

Curriculum Vitae

September 29, 2017

NAME: Mariah R. Baker, Ph.D

PRESENT TITLE: Assistant Professor
The University of Texas Health Science Center at Houston

WORK ADDRESS: Department of Biochemistry and Molecular Biology
The University of Texas Medical School
6431 Fannin, MSB 6.626, Houston, TX 77030

BIRTHDATE: 12/06/1977

CITIZENSHIP: USA

UNDERGRADUATE EDUCATION:

B.S. Biology 2000 (*magna cum laude*)
Oregon State University
Corvallis, Oregon

GRADUATE EDUCATION:

Doctorate of Philosophy, 2002-2009
Structural and Computational Biology and Molecular Biophysics
Susan Hamilton, Ph.D.
Baylor College of Medicine
Houston, Texas

POSTGRADUATE TRAINING:

Postdoctoral Fellow 2009-2012
National Center for Macromolecular Imaging
Verna and Marrs McLean Department of Biochemistry and Molecular
Biology
Wah Chiu, Ph.D.
Baylor College of Medicine
Houston, Texas

Postdoctoral Fellow 2012-2016
Department of Biochemistry and Molecular Biology
Irina Serysheva, Ph.D.
The University of Texas Medical School
Houston, Texas

PROFESSIONAL ORGANIZATIONS:

Local: Keck Center for Interdisciplinary Bioscience Training;
National: Biophysical Society 2001-present
Protein Society 2017-2018

HONORS AND AWARDS:

Rockwell Fund Scholar, Baylor College of Medicine; 2002-2003

Best SCBMB Oral Presentation, Program in Structural and Computational Biology and Molecular Biophysics Research Conference, Baylor College of Medicine; 2006

SERVICE ON THE UNIVERSITY OF TEXAS HEALTH SCIENCE CENTER AT HOUSTON COMMITTEES:

Faculty Senate member: Biochemistry and Molecular Biology 2017-2020

SERVICE TO THE COMMUNITY:

Executive Board Member of the Houston Swing Dance Society a 501(c)3 educational non-profit association; 2002-2016

Student Representative for SCBMB Executive Committee; 2004-2005

Organized student selected seminar for SCBMB; "How to Publish in a Nature Journal" with Boyana Conforti, PhD.; 2005

CURRENT TEACHING RESPONSIBILITIES:

"Emerging Fields in Biochemistry and Molecular Biology: Advanced Cell Signaling" (Course Director: Dr. D. Boehning). –3 lectures, 2016

GSBS Core Course (GS04 1051) "Imaging Cells and Molecules" (Course Director: Dr. Hung Ton-That) - practical course (hands-on training) for cryoEM techniques – Spring 2017

MENTORING ACTIVITIES:

Mentored GSBS student on rotation in Serysheva lab

PAST GRANT SUPPORT:

P.I. Mariah R. Baker, Ph.D.
Structural basis for EC coupling in the skeletal muscle $Ca_v1.1$ channel
Muscular Dystrophy Association
\$153,000 2014-2016

P.I. Mariah R. Baker, Ph.D.
Integrated Modeling of Sub-Nanometer Resolution Cryo-EM Density
National Library of Medicine
Program in Biomedical Informatics and Computational Biology
\$80,000 2009-2011

PUBLICATIONS:

A. Refereed Original Articles in Journals

1. Serysheva II, Ludtke SJ, **Baker MR**, Chiu W, Hamilton SL. Structure of the voltage-gated L-type Ca^{2+} channel by electron cryomicroscopy. Proc Natl Acad Sci. 99(16):10370–10375, 2002.
2. Durham WJ, Aracena-Parks P, Long C, Goonasekera SA, Boncompagni S, Gilman CP, Galvan DL, Rossi AE, **Baker MR**, Shirokova N, Protasi F, Dirksen RT, Hamilton SL. RyR1 S-nitrosylation underlies Environmental Heat Stroke and Sudden Death in Y522S RyR1 Knock-in mice. Cell. 133(1): 53–65, 2008.

3. Fallon J*, **Baker MR***, Xiong L*, Loy RE, Yang G, Dirksen RT, Hamilton SL, Quijcho FA. Crystal structure of dimeric cardiac L-type calcium channel regulatory domains bridged by Ca²⁺-calmodulins. *Proc Natl Acad Sci U S A*.106(13): 5135–5140, 2009. (*authors contributed equally)
4. Baker, ML, **Baker, MR**, Hryc, CF, and DiMaio, F. Analyses of Subnanometer Resolution Cryo-EM Density Maps. *Methods in Enzymology*. 483:1-29, 2010.
5. Baker ML, Baker MR, Cong Y. Computational methods for interpretation of EM maps at subnanometer resolution. *Encyclopedia of Life Sciences*. 2012.
6. **Baker MR**, Rees I, Ludtke SJ, Chiu W, Baker ML. Constructing and Validating Initial C α Models from Subnanometer Resolution Density Maps with Pathwalker. *Structure*. 20(3):450-63, 2012.
7. Baker, ML, **Baker MR**, Hryc C, Ju T, Chiu W. Gorgon and Pathwalking: Macromolecular Modeling Tools for Subnanometer Resolution Density Maps. *Biopolymers*. 97(9):655-68, 2012.
8. Popova OB, **Baker MR**, Tran TP, Le T, Serysheva II. Identification of ATP-Binding Regions in the RyR1 Ca²⁺ Release Channel. *PLoS One*; 7(11), 2012.
9. Lalani SR, Ware SM, Wang X, Zapata G, Tian Q, Franco LM, Jiang Z, Bucasas K, Scott DA, Campeau PM, Hanchard N, Umaña L, Cast A, Patel A, Cheung SW, McBride KL, Bray M, Craig Chinault A, Boggs BA, Huang M, **Baker MR**, Hamilton S, Towbin J, Jefferies JL, Fernbach SD, Potocki L, Belmont JW. MCTP2 is a dosage-sensitive gene required for cardiac outflow tract development. *Hum Mol Genet*. 22(21):4339-48, 2013.
10. **Baker MR**, Fan G, Serysheva II. Single-particle cryo-EM of the ryanodine receptor channel in an aqueous environment. *Eur J Transl Myol*. 25(1):35-48, 2015.
11. Fan G, Baker ML, Wang Z, **Baker MR**, Sinyagovskiy PA, Chiu W, Ludtke SJ, Serysheva II. Gating Machinery of InsP₃R Channels Revealed by Electron Cryo-Microscopy. *Nature*. 527(7578):336-341, 2015.
12. **Baker MR**, Fan G, Serysheva II. Structure of IP₃R channel: high-resolution insights from cryo-EM. *Curr Opin Struct Biol*. 2017 Jun 12;46:38-47.

B. Chapters

1. Serysheva II, **Baker MR**, Fan G. 2017. Structural Insights into IP₃R Function. In: Krebs J. editor. *Membrane Dynamics and Calcium Signaling*. Springer. In press.