

# CHU-YOUNG (CHARLES) KIM

## Curriculum Vitae

Department of Chemistry and Biochemistry  
The University of Texas at El Paso  
500 W. University Ave.  
El Paso, Texas 79902

Tel: (915) 747-6935  
E-mail: ckim7@utep.edu  
Group website: <https://cyklab.org/>  
ORCID iD: 0000-0003-3744-7802

### EDUCATION

Ph.D.	Chemistry	1998–2001
	University of Pennsylvania, Philadelphia, PA	
	(Advisor: David W. Christianson)	
M.S.E.	Bioengineering	1996–1998
	University of Pennsylvania, Philadelphia, PA	
B.A.	Chemistry	1992–1996
	Cornell University, Ithaca, NY	
	(Advisors: Roald Hoffmann, John E. McMurry)	

### PROFESSIONAL POSITIONS

Associate Professor	2016–present
Department of Chemistry & Biochemistry, The University of Texas at El Paso	
Associate Professor	2015–2016
Department of Biological Sciences, National University of Singapore	
Assistant Professor	2006–2015
Department of Biological Sciences, National University of Singapore	
Postdoctoral Fellow	2001–2005
Department of Chemical Engineering, Stanford University	
(Advisor: Chaitan Khosla)	

## PUBLICATIONS

1. Ying Gao, Yulu Hu, Qimeng Liu, Xiaokang Li, Ximming Li, Chu-Young Kim, Tony D. James, Jian Li, Xi Chen, Yuan Guo\*. Two-dimensional design strategy to construct smart fluorescent probes for the precise tracking of senescence. *Angewandte Chemie International Edition* <https://doi.org/10.1002/anie.202101278> (2021).
2. Xiaokang Li, Wenjing Qiu, Jinwen Li, Xi Chen, Yulu Hu, Ying Gao, Donglei Shi, Ximming Li, Huiling Lin, Huiling Lin, Zelan Hu, Guoqiang Dong, Chunquan Sheng, Bei Jiang, Conglong Xia, Chu-Young Kim, Yuan Guo, Jian Li\*. First-generation species-selective chemical probes for fluorescence imaging of human senescence-associated  $\beta$ -galactosidase. *Chemical Science* 11, 7292-7301 (2020).
3. Zilong Wang, Saket R. Bagde, Gerardo Zavala, Tsutomu Matsui, Xi Chen, Chu-Young Kim\*. De novo design and implementation of a tandem acyl carrier protein domain in a type I modular polyketide synthase. *ACS Chemical Biology* 13, 3072-3077 (2018).
4. Thanh-Binh Nguyen, Priya Jayaraman, Elin Bergseng, M. S. Madhusudhan, Chu-Young Kim\*, Ludvig Sollid\*. Unraveling the structural basis for the unusually rich association of human leukocyte antigen DQ2.5 with class-II-associated invariant chain peptides. *Journal of Biological Chemistry* 292, 9218-9228 (2017).
5. Suttinee Poolsup, Chu-Young Kim\*. Therapeutic applications of synthetic nucleic acid aptamers. *Current Opinion in Biotechnology* 48, 180-186 (2017).
6. Fong T. Wong, Kinya Hotta, Xi Chen, Minyi Fang, Kenji Watanabe, Chu-Young Kim\*. Epoxide hydrolase-lasalocid A structure provides mechanistic insight into polyether natural product biosynthesis. *Journal of the American Chemical Society* 137, 86-89 (2015).
7. Kinya Hotta, Ronan M. Keegan, Soumya Ranganathan, Minyi Fang, Jaclyn Bibby, Martyn D. Winn, Michio Sato, Mingzhu Lian, Kenji Watanabe, Daniel J. Rigden, and Chu-Young Kim\*. Conversion of a Disulfide Bond to a Thioacetal Group during Echinomycin Biosynthesis. *Angewandte Chemie International Edition* 53, 824-828 (2014).
8. Sathya Dev Unudurthi, Kinya Hotta, Chu-Young Kim\*. Engineering the Polyproline II Propensity of a Class II Major Histocompatibility Complex Ligand Peptide. *ACS Chemical Biology* 8, 2382-2387 (2013).
9. Kinya Hotta, Xi Chen, Robert S. Paton, Atsushi Minami, Hao Li, Kunchithapadam Swaminathan, Irimpan I. Mathews, Kenji Watanabe, Hideaki Oikawa, Kendall N. Houk, Chu-Young Kim\*. Enzymatic catalysis of anti-Baldwin ring-closure in polyether biosynthesis. *Nature* 483, 355-358 (2012).
10. Stig Tollefsen, Kinya Hotta, Xi Chen, Bjørg Simonsen, Kunchithapadam Swaminathan, Irimpan I. Mathews, Ludvig M. Sollid\*, Chu-Young Kim\*. Structural and functional studies of the *trans*-encoded HLA-DQ2.3 (DQA1\*03:01/DQB1\*02:01) protein molecule. *Journal of Biological Chemistry* 2012, 287, 13611-13619.

