

Bil Clemons

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Education

Ph.D. Biochemistry (December 2000) University of Utah

Salt Lake City, Utah and MRC Laboratory of Molecular Biology, Cambridge, United Kingdom

B.S. Biochemistry (May 1995) Virginia Tech

Blacksburg, Virginia, Minors in Chemistry and Biology

Appointments

2021 – Present **Arthur and Marian Hanisch Memorial Professor of Biochemistry**

2013 – 2021 **Professor of Biochemistry**

2018 – 2019 **Visiting Professor of Biochemistry**

Institute of Organic Chemistry & Biochemistry, Prague, Czech Republic

2005 – 2013 **Assistant Professor of Biochemistry**

Division of Chemistry and Chemical Engineering

California Institute of Technology, Pasadena, California, USA

2001 – 2005 **Damon Runyon Cancer Research Fellow**

Harvard Medical School, Boston, Massachusetts

1999 – 2001 **Visiting Student**

Laboratory of Molecular Biology, Cambridge, UK

1995 – 2000 **Ph. D. Candidate**

Biochemistry Department, University of Utah, Salt Lake City, Utah

Research Experience

2001 – 2005 Research Fellow: Structural studies of the bacterial protein translocation channel using X-ray crystallography and electron microscopy in the lab of Prof. Tom Rapoport, Ph.D., Cell Biology Dept., Harvard Medical School, Boston, Massachusetts. Co-mentored by Stephen Harrison, Ph.D., BCMP.

1996 – 2000 Graduate research: Crystallographic studies of the bacterial small ribosomal subunit and protein structures involved in translation in the lab of Prof. Venki Ramakrishnan, Ph.D. Structural Studies Division, MRC Laboratory of Molecular Biology, Cambridge UK and the Biochemistry Department, University of Utah, Salt Lake City, Utah.

1993 - 1995 Undergraduate research: Enzyme kinetics experiments of enzymes involved in the pathogenic life cycle of the yeast *C. albicans* in the lab of Prof. Walter Niehaus, Ph.D., Biochemistry Department, Virginia Tech, Blacksburg, Virginia.

Honors

National Academy of Sciences Member 2022

American Society of Biochemistry and Molecular Biology Fellow 2022

The William Clemons Agent of Change Award 2021

Caltech Grad Student Council Mentoring Award 2020

Virginia Tech Biochemistry - Distinguished Alumni 2018

Dr. Fred Shair Award for Programming Diversity 2017

NIH Director's Pioneer Award 2011

Searle Scholar Fellow 2007

Burroughs Wellcome Career Award in the Biomedical Sciences 2005

Damon Runyon Cancer Research Foundation Fellowship 2002

Max Perutz Award, LMB, Cambridge 2001

Publications (<https://scholar.google.com/citations?user=DTijWhgAAAAJ&hl=en>)

- 60 Anna K. Orta*, Nadia Riera*, Yancheng E. Li, Shiho Tanaka, Hyun Gi Yun, Lada Klaic, **William M. Clemons Jr.** "The mechanism of the phage encoded protein antibiotic from ΦX174." (2023) *Resubmitted*.
- 59 Alexandra N. Barlow*, M. S. Manu*, Shyam M. Saladi, Paul T. Tarr, Yashpal Yadav, Aye M. M. Thinn, Yun Zhu, Arthur D. Laganowsky, **William M. Clemons Jr.**, **Sureshkumar Ramasamy**. "Structures of Get3d reveal a distinct architecture associated with the emergence of photosynthesis." (2023) *J. Mol. Biol.* <https://doi.org/10.1016/j.jbc.2023.104752>
- 58 Gail A. Robertson, **William M. Clemons Jr.**, **Theanne N. Griffith**. "Being Black in Biophysics." (2023) *Biophys. J.* <https://doi.org/10.1016/j.bpj.2023.03.025>
- 57 Ailiena Maggiolo, Shivansh Mahajan, **Dougless C. Rees**, **William M. Clemons**. "Intradimeric Walker A ATPases: Conserved features of a functionally diverse family." (2023) *J. Mol. Biol.* *In press*.
- 56 Michelle Y. Fry, Vladimira Najdrova, Ailiena Maggiolo, Shyam M. Saladi, Pavel Doležal, **William M. Clemons, Jr.** "Structurally derived universal mechanism for the catalytic cycle of the tail-anchored targeting factor Get3." (2022) *Nat. Struct. Mol. Biol.* v29, pp820-30. Epub 2022 Jul 18. PMID: 35851188. <https://doi.org/10.1038/s41594-022-00798-4>

