

## Kana Yamamoto, Ph.D.

### *Curriculum Vitae*

Waseda University, Global Center for Science  
and Engineering  
4-1 Okubo 3-chome, Shinjuku-ku  
Tokyo, 169-9555, Japan

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Citizenship: US Citizen

### **Professional Appointments**

March 2018 – Present	Waseda University, Global Center for Science and Engineering, Tokyo, Japan, and School of Advanced Science and Engineering, Department of Chemistry and Biochemistry Associate Professor of Chemistry
November 2016 – 2018	Rapafusyn Pharmaceutical Research & Development, Inc., Baltimore, MD Senior Scientist
May 2015 – October 2016	College of Engineering, Department of Chemical and Environmental Engineering, University of Toledo, Toledo, OH Research Associate Professor
August 2008 – May 2015	College of Natural Sciences and Mathematics, Department of Chemistry and Biochemistry, University of Toledo, Toledo, OH Assistant Professor of Chemistry
June 2007 – August 2008	Bristol-Myers Squibb Pharmaceutical Institute, New Brunswick, NJ Senior Research Investigator
June 2003 – July 2007	Bristol-Myers Squibb Pharmaceutical Institute, New Brunswick, NJ Research Investigator II
August 2000 – May 2003	Sloan-Kettering Institute for Cancer Research, New York, NY Helen-Hay Whitney Postdoctoral Fellow Advisor: Samuel J. Danishefsky

### **Professional Preparation and Training**

PhD Synthetic Organic Chemistry (Advisor: Clayton H. Heathcock)	2000	University of California, Berkeley, CA
MS Bioorganic Chemistry (Advisor: Toshiya Endo)	1995	Nagoya University, Nagoya Japan
BS Chemistry (Advisor: Toshiya Endo)	1993	Nagoya University, Nagoya Japan

### **Other Experiences and Professional Memberships**

2000 –	Member, Organic Division, American Chemical Society
2001 –	Member, Society of Synthetic Organic Chemistry, Japan
2004 – 2008	Member, Selection Committee for BMS New Investigator Award
2008	Member, Selection Committee for BMS Graduate Fellowship

### **Professional Activities**

Summary of Research Interest

Medicinal Chemistry; Bioorganic chemistry; Biomimetic reactions; Catalytic, asymmetric synthesis; Development of short and concise syntheses of molecules of interests; Efficient and environmentally friendly reactions.

Publications:

Independent Research at University of Toledo and Bristol-Myers Squibb

15. Ajith Yapa Mudiyansele, Sridhar Viamajala, Sasidhar Varanasi, Kana Yamamoto\* "Tandem Olefin Metathesis/Isomerization approach to  $\alpha$ ,  $\omega$ -Bifunctional Compounds from methyl oleate" *submitted*.
14. Yuefan Wang, Hanjing Peng, Zufeng Guo, Brett R. Ullman, Kana Yamamoto, Sam Y. Hong, Jun O. Liu\* "Influence of stereochemistry on the activity of the rapadocin, an isoform-specific inhibitor of nucleoside transporter ENT1" *Chem. Sci.*, **2021**, 12, 11484–11489.
13. Godwin Ameh Abel, Sridhar Viamajala, Sasidhar Varanasi, Kana Yamamoto\* "Toward Sustainable Synthesis of PA12 (Nylon 12) Precursor from Oleic Acid Using Ring-Closing Metathesis" *Oleic Acid Using Ring-Closing Metathesis* *ACS Sustainable Chem. Eng.*, **2016**, 4 (10), 5703–5710.
12. Pramod Prasad Poudel, Kenji Arimitsu, and Kana Yamamoto\* "Self-assembled Ion-Pair Organocatalysis – Asymmetric Baeyer-Villiger Oxidation Mediated by Flavinium-Cinchona Alkaloid Dimer" *Chem. Commun.*, **2016**, 52, 4163–4166.
11. Ajith Yapa Mudiyansele, Haoyi Yao, Sridhar Viamajala, Sasidhar Varanasi and Kana Yamamoto\* "Efficient Production of Alkanolamides from Microalgae." *Ind. Eng. Chem. Res.*, **2015**, 54 (16), 4060–4065
10. Godwin Ameh Abel, Kim Nguyen, Sridhar Viamajala, Sasidhar Varanasi and Kana Yamamoto\* "Cross-metathesis approach to produce precursors of nylon 12 and nylon 13 from microalgae." *RSC Adv.*, **2014**, 4 (98), 55622–55628.
9. Ajith Yapa Mudiyansele, Sridhar Viamajala, Sasidhar Varanasi and Kana Yamamoto\* "A simple ring-closing metathesis approach for synthesis of PA 11, 12, and 13 precursors from oleic acid." *ACS Sustainable Chem. Eng.*, **2014**, 2 (12), 2831–2836.  
*Highlighted in SynFact of the Month*
8. Haoyi Yao, Yun Tang,<sup>†</sup> and Kana Yamamoto\* "Metal-free Oxidative Amide Formation with *N*-Hydroxysuccinimide and Hypervalent Iodine Reagents". *Tetrahedron Lett.* **2012**, 53, 5094 – 5098.
7. Haoyi Yao and Kana Yamamoto\* "Aerobic Oxidative Amide Bond Formation". *Chem. Asian J.* **2012**, 7, 1542 – 1545.
6. Lindsay A Hobson, Otute Akiti, Subodh S. Deshmukh, Shannon Harper, Kishta Katipally, Chiajen J. Lai, Robert C. Livingston, Ehrlic Lo, Michael M. Miller, Srividya Ramakrishnan, Lifen Shen, Jan Spink, Srinivas Tummala, Chenkou Wei, Kana Yamamoto, John Young, Rodney L. Parsons, Jr. "A development of scalable synthesis of an HMG-CoA inhibitor". *Org. Proc. Res. Dev.* **2010**, 14, 441 – 458.  
*Highlighted in SynFact of the Month*
5. Kana Yamamoto,\* Ye Grace Chen<sup>†</sup> and Frédéric Buono "Oxidative Dehydrogenation of Dihydropyrimidinones and Dihydropyrimidines". *Org. Lett.* **2005**, 7, 4673 – 4676.

Pre- and Postdoctoral Research

4. Kana Yamamoto,\* Kaustav Biswas, Christoph Gaul and Samuel J. Danishefsky  
"Effect of Temperature and Concentration in some Ring Closing Olefin Metathesis Reactions.  
*Tetrahedron Lett.* **2003**, *44*, 3297 – 3299.
3. Kana Yamamoto, Martin F. Hentemann, John G. Allen and Samuel J. Danishefsky  
"On the Total Synthesis and Determination of the Absolute Configuration of Rishirilide B.  
Exploitation of Subtle Effects to Control the Sense of Cycloaddition of o-Quinonebismethides".  
*Chemistry, Eur. J. Chem.* **2003**, *9*, 3242 – 3252.
2. Kana Yamamoto, Robert M. Garbaccio, Shawn J. Stachel, David B. Solit, Gabriela Chiosis, Neal Rosen and Samuel J. Danishefsky\*  
"Total Synthesis as a Resource in the Discovery of Potentially Valuable Agents in Oncology: Cyclopropanadicol". *Angew. Chemie. Int. Ed.* **2003**, *42*, 1280 – 1284.
1. Kana Yamamoto and Clayton H. Heathcock\*  
"α, β -Epoxy Vinyl Triflates in Pd-Catalyzed Reactions". *Org. Lett.* **2000**, *2*, 1709 – 1712.

