Ian T. Suydam

Ian T. Suydam
Department of Bioengineering
University of Washington
W.H. Foege N410C
3720 15th Avenue NE
Seattle, WA 98195-5061

email: isuydam@uw.edu
tel: 206-685-3581

EDUCATION

Ph.D. 2005	Chemistry, **Stanford University**, Stanford, CA. Dissertation title: *The Measurement and Prediction of Electric Fields in the Active Site of Human Aldose Reductase.* Dissertation advisor: Steven G. Boxer
B.A. 1998	Chemistry, **Bard College**, Annandale-on-Hudson, NY. Thesis title: *Spectral and Electrochemical Investigations of Para-Substituted Phenylisocyanide Ruthenium (II) Complexes.* Advisor: Hilton M. Weiss

PROFESSIONAL EXPERIENCE

2010 – present	Affiliate Faculty, Department of Bioengineering **University of Washington**, Seattle, WA 98195
2012 – 2018	Assistant Professor, Department of Chemistry **Seattle University**, Seattle, WA, 98122
2006 – 2009	Postdoctoral Fellow, Department of Molecular Biophysics and Biochemistry **Yale University**, New Haven, CT, 06511 Advisor: Scott A. Strobel
1999 – 2005	Graduate Research, Department of Chemistry **Stanford University**, Stanford, CA, 94305
1999 – 2002	Teaching Assistant, Department of Chemistry **Stanford University**, Stanford, CA, 94305
1998 – 1999	AmeriCorps National Service Member Olympia, WA 98502

HONORS AND AWARDS

2006 – 2009	National Institutes of Health National Research Service Award, **Yale University**
2002	Centennial Teaching Assistant Award, **Stanford University**
2000	Department of Chemistry Graduate Fellowship, **Stanford University**
1998	C. T. Sottery Award, **Bard College**
1998	John Bard Scholar, **Bard College**
1996	American Chemical Society Achievement Award, **Bard College**
1994	Distinguished Scientist Scholar, **Bard College**

PUBLICATIONS

Peer-Reviewed Journal Articles (mentored undergraduates underlined)

9. Ebner, M.E., Afunugo, W.E., Bever, A.M., Cao, S., Jiang, Y., Woodrow, K.A., and **Suydam, I.T.** "Enhanced delivery of HIV integrase inhibitors with prodrugs designed for polymeric nanocarriers", submitted, *Molecular Pharmaceutics*.

8. Blakney, A.K., Simonovsky, F.I., **Suydam, I.T.**, Ratner, B.D., and Woodrow, K.A., "Rapidly biodegrading PLGA-polyurethane fibers for sustained release of physicochemically diverse drugs", *ACS Biomaterials Science & Engineering*, **2**, 1595-1607, (2016).

7. Jiang, Y., Cao, S., Bright, D.K., Bever, A.M., Blakney, A.K., **Suydam, I.T.**, and Woodrow, K.A. "Nanoparticle-based ARV drug combinations for synergistic inhibition of cell-free and cell-cell HIV transmission", *Molecular Pharmaceutics*, **12**, 4363-4374, (2015).

6. Alaimo, P.J., Langenhan, J.M., and **Suydam, I.T.** "Aligning the undergraduate organic laboratory experience with professional work: The centrality of reliable and meaningful data", *Journal of Chemical Education*, **91**, 2093-2098, (2014). Highlighted in *Science*, **346**, 962, (2014).

5. **Suydam, I.T.**, Levandoski, S., and Strobel, S.A., "Catalytic importance of a protonated adenosine in the hairpin ribozyme active site", *Biochemistry*, **49**, 3723-3732, (2010).

4. **Suydam, I.T.** and Strobel, S.A., "Nucleotide analog interference mapping", *Methods in Enzymology*, **468**, 3-30, (2009).

3. **Suydam, I.T.** and Strobel, S.A., "Fluorine substituted adenosines as probes of nucleobase protonation in functional RNAs", *Journal of the American Chemistry Society*, **130**, 13639-13648, (2008).

2. **Suydam, I.T.**, Snow, C.D., Pande, V.S., and Boxer, S.G., "Electric fields at the active site of an enzyme: Direct comparison of experiment with theory", *Science*, **313**, 200-204, (2006).

1. **Suydam, I.T.** and Boxer, S.G., "Vibrational Stark effects calibrate the sensitivity of vibrational probes for electric fields in proteins", *Biochemistry*, **42**, 12050-12055, (2003).

