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# EDUCATION

**Ph.D., Chemistry**, University of Cambridge 2012

Dissertation: *Droplet-based microfluidics for chemical synthesis and integrated analysis*

Advisor: Wilhelm T. S. Huck

Research Collaboration (one-year visit), Université de Strasbourg, France Advisor: Andrew D. Griffiths

**B.A. *magna cum laude*, with honors in Chemistry**, Williams College 2006

Honors Thesis: *Methods for the asymmetric synthesis of pyran-based natural products*

Advisor: Thomas E. Smith

# PROFESSIONAL EXPERIENCE

**Assistant Professor of Chemistry**, University of Washington 2016–present **Adjunct Assistant Professor of Urology**, University of Washington School of Medicine 2016–present *Studying molecular signaling underlying human disease. Advancing methods for isolation of secreted molecules from living cultures; biomimetic models of the lung, testis, prostate, kidney, and vasculature; and multikingdom (human, bacterial, fungal) culture platforms for medicine and agriculture. Using open microfluidics to develop novel methods to 3D pattern hydrogels for cell culture. Developing at-home blood sampling and transcriptomics to study the immune response. Improving microfabrication and manufacturing methods to translate our technology to others.*

## NIH K Career Development Award Scholar 2014–2015

Departments of Biomedical Engineering and Urology, University of Wisconsin–Madison

*Studied mechanisms of urologic and inflammatory disease with complementary* in vitro *microfluidic cell culture platforms and* in vivo *models.*

**Consultant** 2013–2014

Isthmus Biosciences (Madison, WI)

*Advised on a droplet-based microfluidics screening platform. Funded by an NSF STTR grant.*

**Postdoctoral Fellow** 2011–2014

Departments of Biomedical Engineering and Urology, Molecular & Environmental Toxicology Center University of Wisconsin–Madison

*Studied cell signaling in prostate and testis using microfluidic models. Developed methods for integrating microfluidic cell culture and metabolomic analysis.*

Advisors: David J. Beebe (Biomedical Engineering), Will A. Ricke (Urology, Toxicology), and Wade A. Bushman (Urology, Toxicology)

## Selected Undergraduate Summer Research Positions

Merck Research Laboratories (2002, 2003, 2006). Argonne National Laboratory (2004).

# HONORS AND AWARDS

|  |  |
| --- | --- |
| 20212021 | Howard Hughes Medical Institute (HHMI) Gilliam Mentor, [*one of fifty*](https://www.hhmi.org/news/mentoring-and-inclusion-are-top-priority-for-50-new-gilliam-fellows-and-their-advisers)Undergraduate Research Mentor Award, one of seven chosen across UW from >190 nominees |
| 2021 | Sloan Research Fellowship, [*one of twenty-three in Chemistry*](https://sloan.org/fellowships/2021-Fellows) |
| 2019 | Packard Fellowship for Science and Engineering, [*one of twenty-two*](https://www.packard.org/insights/news/packard-fellowships-in-science-and-engineering-announces-2019-class-of-fellows/) |
| 2018 | Beckman Young Investigator (BYI) Award, [*one of ten*](https://www.beckman-foundation.org/awarded-scientists/?query&award_program=Beckman%2BYoung%2BInvestigator&discipline&award_inst&award_year=2018&current_inst) |
| 2018 | NIH Maximizing Investigators’ Research Award (MIRA) for Early Stage Investigators (R35) |
| 2017 | Kavli Microbiome Ideas Challenge Award (ASM, ACS & APS), [*one of three worldwide*](https://www.kavlifoundation.org/kavli-news/kavli-microbiome-ideas-challenge-funds-innovative-cross-cutting-research#.YDWkt5NKjPA) |
| 2017 | Elected Co-Vice Chair (2019) and Co-Chair (2021, now 2023), Gordon Research Conference on the Physics and Chemistry of Microfluidics |
| 2014 | NIH K Career Development Award |
| 2014 | Mayo Clinic Angiogenesis Symposium Travel Award |
| 2013 | Society for Basic Urologic Research Travel Award and invited podium presentation |
| 2013 | Fluigent Travel Fellowship |
| 2013 | MB Research Award for Distinction in Practical *In Vitro* and Alternative Toxicology |
| 2013 | Society of Toxicology *In Vitro* and Alternative Methods Postdoctoral Scholar Award |
| 2011 | NIH National Research Service Award Postdoctoral Traineeship (NIEHS) |
| 2011 | Gordon Research Conference on Physics and Chemistry of Microfluidics Poster Award |
| 2011 | Cambridge Philosophical Society Travel Grant |
| 2010 | Cambridge Philosophical Society Research Studentship |
| 2010 | Emmanuel College Travel Grant |
| 2010 | University of Cambridge, Department of Chemistry Travel Grant |
| 2009 | Emmanuel College Travel Grant |
| 2009 | MicroTAS Student Travel Grant |
| 2006 | Dr. Herchel Smith Fellowship (to support graduate study at Cambridge) |
| 2006 | James F. Skinner Prize in Chemistry |
| 2006 | Sigma Xi Inductee |
| 2005 | Phi Beta Kappa Inductee (awarded junior year to top 5% of class) |
| 2005 | American Chemical Society (ACS) Analytical Division Award, Williams College |
| 2004 | ACS Polymer Chemistry Award for Achievement in Organic Chemistry, Williams College |
| 2003 | CRC Press Annual Freshman Chemistry Achievement Award, Williams College |
| 2002 | Academy of Applied Science, Junior Science and Humanities Symposium Scholarship |
| 2002 | Intel Science Talent Search Finalist; invited poster presentation, National Academy of Sciences |

**PEER-REVIEWED PUBLICATIONS** *(§denotes corresponding author; \*denotes equal authorship)* Total citations: >2170, h-index=19 (per [Google Scholar,](https://scholar.google.com/citations?user=gXANJHIAAAAJ&hl=en) June 30, 2021). [Link to full publication list](https://depts.washington.edu/bcmelab/publications/) that is updated regularly. *Publication titles in this CV contain links.*

*From the University of Washington*

43.§ J. W. Khor\*, U. N. Lee\*, J. Berthier, E. Berthier§, **A. B. Theberge**§. [Removing the ceiling on droplet microfluidics](https://www.biorxiv.org/content/10.1101/2021.07.29.454194v2). Preprint: <https://www.biorxiv.org/content/10.1101/2021.07.29.454194v2>.

42.§ A. M. Dostie\*, H. G. Lea\*, U. N. Lee\*, T. L. van Neel, E. Berthier, **A. B. Theberge**§. [Freestanding hydrogel lumens for biological assays](https://www.biorxiv.org/content/10.1101/2021.10.19.464875v1). Preprint: <https://www.biorxiv.org/content/10.1101/2021.10.19.464875v1>.

41.§ U. N. Lee,\* X. Su,\*, D. L. Hieber, W-c. Tu, A. M. McManamen, M. G. Takezawa, G. W. Hassan, T. C. Chan, K. N. Adams, E. R. Wald, G. P. DeMuri, E. Berthier, **A. B. Theberge**§, S. Thongpang§. [CandyCollect: At-home saliva sampling for respiratory pathogen capture](https://www.biorxiv.org/content/10.1101/2021.10.19.464911v2). Preprint: <https://www.biorxiv.org/content/10.1101/2021.10.19.464911v2>.

40.§ A. J. Haack\*, F. Y. Lim\*, D. S. Kennedy, J. H. Day, K. N. Adams, J. J. Lee, E. Berthier, **A. B. Theberge**§. [*home*RNA: A self-sampling kit for the collection of peripheral blood and stabilization of RNA](https://pubs.acs.org/doi/full/10.1021/acs.analchem.1c02008). *Anal. Chem.* **2021**. *93*, 13196–13203.

39.§ U. N. Lee\*, T. L. van Neel\*, F. Y. Lim, J. W. Khor, J. He, R. S. Vaddi, A. Q. W. Ong, A. Tang, J. Berthier, J. S. Meschke, I. V. Novosselov§, **A. B. Theberge**§, E. Berthier§. [Miniaturizing wet scrubbers](https://pubs.acs.org/doi/full/10.1021/acs.analchem.1c01296) [for aerosolized droplet capture.](https://www.biorxiv.org/content/10.1101/2021.03.23.436614v3)  *Anal. Chem.* **2021**. *93*, 11433–11441.

38.§ T. L. van Neel\*, S. B. Berry\*, E. Berthier, **A. B. Theberge**§. [Localized cell-surface sampling of a](https://pubs.acs.org/doi/abs/10.1021/acs.analchem.0c02578) [secreted factor using cell-targeting beads.](https://pubs.acs.org/doi/abs/10.1021/acs.analchem.0c02578) *Anal. Chem.*, **2020**, *92*, 13634–13640.

37.§ J. J. Lee\*, J. Berthier\*, K. E. Kearney, E. Berthier, **A. B. Theberge**§. [Open-channel capillary trees and](https://pubs.acs.org/doi/abs/10.1021/acs.langmuir.0c01360) [capillary pumping.](https://pubs.acs.org/doi/abs/10.1021/acs.langmuir.0c01360) *Langmuir*, **2020**, *36*, 12795–12803.

