

# Shishir P. S. Chundawat

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## Education

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Ph.D., Chemical Engineering, Michigan State University, December 2009

Dissertation Title: *Ultrastructural and physicochemical modifications within ammonia treated lignocellulosic cell walls and their influence on enzymatic digestibility*

Advisor - Prof. Bruce E. Dale

B. Tech. (Distinction), Chemical Technology, Institute of Chemical Technology, Mumbai, May 2004

Thesis Title: *Sucrose Esters - Manufacture, Analysis & Evaluation as Emulsifier-Detergent*

Advisor - Prof. D. N. Bhowmick

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## Professional Experience

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2015-ongoing, Assistant Professor (Tenure Track), Department of Chemical & Biochemical Engineering, Rutgers The State University of New Jersey, Piscataway

2012-2014, Assistant Scientist, Great Lakes Bioenergy Research Center, Wisconsin Energy Institute, Department of Biochemistry, University of Wisconsin, Madison

Advisor - Prof. Brian G. Fox

2011-2017, Adjunct/Research Assistant Professor (Non-Tenure Track), Department of Chemical Engineering & Materials Science, Michigan State University, East Lansing

2010-2011, Postdoctoral Research Associate, Department of Chemical Engineering & Materials Science, Michigan State University, East Lansing

Advisor - Prof. Bruce E. Dale

2008-Spring, Visiting Scholar, Verenum Cellulosic Biofuels (Enzymes Division), San Diego

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## Research Interests

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Biochemical Engineering, Biomanufacturing, Biomass Process Engineering, Biopharmaceuticals, Bioseparations, Carbohydrate-Active enZymes (CAZymes), Cellulose & Carbohydrate Chemistry, Cellulosic Biofuels, Chemo-Enzymatic Synthesis, Glycans, Glycoconjugates, Glycoengineering, Glycobiology, Protein Adsorption, Protein Engineering, Single-Molecule Force Spectroscopy

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## Honors and Awards

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2019: National Science Foundation (NSF) Early Career Award, Sponsored by NSF  
2018: A. Walter Tyson Assistant Professorship Award, Sponsored by Rutgers University (SOE)  
2017: Undergraduate Teaching Excellence Award, Sponsored by Rutgers University (CBE)  
2017: Outstanding Faculty of the Year, Sponsored by Rutgers University (CBE)  
2016: Ralph E. Powe Junior Faculty Award, Sponsored by Oak Ridge Associated Universities (ORAU)  
2010: Best 'Fundamental Science' Poster at 32<sup>nd</sup> Symposium of Biotechnology for Fuels and Chemicals  
2009: Graduate School Fellowship Awardee, Sponsored by Michigan State University  
2004: Government of Maharashtra (India) Merit Scholarship Holder from 2000-to-2004  
2004: Mumbai University Bachelor of Technology Distinguished Rank Holder from 2000-to-2004  
2003: ICT Alumni Association Best Undergraduate Award  
2002: ICT Alumni Association Best Undergraduate Award  
2001: J.G. Kane Memorial Trust Award

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## Publications

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Google Scholar: <https://scholar.google.com/citations?user=7Yf2K4IAAAAJ&hl=en>

Lead Corresponding Author on publications indicated as **Chundawat, S. P. S.\***

1. Bandi, C. K.; Skalenko, K. S.; Agrawal, A.; Sivaneri, N.; Thiry, M.; **Chundawat, S. P. S.\*** Synthetic Promoter Based Azide Biosensor Toolkit to Advance Chemical-Biology. *bioRxiv*, **July 2020**, 2020.07.08.193060. <https://doi.org/10.1101/2020.07.08.193060>. Submitted for review to *Nature Research journal*.
2. Nemmaru, B.; Ramirez, N.; Farino, C. J.; Yarbrough, J. M.; Kravchenko, N.; **Chundawat, S. P. S.\*** Reduced Type-A Carbohydrate-Binding Module Interactions to Cellulose Leads to Improved Endocellulase Activity. *bioRxiv*, **June 2020**, 2020.07.02.183293. <https://doi.org/10.1101/2020.07.02.183293>. Submitted for review to *Biotechnology and Bioengineering*.
3. **Chundawat, S. P. S.\*** Comparison of Analytical Methods for Rapid and Reliable Quantification of Plant-Based Carbohydrates for the Quintessential Bioenergy Educator. *bioRxiv*, **May 2020**, 2020.05.21.106468. <https://doi.org/10.1101/2020.05.21.106468>. Submitted for review to *Biochemistry and Molecular Biology Education*.
4. **Chundawat, S. P. S.\***, Nemmaru, B., Hackl, M., Brady, S. K., Hilton, M. A., Johnson, M. M., Chang, S., Lang, M. J., Huh, H., Lee, S.-H., Yarbrough, J. M., López, C. A., and Gnanakaran, S., "Multiscale Characterization of Complex Binding Interactions of Cellulolytic Enzymes Highlights Limitations of Classical Approaches," *bioRxiv*, **May 2020**, p. 2020.05.08.084152.

<https://www.biorxiv.org/content/10.1101/2020.05.08.084152v1.full>. Submitted for review to *The Journal of Biological Chemistry*.

5. Agrawal, A., Bandi, C. K., Burgin, T., Woo, Y., Mayes, H. B., and **Chundawat, S. P. S.\***, “Click-chemistry enabled directed evolution of glycosynthases for bespoke glycans synthesis,” *bioRxiv*, **Mar. 2020**, p. 2020.03.23.001982.  
<https://www.biorxiv.org/content/10.1101/2020.03.23.001982v1>. Manuscript under revision at *ACS Chemical Biology*.
6. Bandi, C. K., Goncalves, A., Pingali, S. V., and **Chundawat, S. P. S.\***, “Carbohydrate-binding domains facilitate efficient oligosaccharides synthesis by enhancing mutant catalytic domain transglycosylation activity,” *Biotechnology and Bioengineering*, **2020**, p. bit.27473.  
<https://onlinelibrary.wiley.com/doi/abs/10.1002/bit.27473>.
7. Liu, Y., Nemmaru, B., and **Chundawat, S. P. S.\***, “Thermobifida fusca Cellulases Exhibit Increased Endo–Exo Synergistic Activity, but Lower Exocellulase Activity, on Cellulose-III,” *ACS Sustainable Chemistry & Engineering*, **2020**, p. acssuschemeng.9b06792.  
<https://pubs.acs.org/doi/10.1021/acssuschemeng.9b06792>.
8. **Chundawat, S. P. S.\***, Sousa, L. daCosta, Roy, S., Yang, Z., Gupta, S., Pal, R., Zhao, C., Liu, S.-H., Petridis, L., O’Neill, H., and Pingali, S. V., “Ammonia-salt solvent promotes cellulosic biomass deconstruction under ambient pretreatment conditions to enable rapid soluble sugar production at ultra-low enzyme loadings,” *Green Chemistry*, vol. 22, **2020**, pp. 204–218.  
<http://pubs.rsc.org/en/Content/ArticleLanding/2019/GC/C9GC03524A>.
9. **Chundawat, S. P. S.\***, Pal, R., Zhao, C., Campbell, T., Teymouri, F., Videto, J., Nielson, C., Wieferich, B., Sousa, L., Dale, B. E., Balan, V., Chipkar, S., Aguado, J., Burke, E., and Ong, R. G., “Ammonia Fiber Expansion (AFEX) Pretreatment of Lignocellulosic Biomass,” *J. Vis. Exp*, 2020, p. 57488.  
<https://www.jove.com/video/57488>.
10. Zhao, C., Shao, Q., and **Chundawat, S. P. S.\***, “Recent Advances on Ammonia-based Pretreatments of Lignocellulosic Biomass,” *Bioresource Technology*, **2019**, p. 122446.  
<https://www.sciencedirect.com/science/article/pii/S0960852419316761>.
11. **Chundawat, S. P. S.\***, and Agarwal, U. P., “Swelling by Hydrochloric Acid Partially Retains Cellulose-I Type Allomorphic Ultrastructure But Enhances Susceptibility toward Cellulase Hydrolysis Such as Highly Amorphous Cellulose,” *Understanding Lignocellulose: Synergistic Computational and Analytic Methods (ACS Symposium Series Vol. 1338)*, *ACS Symposium Series Vol. 1338*, **2019**, pp. 69–88. <http://pubs.acs.org/doi/abs/10.1021/bk-2019-1338.ch005>.
12. Chandel, A. K., Albarelli, J. Q., Santos, D. T., **Chundawat, S. P. S.**, Puri, M., and Meireles, M. A. A., “Comparative analysis of key technologies for cellulosic ethanol production from Brazilian sugarcane bagasse at a commercial scale,” *Biofuels, Bioproducts and Biorefining*, vol. 13, **2019**, p. bbb.1990. <https://onlinelibrary.wiley.com/doi/abs/10.1002/bbb.1990>.

13. Sousa, L. da C., Humpula, J., Balan, V., Dale, B. E., and **Chundawat, S. P. S.\***, “Impact of Ammonia Pretreatment Conditions on the Cellulose III Allomorph Ultrastructure and Its Enzymatic Digestibility,” *ACS Sustainable Chemistry & Engineering*, vol. 7, **2019**, pp. 14411–14424. <http://pubs.acs.org/doi/10.1021/acssuschemeng.9b00606>.
14. **Chundawat, S. P. S.\***; Uppugundla, N.; Gao, D.; Curran, P.; Balan, V.; Dale, B. Shotgun Approach to Increasing Enzymatic Saccharification Yields of Ammonia Fiber Expansion (AFEX) Pretreated Cellulosic Biomass. *Frontiers in Energy Research*. **2017**, p 9. <https://doi.org/10.3389/fenrg.2017.00009>.
15. Whitehead, T. A.; Bandi, C. K.; Berger, M.; Park, J.; **Chundawat, S. P. S.\*** Negatively Supercharging Cellulases Render Them Lignin-Resistant. *ACS Sustain. Chem. Eng.* **2017**, 5 (7), 6247–6252. <https://doi.org/10.1021/acssuschemeng.7b01202>. **Journal Cover Article**.
16. Haarmeyer, C. N.; Smith, M. D.; **Chundawat, S. P. S.**; Sammond, D.; Whitehead, T. A. Insights into Cellulase-Lignin Non-Specific Binding Revealed by Computational Redesign of the Surface of Green Fluorescent Protein. *Biotechnol. Bioeng.* **2017**, 114 (4), 740–750. <https://doi.org/10.1002/bit.26201>.
17. da Costa Sousa, L.; Jin, M.; **Chundawat, S. P. S.**; Bokade, V.; Tang, X.; Azarpira, A.; Lu, F.; Avci, U.; Humpula, J.; Uppugundla, N.; et al. Next-Generation Ammonia Pretreatment Enhances Cellulosic Biofuel Production. *Energy Environ. Sci.* **2016**, 9, 1215–1223. <https://doi.org/10.1039/C5EE03051J>.
18. **Chundawat, S. P. S.\***; Paavola, C. D.; Raman, B.; Nouailler, M.; Chan, S. L.; Mielenz, J. R.; Brechot, V. R.; Trent, J. D.; Dale, B. E. Saccharification of Thermochemically Pretreated Cellulosic Biomass Using Native and Engineered Cellulosomal Enzyme Systems. *React. Chem. Eng.* **2016**, 1 (6), 616–628. <https://doi.org/10.1039/c6re00172f>. **Journal Cover Article**.
19. O’Neill, H.; Shah, R.; Evans, B. R.; He, J.; Pingali, S. V.; **Chundawat, S. P. S.**; Jones, A. D.; Langan, P.; Davison, B. H.; Urban, V. Production of Bacterial Cellulose with Controlled Deuterium-Hydrogen Substitution for Neutron Scattering Studies. *Methods Enzymol.* **2015**, 565, 123–146. <https://doi.org/10.1016/bs.mie.2015.08.031>.
20. Pattathil, S.; Hahn, M. G.; Dale, B. E.; **Chundawat, S. P. S.\*** Insights into Plant Cell Wall Structure, Architecture, and Integrity Using Glycome Profiling of Native and AFEX-Pre-Treated Biomass. *J. Exp. Bot.* **2015**, 66 (14), 4279–4294. <https://doi.org/10.1093/jxb/erv107>.
21. Brady, S. K.; Sreelatha, S.; Feng, Y.; **Chundawat, S. P. S.**; Lang, M. J. Cellobiohydrolase 1 from *Trichoderma Reesei* Degrades Cellulose in Single Cellobiose Steps. *Nat. Commun.* **2015**, 6, 10149. <https://doi.org/10.1038/ncomms10149>.