11. Michael Bodd, Chu-Young Kim, Knut E. Lundin, Ludvig M. Sollid\*. T-cell response to gluten in patients with HLA-DQ2.2 reveals requirement of peptide-MHC stability in celiac disease. *Gastroenterology* 142, 552-561 (2012).
12. Kinya Hotta, Chu-Young Kim, David T. Fox\*, Andrew T. Koppisch\*. Siderophore-mediated iron acquisition in *Bacillus anthracis* and related strains. *Microbiology* 156, 1918-1925 (2010).
13. Lars-Egil Fallang, Elin Bergseng, Kinya Hotta, Axel Berg-Larsen, Chu-Young Kim, Ludvig M. Sollid\*. Differences in the risk of celiac disease associated with HLA-DQ2.5 or HLA-DQ2.2 are related to sustained gluten antigen presentation. *Nature Immunology* 10, 1096-1101 (2009).
14. David T. Fox, Kinya Hotta, Chu-Young Kim, Andrew T. Koppisch\*. The missing link in Petrobactin biosynthesis: AsbF encodes a (-)-3-dehydroshikimate dehydratase. *Biochemistry* 47, 12251-12253 (2008).
15. Andrew T. Koppisch\*, Kinya Hotta, David T. Fox, Christy E. Ruggiero, Chu-Young Kim, Timothy Sanchez, Srinivas Iyer, Cindy C. Browder, Pat J. Unkefer, Clifford J. Unkefer\*. Biosynthesis of the 3,4-dihydroxybenzoate moieties of petrobactin by *Bacillus anthracis*. *Journal of Organic Chemistry* 73, 5759-5765 (2008).
16. Jiang Xia, Elin Bergseng, Burkhard Fleckenstein, Matthew Siegel, Chu-Young Kim, Chaitan Khosla\*, Ludvig M. Sollid\*. Cyclic and dimeric gluten peptide analogues inhibiting DQ2-mediated antigen presentation in celiac disease. *Bioorganic & Medicinal Chemistry* 15, 6565-6573 (2007).
17. Yinyan Tang, Alice Y. Chen, Chu-Young Kim, David E. Cane, Chaitan Khosla\*. Structural and Mechanistic Analysis of Protein Interactions in Module 3 of the 6-Deoxyerythronolide B Synthase. *Chemistry & Biology* 14, 931-943 (2007).
18. Yinyan Tang, Ho Young Lee, Yi Tang, Chu-Young Kim, Irimpan Mathews, Chaitan Khosla\*. Structural and Functional Studies on SCO1815: A b-Ketoacyl-Acyl Carrier Protein Reductase from *Streptomyces coelicolor*A3(2). *Biochemistry* 45, 14085-14093 (2006).
19. Yinyan Tang, Chu-Young Kim, Irimpan I. Mathews, David E. Cane, Chaitan Khosla\*. The 2.7-A crystal structure of a 194-kDa homodimeric fragment of the 6-deoxyerythronolide B synthase. *Proceedings of the National Academy of Sciences of the U.S.A.* 103, 11124-11129 (2006).
20. Alice Y. Chen, Nathan A. Schnarr, Chu-Young Kim, David E. Cane, Chaitan Khosla\*. Extender Unit and Acyl Carrier Protein Specificity of Ketosynthase Domains of the 6-Deoxyerythronolide B Synthase. *Journal of the American Chemical Society* 128, 3067-3074 (2006).