36. S. B. Berry, A. J. Haack, **A. B. Theberge**, S. Brighenti, M. Svensson. [Host and pathogen](https://www.frontiersin.org/articles/10.3389/fmed.2020.00537/full) [communication in the respiratory tract: mechanisms and models of a complex signaling](https://www.frontiersin.org/articles/10.3389/fmed.2020.00537/full) [microenvironment.](https://www.frontiersin.org/articles/10.3389/fmed.2020.00537/full) *Front. Med.*, **2020**, *7*, Article 537.

35.§ S. B. Berry, M. S. Gower, X. Su, C. Seshadri, **A. B. Theberge**§. [A modular microscale granuloma](https://www.biorxiv.org/content/10.1101/2020.04.14.040048v2) [model for immune-microenvironment signaling studies *in vitro*](https://www.biorxiv.org/content/10.1101/2020.04.14.040048v2). *Front. Bioeng. Biotechnol.*, **2020**, *8*, Article 931.

34.§ T. Zhang, D. Lih, R. J. Nagao, J. Xue, E. Berthier, J. Himmelfarb, Y. Zheng§, **A. B. Theberge**§. [Open](https://journals.physiology.org/doi/full/10.1152/ajprenal.00069.2020) [microfluidic coculture reveals paracrine signaling from human kidney epithelial cells promotes kidney](https://journals.physiology.org/doi/full/10.1152/ajprenal.00069.2020) [specificity of endothelial cells.](https://journals.physiology.org/doi/full/10.1152/ajprenal.00069.2020) *American Journal of Physiology*−*Renal Physiology*, **2020,** *319*, F41−F51.

33.§ U. N. Lee\*, J. H. Day\*, A. J. Haack\*, R. C. Bretherton, W. Lu, C. A. DeForest§, **A. B. Theberge**§, E. Berthier§. [Layer-by-layer fabrication of 3D hydrogel structures using open microfluidics.](https://pubs.rsc.org/en/content/articlelanding/2020/lc/c9lc00621d#!divAbstract) *Lab Chip*, **2020**, *20*, 525−536.

32.§ J. H. Day\*, T. M. Nicholson\*, X. Su, T. L. van Neel, I. Clinton, A. Kothandapani, J. Lee, M. H. Greenberg, J. K. Amory, T. J. Walsh, C. H. Muller, O. E. Franco, C. R. Jefcoate, S. E. Crawford, J. S. Jorgensen, **A. B. Theberge**[.§ Injection-molded open microfluidic well plate inserts for user-friendly](https://pubs.rsc.org/en/content/articlelanding/2020/lc/c9lc00706g#!divAbstract) [coculture and microscopy.](https://pubs.rsc.org/en/content/articlelanding/2020/lc/c9lc00706g#!divAbstract) *Lab Chip*, **2020**, *20*, 107−119.

31. W. S. Song, H. G. Park, S. M. Kim, S. H. Jo, B. G. Kim, **A. B. Theberge**, Y. G. Kim. [Chemical](https://www.sciencedirect.com/science/article/pii/S1226086X19306392) [derivatization-based LC-MS/MS method for quantitation of gut microbial short-chain fatty acids.](https://www.sciencedirect.com/science/article/pii/S1226086X19306392) *J. Ind. Eng. Chem.*, **2020**, *83*, 297−302.

30. J. Lee\*, J. Berthier\*, **A. B. Theberge**, E. Berthier. [Capillary flow in open microgrooves: bifurcations](https://pubs.acs.org/doi/full/10.1021/acs.langmuir.9b01456) [and networks.](https://pubs.acs.org/doi/full/10.1021/acs.langmuir.9b01456) *Langmuir*, **2019**, *35*, 10667−10675.

29.§ T. Zhang\*, J. H. Day\*, X. Su, A. G. Guadarrama, N. K. Sandbo, S. Esnault, L. C. Denlinger, E. Berthier,

**A. B. Theberge**§. [Investigating fibroblast-induced collagen gel contraction using a dynamic](https://www.frontiersin.org/articles/10.3389/fbioe.2019.00196/full) [microscale platform.](https://www.frontiersin.org/articles/10.3389/fbioe.2019.00196/full) *Front. Bioeng. Biotechnol.*, **2019**, *7,* Article 196.

28.§ S. B. Berry\*, J. J. Lee\*, J. Berthier, E. Berthier, **A. B. Theberge**§. [Droplet incubation and splitting in](https://pubs.rsc.org/en/content/articlelanding/2019/ay/c9ay00758j#!divAbstract) [open microfluidic channels.](https://pubs.rsc.org/en/content/articlelanding/2019/ay/c9ay00758j#!divAbstract) *Anal. Methods*, **2019**, *11*, 4528−4536.

1. § S. C. Millik, A. M. Dostie, D. G. Karis, P. T. Smith, M. McKenna, N. Chan, C. D. Curtis, E. Nance,
	1. **B. Theberge**§, A. Nelson§. [3D printed coaxial nozzles for the extrusion of hydrogel tubes toward](https://iopscience.iop.org/article/10.1088/1758-5090/ab2b4d) [modeling vascular endothelium.](https://iopscience.iop.org/article/10.1088/1758-5090/ab2b4d) *Biofabrication*, **2019**, *11*, 045009.

26.§ E. Berthier\*, A. M. Dostie\*, U. N. Lee, J. Berthier, **A. B. Theberge**§. [Open microfluidic capillary](https://pubs.acs.org/doi/pdf/10.1021/acs.analchem.9b01429?rand=4skunqyy) [systems.](https://pubs.acs.org/doi/pdf/10.1021/acs.analchem.9b01429?rand=4skunqyy) *Anal. Chem.*, **2019**, *91*, 8739−8750.

25.§ U. N. Lee, J. Berthier, J. Yu, E. Berthier, **A. B. Theberge**§. [Stable biphasic interfaces for open](https://link.springer.com/article/10.1007/s10544-019-0367-z) [microfluidic platforms.](https://link.springer.com/article/10.1007/s10544-019-0367-z) *Biomed. Microdevices*, **2019**, *21*, 16.

24. W. S. Song, H. M. Park, J. M. Ha, S. G. Shin, H. G. Park, J. Kim, T. Zhang, D. H. Ahn, S. M. Kim,

Y. H. Yang, J. H. Jeong, **A. B. Theberge**, B. G. Kim, J. K. Lee, Y. G. Kim. [Discovery of glycocholic](https://www.nature.com/articles/s41598-018-29445-z) [acid and taurochenodeoxycholic acid as phenotypic biomarkers in cholangiocarcinoma.](https://www.nature.com/articles/s41598-018-29445-z) *Sci. Rep.*, **2018**, *8*, 11088.

23. J. Lee\*, J. Berthier\*, K. Brakke, A. M. Dostie, **A. B. Theberge**, E. Berthier. [Droplet behavior in open](https://pubs.acs.org/doi/10.1021/acs.langmuir.8b00380) [biphasic microfluidics.](https://pubs.acs.org/doi/10.1021/acs.langmuir.8b00380) *Langmuir*, **2018**, *34*, 5358–5366.

22.§ U. N. Lee, X. Su, D. J. Guckenberger, A. M. Dostie, T. Zhang, E. Berthier, **A. B. Theberge**§. [Fundamentals of rapid injection molding for microfluidic cell-based assays.](http://pubs.rsc.org/en/content/articlelanding/2018/lc/c7lc01052d#!divAbstract) *Lab Chip*, **2018**, *18*, 496– 504.

21.§ S. B. Berry\*, T. Zhang\*, J. H. Day, X. Su, I. Z. Wilson, E. Berthier, **A. B. Theberge**§. [Upgrading well](http://pubs.rsc.org/en/content/articlelanding/2017/lc/c7lc00878c#!divAbstract) [plates using open microfluidic patterning.](http://pubs.rsc.org/en/content/articlelanding/2017/lc/c7lc00878c#!divAbstract) *Lab Chip*, **2017**, *17*, 4253–4264.

*Joint University of Washington—UW-Madison*

20.§ J. Yu\*, E. Berthier\*, A. Craig, T. E. de Groot, S. Sparks, P. N. Ingram, D. F. Jarrard, W. Huang, D. J. Beebe§, **A. B. Theberge**§. [Reconfigurable open microfluidics for studying the spatiotemporal](https://rdcu.be/bO6gN) [dynamics of paracrine signalling](https://rdcu.be/bO6gN). *Nature Biomed. Eng.*, **2019**, *3*, 830–841.

*Prior to the University of Washington*

19. L. J. Barkal, C. L. Procknow, Y. R. Álvarez-García, M. Niu, J. A. Jiménez-Torres, R. A. Brockman- Schneider, J. E. Gern, L. C. Denlinger, **A. B. Theberge**, N. P. Keller, E. Berthier, D. J. Beebe. [Microbial volatile communication in human organotypic lung models.](https://www.nature.com/articles/s41467-017-01985-4) *Nature Commun.*, **2017**, *8*, 1770.

