Douglas Dean Young, PhD.

♦♦♦

Assistant Professor
College of William & Mary
Department of Chemistry
P.O. Box 8795
Williamsburg, VA 23187
Telephone: (919) 325-6837
E-mail: dyoung01@wm.edu

◆ EDUCATION

The Scripps Research Institute Department of Chemistry, La Jolla, CA: Postodoctoral Fellow (2009-present)

North Carolina State University Department of Chemistry, Raleigh, NC: Ph. D.; GPA 4.00 (2003-2009)

University of Puget Sound, Tacoma WA: B.S. Chemistry and B.S. Biology; *summa cum laude,* GPA 3.90 (1998-2003)

Longmont High School, Longmont, CO: High School Diploma; GPA 4.04 (4 pt. scale) (1995-1998)

◆ PROFESSIONAL AND TEACHING EXPERIENCE

The College of William & Mary: Assistant Professor of Chemistry (7/2011-present)

The Scripps Research Institute: National Institutes of Health Postdoctoral Fellowship under the supervision of Dr. Peter G. Schultz on: "Incorporation of Unnatural Amino Acids into Proteins Towards the Development of Novel Therapeutics" (7/2009-7/2011)

North Carolina State University: Graduate studies under the supervision of Dr. Alexander Deiters on: "Development of Novel Tools for Functional Genetics" (5/2004-6/2009)

North Carolina State University: Preparing the Professoriate Program -Taught Second Semester Organic Chemistry (CH223) under the supervision of Dr. Alexander Deiters (8/2005-5/2006)

North Carolina State University: Graduate studies under the supervision of Dr. Daniel Feldheim on: "Utilization of RNA *in vitro* Selections in the Development of Novel Methanol Oxidation Catalysts" (8/2003-5/2004)

North Carolina State University: Teaching Assistant and laboratory designer for the undergraduate course "CH 428: Qualitative Organic Chemistry" (8/2003-12/2004)

University of Puget Sound: Undergraduate research under the supervision of Dr. Eric Scharrer on: "Synthesis and Phase Behavior of a Library of Alkyne-Containing Liquid Crystals and Their Metal Complexes" (3/2000-7/2003)

University of Puget Sound: Teaching Assistant for both the biology and chemistry departments, 22 total laboratories taught ranging from "General Chemistry" to "Biochemistry" (8/1999-5/2003)

University of Puget Sound: Biology stockroom assistant, prepared all biology laboratories including media preparation (8/1998-5/2003)

University of Puget Sound: Chemistry tutor at the University of Puget Sound Center of Writing and Learning (8/2000-5/2003)

◆ EDUCATIONAL ACTIVITIES AND AWARDS

Post Graduate Honors:

- *National Institutes of Health Ruth L. Kirschstein Postdoctoral Research Fellowship (2009-present)*
- ACS Postdoc to Facutly Workshop (1 of 30 selected to participate at the Boston ACS meeting) (2010)

Selected Graduate Honors:

- CEM Microwave Conference Poster Session Award Winner (2008)
- *M.J. Collins Young Innovator in Microwave Chemistry Award (Single National Recipient) (2007)*
- Gordon Research Conference on Medicinal Chemistry Poster Session Winner (2007)
- *American Chemical Society Medicinal Chemistry Predoctoral Fellowship (1 of 8 National Recipients) (2007)*
- CEM Microwave Conference Poster Session Award Winner (2007)
- American Institute of Chemists Student Award (2007)
- Outstanding Graduate Poster Award (2005)
- *DOE GAANN Biotechnology Fellowship (2004-2007)*
- Sara and Chloe Novak Teaching Award (2004)
- Burroughs Welcome Fellowship (2004) *Declined*
- NSF Predoctoral Fellowship Honorable Mention (2004)
- *Single recipient of North Carolina State University Andrews Fellowship (2003)*
- NSF Predoctoral Fellowship Honorable Mention (2003)
-

Selected Undergraduate Honors:

- University of Puget Sound Chemistry ACS Top Chemistry Senior (2003)
- Phi Beta Kappa (2003)
- University of Puget Sound Biology Alcorn Award for Top Biology Senior (2002)
- Phi Kappa Phi (2001)
- UPS Chemistry Department Outstanding Chemistry Teaching Assistant (2001-2002)
- ACS Organic Chemistry Division Undergraduate Research Travel Award (2001)
- University of Puget Sound Summer Research (2000-2002)

◆ PRESENTATIONS AND PUBLICATIONS

Publications:

[37] Georgianna, W.E.; Young, D.D. "Non-coding RNA: Small molecule control and therapeutic promise." *Bioessays* **2011**, submitted (Invited Review)

[36] Young, T.S.; Young, D.D.; Ahmad, I.; Louis, J.M.; Benkovic, S.J.; Schultz, P.G. "Evolution of Cyclic Peptide Protease Inhibitors with Synthetic Building Blocks" *Proc. Nat. Acad. Sci.* **2011**, submitted.

