

# YAN KUNG

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<http://www.brynmawr.edu/chemistry/kung-lab>*

## EDUCATION

- 2011 **Massachusetts Institute of Technology**, Cambridge, MA  
Ph.D. in Biological Chemistry, Advisor: Catherine L. Drennan  
Dissertation: Structural studies of metalloenzyme complexes in acetogenic carbon fixation
- 2005 **Colby College**, Waterville, ME  
B.A. in Chemistry with Honors, Minor in Music  
*Summa cum laude*
- 2003–2004 **University of Oxford** (St. Peter's College), Oxford, United Kingdom  
Visiting student in Biochemistry

## PROFESSIONAL APPOINTMENTS

- 2013– **Assistant Professor**  
Department of Chemistry, Bryn Mawr College, Bryn Mawr, PA
- 2011–2013 **Postdoctoral Fellow**  
Lawrence Berkeley National Laboratory, University of California, Berkeley, CA  
Advisor: Jay D. Keasling

## RESEARCH INTERESTS

Biological chemistry; protein structural characterization and modification; structural enzymology; X-ray crystallography; protein engineering; natural product biosynthesis; environmental biochemistry; bioinorganic chemistry.

## PUBLICATIONS

*At Bryn Mawr College*

Miller, B.R. and Kung, Y. (2018) Structural insight into substrate and product binding in an archaeal mevalonate kinase. *PLoS ONE*. 13, e0208419.

Ragwan, E.R., Arai, E., and Kung, Y. (2018) New crystallographic snapshots of large domain movements in bacterial HMG-CoA reductase. *Biochemistry*. 57, 5715–5725.

Miller, B.R. and Kung, Y. (2018) Structural features and domain movements controlling substrate binding and cofactor specificity in class II HMG-CoA reductase. *Biochemistry*. 57, 654–662.

Kung, Y. and Drennan, C.L. (2017) “One-carbon chemistry of nickel-containing carbon monoxide dehydrogenase and acetyl-CoA synthase” *The Biological Chemistry of Nickel*. Eds. Deborah Zamble, Magdalena Rowińska-Żyrek, Henryk Kozłowski. London: Royal Society of Chemistry. pp. 121–148.

Dowling, D.P., Kung, Y., Croft, A.K., Taghizadeh, K., Kelly, W.L., Walsh, C.T., and Drennan, C.L. (2016) Structural elements of an NRPS cyclization domain and its intermodule docking domain. *Proc. Natl. Acad. Sci. U.S.A.* 113, 12432–12437.

Kung, Y., McAndrew, R.P., Xie, X., Liu, C.C., Pereira, J.H., Adams, P.D., and Keasling, J.D. (2014) Constructing tailored isoprenoid products by structure-guided modification of geranylgeranyl reductase. *Structure*. 22, 1028–1036.

#### *Prior to Bryn Mawr College*

Kung, Y., Runguphan, W., and Keasling, J.D. (2012) From fields to fuels: recent advances in the microbial production of biofuels. *ACS Synth. Biol.* 1, 498–513.

Kung, Y., Ando, N., Doukov, T.I., Blasiak, L.C., Seravalli, J., Bender, G., Ragsdale, S.W., and Drennan, C.L. (2012) Visualizing molecular juggling within a B<sub>12</sub>-dependent methyltransferase complex. *Nature*. 48, 265–269.

- Cover feature in: Methyl hand-off between B vitamins. (2012) *ACA Reflexions*. Fall issue.
- Highlighted in: Yarnell, A. (2012) Methyl handoff between B vitamins. *Chem. Eng. News*. 90(12), 37.

Ando, N., Kung, Y., Can, M., Bender, G., Ragsdale, S.W., and Drennan, C.L. (2012) Transient B<sub>12</sub>-dependent methyltransferase complexes revealed by small-angle X-ray scattering. *J. Am. Chem. Soc.* 134, 17945–17954.

Ragsdale, S.W., Li, Y., Bender, G., Gupta, N., Kung, Y., Yan, L., Stich, T.A., Doukov, T.I., Leichert, L., Jenkins, P.M., Bianchetti, C.M., George, S.J., Cramer, S.P., Britt, R.D., Jakob, U., Martens, J.R., Phillips, G.N., and Drennan, C.L. (2012) Redox, haem and CO in enzymatic catalysis and regulation. *Biochem. Soc. Trans.* 40, 501–507.

Kung, Y. and Drennan, C.L. (2011) A role for nickel-iron cofactors in biological carbon monoxide and carbon dioxide utilization. *Curr. Opin. Chem. Biol.* 15, 276–283.