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23. Tang, X.; da Costa Sousa, L.; Jin, M.; **Chundawat, S. P. S.**; Chambliss, C. K.; Lau, M. W.; Xiao, Z.; Dale, B. E.; Balan, V. Designer Synthetic Media for Studying Microbial-Catalyzed Biofuel Production. *Biotechnol. Biofuels* **2015**, *8* (1), 1. <https://doi.org/10.1186/s13068-014-0179-6>.
24. Garlock, R. J.; **Chundawat, S. P. S.**; Hodge, D. B.; Keskar, S.; Dale, B. E. Linking Plant Biology and Pretreatment: Understanding the Structure and Organization of the Plant Cell Wall and Interactions with Cellulosic Biofuel Production. In *Plants and BioEnergy (Advances in Plant Biology, Vol 4)*; McCann, M. C., Buckeridge, M. S., Carpita, N. C., Eds.; Springer New York: New York, NY, **2014**; pp 231–253. <https://doi.org/10.1007/978-1-4614-9329-7>.
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26. Lim, S.; **Chundawat, S. P. S.\***; Fox, B. G. Expression, Purification and Characterization of a Functional Carbohydrate-Binding Module from Streptomyces Sp. SirexAA-E. *Protein Expr. Purif.* **2014**, *98*, 1–9. <https://doi.org/10.1016/j.pep.2014.02.013>.
27. Humpula, J. F.; Uppugundla, N.; Vismeh, R.; Sousa, L.; **Chundawat, S. P. S.**; Jones, A. D.; Balan, V.; Dale, B. E.; Cheh, A. M. Probing the Nature of AFEX-Pretreated Corn Stover Derived Decomposition Products That Inhibit Cellulase Activity. *Bioresour. Technol.* **2014**, *152*, 38–45. <https://doi.org/10.1016/j.biortech.2013.10.082>.
28. Gao, D.; Haarmeyer, C.; Balan, V.; Whitehead, T. A.; Dale, B. E.; **Chundawat, S. P. S.\*** Lignin Triggers Irreversible Cellulase Loss during Pretreated Lignocellulosic Biomass Saccharification. *Biotechnol. Biofuels* **2014**, *7* (1), 175. <https://doi.org/10.1186/s13068-014-0175-x>.
29. Uppugundla, N.; da Costa Sousa, L.; **Chundawat, S. P. S.**; Yu, X.; Simmons, B.; Singh, S.; Gao, X.; Kumar, R.; Wyman, C. E.; Dale, B. E.; et al. A Comparative Study of Ethanol Production Using Dilute Acid, Ionic Liquid and AFEX Pretreated Corn Stover. *Biotechnol. Biofuels* **2014**, *7* (1), 72. <https://doi.org/10.1186/1754-6834-7-72>.
30. **Chundawat, S. P. S.\***; Bals, B.; Campbell, T.; Sousa, L.; Gao, D.; Jin, M.; Eranki, P.; Garlock, R.; Teymouri, F.; Balan, V.; et al. Primer on Ammonia Fiber Expansion Pretreatment. In *Aqueous Pretreatment of Plant Biomass for Biological and Chemical Conversion to Fuels and Chemicals*; John Wiley & Sons, Ltd, **2013**; pp 169–200. <https://doi.org/10.1002/9780470975831.ch9>.
31. Vismeh, R.; Lu, F.; **Chundawat, S. P. S.**; Humpula, J. F.; Azarpira, A.; Balan, V.; Dale, B. E.; Ralph, J.; Jones, A. D. Profiling of Diferulates (Plant Cell Wall Cross-Linkers) Using Ultrahigh-Performance

Liquid Chromatography-Tandem Mass Spectrometry. *Analyst* **2013**, *138* (21), 6683–6692.  
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32. Gao, D.; **Chundawat, S. P. S.\***; Sethi, A.; Balan, V.; Gnanakaran, S.; Dale, B. E. Increased Enzyme Binding to Substrate Is Not Necessary for More Efficient Cellulose Hydrolysis. *Proc. Natl. Acad. Sci.* **2013**, *110* (27), 10922–10927. <https://doi.org/10.1073/pnas.1213426110>.
33. Vismeh, R.; Humpala, J. F.; **Chundawat, S. P. S.**; Balan, V.; Dale, B. E.; Jones, A. D. Profiling of Soluble Neutral Oligosaccharides from Treated Biomass Using Solid Phase Extraction and LC-TOF MS. *Carbohydr. Polym.* **2013**, *94* (2), 791–799. <https://doi.org/10.1016/j.carbpol.2013.02.005>.
34. Balan, V.; Kumar, S.; Bals, B.; **Chundawat, S. P. S.**; Jin, M.; Dale, B. Biochemical and Thermochemical Conversion of Switchgrass to Biofuels. In *Switchgrass: A Valuable Biomass Crop for Energy*; Springer London, **2012**; pp 153–185. [https://doi.org/10.1007/978-1-4471-2903-5\\_7](https://doi.org/10.1007/978-1-4471-2903-5_7).
35. Bellesia, G.; **Chundawat, S. P. S.**; Langan, P.; Redondo, A.; Dale, B. E.; Gnanakaran, S. Coarse-Grained Model for the Interconversion between Native and Liquid Ammonia-Treated Crystalline Cellulose. *J. Phys. Chem. B* **2012**, *116*(28), 8031–8037. <https://doi.org/10.1021/jp300354g>.
36. Lau, M. W.; Bals, B.; **Chundawat, S. P. S.**; Jin, M.; Gunawan, C.; Balan, V.; Jones, A. D.; Dale, B. E. An Integrated Paradigm for Cellulosic Biorefineries: Utilization of Lignocellulosic Biomass as Self-Sufficient Feedstocks for Fuel, Food Precursors and Saccharolytic Enzyme Production. *Energy Environ. Sci.* **2012**, *5*, 7100–7110. <https://doi.org/10.1039/C2EE03596K>.
37. **Chundawat, S. P. S.\***; Chang, L.; Gunawan, C.; Balan, V.; McMahan, C.; Dale, B. E. Guayule as a Feedstock for Lignocellulosic Biorefineries Using Ammonia Fiber Expansion (AFEX) Pretreatment. *Ind. Crops Prod.* **2012**, *37*, 486–492. <https://doi.org/10.1016/j.indcrop.2011.07.025>.
38. Balan, V.; Sousa, L.; **Chundawat, S. P. S.**; Humpala, J.; Dale, B. E. Overview to Ammonia Pretreatments for Lignocellulosic Biorefineries. *Dyn. Biochem. Process Biotechnol. Mol. Biol.* **2012**, *6* (Special Issue 2), 1–11.  
[http://www.globalsciencebooks.info/Online/GSBOnline/images/2012/DBPBMB\\_6\(SI2\)/DBPBMB\\_6\(SI2\)1-11o.pdf](http://www.globalsciencebooks.info/Online/GSBOnline/images/2012/DBPBMB_6(SI2)/DBPBMB_6(SI2)1-11o.pdf)
39. **Chundawat, S. P. S.\***; Beckham, G. T.; Himmel, M.; Dale, B. E. Deconstruction of Lignocellulosic Biomass to Fuels and Chemicals. *Annu. Rev. Chem. Biomol. Eng.* **2011**, *2*, 121–145.  
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42. Parthasarathi, R.; Bellesia, G.; **Chundawat, S. P. S.**; Dale, B. E.; Langan, P.; Gnanakaran, S. New Insights into Hydrogen Bonding and Stacking Interactions in Cellulose. *J. Phys. Chem. A* **2011**, *115* (49), 14191–14202. <https://doi.org/10.1021/jp203620x>. **Journal Cover Article.**
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45. Gao, D.; Uppugundla, N.; **Chundawat, S. P. S.**; Yu, X.; Hermanson, S.; Gowda, K.; Brumm, P.; Mead, D.; Balan, V.; Dale, B. Hemicellulases and Auxiliary Enzymes for Improved Conversion of Lignocellulosic Biomass to Monosaccharides. *Biotechnol. Biofuels* **2011**, *4* (1), 5. <https://doi.org/10.1186/1754-6834-4-5>.
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47. Bellesia, G.; **Chundawat, S. P. S.**; Langan, P.; Dale, B. E.; Gnanakaran, S. Probing the Early Events Associated with Liquid Ammonia Pretreatment of Native Crystalline Cellulose. *J. Phys. Chem. B* **2011**, *115* (32), 9782–9788. <https://doi.org/10.1021/jp2048844>.
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*Biomass*; Waldron, J., Ed.; Woodhead Publishing Ltd., (CRC Press), 2010; Vol. 3, pp 24–72.  
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60. Balan, V.; da Costa Sousa, L.; **Chundawat, S. P. S.**; Vismeh, R.; Jones, A. D.; Dale, B. E. Mushroom Spent Straw: A Potential Substrate for an Ethanol-Based Biorefinery. *J. Ind. Microbiol. Biotechnol.* **2008**, 35 (5), 293–301. <https://doi.org/10.1007/s10295-007-0294-5>.
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62. Huda, M. S.; Balan, V.; Drzal, L. T.; **Chundawat, S. P. S.**; Dale, B. E.; Misra, M. Effect of Ammonia Fiber Expansion (AFEX) and Silane Treatments of Corncob Granules on the Properties of Renewable Resource Based Biocomposites. *J. Biobased Mater. Bioenergy* **2007**, 1 (1), 127–136. <https://www.ingentaconnect.com/content/asp/jbmb/2007/00000001/00000001/art00015>.
63. **Chundawat, S. P. S.\***; Balan, V.; Dale, B. E. Effect of Particle Size Based Separation of Milled Corn Stover on AFEX Pretreatment and Enzymatic Digestibility. *Biotech Bioeng* **2007**, 96 (2), 219 – 231. <https://doi.org/10.1002/bit.21132>.
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#### Manuscripts under preparation

65. Bandi, C.K., Agrawal, A., and **Chundawat, S. P. S.\***, “Recent advances in Carbohydrate-Active enZyme (CAZyme) engineering for synthetic glycosides”. *Invited manuscript to be submitted to Current Opinion in Biotechnology in July 2020*.
66. Bertuccio, A. and **Chundawat, S.P.S.\***, “Glucometer-based sugar assays to quantitatively monitor enzymatic hydrolysis of cellulose for an undergraduate biochemical engineering laboratory,”. *Manuscript to be submitted to ACS Journal of Chemical Education in August 2020*.

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## Patents

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2020: Biosensors for Selectively Identifying Azide Ions (US Provisional Patent Application filed June 30, 2020; Rutgers Provisional Application No. RU 2019-159). Inventors: **Shishir Chundawat**, Chandra Kanth Bandi, Kyle Skalenko.

2019: High-Throughput Cell-Based Screening Methodology for Evaluating Carbohydrate-Active Enzymes (US Provisional Patent Application No. 62/877,021, filed July 22, 2019). Inventors: **Shishir Chundawat**, Chandra Kanth Bandi, Ayushi Agrawal.

2019: Engineered Carbohydrate-Active Enzymes for Glycan Polymers Synthesis (US Patent Application No. 16/545,786 filed August 20, 2019). Inventors: **Shishir Chundawat**, Chandra Kanth Bandi. <https://patents.google.com/patent/US20200056215A1>.

2017: Methods for producing extracted and digested products from pretreated lignocellulosic biomass (US Patent 9,650,657 B2). Inventors: **Shishir Chundawat**, Leonardo Da Costa Sousa, Albert M. Cheh, Venkatesh Balan, Bruce Dale. <https://patents.google.com/patent/US9650657B2>.

2017: Methods for pretreating biomass (US Patent 9,644,222). Inventors: Venkatesh Balan, Bruce Dale, **Shishir Chundawat**, Leonardo Sousa. <https://patents.google.com/patent/US9644222B2>.

2015: Extraction of solubles from plant biomass for use as microbial growth stimulant and methods related thereto (US Patent 9,206,446 B2). Inventors: Ming Woei Lau, Bruce Dale, Venkatesh Balan, **Shishir Chundawat**. <https://patents.google.com/patent/US9206446B2>.

2013: Fractionated extractive products from plant biomass and methods of making and using same (US Patent Application 20130244293 A1). Inventors: Venkatesh Balan, Albert Cheh, **Shishir Chundawat**, Bruce E. Dale, Leonardo Sousa. <https://patents.google.com/patent/US20130244293A1>.

2013: Process for producing sugars and ethanol using corn stillage (US Patent 8,367,378 B2). Inventors: Venkatesh Balan, **Shishir Chundawat**, Leonardo Sousa, Bruce Dale. <https://patents.google.com/patent/US8367378B2>.

2009: Process for making fuels and chemicals from AFEX treated whole grain or whole plants (US Patent Application 20090053771 A1). Inventors: Bruce Dale, Venkatesh Balan, **Shishir Chundawat**, Bryan Bals. <https://patents.google.com/patent/US20090053771A1>.

2009: Process for enzymatically converting a plant biomass (US Patent Application 20090042259 A1). Inventors: Bruce E. Dale, Farzaneh Teymouri, **Shishir Chundawat**, Venkatesh Balan. <https://patents.google.com/patent/US20090042259A1>.

2007: Composite materials from corncob granules and process for preparation (US Patent Application 20070287795 A1). Inventors: Masud Huda, Venkatesh Balan, Lawrence Drzal, Bruce Dale, **Shishir Chundawat**, Manjusri Misra. <https://patents.google.com/patent/US20070287795A1>.

2007: Process for conversion of mushroom lignocellulosic waste to useful byproducts (US Patent Application 20070227063 A1). Inventors: Bruce E. Dale, Venkatesh Balan, **Shishir Chundawat**. <https://patents.google.com/patent/US20070227063A1>.

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## Research Funding

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### Externally-Funded Research and User Facility Grants

#### Current Projects

Project Title: *Automated N-linked glycan analysis PAT to enable continuous biologics manufacturing*

Award Number: 4481

Grant Amount: \$61,839

Start Date: July 2020, Tentative End Date: Dec 2021.

Investigator: **Shishir Chundawat** (Rutgers)

Agency: Agilent Research Gift

Role: PI

Project Title: *Collaborative Research: Mechanism-guided enzyme engineering for fucosylated glycoconjugate synthesis*

Award Number: 1904890/1904862

Grant Amount: \$719,996

Start Date: Sept 2019, Tentative End Date: Aug 2022

Investigators: Heather Mayes (University of Michigan PI), **Shishir Chundawat** (Rutgers PI)

Agency: National Science Foundation (CHE - Chemistry of Life Processes Program)

Role: Co-PI

Project Title: *CAREER-Force Spectroscopy Enabled Multivalent Glycan-binding Protein Engineering*

Award Number: 1846797

Grant Amount: \$569,469

Start Date: June 2019, Tentative End Date: May 2024

Investigator: **Shishir Chundawat** (Rutgers)

Agency: National Science Foundation (CBET - Cellular & Biochemical Engineering Program)

Role: PI

Award Number: FP00010677 for Biacore 8K+ instrumentation

Start Date: Aug 2019, Tentative End Date: NA.