[35] Young, D.D.; Young, T.S.; Jahnz, M.; Ahmad, I.; Spraggon, G.; Schultz. P.G. "Evolved Aminoacyl-tRNA Synthetases with Atypical Polysubstrate Specificity" *Biochemistry.* **2011**, *50*, 1894-1900.

[34] Young, D.D.; Deiters, A. "Chemo- and Regioselectivity on a Solid Support." **2011**, Jon Wiley & Sons Inc. submitted. (Invited book chapter)

[33] Dush, M.; McIver, A. L.; Parr, M.; Young, D. D.; Fisher, J.; Hauck, M. L.; Deiters, A.; Nascone-Yoder, N. M. "Heterotaxin: a TGF-b Signaling Inhibitor Identified in a Screen for Left-Right Asymmetric Organ Defects in *Xenopus* Embryos" *Chem. Biol.* **2011**, *18*, 252-253.

[32] Karginov, A. V.; Zou, Y.; Shirvanyants, D.; Kota, P.; Dokholyan, N. V.; Young, D. D.; Hahn, K. M.; Deiters A. "Light-Regulation of Protein Dimerization and Kinase Activity in Living Cells Using Photocaged Rapamycin and Engineered FKBP" *J. Am. Chem. Soc.* **2011**, *133*, 420-423.

[31] Young, D. D.; Connelly, C. M.; Grohmann, C.; Deiters, A. "Small Molecule Modifiers of MicroRNA miRNA-122 Function for the Treatment of Hepatitis C Virus Infection and Hepatocellular Carcinoma" *J. Am. Chem. Soc.* **2010**, *132*, 7976–7981.

[30] Young, D. D.; Lively, M. O.; Deiters, A. “Activation and Deactivation of DNAzyme and Antisense Function with Light for the Photochemical Regulation of Gene Expression in Mammalian Cells” *J. Am. Chem. Soc.* **2010**, *132*, 6183-6193.

[29] Chou, C.; Young, D. D.; Deiters, A. “Photocaged T7 RNA Polymerase for the Light-Activation of Transcription and Gene Function in Pro- and Eukaryotic Cells” *ChemBioChem* **2010**, *11*, 972-977.

[28] Wilkins, B. J.; Marionni, S.; Young, D. D.; Liu, J.; Wang, Y.; Di Salvo, M. L.; Deiters, A.; Cropp, T. A. “Site-specific Incorporation of Fluorotyrosines into Proteins in *E. coli* by Photochemical Disguise” *Biochemistry* **2010**, *49*, 1557-1559.

[27] Young, D. D.; Teske, J. A.; Deiters, A. " Open-Vessel Microwave-Mediated [2+2+2] Cyclotrimerization Reactions” *Synthesis* **2009**, *22*, 3785-3790.

[26] Chou, C.; Young, D. D.; Deiters, A. “A Light-Activated DNA Polymerase” *Angew. Chem. Int. Ed.* **2009**, *121*, 6064-6067.

[25] Bereman, M. S.; Young, D. D.; Deiters, A.; Muddiman, D. C. “Development of a Robust and High Throughput Method for Profiling N-linked Glycans Derived from Plasma Glycoproteins by Nano LC FT-ICR Mass Spectrometry” *J. Proteome Res.* **2009**, *8*, 3764-3770.

[24] Edwards, W.E.; Young, D.D.; Deiters, A. “The Effect of Microwave Irradiation on DNA Hybridization” *Org. Biomol. Chem.* **2009**, *7*, 2506-2508

[23] Edwards, W.E.; Young, D.D.; Deiters, A. “Light-Activated Cre Recombinase as a Tool for the Spatial and Temporal Control of Gene Function in Mammalian Cells” ACS *Chem. Biol.* **2009**, *4*, 441-445.

[22] Young, D.D.; Govan, J.M.; Lively, M.O.; Deiters, A. “Photochemical Regulation of Restriction Endonuclease Activity” *ChemBioChem*, **2009**, *10*, 1612-1616.

[21] Young, D. D; Lusic, H.; Lively, M.O.; Deiters, A. “Restriction Enzyme-Free Mutagenesis via the Light Regulation of DNA Polymerization” *Nuc. Acids Res.* **2009**. e58.

