snowflakes? Multifunctional analytical comparison of Remicade® and Remsima™. Protein Metrics Symposium, San Francisco, CA, April 2016.
25. Synthetic HDL – a mimic of nature's nanomedicine, Regenerative Nano-Medicine Summer School, Tel Aviv University, Israel, June 2016.
26. Complex parenteral products, Amneal Pharmaceuticals, Long Island, NY, July 2016.
27. Design and development synthetic HDL nanomedicines, Protein Folding Disease Initiative Seminar Series, University of Michigan, Ann Arbor, September 2016.
28. Comparative analysis of Neupogen® and biosimilar fligrastim. Therapeutic Proteins International, Chicago, IL, September 2016.
29. Design and development synthetic HDL nanomedicines, Cardiovascular Center Frontiers in Science Seminar, University of Michigan, Ann Arbor, MI, October 2016.
30. High density lipoproteins – nanomedicine and drug delivery carrier, Nanjing Technology Institute, Nanjing, China, November 2016.
31. Synthetic high density lipoprotein – a mimic of nature's nanomedicine, Purdue University, West Lafayette, IN, April 2017.
32. Synthetic HDL nanomedicines, Biointerfaces Symposium, Ann Arbor, MI, April 2017.
33. Design, development and applications of synthetic HDL nanomedicines, Siberian Federal University, Krasnoyarsk, Russia, April 2017.
34. Protein delivery strategies, Department of Biotechnology, Siberian Federal University, Krasnoyarsk, Russia, April 2017.

35. Synthetic HDL and neurodegenerative diseases, Krasnoyarsk Medical Institute, Krasnoyarsk, Russia, May 2017.
36. Synthetic high density lipoprotein – a potential therapy for sepsis, NIH NHLBI Blood & Vascular System Response to Sepsis grantee meeting, Bethesda, MD, May 2017.
37. Analytical Comparability Strategies for Biosimilars, BioProcess International, Boston, MA, October 2017.
38. Synthetic HDL nanoparticles for treatment of Niemann-Pick diseases, Protein Folding Diseases Symposium, Ann Arbor, MI, October 2017.
39. Technical aspects of measuring drug release from nanoparticles, UNC Nanoformulation Workshop, Chapel Hills, NC, March 2018.
40. Synthetic HDL – “Drano for the arteries” from bench to bedside, Training Program in Translational Cardiovascular Research and Entrepreneurship Bootcamp, Ann Arbor, MI, April 2018.
41. Use of synthetic high-density lipoproteins for drug delivery and treatment of inflammatory diseases, University of Maryland, Baltimore, MD, May 2018.
42. Optimization of sHDL composition for treatment of sepsis, NIH NHLBI Blood & Vascular System Response to Sepsis grantee meeting, Bethesda, MD, May 2018.
43. Development of personalized nanodisc cancer vaccine, Precision Medicine World Conference, Ann Arbor, MI, June 2018.
44. Synergetic effect of synthetic HDL and liver X receptor agonists on reversal of atherosclerosis, Lipoprotein Metabolism GRC, Waterville Valley, NH, June 2018.
45. Synthetic HDL or “Drano for the arteries” from bench to bedside, Keynote speaker at Interdisciplinary REU in Protein Structure and Function Symposium, Ann Arbor, MI, August 2018.
46. Biosimilarity under stress: Remicade and Remsima case study, GPEN, Singapore, September 2018.
47. Synthetic HDL – a mimic of nature’s nanomedicine, Keynote Lecture at Controlled Release Society Asia Meeting, Singapore, September 2018.
48. Synthetic HDL nanoparticles for delivery of small molecules and oligonucleotides. Moderna Pharmaceutical, Boston, MA, October 2018.
49. Synthetic HDL – a mimic of nature’s nanomedicine, College of Pharmacy, Fudan University, Shanghai, November 2018.
50. Design of synthetic high-density lipoproteins for drug and personalized neoantigen vaccine delivery, School of Basic Medical Sciences, Fudan University, Shanghai, China, November 2018.