18. L. J. Barkal\*, E. Berthier\*, **A. B. Theberge**\*, N. P. Keller, D. J. Beebe. [Multikingdom microscale](https://doi.org/10.1371/journal.ppat.1006424) [models.](https://doi.org/10.1371/journal.ppat.1006424) *PLoS Pathogens*, **2017**, *13*, e1006424.

17.§ T. E. de Groot, K. S. Veserat, E. Berthier, D. J. Beebe§, **A. B. Theberge**§. [Surface-tension driven open](https://pubs.rsc.org/en/content/articlelanding/2016/LC/C5LC01353D#!divAbstract) [microfluidic platform for hanging droplet culture.](https://pubs.rsc.org/en/content/articlelanding/2016/LC/C5LC01353D#!divAbstract) *Lab Chip*, **2016**, *16*, 334–344.

16. L. J. Barkal\*, **A. B. Theberge\***, C. J. Guo\*, J. Spraker, L. Rappert, J. Berthier, K. A. Brakke, C. C. Wang, D. J. Beebe, N. P. Keller, E. Berthier. [Microbial metabolomics in open microscale platforms.](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4742997/) *Nature Commun.*, **2016**, *7*, 10610.

15. **A. B. Theberge\***, J. Yu\*, E. W. K. Young, W. A. Ricke, W. Bushman, D. J. Beebe. [Microfluidic](https://pubs.acs.org/doi/10.1021/ac503700f) [multiculture assay to analyze biomolecular signaling in angiogenesis](https://pubs.acs.org/doi/10.1021/ac503700f). *Anal. Chem.*, **2015**, *87*, 3239- 3246.

14.§ C. M. Carney, J. L. Muszynski, L. N. Strotman, S. R. Lewis, R. L. O’Connell, D. J. Beebe, **A. B. Theberge**§, J. S. Jorgensen§. [Cellular microenvironment dictates androgen production by murine fetal](https://academic.oup.com/biolreprod/article/91/4/85%2C%201-13/2434279) [Leydig cells in primary culture.](https://academic.oup.com/biolreprod/article/91/4/85%2C%201-13/2434279) *Biol. Reprod*., **2014**, *91*, Article 85.

13. P. C. Thomas, L. N. Strotman, **A. B. Theberge**, E. Berthier, R. O’Connell, J. M. Loeb, S. M. Berry,

D. J. Beebe. [Nucleic acid sample preparation using spontaneous biphasic plug flow](https://pubs.acs.org/doi/10.1021/ac4012914). *Anal. Chem.*,

**2013**, *85*, 8641–8646.

12. T. M. Nicholson, K. S. Uchtmann, C. D. Valdez, **A. B. Theberge**, T. Miralem, W. A. Ricke. [Renal](https://www.jove.com/t/50574/renal-capsule-xenografting-subcutaneous-pellet-implantation-for) [capsule xenografting and subcutaneous pellet implantation for the evaluation of prostate](https://www.jove.com/t/50574/renal-capsule-xenografting-subcutaneous-pellet-implantation-for) [carcinogenesis and benign prostatic hyperplasia.](https://www.jove.com/t/50574/renal-capsule-xenografting-subcutaneous-pellet-implantation-for) *J. Vis. Exp.*, **2013**, *78*, 50574.

11. B. P. Casavant, E. Berthier, **A. B. Theberge**, J. Berthier, S. I. Montanez-Sauri, L. L. Bischel, K. Brakke, C. J. Hedman, W. Bushman, N. P. Keller, D. J. Beebe. [Suspended microfluidics.](http://www.pnas.org/content/110/25/10111.full) *Proc. Natl. Acad. Sci. U.S.A.*, **2013**, *110*, 10111–10116.

10. X. Su\*, **A. B. Theberge\***, C. T. January, D. J. Beebe. [Effect of microculture on cell metabolism and](https://pubs.acs.org/doi/10.1021/ac3027228) [biochemistry: Do cells get stressed in microchannels](https://pubs.acs.org/doi/10.1021/ac3027228)? *Anal. Chem.*, **2013**, *85*, 1562–1570.

9. S. Mellouli, L. Bousekkine, **A. B. Theberge**, W. T. S. Huck. [Investigation of ‘on water’ conditions](http://onlinelibrary.wiley.com/doi/10.1002/anie.201200575/epdf) [using a biphasic fluidic platform.](http://onlinelibrary.wiley.com/doi/10.1002/anie.201200575/epdf) *Angew. Chem., Int. Ed*., **2012**, *51*, 7981–7984.

8. **A. B. Theberge**, E. Mayot, A. E. Harrak, F. Kleinschmidt, W. T. S. Huck, A. D. Griffiths. [Microfluidic](http://pubs.rsc.org/en/content/articlepdf/2012/lc/c2lc21019c) [platform for combinatorial synthesis in picolitre droplets.](http://pubs.rsc.org/en/content/articlepdf/2012/lc/c2lc21019c) *Lab Chip*, **2012**, *12*, 1320–1326.

7. Z. Lu, J. B. Napolitano, **A. Theberge**, A. Ali, M. L. Hammond, E. Tan, X. Tong, S. S. Xu, M. J. Latham, L. B. Peterson, M. S. Anderson, S. S. Eveland, Q. Guo, S. A. Hyland, D. P. Milot, Y. Chen,

C. P. Sparrow, S. D. Wright, P. J. Sinclair. [Design of a novel class of biphenyl CETP inhibitors.](http://www.sciencedirect.com/science/article/pii/S0960894X10014708)

*Bioorg. Med. Chem. Lett.*, **2010**, *20*, 7469–7472.

6. **A. B. Theberge**, F. Courtois, Y. Schaerli, M. Fischlechner, C. Abell, F. Hollfelder, W. T. S. Huck. [Microdroplets in microfluidics: An evolving platform for discoveries in chemistry and biology.](http://onlinelibrary.wiley.com/doi/10.1002/anie.200906653/epdf) *Angew. Chem., Int. Ed.*, **2010**, *49*, 5846–5868.

5. **A. B. Theberge\***, G. Whyte\*, W. T. S. Huck. [Generation of picoliter droplets with defined contents](http://pubs.acs.org/doi/pdf/10.1021/ac1005316) [and concentration gradients from the separation of chemical mixtures](http://pubs.acs.org/doi/pdf/10.1021/ac1005316). *Anal. Chem.*, **2010**, *82*, 3449– 3453.

4. **A. B. Theberge**, G. Whyte, M. Frenzel, L. M. Fidalgo, R. C. R. Wootton, W. T. S. Huck. [Suzuki-](http://pubs.rsc.org/en/content/articlehtml/2009/cc/b911594c) [Miyaura coupling reactions in aqueous microdroplets with catalytically active fluorous interfaces](http://pubs.rsc.org/en/content/articlehtml/2009/cc/b911594c). *Chem. Commun.*, **2009**, 6225–6227.

3. F. Courtois, L. F. Olguin, G. Whyte, **A. B. Theberge**, W. T. S. Huck, F. Hollfelder, C. Abell. [Controlling the retention of small molecules in emulsion microdroplets for use in cell-based assays.](http://pubs.acs.org/doi/pdf/10.1021/ac802658n) *Anal. Chem.*, **2009**, *81*, 3008–3016.

2. T. E. Smith, W. H. Kuo, E. P. Balskus, V. D. Bock, J. L. Roizen, **A. B. Theberge**, K. A. Carroll, T. Kurihara, J. D. Wessler. [Total Synthesis of (-)-hennoxazole A](http://pubs.acs.org/doi/pdf/10.1021/jo7018015). *J. Org. Chem*., **2008**, *73*, 142–150.

1. T. E. Smith, W. H. Kuo, V. D. Bock, J. L. Roizen, E. P. Balskus, **A. B. Theberge**. [Total synthesis of](http://pubs.acs.org/doi/pdf/10.1021/ol070244p) [(-)-hennoxazole A.](http://pubs.acs.org/doi/pdf/10.1021/ol070244p) *Org. Lett.*, **2007**, *9*, 1153–1155.

# BOOKS

1. J. Berthier, **A. B. Theberge**, E. Berthier. Open-channel microfluidics: fundamentals and applications. Morgan & Claypool Publishers: San Rafael, CA, 2019.

# PATENTS

7. T. van Neel, **A. Theberge**, H. Lea, M. Gower, E. Berthier. Capture of molecules in native biological environments for clinical and biological applications. US Patent Application 63/244,680. Filed 9/15/2021

6. S. Thongpang, **A. Theberge**, E. Berthier, D. L. Hieber, X. Su, U. N. Lee. Oral sampling device. US Patent Application 63/152,103. Filed 02/22/2021.

5. A. Nelson, S. Millik, P. Smith, D. Karis, **A. Theberge**, A. Dostie. Extruded hydrogel tubes and coaxial fibers and applications thereof. US Patent Application 17/251.735. Filed 12/11/2020.

4. **A. Theberge**, T. van Neel, J. Berthier, E. Berthier, U. Lee. Devices and methods for collecting and accumulating droplets for analysis. US Patent Application 63/079.845. Filed 09/17/2020.

3. **A. Theberge**, E. Berthier, A. Haack, D. Kennedy, F. Lim. Fluid transfer system for applications including stabilizing biological fluids. US Patent Application 63/046.561. Filed 06/30/2020.