Publications (Books):

1. Kana Yamamoto (solicited, contributing author)  
*e-EROS (Encyclopedia of Reagents for Organic Synthesis) (invited contribution):*  
"2-Amino-6-hydroxy-4(3H)-pyrimidinone" (56-09-7, 125037-36-7, 4425-667-6)  
Accepted, August 2013
2. Kana Yamamoto (solicited, contributing author)  
*e-EROS (Encyclopedia of Reagents for Organic Synthesis) (invited contribution):*  
"5-tert-Butyl-2-hydroxy-1,4-benzoquinone" (4857-70-9)  
Accepted, August 2013

Patents:

5. "Rapafusyn derivative compounds and methods of use thereof "  
United States Patent Application Serial no.62/909,008 Issued Oct 1, 2019.  
Sam Hong, Brett R. Ullman, Joseph E. Semple, Kana Yamamoto, Puneet Kumar, Magesh Sadagopan and Jennifer C. Schmitt
4. "Process for the preparation of  
4-(8-(2-chlorophenoxy)-[1,2,4]-triazolo[4,3-A]pyridin-3-yl)bicyclo[2.2.1]heptan-1-ol and novel intermediates thereof"  
United States, Patent Application: 2015-14817352 August 4, 2015  
Xinhua Qian, Keming Zhu, Joerg Deerberg, Wendy Yang, Kana Yamamoto, Mathew R. Hickey
3. "Production of alkanolamides from microalgal biomass"  
United States, Utility Patent: U.S. Pat. No. 9,562,210 B1, Issued February 7, 2017.  
Kana Yamamoto, Sridhar Viamakala, Sasidhar Varanasi, Ajith Yapa Mudiyansele, Pramod Prasad Poudel
2. "Ring-closing metathesis approach to produce precursors of nylon 11, 12, and 13 from oleic acid."  
United States, Utility Patent: U.S. No. 9,845,294 B2, Issued December 19, 2017.  
Kana Yamamoto, Sridhar Viamajala, Sasidhar Varnasi, Ajith Yapa Mudiyansele, Godwin Ameh Abel
1. "Cross metathesis approach to C11–13 fatty-chain amino esters from oleic acid derivatives."  
United States, Utility Patent: U. S. No. 10,087,137 B2, Issued October 2, 2018.

Kana Yamamoto, Sridhar Viamajala, Sasidhar Varnasi, Kim Oliver Nguyen, Godwin Ameh Abel, Ajith Yapa Mudiyansele

*Published Abstracts:*

*Independent Research >30 poster/oral presentations*

*Invited Lectures:*

*Waseda University*

9. Kana Yamamoto "Reactions Promoted by Flavin co-Factor Derivatives" (invited lecture) *The 2<sup>nd</sup> Nagoya Seminar on Green Synthesis & Catalysis (NSGSC-2)*, Nagoya, Japan 12/12, 2019
- University of Toledo*
8. Kana Yamamoto "New Approaches for the syntheses of Nylon-11, 12, and 13 from Algal Lipid" Kyoto University, Kyoto, Japan, 1/16, 2014.
7. Kana Yamamoto "I. A new method of conversion of omega-9 fatty acids to polymer units; II. Progress in concise synthesis of Entecavir: from recycled newspaper to HCV drug" University of Toledo, Department of Medicinal and Biological Chemistry, Toledo, OH, 12/8, 2013.
6. Kana Yamamoto "Progress toward a catalytic amide bond formation" Aquinas College, Grand Rapids, MI, 4/20, 2012.
5. Kana Yamamoto "Progress toward a catalytic amide bond formation" John-Carroll University, University Heights, OH, 2/1, 2012.
4. Kana Yamamoto "Development of oxidative amide bond formation" University of Toledo, Department of Chemical and Environmental Engineering, Toledo, OH, 11/3, 2011.
3. Haoyi Yao and Kana Yamamoto "Oxidative Amide Bond Formation" University of Akron, Department of Chemistry, Akron, OH, 3/9, 2011.
2. Kana Yamamoto "The Organocatalytic Asymmetric Oxidation with Aminoxyl-Radical Catalyst – From Alcohol Oxidation to C-H Functionalization" University of Toledo, Department of Medicinal and Biological Chemistry, Toledo, OH, 12/11, 2008.