51. Synthetic HDL – a mimic of nature’s nanomedicine, China Pharmaceutical University, Nanjing, China, November 2018.
52. Synthetic high density lipoprotein carriers for drug delivery, Chinese Pharmaceutical Conference, Guangzhou, China, December 2018.
53. Synthetic high-density lipoprotein - nanomedicine and drug delivery carrier, CT3N Symposium, University of Pennsylvania, Philadelphia, PA, December 2018.
54. Synthetic high density lipoprotein carriers for drug delivery, West China University, School of Pharmacy, Chengdu, China, January 2019.
55. Synthetic HDL – a mimic of nature’s nanomedicine, Peking University, College of Pharmacy, Beijing, China, January 2019.
56. Synthetic HDL – nanomedicine and drug delivery carrier, University of Kansas, Lawrence, KS, April 2019.
57. Career strategies, University of Kansas, Lawrence, KS, April 2019.
58. Synthetic HDL – nanomedicine and drug delivery carrier, University of Texas, Austin, TX, May 2019.
59. Synthetic HDL – nanomedicine and drug delivery carrier, Taiwan National University, Taipei, Taiwan, May 2019.
60. Personalized nanodisc cancer vaccine, Nanotech Conference and Exposition, Boston, MA, June 2019.
61. HDL in sepsis: biomarker and potential therapeutics, South East Lipid Conference, Cincinnati, OH, September 2019.
62. Synthetic HDL for treatment of sepsis and atheroma drug delivery, HDL Workshop, European Atherosclerosis Society, Valencia, Spain, September 2019.
63. Analytical strategies for characterization of biosimilars, NIPTE Conference, Washington, DC, October 2019.
64. Application of lipoprotein mimetic nanomaterials, Materials and Formulations at Biointerfaces, Malmö University, Malmö, Sweden, October 2019.
65. Synthetic high-density lipoproteins – nanomedicine and drug delivery carrier, University of Iowa, IA, April 2020 (postponed).
66. Synthetic HDL nanodiscs for cardiovascular and immunotherapy delivery, HDL Workshop, ATVB, Chicago, May 2020 (postponed).
67. Synthetic high-density lipoproteins – nanomedicine and drug delivery carrier, University of Portland, IA, May 2020 (postponed).

68. Synthetic high-density lipoproteins – cardiovascular therapeutics and drug delivery carrier, Drug Carriers in Medicine and Biology GRC, Mount Snow, VT, August 2020 (postponed).
69. Cancer chemo-immunotherapy for treatment of glioblastoma multiforme, Brain Cancer Symposium, Moscow, Russia, October 2020 (postponed).
70. HDL and sepsis, American Heart Association, Dallas, TX, November 2020.
71. Personalized nanodisc vaccine for cancer immunotherapy, Nanoscience in Cancer Immunotherapy, University of Torino, Torino, Italy, March 2021.
72. Introduction to Center for Research in Complex Generics, SweDeliver, Uppsala University, Sweden, February 2021.
73. Application of lipoprotein mimetics for drug delivery, Emerging Strategies and Applications in Drug Delivery, Materials Research Society, Phoenix, AZ, April 2021.
74. Summary of interview feedback from industry stakeholders, GDUFA Public Forum (plenary session), FDA, June 2021.

Conference Moderator/Organizer

1. Nobel Nanoparticles Workshop, Biointerfaces Institute, Nanoparticle and Drug Delivery (Moderator), Ann Arbor, MI, July 2012.
2. Nanomedicine Workshop, Biointerfaces Institute, Cardiovascular Disease Applications (Moderator), Ann Arbor, MI, November 2013.
3. Nanomedicine and Drug Delivery Symposium (NanoDDS), Nanoparticle Assisted Imaging (Moderator), Chapel Hills, NC, October 2014.
4. UM-Weizmann-Technion Conference, Metabolic Diseases (Moderator), Rehovot, Israel, January 2015.
5. B-EYE: Biointerfaces and Ophthalmology Challenge (Co-organizer), Ann Arbor, MI, March 2015.
6. 2nD FDA/PQRI Conference on Advancing Product Quality, Biosimilars: How Similar is Similar? (Moderator), Bethesda, MD, October 2015.
7. Recent Advances in Biomolecular NMR Spectroscopy International Symposium, Membrane Active Peptides (Moderator), Ann Arbor, MI, April 2016.
8. NanoDDS 2017 (Co-organizer), Ann Arbor, MI, September 2017.
9. Biomolecular and Biophysical Processes, ACS BIOT (Moderator), New Orleans, LA, March 2018.
10. Biointerfaces Internal Challenge, Delivery to the Brain via Advanced Materials (Moderator), June 2018.