2. **A. Theberge**, E. Berthier, I. Wilson, J. Day, Tianzi Zhang, U. Lee. Fluidic patterning of hydrogel partitions. US Patent Application 16/428,829. Filed 5/31/2019. Notice of Allowance 05/05/2021.

1. E. Berthier, T. de Groot, J. Yu, **A. Theberge**, D. Beebe. Apparatus, systems and methods for modular microfluidic devices. US Patent Application 15/425720. Filed 02/06/2017. Publication date 08/24/2017.

# PRESENTATIONS

## Invited Seminars at Universities and Other Institutions

*From the University of Washington*

44. Microsystems Technology Laboratories Seminar Series, Massachusetts Institute of Technology, Cambridge, MA, April 2021

43. Department of Chemistry, Purdue University, West Lafayette, IN, March 2021

42. Department of Chemistry, University of Arizona, Tucson, AZ, February 2021

41. Department of Chemistry, University of Minnesota, Minneapolis, MN, February 2021 (rescheduled from March 2020)

40. Department of Chemistry, University of Virginia, Charlottesville, VA, January 2021

39. Center for Exposures, Diseases, Genomics, and Environment, University of Washington, January 2021

38. Department of Chemistry, University of North Carolina, Chapel Hill, NC, December 2020

37. Men’s Health Steering Committee, Urology, University of Washington, Seattle, WA, April 2020

36. Department of Biomedical Engineering, University of California, Irvine, CA, April 2020 (postponed)

35. Department of Chemistry, Colorado State University, Fort Collins, CO, April 2020 (postponed)

34. Pharmaceutical Chemistry Seminar Series, University of Kansas, Lawrence, KS, February 2020

33. Analytical Chemistry Seminar Series, University of Kansas, Lawrence, KS, February 2020

32. Innovation Roundtable, CoMotion Event, University of Washington, Seattle, WA, January 2020

31. Cardiology Breakfast Club Lecture Series, University of Washington, Seattle, WA, January 2020

30. Global Infectious Disease Seminar, Seattle Children’s Research Institute, Seattle, WA, December 2019

29. Institute for Chemical and Bioengineering, ETH, Zürich, Switzerland, November 2019

28. Department of Chemistry, University of Idaho, Moscow, ID, October 2019

27. Arnold and Mabel Beckman Foundation, Irvine, CA, August 2019

26. BioMolecular Science and Engineering Program, University of California, Santa Barbara, CA, April 2019

25. Department of Chemistry, Compton Lectureship, Williams College, Williamstown, MA, April 2019

24. Department of Microbiology, University of Washington, Seattle, WA, April 2019

23. Centre de recherche du Centre hospitalier de l’Université de Montréal / University of Montreal Hospital Research Centre (CRCHUM), Montreal, Canada, March 2019

22. Department of Urology, Grand Rounds, University of Washington, Seattle, WA, October 2018

21. Department of Chemistry, University of Puget Sound, Tacoma, WA, February 2018

20. Department of Chemistry, Santa Clara University, Santa Clara, CA, September 2017

19. Department of Bioengineering, University of Washington, Seattle, WA, May 2017

18. Department of Bioengineering, University of California, Berkeley, CA, March 2017

17. Department of Mechanical & Industrial Engineering, University of Toronto, Canada, January 2017

16. Pacific Northwest National Laboratory, Richland, WA, July 2016

15. Program in Prostate Cancer Research (PPCR), Fred Hutchinson Cancer Research Center, Seattle, WA, January 2016

*Prior to the University of Washington*

14. Department of Biomedical Engineering, University of North Carolina, Chapel Hill, NC, February 2015

13. Department of Bioengineering, University of California, Los Angeles, CA, February 2015

12. Department of Chemistry, University of California, Davis, CA, February 2015

11. Department of Biochemistry, University of Utah, Salt Lake City, UT, January 2015

10. Department of Chemistry, Indiana University, Bloomington, IN, January 2015

9. Department of Chemistry, University of Washington, Seattle, WA, January 2015

8. Department of Chemistry, Georgia Institute of Technology, Atlanta, GA, December 2014

7. Department of Biomedical Engineering, University of Wisconsin–Madison, WI, December 2014

6. Department of Biomedical Engineering, University of California, Irvine, CA, February 2014

5. Vanderbilt Institute for Integrative Biosystems Research & Education (VIIBRE), Vanderbilt University, Nashville, TN, November 2013

4. Department of Physics, University of Erlangen, Erlangen, Germany, June 2013

3. Department of Experimental Biomedicine, Norwegian School of Veterinary Science, Oslo, Norway, October 2012

2. Department of Biology, University of Wisconsin–Whitewater, WI, April 2012

1. Vanderbilt Institute for Integrative Biosystems Research & Education (VIIBRE), Vanderbilt University, Nashville, TN, August 2009

## Invited Presentations at Conferences and Scientific Meetings

*From the University of Washington*

18. “Studying cell signaling in complex environments using open microfluidics.” *Pacifichem 2021: The International Chemical Congress of Pacific Basin Societies*, Honolulu, HI, December 2021. (Rescheduled from 2020)

17. “Open microfluidic tools for cell culture and at-home blood transcriptomics.” *EMBS Micro & Nanotechnology in Medicine (IEEE Conference)*, Aulani, HI, December 2021. (Rescheduled from 2020)

16. “Open capillary driven systems: New approaches for multiphase flow and droplet-based microfluidics.”

*25th Annual Green Chemistry & Engineering Conference (ACS)*, Virtual, Keynote speaker, June 2021.

15. “Microfluidic tools for cell culture and at-home blood transcriptomics.” *Society for Basic Urologic Research Annual Meeting*, Virtual, November 2021.

14. *Gordon Research Conference on Bioorganic Chemistry,* Andover, NH, June 2020. (Declined due to childbirth)

13. “Sculpting hydrogels using open microfluidics.” *Society of Western Analytical Professors Annual Meeting*, Fort Collins, CO, January 2020.

12. “Studying cell signaling in complex environments using open microfluidic models.” *Keystone Symposium, Microbiome: Chemical Mechanisms & Biological Consequences*, Montreal, Quebec, Canada, March 2019.

11. “Sculpting hydrogels using open microfluidics.” *EMBS Micro & Nanotechnology in Medicine (IEEE Conference)*, Kauai, HI, December 2018.

10. “Studying cell signaling in complex environments using open microfluidics.” *3rd Annual Microfluidics Congress*, San Francisco, CA, September 2018.

9. “Examining cell signaling in complex environments using open microfluidics.” *Society of Western Analytical Professors Annual Meeting*, Seattle, WA, January 2018.

8. “Microscale culture systems to probe small molecule signaling.” *Northwest Regional Meeting*, *American Chemical Society,* Biochemistry Session, Corvallis, OR, June 2017.

7. “Open microfluidics for chemical analysis of organotypic cell cultures.” *Northwest Regional Meeting, American Chemical Society*, Analytical Chemistry Session, Corvallis, OR, June 2017.

6. “Multikingdom metabolomics: Studying complex interactions with open microfluidic platforms.” *Pittcon*, Symposium: Analyzing Chemical Signals Across Biological Kingdoms, Chicago, IL, March 2017.

5. “Examining cellular signaling in complex environments with microscale systems.” *EMBS Micro & Nanotechnology in Medicine (IEEE Conference)*, Waikoloa, HI, December 2016.

4. “Examining cell signaling in complex environments with microscale systems.” *Society for Basic Urologic Research Annual Meeting*, Scottsdale, AR, November 2016.

3. “Examining cellular signaling in complex environments with microscale systems.” *Pittcon*, Symposium: Quantifying the Tumor Microenvironment, Atlanta, GA, March 2016.

*Prior to the University of Washington*

2. “Metabolomics at the microscale.” *Gordon Research Conference on the Physics and Chemistry of Microfluidics,* West Dover, VT, May-June 2015.

1. “Probing paracrine signaling in benign prostatic hyperplasia with new microfluidic methods.” *NIDDK Urology Developmental Centers Meeting*, Madison, WI, September 2015.

**Other Presentations and Posters at Conferences and Scientific Meetings** *(*\**Theberge oral presentation)*

22. **A. B. Theberge**, J. Yu, X. Su, E. W. K. Young, W. A. Ricke, W. Bushman, D. J. Beebe. “Examining microenvironmental regulation of angiogenesis in benign prostatic hyperplasia with microscale culture.” *NIDDK Urology Developmental Centers Meeting*, Asilomar, CA, December 7-9, 2014.

21. L. Barkal, J. Yu, X. Su, M. Kohli, J. Yang, B. D. Hammock, N. P. Keller, D. J. Beebe, E. Berthier, **A. B. Theberge**. “Microscale metabolomics platform for studying cell signaling in benign prostatic hyperplasia.” *Society for Basic Urologic Research Fall Symposium*, Dallas, TX, November 13-16, 2014.

20. **A. B. Theberge**, J. Yu, E. W. K. Young, W. A. Ricke, W. Bushman, D. J. Beebe. “Microscale multiculture platform enables investigation of soluble factor signaling in angiogenesis.” *6th Mayo Clinic Angiogenesis Symposium*, Rochester, MN, August 22-24, 2014.

