CURRICULUM VITAE

Aaron C. Anselmo, Ph.D.
Eshelman School of Pharmacy
Division of Pharmacoengineering and Molecular Pharmaceutics
University of North Carolina, Chapel Hill
Campus Box 7362 Email: aanselmo@email.unc.edu Phone: (919)966-1123

EDUCATION

2015 **Ph.D., Chemical Engineering** — University of California, Santa Barbara
Dissertation: *Blood-Cell Inspired Polymeric Drug Delivery Systems*
Advisor: Samir Mitragotri

2010 **B.S., Chemical Engineering** — Rensselaer Polytechnic Institute
Magna Cum Laude
Transferred from Orange County Community College

PROFESSIONAL EXPERIENCE

2017-Present **Assistant Professor** — University of North Carolina, Chapel Hill
Eshelman School of Pharmacy
Division of Pharmacoengineering and Molecular Pharmaceutics

2015-2017 **Postdoctoral Associate** — Massachusetts Institute of Technology
David H. Koch Institute for Integrative Cancer Research
Advisor: Robert S. Langer

ACADEMIC HONORS

2014 Mellichamp Fellowship for Graduate Students in Systems Biology and Bioengineering
2011-2014 National Science Foundation Graduate Research Fellowship (**NSF GRFP**)
2010 UCSB Summer Doctoral Research Institute Fellowship
2008-2010 Garnet D. Baltimore Scholarship, Phi Theta Kappa Scholarship
2008 ACS (Mid-Hudson Chapter) College Recognition Award

PUBLICATIONS (Google Scholar Link – Citations as of 1/24/2018: 1696)

Peer-reviewed Publications

UNC Affiliation:

1. **Anselmo, A. C.**, "*The Clinical Landscape of Microbial Therapeutics"* **Bioengineering & Translational Medicine**, in review.
2. Pan, D., Myerson, J., Brenner. J., Patel, P., **Anselmo, A.C.**, Mitragotri, S., & Muzykantov, V. "*Nanoparticle Properties Modulate Their Attachment and Effect on Carrier Red Blood Cells*" **Scientific Reports**, Accepted, 2018.

3. McHugh, K.J., Nguyen, T.D., Linehan, A.R., Yang, D., Behrens, A.M., Rose, S., Tochka Z.L., Tzeng, S.Y., Norman, J.J., **Anselmo, A.C.**, Xu, X., Tomasic, S., Taylor, M.A., Lu, J., Guarecuco, R., Langer, R., & Jaklenec, A. "*A new approach for creating fillable microparticles and other complex 3D microstructures*" **Science**, 357, 1138-1142, 2017.

Prior to UNC:

4. Wibroe, P.P., **Anselmo, A.C.**, Nilsson P.H., Gupta, V., Urbanics, R., Szebeni, J., Mitragotri, S., Mollnes, T.E., & Moghimi, S.M., "*Bypassing adverse injection reactions to nanoparticles through shape modification and attachment to erythrocytes*" **Nature Nanotechnology**, 12, 589-594, 2017.
5. **Anselmo, A. C.**, Prabhakarpandian, B., Pant, K., & Mitragotri, S. "*Clinical and Commercial Translation of Advanced Nanoparticle Systems: Challenges and Opportunities*", **Translational Materials Research**, 4(1), 2017.
6. **Anselmo, A. C.** & Mitragotri, S. "*Impact of Particle Elasticity on Particle-Based Drug Delivery Systems"* **Advanced Drug Delivery Reviews**, 108, 51-67, 2017.
7. **Anselmo, A. C.**, McHugh, K.J., Webster, J., Langer, R., & Jaklenec, A. "*Layer-by-Layer Encapsulation of Probiotics for Delivery to the Microbiome*" **Advanced Materials**. 28(43), 9486-9490, 2016.
8. *Jaklenec, A., ***Anselmo, A. C.**, Hong, J., Vegas, A.J., Kozminksy, M., Langer, R., Hammond, P.T., & Anderson, D.G., "*High Throughput Layer-by-Layer Films for Extracting Film Forming Parameters and Modulating Film Interactions with Cells*" **ACS Applied Materials & Interfaces**, 8(3), 2255-2261, 2016.
   ***Denotes Equal Contribution**
9. **Anselmo, A. C.** & Mitragotri, S. "*Nanoparticles in the Clinic"* **Bioengineering & Translational Medicine**, 1(1), 10-29, 2016.
10. Gupta, V., Hwang, B. H., Doshi, N., Banerjee, A., **Anselmo, A. C.**, & Mitragotri, S. "*Delivery of Exenatide and Insulin Using Mucoadhesive Intestinal Devices*" **Annals of Biomedical Engineering**, 44(6), 1993-2007, 2016.
11. *Villa, C., ***Anselmo, A. C.**, Mitragotri, S., & Muzykantov, V. "*Red Blood Cells: Supercarriers for Drugs, Biologicals, and Nanoparticles and Inspiration for Advanced Delivery Systems"* **Advanced Drug Delivery Reviews**, 106A, 88-103, 2016.
    ***Denotes Equal Contribution**
12. Myerson, J.W., **Anselmo, A.C.**, Liu, Y., Mitragotri, S., Eckmann, D.E., & Muzykantov, V. R. "*Non-affinity Factors Modulating Vascular Targeting of Nano- and Microcarriers*" **Advanced Drug Delivery Reviews**, 99A, 97-112, 2016.
13. Pan, D., Vargas-Morales, O., Zern. B., **Anselmo, A.C.**, Gupta, V., Zakrewsky, M., Mitragotri, S., & Muzykantov, V. "*The Effect of Polymeric Nanoparticles on Biocompatibility of Carrier Red Blood Cells*" **PLoS ONE**, 11(3): e0152074, 2016.
14. **Anselmo, A. C.** & Mitragotri, S. "*A Chemical Engineering Perspective on Nanoparticle-based Targeted Drug Delivery: A Unit Process Approach"* **AIChE Journal**, 62, 966-974, 2016.
15. Kumar, S., **Anselmo, A.C.**, Banerjee, A., Zakrewsky, M., & Mitragotri, S. "*Shape and Size-dependent Immune Response to Antigen-carrying Nanoparticles*" **Journal of Controlled Release**, 220A, 141-148, 2015.
16. **Anselmo, A.C.**, Kumar, S., Gupta, V., Pearce, A.M., Ragusa, A., Muzykantov, V., & Mitragotri, S. "*Exploiting Shape, Cellular-Hitchhiking and Antibodies to Target Nanoparticles to Lung Endothelium: Synergy between Physical, Chemical and Biological Approaches*" **Biomaterials**, 68, 1-8, 2015.
17. Kumar, S., Chen, M., **Anselmo, A. C.**, & Mitragotri, S. "*Enhanced Epidermal Localization of Topically Applied Steroids using SPACE Peptide*" **Drug Delivery and Translational Research**, 5, 523-530, 2015.
18. **Anselmo, A. C.**, & Mitragotri, S. "*A Review of Clinical Translation of Inorganic Nanoparticles*" **The AAPS Journal**, 17, 1041-1054, 2015.
19. Camacho, K.C., Kumar, S., Menegatti, S., Vogus, D.R., **Anselmo, A.C.**, & Mitragotri, S. "*Antitumor Activity of Camptothecin-Doxorubicin and their Conjugates with Hyaluronic Acid*" **Journal of Controlled Release**, 210, 198-207, 2015.