- 55 Katsuhiko Mitachi, David Mingle, Wendy Effah, Antonio Sánchez-Ruiz, Kirk E. Hevener, Ramesh Narayanan, William M. Clemons, Jr., Francisco Sarabia, **Michio Kurosu**. “Concise Synthesis of Tunicamycin V and Discovery of a Cytostatic DPAGT1 Inhibitor.” (2022) *Angew. Chem., Int. Ed. Engl.* v61 n31. Epub 2022 Jun 10. PMID: 35594368. <http://doi.org/10.1002/anie.202203225>
- 54 Michelle Y. Fry*, Shyam M. Saladi*, Alexandre Cunha, **William M. Clemons, Jr.**, “Sequence-based features that are determinant for tail-anchored membrane protein sorting in eukaryotes.” (2021) *Traffic*. v22 n9 pp306-318. Epub 2021 Aug 3. PMID:34288289. <https://doi.org/10.1111/tra.12809>
- 53 Michelle Y. Fry*, Shyam M. Saladi*, **William M. Clemons, Jr.**, “The STI1-domain is a flexible alpha-helical fold with a hydrophobic groove.” (2021) *Protein Sci.* v30 n4 pp882-898. Epub 2021 Mar 4. PMID: 33620121. <https://doi.org/10.1002/pro.4049>
- 52 Ku-Feng Lin, Michelle Y. Fry*, Shyam M. Saladi*, **William M. Clemons, Jr.**, “Molecular basis of tail-anchored integral membrane protein recognition by the cochaperone Sgt2.” (2021) *J. Biol. Chem.* v296. Epub 2021 Feb 19. PMID: 33610544. <https://doi.org/10.1016/j.jbc.2021.100441>
- 51 **Shyam M. Saladi**, Ailiena Maggiolo, Kate Radford, William M. Clemons, Jr., “Structural Biologists, Let's Mind Our Colors.” (2020) *bioRxiv*. <https://doi.org/10.1101/2020.09.22.308593>
- 50 Hyun Gi Yun, Kyoung-soon Jang, Shiho Tanaka, **William M. Clemons, Jr.**, “The structure of the UDP-Glc/GlcNAc 4-epimerase from the human pathogen *Campylobacter jejuni*.” (2020) *bioRxiv*. <https://doi.org/10.1101/2020.09.22.308395>
- 49 Katsuhiko Mitachi, Hyun Gi Yun, Cody D. Gillman, Karolina Skorupinska-Tudek, Ewa Swiezewska, William M. Clemons Jr., **Michio Kurosu**. “Substrate Tolerance of Bacterial Glycosyltransferase MurG: Novel Fluorescence-based Assays.” (2019) *ACS Infect. Dis.* v6 n6 pp1501-1516. Epub 2019 Dec 11. PMID: 31769280. <https://doi.org/10.1021/acsinfecdis.9b00242>
48. Katsuhiko Mitachi, Shou M. Kurosu, Shakiba Eslamimehr, Maddie R. Lemieux, Yoshimasa Ishizaki, William M. Clemons, Jr., **Michio Kurosu**. “Semisynthesis of an Anticancer DPAGT1 Inhibitor from a Muraymycin Biosynthetic Intermediate.” (2019) *Org. Lett.* v21 n4 pp876-879. Epub 2019 Jan 30. PMID: 30698984. <http://doi.org/10.1021/acs.orglett.8b03716>
47. Katsuhiko Mitachi, Hyun Gi Yun, Sara Kurosu, Shakiba Eslamimehr, Maddie Lemieux, Lada Klaić, William Clemons Jr., **Michio Kurosu**. “Novel FR-900493 analogs that inhibit germination of *Clostridium difficile* spores.” (2018) *ACS Omega*. v3 n2 pp1726-1739. <http://doi.org/10.1021/acsomega.7b01740>
46. Shyam Saladi, Nauman Javed, Axel Müller, **William Clemons, Jr.** “A statistical model for improved membrane protein expression using sequence-derived features.” (2018) *J. Biol. Chem.* v293 n13 pp4913-4927. Epub 2018 Jan 29. PMID: 29378850. <http://doi.org/10.1074/jbc.RA117.001052>
45. Jee-Young Mock, Yue Xu, Yihong Ye, **William Clemons, Jr.** “The structural basis for regulation of the nucleocytoplasmic distribution of Bag6 by TRC35.” (2017) *Proc. Nat. Acad. Sci.* v114 n44 pp11679-11684. Epub 2017 Oct 17. PMID: 29042515. <http://doi.org/10.1073/pnas.1702940114>
44. Michiel Niesen*, Stephen Marshall*, **Thomas Miller III, William Clemons Jr.** “Improving membrane protein expression by optimizing integration efficiency.” (2017) *J. Biol. Chem.* v292 n47 pp19537-19545. Epub 2017 Sep 16. PMID: 28918393. <http://doi.org/10.1074/jbc.M117.813469>
43. Stephen Marshall*, Michiel Niesen*, Axel Müller, Katrin Tiemann, Shyam Saladi, Rachel Galimidi, Bin Zhang, **William Clemons Jr, Tom Miller III.** “A link between integral membrane protein expression and simulated integration efficiency.” (2016) *Cell Rep.* v16 n8 pp2169-2177. Epub 2016 Aug 11. PMID: 27524616. <http://doi.org/10.1016/j.celrep.2016.07.042>
42. Harry Gristick*, Michael Rome*, Justin Chartron, Meera Rao, Sonja Hess, Shu-ou Shan, **William Clemons Jr.** “Mechanism of assembly of a substrate transfer complex during tail-anchored protein targeting.” (2015) *J Biol. Chem.* v290 n50 pp30006-30017. Epub 2015 Oct 7. PMID: 26451041. <http://doi.org/10.1074/jbc.M115.677328>
41. Kyoung-Soon Jang, Roger Nani, Anastasia Kalli, Sergiy Levin, Axel Müller, Sonja Hess, **Sarah Reisman, William Clemons Jr.** “A cationic cysteine-hydrazide as an enrichment tool for the mass spectrometric characterization of bacterial free oligosaccharides.” (2015) *Anal. Bioanal. Chem.* v407 n20 pp6181-6190. Epub 2015 Jun 23. PMID: 26100547. <http://doi.org/10.1007/s00216-015-8798-8>
40. Kasuhiko Mitachi, Shajila Siricilla, Lada Klaić, William Clemons, Jr., **Michio Kurosu**. “Chemoenzymatic syntheses of water-soluble lipid I fluorescent probes.” (2015) *Tetrahedron Lett.* v56 n23 pp3441-3446. Epub Jan 12. PMID: 26190869. <http://doi.org/10.1016/j.tetlet.2015.01.044>
39. Jee-Young Mock, Justin Chartron, Ma'ayan Zaslaver, Yue Xue, Yihong Ye, **William Clemons, Jr.** “Bag6 complex contains a minimal tail-anchor-targeting module and a mock BAG domain.” (2015) *Proc. Nat. Acad. Sci.* v112 n1 pp106-111. Epub 2014 Dec 22. PMID: 25535373. <https://doi.org/10.1073/pnas.1402745112>
38. Axel Müller, Morgan Beeby, Alasdair W. McDowall, Janet Chow, Grant Jensen, **William M. Clemons, Jr.** “Ultrastructure and complex polar architecture of the human pathogen *Campylobacter jejuni*.” (2014) *Microbiology Open*. v3 n5 pp702-710. Epub 2014 Jul 25. PMID: 25065852. <http://doi.org/10.1002/mbo3.200> PMID:25065852
37. Harry Gristick, Meera Rao, Justin Chartron, Michael Rome, Shu-ou Shan, **William Clemons, Jr.** “The structure of a tail-anchor membrane protein-binding complex reveals the regulation of Get3 by Get4.” (2014) *Nat. Struct. Mol. Biol.* v21 n5 pp437-442. Epub 2014 Apr 13. PMID: 24727835. <https://doi.org/10.1038/nsmb.2813>
36. Yanfen Liu, Nia Soetandyo, Jin-gu Lee, Liping Liu, Yue Xu, William M. Clemons Jr, **Yihong Ye.** “USP13 antagonizes gp78 to maintain functionality of a chaperone in ER-associated degradation.” (2014) *eLife* v3 e01369. Epub 2014 Jan 14. PMID: 24424410. <https://doi.org/10.7554/elife.01369>

