

## Curriculum Vitae Chayasith (Tao) Uttamapinant



### Personal particulars

Date of birth: 29 April 1984  
Nationality: Thailand  
Contact address:  
School of Biomolecular Science and Engineering  
Vidyasirimedhi Institute of Science and Technology (VISTEC)  
555 Moo 1 Payupnai, Wangchan, Rayong 21210 Thailand  
Contact number: +66984856979

### Employment history

2018-present Lecturer, School of Biomolecular Science and Engineering, VISTEC  
2013-2018 Investigator scientist and career development fellow, MRC Laboratory of Molecular Biology (LMB), Cambridge, United Kingdom

### Academic qualifications

2007-2012 Ph.D., biological chemistry, Massachusetts Institute of Technology, Cambridge, MA, United States  
2003-2007 A.B., chemistry, Harvard College, Cambridge, MA, United States

### Awards and grants

2019 Seed Award in Science, Wellcome Trust, United Kingdom  
2019 Best Publication Award, Development and Promotion for Science and Technology project of Thailand  
2019 Thailand Research Fund (TRF) Young Researcher grant  
2015 Career Development Fellowship, MRC LMB, United Kingdom  
2013 College Research Associateship, St John's College, University of Cambridge, United Kingdom  
2012 Marie Curie International Incoming Postdoctoral Fellowship, European Commission  
2012 Morse Travel Grant, MIT. Graduate Student Council Travel Grant, MIT  
2011 C. P. Chu and Y. Lai Graduate Fellowship, MIT  
2006 James Flack Norris/Theodore William Richards Fellowship, Northeastern Section of American Chemical Society  
2002 Gold medal in International Chemistry Olympiad, the Netherlands  
2002 Development and Promotion for Science and Technology talents project of Thailand (DPST) scholarship

### Publications (in chronological order, **bold** highlights first/co-first or corresponding authorship, \* denotes equal contribution):

1. Xiongwen Cao, Alexandra Khitun, Zhenkun Na, Thitima Phoodokmai, Khomkrit Suppakhaw, Elizabeth Olatunji, **Chayasith Uttamapinant**, Sarah A. Slavoff, "Alt-RPL36 downregulates the PI3K-AKT-mTOR signaling pathway by interacting with TMEM24," **2020**, in revision.
2. Julius Fredens, Kaihang Wang, Daniel de la Torre, Louise Funke, Wesley Robertson, Yonka Christova, Tionsun Chia, Wolfgang Schmied, Daniel Dunkelmann, Vaclav Beranek, **Chayasith Uttamapinant**, Andres Gonzales, Thomas Elliott, Jason W. Chin, "Total synthesis of *Escherichia coli* with a recoded genome," *Nature*, **2019** (569), 514-518.
  - Highlighted in >40 news outlets, including New York Times, BBC News, The Guardian, etc.