19. **A. B. Theberge**\*, J. Yu, R. D. Bell, E. W. K. Young, D. J. Beebe, W. A. Ricke. “Probing the effects of tumor microenvironment on angiogenesis using tissue recombination and microfluidic multiculture models.” *10th World Congress on Urological Research, Society for Basic Urologic Research Fall Symposium*, Nashville, TN, November 21-24, 2013.

18. **A. B. Theberge**\*. “Enabling companion diagnostic platforms for cancer treatment.” *Gordon Research Conference on the Physics and Chemistry of Microfluidics,* Lucca, Italy, June 9-14, 2013. Invited oral flash presentation.

17. **A. B. Theberge**, E. Berthier, A. L. Howard, C. J. Hedman, B. P. Casavant, N. P. Keller, W. A. Bushman,

D. J. Beebe. “Microscale methods for studying steroidogenesis in prostate cancer.” *Gordon Research Conference on the Physics and Chemistry of Microfluidics,* Lucca, Italy, June 9-14, 2013.

16. **A. B. Theberge**\*, E. Berthier, A. L. Howard, C. J. Hedman, B. P. Casavant, N. P. Keller, W. A. Bushman,

D. J. Beebe. “Microfluidic platform for studying steroidogenesis in advanced prostate cancer.” *Gordon Research Seminar on the Physics and Chemistry of Microfluidics,* Lucca, Italy, June 8-9, 2013.

15. **A. B. Theberge**, E. Berthier, C. J. Hedman, B. Casavant, N. P. Keller, W. A. Bushman, D. J. Beebe, “Microfluidic steroidogenesis assays for *in vitro* toxicant screening.” *Society of Toxicology Annual Meeting*, San Antonio, TX, March 10-14, 2013.

14. **A. B. Theberge**, M. Moses, V. Tripathi, B. G. Timms, F. S. vom Saal, D. J. Beebe, W. A. Ricke, “Effects of bisphenol A on prostatic stroma and epithelia.” *Society for Basic Urologic Research Fall Symposium*, Miami Beach, FL, November 15-18, 2012.

13. **A. B. Theberge**, E. Berthier, C. J. Hedman, B. P. Casavant, N. P. Keller, W. A. Bushman, D. J. Beebe, “Microscale steroidogenesis assays for toxicant screening.” *Gordon Research Conference on Environmental Endocrine Disruptors*, West Dover, VT, June 3-8, 2012.

12. **A. B. Theberge**\*, E. Berthier, C. J. Hedman, B. P. Casavant, N. P. Keller, J. S. Jorgensen, W. A. Bushman, D. J. Beebe, “Microfluidic culture platform for *in vitro* steroidogenesis assays.” *Gordon Research Seminar on Environmental Endocrine Disruptors*, West Dover, VT, June 2-3, 2012.

11. **A. B. Theberge**, E. Mayot, A. E. Harrak, F. Kleinschmidt, W. T. S. Huck, A. D. Griffiths, “Combinatorial synthesis of enzyme inhibitors in picoliter droplets.” *Gordon Research Conference on the Physics and Chemistry of Microfluidics,* Waterville Valley, NH, June 26-July 1, 2011.

10. **A. B. Theberge**, G. Whyte, W. T. S. Huck, “From chemical mixtures to picoliter droplet libraries: Harnessing concentration gradients with droplet-based microfluidics.” *MicroTAS 2010*, Groningen, The Netherlands, October 3-7, 2010.

9. **A. B. Theberge**\*, G. Whyte, A. E. Harrak, F. Kleinschmidt, E. Mayot, A. D. Griffiths, W. T. S. Huck, “Microdroplets in microfluidics: Chemical synthesis and integrated analysis.” *sIMMposium 2010*, Radboud University Nijmegen, The Netherlands, May 17-18, 2010.

8. **A. B. Theberge**\*, G. Whyte, M. Frenzel, L. M. Fidalgo, R. C. R. Wootton, W. T. S. Huck, “Droplet reactors with catalytic interfaces: An active fluorous phase for segmented-flow microfluidic reactions.” *MicroTAS 2009*, Jeju, Korea, November 1-5, 2009.

7. **A. B. Theberge**, G. Whyte, M. Frenzel, L. M. Fidalgo, R. C. R. Wootton, W. T. S. Huck, “Droplet reactors with fluorous catalytic interfaces.” *Gordon Research Conference on the Physics and Chemistry of Microfluidics,* Lucca, Italy, June 28-July 3, 2009.

6. **A. B. Theberge**, L. Li, M. Robbins, A. Templeton, “The effect of iron on the photostability of drug molecules in solution.” *232nd American Chemical Society National Meeting*, San Francisco, CA, September 10-14, 2006.

5. T. E. Smith, W. H. Kuo, J. L. Green, **A. B. Theberge**, D. L. M. Suess, “Toward the asymmetric synthesis of hennoxazole A.” *Pacifichem: The Fifth International Chemical Congress of Pacific Basin Societies*, Honolulu, HI, December 15-20, 2005.

4. N. A. Capurso, **A. B. Theberge**, B. Rudick, D. Bingemann, “Heterogeneous dynamics in glasses probed with single molecule spectroscopy.” *Gordon Research Conference on the Chemistry and Physics of Liquids*, Holderness, NH, July 24-29, 2005.

3. N. Matell, **A. B. Theberge**, H. M. Stoll, S. Nobumichi, “Tropical Atlantic coccolith Sr/Ca productivity records from the Paleocene-Eocene Thermal Maximum.” *40th Annual Meeting of the Northeastern Section of the Geological Society of America*, Saratoga Springs, NY, March 14-16, 2005.

2. T. Auer, R. S. Hahn, **A. B. Theberge**, H. M. Stoll, J. Montse, “Can cave deposits in northern Spain reconstruct the North Atlantic Oscillation?” *40th Annual Meeting of the Northeastern Section of the Geological Society of America*, Saratoga Springs, NY, March 14-16, 2005.

1. **A. B. Theberge**, “Effect of Roundup on free-living and symbiotically occurring diazotrophs.” *61st Annual Science Talent Search, Poster Session at the National Academy of Sciences*, Washington, DC, March 9-10, 2002.

# RESEARCH SUPPORT

Total to Theberge lab at the University of Washington: $3,827,051 direct; $4,900,859 direct & indirect

## Current

David and Lucile Packard Foundation 9/16/2019**–**10/15/2024 Packard Fellowship for Science and Engineering\*

Theberge (PI) $787,500 ABT direct; $875,000 ABT direct & indirect

*Deciphering cell signaling molecules in complex environments using biofunctional chromatography*

* Theberge was [one of twenty-two Packard Fellows for Science and Engineering](https://www.packard.org/insights/news/packard-fellowships-in-science-and-engineering-announces-2019-class-of-fellows/) nationwide. Selection is based on a statement of research vision, letters of recommendation, accomplishments to date, and demonstration of creativity. Candidates are chosen from across science and engineering disciplines. “The Packard Fellowships in Science and Engineering are among the nation’s largest nongovernmental fellowships, designed to allow maximum flexibility in how the funding is used. Since 1988, this program has supported the blue-sky thinking of scientists and engineers…” (David and Lucile Packard Foundation website).

National Institutes of Health (NIGMS), 1R35GM128648-01\* 8/1/2018**–**7/31/2023 Theberge (PI) $1,250,000 ABT direct; $1,927,520 ABT direct & indirect *Deciphering the role of chemical signals in inflammation with open microfluidic functional assays*

* NIH Maximizing Investigators’ Research Award (MIRA) for Early Stage Investigators. The MIRA provides R01-level funding “support for the research program of an investigator and his/her laboratory’s NIGMS-related research, rather than…support on a project-by-project basis” (NIGMS website). Evaluation is based on the track record of the PI and a proposal describing research accomplishments, proposed projects, and broad research vision. This grant is renewable.

Arnold and Mabel Beckman Foundation 9/1/2018**–**8/31/2022 Beckman Young Investigator Award\*

Theberge (PI) $600,000 ABT direct

*Uncovering chemical signals in complex cellular environments with open microfluidic methods*

* Theberge was [one of ten Beckman Young Investigator Awardees](https://www.beckman-foundation.org/awarded-scientists/?query&award_program=Beckman%2BYoung%2BInvestigator&discipline&award_inst&award_year=2018&current_inst) nationwide. Selection is based on a two- stage proposal review, letters of recommendation, a research presentation, and an interview. The “Beckman Young Investigator (BYI) Program provides research support to the most promising young faculty members in the early stages of their academic careers in the chemical and life sciences, particularly to foster the invention of methods, instruments and materials that will open up new avenues of research in science” (Arnold and Mabel Beckman Foundation website).