35. Kyoung-Soon Jang, Michael Sweredoski, Robert Graham, Sonja Hess, **William Clemons, Jr.** “Comprehensive proteomic profiling of outer membrane vesicles from *Campylobacter jejuni*.” *J. Proteomics* (2014) v98 pp90-98. Epub 2013 Dec 29. PMID: 24382552. <https://doi.org/10.1016/j.jprot.2013.12.014>
34. Sureshkumar Ramasamy, Ravinder Abrol, Christian Suloway, **William Clemons, Jr.** “The glove-like structure of the conserved membrane protein TatC provides insight into signal sequence recognition in twin-arginine translocation.” (2013) *Structure*. v21 n5 pp777-788. Epub 2013 Apr 11. PMID: 23583035. <https://doi.org/10.1016/j.str.2013.03.004>
33. Michael Rome, Meera Rao, William Clemons, Jr., **Shu-ou Shan.** “Precise timing of ATPase activation drives targeting of tail-anchored proteins.” (2013) *Proc. Nat. Acad. Sci.* v110 n19 pp7666-7671. Epub 2013 Apr 22. PMID: 23610396. <https://doi.org/10.1073/pnas.1222054110>
32. Justin Chartron, David Vandervelde, **William Clemons, Jr.** “Structures of the Sgt2/SGTA dimerization domain with the Get5/UBL4A UBL domain reveal an interaction that forms a conserved dynamic interface.” (2012) *Cell Rep.* v2 n6 pp1620-1632. Epub 2012 Nov 8. PMID: 23142665. <https://doi.org/10.1016/j.celrep.2012.10.010>
31. Shiho Tanaka and **William Clemons, Jr.** “Minimal requirements for inhibition of MraY by lysis protein E from bacteriophage ΦX174.” (2012) *Mol. Microbiol.* v85 n5 pp975-985. Epub 2012 Jul 13. PMID: 22742425. <https://doi.org/10.1111/j.1365-2958.2012.08153.x>
30. Justin Chartron, **William Clemons, Jr.**, Christian Suloway. “The complex process of GETting tail-anchored proteins to the membrane. (REVIEW)” (2012) *Curr. Opin. Struct. Biol.* v22 n2 pp217-224. Epub 2012 Mar 21. PMID: 22444563. <https://doi.org/10.1016/j.sbi.2012.03.001>
29. Justin Chartron, David Vandervelde, Michael Rao, **William Clemons, Jr.** “The Get5 carboxyl terminal domain is a novel dimerization motif that tethers an extended Get4/Get5 complex.” (2012) *J. Biol. Chem.* v287 n11 pp8310-8317. Epub 2012 Jan 17. PMID: 22262836. <https://doi.org/10.1074/jbc.m111.333252>
28. Christian Suloway, Michael Rome, **William Clemons, Jr.** “Tail-anchor targeting by a Get3 tetramer: the structure of an archaeal homologue.” (2012) *EMBO J.* v31 n3 pp707-719. Epub 2011 Nov 29. PMID: 22124326. <https://doi.org/10.1038/emboj.2011.433>
27. Justin Chartron, Grecia Gonzalez, **William Clemons, Jr.** “A structural model of Sgt2 and its interactions with chaperones and Get4/Get5.” (2011) *J. Biol. Chem.* v286 n39 pp34325-34334. Epub 2011 Aug 10. PMID: 21832041. <https://doi.org/10.1074/jbc.m111.277798>
26. Justin Chartron, Christian Suloway, Ma’ayan Zaslaver, **William Clemons, Jr.** “Structural characterization of the Get4/Get5 complex and its interaction with Get3.” (2010) *Proc. Natl. Acad. Sci.* v107 n27 pp12127-12132. Epub 2010 Jun 16. PMID: 20554915. <https://doi.org/10.1073/pnas.1006036107>
25. Christian Suloway, Justin Chartron, Ma’ayan Zaslaver, **William Clemons, Jr.** “Model for eukaryotic tail-anchored protein binding based on the structure of Get3.” (2009) *Proc. Natl. Acad. Sci.* v106 n35 pp14849-14854. Epub 2009 Aug 14. PMID: 19706470. <https://doi.org/10.1073/pnas.0907522106>
24. Suresh Ramasamy and **William Clemons, Jr.** “Structure of the twin-arginine signal binding protein DmsD from *Escherichia coli*.” (2009) *Acta Cryst. F.* v65 n8 pp746-750. Epub 2009 Jul 21. PMID: 19652330. <https://doi.org/10.1107/s1744309109023811>

