ZIBO CHEN, PH.D.

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EDUCATION AND RESEARCH EXPERIENCE

California Institute of Technology *2019-Present*
Postdoc Scholar
Advisor: Michael Elowitz

University of Washington *2018-2019*
Senior Fellow
Advisor: David Baker

University of Washington *2013-2018*
Ph.D, Biological Physics, Structure and Design program
Dual Degree in Nanotechnology
Advisors: David Baker, Frank DiMaio

National University of Singapore *2009-2013*
B.S., First Class Honours
Life Sciences with a minor in Biophysics

REFEREED JOURNAL PUBLICATIONS

[11] **Chen, Z.**, Kibler, R.K., Hunt, A., Busch, F., Pearl, J., Jia, M., Van Aernum, Z.L., Wicky, B.I.M., Dods, G., Liao, H., El-Samad, H., Stamatoyannopoulos, J., Wysocki, V.H., Jewett, M.C., Boyken, S.E., Baker, D., (2019). De novo design of protein logic gates. ***Science*** in revision.

[10] **Chen, Z.** (2019). Creating the protein version of DNA base pairing. ***Science*** 366, 965-965.

[9] Langan, A., Boyken, S.E., Ng, A.H., Samson, J.A., Dods, G., Hguyen, T.H., **Chen, Z.**, Berger, S., Lajoie, M.J., Mulligan, V.K., Dueber, J.E., Novak, W.R.P., El-Samad, H., Baker, D., (2019). De Novo Design of Bioactive Protein Switches. ***Nature*** 572, 205-210.

[8] Cao, L., Yu, B., Kong, D., Cong, Q., Yu, T., **Chen, Z.**, Hu, Z., Chang, H., Zhong, J., Baker, D., He, Y., (2019). Functional expression and characterization of the envelope glycoprotein E1E2 heterodimer of hepatitis C virus. ***PLoS Pathog***. 15, e1007759.

[7] Boyken, S.E., Benhaim, M.A., Busch, F., Jia, M., Bick, M.J., Choi, H., Klima, J.C., **Chen, Z.**, Walkey, C., Mileant, A., Sahasrabuddhe, A., Wei, K.Y., Hodge, E.A., Byron, S., Quijano-Rubio, A., Sankaran, B., King, N.P., Lippincott-Schwartz, J., Wysocki, V.H., Lee, K.K., Baker, D., (2019). De novo design of tunable, pH-driven conformational changes. ***Science*** 364, 658-664.

[6] **Chen, Z.**, Johnson, M.C., Chen, J., Bick, M.J., Boyken, S.E., Lin, B., De Yoreo, J.J., Kollman, J.M., Baker, D., DiMaio, F., (2019). Self-assembling 2D arrays with de novo protein building blocks. ***J. Am. Chem. Soc.*** 141, 8891-8895.

[5] **Chen, Z.**, Boyken, S.E., Jia, M., Busch, F., Flores-Solis, D., Bick, M.J., Lu, P., Van Aernum, Z.L., Sahasrabuddhe, A., Langan, R.A., Bermeo, S., Brunette, T., Mulligan, V.K., Carter, L.P., DiMaio, F., Sgourakis, N.G., Wysocki, V.H., Baker, D. (2019). Programmable design of orthogonal protein heterodimers. ***Nature*** 565, 106-111.

[4] Lu, P., Min, D., DiMaio, F., Wei, K.Y., Vahey, M.D., Boyken, S.E., **Chen, Z.**, Fallas, J.A., Ueda, G., Sheffler, W., Mulligan, V.K., Xu, W., Bowie, J.U., Baker, D. (2018). Accurate computational design of multipass transmembrane proteins. ***Science*** 359, 1042-1046.

[3] Thubagere, A.J., Li, W., Johnson, R.F., **Chen, Z.**, Doroudi, S., Lee, Y.L., Izatt, G., Wittman, S., Srinivas, N., Woods, D., Winfree, E., Qian, L. (2017). A cargo-sorting DNA robot. ***Science*** 357, eaan6558.

[2] Boyken, S.E., **Chen, Z.**, Groves, B., Langan, R.A., Oberdorfer, G., Ford, A., Gilmore, J.M., Xu, C., DiMaio, F., Pereira, J.H., Sankaran, B., Seelig, G., Zwart, P.H., Baker, D. (2016). De novo design of protein homo-oligomers with modular hydrogen-bond network-mediated specificity. ***Science*** 352, 680-687.

[1] **Chen, Z.**, Tan, J.Y., Wen, Y., Niu, S., Wong, S.-M. (2012). A game-theoretic model of interactions between Hibiscus latent Singapore virus and tobacco mosaic virus. ***PLoS One*** 7, e37007.