Investigators: Nilgun Tumer (PI), Study Team Member: **Shishir Chundawat** (along with several faculty)

Agency: National Institutes of Health (Shared Instrumentation Grant)

Role: Study Team Member

Project Title: *A Multiscale Approach to Characterizing Interfacial Carbohydrate-Active Enzymes*

Award Number: 1604421 (NSF-INTERN Supplement)

Grant Amount: \$54,998

Start Date: July 2019, Tentative End Date: Feb 2020

Investigator: **Shishir Chundawat** (Rutgers)

Agency: National Science Foundation (CBET – Catalysis Program)

Role: PI

Project Title: *Computationally Designed Cellulases to Decrease the Cost of Biofuels*

Award Number: CSP-503631 Syn (DOE-JGI Community Science Program)

Grant Amount: 350 kbp total DNA synthesis

Start Date: Sept 2018, Tentative End Date: Aug 2021

Investigators: **Shishir Chundawat** (Rutgers Lead PI), Jeffrey Linger (Note: Deanne Sammond was NREL PI before she left NREL in 2019)

Agency: Department of Energy (Joint Genome Institute Annual DNA Synthesis Award)

Role: Co-PI

Project Title: *In planta single-molecule imaging and holographic force spectroscopy to study real-time, multimodal turnover dynamics of polysaccharides and associated carbohydrate metabolites*

Award Number: DE-SC0019313

Grant Amount: \$1,500,000  
Start Date: Sept 2018, Tentative End Date: Aug 2021  
Investigators: Sanghyuk Lee (Rutgers Lead PI), **Shishir Chundawat** (Rutgers Lead Co-PI), Eric Lam, Matthew Lang (Vanderbilt), Wellington Muchero (ORNL), Sai Venkatesh Pingali (ORNL)  
Agency: Department of Energy (Bioimaging Program in Biological & Environmental Research)  
Role: Co-PI

Project Title: *Advanced continuous upstream manufacturing of biotherapeutics*  
Award Number: 1R01FD006588  
Grant Amount: \$1,800,000  
Start Date: Sept 2018, Tentative End Date: Aug 2021  
Investigators: Marianthi Ierapetritou (Original PI moved to U.Delaware) and **Shishir Chundawat** (Current Rutgers Lead PI), Rohit Ramachandran, Haoran Zhang, Georgios Tsilomelekis, Ravendra Singh, Doug Hausner  
Agency: Food and Drug Administration  
Role: Co-PI

Project Title: *SusChEM-Designer Glycoligands for Enabling Targeted Multimodal Protein Bioseparations*  
Award Number: 1704679  
Grant Amount: \$300,000  
Start Date: Sept 2017, Tentative End Date: Dec 2020  
Investigator: **Shishir Chundawat** (Rutgers)  
Agency: National Science Foundation (CBET - Separations Program)  
Role: PI

Project Title: *A Multiscale Approach to Characterizing Interfacial Carbohydrate-Active Enzymes*  
Award Number: 1604421  
Grant Amount: \$449,678  
Start Date: Sept 2016, Tentative End Date: Feb 2021  
Investigators: **Shishir Chundawat** (Rutgers), Co-PI: Matthew Lang (Vanderbilt University)  
Agency: National Science Foundation (CBET – Catalysis Program)  
Role: PI

#### Expired Projects

Project Title: *In-vitro Multiscale Carbohydrate-Active Enzyme Binding Characterization using SANS*  
Instrumentation: HFIR/BioSANS Small Angle Neutron Scattering at Oak Ridge National Laboratory  
Award Number: 17752  
Beam Time Date: 7-10 Aug 2017  
Investigator: **Shishir Chundawat** (Rutgers)  
Agency: Oak Ridge National Lab Neutron Sciences Division HFIR-BioSANS Instrumentation Grant  
Role: PI

Project Title: *In-situ Time Resolved Ammonia-Salt Based Pretreatment of Cellulosic Biomass*

Instrumentation: HFIR/BioSANS Small Angle Neutron Scattering at Oak Ridge National Laboratory  
Award Number: 17764  
Beam Time Date: 7-10 Aug 2017  
Investigator: **Shishir Chundawat** (Rutgers)  
Agency: Oak Ridge National Lab Neutron Sciences Division HFIR-BioSANS Instrumentation Grant  
Role: PI

Project Title: *Valorization of biopolymers to fuels, chemicals, & advanced materials*  
Grant Amount: \$10,000  
Start Date: May 2016, End Date: July 2017  
Investigator: **Shishir Chundawat** (Rutgers)  
Agency: Ralph E. Powe Junior Faculty Enhancement Award (ORAU)  
Role: PI

Project Title: *Solving a Sticky Problem-Understanding Enzyme Binding to Lignocellulosic Biomass during Biofuel Production*  
REU Supplement Subaward for Award Number: 1236120  
Grant Amount: \$14,683  
Start Date: Aug 2015, End Date: Dec 2016  
Investigators: **Shishir Chundawat** (Rutgers PI), Timothy Whitehead (MSU PI)  
Agency: National Science Foundation (CBET - Energy for Sustainability Program)  
Role: Co-PI

Project Title: *Industrial Service Project with Aurobindo Pharma (NJ) on characterization of pharmaceutical formulations*  
Grant Amount: \$1,975  
Start Date: Dec 2015, End Date: Dec 2016  
Investigator: **Shishir Chundawat** (Rutgers)  
Agency: Aurobindo Pharma (NJ)  
Role: PI

Project Title: *Solving a Sticky Problem: Understanding Enzyme Binding to Lignocellulosic Biomass during Biofuel Production*  
Award Number: 1236120  
Grant Amount: \$299,801  
Start Date: Aug 2012, End Date: Dec 2016  
Investigators: Timothy Whitehead (MSU), **Shishir Chundawat** (MSU and Rutgers)  
Agency: National Science Foundation (CBET - Energy for Sustainability Program)  
Role: Co-PI

Project Title: *Conversion of palm industry cellulosic waste to biofuels & biochemicals*  
Award Number: MSU-DER #RC101539  
Grant Amount: \$177,025  
Start Date: 2012, Tentative End Date: 2014

Investigators: Venkatesh Balan, Bruce Dale, **Shishir Chundawat** (MSU)  
Agency: Date Palm Research Center (King Faisal University)  
Role: Co-PI

### **Internally-Funded Research and User Facility Grants**

#### Current Projects

Project Title: *Preserving and Nurturing Our Healthy Microbiome*  
Start Date: Sept 2020, Tentative End Date: NA.  
Investigators: Liping Zhao, **Shishir Chundawat** (along with 100+ Rutgers faculty)  
Agency: Rutgers Big Idea Initiative  
Role: Team Member/Collaborator

Project Title: *Multimodal Single-molecule Microscopy (MoSoM) initiative to catalyze interdisciplinary life sciences research at Rutgers University*  
Grant Amount: \$70,000  
Start Date: Sept 2019, Tentative End Date: Aug 2021.  
Investigators: Sang-Hyuk Lee, **Shishir Chundawat** (Rutgers)  
Agency: Rutgers Office of Research and Innovation Team Proposal Development Grant  
Role: Co-PI

Project Title: *Responsive Bio-Inspired Materials for Sensing and Actuation*  
Grant Amount: \$50,000  
Start Date: Oct 2019, Tentative End Date: Sept 2020.  
Investigators: Adam Gormley. Co-PIs: Vikas Nanda, Sagar Khare, Enver Izgu, **Shishir Chundawat**, Meenakshi Dutt, Benjamin Schuster (Rutgers)  
Agency: Rutgers Initiative for Materials Research (iMR) Team Proposal Development Grant  
Role: Co-PI

Project Title: *Synthetic Cells and Cell Components*  
Grant Amount: \$60,000  
Start Date: Oct 2019, Tentative End Date: Sept 2020.  
Investigators: Adam Gormley. Co-PIs: Vikas Nanda, Sagar Khare, Enver Izgu, **Shishir Chundawat**, Meenakshi Dutt, Benjamin Schuster (Rutgers)  
Agency: Rutgers Office of Research and Innovation Team Proposal Development Grant  
Role: Co-PI

#### Expired Projects

Project Title: *Enabling the creation of a sustainable and economically viable cellulosic biofuels industry in Brazil*  
Grant Amount: \$8,000  
Start Date: Feb 2016, End Date: Dec 2017.

Investigator: **Shishir Chundawat** (Rutgers)

Agency: Rutgers GAIA International Collaborative Research Grants for Tenure-Track Faculty

Role: PI

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## Teaching Experience

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### Doctoral Dissertation Primary Advisor at Rutgers

#### Current

1. *Mr. Mohit Kumar* (2020-Current; Rutgers CBE Ph.D. Dissertation Title "*Engineering glycosynthase enzymes for synthesis of bespoke human-milk oligosaccharides*")
2. *Mr. Aron Gyorgypal* (2019-Current; Rutgers CBE Ph.D. Dissertation Title "*Real-time characterization of N-linked protein glycosylation to enable continuous upstream biomanufacturing of monoclonal antibodies*")
3. *Mr. Dharanidaran Jayachandran* (2019-Current; Rutgers CBE Ph.D. Dissertation Title "*Engineering polysaccharides synthase enzyme complexes and their single-molecule characterization for improved transgenic bioenergy crops*")
4. *Mr. Markus Hackl* (2018-Current; Rutgers CBE Ph.D. Dissertation Title "*Single-molecule acoustic force spectroscopy enabled protein engineering*"). Ph.D. Proposal Defense Postponed from early-Summer 2020 to late-Fall 2020 Due to COVID-19 Pandemic.
5. *Mr. Bhargava Nemmaru* (2017-Current; Rutgers CBE Ph.D. Dissertation Title "*Engineering cellulases and their single-molecule characterization for enhanced lignocellulose deconstruction to biofuels*"). Ph.D. Proposal Defense Postponed from Spring 2020 to Aug 2020 Due to COVID-19 Pandemic.
6. *Mr. Chandra Kanth Bandi* (2016-Current; Rutgers CBE Ph.D. Dissertation Title "*Novel Protein Engineering Approaches for Chemoenzymatic Synthesis of Glycans*"). Ph.D. Dissertation Defense Postponed from Spring 2020 to late-Fall 2020 Due to COVID-19 Pandemic.

### Master's Thesis Primary Advisor at Rutgers

#### Current

1. *Mr. Zachary Power* (2019-2021; Rutgers CBE MS Thesis Title "*Optimizing sample immobilization methods to study protein-glycan interactions at the single-molecule level using acoustic force spectroscopy*")
2. *Mr. Antash Chaturvedi* (2019-2021; Rutgers CBE MS Thesis Title "*Continuous upstream CHO cell culture for production of glycosylated monoclonal antibodies*")

#### Former

1. *Ms. Madhura Kasture* (2017-2020; Rutgers CBE MS Thesis Title "*Impact of carbohydrate binding modules on transglycosylation efficiency in the glycoside hydrolase family 5 proteins*")
2. *Mr. Antonio Goncalves* (2017-2019; Rutgers CBE MS Thesis Title "*Chemoenzymatic synthesis of multimodal glycoligands with bio-orthogonal aldehyde based functional moiety*")
3. *Ms. Ayushi Agrawal* (2016-2019; Rutgers CBE MS Thesis Title "*Development of a cell based screening methodology for the directed evolution of glycosynthases*")
4. *Ms. Namratha Subhash* (2016-2018; Rutgers CBE MS Thesis Title "*Selective growth of targeted bacteria using enzymatically synthesized oligosaccharides*")

5. Mr. Akash Dagia (2016-2018; Rutgers CBE MS Thesis Title "*Characterizing CBM1 Y5 mutants structure and its impact on binding affinity to cellulose*")
6. Ms. Yuxin Liu (2015-2017; Rutgers CBE MS Thesis Title "*Cell culture optimization, homologous expression, and purification of CAZymes from Thermobifida fusca*")
7. Ms. Vibha Narayanan (2015-2017; Rutgers CBE MS Thesis Title "*Binding interactions of Family 1 CBMs with cellulose allomorphs*")

### **Master's Thesis Committee Member at Rutgers**

#### Former

1. Mr. Aparajith Bhaskar (August 2018; Rutgers CBE MS Thesis Title "*Implementation of an Advanced Control Strategy into a Continuous Direct Compaction Pharmaceutical Tablet Manufacturing Process*"; MS Thesis Director - Dr. Ravendra Singh)
2. Mr. Praneeth Annam (Dec 2017; Rutgers CBE MS Thesis Title "*Life Cycle Assessment for Bio-Based Production of p-Xylene*"; MS Thesis Director - Dr. Marianthi Ierapetritou)
3. Mr. Geetartha Uppaladadium (May 2015; Rutgers CBE MS Thesis Title "*Mesoscale modeling of biomimetic macromolecular aggregates*"; MS Thesis Director - Dr. Meenakshi Dutt)

### **Postdoctoral Trainees at Rutgers**

#### Current

1. Dr. Viki Chopda (May 2019-Current; Full-time Postdoctoral Research Associate at Rutgers University). Project title: *Continuous biomanufacturing of glycosylated monoclonal antibodies*.
2. Dr. Mohammad Irfan (Feb 2019-Current; Full-time Postdoctoral Research Associate at Rutgers University). Project title: *Heterologous expression of polysaccharide synthases in plant protoplasts*.

#### Former

1. Dr. Chao Zhao (Aug 2018-July 2019; Visiting Postdoctoral Scholar from China; Currently a faculty member at Zhejiang A&F University).
2. Dr. Shyamal Roy (Jul 2016-June 2017; Visiting Postdoctoral Scholar from India; Currently a faculty member at Jadavpur University)
3. Dr. Yongling Qin (Jan 2016-Dec 2016; Visiting Postdoctoral Scholar from China; Currently a faculty member at Hechi University)

### **Students Supervised for Independent Studies at Rutgers**

#### Graduate Students

1. Ms. Margaux Thiry (2019 Summer; University of Poitiers-France Visiting Biology MS Student (Biochemistry Molecular and Cell Biology and Genetics Program), Summer Intern at Rutgers). Internship Project/Report Titled "*Operon Optimization for Bacterial Protein Expression*" was submitted to University of Poitiers for credits.
2. Ms. Navya Sahithi (2016-2019; Rutgers CBE MS). Trained in lab and conducted research on NSF Sponsored Project (Award #1604421) to express supercharged CAZymes and characterize their binding affinity to cellulose/lignin. Submitted a final independent study report to CBE titled



"Characterizing binding and activity of supercharged CAZymes to lignocellulosic biomass" in Summer 2019.