23. Jean-Francois Menetret, Julia Schaletzky, William Clemons, Jr., Andrew Osborne, Sigrid Skanland, Carilee Denison, Stephen Gygi, Don Kirkpatrick, Eunyong Park, Steven Ludtke, **Tom Rapoport, Christopher Akey.** “Ribosome binding of a single copy of the SecY complex: implications for the initiation of protein translocation.” (2007) *Mol. Cell.* v28 n6 pp1083-1092. PMID: 18158904. <https://doi.org/10.1016/j.molcel.2007.10.034>
22. Margaret Smith, William Clemons, Jr., Catherine DeMars, **Ann Flower.** “Modeling the effects of *pri* mutations on the *Escherichia coli* SecY complex.” (2005) *J. Bacteriol.* v187 n18 pp6454-6465. PMID: 16159779. <https://doi.org/10.1128/jb.187.18.6454-6465.2005>
21. Kurt Cannon, Eran Or, William Clemons, Jr., Yoko Shibata, **Tom Rapoport.** “Disulfide bridge formation between SecY and a translocating polypeptide localizes the translocation pore to the center of SecY.” (2005) *J. Cell Biol.* v169 n2 pp219-225. PMID: 15851514. <https://doi.org/10.1083/jcb.200412019>
20. William Clemons, Jr., Jean-François Ménétret, Christopher Akey, **Tom Rapoport.** “Structural insight into the protein translocation channel (REVIEW).” (2004) *Curr. Opin. Struct. Biol.* v14 n4 pp390-396. PMID: 15313231. <https://doi.org/10.1016/j.sbi.2004.07.006>
19. Andrew Osborne, William Clemons, Jr., **Tom Rapoport.** “A large conformational change of the translocation ATPase SecA.” (2004) *Proc. Natl. Acad. Sci.* v101 n30 pp10937-10942. Epub 2004 Jul 15. PMID: 15256599. <https://doi.org/10.1073/pnas.0401742101>
18. Bert van den Berg, Paul Black, William Clemons, Jr., **Tom Rapoport.** “Crystal structure of the long-chain fatty acid transporter FadL.” (2004) *Science*. v304 n5676 pp1506-1509. PMID: 15178802. <https://doi.org/10.1126/science.1097524>
17. Bert van den Berg*, William Clemons, Jr.*, Ian Collinson, Yorgo Modis, Enno Hartmann, Stephen Harrison, and **Tom Rapoport.** “X-ray structure of a protein conducting channel.” (2004) *Nature*. v427 n6969 pp36-44. Epub 2003 Dec 3. PMID: 14661030. <https://doi.org/10.1038/nature02218>
16. Ditlev Brodersen, William Clemons, Jr., Andrew Carter, Brian Wimberly, **Venki Ramakrishnan.** “Phasing the 30S ribosomal subunit structure.” (2003) *Acta Crystallogr. D.* v59 n11 pp2044-2050. Epub 2003 Oct 23. PMID: 14573961. <https://doi.org/10.1107/s0907444903017669>
15. Ditlev Brodersen, William Clemons, Jr., Andrew Carter, Brian Wimberly, **Venki Ramakrishnan.** “Crystal structure of the 30S ribosomal subunit from *Thermus thermophilus*. Structure of the proteins and their interactions