Kung, Y., Doukov, T.I., Seravalli, J., Ragsdale, S.W., and Drennan, C.L. (2009) Crystallographic snapshots of cyanide- and water-bound C-clusters from bifunctional carbon monoxide dehydrogenase/acetyl-CoA synthase. *Biochemistry*. 48, 7432–7440.

- Cover feature in: Stauffer, N. (2009) Carbon-capturing enzyme: MIT chemists learn from nature. *Energy Futures*. Autumn issue, 6–8.

#### *Other published writing*

Kung, Y. (2014) Words of Wisdom. *Chem. Eng. News*. 92(36), 52–53.

## GRANTS AND AWARDS

- 2015– National Institutes of Health (GM116029)  
2013– K/G Fund for Faculty Research, Bryn Mawr College  
2014–2015 HHMI New Directions in Research and Teaching, Bryn Mawr College  
2014 Andrew W. Mellon Tri-College Faculty Forum Brainstorming Grant  
2009 Morse Grant for Vitamin B<sub>12</sub> and Corphins Gordon Research Conference (GRC)  
2008 Morse Grant for Molecular Basis of Microbial One-Carbon Metabolism GRC  
2005 *Summa cum laude*  
2005 Phi Beta Kappa  
2005 American Institute of Chemists (AIC) Award in Biochemistry  
2005 Merck-AAAS Scholarship  
2004 Certificate of Excellence, Department of Pharmacology, Oxford University  
2001–2005 Shelby MC Davis United World College (UWC) Scholarship

## SELECTED RESEARCH PRESENTATIONS

- Jul 2019 *Conference talk*: Enzyme, Coenzymes and Metabolic Pathways Gordon Research Conference (GRC), Waterville Valley Resort, NH  
Feb 2019 *Invited talk*: Department of Chemistry, Purdue University, West Lafayette, IN  
Jul 2018 *Conference talk*: 68<sup>th</sup> American Crystallographic Association (ACA) Annual Meeting, Toronto, ON, Canada  
Mar 2018 *Invited talk*: Department of Chemistry, Bucknell University, Lewisburg, PA  
Mar 2018 *Invited talk*: Department of Chemistry, Bryn Mawr College, Bryn Mawr, PA  
Mar 2018 *Invited talk*: Department of Chemistry and Biochemistry, Swarthmore College, Swarthmore, PA  
Apr 2017 *Invited talk*: Department of Chemistry, Villanova University, Villanova, PA  
Aug 2016 *Conference talk*: 252<sup>nd</sup> American Chemical Society (ACS) National Meeting, Philadelphia, PA.  
• Featured in: Halford, B. (2016) *Chem. Eng. News*. 94(35), 25–26.  
Dec 2015 *Invited talk*: Department of Chemistry, Haverford College, Haverford, PA  
Jul 2015 *Conference talk*: 65<sup>th</sup> ACA Annual Meeting, Philadelphia, PA  
Jan 2015 *Conference poster*: Metals in Biology GRC, Ventura, CA  
Jan 2015 *Invited talk*: Division of Science, Yale-NUS College, Singapore  
Jul 2012 *Conference talk*: Chemistry and Biology of Tetrapyrroles GRC, Salve Regina University, Newport, RI  
Feb 2011 *Conference talk*: Bioinorganic Chemistry Gordon Research Seminar (GRS), Ventura, CA  
Oct 2010 *Invited talk*: MIT Microbiology Division Seminar Series, Cambridge, MA  
Aug 2010 *Conference*: Molecular Basis of Microbial One-Carbon Metabolism GRC, Bates College, Lewiston, ME  
Aug 2010 *Conference talk*: 240<sup>th</sup> ACS National Meeting, Boston, MA  
Apr 2010 *Invited talk*: MIT Biological Chemistry Seminar Series, Cambridge, MA  
Feb 2010 *Conference talk*: Bioinorganic Chemistry GRS, Ventura, CA  
Jan 2010 *Conference poster*: Metals in Biology GRC, Ventura, CA  
Jan 2010 *Conference poster*: MIT Energy Initiative (MITEI) Energy Futures, Cambridge, MA  
Aug 2009 *Conference talk*: Vitamin B<sub>12</sub> and Corphins GRC, University of Oxford, UK

- Jul 2008      *Conference poster:* Molecular Basis of Microbial One-Carbon Metabolism, GRC  
Bates College, Lewiston, ME
- Apr 2008      *Invited talk:* MIT Biology–Chemistry Seminar Series, Cambridge, MA