3. *Mr. Bolun Tan* (2016-2018; Rutgers CBE MS). Trained in lab and conducted research on Aspen Plus modeling project. Submitted a final independent study report to CBE titled "*A solid liquid equilibrium based on eNRTL(electrolyte NRTL) model and evaluation of thermodynamic representation of NH<sub>4</sub>SCN/NH<sub>3</sub>/Ethanol system*".
4. *Ms. Shraddha Gupta* (2016-2018; Rutgers CBE MS). Trained in lab and conducted research on NSF Sponsored Project (Award #1704679) to express proteins and characterize their binding affinity. Submitted a final independent study report to CBE on glycoligand-beads based protein bioseparations.
5. *Mr. Shashwat Gupta* (2015-2016, Rutgers CBE MS); Trained in lab and conducted research on ORAU Sponsored Project to characterize ammonia pretreated biomass and its enzymatic digestibility.
6. *Mr. Satvik Sharma* (2015-2016; Rutgers CBE MS); Trained in lab and conducted research on NASA Sponsored Project (New Jersey Space Grant Consortium Graduate Student Fellowship) to test activity of CAZymes under various mixing regimes.
7. *Mr. Soumya Asthana* (2015-2016; Rutgers CBE MS); Trained in lab and conducted research on NSF Sponsored Project (Award #1236120) to express supercharged CAZymes and characterize their binding affinity to lignin

#### Undergraduate Students

1. *Mr. Kishan Mehta* (2020-Ongoing; Rutgers CBN BS; Aresty Undergraduate Research Fellow); Received Aresty Undergraduate Research Award to conduct research on DOE Sponsored Project (Award No. DE-SC0019313) to engineer, express and purify plant membrane proteins for imaging in vitro.
2. *Mr. Shamanth Manjunatharao* (2020-Ongoing; Rutgers Chem BS; Aresty Undergraduate Research Fellow); Received Aresty Undergraduate Research Award to conduct research on DOE Sponsored Project (Award No. DE-SC0019313) to engineer, express and purify plant membrane proteins for imaging in vitro.
3. *Mr. Tan Ngo* (2020-Ongoing; Rutgers CE BS; Aresty Research Assistant); Training in lab and conducting research on NSF Sponsored Project (Award #1846797) to develop LabView code for single-molecule force spectroscopy experiments data analysis. Research to be presented in Aresty 2021 Symposium.
4. *Mr. Kevin Zheng* (2020-Ongoing; Rutgers CBE BS; Aresty Research Assistant); Training in lab and conducting research on NSF Sponsored project (Award No. 1904890) titled '*Enzyme engineering for synthesis of prebiotic human milk oligosaccharides*'. Research to be presented at 2021 Aresty Research Symposium.
5. *Mr. Igor Guranovic* (2020-Ongoing; Rutgers BME BS; Aresty Research Assistant); Training in lab and conducting research on NSF Sponsored project (Award No. 1904890) titled '*Enzyme engineering for synthesis of prebiotic human milk oligosaccharides*'. Research to be presented at 2021 Aresty Research Symposium.
6. *Mr. Vrushabh Khot* (2020-Ongoing; Rutgers CBE BS; Aresty Research Assistant); Training in lab and conducting research on FDA Sponsored project (Award No. 5R01FD006588) titled '*Glycosylated monoclonal antibody production and mAbs characterization for enabling Quality-by-Control biomanufacturing*'. Research to be presented at 2021 Aresty Research Symposium.

7. *Mr. Rishabh Shah* (2020-Ongoing; Rutgers CBE BS; Aresty Research Assistant); Training in lab and conducting research on FDA Sponsored project (Award No. 5R01FD006588) titled '*Glycosylated monoclonal antibody production and mAbs characterization for enabling Quality-by-Control biomanufacturing*'. Research to be presented at 2021 Aresty Research Symposium.
8. *Ms. Vrinda Jain* (2020-Ongoing; Rutgers BME BS; Aresty Research Assistant); Training in lab and conducting research on NSF Sponsored project (Award No. 1904890) titled '*Enzyme engineering for synthesis of prebiotic human milk oligosaccharides*'. Research to be presented at 2021 Aresty Research Symposium.
9. *Mr. Darin Mak* (2020-Ongoing; Rutgers BME BS; Aresty Research Assistant); Training in lab and conducting research on NSF Sponsored project (Award No. 1904890) titled '*Enzyme engineering for synthesis of prebiotic human milk oligosaccharides*'. Research to be presented at 2021 Aresty Research Symposium.
10. *Ms. Shoili Banerjee* (2020-Ongoing; Rutgers CBE BS; Rutgers Energy Institute or REI Undergraduate Fellow); Trained in lab and conducted research on REI and DOE Sponsored Project (Award #DE-SC0019313) to express, purify, and characterize mutant CAZymes. Student submitted online poster in spring 2020 titled 'Expressing Cesa8 and Cesa5 in *P. pastoris* for in vitro cellulose analysis' for DRC course on Intro to Scientific Research. Final student report on "*Expression, purification and characterization of a plant origin cellulose synthase enzyme*" to be presented and submitted to REI in coming 2020-2021 academic year.
11. *Ms. Vaneeza Abbas* (2019-2020; Rutgers CBE BS; CBE Research Assistant); Trained in lab and conducted research on development of reproducible surface modification procedures for the attachment of glycans and proteins to study protein-glycan interactions at the single molecule level.
12. *Mr. Atharv Kulkarni* (2019-2020; Rutgers BME BS; Aresty Research Assistant); Developed LabView code for single-molecule force spectroscopy experiments data analysis relevant to NSF Sponsored Project. Research presented at 2020 Aresty Research Symposium.
13. *Ms. Wen-Chen Chen* (2019-Ongoing; Rutgers CBE BS; CBE Research Assistant); Trained in lab and conducted research on NSF Sponsored Project (Award #1704679) to express, purify and characterize engineered proteins and synthesized glycans. Submitted CBE independent study report for research credits in Fall 2019/Spring 2020.
14. *Mr. Varun Raghuraman* (2017-2020; Rutgers CS BS; Aresty Summer Science & Undergraduate Research Fellow); Trained in lab and conducted research on NSF Sponsored Project (Award #1604421) to express, purify, and characterize mutant CAZymes and CBMs in 2017-2018. Received Aresty Undergraduate Research Award in 2019 to develop LabView code for single-molecule force spectroscopy experiments data analysis relevant to NSF Sponsored Project (Award #1846797).
15. *Mr. Edward Contrada* (2019-2020; Rutgers BME BS; Aresty Research Assistant); Trained in lab and conducted research on Rutgers Sponsored project titled '*Developing an Acoustic Force Spectroscopy Technique to Measure Carbohydrate Binding Module Interaction with Cellulose*'. Research presented at 2020 Aresty Research Symposium.
16. *Ms. Jenna Douglas* (2019-2020; Rutgers CBE BS; Aresty and CBE Research Assistant); Trained in lab and conducted research on NSF Sponsored Project (Award #1604421) to express, purify and characterize processive cellulase/CBMs.

17. Mr. Naven Sekhon (2019-2020; Rutgers CBE BS; Aresty and CBE Research Assistant); Trained in lab and conducted research on NSF Sponsored Project (Award #1604421) to express, purify and characterize processive cellulase/CBMs.
18. Mr. Ahmed Abdelhamid (2019-2020; Rutgers BME BS; Aresty Undergraduate Research Fellow); Received Aresty Undergraduate Research Award to conduct research on DOE Sponsored Project (Award No. DE-SC0019313) to engineer, express and purify plant membrane proteins for imaging in vitro.
19. Mr. Srivatsan Shankar (2019-2020; Rutgers CBE BS; Aresty and CBE Research Assistant); Trained in lab and conducted research on NSF Sponsored Project (Award #1604421) to express, purify and characterize processive cellulase/CBMs.
20. Ms. Deepika Saravana (2019-Ongoing; Rutgers CBE BS; Aresty Research Assistant); Trained in lab and conducted research on NSF Sponsored Project (Award #1704679) to optimize column chromatography technique for preparative sugar separations and characterize enzymatic reaction for glycan synthesis. Will be presenting a poster at Aresty Symposium 2020.
21. Ms. Khushbu Patel (2019-Ongoing; Rutgers CBE BS; Aresty Research Assistant); Trained in lab and conducted research on NSF Sponsored Project (Award #1704679) to express, purify and characterize engineered proteins and synthesized glycans. Will be presenting a poster at Aresty Symposium 2020.
22. Mr. Jorge Gustavo Tapia (2019-Ongoing; Rutgers CBE BS; Aresty Research Assistant); Trained in lab and conducted research on NSF Sponsored Project (Award #1704679) to express, purify and characterize supercharged green fluorescent proteins (GFP) to test their binding characteristics to sugar ligands. Will be presenting a poster at Aresty Symposium 2020.
23. Mr. Akshay Thakur (2019-2020; Rutgers BT BS; Aresty Undergraduate Research Fellow); Received Aresty Undergraduate Research Award to conduct research on DOE Sponsored Project (Award No. DE-SC0019313) to engineer, express and purify plant membrane proteins for imaging in vitro.
24. Mr. Ari Alter (2019-2020; Rutgers CBE BS; Research Assistant); Trained in lab and conducting research on FDA Sponsored project (Award No. 5R01FD006588) titled '*Glycosylated monoclonal antibody production and mAbs characterization for enabling Quality-by-Control biomanufacturing*' developing models for Raman PAT data chemometrics.
25. Ms. Rana Said (2019-Ongoing; Rutgers Pharmacy BPharmD; Research Assistant); Trained in lab and conducting research on FDA Sponsored project (Award No. 5R01FD006588) titled '*Glycosylated monoclonal antibody production and mAbs characterization for enabling Quality-by-Control biomanufacturing*' on PNGase enzyme heterologous expression.
26. Ms. Sarah Hussain (2019-2020; Rutgers CBE BS; CBE Research Assistant); Trained in lab and conducted research on NSF Sponsored Project (Award #1604421) to express, purify and characterize engineered proteins. Submitted CBE independent study report "*Supercharging of Cel6B, Cel5A, GFP, and CelE*" for research credits in Fall 2019/Spring 2020.
27. Mr. Jonathan Ash (Summer/Fall 2019; Rutgers Biotechnology (Bioinformatics) BS); Trained in lab and conducted independent study research work as part of School of Environmental & Biological Sciences General (four-year) Honors Program Tutorial III Program. Submitted report titled "*Acoustic force spectroscopy (AFS) Lab Research Report*" to Rutgers SEBS Honors Programs for Credit.
28. Ms. Lisa Poponne (2018-2019; Rutgers CBE BS; Aresty and CBE Research Assistant); Trained in lab and conducted research on NSF Sponsored Project (Award #1604421) to express, purify and

- characterize processive cellulase/CBMs. Submitted CBE independent study report "*Production and Characterization of CBM Family 1 Aromatic Mutants for Single Molecule activity*".
29. Mr. Mohamed Khan (Spring 2019; Rutgers Biochemistry and Microbiology BS); Trained in lab and conducted independent study research work as part of Research in Biochemistry 11:115:494 Course. Submitted report titled "*Impact of planar aromatic residues of CBM on endo-cellulase activity*" to Rutgers Department of Biochemistry and Microbiology for Credit.
  30. Ms. Orchid Poponne (2018-2019; Rutgers CBE BS; Aresty and CBE Research Assistant); Trained in lab and conducted research on NSF Sponsored Project (Award #1604421) to express, purify and characterize processive cellulase/CBMs. Submitted CBE independent study report "*The effect of aromatic residues on the activity of the Cel6B Catalytic Domain*".
  31. Ms. Ruchi Pandya (2018-2019; Rutgers Biotechnology BS); Trained in lab and conducted independent study research work as part of School of Environmental & Biological Sciences Program. Submitted report titled "*Studying the effect of CBM supercharging on binding to cellulose allomorphs*" to Rutgers SEBS Research in Biotechnology Program in Fall 2018/Spring 2019 for Credit.
  32. Ms. Siqi Ma (2018-2019; Rutgers Molecular Biology & Biochemistry BS; Aresty Summer Science); Trained in lab and conducted research on Rutgers Sponsored Project titled '*Developing an Acoustic Force Spectroscopy Technique to Measure Carbohydrate Binding Module Interaction with Cellulose*' and research presented at 2018 Aresty Research Symposium.
  33. Mr. Mohamed Khan (Fall 2018; Rutgers Biochemistry and Microbiology BS); Trained in lab and conducted independent study research work as part of Research in Biochemistry 11:115:493 Course. Submitted report titled "*Impact of planar aromatic residues of CBM on exo-cellulase activity*" to Rutgers Department of Biochemistry and Microbiology for Credit.
  34. Ms. Jia-Mei Hong (2018-2019; Rutgers CBE BS; Aresty Research Assistant); Trained in lab and developed cellulosic bioenergy outreach protocol as part of NSF Sponsored Project (Award #1604421) and assisted Dr. Chundawat in a summer 2018 high-school students outreach event sponsored by the Rutgers SOE.
  35. Mr. Allan Wang (2018-2020; Rutgers CBE BS; Aresty Summer Science and Rutgers Energy Institute or REI Undergraduate Fellow); Trained in lab and conducted research on REI and NSF Sponsored Project (Award #1604421) to express, purify, and characterize mutant CAZymes. Final student report on "*Studying the effect of CBM supercharging on exo-cellulase activity: Optimization of supercharged mutant expression and purification*" presented and submitted to REI.
  36. Mr. Benjamin Esposito (2017-2018; Rutgers CBE BS; Aresty Research Assistant); Trained in lab and conducted research on cellulosic biomass composition analysis and enzymatic hydrolysis
  37. Mr. Patrick Doran (2016-2018; Rutgers BME BS; Aresty Research Assistant); Trained in lab and conducted research on NSF Sponsored Project (Award #1604421) to model protein structure using Rosetta/FoldIt software package
  38. Ms. Marissa Berger (2015-2018; Rutgers BME BS/MS; Aresty Researcher/Aresty Summer Science, NSF REU Scholar); Trained in lab and conducted research on NSF REU Sponsored Project (Award #1236120) to express, purify, and characterize CAZymes binding/activity
  39. Mr. Neelan Sivaneri (2017-2020; Rutgers CBE BS; Aresty and CBE Research Assistant); Trained in lab and conducted research on NSF Sponsored Projects (Award #1604421 and #1704679) to express, purify and characterize CAZymes. Submitted CBE independent study report in Fall 2019.