11. Controlled Release Society Annual Meeting, Parenteral Drug Delivery (Moderator) New York, July 2018.
12. Drug Carriers in Medicine and Biology GRC, Local Drug Delivery (Discussion Leader), Mount Snow, VT, August 2018.
13. Controlled Release Asia, Delivery of Biologicals (Moderator), Singapore, September 2018.
14. Junior Scientist Poster Presentations (Moderator), HDL Workshop, European Atherosclerosis Society, Valencia, Spain, September 2019.
15. Biopharmaceutical Products (Moderator), NIPTE Conference, Washington, DC, October 2019.
16. GDUFA Public Forum (plenary session organizer), FDA, June 2019.
17. FDA-CRCG IVRT/IVPT Workshop (member of planning committee), FDA-CRCR, August 2021.

Regulatory Submissions

1. Pre-IND Briefing Document for ETC-642 – Reverse Lipid Transport (RLT) Peptide, Esperion Therapeutics, FDA, 2000.
2. Investigational Drug Application (IND) for ETC-642 – Reverse Lipid Transport (RLT) Peptide, Esperion Therapeutics, FDA, 2001.
3. Investigational Drug Application (IND) for ETC-216, Apolipoprotein A-I-Milano Recombinant Protein and Phospholipid Complex for Treatment of Acute Coronary Syndrome Patients, Esperion Therapeutics, FDA, 2001.
4. Investigational Drug Application (IND) for ETC-1001 for Treatment of Individuals with Lipid Disorders, Esperion Therapeutics, FDA, 2003.
5. Pre-CTA Briefing Document for ETC-588, Health Canada, Esperion Therapeutics, 2004.
6. Clinical Trial Application (CTA) for ETC-642, Health Canada, Esperion Therapeutics a Division of Pfizer PGRD 2004.
7. Clinical Trial Application for ETC-588, Health Canada, Esperion Therapeutics a Division of Pfizer PGRD 2004.
8. Investigation Drug Application for CER-522, an Apolipoprotein A-I mimetic peptide, for treatment of dyslipidemic disorders, Cerenis Therapeutics, FDA, 2008.
9. Investigational Drug Application for CER-001, a recombinant Apolipoprotein A-I phospholipid complex, Cerenis Therapeutics, FDA, 2009.

10. Clinical Trial Application for CER-001, a recombinant Apolipoprotein A-I phospholipid complex, Cerenis Therapeutics, Health Canada, 2010.
11. Change of Final Product Manufacturing Process for CER-001, CTA Amendment, Cerenis Therapeutics, Health Canada, 2011.
12. Change of Final Product Manufacturing Process for CER-001, IND Amendment, Cerenis Therapeutics, FDA, 2011.
13. Change of Cell Culture Process and Facility for CER-001, CTA Amendment, Cerenis Therapeutics, Health Canada, 2011.
14. Change of Cell Culture Process and Facility for CER-001, IND Amendment, Cerenis Therapeutics, FDA, 2011.
15. Investigational Medical Product Dossier for CER-001, a recombinant Apolipoprotein A-I phospholipid complex, Cerenis Therapeutics, European Medical Agency, 2011.
16. Pre-IND Briefing Document for ONL-101 a synthetic peptide for treatment of retinal detachment, ONL Therapeutics, FDA, 2013.