## **COURSES TAUGHT**

### *Semester courses at Bryn Mawr College*

- CHEM B104, General Chemistry II (Spring 2014, 2016, 2019)  
CHEM B242, Biological Chemistry I (Fall 2014, 2015, 2017, 2018)  
CHEM B251, Research Methodology I (Fall 2013, 2017, 2018)  
CHEM B252, Research Methodology II (Spring 2015)  
BIOL B354, Basic Concepts and Special Topics in Biochemistry (Spring 2014, 2015, 2016, 2018, 2019)  
CHEM B377/577, Biological Chemistry II: Metabolism (Spring 2018)  
CHEM B345/545, Advanced Biological Chemistry: Biochemical Pathways (Fall 2013, 2014, 2015, 2017, 2018)  
CHEM B515, Medicinal Chemistry (Spring 2015)

### *Research-supervised courses at Bryn Mawr College*

- CHEM B398 and B399, Senior Seminar (Fall and Spring 2013–2019)  
CHEM B403, Supervised Undergraduate Research (Fall and Spring 2013–2019)  
CHEM B701, Supervised Graduate Work (Fall and Spring 2013–2019)

### *Invited guest lectures*

- Haverford College, BIOL/CHEM H390, Laboratory in Biochemical Research (3/26/2015)  
Haverford College, CHEM H351, Bioinorganic Chemistry (4/15/2014)  
Haverford College, CHEM H222, Organic Biological Chemistry (9/30/2013)

## **RESEARCH STUDENTS**

- 2016–      Edwin Ragwan (M.A. '18)  
2018–      Ruining (Raining) Huo '21  
2018–      Bushra Amin '19  
2017–      Jingyi (Rena) Ren '19  
2016–2018      Bradley R. Miller, Ph.D. (postdoctoral teaching/research fellow)  
2015–2017      Monica Drummond (graduate student)  
2014–2016      Bridget Gavaghan (M.A. '16)  
2014–2018      Connie Lam '18  
2015–2017      Shreekari Tadepalli '17  
2014–2017      Nanding Chen '17  
2015–2016      Eri Arai '16  
2015–2016      Jie Cheng '16  
2015–2016      Linh Tran '16  
2013–2016      Halle Watkin '16  
2013–2015      Vivian Chang '15  
2013–2015      Madison Rosen '15

## THESIS COMMITTEES

### *As Research Advisor*

Edwin Ragwan (M.A. Chemistry, 2018)  
Bridget Gavaghan (M.A. Chemistry, 2016)  
Bushra Amin '19 (B.A. Chemistry)  
Jingyi Ren '19 (B.A. Biochemistry and Molecular Biology)  
Connie Lam '18 (B.A. Biochemistry and Molecular Biology)  
Shreekari Tadepalli '17 (B.A. Biochemistry and Molecular Biology)  
Nanding Chen '17 (B.A. Chemistry)  
Eri Arai '16 (B.A. Biochemistry and Molecular Biology)  
Jie Cheng '16 (B.A. Chemistry)  
Halle Watkin '16 (B.A. Biology)  
Vivian Chang '15 (B.A. Chemistry)  
Madison Rosen '15 (B.A. Biology)

### *As Ph.D. Dissertation Committee Chair*

Justine Polster (Ph.D. GSSWSR, 2016)

### *As Committee Member*

Douglas Gisewhite (Ph.D. Chemistry)  
Bashkim Kokona (Ph.D. Chemistry)  
Andrew Krasley (Ph.D. Chemistry)  
Britt Benner (M.A. Chemistry)  
Cassandra Gates (M.A. Chemistry)  
Robinson Fair (M.A. Chemistry)  
Nissa Abidi (M.A. Chemistry)  
Mary Sexton (M.A. Chemistry)  
Stephanie Yang '15 (B.A. Chemistry)

## COLLEGE COMMITTEES AND SERVICE

2017– Graduate Council  
2015– Director of Graduate Studies, Department of Chemistry  
2018 Tenure-Track Faculty Search Committee, Department of Chemistry  
2015–2018 Committee on Libraries, Information and Computing (CLIC)  
2013–2016 Director of the Chemistry Colloquium Series, Department of Chemistry  
2016 Chair, Bucher-Jackson Postdoctoral Fellow Search Committee  
2015 Tenure-Track Faculty Search Committee, Department of Biology (Haverford College)  
2015 Continuing Non-Tenure Track (CNTT) Faculty Search Committee, Department of Chemistry  
2014–2015 First-Year Student Advising, Faculty Pilot Advising Program  
Jan 2015 Organizer, Biological Chemistry Mellon Tri-College Brainstorming  
2014 CNTT Faculty Search Committee, Department of Chemistry  
2014 Presidential Inauguration Committee