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

[12] **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., (2020). De novo design of protein logic gates. ***Science*** in press.

[11] VanAernum, Z.L., Busch, F., Jones, B.J., Jia, M., **Chen, Z.**, Boyken, S.E., Sahasrabuddhe, A., Baker, D., Wysocki, V.H. (2020). Rapid online buffer exchange for screening of proteins, protein complexes and cell lysates by native mass spectrometry. ***Nature Protocols***

[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　MIT Technology Review 35 Under 35 China (Beijing, China)

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)

ACADEMIC TALKS

2020   Harvard University (Boston, USA)

2019   Karolinska Institute (Stockholm, Sweden)

2019   Uppsala University (Uppsala, Sweden)

2019   University of California, Berkeley (Berkeley, USA)

2019   Molecular Programming Project Workshop Retreat (Pasadena, USA)

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.