Conference Proceedings

1. Shenderova A, Burke TG, Schwendeman SP, Biodegradable polymer microspheres stabilize the active form of 10-hydroxycamptothecin, *Proc. Am. Assoc. Cancer Res.*, 36, 303 (1996).
2. Shenderova A, Burke TG, Schwendeman SP, Characterization of the microclimate in PLGA microspheres with a camptothecin probe, *Pharm. Res.*, 9, S-254 (1996).
3. Shenderova A, Burke TG, Giovanella B, Schwendeman SP, Characterization of controlled release formulations of camptothecins composed of poly(lactide-co-glycolide) (PLGA) microspheres, *Proc. Am. Assoc. Cancer Res.*, 38, 260 (1997).
4. Shenderova A, Burke TG, Schwendeman SP, Mechanisms of stabilization of camptothecins in PLGA microspheres, *Pharm. Res.*, 14, S-46 (1997).
5. Zhu G, Mallery SR, Clark YM, Shenderova A, Schwendeman SP, Stabilization of proteins encapsulated in injectable poly(lactide-co-glycolide) delivery vehicles, *J. Dent. Res.*, 77 (Special Issue A), 170 (1998).
6. Shenderova A, Burke TG, Schwendeman SP, Evidence for an acidic microclimate in PLGA microspheres, *Proceed. Int'l. Symp. Control. Rel. Bioact. Mater.*, 25, 265-266 (1998).
7. Shenderova A, Madou MJ, Yao S, Schwendeman SP, Potentiometric and impedance measurements of PLGA coated microelectrodes, *Proceed. Int'l. Symp. Control. Rel. Bioact. Mater.*, 26, #5919 (1999).
8. Shenderova A and Schwendeman SP, Techniques for microclimate pH measurement in PLGA delivery devices, *PharmSci*, 2, #2241 (1999).

9. Shenderova A, Zhu G and Schwendeman SP, Correlation of measured microclimate pH with the stability of BSA encapsulated in PLGA microspheres, *Proceed. Int'l. Symp. Control. Rel. Bioact. Mater.*, 27, #0413 (2000).
10. Lalwani N, Drake S, Watson C, Shenderova A, Rodriguez W, Bisgaier C, Dasseux JL, ETC-642, a Novel HDL mimetic, rapidly elevates HDL-associated cholesterol following intravenous administration in rats, rabbits, and nonhuman primates. *Proceed. Atherosclerosis, Thrombosis and Vascular Biology*, 24 (2004).
11. Devalaraja RM, Loughner A, Schwendeman A, Drake SL, Lalwani N, Synthetic HDL decreases the expression of scavenger receptor and blocks differentiation of foam cells in vitro. *Proceed. Atherosclerosis, Thrombosis and Vascular Biology*, 26, (2006).
12. Zhong Y, Zhang L, Shenderova A, Zhu G, Pei P, Chen R, Mallery SR, Mooney DJ, Schwendeman SP, Overcoming barriers to protein delivery with minimally invasive controlled release depots, *Proceedings of the 13th International Symposium on Recent Advances in Drug delivery Systems: "Overcoming long-standing barriers,"* Salt Lake City, UT, pp. 36-37 (2007).
13. Zhong Y, Zhang L, Shenderova A, Zhu G, Pei P, Chen R, Mallery SR, Mooney DJ, Schwendeman SP, Rescue of murine ischemic hindlimbs with controlled-release rhbFGF, *Proceed. Int'l. Symp. Control. Rel. Bioact. Mater.*, 34, #231 (2007).
14. Keyserling CH, Hunt TL, Klepp HM, Barbaras R, Schwendeman A, Lalwani N, Dasseux JL, A first-in-human, randomized, double-blind, ascending single-dose, placebo-controlled, two-period crossover study to evaluate the safety, tolerability, pharmacokinetics and pharmacodynamics of intravenous CER-001 in healthy dyslipidemic volunteers. *Proceed. AHA* (2011).
15. Baron R, Goffinet M, Sy G, Schwendeman A, Keyserling CH, Barbaras R, Lalwani ND, Dasseux JLH, CER-001 a novel HDL mimetic: characterization of in vitro and in vivo biological activities. *Proceed. AHA* (2011).
16. Sviridov DO, Schwendeman AA, Kim G, Stonik J, Ossoli A, Thacker S, Pryor M, O'Mahony A, Polokoff M, Turner S, Remaley AT, The association of 5A peptide with sphingomyelin increases its ability to efflux cholesterol both in vitro and in vivo, *ATVB*, 34, (2013).
17. Yuan Y, Kim G, Schwendeman A, Synthetic HDL nanoparticles for anticancer drug delivery, *PharmSci*, 16, #3745 (2013).
18. Chang RS, Shah RB, Giles MB, Schwendeman AS, Schwendeman SP. Aqueous PLGA-microencapsulation and long-term immunoreactive release of anti-VEGF Fab, *PharmSci*, 16, (2013).
19. Yuan Y, Che X, Zhao M, Li S, Wang Y, Schwendeman A. Development of cyclosporine A microemulsion for parenteral delivery, *PharmSci*, 16, (2013).
20. Mariani FMA, Kim G, Yuan Y, Schwendeman A. Polymerized HDLs for vaccine delivery. *ABRCMS* (2013).