PRESENTATIONS

Professional Society Conferences (*presenting author(s), mentored undergraduates underlined)

21. *Creighton, R., Ebner, M.E., Afunugo, W.E., Bever, A.M., Cao, S., Jiang, Y., Woodrow, K.A., **Suydam, I.T.**, "A prodrug strategy to improve drug loading and determine intracellular release from nanoparticle systems", international meeting of the Biomedical Engineering Society, Phoenix, AZ, October 2017.

20. *Yamakawa, K.L.M., Doan, M.A., Davison, J.M., Pahl, M.N., **Suydam, I.T.**, "Ligand selectivity in a pathogenic preQ$_1$ riboswitch aptamer domain", international meeting of the American Chemical Society, San Francisco, CA, April 2017.

19. *Afunugo, W.E., Ebner, M.E., Bever, A.M., Cao, S., Jiang, Y., Woodrow, K.A., **Suydam, I.T.**, "Enhanced delivery of HIV integrase inhibitors with prodrugs designed for polymeric nanocarriers", international meeting of the American Chemical Society, San Francisco, CA, April 2017.

18. *Phan, J.C., Roberts, E., Blakney, A.K., Stoddard, R., Ebner, M.E., Bever, A.M., Edmark, R., **Suydam, I.T.**, Woodrow, K.A., "Electrospinning process considerations to formulate a triple drug microbicide for rapid and asynchronous release", HIV Research for Prevention, Chicago, IL, October 2016.

17. *Blakney, A.K., Simonovsky, F.I., **Suydam, I.T.**, Ratner, B.D., Woodrow, K.A., "A new class of biodegradable polyurethanes with PLGA moieties for sustained release of physicochemically diverse drugs from electrospun fibers with biologically relevant degradation rates", 10th World Biomaterials Congress, Montréal, Canada, May 2016.

16. *Doan, M.A., Pahl, M.N., Neilson, B.K., **Suydam, I.T.**, "Expanding structure activity relationships for the preQ$_1$ riboswitch: functional group requirements and metal dependence in pathogenic aptamer domains", international meeting of the American Society for Biochemistry and Molecular Biology, San Diego, CA, April 2016.

15. *Afunugo, W.E., Ebner, M.E., Jiang, Y., Cao, S., Woodrow, K.A., **Suydam, I.T.**, "Raltegravir prodrugs for improved nanoparticle delivery", International Nanomedicine & Drug Delivery Symposium, Seattle, WA, September 2015.

14. ***Suydam, I.T.**, Ebner, M.E., Afunugo, W.E., Bever, A.M., Jiang, Y., Cao, S., Woodrow, K.A., "Raltegravir prodrugs for improved nanoparticle delivery", Research Highlight Talk, international meeting of the Controlled Release Society, Edinburgh, Scotland, July 2015.

13. ***Suydam, I.T.**, Davison, J.M., Neilson, B.K., Pahl, M.N., Doan, M., Ryon, L.R., Piehl, D.W., "Hydrogen bonding and sterics in the preQ$_1$ riboswitch binding site", Volcano Conference in Chemical Biology, University of Washington, February 2015.

12. *Ebner, M.E., Bever, A.M., **Suydam, I.T.**, "Drug-delivery devices for ARV combinations", Volcano Conference in Chemical Biology, University of Washington, February 2015.

11. *Jiang, Y.H., Cao, S., Bright, D.K., Suydam, I.T., Woodrow, K.A., "Testing of nanoparticle based ARV drug combinations for inhibiting cell-free and cell-cell HIV transmission" Annual Symposium on Nonhuman Primate Models for AIDS, Portland, OR, November 2014.

10. *Davison, J.M., *Neilson, B.K., *Pahl, M.N., **Suydam, I.T.**, "Molecular determinants of ligand recognition in the $preQ_1$ riboswitch: Quantitating the effect of 7-aminomethyl modifications in a series of $preQ_1$ analogs", international meeting of the Biophysical Society, San Francisco, CA, February 2014.

9. *Jiang, Y.H., Cao, S., Bright, D.K., Do E., Suydam, I.T., Woodrow, K.A., "Evaluation of nanoparticle-mediated delivery of ARV drug combinations", Annual Symposium on Nonhuman Primate Models for AIDS, Atlanta, Georgia. October 2013.

8. *Bright, D.K., Jiang, Y.H., Do, E., **Suydam, I.T.**, Woodrow, K.A., "Developing nanoparticle-based combination ARVs for HIV inhibition", international meeting of the Biomedical Engineering Society, Seattle, WA, September 2013.

