

# ZIBO CHEN, PH.D.

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## EDUCATION AND RESEARCH EXPERIENCE

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### 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

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[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., Sahasrabudhe, 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., Sahasrabudhe, 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

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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

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2019 Hans Neurath Outstanding Promise Travel 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)
- 2009 Book Prize (ranked first) for Linear Algebra class (NUS, Singapore)
- 2008 Undergraduate Scholarship for PRC Students (NUS, Singapore)

## **INVITED TALKS**

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- 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**

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- 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

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### **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>

## TEACHING EXPERIENCE

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### **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.