PATENTS

2019 Provisional Patent Application 62/862,218. "De novo design of phosphorylation inducible protein switches (phosphoswitches)". Nicholas Woodall, Scott Boyken, Marc Lajoie, Zibo Chen, Robert A. Langan, David Baker

2019 Provisional Patent Application 62/835,651. "De Novo Design of Tunable pH Conformational Switches". Scott Boyken, David Baker, Zibo Chen, Alfredo Quijano Rubio, Neil King, Jason Klima, Carl Walkey

2019 Provisional Patent Application 62/833,902. "Self-Assembling 2D Arrays With De Novo Protein Building Blocks". Zibo Chen, David Baker, Frank DiMaio

2019 Patent Application PCT/US2019/19948. "Accurate Computational Design of Multipass Transmembrane Proteins". Peilong Lu, David Baker, Scott E. Boyken, Zibo Chen, Jorge A. Fallas, George Ueda, William Sheffler

2018 Provisional Patent Application 62/755,264. "Programmable design of orthogonal protein heterodimers". Zibo Chen, Scott Boyken, Sherry Bermeo, Robert Langan, David Baker

2017 Patent Application PCT/US2017/025532. "Polypeptides Capable of Forming Homo-Oligomers With Modular Hydrogen Bond Network-Mediated Specificity And Their Design". David Baker, Scott Boyken, Zibo Chen, Chunfu Xu, Sherry Bermeo, Robert A. Langan

AWARDS AND HONORS

2019 Damon Runyon Fellowship Award (New York, USA)

2019 Science & SciLifeLab Prize (Stockholm, Sweden)

2019 Hans Neurath Outstanding Promise Award (Seattle, USA)

2019 Protein Science Young Investigator Travel Award (Seattle, USA)

2017 67th Lindau Nobel Laureate Meeting, Fellow of the Boehringer Ingelheim Stiftung (Lindau, Germany)

2017 Urdal Fellowship (University of Washington, USA)

2016 Chinese Government Award for Outstanding Self-Financed Students Abroad (Beijing, China)

2016 30th Annual Protein Society Symposium Best Poster Award (Baltimore, USA)

2016 Protein Science Young Investigator Travel Award (Baltimore, USA)

2016 Benjamin Schultz Endowed Research Fund (University of Washington, USA)

2013 Lee Foundation Medal (Ranked first in Life Sciences major) (NUS, Singapore)

2012 NUS Science Diamond Jubilee SEP Award (NUS, Singapore)

2012 Science Outstanding Undergraduate Research Award (NUS, Singapore)

2011 Gold Award, International Bio-Molecular Design Competition (Harvard University, USA)

2011 Caltech Summer Undergraduate Research Fellowship (Caltech, USA)

2011 Study and Travel Grant (NUS, Singapore)

2011 Dean's Lists (NUS, Singapore)

2010 Dean's Lists (NUS, Singapore)

2009 Dean's Lists (NUS, Singapore)

INVITED TALKS

2019 Tsinghua University (Beijing, China)

2019 Zhejiang University (Hangzhou, China)

2019 Peking University (Beijing, China)

2018 Fudan University (Shanghai, China)

2018 Westlake Institute for Advanced Studies (Hangzhou, China)

2018 RosettaCON (Leavenworth, USA)

2018 DARPA SD2 Meeting (Seattle, USA)

2017 3rd BioOrigami Meeting (Ljubljana, Slovenia)

CONFERENCE PRESENTATIONS

2019 Molecular Programming Project Workshop Retreat (Pasadena, USA)

2018 RosettaCON (Leavenworth, USA)

2018 DARPA SD2 Meeting (Seattle, USA)

2017 RosettaCON (Leavenworth, USA)

2017 Gordon Research Conference in Synthetic Biology (Stowe, USA)

2017 67th Lindau Nobel Laureate Meeting (Lindau, Germany)

2017 3rd BioOrigami Meeting (Ljubljana, Slovenia)

2016 RosettaCON (Leavenworth, USA)

2016 30th Annual Protein Society Symposium (Baltimore, USA)

2016 2nd BioOrigami Meeting (Seattle, USA)

2016 Molecular Programming Project Workshop (Seattle, USA)

2015 RosettaCON (Leavenworth, USA)

2014 RosettaCON (Leavenworth, USA)

MEDIA COVERAGE

Nature, 2019
The computational protein designers
https://go.nature.com/2Yk63pr

The Economist, 2019
The applications of synthetic biology are endless
https://econ.st/2CYTYKd

Phys.org, 2018
Scientists program proteins to pair exactly
https://goo.gl/pU9Ce8

Geekwire.com, 2016
Scientists add twists to protein designs
http://goo.gl/uERKTj

Caltech Media, 2011
DNA Robotics Research Earns Undergrads a Gold Prize at BIOMOD 2011 Competition
https://goo.gl/EmO4Ja

JOURNAL REVIEWER

Biomedicine & Pharmacotherapy ◇ Journal of Biological Physics ◇ Protein & Peptide Letters ◇ PeerJ ◇ The Protein Journal ◇ Protein Expression and Purification

TEACHING EXPERIENCE

Winter 2014, Human Physiology *Teaching Assistant*
Course Instructor: Linda Wordeman, Department of Physiology and Biophysics, University of Washington.

Fall 2014, Advanced Biochemistry *Teaching Assistant*
Course Instructor: David Baker, Department of Biochemistry, University of Washington.

Spring 2013, Unconventional Computing *Guest Lecturer*
Course Instructor: Eric Klavins, Department of Electrical Engineering, University of Washington.