40. *Mr. Zheyu Zhang* (2016-2017; Rutgers CBE BS; Aresty Research Assistant); Trained in lab and conducted research on characterizing protein adsorption to oxidized polysaccharide surfaces
41. *Ms. Elizabeth McGinley* (2016-2017; Rutgers CBE BS; Aresty Research Assistant & Dr. Alkis Constantinides Endowed Scholar); Trained in lab and conducted research on NSF Sponsored Project (Award #1236120) to express and purify CAZymes
42. *Ms. Cindy Farino* (2015-2017; Rutgers BME BS; Aresty Research Assistant & NSF REU Scholar); Trained in lab and conducted research on NSF REU Sponsored Project (Award #1236120) to express, purify, and characterize CAZymes binding to cellulose allomorphs
43. *Ms. Jihyun Park* (2015-2017; Rutgers CBE BS; Aresty Research Assistant & Dr. Alkis Constantinides Endowed Scholar); Trained in lab and conducted research on NSF Sponsored Project (Award #1236120) to express and purify CAZymes
44. *Ms. Alina Thokkadam* (2016-2019; Rutgers CBE BS; Aresty Summer Science); Trained in lab and conducted research on NSF Sponsored Project (Award #1704679) to characterize CAZymes involved in glycans synthesis
45. *Ms. Samantha Cobos* (Summer 2016; NSF REU Visiting Undergraduate Student from Pace University); Trained in lab and conducted research on NSF-REU Sponsored Project to characterize protein adsorption to oxidized polysaccharide surfaces
46. *Ms. Jeong Eunsu* (2015-2016; Rutgers CBE BS/MS); Conducted research on using Aspen Plus process simulation software to model cellulosic ethanol biorefinery using NREL base model as group project following completion of 155:324 design course
47. *Mr. Ashav Desai* (2015-2016; Rutgers CBE BS); Conducted research on using Aspen Plus process simulation software to model cellulosic ethanol biorefinery using NREL base model as group project following completion of 155:324 design course
48. *Mr. Alexander Pelham-Webb* (2015-2016; Rutgers CBE BS); Conducted research on using Aspen Plus process simulation software to model cellulosic ethanol biorefinery using NREL base model as group project following completion of 155:324 design course
49. *Ms. Sanchari Ghosh* (2015-2016; Rutgers CBE BS); Conducted research on using Aspen Plus process simulation software to model cellulosic ethanol biorefinery using NREL base model as group project following completion of 155:324 design course
50. *Mr. Raymond Bertram* (2015-2016; Rutgers CBE BS); Conducted research on using Aspen Plus process simulation software to model cellulosic ethanol biorefinery using NREL base model as group project following completion of 155:324 design course
51. *Mr. Jonathan Gerszberg* (2015-2016; Rutgers CBE BS); Developed basic hidden Markov type models for CAZymes
52. *Mr. Yianni Antonatos* (2015-2016; Rutgers CBE BS); Trained in lab on basics of microbiology, molecular biology, and enzymology
53. *Mr. Dylan McHugh* (2015-2016; Rutgers CBE BS); Trained in lab and conducted research on kinetic modeling of data generated via confocal fluorescence microscopy imaging of CAZyme desorption from cellulose microfibril surfaces
54. *Mr. Apurva Srivastav* (2015-2016; Rutgers CBE BS; Aresty Research Assistant); Trained in lab and conducted research on using Aspen Plus process simulation software to model cellulosic biomass ammonia pretreatment

55. *Ms. Maytal Merhav* (2015-2016; Rutgers CBE BS; Aresty Research Assistant); Trained in lab and conducted research on NSF Sponsored Project (Award #1236120) to express supercharged CAZymes and characterize their binding affinity to lignin
56. *Ms. Danielle Mainardi* (2015-2016; Rutgers CBE BS; Aresty Research Assistant); Trained in lab and conducted research on NSF Sponsored Project (Award #1236120) to express supercharged CAZymes and characterize their binding affinity to lignin
57. *Ms. Natália Dias* (Summer 2016; Brazilian Scientific Mobility Program Visiting Undergraduate Student); Trained in lab and conducted research on protein adsorption
58. *Mr. Ketley Alves* (Summer 2015; Brazilian Scientific Mobility Program Visiting Undergraduate Student); Trained in lab and conducted research on biomass pretreatment and its impact on cellulase digestibility

### **Doctoral Dissertation Committee Member at Rutgers**

#### Current

1. *Ms. Ou Yang* (Rutgers CBE PhD Thesis Proposal Title "Modeling and Optimization of Biopharmaceutical Manufacturing"; PhD Thesis Director - Dr. Marianthi Ierapetritou)
2. *Ms. Nanxia Zhao* (Rutgers CBE PhD Thesis Proposal Title "Design of Amphiphilic Macromolecule and Antioxidant Based Nanoparticles for Microglia Targeted Therapy in Parkinson's Disease"; PhD Thesis Director - Dr. Prabhas Moghe)

#### Former

1. *Mr. Abhay Athaley* (Dec 2019; Rutgers CBE PhD Thesis Title "Integrated design, analysis, and optimization of chemical production from biomass feedstocks"; PhD Thesis Director - Dr. Marianthi Ierapetritou)

### **Students & Research Staff Supervised at MSU and UW-Madison (GLBRC)**

#### Graduate Students Co-Advised at Rutgers at MSU

1. *Ms. Carolyn Haarmeyer* (2012-2016; Michigan State CHEMS MS); Co-advised MS graduate student with Prof. Tim Whitehead (Primary Advisor) at MSU.
2. *Ms. Stephanie Crews* (2011-2013; Michigan State CHEMS MS): Co-advised MS graduate student with Prof. Bruce Dale (Primary Advisor) at MSU.

#### Research Associate Staff Supervised or Trained at MSU (GLBRC)

1. *Mr. James Humpala* (2009-2012; Michigan State CHEMS Research Associate)
2. *Ms. Margaret Magyar* (2010-2012; Michigan State CHEMS Research Associate)
3. *Mr. Nirmal Uppugundla* (2010-2012; Michigan State CHEMS Research Associate)
4. *Ms. Christa Gunawan* (2010-2012; Michigan State CHEMS Research Associate)
5. *Mr. Nana Achampong* (2007-2009; Michigan State CHEMS Research Associate)

#### High School & Undergraduate Students Supervised or Trained at UW-Madison (GLBRC)

1. *Ms. Amy (Dohi) Lim* (2012-2015; Wisconsin-Madison Biochemistry BS)
2. *Ms. Alice Zhang* (Summer 2015; High School Junior Student)
3. *Ms. Crystal Dyer* (Summer 2013; High School Junior Student)

4. Mr. Alec Hernst (2012-2014; Wisconsin-Madison Biochemistry BS)
5. Ms. Cassandra Hainer (2012-2014; Wisconsin-Madison Biochemistry BS)
6. Mr. Dylan Edwards (2012-2014; Wisconsin-Madison Biochemistry BS)
7. Mr. Cameron Seiser (2012-2014; Wisconsin-Madison Biochemistry BS)
8. Mr. Sungsoo Lim (2012-2014; Wisconsin-Madison Biochemistry BS)

High School Teacher Supervised or Trained at UW-Madison (GLBRC)

1. Mr. Marin Dobson (Summer 2013; High School Teacher; GLBRC RET Scholar)

High School & Undergraduate Students Supervised or Trained at MSU (GLBRC)

1. Mr. Thomas Birkett (2009-2011; Michigan State CHEMS BS)
2. Mr. Chad Rogers (2008-2010; Michigan State CHEMS BS)
3. Mr. Aditya Rajagopalan (Summer of 2008 and 2009; High School Junior/Senior Student)
4. Mr. Luke Biela (2007-2009; Michigan State CHEMS BS)
5. Ms. Linpei Chang (2007-2009; Michigan State CHEMS BS)
6. Ms. Linda Stanek (2006-2008; Michigan State CHEMS BS)

**Undergraduate and Graduate Courses Taught at Rutgers**

Course Details

[155:324](#) Separation Processes (Spring 2015-Present)

[155:507](#) Analytical Methods in Chemical & Biochemical Engineering (Fall 2016-2018)

[155:411](#) Biochemical Engineering: Co-instructor with Haoran Zhang in Fall 2020 (Tentatively Scheduled)

Non-Rutgers personnel who do not have access to Sakai can review most recent representative course syllabi on Chundawat Research Website here: <http://chundawat.rutgers.edu/other.html>

Course Syllabi (available via Sakai with instructor permission)

1. Spring 2020 14:155:324:01 Design of Separation Processes Course Syllabus Link: <https://sakai.rutgers.edu/x/p7a013>
2. Spring 2019 14:155:324:01 Design of Separation Processes Course Syllabus Link: <https://sakai.rutgers.edu/x/nb1ojF>
3. Fall 2018 14:155:507:01 Analytical Methods in Chemical & Biochemical Engineering Course Syllabus Link: <https://sakai.rutgers.edu/x/A7x0ba>
4. Spring 2018 14:155:324:01 Design of Separation Processes Course Syllabus Link: <https://sakai.rutgers.edu/x/clTY7p>
5. Fall 2017 14:155:507:02 Analytical Methods in Chemical & Biochemical Engineering Course Syllabus Link: <https://sakai.rutgers.edu/x/cnRn5r>
6. Spring 2017 14:155:324:01 Design of Separation Processes Course Syllabus Link: <https://sakai.rutgers.edu/portal/directtool/10d48580-29a3-4e4f-a876-888b4bffd5d7/>
7. Fall 2016 14:155:507:01 Analytical Methods in Chemical & Biochemical Engineering Course Syllabus Link: <https://sakai.rutgers.edu/portal/directtool/65165bf0-cb58-4478-a0ea-15bc631b4517/>

8. Spring 2016 14:155:324:01 Design of Separation Processes Course Syllabus Link:  
<https://sakai.rutgers.edu/portal/directtool/9b47156f-91cc-421a-bf5b-d9f2412413c6/>
9. Spring 2015 14:155:324:01 Design of Separation Processes Course Syllabus Link:  
<https://sakai.rutgers.edu/portal/directtool/23ee994e-0901-46e4-a94b-2e4054ebf550/>

#### Other Course and Curricular Development at Rutgers

1. *CBE Process Engineering Laboratory Undergraduate Lab Course (155:416)*: In collaboration with Dr. Alex Bertuccio, successfully integrated a new biomass conversion experiment in process lab curriculum focused on cellulase kinetics modeling relevant to biochemical/bioprocess engineering.
2. *CBE Separation Processes Undergraduate Course (155:324)*:
  - a. In collaboration with Dr. Alex Bertuccio, successfully integrated an ethanol-water separation experimental project into 155:324 course starting Spring 2019. Students work on a pilot-scale wiped film evaporator to collect data and model system using Aspen Plus software.
  - b. Programmatic integration of Learning Assistants (LA's), sponsored by the Rutgers Learning Centers into separations process course starting Spring 2015 to improve student learning and performance. LA's meet with instructor on a weekly basis to provide updates.

#### Invited or Guest Instructor at Rutgers

1. *Guest instructor for CBE Graduate Course on Biochemical Engineering*: 3-hour seminar on 'Enzyme/Protein Engineering' in Prof. Charlie Roth's Biochemical Engineering course (155:531) (Spring 2019, Fall 2020).
2. *Guest instructor for CBE Undergraduate Course on Professional Skills Development*: Professional presentation skills 80 min seminar in Prof. Marianthi Ierapetritou's Professional Skills Development course (155:298) for Rutgers CBE sophomores (Fall 2015, 2016, 2017).
3. *Guest instructor for School of Engineering CBE Introductory and Outreach Courses*:
  - a. Lecture/demo activity (80 min) introducing chemical and biochemical engineering to Rutgers School of Engineering first year undergraduates (2016, 2017, 2018)
  - b. Introduction to engineering lecture (80 min) for Rutgers women undergraduates at the Reilly Douglass Engineering Living-Learning Community (Fall 2016).

#### **Undergraduate and Graduate Courses Taught at Michigan State University**

[CHE-891](#): Plant Cell Wall Chemistry 3-credit graduate elective course (Department of Chemical Engineering & Materials Science) on fundamental and applied aspects of the chemistry of plant cell walls and their conversion to fuels and chemicals co-instructed with David Hodge in Spring 2012.

[CSE-101](#): Computing Concepts & Competencies 3-credit undergraduate core course (Department of Computer Science and Engineering) taught as sole TA instructor in Fall 2004 and Spring 2005.

#### **Other K-12 Education and Outreach Instructional Materials Development**

1. *Development of K-12 Biofuels and Enzyme Engineering Outreach Activity at Rutgers*: Developed a K-12 hands-on demonstration activity on using cellulase enzymes for biomass conversion. Hands-on



4-hr activity deployed in 2017 and 2018 summer with over 45 high school students from local New Jersey schools ([https://twitter.com/sps\\_chundawat/status/885910187869167617](https://twitter.com/sps_chundawat/status/885910187869167617)). Detailed educational materials relevant to this hands-on student activity are now available online (<https://www.biorxiv.org/content/10.1101/2020.05.21.106468v1>).

2. *Research Education for Teachers (RET) Mentor at GLBRC*: Research mentor for **Mr. Marin Dobson**, a biology and biotechnology teacher at Fort Atkinson high school (Wisconsin), as part of the Research Experience for Teachers (RET) program sponsored by the Department of Energy's Great Lakes Bioenergy Research Center (DOE-GLBRC) at the University of Wisconsin-Madison for seven weeks in the summer of 2013. All relevant educational material on biomass deconstruction is made available via GLBRC (<https://www.glbrc.org/outreach>).