7. *Alaimo, P.J., Langenhan, J.M., **Suydam, I.T.**, "Integrating professional training with organic chemistry teaching labs" international meeting of the American Chemical Society, New Orleans, LA, April 2013.

6. *Ryon, L.R., **Suydam, I.T.**, "Investigating the role of sterics and hydrogen bonding in the $preQ_1$ riboswitch binding site", selected as Best RNA Themed Poster, international meeting of the American Society for Biochemistry and Molecular Biology, San Diego, CA, April 2012.

5. *Alaimo, P.J., Langenhan, J.M., **Suydam, I.T.**, "Thinking like a scientist in the organic chemistry teaching lab: Designing experiments to generate data for analysis and discussion" international meeting of the American Chemical Society, Denver, CO, August 2011.

4. ***Suydam, I.T.**, Strobel S.A., "Fluorine substituted adenosines as probes of nucleobase protonation in catalytic RNA", international meeting of the American Chemical Society, Philadelphia, PA, August 2008.

3. ***Suydam, I.T.**, Strobel S.A., "Fluorine substituted adenosines as probes of nucleobase protonation in the Varkud Satellite ribozyme", international meeting of the RNA Society, Madison, WI, May 2007.

2. ***Suydam, I.T.**, Boxer S.G., "Vibrational probe of human aldose reductase electrostatics", international meeting of the Biophysical Society, Long Beach, CA, February 2005.

1. ***Suydam, I.T.**, Park, E.S., Romanova, Z.S., Boxer S.G., "Vibrational probes for electrostatic fields in proteins", international meeting of the Biophysical Society, San Francisco, CA, February 2002.

Regional/Undergraduate Conferences (*presenting author(s), mentored undergraduates underlined)

8. *Bever, A.M., *Ebner, M.E., **Suydam, I.T.**, "Drug-delivery devices for ARV combinations", annual Murdock Conference on Undergraduate Research, Vancouver, WA, November 2014.

7. *Bright, D.K., Do, E., Jiang, Y., Ramanathan, R., **Suydam, I.T.**, Woodrow, K.A., "Evaluating the long-term release of antiretrovirals from nanoparticles", University of Washington Amgen Scholars research symposium, Seattle, WA, August 2013.

6. Davison, J.M., *Neilson, B.K., Pahl, M.N., **Suydam, I.T.**, "The synthesis of $preQ_1$ analogs to identify required contacts in the $preQ_1$ riboswitch binding site", Washington NASA space grant conference, Seattle, WA, September 2013.

5. *Neilson, B.K., Ryon, L.W., **Suydam, I.T.**, "Electrostatic contributions to ligand binding in the $preQ_1$ riboswitch" annual West Coast Biological Sciences Undergrad Research Conference, San Diego, CA, April 2013.

4. *Buonarati, O.R., *Rozal, L.M., *Ryon, L.W., **Suydam, I.T.**, "Metabolite structure influences $preQ_1$ metabolite binding", annual Murdock Conference on Undergraduate Research, Seattle, WA, November 2011.

3. *Andrews, D.M., *Symon, M.R., **Suydam, I.T.**, "Fluorescence based assays of metabolite binding in the $PreQ_1$ riboswitch", Murdock Conference on Undergraduate Research, McMinnville, OR, November 2010.

2. ***Suydam, I.T.**, Strobel S.A., "Fluorine substituted adenosines as probes of nucleobase protonation in catalytic RNA", northwest regional meeting of the American Chemical Society, Tacoma, WA, June 2009.

1. ***Suydam, I.T.**, Strobel S.A., "Fluorine substituted adenosines as probes of nucleobase protonation in functional RNAs", Chemistry/Biology Interface Seminar Series, New Haven, CT, December 2008.

EXTERNAL RESEARCH GRANTS AND FUNDING

Completed Research Funding

2016 – 2018	M.J. Murdock College Research Program for Natural Sciences, $75,000. "Sequence dependent selectivity in the $preQ_1$ riboswitch binding domain"
2014 – 2016	NIH PIP R01, NIAID (1R01AI112002-01), $46,961 sub-contract. "Combination HIV prevention in drug-eluting fibers: designing for efficacy and use", (K.A. Woodrow, PI)
2010 – 2012	Department of Bioengineering, University of Washington, $40,000. Undergraduate Research Contract

INTERNAL RESEARCH GRANTS AND FUNDING

Completed Research Funding

2014 – 2015 Clare Boothe Luce Research Program, $13,000.
"Formulation and release kinetics of antiretroviral loaded PLGA nanoparticles"

2014 Murdock College Science Research Program, $4,000.
"Purification of antiretrovirals for combination drug delivery"

2012 – 2014 New Faculty Startup Funds, College of Science and Engineering, $75,000.