[20] Young, D. D.; Garner, R. A.; Yoder, J. A.; Deiters, A. "Light Activation of Gene Function in Mammalian Cells via Ribozymes", *Chem. Commun.* **2009**, 568-570.

[19] Young, D.D.; Torres-Koblus, J.; Deiters, A. “Microwave-Assisted Synthesis of Unnatural Amino Acids”, *Bioorg. Med. Chem. Lett.* **2008**, 5478-5480.

[18] Young, D.D.; Lusic, H.; Lively, M.O.; Yoder, J.A.; Deiters, A. “Gene Silencing with Light-Activated Antisense Agents”, *ChemBioChem* **2008**, *9*, 2937-2940.

[17] Zou, Y.; Young, D.D.; Cruz, A.; Deiters, A. “Synthesis of Anthracene and Azaanthracene Fluorophores via [2+2+2] Cyclotrimerization Reactions”, *Org. Lett..* **2008**, *10*, 4661-4664.

[16] McIver, A.; Young, D. D.; Deiters, A. "A General Approach to Triphenylenes and Azatriphenylenes: Total Synthesis of Dehydrotylophorine and Tylophorine", *Chem. Commun.* **2008**, 4750-4752.

[15] Young, D.D.; Nichols, J. Kelly; R.M.; Deiters, A. “Microwave Activation of Enzymatic Catalysis” *J. Am. Chem. Soc.* **2008**, *130*, 10048-10049.

[14] Gumireddy, K.; Young, D.D.; Xiong, X.; Hogenesch, J.B.; Huang, Q.; Deiters, A. “Small Molecule Inhibitors of MicroRNA miRNA-21” *Angew. Chem. Int. Ed.* **2008**, *47*, 7482-7484.

[13] Young, D.D.; Deiters, A. “Light-Regulated RNA-Small Molecule Interactions” *ChemBioChem* **2008**, *9*, 1225-1228.

[12] Young, D.D.; Edwards, W.F.; Lusic, H. Lively, M.O.; Deiters, A. “Light-Triggered Polymerase Chain Reaction” *Chem. Commun.* **2008**, 462-464.

[11] Young, D.D.; Sripada, L.; Deiters, A. “Microwave-Assisted Solid-Supported Alkyne Cyclotrimerization Reactions for Combinatorial Chemistry” *J. Comb. Chem.* **2007**, *9*, 735-738.

[10] Senaiar, R.S.; Teske, J.A.; Young, D.D.; Deiters, A. “Total Synthesis of Indanones via [2+2+2] Cyclotrimerization” *J. Org. Chem.* **2007**, *72*, 7801-7804.

[9] Young, D.D.; Deiters, A. “A General Approach to Chemo- and Regioselective Cyclotrimerization Reactions” *Angew. Chem. Int. Ed.* **2007** *46*, 5187-5190.

[8] Lusic, H.; Young, D.D.; Deiters, A. “Photochemical DNA Activation” *Org. Lett.* **2007**, *9*, 1903-1906.

[7] Young, D.D.; Deiters, A. “Photochemical Activation of Protein Expression in Bacterial Cells” *Angew. Chem. Int. Ed.* **2007**, *46*, 4290-4292.

[6] Young, D.D.; Deiters, A. “Photoregulation of Gene Expression” *Org. Biomol. Chem*. **2007**, *5*, 999-1005. (invited review)

[5] Senaiar, R. S.; Young, D.D.; Deiters, A. "Pyridines via Solid-Supported [2+2+2] Cycloadditions" *Chem. Commun.* **2006**, 1313-1315.

[4] Young, D.D.; Deiters, A. "Photochemical Activation of a Hammerhead Ribozyme" *Bioorg. Med. Chem. Lett.* **2006**, *16*, 2658-2661.

[3] Young, D.D.; Senaiar, R. S.; Deiters, A. "Solid-Supported [2+2+2] Cycloadditions" *Chem. Eur. J.* **2006**, *12*, 5563-5568.

[2] Young, D.D.; Scharrer, E.A. “$Co_2(CO)_6$ Complexes of Alkyne-Containing Liquid Crystals: a New Class of Metallomesogens” *Polym. Prepr.* **2004**, *45*, 490-491.

[1] Young, D.D.; Yoa, M.; Scharrer, E.A. “Synthesis and Phase Behavior of Liquid Crystalline Diphenylacetylene Derivatives Possessing High Clearing Temperatures” *Mol. Cryst. Liq. Cryst.* **2003**, *408*, 21-31.

Selected Oral Presentations:

Young, D.D. “Evolved Aminoacyl-tRNA Synthetases with Atypical Polysubstrate Specificity”, 240th ACS National Meeting, Boston, MA. August **2010**.