## **Fellowships, Awards, and/or Honors Earned by Chundawat Research Group Members at Rutgers**

### Postdoctoral Scholars

1. Fellowship Recipient: **Dr. Zhao Chao**, Post-doctoral Research Advisor: Shishir Chundawat (Rutgers University), Project Title: *Catalytic routes to upgrade glycan-derived substrates to value-added products*, Fellowship Amount: \$30,000, Start Date: Aug 2018, End Date: Jul 2019, Agency: China Scholarship Council from Government of China, Role: Post-doctoral Research Advisor
2. Fellowship Recipient: **Dr. Shyamal Roy**, Post-doctoral Research Advisor: Shishir Chundawat (Rutgers University), Project Title: *Integrated cellulosic biomass pretreatment and catalytic-upgrading processes for advanced biofuel production*, Fellowship Amount: \$37,200, Start Date: July 2016, End Date: June 2017, Agency: University Grant Commission (UGC) Raman Postdoctoral Fellowship from Government of India, Role: Post-doctoral Research Advisor
3. Fellowship Recipient: **Dr. Yongling Qin**, Post-doctoral Research Advisor: Shishir Chundawat (Rutgers University), Project Title: *Conversion of renewable biomass to fuels using a thermophilic cellulolytic microbe *Thermobifida fusca**, Fellowship Amount: \$32,400, Start Date: Jan 2016, End Date: Jan 2017, Agency: Guangxi Scholarship from Guangxi Education Department from Government of China, Role: Post-doctoral Research Advisor

### Graduate Students

1. Award Recipient: **Mr. Aron Gyorgypal**, Sponsor: Rutgers BME Annual Research Symposium, Date: Dec 2019. Outstanding poster award.
2. Award Recipient: **Mr. Aron Gyorgypal**, Sponsor: International Foundation Process Analytical Chemistry Annual Meeting, Date: Feb 2020. Outstanding poster award.
3. Fellowship Recipient: **Mr. Satvik Sharma**, Sponsor: NASA New Jersey Space Grant Consortium Graduate Student Fellowship, Start Date: Sept 2015, End Date: May 2016. This fellowship provided support for his annual stipend (\$10,000/year) at Rutgers.

### Undergraduate Students

1. Fellowship Recipient: **Ms. Shoili Banerjee**, Sponsor: Rutgers Energy Institute (REI) Summer Internship, Start Date: May 2020, End Date: Aug 2021.
2. Award Recipient: **Mr. Varun Raghuraman**, Sponsor: Aresty Undergraduate Research Fellowship, Start Date: Sept 2019, End Date: May 2020.

3. Fellowship Recipient: **Mr. Allan Wang**, Sponsor: Rutgers Energy Institute (REI) Summer Internship, Start Date: May 2018, End Date: Aug 2018.
4. Award Recipient: **Mr. Patrick Doran**, Sponsor: Aresty Undergraduate Research Fellowship, Start Date: Sept 2017, End Date: May 2018.
5. Fellowship Recipient: **Mr. Varun Raghuraman**, Sponsor: Aresty Undergraduate Summer Science Fellowship, Start Date: May 2017, End Date: Aug 2017.
6. Award Recipient: **Ms. Marissa Berger**, Sponsor: Aresty Summer Science and Undergraduate Research Fellowship, Start Date: Sept 2016, End Date: May 2017.
7. Award Recipient: **Ms. Cindy Farino**, Sponsor: Aresty Undergraduate Research Fellowship, Start Date: Sept 2016, End Date: May 2017.
8. Fellowship Recipient: **Ms. Alina Thokaddam**, Sponsor: Aresty Undergraduate Summer Science Fellowship, Start Date: May 2016, End Date: Aug 2016.
9. Fellowship Recipient: **Ms. Natália Dias**, Sponsor: Brazilian Scientific Mobility Program for Visiting Undergraduate Students, Start Date: May 2016, End Date: Aug 2016.
10. Fellowship Recipient: **Ms. Samantha Cobos**, Sponsor: NSF-REU and Rutgers RiSE Fellow Program, Start Date: May 2016, End Date: Aug 2016.
11. Fellowship Recipient: **Ms. Marissa Berger**, Sponsor: Aresty Undergraduate Summer Science Fellowship, Start Date: May 2015, End Date: Aug 2015.
12. Fellowship Recipient: **Mr. Ketley Alves**, Sponsor: Brazilian Scientific Mobility Program for Visiting Undergraduate Students, Start Date: May 2015, End Date: Aug 2015.

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## Conference Presentations, Lectures, and Interviews

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### Invited Talks

1. Invited seminar by **Shishir Chundawat** at Gordon Research Conference on Carbohydrate-Active Enzymes for Glycan Conversions, *Engineering and mechanistic analysis of CAZymes for in-vitro and in-vivo synthesis of glycan polymers*, Andover, July 2021 (Tentatively Scheduled).
2. Invited seminar by **Shishir Chundawat** at Agilent Biopharmaceutical Web Summit 2020 on Discovery Development and Characterization of Next-Generation Therapeutics, *Continuous Biomanufacturing at Rutgers University: Integrated Real-time PAT, Modeling, and Process Control Strategies to Enable Production of Glycosylated Biologics*, Andover, March 2020 (Summit Held Remotely On-line Due to COVID-19 Pandemic).
3. Invited seminar at Department of Energy 2020 Bioimaging Science Program Annual Principal Investigator (PI) Meeting, *In planta single-molecule imaging and holographic force spectroscopy to study real-time, multimodal turnover dynamics of polysaccharides and associated carbohydrate metabolites*, Washington DC, Feb 2020. Attended by PI Sang-Hyuk Lee & Co-PI Chundawat.
4. Invited seminar at Food and Drug Administration (FDA) Center for Biologics Evaluation and Research (CBER) Program Advanced Technologies Symposium, *Advanced Continuous Upstream Manufacturing of Biotherapeutics*, Silver Spring, July 2019. Talk jointly presented by PI Marianthi Ierapetritou and Co-PI **Shishir Chundawat**.

5. Invited seminar by **Shishir Chundawat** at Gordon Research Seminar on Carbohydrates (Development of Carbohydrate-Based Therapeutics and Targets), *Engineering and Mechanistic Analysis of Novel Multidomain Transglycosylases*, Hong Kong, June 2019.
6. Invited seminar at Department of Energy 2019 Bioimaging Science Program Annual Principal Investigator (PI) Meeting, *In planta single-molecule imaging and holographic force spectroscopy to study real-time, multimodal turnover dynamics of polysaccharides and associated carbohydrate metabolites*, Vienna, Feb 2019. Attended by PI Sang-Hyuk Lee & Co-PI Chundawat.
7. Invited seminar by **Shishir Chundawat** at New York Institute of Technology (NYIT) 13th Annual Energy Conference on Bioenergy and Natural Systems, *Engineering Enzymes to Reduce Cellulosic Biofuels Production Costs*, Old Westbury (New York), June 2018.
8. Invited fermentation series seminar by **Shishir Chundawat** at Rutgers State University of New Jersey (Dept. of Biochemistry and Microbiology), *Engineering 'small' enzyme steps to make giant leaps save our planet!*, New Brunswick, Nov 2017.
9. Invited seminar by **Shishir Chundawat** at Exxon-Mobil Research Division, *Deconstruction of cellulosic biomass to fuels and chemicals using an integrated approach*, Annandale (New Jersey), March 2017.
10. Invited seminar by **Shishir Chundawat** at Montclair State University, *Conversion of lignocellulosics to biofuels using a multistep chemo-enzymatic deconstruction approach*, Montclair (New Jersey), April 2017.
11. Invited poster presentation by **Shishir Chundawat** at Gordon Research Conference on Cellulases & Other Carbohydrate-Active Enzymes, *Single-molecule characterization of processive cellulase activity on cellulose*, Andover (NH), July 2017.
12. Invited seminar by **Shishir Chundawat** at Rutgers State University of New Jersey (Rutgers Global Grant Symposium), *Enabling the Creation of a Sustainable and Economically Viable Cellulosic Biofuels Industry in Brazil*, New Brunswick, Nov 2017.
13. Invited NRL colloquium series seminar by **Shishir Chundawat** at US Naval Research Center (Center for Bio/Molecular Science and Engineering), *Providing a molecular basis to modeling protein adsorption to multimodal carbohydrate ligands*, Washington DC, Sept 2016.
14. Invited seminar by **Shishir Chundawat** at Rutgers State University of New Jersey (Dept. of Chemical & Biochemical Engineering), *Deconstruction of cellulosic biomass to fuels and chemicals: The emerging paradigm of substrate engineering*, New Brunswick, Mar 2014
15. Invited seminar by **Shishir Chundawat** at the 36<sup>th</sup> Symposium on Biotechnology for Fuels and Chemicals in plenary session on "Enzyme Science and Technology II – Modeling and Structure/Function Relationship", *Cellulases have low affinity but improved activity on unnatural cellulose allomorphs*, Clearwater Beach, May 2014.
16. Invited seminar by **Shishir Chundawat** at Iowa State University (Dept. of Chemical & Biological Engineering), *Deconstruction of cellulosic biomass to fuels and chemicals: The emerging paradigm of substrate engineering*, Ames, Feb 2014.
17. Invited seminar by **Shishir Chundawat** at AIChE Annual Meeting session "Advances In Biofuels: DOE Bioenergy Research Centers", *Interactions of cellulolytic proteins with a non-native, polysaccharide allomorph formed during pretreatment of lignocellulosic biomass*, San Francisco, Nov 2013.
18. Invited seminar by **Shishir Chundawat** at ACA Annual Meeting session "Materials for a Sustainable Future", *Modifying native crystalline polysaccharide ultrastructure can improve its chemical and biological processability to fuels, chemicals and materials*, Boston, July 2012.

19. Invited seminar by **Shishir Chundawat** at AICHE Annual Meeting session “Advances In Biofuels: DOE Bioenergy Research Centers”, *Development of the Extractive-AFEX (E-AFEX) pretreatment process*, Pittsburgh, Oct 2012.
20. Invited plenary talk by **Shishir Chundawat** at Materials Research Society Spring Meeting (Renewable Fuels and Nanotechnology Session), *Impact of Ammonia Treatment on Natural Lignocellulosic Composites*, San Francisco, April 2011.
21. Invited plenary talk by **Shishir Chundawat** at Gordon-Kenan Research Seminar on Cellulosomes, Cellulases & Other Carbohydrate Modifying Enzymes, *Role of cellulose crystal structure on exo- and endo-cellulase synergistic activity*, Easton (MA), 2011.
22. Invited seminar by **Shishir Chundawat** at Institute of Chemical Technology (Dept. of Chemical Engineering), *Deconstruction of lignocellulosic biomass to fuels and chemicals*, Mumbai, Aug 2011.
23. Invited seminar by **Shishir Chundawat** at Michigan State University (Dept. of Chemical Engineering & Materials Science), *A new strategy for biomass deconstruction to fuels and chemicals*, East Lansing, Sept 2011.
24. Invited seminar by **Shishir Chundawat** at AICHE Annual Meeting session “Advances In Biofuels: DOE Bioenergy Research Centers”, *The binding properties of cellulases on cellulose allomorphs and pretreated biomass during enzymatic hydrolysis*, Minneapolis, Oct 2011.
25. Invited seminar by **Shishir Chundawat** at Bioenergy Science Center (BESC) Biomass Characterization Workshop, *Characterizing the effect of alkaline based pretreatments on lignocellulosic cell walls*, Riverside, Jan 2010.
26. Invited seminar by **Shishir Chundawat** at Los Alamos National Laboratory, *“NH<sub>3</sub>”...a potent catalyst for deconstructing plant cell walls to fuels and chemicals*, Los Alamos, Sept 2010.
27. Invited seminar by **Shishir Chundawat** at Inter-Bioenergy Research Center Workshop (Enzymes for biomass degradation), *Effect of ammonia treatments on enzyme-biomass interactions*, Madison, Nov 2010.
28. Invited session by **Shishir Chundawat** at the Annual GLBRC Retreat, *Assessing the ability of glycosyl hydrolases to digest ammonia pretreated biomass*, South Bend, May 2009.
29. Invited seminar by **Shishir Chundawat** at Verenium Corporation, *Towards a fundamental understanding of ammonia based pretreatment and enzymatic hydrolysis of lignocellulosic biomass*, San Diego, Feb 2008.

**Contributed Talks** (asterisk\* indicates seminar talk presenter)

1. Hackl M\*, Nemmaru B, **Chundawat SPS**. *Single-molecule protein-carbohydrate dissociation characterization using acoustic force spectroscopy*. ACS Annual Meeting 2020, Philadelphia. (Oral Presentation Cancelled due to COVID-19)
2. Chopda V\*, Gyorgypal A, Said R, Alter A, **Chundawat SPS**, Zhang H. *Continuous monoclonal antibody (mAb) biomanufacturing and integrated process analytics for mAb N-linked glycans analysis*. ACS Annual Meeting 2020, Philadelphia. (Oral Presentation Cancelled due to COVID-19)
3. Bandi CK\*, Burgin T, Pasture M, Goncalves A, Pingali SV, Gao J, Mayes H, **Chundawat SPS**. *Engineering and mechanistic analysis of carbohydrate binding domain assisted transglycosylation reactions for a novel protein design of multidomain transglycosidases*. ACS Annual Meeting 2020, Philadelphia. (Oral Presentation Cancelled due to COVID-19)