2013 Murdock College Science Research Program, $7,500.
"Investigating the role of $preQ_0$ polarity on binding affinity"

2013 Washington NASA Space Grant Program, $4,345.
"Investigating the role of $preQ_1$ charge on binding affinity"

2010 Murdock College Science Research Program, $14,500.
"Fluorescence based assays of metabolite binding in the $PreQ_1$ riboswitch"

TEACHING AND UNGERGRADUATE MENTORING

Seattle University Courses

WQ 2010 – 2018	Chemistry 4990: Senior Synthesis II: Independent Research
SQ 2016 – 2018	Chemistry 3960: Integrated Research Lab, Antiviral Prodrugs for HIV Prevention
SQ 2018	Chemistry 3521: Physical Chemistry Laboratory II
SQ 2018	Chemistry 3520: Physical Chemistry III
WQ 2013 – 2017	Chemistry 3511: Physical Chemistry Laboratory I
WQ 2015 – 2017	Chemistry 3510: Physical Chemistry II
SQ 2011 – 2017	Chemistry 2521: Organic Chemistry Laboratory III
WQ 2012, SQ 2015	Chemistry 2511: Organic Chemistry Laboratory II
FQ 2010 – 2017	Chemistry 2501: Organic Chemistry Laboratory I
SQ 2011 – 2012	Chemistry 2520: Organic Chemistry III
WQ 2012, SQ 2015	Chemistry 2510: Organic Chemistry II
FQ 2011	Chemistry 2500: Organic Chemistry I
SQ 2010	Chemistry 242: Fundamental Organic Chemistry Laboratory II
WQ 2010 – 2011	Chemistry 241: Fundamental Organic Chemistry Laboratory I
SQ 2010	Chemistry 232: Fundamental Organic Chemistry II
WQ 2010 – 2011	Chemistry 231: Fundamental Organic Chemistry I
SQ 2013	Chemistry 1521: General Chemistry Laboratory III
WQ 2013 – 2014	Chemistry 1511: General Chemistry Laboratory II
FQ 2012 – 2013	Chemistry 1501: General Chemistry Laboratory I
SQ 2013	Chemistry 1520: General Chemistry III
WQ 2013 – 2014	Chemistry 1510: General Chemistry II
FQ 2012	Chemistry 1500: General Chemistry I

Previous Undergraduate Research Students

	Student	Dates of Research	Position after Graduation
21.	Carley J. Ponchetti	3/17 - 3/18	Intern, Benaroya Research Institute
20.	Brittney A. Kessel	3/17 - 3/18	Pharm. D. candidate, Creighton University
19.	Karyl-Lin Yamakawa	3/16 - 5/18	Dental student, University of Washington
18.	Wilma E. Afunugo	3/15 - 5/17	Medical student, U. Texas Medical Branch
17.	Mikaela E. Ebner	3/14 - 5/16	M.S. candidate, U.C. Berkeley
16.	Alaina M. Bever	3/14 - 5/16	MD/Ph.D. candidate, Harvard University
15.	My-Anh Doan	9/14 - 5/16	International volunteer, Vietnam Health Clin.
14.	Megan Rogers-Peckham	9/14 - 5/16	Laboratory assistant, Stratos Genomics
13.	Jenna M. Davison	2/13 - 5/15	Medical student, Oregon Health & Science U.
12.	Anthony J. Krzysko	9/13 - 5/14	Ph.D. candidate, Washington State University
11.	Mohammed H. Alshathri	9/13 - 3/14	
10.	Danielle K. Bright	10/12 - 5/14	Ph.D. candidate, Tufts
9.	Mallory H. Pahl	5/12 - 5/14	Research tech., Puget Sound Blood Center
8.	Ben K. Neilson	4/12 - 5/14	Freelance photographer
7.	Dennis W. Piehl	3/12 - 5/13	Ph.D. candidate, U.I. Urbana-Champaign
6.	Lauren W. Ryon	6/11 - 5/13	Ph.D. candidate, U.C. San Diego
5.	Lily Jeong	3/12 - 5/13	Medical student, University of Washington
4.	Olivia R. Buonarati	6/11 - 9/11	Ph.D. candidate, U.C. Davis
3.	Leo M. Rozal	6/11 - 9/11	Medical student, Creighton University
2.	Melissa R. Symon	6/10 - 9/10	Medical student, Creighton University
1.	David M. Andrews	6/10 - 6/11	Ph.D. candidate, U.N.C. Chapel Hill