- with 16S RNA.” (2002) *J. Mol. Biol.* v316 n3 pp725-768. PMID: 11866529. <https://doi.org/10.1006/jmbi.2001.5359>
14. William Clemons, Jr., Ditlev Brodersen, John McCutcheon, Joanna May, Brian Wimberly, Andrew Carter, Robert Morgan-Warren, **Venki Ramakrishnan**. “Crystal structure of the 30S ribosomal subunit from *Thermus thermophilus* I. Purification, crystallization and structure determination.” (2001) *J. Mol. Biol.* v310 n4 pp827-843. PMID: 11453691. <https://doi.org/10.1006/jmbi.2001.4778>
 13. James Ogle, Ditlev Brodersen, William Clemons, Jr., Michael Tarry, Andrew Carter, **Venki Ramakrishnan**. “Recognition of cognate transfer RNA by the 30S ribosomal subunit.” (2001) *Science*. v292 n5518 pp897-902. PMID: 11340196. <https://doi.org/10.1126/science.1060612>
 12. Andrew Carter, William Clemons, Jr., Ditlev Brodersen, Robert Morgan-Warren, Thomas Hartsch, Brian Wimberly **Venki Ramakrishnan**. “Crystal structure of an initiation factor bound to the 30S ribosomal subunit.” (2001) *Science*. v291 n5503 pp498-501. PMID: 11228145. <https://doi.org/10.1126/science.1057766>
 11. Ditlev Brodersen, William Clemons, Jr., Andrew Carter, Robert Morgan-Warren, Brian Wimberly, **Venki Ramakrishnan**. “The structural basis for the action of the antibiotics tetracycline, pactamycin, and hygromycin B on the 30S ribosomal subunit.” (2000) *Cell*. v103 n7 pp1143-1154. PMID: 11163189. [https://doi.org/10.1016/s0092-8674\(00\)00216-6](https://doi.org/10.1016/s0092-8674(00)00216-6)
 10. Brian Wimberly*, Ditlev Brodersen*, William Clemons, Jr.*, Robert Morgan-Warren*, Andrew Carter*, Clemens Vonrhein, Thomas Hartsch, **Venki Ramakrishnan**. “The Structure of the 30S Ribosomal Subunit.” (2000) *Nature*. v407 n6802 pp327-339. PMID: 11014182. <https://doi.org/10.1038/35030006>
 9. Andrew Carter*, William Clemons, Jr.*, Ditlev Brodersen*, Robert Morgan-Warren, Brian Wimberly, **Venki Ramakrishnan**. “Functional insights from the structure of the 30S ribosomal subunit and its interactions with antibiotics.” (2000) *Nature*. v407 n6802 pp340-348. PMID: 11014183. <https://doi.org/10.1038/35030019>
 8. Peter Allard, Alexey Rak, Brian Wimberly, William Clemons, Jr., Alexander Kalinin, Magnus Helgstrand, Maria Garber, Venki Ramakrishnan, **Torleif Härd**. “Another piece of the ribosome: solution structure of S16 and its location in the 30S subunit.” (2000) *Structure*. v8 n8 pp875-882. PMID: 10997906. [https://doi.org/10.1016/s0969-2126\(00\)00177-5](https://doi.org/10.1016/s0969-2126(00)00177-5)
 7. **Venki Ramakrishnan**, Malcolm Capel, William Clemons, Jr., Joanna May, Brian Wimberly. “Progress toward the crystal structure of a bacterial 30S ribosomal subunit.” (2000) In Garrett et al (eds). *The Ribosome* ASM Press, Washington D.C. pp3-10.
 6. Stephen White, William Clemons Jr., Christopher Davies, **Venki Ramakrishnan**, Brian Wimberly. “Structures of bacterial ribosomal proteins: High resolution probes of the architecture and mechanism of the ribosome.” (2000) In Garrett et al (eds). *The Ribosome* ASM Press, Washington D.C. pp66-72.
 5. William Clemons Jr, Krishne Gowda, Shaun Black, Christian Zweib, & **Venki Ramakrishnan**. “Crystal structure of the conserved subdomain of human protein SRP54m at 2.1Å resolution: Evidence for the mechanism of signal peptide binding.” (1999) *J. Mol. Biol.* v292 n3 pp697-705. PMID: 10497032. <https://doi.org/10.1006/jmbi.1999.3090>
 4. William Clemons Jr.*, Joanna May*, Brian Wimberly*, John McCutcheon, Malcolm Capel, **Venki Ramakrishnan**. “Structure of a bacterial 30S ribosomal subunit at 5.5Å resolution.” (1999) *Nature*. v400 n6747 pp833-840. <https://doi.org/10.1038/23631>
 3. Krishne Gowda, William Clemons Jr., Shaun Black, **Christian Zweib**. “Expression, purification, & crystallography of the conserved methionine-rich domain of human signal recognition particle 54kDa protein.” (1999) *Protein Sci.* v8 n5 pp1144-1151. PMID: 10338025. <https://doi.org/10.1110/ps.8.5.1144>
 2. John McCutcheon, Rajendra Agrawal, Shibu Philips, Robert Grassucci, Sue Ellen Gerchman, William Clemons Jr., **Venki Ramakrishnan**, **Joachim Frank**. “Location of translational initiation factor IF3 on the small ribosomal subunit.” (1999) *Proc. Natl. Acad. Sci.* v96 n8 pp4301-4306. PMID: 10200257. <https://doi.org/10.1073/pnas.96.8.4301>
 1. William Clemons Jr., Christopher Davies, Steven White, **Venki Ramakrishnan**. “Conformational variability of an N-terminal helix in the structure of ribosomal protein S15”, (1998) *Structure*. v6 n4 pp429-438. PMID: 9562554. [https://doi.org/10.1016/s0969-2126\(98\)00045-8](https://doi.org/10.1016/s0969-2126(98)00045-8)

* denotes equal contribution, **bold** is corresponding author

Patents

- Ditlev Brodersen, Andrew Carter, William Clemons, Jr., Venki Ramakrishnan, Brian Wimberly. “Crystal Structure of the 30S Subunit and Its Use.” US Patent 7,606,670; 20020106660, GB Patents 0017376.5 and 0022943.5.
- William Clemons, Jr., Kyoung-soon Jang, Sergiy Levin, Roger Nani and Sarah Reisman. “Cysteine Hydrazide Nicotinamide for Glycomics and Glycoproteomics Studies.” US Patent 9,541,558, US 20140072981 A1.
- Thomas Miller, III, William Clemons, Jr., Stephen Marshall, Axel Mueller, Michiel Niesen, Bin Zhang. “Translocon-associated biogenesis features and related methods, systems and products”. US Patent 10,108,776 B1.
- Shyam Saladi & William Clemons, Jr. “Methods and systems for predicting membrane protein expression based on sequence-level information.” US Patent 11,545,326 B2.
- Michio Kurosu & William Clemons. “Glycosyltransferase Inhibitors For Treatment of Solid Tumors”. US Patent No. 11,597,743 B2. International patent PCT/US2019/013152, Filed Jan. 30, 2019.

Teaching

Ch/Bi 110: Introduction to Biochemistry 2019 – Current

BMB202abc: Biochemistry Seminar Course 2010 – Current

BMB170abc: Biochemistry and biophysics of macromolecules & molecular assemblies 2008 – 2017

BMB170: Principles of three-dimensional protein structure 2006 & 2007

Service

Internal

Campus: President's Diversity Council (Chair, 2019-Present, Member, 2015-Present); Grad Student Council for Caltech (2013-present); Caltech Shines Planning Committee (2021-Present) ; Molecular Observatory advisory committee (2007-Present); EM facility advisory committee (Chair 2018, 2015-present); CEMI steering committee (2019-present); Graduate Dean Search Committee (2019-20); Climate Survey Working Group (2021); Committee for Student Admissions & Recruiting (2020-21); Rosen Bioengineering Steering Committee (2018-2020); Undergraduate Academic Standards and Honors Committee (2019-2020); Faculty Board (2015-18); Student Life and Housing Committee (2013-16)

CCE Division: BMB Graduate Option Representative (2013-present); Admissions/Grad Student Council for BMB option (2006 - present); CCE DEI Committee (2020-present); CCE Space committee (2018-present); Biochemistry seminar organizer (2007-2020); 12 faculty search committees (Andre Hoelz, Mitch Guttman, Dan Semlow, & Shasha Chong); Grad Student Council for Chemistry option (2011-present); CCE Instrumentation Committee (2016-2019)

External

Editorial Boards: *J. Biol. Chem.* (2014-present), *J. Mol. Biol* (2020-present), *Cell Reports* (2012-2023)

Foundations and Review Boards: The Pew Scholars Advisory Committee (2021-Present), The Weston-Havens Review Panel (2021-Present), Interdisciplinary Quantitative Biology Program Board – CU Boulder (2021-Present)

Reviewer: *Acta Cryst D*, *Biochemistry*, *Biochem J*, *BioEssays*, *Cell*, *Cell Reports*, *Current Biology*, *eLife*, *EMBO J*, *J Cell Biol*, *JACS*, *JBC*, *JMB*, *Mol Biol Cell*, *Mol Cell Phys*, *Nature*, *Nature Comm*, *Nature Struct Mol Biol*, *PLoS Biology*, *PNAS*, *Science*, *Structure* and grants for the UK BBSRC.