21. Elin Bergseng\*, Jiang Xia, Chu-Young Kim, Chaitan Khosla, Ludvig M. Sollid. Main chain hydrogen bond interactions in the binding of proline-rich gluten peptides to the celiac disease associated HLA-DQ2 molecule. *Journal of Biological Chemistry* 23, 21791-21796 (2005).
22. Chu-Young Kim, Viktor Y. Alekseyev, Alice Y. Chen, Yinyan Tang, David E. Cane, Chaitan Khosla\*. Reconstituting modular activity from separated domains of 6-deoxyerythronolide B synthase. *Biochemistry* 43, 13892-13898 (2004).
23. Chu-Young Kim, Hanne Quarsten, Elin Bergseng, Chaitan Khosla\*, Ludvig M. Sollid\*. Structural basis for HLA-DQ2 mediated presentation of gluten epitopes in celiac disease. *Proceedings of the National Academy of Sciences of the U.S.A.* 101, 4175-4179 (2004).
24. Vijay M. Krishnamurthy, Brooks R. Bohall, Chu-Young Kim, Demetri T. Moustakas, David W. Christianson, George M. Whitesides\*. Thermodynamic Parameters for the Association of Fluorinated Benzenesulfonamides with Bovine Carbonic Anhydrase II. *Chemistry - An Asian Journal* 2, 94-105 (2007).
25. Chu-Young Kim, Douglas A. Whittington, Jeanne S. Chang, John Liao, Jesse A. May, David W. Christianson\*. Structural aspects of isozyme selectivity in the binding of inhibitors to carbonic anhydrases II and IV. *Journal of Medicinal Chemistry* 45, 888-893 (2002).
26. Bartosz A. Grzybowski, Alexey V. Ishchenko, Chu-Young Kim, George Topalov, Robert Chapman, David W. Christianson, George M. Whitesides, Eugene I. Shakhnovich\*. Combinatorial computational method gives new picomolar ligands for a known enzyme. *Proceedings of the National Academy of Sciences of the U.S.A.* 99, 1270-1273 (2002).
27. Ryan D. Madder, Chu-Young Kim, Pooja P. Chandra, Jeffrey B. Doyon, Teaster A. Baird Jr., Carol A. Fierke, David W. Christianson, Judith G. Voet, Ahamindra Jain\*. Twisted amides inferred from QSAR analysis of hydrophobicity and electronic effects on the affinity of fluoroaromatic inhibitors of carbonic anhydrase. *Journal of Organic Chemistry* 67, 582-584 (2002).
28. Chu-Young Kim, Pooja P. Chandra. Ahamindra Jain, David W. Christianson\*. Fluoroaromatic-fluoroaromatic interactions between inhibitors bound in the crystal lattice of human carbonic anhydrase II. *Journal of the American Chemical Society* 123, 9620-9627 (2001).
29. Chu-Young Kim, Jeanne S. Chang, Jeffrey B. Doyon, Teaster T. Baird Jr., Carol A. Fierke, Ahamindra Jain, David W. Christianson\*. Contribution of fluorine to protein-ligand affinity in the binding of fluoroaromatic inhibitors to carbonic anhydrase II. *Journal of the American Chemical Society* 122, 12125-12134 (2000).
30. Jeffrey B. Doyon, Elizabeth A. M. Hansen, Chu-Young Kim, Jeanne S. Chang, David W. Christianson, Ryan D. Madder, Judith G. Voet, Teaster A. Baird Jr., Carol A. Fierke, Ahamindra Jain\*. Linear free energy relationships implicate three modes of binding for

fluoroaromatic inhibitors to a mutant of carbonic anhydrase II. *Organic Letters* 2, 1189-1192 (2000).

#### Book chapter

Chu-Young Kim. Three-dimensional structure of megasynthases - mammalian fatty acid synthase, type I modular polyketide synthase, and nonribosomal peptide synthetase. In: Hung-Wen (Ben) Liu and Tadhg P. Begley (eds.) *Comprehensive Natural Products III: Chemistry and Biology*, vol.[6], pp. 318-335. UK: Elsevier (2020).