Alfred P. Sloan Foundation 9/15/2021**–**9/14/2023

Sloan Research Fellowship\*

Theberge (PI) $75,000 ABT direct

*Bioanalytical chemistry for medicine and the environment*

* Theberge was [one of twenty-three Sloan Research Fellows in Chemistry](https://sloan.org/fellowships/2021-Fellows) across the United States and Canada. Selection is based on a statement of research vision, letters of recommendation, accomplishments to date, and track record of independent publications. “The Sloan Research Fellowships seek to stimulate fundamental research by early-career scientists and scholars of outstanding promise. These two-year,

$75,000 fellowships are awarded yearly to 126 researchers in recognition of distinguished performance and a unique potential to make substantial contributions to their field” (Alfred P. Sloan Foundation website).

National Institutes of Health (NICHD), R01HD090660-01A1 8/16/2017**–**4/30/2022 Jorgensen, Jefcoate (Co-PIs), Theberge (Co-I) $243,267 ABT direct; $351,517 ABT direct & indirect *Mediators for dynamic regulation of STAR transcription: comparing fetal and adult Leydig cells*

National Institutes of Health (NCATS), 1UG3TR002158-01 7/25/2017–6/30/2022 Himmelfarb (PI), Theberge (Co-I) $157,584 ABT direct; $217,184 ABT direct & indirect *A microphysiological system for kidney disease modeling and drug efficacy testing*

Gordon and Betty Moore Foundation 9/15/2020**–**9/14/2023 Amend (PI), Theberge (Co-PI), Gladfelter (Co-PI), James (Co-PI)

$81,069 ABT direct; $90,000 ABT direct & indirect

*Marine Malassezia symbiont model systems*

Department of Defense, Proposal #PR180585 4/5/2019–4/4/2022 Shankland (PI), Theberge (Co-I) $75,000 ABT direct; $116,625 ABT direct & indirect *Targeting parietal epithelial cells in FSGS*

National Institutes of Health (NIGMS), Supplement: Equipment 7/1/2020–6/30/2021

Theberge (PI) $69,942 ABT direct

*Equipment supplement (microscope) to the parent NIH R35 grant listed above (R35GM128648)*

Washington Research Foundation (Pilot Grant) 12/3/2020**–**9/30/2021

Theberge (PI) $50,000 ABT direct

*Development of a novel saliva collection system*

National Institutes of Health (NIDDK), 2R01DK097598-06 8/16/2019**–**5/31/2023 Shankland, Wessely (M-PI), Theberge (Co-I) $44,048 ABT direct; $68,275 ABT direct & indirect *Juxta-glomerular cells serve as glomerular epithelial cell progenitors in glomerular disease*

UW Technology Transfer Office (CoMotion), STEP Grant 1/4/2021**–**1/3/2022

Theberge (PI) $24,960 ABT direct

*Identifying biomarkers of psychological stress*

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National Institutes of Health (NIGMS), Supplement: Undergraduate Research 6/21/2021-8/27/2021 Theberge (PI) $8,558 ABT direct; $13,308 ABT direct & indirect *Supplement to the parent NIH R35 grant listed above (R35GM128648) to fund undergraduate summer research*

## Selected Pending Proposals

National Institutes of Health (NIAID), R01 4/1/2022–3/31/2027 Theberge, Lertanantawong, Phumratanaprapin (Multi-PI), Athamanolap, Berthier, Hanboonkunupakarn, Leaungwutiwong, Matsee, Thongpang (Co-I) $2,573,267 total direct; $3,210,874 total direct & indirect

$1,123,842 ABT direct; $1,761,449 ABT direct & indirect

*Remote testing for early prognosis of dengue fever using multi-analyte analysis*

In collaboration with Mahidol University, Thailand, Faculties of Tropical Medicine and Engineering

National Institutes of Health (NIAID), R21 12/1/2021–11/30/2023 Theberge, DeMuri (Multi-PI), Berthier, Thongpang, Wald (Co-I)

$275,000 total direct; $441,500 total direct & indirect

$197,894 ABT direct; $321,600 ABT direct & indirect

*Microengineered lollipop for patient centric saliva collection*

National Institutes of Health (NCI), U01 4/1/2022–3/31/2027 Radich, (PI), Berthier, Chiu, Theberge (Co-I) $732,045 ABT direct; $1,138,329 ABT direct & indirect *Molecular diagnostic testing platforms for use in low and middle income countries (LMIC)*

QNRF Path Towards Precision Medicine (PPM) 11/15/2021–11/14/2023 Karim (PI), Chaussabel (Co-PI), Tabaku (Co-PI), Theberge (Co-PI)

$90,137 ABT direct; $99,151 ABT direct & indirect *Enhancing the monitoring of patients with autoimmune and inflammatory disease using high-frequency longitudinal multi-omics sampling*

In collaboration with Sidra Medicine, Qatar

## Past Support at the University of Washington

National Institutes of Health (NIGMS), Supplement: Diversity 4/11/2019–4/10/2021 Theberge (PI) $108,007 ABT direct; $151,430 ABT direct & indirect *Research Supplements to Promote Diversity in Health-Related Research, supplement to parent NIH R35 grant listed above (R35GM128648) to fund a graduate student*

UW Medicine Men’s Health Pilot Grant Program 4/1/2020**–**3/31/2021

Theberge (PI), Muller, Nicholson (Co-PI), Amory (Co-I) $10,000 ABT direct

*Studying autoimmune mechanisms of infertility to personalize patient treatment*

UW Molecular Engineering Materials Center (MEM-C) Seed Award 9/16/2019**–**9/15/2020 Theberge (PI), DeForest (Co-PI) $75,000 direct & indirect; $37,500ABT direct & indirect *Spatial control over logically responsive multi-material structures*

National Institutes of Health (NIGMS), Supplement: Undergraduate Research 6/22/2020**–**8/24/2020 Theberge (PI) $8,425 ABT direct; $13,101 ABT direct & indirect *Supplement to the parent NIH R35 grant listed above (R35GM128648) to fund undergraduate summer research*

Kavli Microbiome Ideas Challenge Award (ASM, ACS & APS)\* 4/14/2017–10/14/2018 Theberge (PI), Keller (Co-PI), Berthier (Co-I) $340,000 total direct; $170,000 ABT direct *Deciphering multikingdom communication molecules using engineered cellular traps*

\*[One of three awards worldwide.](https://www.kavlifoundation.org/kavli-news/kavli-microbiome-ideas-challenge-funds-innovative-cross-cutting-research#.YDWkt5NKjPA) Theberge led a multidisciplinary team developing new tools to study chemical signals exchanged across microbes and between host and microbe. The Kavli Microbiome Ideas Challenge was funded by the Kavli foundation in partnership with the American Society for Microbiology (ASM), the American Chemical Society (ACS), and the American Physical Society (APS) to support “novel, cross-cutting tools and methods in the field of microbiome research” (quoted from award website).

CoMotion, UW Technology Transfer Office, STEP Grant 4/3/2018–10/3/2018

Theberge (PI), Berthier (co-PI) $19,800 ABT direct

*Pilot funding to develop CellRail Insert MVP, a commercially viable well plate multiculture device*

UW ADVANCE Transitional Support Program 4/1/2018–6/30/2018

Theberge (PI) $19,697 ABT direct

*Transitional support program to fund research staff during maternity leave*

## Past Support Prior to the University of Washington

NIH Multidisciplinary K12 Career Development Award (NIDDK) 3/1/2014–12/31/2015 Theberge (NIH K Career Development Award Scholar) $319,547 ABT direct *The role of stromal paracrine signals in angiogenesis in benign prostatic hyperplasia*

NIH West Coast Metabolomics Center (WCMC) Pilot Project Grant 6/1/2014**–**5/30/2015 Berthier and Keller (Co-PI), Theberge (Co-I) $50,000 direct *Aspergillus fumigatus oxylipins disrupt host immune eicosanoid signaling*

Environmental Health Sciences (EHS) Pilot Project Grant 1/1/2014**–**3/31/2014 Jorgensen, Theberge, Beebe, Döpfer (Multi-PI) $6,300 direct *Effects of chemicals on cryptorchidism (testis descent failure)*

# PROFESSIONAL ACTIVITIES AND SERVICE

## Conference Organization and Leadership

Elected Co-Vice Chair (2019) and Co-Chair (2021), Gordon Research Conference on the Physics and Chemistry of Microfluidics. (Note: 2021 GRC postponed to 2023 due to pandemic.)

Session Chair, “Manipulation of Cells,” MicroTAS, Basel, Switzerland, October 2019.

Session Chair, “Cell Assays and Phenotyping,” MicroTAS, Kaohsiung, Taiwan, November 2018. Session Chair, “Droplets and Digital Microfluidics,” MicroTAS, Savannah, GA, USA, October 2017.

Session Organizer, “Analyzing Chemical Signals Across Biological Kingdoms” symposium sponsored by ACS Division of Analytical Chemistry, Pittcon, Chicago, IL, March 2017.

## Other Professional Service

Poster Judge, MicroTAS, Virtual, October 2020

Poster Judge, MicroTAS, Basel, Switzerland, October 2019.

Co-Chair, MicroTAS Conference Poster Award Committee (2017-2018), MicroTAS conferences in Savannah, GA, USA & Kaohsiung, Taiwan (coordinated 39 faculty poster judges at the major annual international microfluidics conference, interacted with student poster presenters to evaluate work and encourage them in science, conferred awards).