Society Roles: National Academies of Science, Engineering, and Medicine–Committee on Equitable and Effective Teaching in Undergraduate STEM Education; The Protein Society, Executive council (2018-2021), DEI committee (2019-present, Chair 2020-present), Nomination Committee (2014-17); ASBMB 2012 Annual Meeting Organizing Committee (2011-12), Member of The Protein Society, American Society of Biochemists and Molecular Biologists, The Biophysical Society

NIH Service: NCI Board of Scientific Counselors (2023-Present); Study Sections – ZRG1 MBBC-U 2022, DP5 Review Panel 2021, Macromolecular Structure and Function C, Member (2016-20) and *ad hoc* for June 2012 & Oct. 2014; Membrane Biology and Protein Processing, *ad hoc* February 2012; MIRA grants for NIGMS, *ad hoc* Nov. 2015; PRAT fellowships, *ad hoc* 2016; Pioneer Award Panel, *ad hoc* 2016 & 2017; Program Project Grant reviewer for NIAID *ad hoc* 2014

Scientific Presentations (Selected)

2023 Biophysical Society Annual Meeting (BPS), San Diego, CA, Chair of “Black in Biophysics” symposium, speaker; University of Pennsylvania, Philadelphia, PA, IDEAL Research Diversity Day Lecture, Biochemistry & Biophysics invited speaker, **Lorne Proteins Conference**, Lorne, Australia, invited speaker; Indiana University, Bloomington, IN, “Who is paying the cost for diversity”, Biochemistry & Chemical Biology seminar.

2022 Annual Biomedical Research Conference for Minority Students (ABRCMS), Anaheim, CA, Speaker/Exhibitor; **Endoplasmic Reticulum EMBO Workshop**, Lucca, Italy, speaker; University of Utah **Jim McCloskey Lecture**, Salt Lake City, UT; Caltech Associates Dinner, Keynote, New York, NY, **Biophysics Annual Symposium** at Wesleyan University, Keynote, Middletown, CT, **The Protein Society Annual Meeting**, San Francisco, panel leader; Johns Hopkins Medical School, Biophysics, Baltimore, MD; Meharry Medical College, Biochemistry; Nashville, TN; **Integrated Applications of Structural Biology Symposium**, speaker, Vanderbilt University, Nashville, TN; Northwestern University, Biochemistry seminar, Evansville, IL; University of Michigan **Martha L. Ludwig Lectureship in Structural Biology**, Ann Arbor, MI; **ASBMB Annual Meeting**, Philadelphia, PA; University of California San Francisco, Biochemistry seminar, San Francisco, CA; University of California Berkeley, SQB Seminar, Berkeley, CA; University of Colorado Boulder, Molecular Biophysics Trainees Speaker, Boulder, CO; University of Rochester School of Medicine, Biochemistry and Biophysics, Rochester, NY

2021 Rockefeller Inclusive Science Initiative Distinguished Speaker “How we got here and where do we go”, Rockefeller University, New York, NY (Remote); **Tri-Institute Chemical Biology Symposium** (Rockefeller, Cornell Med, Sloan-Kettering), Keynote Speaker, New York, NY; **The Protein Society Annual Meeting** “Diversifying Protein Science II” (Remote); University of Texas - Southwestern, PROVIDES seminar (Remote), Houston, TX; Notre Dame (Remote), Biophysics Student Seminar, South Bend, IN; University of Illinois Medical School (Remote), Biochemistry Department, Chicago, IL; University of Michigan (Remote), CMB DEI Taskforce, “Who’s Paying the Cost for Diversity”, Ann Arbor, MI; University of California Los Angeles (Remote), Molecular Biology Institute, Los Angeles, CA; Harvard Medical School (Remote), BCMP, Boston, MA; Fisk University Chemical Colloquia (Remote), Nashville, KY; University of Cambridge (Remote), Chemistry Dept, Cambridge, UK; University of Maryland (Remote), College Park, MD; Case Western Reserve University (Remote), Cleveland, OH; University of Massachusetts Medical School (Remote), Worcester,

MA; The Biophysical Society Annual Symposia (Remote) “President’s Symposium: Building an Inclusive Biophysical Society” speaker

2020 The Ohio State University (Remote), RCR trainees DEI discussion, Columbus, OH; University of Massachusetts (Remote), Amherst, MA; ABRCMS virtual meeting, Exhibitor; The Protein Society Webinar “Diversifying Protein Science”; Cold Spring Harbor Laboratory, NY

2019 Annual Biomedical Research Conference for Minority Students (ABRCMS), Long Beach, CA, Exhibitor; Chemistry Summer Seminar Series, Caltech, Pasadena, CA; GRC Membrane Protein Folding, Stonehill College, MA, Presenter; 33rd Annual Symposium of the Protein Society Seattle, WA; Institute of Parasitology, University of South Bohemia, Ceske Budejovice, Czech Republic; Department of Pathology, Oxford University, Oxford, UK; Laboratory of Molecular Biology, Cambridge University, Cambridge, UK