21. Kuai R, Subramanian C, Timmermann BN, Moon JJ, Cohen MS, Schwendeman A. Synthetic high density lipoproteins for targeted delivery of withalngolides to adrenocortical carcinomas, *Proceed. Int'l. Symp. Control. Rel. Bioact. Mater.*, 41, #10347 (2014).
22. Nieto K, Schwendeman A, Kim YC, Prausnitz MR, Schwendeman SP. Sulprostone-loaded polylactic acid microspheres for treatment of glaucoma., *Proceed. Int'l. Symp. Control. Rel. Bioact. Mater.*, 41 (2014).
23. Dai Z, Tran D, Yuan W, Yuan Y, Zheng N, Jiang W, Schwendeman A, Noble C, Hayes M, Working P. Development of a liposomal doxorubicin product drug release assay, *PharmSci*, (2014).
24. Dai Z, Yuan W, Kuai R, Yuan Y, Zheng N, Jiang W, Noble C, Hayes M, Schwendeman A. Development of flow-through USP 4 apparatus release assay for liposomal doxorubicin, *PharmSci*, 2262 (2014).
25. Doty AC, Wang Y, Choi S, Qu W, Lionberger R, Feng MR, Schwendeman A, Schwendeman SP. Cage implant system to evaluate mechanisms of *in vivo* PLGA microsphere release for IVIVC model development, *PharmSci* (2014).
26. Gebrehiwot EB, Patel H, Schwendeman A. Optimizing Synthetic HDL Therapy for Arteriosclerosis, *ABRCMS* (2014). *Travel award*
27. Morin EE, Guo Y, Kuai R, Lautner G, Meyerhoff ME, Chen YE, Schwendeman A. Atheroma-specific delivery of synthetic HDL containing S1P for modulation of vascular inflammation, *ATVB* (2015).
28. Zhang M, Huang R, Ackermann R, Im SC, Waskell L, Schwendeman A, Ramamoorthy A, Incorporation of the cyt *b*₅ – cyt P450 complex in nanodiscs characterized by solution NMR, *Experimental Nuclear Magnetic Resonance Conference* (2015).
29. Kuai R, Schwendeman A, Moon JJ. Nanodisc vaccine platform for elicitation of anti-tumor cytotoxic CD8+ T lymphocytes, *BME Conference* (2015).
30. Becker C, Carlson E, Kil Y, Saveliev S, Ford M, Schwendeman A. Comprehensive HCP analysis of infliximab samples, *Host Cell Protein Workshop, BEBPA Conferences* (2015).
31. Shalev O, Raghavan S, Rockwell C, Simopoulos N, Mazzara JM, Schwendeman A, Mehta G, Shtein M. Novel approach to enhance bioavailability of organic small molecule medicines by organic vapor jet printing. *Preclinical formulation and formulation for drug discovery, GRC* (2015).
32. Tang WH, Kil YJ, Crowell KL, Bern MW, Carlson E, Becker C, Ford M, Saveliev S, Pisupati K, Ackermann R, Schwendeman A. Rapid identification and quantitation of disulfide bonds in infliximab (Remicade versus Remsima), *ASMS Conference* (2015).
33. Pisupati K, Benet A, Ackermann R, Tian Y, Ford M, Saveliev S, Carlson E, Becker C, Ruotolo B, Schwendeman S, Schwendeman A. Assessing biosimilarity of infliximab