*Bristol-Myers Squibb*

1. Kana Yamamoto "From bench to plant: Process Development for multi-kg Synthesis of HMG CoA Reductase Inhibitor" *Mitsubishi Pharmaceutical Institute*, Tokyo, August 2007

**Honors and Award**

2015	Best Poster Award – 80 <sup>th</sup> Ei-ichi Negishi Symposium
2009	Thieme Verlag Journal Award
2007	Bristol-Myers Squibb ChemStar Award – Dedication and Commitment to Excellence in a Thorough Evaluation of Candidates for the BMS Unrestricted Grants in Synthetic Organic Chemistry
2007	Bristol-Myers Squibb ChemStar Award – Contributions to FIH Campaign of the 11- $\beta$ HSD-1 Project (BMS-770767-02)
2004	Bristol-Myers Squibb ChemStar Award – Contribution to FIH Campaign of the Statin Project
2000 – 2003	Postdoctoral Fellowship, Helen-Hay Whitney Foundation
1995 – 1997	Graduate Fellowship, Ishizaka Foundation
1993 – 1995	JSPS (Japan Society of Promotion in Science) Fellowship for Graduate Program

**Collaborators and Other Affiliations**

*Past Collaborators*

Sridhar Viamajala, Assistant Professor,  
Department of Chemical and Environmental Engineering, University of Toledo, Toledo, OH

Sasidhar Varanasi, Professor,  
Department of Chemical and Environmental Engineering, University of Toledo, Toledo, OH  
“Alkaliphlic microalgae-based sustainable and scalable processes for renewable fuels and products.”

*Graduate Advisors and Postdoctoral Sponsors*

Clayton H. Heathcock, Chief Scientist, QB3 Berkeley; Emeritus Faculty, University of California, Berkeley  
Samuel J. Danishefsky, Professor, Columbia University;  
Principal Investigator, Sloan-Kettering Institute for Cancer Research.

**Continuation of Grant Support (\*designates student/postdoctoral fellowships)**

*Recent Grants:* (\* designates Student Fellowships)

Grant Received:

Project/Proposal Title: Asymmetric Construction of Phosphorous Stereocenters  
Source of Support: Sumitomo Foundation  
Total Award Amount: ¥ 1500,000  
Location of the Project: Waseda University.  
Total Award Period Covered: 11/01/2021 – 10/31/2022 (extendable)  
Investigators: Kana Yamamoto (PI)

Project/Proposal Title: Oxidation reactions promoted by self-assembled catalyst based on flavin cofactor.  
Source of Support: Grants in aid for Scientific Research (KAKENHI).  
Total Award Amount: ¥4,290,000 (direct: ¥3,300,000; indirect: ¥990,000)  
Location of the Project: Waseda University.  
Total Award Period Covered: 04/01/2019 – 03/31/2023 (extended 1 year)  
Investigators: Kana Yamamoto (PI)

*Completed Research Grant Support:*

Project/Proposal Title: Toward asymmetric synthesis of phosphorous stereocenters: Phosphorous atom oxygenation involving dynamic kinetic resolution  
Source of Support: Tokyo Ohka Foundation for The Promotion of Science and Technology  
Total Award Amount: ¥ 900,000  
Location of the Project: Waseda University.  
Total Award Period Covered: 04/01/2021 – 03/31/2022  
Investigators: Kana Yamamoto (PI)

Project/Proposal Title: Development of Environmentally Benign catalysts with Flavin cofactor derivatives  
Source of Support: The Uehara Memorial Foundation  
Total Award Amount: ¥5,000,000  
Location of the Project: Waseda University.  
Total Award Period Covered: 04/01/2019 – 03/31/2020  
Investigators: Kana Yamamoto (PI)