3. Wolfgang Schmied\*, Zakir Tnimov\*, **Chayasith Uttamapinant\***, Christopher Rae, Stephen Fried, Jason W. Chin, "Controlling orthogonal ribosome subunit interactions enables evolution of new function," *Nature*, **2018** (564), 444-448.  
- Highlighted in Nature Research Bioengineering Community and LMB news
4. Martin Baumdick, Marton Gelleri, Chayasith Uttamapinant, Vaclav Beranek, Jason W. Chin, Phillippe Bastiaens, "Conformational EGFR sensor based on genetic code expansion reveals the autocatalytic activation of EGFR," *Nature Communications*, **2018** (9), 3847.
5. Sijia Wu, Rita Fagan, Chayasith Uttamapinant, Lawrence Lifshitz, Kevin Fogarty, Alice Y. Ting, Haley Melikian, "The dopamine transporter recycles via a retromer-dependent post-endocytic mechanism," *J Neurosci*, **2017** (37), 9438-52.
6. Stephen Fried, Wolfgang Schmied, Chayasith Uttamapinant, Jason W. Chin, "Ribosome subunit stapling for orthogonal translation in *E. coli*," *Angew Chem Int Ed*, **2015** (43), 12791-4.
7. Mark Lee, Caleb Glassman, Neha Deshpande, Hemant Badgandi, Heather Parrish, Chayasith Uttamapinant, Philipp Stawski, Alice Y. Ting, Michael S. Kuhns, "A mechanistic switch couples T cell receptor triggering to the cytoplasmic juxtamembrane region of CD3 $\zeta$ ," *Immunity*, **2015** (2), 227-39.
8. **Chayasith Uttamapinant**, Jonathan Howe, Kathrin Lang, Vaclav Beranek, Lloyd Davis, Mohan Mahesh, Nicholas Barry, Jason W. Chin, "Genetic code expansion enables live-cell and super-resolution imaging of site-specifically labeled proteins," *J Am Chem Soc*, **2015** (137), 4602-5.
9. Wolfgang Schmied, Simon Elsässer, Chayasith Uttamapinant, and Jason W. Chin, "Efficient multisite unnatural amino acid incorporation in mammalian cells via optimized pyrrolysyl tRNA synthetase/tRNA expression and engineered eRF1," *J Am Chem Soc*, **2014** (136), 11577-83.
10. Duy Nguyen, Mohan Mahesh, Simon Elsässer, Susan Hancock, Chayasith Uttamapinant, and Jason W. Chin, "Genetic encoding of photocaged cysteine allows photoactivation of TEV protease in live mammalian cells," *J Am Chem Soc*, **2014** (6), 2240-43.
11. **Chayasith Uttamapinant**, Mateo Sanchez, Daniel Liu, Jennifer Yao, Katharine White, Scott Grecian, Scott Clark, Kyle Gee, and Alice Y. Ting, "Site-specific protein labeling with PRIME and chelation-assisted click chemistry," *Nature Protocols*, **2013** (8), 1620-34.
12. Jarunee Vanichtanankul, Supanee Taweethai, Chayasith Uttamapinant, Penchit Chitnumsub, Tirayut Vilaivan, Yongyuth Yuthavong, and Sumalee Kamchonwongpaisan, "Combined spatial limitation around residues 16 and 108 of *Plasmodium falciparum* dihydrofolate reductase explains resistance to cycloguanil," *Antimicrob Agents Chemother*, **2012** (7), 3928-35.
13. **Chayasith Uttamapinant**, Anupong Tangpeerachai, Scott Grecian, Scott Clarke, Upinder Singh, Peter Slade, Kyle Gee, and Alice Y. Ting, "Fast, cell-compatible click chemistry with copper-chelating azides for biomolecular labeling," *Angew Chem Int Ed*, **2012** (24), 5852-6.  
- Highlighted in Nature Chemical Biology
14. Jennifer Yao, Chayasith Uttamapinant, Andrei Poloukhine, Jeremy Baskin, Julian Codelli, Ellen Sletten, Carolyn Bertozzi, Vladimir Popik, and Alice Y. Ting, "Fluorophore targeting to cellular proteins via enzyme-mediated azide ligation and strain-promoted cycloaddition," *J Am Chem Soc*, **2012** (134), 3720-8.
15. Xin Jin\*, **Chayasith Uttamapinant\***, and Alice Y. Ting, "Synthesis of 7-aminocoumarin by Buchwald-Hartwig Cross Coupling for Specific Protein Labeling in Living Cells," *ChemBioChem*, **2011** (12), 65-70.
16. **Chayasith Uttamapinant\***, Katharine White\*, Hemanta Baruah\*, Samuel Thompson, Marta Fernández-Suárez, Sujiet Puthenveetil, and Alice Y. Ting, "A fluorophore ligase for site-specific protein labeling inside living cells," *Proc Natl Acad Sci USA*, **2010** (107), 10914-9.

- Highlighted in MIT News, Nature, PNAS, Nature Methods, and Faculty of 1000
17. Seongmin Lee, Chayasith Uttamapinant, and Gregory L. Verdine, "A Concise Synthesis of 4'-Fluoro Nucleosides," *Org. Lett.*, **2007** (9), 5007-9.