Poster Judge, Gordon Research Conference on the Physics and Chemistry of Microfluidics, Lucca, Italy, June 2017.

## Professional Society Membership

American Chemical Society (ACS)

IEEE Engineering in Medicine and Biology Society (IEEE EMBS) Society for Basic Urologic Research (SBUR)

## Journal Reviewer

## *Acta Biomaterialia, Advanced Functional Materials, Analytical Chemistry, Lab on a Chip, Nature, Nature Biotechnology, Nature Communications, Science Advances, Scientific Reports*

**Proposal Reviewer**

Institute for Clinical and Translational Research (ICTR), UW-Madison, Pilot Award Program Israel Science Foundation (ISF)

Natural Sciences and Engineering Research Council of Canada (NSERC) NanoES Research Initiatives, University of Washington

Breast Cancer Now, Research & Care Charity, UK

(Declined several NIH study section invitations due to childbirths)

## University Service

Board Member, Murdock Foundation-funded UW Diagnostics Foundry for Translational Research Advisory Board Member, UW Medicine Men’s Health Steering Committee (w/ Urology & Medicine faculty)

## Department Service

PhD Training Committee, 2020–present

Graduate and Postdoc Professional Development Committee, 2020–present Chemistry Graduate Exam Committees, 2016–present

Chemistry Graduate Recruiting Committee, 2016–2020

**UW Graduate Student Exam Committees** (excluding own group; Chemistry unless otherwise noted) Doctoral Supervisory Committee (17)

Sophia Masi, Rachel Eaton, Glennis Rayermann, Nathanial Watson, Andrew Francis, Seoyeon Hong, Amrita Basu, Patrick Smith, Derrick Gough, Bryce Manifold, Samuel Barlow, Peter Defnet, Tina Sun, Todd Jonathan Anderson, Anne Claire Wageman, Ben Zercher, Emily Pruitt

Chemistry Second-Year Exam Committee (16)

Yi Ting Sun, Zhongtian Mao, Peter Defnet, Todd Anderson, Eleanor Munger, Julia Greenwald, Daniele Canzani, Anne Claire Wageman, Derrick Gough, Paige Sudol, Waren Sadler, Sonia Schoneich, Emily Pruitt, Cem Millik, Christopher McAllister, Caitlin Cain

University Graduate School Representative (all outside Chemistry) (4)

Junwei Li (Materials Science and Engineering), Eileen Brady (Molecular and Cellular Biology, MSTP), Lauren Gonsalves (Microbiology ,Medicine), Lucy Yang (Bioengineering)

## International PhD Exam Committees

Final exam committee for Lisa Mahler, Friedrich Schiller University, Jena, Germany

## Outreach

Round-table Moderator, UW Institute for Protein Design, Curie Symposium: Celebrating Women in publicaScience (an event for female graduate students and postdocs), November 2019

Co-Chair of the Power Hour, a discussion on inclusion of women and underrepresented groups in microfluidics, at the Gordon Research Conference (GRC) on the Physics and Chemistry of Microfluidics, June 2019

Career panel speaker for graduate students/postdocs at Gordon Research Symposium (GRS) on the Physics and Chemistry of Microfluidics, June 2019

Wikipedia Contributions (via CHEM 425/525): >4 million article views, ~80,000 words added,

~1000 references added

Career development talk to Free Radicals, UW Chemistry Undergraduate Society, May 2016

# TEACHING

CHEM 321 Quantitative Analysis (Undergraduate)

CHEM 425 Meso and Microfluidics in Chemical Analysis (Undergraduate)

CHEM 525 Meso and Microfluidics in Chemical Analysis (Graduate) *cross-listed w/ CHEM 425*

## Additional Teaching Activities

CHEM 592 Seminar in Analytical Chemistry (Graduate)

BioE/ChemE 511, Biomaterials Seminar (Undergraduate & Graduate), Guest lecturer, November 2019

# RESEARCH MENTORING

## Current PhD Students

|  |  |  |
| --- | --- | --- |
| Ashley Dostie | 1/2016–present |  |
| Jing Lee | 9/2016–present |
| Ulri Lee | 9/2017–present |
| Tammi van Neel | 9/2017–present |
| Amanda Haack | 6/2018–present | Medical Scientist Training Program |
| Dakota Kennedy | 9/2019–present |  |
| Yuting Zeng | 9/2019–present |  |
| **Current Master’s Students** |  |  |
| Anika McManamen | 9/2020–present |  |
| Wan-Chen Tu | 9/2020–present |  |
| **Current Research Scientists, Postdoctoral Researchers, Affiliates, and Visitors** |
| Erwin Berthier, Ph.D. | 1/2016–present | Senior Researcher/Affiliate Assistant Professor |
| Xiaojing Su, M.S. | 1/2016–present | Research Scientist |
| Jean Berthier, Ph.D. | 1/2018–present | Visiting Scholar/Affiliate Professor, France |
| Fang Yun Lim, Ph.D. | 8/2019–present | Postdoctoral Researcher |
| Jian Wei Khor, Ph.D. | 2/2020–present | Postdoctoral Researcher |
| Sanitta Thongpang, Ph.D. | 9/2020–present | Acting Instructor |

**Current Undergraduate Researchers**

Maia Gower 1/2018–present

Hannah Lea 1/2019–present

Cheryl Chan 10/2020–present

Grant Hassan 10/2020–present

Damielle Hieber 10/2020–present

Meg G. Takezawa 10/2020–present

Jennifer Stolarczuk 6/2021–present

Maxwel Yapp 6/2021–present

Yixuan Zhou 6/2021–present

## Former Graduate Students

*Subsequent position(s) where known are listed in parentheses*

Samuel Berry 9/2016–6/2020 (Postdoc, University of California, Berkeley)

Tianzi Zhang 1/2016–8/2020 (Postdoc, Fred Hutchinson Cancer Research Center)

## Former Research Scientists, Postdoctoral Researchers, and Visitors

Tristan Nicholson, M.D., Ph.D. 7/2018–6/2019 Resident (Research), Urology

Yun-Gon Kim, Ph.D. 2/2018–1/2019 Visiting Professor, Korea (Sabbatical) Nicholas Buker, Ph.D.

 5/2016–9/2016 Visiting Scientist

## Former Undergraduate Researchers

*Subsequent position(s) where known are listed in parentheses*

Majid Alqassim 1/2019-1/2020

Stephanie Baghoumina 1/2016–12/2016 (Tasso, Inc., Biomedical Startup) Ryan Chu 8/2016–6/2018 (UW Pharmacy School)

Evan Clasen 9/2019–3/2018

Ivor Clinton 9/2016–9/2018 (Seattle Cancer Care Alliance)

John Day 1/2017–6/2020 (MIT PhD student in Bioengineering)

Tarun Ghandi 1/2017–8/2018

Carson Hartzog 1/2019–6/2019

Eugene Hua 10/2019–1/2021

Molly Hubbard 1/2020–3/2021

Sriram Katipamula 1/2016–4/2017 (Pacific Northwest National Lab, Rutgers PhD student) Kathleen Kearney 10/2019-4/2021

Chenxing (Kristin) Li 1/2019-6/2020

Ulri Lee 6/2016–6/2017 (UW PhD student in Chemistry)

Wenbo Lu 1/2018–8/2018 (UW-Madison PhD student in Biochemistry)

Bryan Magnuson 1/2016–8/2016

Shayla Payne 10/2019–10/2021 (UW Master’s student in Mechanical Engineering) Grace Zimu Wang 6/2016–8/2016 (CalTech PhD student in Chemistry)

Ilham Wilson 8/2016–3/2017 (Thermo Fisher)

## Group Honors & Awards

Samuel Berry 2020 Graduate Student Merit Fellowship

2018 NSF GRFP Global Research Opportunities Worldwide (GROW) to support a research collaboration at the Karolinska Institutet (Stockholm, Sweden)

2017 Pacific Northwest National Laboratory Graduate Fellowship

2017 National Science Foundation Graduate Research Fellowship (GRFP) 2016 Irving and Mildred Shain Endowed Fellowship in Chemistry

2016 Tomas Hirschfeld Endowed Graduate Fellowship in Chemistry Ryan Chu 2019 Distinguished Achievement in Chemistry Research Award

John Day 2020 Distinguished Research in Chemistry Award 2019 Gerald and Sheila Berkelhammer Book Award 2019 Mary Gates Research Scholarship

2019 ACS Undergraduate Award in Analytical Chemistry

Ashley Dostie 2020 Excellence in Teaching – Finalist

2016 Edwin and Phyllis Motell Endowed Graduate Fellowship in Chemistry 2016 Natt-Lingafelter Endowed Graduate Fellowship in Chemistry

Maia Gower 2021 Mary Gates Research Scholarship

2020 Zalia Jencks Rowe Undergraduate Tuition Scholarship, UW Department of Chemistry

2020 DAAD RISE Research Scholarship (cancelled due to pandemic) 2020 Mary Gates Research Scholarship

Amanda Haack 2021 NIH F30 Ruth L. Kirschstein Individual Predoctoral NRSA for MD/PhD and other Dual Degree Fellowships