Project/Proposal Title: Mechanistic investigations and application of the Baeyer-Villiger reaction promoted by flavinium-cinchona alkaloid dimer ion-pair catalyst.  
Source of Support: National Institute of Health  
Total Award Amount: \$442,500 (direct: \$300,000; indirect: \$142,500) – withdrew for

Location of the Project: The University of Toledo.  
Total Award Period Covered: 09/30/2017 – 08/31/2020  
Investigators: Kana Yamamoto (PI); Xiche Hu (co-PI)

Project/Proposal Title: SEP Collaborative: Alkaliphilic microalgae-based sustainable and scalable processes for renewable fuels and products.  
Source of Support: National Science Foundation  
Total Award Amount: \$1,685,310 (direct: \$950,000; indirect: \$735.310)  
Location of the Project: The University of Toledo  
Total Award Period Covered: 09/15/2012 – 08/31/2016  
Investigators: Sridhar Viamajala (PI), Sasidnar Varanasi (co-PI), Kana Yamamoto (co-PI)

Travel Supports:

- The University of Toledo (\$1000 for attending Fall 2013 ACS National Meeting) 2013
- The University of Toledo (\$500 for attending 2012 Gordon Conference, Stereochemistry) 2012

Project/Proposal Title: Commercial assessment and development of a new technology for bio-sourced Nylon 11–13 productions.  
Source of Support: National Science Foundation (I-Corps Team Program)  
Total Award Amount: \$50,000  
Location of the Project: The University of Toledo  
Total Award Period Covered: 07/01/2015 – 12/31/2015  
Investigators: Kana Yamamoto (PI), Kelvin Okamoto (mentor)

Project/Proposal Title: Fuels and products from alkaliphilic microalgae  
Source of Support: University of Toledo, Interdisciplinary Research Initiation Program  
Total Award Amount: \$100,000 (shared among 4 P.I.s, \$16,667 designated for KY)  
Location of the Project: The University of Toledo  
Total Award Period Covered: 6/2012-12/2013

\*Project/Proposal Title: Metal-Free, Aerobic Dehydrogenation of 1,3,5-Pyrazolines, 1,4-Dihydropyridines, and 3,4-Dihydropyrimidin-2(1*H*)-ones.  
Sponsor: University of Toledo, First Year Student Research (FYSRE).  
Amount: \$2500, P.I.: Kana Yamamoto, Student: Sierra Parker, Status: Funded.  
Period Covered: 6/2013-8/2013

\*Project/Proposal Title: Development of a Metal-Free, Aerobic Oxidation of Azolines to Azoles  
Sponsor: University of Toledo, Undergraduate Summer Research and Creative Activity Program (USRCAP).  
Amount: \$3000, P.I.: Kana Yamamoto, Student: Joshua Staffeld, Status: Funded.  
Period Covered: 6/2013-8/2013

Project/Proposal Title: A New Strategy for Green Amide Bond Formation.  
Source of Support: University of Toledo, Summer Research Award and Fellowships Program  
Total Award Amount: \$11,200  
Location of the Project: The University of Toledo  
Total Award Period Covered: 6/2010-8/2010

Project/Proposal Title: Aminoxy radical catalyzed oxidation.  
Source of Support: University of Toledo, Summer Research Award and Fellowships Program  
Total Award Amount: \$11,500  
Location of the Project: The University of Toledo  
Total Award Period Covered: 6/2009-8/2009

\*Project/Proposal Title: Stereoselective Oxidative Reactions with Bicyclic Aminoxy Radical

Sponsor: University of Toledo, Undergraduate Summer Research and Creative Activity Program (USRCAP).

Amount: \$1750, P.I.: Kana Yamamoto, Student: Evan Bruneau, Status: Funded.

Period Covered: 6/2009-8/2009