2018 Institute of Organic Chemistry and Biochemistry, Prague, Czech Republic; Cold Spring Harbor Laboratory Course X-Ray Methods in Structural Biology, NY, Instructor; Washington University, St. Louis, MO; International School of Biological Magnetic Resonance, Erice, Italy, Lecturer; Stanford University, Palo Alto, CA; Virginia Tech, Blacksburg, VA; GRC Protein Transport Across Membranes Galveston, TX; Oregon State University, Corvallis, OR; University of North Carolina, Chapel Hill, NC

2017 St. Jude Children’s Hospital, Memphis, TN; University of Tennessee Health Science Center, Memphis, TN; Frontiers in Membrane Protein Structural Dynamics, Argonne, IL; Annual Biomedical Research Conference for Minority Students (ABRCMS), Phoenix, AZ, Exhibitor; Ohio State University, Columbus, OH, Århus University, Denmark; The Ins & Outs of Membrane Biology, Hemavan, Sweden; International School of Biological Magnetic Resonance, Erice, Italy, Lecturer; Johns Hopkins University, Baltimore, MD; Biophysical Society Annual Meeting, New Orleans, LA; Princeton University, Princeton, NJ; West Coast Crystallography Course, CA

2016 University of Michigan, Ann Arbor, MI; Wayne State University Medical School, Detroit, MI; Annual Biomedical Research Conference for Minority Students (ABRCMS), Tampa, FL, Exhibitor; SACNAS Annual Meeting, Long Beach, CA, Presenter; Inst. of Org. Chem. and Bioch. of the Czech Academy of Sciences, Prague, Czech Republic; 30th Anniversary Symposium of the Protein Society, Baltimore, MD, Presenter; University of Maryland, Baltimore County; International School of Biological Magnetic Resonance, Erice, Italy, Lecturer; University of Pittsburgh, PA; GRC Protein Transport Across Membranes Galveston, TX, Session leader

2015 Annual Biomedical Research Conference for Minority Students (ABRCMS), Seattle, WA, Exhibitor; ACA Annual Meeting, Philadelphia, PA, Presenter; Amgen Scholars Meeting, UCLA, Keynote speaker; GRC Membrane Protein Folding, Waltham, MA, Presenter; University of Tennessee, Knoxville, TN; Watson Lecturer, Caltech, Pasadena, CA

2014 Indiana University, Bloomington, IA; Annual Biomedical Research Conference for Minority Students (ABRCMS), San Antonio, TX, Exhibitor; International School of Biological Magnetic Resonance, Erice, Italy, Lecturer; FASEB Protein Folding in the Cell, Saxby River, VT, Presenter; Miami University, Oxford, IL; GRC Protein Transport Across Membranes Galveston, TX, Presenter

2013 Northwestern University, Evanston, IL; University of Chicago, Chicago, IL; University of California, Irvine, CA; University of Virginia, Charlottesville, VA; University of Maryland, Baltimore County, MD; Johns Hopkins University School of Medicine, Baltimore, MD; Massachusetts Institute of Technology, Cambridge, MA; Laboratory of Molecular Biology, Cambridge, United Kingdom; Oxford University, Oxford, United Kingdom; Imperial College, London, United Kingdom; Stanford University, Palo Alto, CA; Yale University, New Haven, CT; GRC Glycobiology, Ventura, CA, Poster; City College New York, NY; The Scripps Research Institute, San Diego, CA

2012 Weill Cornell Medical, New York, NY; Protein Society Annual Meeting, San Diego, CA; University of San Diego, San Diego, CA; ASBMB Annual Meeting, San Diego, CA; National Institutes of Health, Bethesda, MD; GRC Protein Transport Across Membranes Galveston, TX, Poster; University of California at Los Angeles, Los Angeles, CA

2011 University of Wisconsin, Madison, WI

2010 University of California at Berkeley, Berkeley, CA; Texas A&M, College Station, TX; University of Toronto, Ontario, Canada; GRC Protein Transport Across Membranes Galveston, TX, Speaker

2009 Stockholm University, Sweden; California State University, Los Angeles; University of Colorado, Boulder; Protein Society Annual Meeting “Proteins in Motion”, Boston, Speaker

2007 GRC Proteins, New Hampshire

2006 8th International School of Crystallography, MAX/INF, Como, Italy

2005 Carlsberg Research Center, Copenhagen, Denmark; Stockholm University, Stockholm, Sweden; Århus University, Århus, Denmark; 11th DRDC-IBS Workshop, Autrans, France

2004 University of Maryland, Baltimore County, MD; University of Utah, Salt Lake City, UT; American Crystallographic Association, Chicago, IL; GRC Endocytosis and Lysosomes, NH; Keystone Symposia, Frontiers in Structural Biology, Snowbird, UT

2002 Vertex Pharmaceuticals Inc., Cambridge, MA; Pfizer Inc., Groton, CT

2001 Daresbury Laboratories, Daresbury, United Kingdom; RNA Society of Cambridge, Cambridge, United Kingdom; 3rd Cell Biology Symposium on Protein Transport and Stability, Berlin, Germany

2000 Rockefeller University, New York City, NY; Harvard Medical School, Boston, MA

Lab Members

Current:

Juliet Lee, Grad Student, BMB, 2022

Yusrah Kaudeer, Grad Student, Chemistry, 2022

Evelyn Li, Grad Student, BMB, 2021

Victor Garcia, Grad Student, BMB, 2020

Karen Orta, Grad Student, BMB, 2019

Alexandra Barlow, Grad Student, BMB, 2018

Shyam Saladi, Grad Student, BMB, 2014

Jessica Ochoa, Post-Doc, 2021

Former:

Graduate Students

Michelle Fry, Grad Student, BMB, 2016-21; Post-doc,
Harvard Medical School

Hyun Gi Yun, Grad Student, Chemistry, 2013-19, PharmD
program, University of Michigan

Stephen Marshall, Grad Student, Chemistry, 2013-2017,
Senior Manager, Strategic Analysis at Regeneron
Pharmaceuticals, Inc.