- products by LCMS and forced degradation studies. *Colorado Protein Stability Conference* (2015).
34. Kuai R, Schwendeman A, and Moon JJ. Nanodisc vaccine platform for elicitation of anti-tumor cytotoxic CD8+ T lymphocytes. *Biomedical Engineering Society Annual Meeting* (2015).
 35. Li D, Tang J, Olsen K, Ackermann R, Schwendeman A. Pegylation of synthetic high-density lipoproteins improves circulation time and in vivo efficacy, *AAPS Conference*, #2548, (2015).
 36. Pisupati K, Benet A, Ackermann R, Tian Y, Ford M, Saveliev S, Carlson E, Becker C, Ruotolo B, Schwendeman SP, Schwendeman A. Comprehensive characterization of Remicade and its biosimilar- Remsima using mass spectrometry, *AAPS Conference*, #2679, (2015).
 37. Tang J, Yuan W, Dai Z, Li D, Zheng N, Jiang W, Noble C, Hayes M, Szoka FC, Schwendeman A. Development of the liposomal amphotericin B release assay, *AAPS Conference*, #2820, (2015).
 38. Yuan W, Kuai R, Dai Z, Tang J, Zheng N, Jiang W, Noble C, Hayes M, Szoka FC, Schwendeman A. Comparison of drug release profiles of doxorubicin liposomes prepared by different processes, *AAPS Conference*, #2936, (2015).
 39. Dai Z, Noble C, Yuan W, Zheng N, Jiang W, Szoka FC, Schwendeman A, Hayes M, Working P. Development of a single vial assay for liposomal doxorubicin drug release, *AAPS Conference*, (2015).
 40. Kuai R, Ochyl LJ, Schwendeman A, and Moon JJ. Nanodisc-based peptide vaccines for personalized cancer immunotherapy. *Keystone Symposium on Cancer Vaccines*, (2016).
 41. Guo L, Morin E, Yuan Y, Zhan GG, Gong MC, Li Z, Standiford T, Schwendeman A, Li XA. Synthetic high-density lipoprotein – a potential therapy for sepsis, *ATVB Conference* (2016).
 42. Acevedo-Mariani FM, Kang JJ, Yuan W, Pogozeva I, Schwendeman A. Optimization of apolipoprotein A-I mimetic peptides for lipid binding and lecithin-cholesterol acyltransferase activation, *ATVB Conference* (2016).
 43. Tang W, Bern M, Skilton J, Carlson E, Ford M, Pisupati K, Schwendeman A, Hosfield C, Saveliev S, Rosenblatt M, Urh M, Becker C. Improved reagents and software for comparing biosimilar and originator therapeutic proteins: accurate analysis of deamidation and disulfide bond scrambling, *ASMS Conference* (2016).
 44. Kerr RA, Kang J, Schwendeman A, Ruotolo BT. Ion mobility-mass spectrometry reveals the stoichiometry and structures of lipid bound amyloidogenic peptide complexes within nanodiscs. *ASMS Conference* (2016).
 45. Tang J, Kuai R, Yuan W, Moon JJ, Schwendeman A. Effect of size and pegylation of liposomes and peptide-based synthetic lipoproteins on tumor targeting, *AAPS Conference* (2016).