4. Bandi CK\*, Agrawal A, **Chundawat SPS**. *Development of a high-throughput cell screening toolkit for the directed evolution of glycosynthase enzymes for bespoke oligosaccharides synthesis using azido sugars*. ACS Annual Meeting 2020, Philadelphia. (Oral Presentation Cancelled due to COVID-19)
5. Chopda V\*, Gyorgypal A, Said R, Alter A, Zhang H, **Chundawat SPS**. *Optimizing monoclonal antibody (mAb) production: Establishing an in-house platform for continuous biomanufacturing and integrated process analytics*. Rutgers University (RU) BME Department Graduate Research Symposium, Dec 2019, Piscataway. (Oral Presentation by Staff)
6. Agrawal A\*, **Chundawat SPS**. *Development of click chemistry based screening methodology for engineering enzymes that can synthesize glycans*. Rutgers University (RU) CBE Department Graduate Research Symposium, Apr 2019, Piscataway. (Oral Presentation by Student)
7. **Chundawat SPS\***, Nemmaru B, Hilton M, Hackl M, Lopez C, Gnanakaran S, Lang M. *Single-molecule characterization of protein adsorption to multivalent glucan polymers like cellulose*. AICHE Annual Meeting 2018, Pittsburgh. (Oral Presentation by Chundawat)
8. Bandi CK, Goncalves A, **Chundawat SPS\***. *Engineering a multifunctional family 5 glycosyl hydrolase into a transglycosidase*. AICHE Annual Meeting 2018, Pittsburgh. (Oral Presentation by Chundawat)
9. Bandi CK\*, Goncalves A, **Chundawat SPS**. *Engineering a multifunctional family 5 glycosyl hydrolase into a transglycosidase*. ACS Annual Meeting 2018, Boston. (Oral Presentation by Student)
10. **Chundawat SPS\***, Nemmaru B, Hilton M, Hackl M, Lopez C, Gnanakaran S, Lang M. *Single-molecule characterization of protein adsorption to multivalent glucan polymers like cellulose*. ACS Annual Meeting 2018, Boston. (Oral Presentation by Chundawat)
11. **Chundawat SPS\***, Sousa L, Pingali SV, O'Neill H. *In-situ small-angle neutron scattering investigation of cellulose dissolution*. ACS Annual Meeting 2018, Boston. (Oral Presentation by Chundawat)
12. Nemmaru B, Brady SK, Lang MJ, **Chundawat SPS\***. *Single-Molecule Characterization of Protein Adsorption to Multivalent Glycan Polymers*. AICHE Annual Meeting 2017, Minneapolis. (Oral Presentation by Chundawat)
13. Farino C, Nemmaru B, **Chundawat SPS\***. *Site-Directed Mutagenesis of Family 64 CBM Provides Insights into the Anomalous Binding Interactions with Pretreated Cellulose during Biomass Saccharification*. AICHE Annual Meeting 2017, Minneapolis. (Oral Presentation by Chundawat)
14. **Chundawat SPS\***, Brady S, Narayanan V, Lang M. *Providing a Molecular Basis to Modeling Protein Adsorption to Multimodal Carbohydrate-based Ligands*. AICHE Annual Meeting 2016, San Francisco. (Oral Presentation by Chundawat)
15. Brady S\*, **Chundawat SPS**, Lang M. *Cellobiohydrolase behavior visualized at the single molecule level*. Society of Industrial Microbiology and Biotechnology Annual Meeting session on "Biocatalysis: Lignocellulosic Conversion Sponsored by Novozymes" 2016, New Orleans. (Oral Presentation by Collaborator)
16. Brady S\*, **Chundawat SPS**, Lang M. *A Multi-Scale Investigation of Cellulases and Their Interaction with Cellulose Allomorphs*. AICHE Annual Meeting 2015, Salt Lake City. (Oral Presentation by Collaborator)
17. Gnanakaran S, **Chundawat SPS\***, López C, Sousa L, Dale BE, Fox BG. *Engineering More Effective Catalysts for Unnatural Allomorphs of Cellulose*. AICHE Annual Meeting 2014, Atlanta. (Oral Presentation by Chundawat)
18. **Chundawat SPS\***, Gao D, Sethi A, Crews S, Sousa L, Uppugundla N, Balan V, Gnanakaran S, Dale BE. *Increased enzyme binding to substrates does not always increase catalytic activity*. AICHE Annual Meeting 2012, Pittsburgh. (Oral Presentation by Chundawat)

19. Dale BE\*, Sousa L, **Chundawat SPS**, Balan V, Bals B. *A New Low Cost Design for the AFEX Process: Application in Distributed Biofuel Production Systems*. Symposium on Biotechnology for Fuels and Chemicals 2012, New Orleans. (Oral Presentation by PhD Advisor)
20. Pattathil S\*, **Chundawat SPS**, DeMartini JD, Li H, Miller J, Brown V, Kandemkavil S, Biswal A, Saffold T, O'Neill M, York WS, Wyman C, Mohnen D, Dixon RA, Chen F, Dale BE, Hahn MG. *Comparative Glycomics of Plant Biomass and Insights into Cell Wall Components that Affect Recalcitrance*. Symposium on Biotechnology for Fuels and Chemicals 2012, New Orleans. (Oral Presentation by Collaborator)
21. Sousa L\*, Jin M, Uppugundla N, Bokade V, Humpula J, Gunawan C, Foston M, Azarpira A, Ralph J, Bals B, Teymouri F, **Chundawat SPS**, Dale BE, Balan V. *Extractive-AFEX (E-AFEX) Pretreatment: A unified approach for resolving bottlenecks to efficient cellulosic bioethanol production*. Symposium on Biotechnology for Fuels and Chemicals 2012, New Orleans. (Oral Presentation by Collaborator)
22. **Chundawat SPS\***, Uppugundla N, Lipton M, Magyar M, Gao D, Balan V, Dale BE. *Role of enzyme blend composition, biomass particle size and solids loading on pretreated biomass saccharification efficiency*. AIChE Annual Meeting 2011, Minneapolis. (Oral Presentation by Chundawat)
23. **Chundawat SPS**, Dale BE\*. *Fundamental insights to the AFEX process that catalyzes the rapid deconstruction of lignocellulose to fuels and chemicals*. 1<sup>st</sup> Brazilian BioEnergy Science and Technology Conference 2011, São Paulo (Brazil). (Oral Presentation by PhD Advisor)
24. **Chundawat SPS\***, Cheh A, Sousa L, Uppugundla N, Gao D, Langan P, Gnanakaran S, Bellesia G, Agarwal U, Bianchetti C, Phillips G, Balan V, Dale BE. *Cellulose hydrolysis kinetics is closely related to its crystalline structure*. Symposium on Biotechnology for Fuels and Chemicals 2010, Clearwater. (Oral Presentation by Chundawat)
25. **Chundawat SPS\***, Sousa L, Hodge D, Balan V, Dale BE. *Alkaline Based Pretreatments at Great Lakes Bioenergy Research Center*. AIChE Annual Meeting 2010, Salt Lake City. (Oral Presentation by Chundawat)
26. **Chundawat SPS\***, Donohoe B, Sharma L, Elder T, Askeland P, Vismeh R, Agarwal U, Humpula J, Garlock R, Jones D, Chambliss K, Himmel M, Balan V, Dale BE. *Ultra-structural and physicochemical modifications within ammonia pretreated lignocellulosic cell walls that influence enzyme accessibility*. Symposium on Biotechnology for Fuels and Chemicals 2009, San Francisco. (Oral Presentation by Chundawat)
27. **Chundawat SPS\***, Gao D, Krishnan C, Poland J, Stege J, Lipton M, Balan V, Dale BE. *Enzymatic hydrolysis of AFEX treated corn stover by cellulolytic and hemicellulolytic synergistic enzyme cocktails*. AIChE Annual Meeting 2008, Philadelphia. (Oral Presentation by Chundawat)
28. **Chundawat SPS\***, Balan V, Dale BE. *Synergistic Hydrolysis of AFEX treated Corn Stover and Poplar using an Automated 96-well BCRL Microplate Assay*. AIChE Annual Meeting 2007, Salt Lake City. (Oral Presentation by Chundawat)
29. **Chundawat SPS\***, Balan V, Jones D, Sousa L, Lau M, Dale BE. *Towards a Fundamental Understanding of Ammonia Fiber Expansion (AFEX) Pretreatment and its Effect on Enzymatic Hydrolysis and Fermentation*. Symposium on Biotechnology for Fuels and Chemicals 2007, Denver. (Oral Presentation by Chundawat)
30. **Chundawat SPS\***, Venkatesh B, Dale BE. *Enzyme Synergies in the Hydrolysis of AFEX Pretreated Biomass*, AIChE Annual Meeting 2005, Cincinnati. (Oral Presentation by Chundawat)

**Posters** (asterisk\* indicates poster presenter)

1. Irfan M\*, Jayachandran D\*, Huh H, Muchero W, Lang M, Lam E, Lee SH, **Chundawat SPS**. *Multimodal imaging of plant protoplasts with regenerating cell walls*. ACS Annual Meeting 2020, Philadelphia. (Poster Presentation Cancelled due to COVID-19)
2. Gyorgypal A\*, Chopda V, Zhang H, **Chundawat SPS**. *Real-time N-linked glycans analysis to facilitate monoclonal antibody manufacturing*. ACS Annual Meeting 2020, Philadelphia. (Poster Presentation Cancelled due to COVID-19)
3. Nemmaru B\*, Ramirez N, Kravchenko N, **Chundawat SPS**. *Reducing non-productive binding of cellulases to improve crystalline cellulose hydrolysis rates*. ACS Annual Meeting 2020, Philadelphia. (Poster Presentation Cancelled due to COVID-19)
4. Chopda V, Gyorgypal A, Zhang H, **Chundawat SPS**, Hausner D\*. *Integration of Process Analytics for Real-Time monitoring of Critical Quality Parameters and Attributes for Continuous Biomanufacturing*. International Foundation Process Analytical Chemistry (IFPAC) Annual Meeting, Feb 2020, North Bethesda. (Poster Presentation by Staff on behalf of student)
5. Gyorgypal A\*, Chopda V, Zhang H, **Chundawat SPS**. *At-Line N-linked Glycan Analysis to Facilitate Monoclonal Antibody Manufacturing*. Rutgers University (RU) BME Department Graduate Research Symposium, Dec 2019, Piscataway. (Poster Presentation by Student)
6. Yang O\*, Chopda V, Muddu SV, Gyorgypal A, Hausner D, Singh R, Tsilomelekis G, Zhang H, **Chundawat SPS**, Ramachandran R, Ierapetritou M. *Continuous Upstream Biopharmaceuticals Manufacturing*. Advanced Process Modelling (APM) Forum 2019, New York. (Poster Presentation by Student)
7. Thokkadam A\*, Wang A, Nemmaru B, **Chundawat SPS**. *Studying the Effect of CBM Supercharging on Endo-Exo CellulaseHydrolysis Activity*. Rutgers University (RU) SOE Undergraduate James J Slade Research Symposium, Apr 2019, Piscataway. (Poster Presentation by Student)
8. Lee S-H, **Chundawat SPS\***, Lam E, Fabris L, Lang M, Muchero W, Pingali SV. *In planta multimodal single-molecule imaging of cell wall synthesis*. Department of Energy Annual PI Meeting 2019, Vienna. (Poster Presentation by Co-PI Chundawat)
9. Ma S\*, Hackl M, **Chundawat SPS**. *Developing an Acoustic Force Spectroscopy Technique to Measure Carbohydrate Binding Module Interaction with Cellulose*. Rutgers University (RU) Aresty Undergraduate Research Symposium, August 2018, Piscataway. (Poster Presentation by Student)
10. Agrawal A\*, Bandi CK, **Chundawat SPS**. *High-throughput cell screening methodology for the directed evolution of glycosynthases*. Rutgers University (RU) Society of Women Engineers (SWE) Research Symposium, Apr 2018, Piscataway. (Poster Presentation by Student)
11. Goncalves A\*, Bandi CK, **Chundawat SPS**. *Understanding the Role of CBMs in the Transglycosylation Efficiency of GH5 Family Enzymes*. Rutgers University (RU) SOE Undergraduate James J Slade Research Symposium, Apr 2018, Piscataway. (Poster Presentation by Student)
12. Esposito B\*, **Chundawat SPS**. *Ammonia Pretreatment of Cellulosic Biomass Increases Efficiency of Biofuels Production*. Rutgers University (RU) Aresty Undergraduate Research Symposium, April 2018, Piscataway. (Poster Presentation by Student)
13. Thokkadam A\*, Bandi CK, Vankayalapati NS, **Chundawat SPS**. *Impact of Cellulase Supercharging on Binding to Lignocellulosic Biomass*. AIChE Northeast Regional Undergraduate Meeting 2018, San Francisco. (Poster Presentation by Undergraduate Student)
14. Liu Y\*, Nemmaru B, **Chundawat SPS**. *Characterization of T. fusca cellulaseactivity on unnatural cellulose allomorphs*. Rutgers University (RU) CBE Department Graduate Research Symposium, Nov 2017, Piscataway. (Poster Presentation by Student)

15. Gupta S\*, Bandi CK, Thokkadam A, **Chundawat SPS**. Developing designer glycoligands for multimodal protein bioseparations. Rutgers University (RU) CBE Department Graduate Research Symposium, Nov 2017, Piscataway. (Poster Presentation by Student)
16. Vankayalapati N\*, Bandi CK, Thokkadam A, **Chundawat SPS**. Effect of supercharging cellulases on binding to cellulose and pretreated cellulosic biomass. Rutgers University (RU) CBE Department Graduate Research Symposium, Nov 2017, Piscataway. (Poster Presentation by Student)
17. Subhash N\*, Bandi CK, **Chundawat SPS**. Enzymatic Synthesis of Oligosaccharides for Modulating Growth of the Gut Microbiome. Rutgers University (RU) CBE Department Graduate Research Symposium, Nov 2017, Piscataway. (Poster Presentation by Student)
18. Agrawal A\*, Bandi CK, **Chundawat SPS**. High-throughput cell screening methodology for the directed evolution of glycosynthases. Rutgers University (RU) CBE Department Graduate Research Symposium, Nov 2017, Piscataway. (Poster Presentation by Student)
19. Dagia A\*, Nemmaru B, **Chundawat SPS**. Impact of a conserved tyrosine residue on Family 1 CBM binding to cellulose allomorphs. Rutgers University (RU) CBE Department Graduate Research Symposium, Nov 2017, Piscataway. (Poster Presentation by Student)
20. Samantha Cobos\*, Bhargava Nemmaru, **Chundawat SPS**. *Understanding protein adsorption to TEMPO-oxidized cellulose microfibrils*. ACS Annual Meeting, April 2017, San Francisco. (Poster Presentation by Student)
21. Thokkadam A\*, Bandi C, **Chundawat SPS**. *Effect of nucleophilic mutations on hydrolytic and transglycosylation activities of carbohydrate-active enzymes (CAZymes)*. Rutgers University (RU) CBE Department Undergraduate Research Symposium, April 2017, Piscataway. (Poster Presentation by Student)
22. Berger M\*, Bandi C, **Chundawat SPS**. *Negatively charging cellulolytic enzymes can reduce non-productive binding to lignin*. Rutgers University (RU) Aresty Undergraduate Research Symposium, April 2017, Piscataway. (Poster Presentation by Student)
23. Park J\*, McGinley E, Bandi C, **Chundawat SPS**. *Expression and Purification of CelE-CBM3a and its Mutants*. Rutgers University (RU) CBE Department Undergraduate Research Symposium, Apr 2016, Piscataway. (Poster Presentation by Student)
24. Farino C\*, Nemmaru B, **Chundawat SPS**. *Binding Affinity of Family 64 Carbohydrate Binding Modules and its Mutants to Crystalline Cellulose Allomorphs*. Rutgers University (RU) Aresty Undergraduate Research Symposium, April 2017, Piscataway. (Poster Presentation by Student)
25. Bandi C\*, Sahithi N, Berger M, Park J, Whitehead T, **Chundawat SPS**. *Minimizing non-productive binding of cellulases to lignin by supercharging enzyme surfaces*. Gordon Research Conference (GRC) on Cellulases and Carbohydrate-Active Enzymes, July 2017, Andover. (Poster Presentation by Student)
26. Park J\*, McGinley E, **Chundawat SPS**. *Expression and Characterization of Fungal Cellulase Catalytic and Cellulose Binding Domains for Single-Molecule Assays*. Rutgers University (RU) CBE Department Undergraduate Research Symposium, Apr 2016, Piscataway. (Poster Presentation by Student)
27. Gerszberg J\*, **Chundawat SPS**. *t-Test Stepping Algorithm and Variable Stepsize Hidden Markov Models for Characterizing Enzyme Motility Determined Using Optical Tweezers*. Rutgers University (RU) CBE Department Undergraduate Research Symposium, Apr 2016, Piscataway. (Poster Presentation by Student)