Amanda Jee-Young Mock, Grad Student, BMB, 2011-2017,
Scientist II, A2 Biotherapeutics

Harry Gristick, Grad Student, BMB, 2009-2015, Research
Scientist, Caltech

Justin Chartron, Grad Student, BMB, 2006-2012, Protein
Engineering Scientist, Protabit

Christian Suloway, Grad Student, Biology, 2006 – 2012,
Genomics Data Scientist, Medidata Solutions

Post-doctoral

Nadia Riera Faraone, Post-Doc, 2017-2020, Inst. Pasteur de
Montevideo

Aye Myat Myat Thinn, Post-Doc, 2018-2020, Scientist,
Amgen

Austin Rice, Ph.D. Northwestern Univ., Post-Doc, 2014-17,
Protein Engineer, Amgen

Geoffrey Lin, Ph.D. National Tsinghua Univ., Post-Doc,
2012-16, Researcher, Industrial Tech. Research Institute

Lada Klaic, Ph.D. Northwestern Univ., Post-Doc, 2012-16,
Principal Scientist, Cell Care Therapeutics

Axel Müller, Ph.D. York Univ., Staff Scientist, 2011-2016,
Research Scientist, Integrity Bio

Eugene Chun, Ph.D. The Scripps Research Institute, Post-
Doc, 2012, Scientist I, Synthorx

Vijay Somalinga, Post-Doc, 2012-14, Asst. Prof., South West
Oklahoma State Univ

Katrine Tieman, Post-Doc, 2011-12, Director, Translational
Development Center, City of Hope

Shiho Tanaka, Post-Doc, 2010-14, Principal Scientist,
ImmunityBio, Thousand Oaks, CA

Kyoung-Soon Jang, Post-Doc, 2010-13, Principal Researcher,
Korean Basic Sci Inst

Suresh Kumar Ramasamy, Staff Scientist, 2006-12, Asst.
Prof., NCL-Pune, India

Yuko Tsutsui, Post-Doc, Case Western Univ, 2007 – 2011,
Research Associate, Yale Cancer Biology Institute

Axel Müller, Post-Doc, York Univ, 2006 – 2011

Alison Glazier, Post-Doc, Caltech 2006

Staff

Cody Gillman, Research Technician, 2017-19

Aaron Motacek, Research Technician, 2015

Katrine Museth, Research Technician, 2011-14

Ma'ayan Zaslaver, Research Technician, 2007-12

Natalie Martin, Research Technician, 2011

Allen Lee, Lab Manager of Rees/Clemons group

Lily DeBell, Undergraduate, 2019

Helen Brackney, Undergraduate, 2021

Celine Boucher, Undergraduate, 2022

Alice Chen, Research Technician, 2011

Matt Thornton, Research Technician, 2006-7

Undergraduates, diploma and high school students

Vanessa Mecham, Undergraduate, 2020-22

India Wesley-Cardwell, WAVE, Cal State LA, 2022

Manuel Holguin, WAVE, UC Irvine, 2022

Omar Santiago-Reyes, MIT (virtual), 2021

Paul Leclerc, Williams College (virtual), 2021

Andy Sun, HS student, 2018-2020

Kate Radford, Intern, 2019

Reeti Gulati, Undergraduate, 2016-2018

Charles Nelson, Undergraduate, 2016-2018

Victor Garcia, WAVE, UC Riverside, 2018

Katarzyna Zator, SURF undergrad, 2018

Rita Aksenfeld, Undergraduate & SURF, 2017

Tatiana Brailovskaya, SURF, Caltech, 2017

Omoshola Aleru, Amgen, Fresno State Univ., 2016

Nadine Bradbury, SURF, Caltech, 2016

Alex Chu, Amgen, Brigham Young Univ., 2016

Catherine Day, SURF, Caltech, 2016

Romanus Hutchens, WAVE, Univ. of Missouri, 2016

Gyu Bin Jang, SURF, Caltech, 2016

Sam Schulte, Amgen, Univ. of Iowa, 2016

Anthony Jones, MURF, Cal State – Dominguez Hills, 2014

Amarise Little, SURF, Caltech, 2014

Nauman Javad, SURF, 2013, Caltech, 2014-16

Shyam Saladi, SURF, Univ. of Illinois UC, 2012-14

Sumin Kim, SURF, MIT, 2013

Arun Chandra, SURF, Caltech, 2013

Esha Wang, Caltech, 2012

Doreen Chen, Caltech, 2012

Jacqueline Maslyn, Caltech, 2012

Tinyi Chu, Hong Kong Undergraduate Research Fellow, 2011

Jaeyoon Chung, Volunteer, Caltech, Chemistry, 2011

Katherine Brugman, SURF, UC Berkeley, 2011

Anastasia Zinchenko, Diplom, Univ of Saarbrücken, 2011

Tamara Stegmenn, Diplom, Univ of Utrecht, 2011

Grecia Gonzalez, MURF, Harvard Univ, 2010

David Machejewski, Amgen, Boston College, 2010

Jennifer Timm, Diplom, Univ of Konstanz, 2009 – 2010

Nadia Iqbal, Undergrad, Bioengineering, 2009 – 2011

Alan Deng, Undergrad, Chemistry, 2009

Yee-ra Jo, Undergrad, Biology, 2009

Grace Wu, Amgen, Univ of Chicago, 2009

Christine Hanna, MURF Program, Summer 2008

Kangway Chuang, SURF, Caltech, 2008

Caroline Nguyen, HS Student, 2008

Tom Lampo, SURF, Caltech 2008

Damien Soghoian, Caltech 2006 – 2008

Sunny Chun, Caltech 2006 - 2008

Monique Hall, MURF, 2006