46. Kang JJ, Acevedo-Mariani FM, Yuan W, Pogozeva I, Schwendeman A. Optimization of apolipoprotein A-I mimetic peptides for lipid binding and lecithin-cholesterol acyltransferase activation, *AAPS Conference* (2016).
47. Tang J, Li D, Yuan W, Drake L, Morin EE, Deschaine S, Ackermann R, Olsen K, Smith DE, Schwendeman A. Influence of apolipoprotein A-I peptide lipidation and administration route on pharmacokinetics and ability to mobilize cholesterol, *AAPS Conference* (2016).
48. Kuai R, Xu Y, Schwendeman A, Moon JJ. Cancer immunotherapy with novel vaccine nanodiscs for efficient elimination of mucosal tumors, *CRS Conference* (2017).
49. Li D, Fawaz, M, Schwendeman A. The effect of PEG-lipid micelles on cholesterol efflux and atherosclerosis, *AAPS Conference* (2017).
50. Benet, A, Pisupati K, Benet A, Tian Y, Okbazghi S, Kang J, Ford M, Saveliev S, K. Sen KI, Carson E, Tolbert TJ, Ruotolo BT, Schwendeman SP, Schwendeman A. Biosimilarity under stress: a forced degradation study of Remicade and Remsima, *AAPS Conference* (2017).
51. Kang J, Tian Y, Subramanian V, Ruotolo BT, Schwendeman A. Analytical characterization and comparison of Neupogen® and biosimilar Filgrastim, *AAPS Conference* (2017).
52. Kim SY, Fawaz M, Li D, Ackermann R, Olsen K, Schwendeman A. The effect of phospholipid chain length and saturation on sHDL reverse cholesterol transport and anti-inflammatory effect, *AAPS Conference* (2017).
53. Morin EE, Guo L, Yuan Y, Zhan GG, Gong MC, Li Z, Standiford T, Li XA, Schwendeman A. Synthetic high-density lipoprotein – a potential therapy for sepsis, *AAPS Conference* (2017).
54. Kuai R, Yuan W, Xu Y, Fan Y, Schwendeman A, Moon JJ. Cancer immunotherapy with novel vaccine nanodiscs for efficient elimination of mucosal tumors, *The Society for Immunotherapy of Cancer Annual Meeting* (2017).
55. Fawaz MV, Schultz M, Liu E, Ming R, Morin EE, Lieberman A, Schwendeman A. Synthetic lipid scavengers for the treatment of Niemann-Pick C disease, *ASPET Conference* (2018).
56. Kim SY, Li D, Fawaz MV, Morin EE, Olsen K, Li XA, Schwendeman A. The impact of phospholipid composition of synthetic high-density lipoprotein on its pharmacological activity, *ATVB Conference* (2018)
57. Fawaz MV, Schultz M, Liu E, Ming R, Morin EE, Lieberman A, Schwendeman A. Synthetic high-density lipoprotein cholesterol scavengers for the treatment of Niemann-Pick C disease, *ATVB Conference* (2018).
58. Kuai R, Schwendeman A, Moon JJ. Personalized vaccine nanodiscs for elimination of established tumors, *Keystone Conference Cancer Immunotherapy* (2018).

59. Scheetz L, Sun X, Schwendeman A, Moon JJ. Synthetic high-density lipoprotein nanodiscs for personalized vaccination against glioblastoma multiforme, *Society for Biomaterials Conference* (2018).
60. Sun X, Kuai R, Schwendeman A, Moon JJ. Subcutaneous nanodisc vaccination with dual-adjuvants for cancer immunotherapy, *Society for Biomaterials Conference* (2018).
61. Najafabadi AH, Kuai R, Schwendeman A, Moon JJ. Nanomaterials for immunotherapy against multiple sclerosis/experimental autoimmune encephalomyelitis (EAE), *Society for Biomaterials Conference* (2018).
62. Vallejo DD, Polasky DA, Kang J, Schwendeman A, Ruotolo BT. Rapid, Parallelized collision induced unfolding of intact antibodies: the influence of excipients on antibody charge stripping, *ASMS Conference* (2018).
63. Hageman T, Kang J, Schwendeman A, Weis DD, Volcano plot analysis of HX-MS measurements for reliable identification of significant differences in comparability studies, *ASMS Conference* (2018).
64. Kang J, Kim SY, Vallejo DD, Hageman TS, Benet A, Saveliev S, Weis DD, Ruotolo BT, Schwendeman A. Comparing glycosylation, ADCC activity and structural profiles of rituximab and its biosimilar, *ASMS Conference* (2018).
65. Kim SY, Li D, Morin EE, Olsen K, Li XA, Schwendeman A, Phospholipid composition of synthetic high-density lipoprotein alters its anti-inflammatory activity, *AAPS Conference* (2018).
66. Li D, Kim SY, Guo Y, Yu M, Ackermann R, Olsen K, Chen YE, Schwendeman SP, Schwendeman A. Nano-micelles mimicking high-density lipoproteins reverse atherosclerosis and prevent inflammatory response in animals, *AAPS Conference* (2018).
67. Kang J, Kim SY, Vallejo DD, Hageman TS, Benet A, Saveliev S, Ford M, Tolbert TJ, Weis DD, Ruotolo BT, Schwendeman A. Analytical comparability strategies for rituximab and its biosimilar, *AAPS Conference* (2018).
68. Yu M, Yuan W, Schwendeman A, Schwendeman SP. A mathematical model to determine actual drug release kinetics from nanocarriers using dialysis methods, *AAPS Conference* (2018).
69. Morin EE, Guo Y, Souery W, Yuan W, Liu Y, Olsen K, Fawaz MA, Chen YE, Schwendeman A. Synergetic effect of synthetic high-density lipoprotein and liver X receptor ligands co-administration on reduction of atherosclerosis, *AAPS Conference* (2018).
70. Najafabadi AH, Kuai R, Schwendeman A, Moon JJ. Treatment of experimental autoimmune encephalomyelitis with synthetic high-density lipoprotein nanodiscs, *AAPS Conference* (2018).