#### Other publications

1. Chu-Young Kim: Faculty Opinions Recommendation of [Jarmoskaite I et al., elife 2020 9]. In Faculty Opinions, 22 Jan 2021; DOI: 10.3410/f.738447994.793582105
2. Chu-Young Kim: Faculty Opinions Recommendation of [Edwards MJ et al., J Biol Chem 2020 295(45):15174-15182]. In Faculty Opinions, 23 Nov 2020; DOI: 10.3410/f.738650481.793580391
3. Chu-Young Kim: Faculty Opinions Recommendation of [Ruijtenberg S et al., Nat Struct Mol Biol 2020 27(9):790-801]. In Faculty Opinions, 05 Oct 2020; DOI: 10.3410/f.738317416.793578795
4. Chu-Young Kim: Faculty Opinions Recommendation of [Kneller DW et al., Nat Commun 2020 11(1):3202]. In Faculty Opinions, 29 Jul 2020; DOI: 10.3410/f.738192970.793577108
5. Chu-Young Kim: Faculty Opinions Recommendation of [Zargar A et al., J Am Chem Soc 2020]. In Faculty Opinions, May 29, 2020; DOI: 10.3410/f.737956814.793574731
6. Chu-Young Kim: Faculty Opinions Recommendation of [Förster A and Schulze-Briese C, Struct Dyn 2019 6(6):064302]. In Faculty Opinions, February 27, 2020; DOI: 10.3410/f.737110896.793571475
7. Chu-Young Kim: Faculty Opinions Recommendation of [Ratnayake AS et al., Bioconjug Chem 2019 30(1):200-209]. In Faculty Opinions, January 15, 2020; DOI: 10.3410/f.734628905.793569412
8. Chu-Young Kim: Faculty Opinions Recommendation of [Barnes CO et al., Proc Natl Acad Sci USA 2019 116(19):9333-9339]. In Faculty Opinions, October 24, 2019; DOI: 10.3410/f.735614750.793566309
9. Chu-Young Kim: Faculty Opinions Recommendation of [Kawano S et al., Sci Rep 2019 9(1):8656]. In Faculty Opinions, September 10, 2019; DOI: 10.3410/f.735996414.793564680

10. Chu-Young Kim: Faculty Opinions Recommendation of [Wojtaszek JL et al., Cell 2019 178(1):152-159.e11]. In Faculty Opinions, June 28, 2019; DOI: 10.3410/f.735918247.793561717
11. Chu-Young Kim: Faculty Opinions Recommendation of [Lyumkis D, J Biol Chem 2019 294(13):5181-5197]. In Faculty Opinions, May 10, 2019; DOI: 10.3410/f.735165326.793559716
12. Chu-Young Kim: Faculty Opinions Recommendation of [Wilson MR et al., Science 2019 363(6428)]. In Faculty Opinions, February 21, 2019; DOI: 10.3410/f.735089517.793556577
13. Chu-Young Kim: Faculty Opinions Recommendation of [Mahata T et al., Biochemistry 2018 57(38):5557-5563]. In Faculty Opinions, December 17, 2018; DOI: 10.3410/f.733896235.793554078
14. Chu-Young Kim: Faculty Opinions Recommendation of [Macdonald-Obermann JL and Pike LJ, J Biol Chem 2018 293(35):13401-13414]. In Faculty Opinions, October 05, 2018; DOI: 10.3410/f.733629181.793551196
15. Chu-Young Kim: Faculty Opinions Recommendation of [Edwardson TGW et al., J Am Chem Soc 2018 140(33):10439-10442]. In Faculty Opinions, August 30, 2018; DOI: 10.3410/f.733793248.793549847
16. Chu-Young Kim: Faculty Opinions Recommendation of [Knappenberger AJ et al., elife 2018 7]. In Faculty Opinions, July 26, 2018; DOI: 10.3410/f.733397290.793548305
17. Chu-Young Kim: Faculty Opinions Recommendation of [Kim W et al., Nature 2018 556(7699):103-107]. In Faculty Opinions, May 21, 2018; DOI: 10.3410/f.732909342.793545839
18. Chu-Young Kim: Faculty Opinions Recommendation of [Hover BM et al., Nat Microbiol 2018 3(4):415-422]. In Faculty Opinions, March 08, 2018; DOI: 10.3410/f.732646025.793543292
19. Chu-Young Kim: Faculty Opinions Recommendation of [Prokhorova I et al., Proc Natl Acad Sci USA 2017 114(51):E10899-E10908]. In Faculty Opinions, January 30, 2018; DOI: 10.3410/f.732234543.793541787