Young, D.D. “Inhibition of MicroRNA miR21 by Small Molecules”, 237th ACS National Meeting, Salt Lake City, UT. March **2009**.

Young, D.D.’ "Small Molecule Probes for the Investigation of Biological Processes", 236th ACS National Meeting, Philadelphia, PA. August **2008**. (invited talk)

Young, D.D.; "Microwave Activation of Enzymatic Catalysis ", 236th ACS National Meeting, Philadelphia, PA. August, **2008**.

Young, D.D.;. "Microwave Assisted Organic and Enzymatic Catalysis", 236th ACS National Meeting, Philadelphia, PA. August **2008**. (invited talk)

Young, D.D. “Development of Photochemical Tools for Gene Regulation” 234th National ACS Meeting, Boston, MA. August **2007**.

Young, D.D. “Microwave Assisted [2+2+2] Cyclotrimerization Reactions” 234th National ACS Meeting, Boston, MA. August **2007**.

Young, D.D. “Photochemical Control of Biological Processes” 233th National ACS Meeting, Chicago, IL. March **2007**.

Young, D.D. “Photoregulation of Gene Function” 232th National ACS Meeting, San Francisco, CA. September **2006**.

Young, D.D. “Development of Novel Tools for Functional Genomics” Thompson Hall Seminar, University of Puget Sound, Tacoma, WA. March **2006**.

Young, D.D. “Controlling Oligonucleotide Function Using Light” 230th National ACS Meeting, Washington D.C. August **2005**.

Young, D.D. “Synthesis and Phase Behavior of a Series of Alkyne-Containing Liquid Crystals and their Metal Complexes“ Phi Sigma Undergraduate Research Symposium, University of Puget Sound, Tacoma, WA. April, **2003**.

Young, D.D. “Synthesis and Analysis of Metal-Containg Liquid Crystals Possessing an Octahedral Metal Center“ Northwest Undergraduate Research Symposium, University of Washington, Seattle, WA. May, **2002**.

Young, D.D. “Synthesis and Phase Behavior of Diphenylacetylene Liquid Crystalline Derivatives” 9th Regional Murdock Conference, Gonzaga University, Spokane, WA. November, **2000**.

Selected Poster Presentations:

Young, D.D.; Deiters, A. "Microwave Assisted Enzymatic Catalysis" 6th International Microwaves in Chemistry Conference, Boston, MA May **2008**.

Young, D.D.; Deiters, A. "Microwave Assisted [2+2+2] Cycloadditions" 5th International Microwaves in Chemistry Conference, London, UK, April **2007**.

Young, D.D.; Deiters, A. "Efficient Preparation of Combinatorial Libraries via [2+2+2] Cycloadditions" 232th ACS National Meeting, San Francisco, CA. United States, September **2006**.

Young, D.D.; Deiters, A. "[2+2+2] Cycloaddtions on a Solid Support" Pacifichem, Honolulu, HI, United States, December **2005**.

Young, D.D.; Senaiar, R.S.; Deiters, A. "[2+2+2] Cycloadditions on the solid phase" 230th ACS National Meeting, Washington, DC, United States, Aug. **2005**.

Young, D.D.; Deiters, A. "Photoactivatable RNA functions" 229th ACS National Meeting, San Diego, CA, United States, March **2005**.

Young, D.D.; Scharrer, E.A. "Synthesis and phase behavior of a series of alkyne-containing liquid crystals and their metal complexes" 225th ACS National Meeting, New Orleans, LA, United States, March **2003**.

Young, D.D.; Scharrer, E.A. "Synthesis and analysis of Metallomesogenic Compounds Possessing an Octahedral Metal Center" 223rd ACS National Meeting, Orlando, FL, United States, April **2002**.

Young, D.D.; Yoa, M.; Scharrer, E.A. "Synthesis of Liquid Crystalline Diphenylacetylene Derivatives" 221st ACS National Meeting, San Diego, CA, United States, April **2000**.

◆ REFERENCES

Dr. Eric Scharrer
University of Puget Sound
Department of Chemistry
335J Thompson Hall
1500 N. Warner
Tacoma, WA 98416

(253) 879-3957

escharrer@ups.edu

Dr. Alexander Deiters
North Carolina State University
Department of Chemistry
Campus Box 8204
Raleigh, NC 27695
(919) 513-2958

alex_deiters@ncsu.edu

Dr. Peter Schultz
The Scripps Research Institute
Department of Chemistry and
The Skaggs Institute for Chemical Biology
SR 207
10550 North Torrey Pines Road
La Jolla, CA 92037
(858) 784-9273

schutz@scripps.edu