71. Scheetz L, Sun X, Schwendeman A, Moon JJ. Synthetic high-density lipoprotein nanodiscs for personalized vaccination against glioblastoma multiforme, *AAPS Conference* (2018).
72. He H, Adili R, Holinstat M, Schwendeman A. Synthetic high-density lipoproteins loaded with ML355 for efficiently inhibiting thrombosis, *CRS Conference* (2019).
73. Liu Y, Schwendeman A. Characterization and quality comparison of AmBisome and several generic products, *CRS Conference* (2019).
74. Najafabadi AH, Hendy D, Munie A, Duncker PC, Wilkinson N, Schwendeman A, Segal BM, Moon JJ. Myelin-based peptide-cojugated nanodiscs to promote immunological tolerance against multiple sclerosis/experimental autoimmune encephalomyelitis (EAE), *CRS Conference* (2019).
75. Vallejo DD, Polasky DA, Kang J, Benet A, Kurulugama RT, Fjeldsted JC, Schwendeman A, Ruotolo BT. Collision induced unfolding enables the rapid analysis of biosimilars under stressed conditions, *ASMS Conference* (2019).
76. Mei L, Yu M, Pawar M, Besirli CC, Schwendeman A. High-density lipoprotein nanoparticles delivering liver X receptors agonist for the treatment of age-related macular degeneration, *AAPS Conference* (2019).
77. Liu Y, Mei Z, Schwendeman A. Characterization and quality comparison of AmBisome® and several generic products, *AAPS Conference* (2019).
78. Yu M, Yuan W, Liu Y, Schwendeman A. Product characterization and development of *in vitro* Drug Release Assay of Exparel® Bupivacaine Multivesicular Liposomes, *AAPS Conference* (2019).
79. Scheetz L, Sun X, Schwendeman A, Moon JJ. Synthetic high-density lipoprotein nanodiscs for personalized vaccination against glioblastoma multiforme, *AAPS Conference* (2019).
80. Benet A, Kang J, Halseth, Srinivasan S, Schwendeman SP, Schwendeman A. The effects of excipients and pH on exenatide stability in solution, *AAPS Conference* (2019).
81. Lui L, He H, Schwendeman A. Development of kidney-targeted synthetic lipoproteins delivering liver X receptor agonist for treatment of diabetic nephropathy, *CRS Conference* (2020).
82. He H, Adili R, Liu L, Holinstat M, Schwendeman A. Antithrombotic effects of synthetic high-density lipoprotein nanodiscs, *CRS Conference* (2020).
83. Hong K, Yu M, Mei L, Olsen K, Guo Y, Luo Y, Chen EY, Schwendeman A. Effect of lipid composition on anti-inflammatory activity of HDL-mimicking micelles, *AAPS Conference* (2021).
84. Yu M, Mei L, Liu L, He H, Hong K, Schwendeman A. Development of inflamed endothelium targeted synthetic high-density lipoproteins, *AAPS Conference* (2021).