20. **Anselmo, A. C.**, Zhang, M., Kumar, S., Vogus, D.R., Menegatti, S., Helgeson, M.E., & Mitragotri, S. "*Elasticity of Nanoparticles Influences Their Blood Circulation, Phagocytosis, Endocytosis and Targeting*" **ACS Nano**, 9(3), 2169-3177, 2015.
21. Chen, M., Kumar, S., **Anselmo, A. C.**, Gupta, V., Slee, D. H., Muraski, J. A., & Mitragotri, S. "*Topical Delivery of Cyclosporin A into Skin using SPACE-peptide*" **Journal of Controlled Release**, 199, 190-197, 2015.
22. ***Anselmo, A. C.**, *Gilbert, J.B., Kumar, S., Gupta V., Cohen, R.E., Rubner, M.F., & Mitragotri, S. "*Monocyte-Mediated Delivery of Polymeric Backpacks to Inflamed Tissues: A Generalized Strategy to Deliver Drugs to Treat Inflammation"* **Journal of Controlled Release**, 199, 29-36, 2015.
    ***Denotes Equal Contribution**
23. **Anselmo, A. C.**, Modery-Pawlowski, C.L., Menegatti, S., Kumar, S., Vogus, D.R., Tian, L.L., Chen, M., Squires, T.M., Sen Gupta, A., & Mitragotri, S. "*Platelet-like Nanoparticles: Mimicking Shape, Flexibility, and Surface Biology of Platelets to Target Vascular Injuries"* **ACS Nano**, 8(11), 11243-11253, 2014.
24. **Anselmo, A. C.** & Mitragotri, S. "*Cell-Mediated Delivery of Nanoparticles: Taking Advantage of Circulatory Cells to Target Nanoparticles"* **Journal of Controlled Release**, 190, 531-541, 2014.
25. **Anselmo, A. C.** & Mitragotri, S. "*An Overview of Clinical and Commercial Impact of Drug Delivery Systems"* **Journal of Controlled Release**, 190, 15-28, 2014.
26. Howard, M., Zern, B.J., **Anselmo, A. C.**, Shuvaev, V.V., Mitragotri, S., & Muzykantov, V. "*Vascular Targeting of Nanocarriers: Perplexing Aspects of the Seemingly Straightforward Paradigm"* **ACS Nano**, 8(5), 4100-4132, 2014.
27. Chen, M., Zakrewsky, M., Gupta, V., **Anselmo, A. C.**, Slee, D. H., Muraski, J. A., & Mitragotri, S. "*Topical Delivery of siRNA into Skin using SPACE-peptide Carriers*" **Journal of Controlled Release**, 179, 33-41, 2014.
28. Sarkar, D., Liu, W., Xie, X., **Anselmo, A. C.**, Mitragotri, S., & Banerjee, K. "*MoS_2 Field-Effect Transistor for Next-Generation Label-Free Biosensors"* **ACS Nano**, 8(4), 3992-4003, 2014.
29. Chen, M., Gupta, V., **Anselmo, A. C.**, Muraski, J. A., & Mitragotri, S. "*Topical Delivery of Hyaluronic Acid into Skin using SPACE-peptide Carriers*" **Journal of Controlled Release**, 173, 67-74, 2014.
30. Gupta, V., Hwang, B. H., Lee, J., **Anselmo, A. C.**, Doshi, N., & Mitragotri, S. "*Mucoadhesive Intestinal Devices for Oral Delivery of Salmon Calcitonin*" **Journal of Controlled Release**, 172(3), 753-762, 2013.
31. **Anselmo, A. C.**, Gupta, V., Zern, B. J., Pan, D., Zakrewsky, M., Muzykantov, V., & Mitragotri, S. "*Delivering Nanoparticles to Lungs while Avoiding Liver and Spleen through Adsorption on Red Blood Cells*" **ACS Nano**, 7(12), 11129-11137, 2013.
32. *Kolhar, P., ***Anselmo, A. C.**, Gupta, V., Pant, K., Prabhakarpandian, B., Ruoslahti, E., & Mitragotri, S. "*Using Shape Effects to Target Antibody-coated Nanoparticles to Lung and Brain Endothelium*" **PNAS**, 110(26), 10753-10758, 2013.
    ***Denotes Equal Contribution**
33. Zhou, Z., **Anselmo, A. C.**, & Mitragotri, S. "*Synthesis of Protein-based, Rod-shaped Particles from Spherical Templates using Layer-by-layer Assembly*" **Advanced Materials**, 25(19), 2723-2727, 2013.
34. Marcelino-Cruz, A. M., Bhattacharya, M., **Anselmo, A. C.**, & Tessier, P. M. "*Site-specific Structural Analysis of a Yeast Prion Strain with Species-specific Seeding Activity*" **Prion**, 5(3), 208-214, 2013.

Research Highlights (Literature Commentary)

1. **Anselmo, A. C.**, "*BioTM Buzz*" **Bioengineering & Translational Medicine**, 2(3), 3, 2017.
2. **Anselmo, A. C.**, "*BioTM Buzz*" **Bioengineering & Translational Medicine**, 2(2), 133, 2017.
3. **Anselmo, A.**, "*BioTM Buzz*" **Bioengineering & Translational Medicine**, 2(1), 3, 2017.

PATENTS

1. Mitragotri, S., **Anselmo, A. C.**, Menegatti, S. "*Synthetic Platelets*" **PCT/US2015/014326**.

2. **Anselmo, A. C.**, Langer, R., Jaklenec, A. "*pH-Responsive Mucoadhesive Polymeric Encapsulated Microorganism*" **Filed with USPTO, Provisional Application Number: 62/333,570**.
3. **Anselmo, A. C.**, Xu, X., Tang, W., Langer, R., Jaklenec, A. "*Stable Vitamin A and Iron Supplemental Particles*" **Filed with USPTO, Provisional Application Number: U.S.S.N. 62/412,168**.

INVITED LECTURES/SEMINARS

1. **Anselmo, A.C.**, Langer, R., Jaklenec, A., "*Layer-by-Layer Encapsulation of Probiotics for Delivery to the Intestinal Microbiome*" **Invited Seminar at MatTek Corporation**, Sep. 28th, 2016; Ashland, MA. USA.
2. **Anselmo, A.C.**, Mitragotri, S., "*Hitchhiking Nanoparticles on Red Blood Cells: A Stealth Approach for Targeted Nanoparticle Delivery*", **Gordon Research Seminar: Drug Carriers in Medicine and Biology**, Aug. 6-7, 2016; Waterville Valley, NH. USA.
3. **Anselmo, A.C.** "*Interfacing Cells and Materials for Advanced Delivery Systems*", **Distinguished Young Scholars Seminar**, June 20, 2016; University of Washington, Seattle, WA. USA.
4. **Anselmo, A.C.**, Mitragotri, S., **LaMer Keynote Lecture**, "*Modulating Nanoparticle Properties and Features for Enhanced Biological Performance*", **ACS Colloids**, June 5-8, 2016; Cambridge, MA. USA. *Enhanced Biological Performance*", **ACS Colloids**, June 5-8, 2016; Cambridge, MA. USA.