2019 Joanne and Bruce Montgomery ARCS Foundation Endowed Fellowship in Honor of the American Lung Association

Damielle Hieber 2021 Louis Stokes Alliance for Minority Participation Stipend 2021 McNair Scholar

Hannah Lea 2021 CoMotion Mary Gates Innovation Internship

2020 Gerald and Sheila Berkelhammer Book Award, UW Department of Chemistry 2020 NIH Undergraduate Research Supplement

2020 Washington Research Foundation Fellowship Award

2019 Zalia Jencks Rowe Scholarship, UW Department of Chemistry

Ulri Lee 2020 Society for Laboratory Automation and Screening Graduate Education Fellowship

2019 Biosensors MDPI Travel Award

2019 Graduate Student Merit Fellowship (Christian, Gary and Sue Graduate Student Support Fund in Chemistry)

2017 Tomas Hirschfeld Endowed Graduate Fellowship in Chemistry 2017 Distinguished Achievement in Chemistry Research

2017 Rex J. And Ruth C. Robinson Scholarship for Excellence in Chemistry Meg Takezawa 2021 NIH Undergraduate Research Supplement

Tammi van Neel 2021 Merck Research Award for Underrepresented Chemists of Color 2021 SMDP Biotech Mentoring Program

2019 NIH Diversity Administrative Supplement

2017 Faculty Endowment for Graduate Study in Chemistry

Tianzi Zhang 2019 Graduate Student Merit Fellowship (Christian, Gary and Sue Graduate Student Support Fund in Chemistry)

2019 Alma Mater Travel Award 2019 MicroTAS

2019 Travel Grant

2016 A. Bruce Montgomery Endowed Fellowship in Chemistry

2015 Benton Seymour Rabinovitch Endowed Graduate Fellowship in Chemistry

## Group Member Oral Presentations

7. T. Zhang, J.H. Day, X. Su, A. G. Guadarrama, N.K. Sandho, S. Esnault, L.C. Denlinger, E. Berthier, A. B. Theberge, “Investigating fibroblast-induced collagen gel contraction using a dynamic microscale platform.” *MicroTAS* 2019, Basel, Switzerland, October 27-31, 2019.

6. J. H. Day, T. M. Nicholson, X. Su, T. L. van Neel, I. Clinton, A. Kothandapani, J. Lee, M. H. Greenberg, J. K. Amory, T. J. Walsh, C. H. Muller, O. E. Franco, C. R. Jefcoate, S. E. Crawford, J. S. Jorgensen, A. B. Theberge, “Upgrading well plates using open microfluidics and rapid injection molding.” *Gordon Research Seminar on the Physics and Chemistry of Microfluidics*, Shatin, Hong Kong, June 14-15, 2019.

5. J. H. Day, U. N. Lee, A. J. Haack, W. Lu, A. B. Theberge, E. Berthier, “3D printing hydrogels using open microfluidics.” *2019 Society for Biomaterials Annual Meeting and Exposition*, Seattle, WA, April 3, 2019.

4. J. Berthier, J.J. Lee, S.B. Berry, A. Dostie, U. Lee, J. Yu, E. Berthier, A.B. Theberge, “Open Microfluidics.” *Oxford University Thermofluids Institute*, Oxford, UK. January 29, 2019.

3. U. N. Lee, J. Berthier, J. Yu, E. Berthier, A. B. Theberge, “Stable biphasic interfaces for open microfluidic platforms.” *Metabolomics 2018*, Seattle, WA, June 24-28, 2018.

2. J. H. Day, S. B. Berry, T. Zhang, X. Su, I. Z. Willson, E. Berthier, A. B. Theberge, “Upgrading well plates with open microfluidics.” *2018 ACS Puget Sound Section Undergraduate Research Symposium*, Olympia, WA, April 28, 2018.

1. U. N. Lee, E. Berthier, X. Su, D. J. Guckenberger, A. B. Theberge, “Fundamentals of rapid injection molding for microfluidic cell-based microfluidics.” *2017 ACS Puget Sound Section Undergraduate Research Symposium*, Bothell, WA, April 29, 2017.

## Group Member Poster Presentations

17. J. J. Lee,\* J. Berthier,\* K. E. Kearney, E. Berthier, A.B. Theberge, “Capillary trees and capillary pumping.” *MicroTAS* 2020, Virtual, October 4-9, 2020.

16. A. J. Haack, F.Y. Lim, D. S. Kennedy, J. J. Lee, E. Berthier, A.B. Theberge, “A capillary pressure driven transfer tube for at home blood collection and RNA stabilization.” *MicroTAS* 2020, Virtual, October 4-9, 2020.

15. U. N. Lee,\* T. L. van Neel,\* F.Y. Lim, J. Berthier, E. Berthier, A.B. Theberge, “Aerolized droplets and open microfluidics for capturing at-home airborne exposures.” *MicroTAS* 2020, Virtual, October 4-9, 2020.

14. M. S. Gower, S. B. Berry, X. Su, C. Seshadri, A. B. Theberge, “A novel modular microscale device for modeling mycobacterial infection *in vitro*.” *MicroTAS* 2020, Virtual, October 4-9, 2020.

13. M. S. Gower, S. B. Berry, X. Su, C. Seshadri, A. B. Theberge, “A modular granuloma infection model for *in vitro* microenvironment signaling studies.” *EMBL Conference: Microfluidics: Designing the Next Wave of Biological Inquiry*, Virtual, July 13-15, 2020.

12. S. B. Berry, M. S. Gower, X. Su, C. Seshadri, E. Berthier, A. B. Theberge, “A modular microfluidic granuloma model for in vitro angiogenic signaling.” *Keystone Symposia Conference 2020: Tuberculosis: Immunity and Immune Evasion*, Santa Fe, NM, January 16-20, 2020.

11. A. J. Haack, U. N. Lee, J. H. Day, W. Lu, A. B. Theberge, E. Berthier, “Layer-by-layer hydrogel structures using open microfluidics.” *Gordon Research Conference on Biomaterials and Tissue Engineering*, Castelldefels, Spain, July 28-August 2, 2019.

10. M. S. Gower, S. B. Berry, X. Su, R. Chu, L. C. Denlinger, E. Berthier, A. B. Theberge, “Novel in vitro microscale devices for modeling lung function.” *NORM ACS 2019*, Portland, Oregon, June 16- 19, 2019.

9. U. N. Lee, J. H. Day, A. J. Haack, W. Lu, E. Berthier, A. B. Theberge, “Rails and hydrophilic tracks for multilayer hydrogel patterning.” *Gordon Research Conference on the Physics and Chemistry of Microfluidics*, Shatin, Hong Kong, June 15-21, 2019.

8. J. H. Day, T. M. Nicholson, X. Su, T. L. van Neel, I. Clinton, A. Kothandapani, J. Lee, M. H. Greenberg, J. K. Amory, T. J. Walsh, C. H. Muller, O. E. Franco, C. R. Jefcoate, S. E. Crawford, J. S. Jorgensen, A. B. Theberge, “Open microfluidic well plate inserts for micro-coculture experiments.” *Gordon Research Conference on the Physics and Chemistry of Microfluidics*, Shatin, Hong Kong, June 15-21, 2019.

7. T. L. van Neel, S. B. Berry, E. Berthier, A. B. Theberge, “Deciphering the role of chemical signals using biologically-homing beads.” *Keystone Symposia on Microbiome: Chemical Mechanisms and Biological Consequences*, Montreal, Canada, March 10-14, 2019.

6. T. Zhang, D. Lih, X. Su, J. Himmelfarb, E. Berthier, Y. Zheng, A. B. Theberge, “Studying paracrine signaling between human kidney vascular endothelial and tubular epithelial cells using open microfluidic coculture.” *IEEE EMBS Micro and Nanotechnology in Medicine Conference*, Kauai, HI, December 10-14, 2018.

5. U. N. Lee, J. H. Day, A. J. Haack, W. Lu, E. Berthier, A. B. Theberge, “3D printing hydrogels using open microfluidics.” *MicroTAS 2018*, Kaohsiung, Taiwan, November 11-15, 2018.

4. S. B. Berry, J. J. Lee, J. Berthier, E. Berthier, A. B. Theberge, “Open channel droplet-based microfluidics.” *MicroTAS 2018*, Kaohsiung, Taiwan, November 11-15, 2018.

3. A. M. Dostie, T. Gandhi, E. Berthier, A. B. Theberge, “Vasodilation-on-a-Chip: A novel microfluidic device to study the effect of inflammatory metabolites on blood vessel dilation.” *Metabolomics 2018*, Seattle, WA, June 24-28, 2018.

2. U. N. Lee, X. Su, D.J. Guckenberger, A. M. Dostie, T. Zhang, E. Berthier, A. B. Theberge, “Fundamentals of rapid injection molding for microfluidic cell-based assays.” *MicroTAS 2017*, Savannah, GA, October 22-26, 2017.

1. T. Zhang, J. H. Day, X. Su, I. Z. Wilson, E. Berthier, A. B. Theberge, “Upgrading well plates: Virtual multiculture devices on demand.” *Gordon Research Conference on the Physics and Chemistry of Microfluidics*, Lucca, Italy, June 4-9, 2017.