### **Invited lectures**

1. Seminar in Chemical Sciences, Chulabhorn Graduate Institute, Thailand. "Genetic code expansion with engineered translation machineries," 13<sup>th</sup> December 2019.
2. Learning Space Opening Ceremony, Suranaree University of Technology, Thailand. "Future of synthetic biology: drastic engineering of life at molecular scale," 28<sup>th</sup> August 2019.
3. Symposium on Synthetic Biology and Biocatalysis, VISTEC, Thailand. "Genetic code expansion and new fluorophore design for live-cell, super-resolution imaging of proteins," 2<sup>nd</sup> August 2019.
4. Researcher on The Rise Lecture, Faculty of Medicine, Siriraj Hospital, Thailand. "Genetic code reprogramming with engineered translation machineries," 14<sup>th</sup> December 2018.
5. Annual TRF symposium/conference for School of Biomolecular Science and Engineering, VISTEC, Thailand. "Stapled ribosomes with high activity and orthogonality enable evolution of larger subunit function," 31<sup>st</sup> August 2018.
6. Cambridge Super-resolution Microscopy Meeting, MRC Laboratory of Molecular Biology, Cambridge, United Kingdom. "Genetic code expansion for live-cell and super-resolution imaging," 6<sup>th</sup> February 2015.
7. Joint meeting of the British Societies of Developmental Biology and Cell Biology, Warwick University, United Kingdom. "Chemical reporters for protein trafficking in living cells," 19<sup>th</sup> March 2013.

### **Oral research presentations**

1. International Chemical Biology Society annual conference, CSIR-Indian Institute of Chemical Technology, Hyderabad, India. "Genetic code reprogramming with engineered translation machineries," 3<sup>rd</sup> November 2019.
2. Protein and Nucleic Acid Chemistry divisional talk, MRC Laboratory of Molecular Biology, Cambridge, United Kingdom. "Ribosome subunit stapling for efficient and orthogonal translation in *E.coli*," 7<sup>th</sup> October 2015.
3. Special chemistry seminar, Chulalongkorn University, Thailand. "Cellular delivery and site-specific targeting of organic fluorophores for super-resolution imaging in living cells," 8<sup>th</sup> January 2013.
4. Biochemistry seminar, Mahidol University, Thailand. "Engineered probe ligases for site-specific protein labeling in cells," 7<sup>th</sup> June 2011.
5. Biological chemistry seminar series, MIT. "Enzymatic probe ligation and click chemistry for live-cell and super-resolution imaging of proteins," 23<sup>rd</sup> May 2011.
6. *Watch the cellular nanomachinery at work*, transatlantic workshop on single-molecule and super-resolution microscopy, Rockefeller University, NY. "New methods for fluorophore targeting to proteins", 9<sup>th</sup> October 2009.
7. Single Molecule Discussion Club, Harvard/MIT. "Targeting of small organic fluorophores for intracellular protein labeling and super-resolution imaging". 29<sup>th</sup> April 2009.
8. The Northeast Student Chemistry Research Conference (NSCRC) of the American Chemical Society, MIT. "Synthesis of 4'-fluorinated oligonucleotides and their use as RNA glycosylase Inhibitors". April 2007.

### **Teaching Experience**

- 2019                      Course organizer, BSE611 (synthetic biology); BSE572/672 (graduate seminar), VISTEC, Thailand  
                                 Guest lecturer, SCBC617 (systems biology), Mahidol University, Thailand  
                                 Guest lecturer, BIF694 (seminar in bioinformatics and systems biology),

2018 King Mongkut's University of Technology Thonburi (KMUTT), Thailand  
Course organizer, BSE571/671 (graduate seminar), VISTEC, Thailand

2015 Supervisor, Chemistry B Part IB (chemical biology), St John's College,  
University of Cambridge

2014 Supervisor, Chemistry B Part IB (organic chemistry), St John's College,  
University of Cambridge

2014-2018 Mentor, Vaclav Beranek (graduate student, MRC LMB)

2014, 2015 Mentor, Martin Baumdick (visiting graduate student, Max Planck Institute  
of Molecular Physiology, Germany)

2012 Mentor, Mateo Sanchez (visiting graduate student, University of Santiago  
de Compostela, Spain)

2009-2010 Mentor, Xin Jin (MIT Undergraduate Research Opportunity Program)

2008 Teaching Assistant, Biochemistry and Organic Laboratory (5.36), MIT

2007 Teaching Assistant, Biochemistry I (5.07), MIT

2006 Teaching Fellow, Organic Chemistry II, Harvard University Division of  
Continuing Education

2005-2006 Tutor, Organic Chemistry, Harvard University