CONFERENCE PROCEEDINGS (Underlined = Talk, *Italicized = Poster*)

1. **Anselmo, A. C.**, McHugh, K.J., Webster, J., Langer, R., Jaklenec, A. "Layer-By- Layer Encapsulation of Probiotics: Addressing the Challenges of Oral Delivery to Modulate the Microbiome", **AIChE Annual Meeting**, Nov. 13-18, 2016; San Francisco, CA. USA.
2. **Anselmo, A.C.**, Mitragotri, S., Langer, R., "*Interfacing Cells and Materials for Advanced Delivery Systems*", **AIChE Annual Meeting**, Nov. 13-18, 2016; San Francisco, CA. USA.
3. **Anselmo, A.C.**, Langer, R., Jaklenec, A., "*Modulating the Microbiome via Layer-by-Layer Templating of Probiotics*", **The 13th US-Japan Symposium on Drug Delivery Systems**, Dec. 16-20, 2015; Lahaina, Maui, HI. USA. ****Selected for Oral Presentation***
4. **Anselmo, A.C.**, Mitragotri, S., "Tuning Nanoparticle Elasticity for Improved Biological Function", **AIChE Annual Meeting**, Nov. 8-13, 2015; Salt Lake City, UT. USA.
5. **Anselmo, A.C.**, Mitragotri, S., "A Physical, Chemical and Biological Approach to Targeting Nanoparticles to Lung Endothelium: Leveraging Shape Effects, Cellular Hitchhiking and Antibody Targeting", **AIChE Annual Meeting**, Nov. 8-13, 2015; Salt Lake City, UT. USA.
6. **Anselmo, A.C.**, Mitragotri, S., "Delivering Cellular Backpacks to Lungs Via Hitchhiking on Monocytes", **AIChE Annual Meeting**, Nov. 16-21, 2014; Atlanta, GA. USA.
7. **Anselmo, A.C.**, Mitragotri, S., "Platelet-like Nanoparticles as Synthetic Hemostats", **AIChE Annual Meeting**, Nov. 16-21, 2014; Atlanta, GA. USA.
8. **Anselmo, A.C.**, Mitragotri, S., "*Blood-Cell Inspired Drug Delivery Systems for Improved Delivery of Polymeric Carriers*", **AIChE Annual Meeting**, Nov. 16-21, 2014; Atlanta, GA. USA.
9. **Anselmo, A.C.**, Mitragotri, S., "*Blood-Cell Inspired Drug Delivery Systems*", **Gordon Research Conference: Drug Carriers in Medicine and Biology**, Aug. 18-22, 2014; Waterville Valley, NH. USA.
10. **Anselmo, A.C.**, Gupta, V., Mitragotri, S., "Delivering Nanoparticles to Lungs and Brain Via Hitchhiking On Red Blood Cells", **AIChE Annual Meeting**, Nov. 4-8, 2013; San Francisco, CA. USA.
11. Kolhar, P., **Anselmo, A.C.**, Gupta, V., Pant, K., Prabhakarpandian, B., Ruoslahti, E., Mitragotri, S., "Using Shape Effects to Enhance Nanoparticle Targeting to Lungs and Brain", **AIChE Annual Meeting**, Nov. 4-8, 2013; San Francisco, CA. USA.
12. **Anselmo, A.C.**, Mitragotri, S., "*Layer-By-Layer Synthesis of Polymeric Carriers for Drug Delivery*", **AIChE Annual Meeting**, Nov. 4-8, 2013; San Francisco, CA. USA.
    ****2nd Place Nanoscale Science & Engineering Forum (NSEF) Poster Section***

13. **Anselmo, A.C.**, Gupta, V., Zern, B., Pan, D., Muzykantov, V., Mitragotri, S., "*RBC-Hitchhiking for Targeted Delivery of Nanoparticles to Lungs*", **NanoDDS**, Oct. 26-28, 2013; San Diego.

TEACHING EXPERIENCE

2017	Lecturer, UNC DPMP 868 (Advances in Drug Delivery and Nanomedicine)
2014	Teaching Assistant, UCSB ChE125 (Principles of Bioengineering)
2012	Teaching Assistant, UCSB ChE132B (Numerical Methods in Chemical Engineering)
2011	Teaching Assistant, UCSB ChE132A (Analytical Methods in Chemical Engineering)
2006-2008	Physics, chemistry, and mathematics tutor: Orange County Community College

PROFESSIONAL SERVICE

Reviewer:
Nature Communications (2016-Present), Bioengineering & Translational Medicine (2016-Present), Nano Today (2015-Present), Journal of Controlled Release (2014-Present)