28. Farino C\*, Mainardi D, **Chundawat SPS**. *Determining the Binding Affinity of Carbohydrate Binding Modules to Crystalline Cellulose*. Rutgers University (RU) CBE Department Undergraduate Research Symposium, Apr 2016, Piscataway. (Poster Presentation by Student)
29. Lemenze A\*, **Chundawat SPS**. *Rutgers Chem-E-Car: The Drunken Snail*. Rutgers University (RU) CBE Department Undergraduate Research Symposium, Apr 2016, Piscataway. (Poster Presentation by Student)
30. Desai A\*, Webb AP, Bertram R, Ghosh S, Jeong E, Srivastav A, **Chundawat SPS**. *Validation of an Integrated Lignocellulosic Biorefinery Model using Aspen*. Rutgers University (RU) CBE Department Undergraduate Research Symposium, Apr 2016, Piscataway. (Poster Presentation by Student)
31. **Chundawat SPS\***. *A multiscale approach to studying conversion of lignocellulosic biomass to biofuels*. Rutgers University (RU) First Annual Sustainable Symposium, April 2016, Piscataway. (Poster Presentation by Chundawat)
32. Roy S\*, Berger M, Gupta S, Sousa L, **Chundawat SPS**. *Novel Pretreatment Process Enhances Cellulosic Biofuel Production*. Rutgers University (RU) CBE Department Graduate Research Symposium, Dec 2016, Piscataway. (Poster Presentation by Postdoc)
33. Bandi C\*, **Chundawat SPS**. *Engineering multifunctional glycosynthases for glycan synthesis*. Rutgers University (RU) CBE Department Graduate Research Symposium, Dec 2016, Piscataway. (Poster Presentation by Student)
34. Nemmaru B\*, Doran P, Liu Y, Brady S, Lang MJ, **Chundawat SPS**. *Single-molecule characterization of processive glycosyl hydrolase enzymes*. Rutgers University (RU) CBE Department Graduate Research Symposium, Dec 2016, Piscataway. (Poster Presentation by Student)
35. Haarmeyer C, Smith M, **Chundawat SPS**, Sammond DW, Whitehead T\*. *Using Protein Design to Evaluate the Relationship Between Protein Surface Potential and Protein-Lignin Binding for the Eventual of Low Lignin Binding Cellulases*. AIChE Annual Meeting 2016, San Francisco. (Poster Presentation by Collaborator)
36. Poster Presentation by **Shishir Chundawat** at Gordon Research Conference/Seminar on Cellulosomes, Cellulases & Other Carbohydrate Modifying Enzymes, *Native cellulases have abnormal interactions with unnatural cellulose allomorphs*, Andover (NH), Aug 2015.
37. Berger M\*, Alves K, **Chundawat SPS**. *Novel Plant Biomass Pretreatments For Enhancing Biofuel Production*. Rutgers University (RU) Aresty Undergraduate Research Symposium, Aug 2015, Piscataway. (Poster Presentation by Student)
38. Asthana S\*, **Chundawat SPS**. *Characterization of the Binding Affinity of Engineered Carbohydrate-Binding Modules to Lignocellulosic Biomass*. Rutgers University (RU) CBE Department Graduate Research Symposium, Nov 2015, Piscataway. (Poster Presentation by Student)
39. Sharma S\*, **Chundawat SPS**. *Using Confocal Imaging to Study Binding Dynamics of Cellulolytic Enzymes to Cellulose*. Rutgers University (RU) CBE Department Graduate Research Symposium, Nov 2015, Piscataway. (Poster Presentation by Student)

#### Other Interviews, Presentations, and Public Outreach

1. Interviewed with journalist Todd Bates in Rutgers Today and as part of press release highlighting 2020 Green Chemistry article (<https://neutrons.ornl.gov/content/how-make-it-easier-turn-plant-waste-biofuels>).

2. Interviewed with Burt Sempier of WMBCTV showcasing research work at Rutgers on Feb 6th 2020: <https://wmbctv.com/portfolio-view/biofuels/>.
3. Cover story about Chundawat Research Group and interview in SOE's RU Engineer magazine (Winter 2017, Vol. 2, No. 1)
4. Interview with ethanol manufacturer POET in 2017 'Vital' magazine as part of a press release online article (<http://vitalbypoet.com/stories/poet-internship-program-offers-opportunity-for-experience>) highlighting Rutgers CBE student (James Forder) internship at POET.
5. Interviewed on WRNJ Radio (at 11:15 am on July 7th 2017) by Ms. Joyce Estey (WRNJ Radio News Director) to discuss on-going research at Rutgers University on how cellulases.
6. Interviewed with science journalist Todd Bates in Rutgers Today as part of a press release online article (<http://news.rutgers.edu/research-news/cutting-cost-ethanol-other-biofuels-and-gasoline/20170630#.WZ3bXq2ZMmJ>) that highlighted a journal cover article on cellulases.
7. Press coverage in 2016 for journal cover article highlighted by The Royal Society of Chemistry (<http://cbe.rutgers.edu/news/chundawat-group-research-highlighted-royal-society-chemistry-journal-cover-article>).
8. Press coverage in 2016 for journal article highlighted by U.S. Department of Energy Bioenergy Center (<https://www.glbrc.org/research/highlights/next-generation-ammonia-pretreatment-enhances-cellulosic-biofuel-production>).
9. Press coverage in 2016 on collaborative Nature Communications article highlighted in social media (<http://www.labmanager.com/news/2015/12/anatomy-of-a-microscopic-wood-chipper#.VnB5LYTWpW8>).
10. Interviewed for coverage on sustainable biofuels focused on 2013 PNAS article highlighted in social media (<http://www.biofuelsdigest.com/bdigest/2013/07/02/researchers-find-new-method-to-convert-cellulose-for-better-biofuel-production/>).
11. Press coverage on Energy and Environmental Science article in 2011 by The Royal Society of Chemistry and U.S. DOE GLBRC (<http://blogs.rsc.org/ee/2011/01/11/improving-pre-treatments-for-better-biomass-conversion/>).
12. Interviewed for press coverage on JACS article on cellulosic biofuels highlighted in AIChE Chemical & Engineering Progress Magazine in September Issue (2011, Vol. 107, No. 9) and other social media (<http://greatlakesecho.org/2011/10/26/research-may-strengthen-biofuel-production-from-non-edible-sources/>).
13. Interviewed for press coverage on journal cover article in 2011 (<http://pubs.acs.org/doi/abs/10.1021/jp203620x>).

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## Service Activities

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### Service to Rutgers University

2020-ongoing: Co-Organizer (with Dr. Benjamin Schuster), CBE Annual Fall/Spring Seminar Series

2015-2019: Undergraduate Faculty Advisor for American Institute of Chemical Engineers (AIChE)  
Rutgers Student Chapter Chem-E-Car Team

2019: Coordinated donations and no-cost loans to Rutgers, together with Dr. Doug Hausner and Dr. Haoran Zhang, of equipment and supplies worth approximately \$450,000 from Agilent, Eppendorf, and Genscript to establish first-of-its-kind biologics R&D facility at Rutgers University.

2019-2020: Member, CBE Faculty Search Committee

2019: Invited Ad Hoc Reviewer for Rutgers Vice Chancellor for Research and Innovation Office

2019: Member, CBE-Rutgers Strategic Planning Sub-Committee on CBE/SOE Infrastructure

2018: CBE Committee Member, Graduate Certificate/Concentration in Biochemical Engineering

2017: Speaker, Invited faculty panel speaker at Rutgers Global (GAIA) Grant Symposium on Nov 16th

2017-2018: Chair, Masters Certificate/Concentration in Energy CBE Committee

2017-2018: Chair, CBE Faculty Search Committee

2017: Faculty representative for outreach and support to Chem-E-Car team at AIChE Regional Meeting

2017: Faculty panelist on Engineering & Medicine for admitted Rutgers students

2017: Faculty representative for outreach and representation at NJ Future City Competition

2017: Education and outreach for local NJ high-school students on July 14th, 2017

2017: Faculty representative for CBE outreach, Rutgers Day 2017

2017: Member, SOE Freshman Orientation lecture series representing CBE Department

2017: Organizing tour of research labs for admitted undergraduate students and families

2016: Coordinated donations to Rutgers of equipment and supplies worth approximately \$250,000 from GE Healthcare (Piscataway, NJ).

2016-2017: Member, CBE Faculty Search Committee

2016: Organized a half-day seminar introduction to Chemical Engineering and conducted a hands-on Chem-E-Car design activity for high school students and parents on July 27th, 2016

2016: Organized a half-day seminar introduction to Chemical Engineering and conducted a hands-on Chem-E-Car design activity for pre-engineering summer academy held on Aug 5th, 2016

2016: Faculty representative for CBE outreach, Rutgers Day 2016

2016: Member, CBE Qualifying Exam Committee

2016: Member, CBE-Rutgers Strategic Planning Sub-Committee on Department Infrastructure

2015-ongoing: Chair, CBE Department Social Media Activities (e.g., Twitter)

2015-2018: Faculty Advisor, CBE Undergraduate Junior Students

2015-2019: Member, CBE Graduate Student Admissions Review Committee

2015-ongoing: Member, CBE Undergraduate Curriculum Committee

2015-2019: Faculty Advisor, AIChE Rutgers Chapter ChemE Car Team

2015: Judge, CBE Graduate Research Symposium

2015: Member, Masters of Engineering (ME) in Energy Systems CBE Sub-Committee

2015: Member, CBE Qualifying Exam Committee

### **Other Academic Service at Rutgers**

1. Invited CBE department speaker at Rutgers annual SOE Women in Engineering event for ~30 High School Female Students (March 1st, 2019)
2. Invited speaker and guest panelist at Rutgers annual CABLE (Consortium for Advanced Bioeconomy Leadership Education) event on 'Transforming Transportation for a Low-Carbon Future' hosted by Dr. Serpil Guran at Livingston Student Center for ~20 Rutgers Undergraduates (March 7th, 2019)
3. AIChE ChemE Car team faculty co-advisor with Dr. Alex Bertuccio, 2019, 15 advisees per year
4. Introduction to CBE seminar followed by hands-on cellulosic biofuels process design activity for ~45 High School Students as part of 2018 half-day (July 20th) pre-engineering summer academy sponsored by Rutgers University (Division of Continuing Studies)
5. Basic introduction to Foldit online protein modeling/gaming software and 90 mins hands-on training session for volunteer CBE undergraduate students at Rutgers CBE (March 20th 2018)
6. AIChE ChemE Car team faculty advisor, 2018, 15 advisees per year
7. 2017 Introduction to CBE seminar followed by hands-on cellulosic biofuels process design activity for ~45 High School Students as part of 2017 half-day (July 14th) pre-engineering summer academy sponsored by Rutgers University (Division of Continuing Studies)
8. AIChE ChemE Car team faculty advisor, 2017, 15 advisees per year
9. CBE faculty advisor for junior year students, 2017, 119 advisees
10. Introduction to CBE seminar followed by hands-on CBE Rocket-Car design activity, and tour of CBE department for ~50 High School Students and their parents as part of 2016 half-day (July 27th) introduction to engineering summer outreach program sponsored by Rutgers School of Engineering
11. Introduction to CBE seminar followed by hands-on CBE Rocket-Car design activity for ~40 High School Students as part of 2016 half-day (Aug 5th) pre-engineering summer academy sponsored by Rutgers University (Division of Continuing Studies)
12. AIChE ChemE Car team faculty advisor, 2016, 15 advisees per year
13. CBE faculty advisor for junior year students, 2016, 109 advisees
14. AIChE ChemE Car team faculty advisor, 2015, 15 advisees per year

### **Service to Other Public Bodies**

1. 2020: U.S. Civilian Research and Development Foundation for the Independent States of the Former Soviet Union (CRDF) Global Grant Program Invited Panel Reviewer
2. 2020: National Science Foundation (NSF) Chemical, Bioengineering, Environmental, and Transport Systems (CBET) Program Invited Panel Reviewer
3. 2018: Swedish Research Council (Vetenskapsrådet) Invited Proposal Reviewer
4. 2018: National Science Foundation (NSF) Chemical, Bioengineering, Environmental, and Transport Systems (CBET) Program Invited Panel Reviewer
5. 2016: Invited panelist/participant on "*Papertronics: Paper-based Electronics for the 21st Century*" hosted by Prof. Aaron Mazzeo and sponsored by NSF in Arlington (VA)

6. 2015: National Science Foundation (NSF) Chemical, Bioengineering, Environmental, and Transport Systems (CBET) Program Invited Panel Reviewer
7. 2013: Invited Reviewer for Department of Energy (DOE) Small Business Innovation Research and Small Business Technology Transfer Program (SBIR/STTR)
8. 2013: Invited Reviewer for Doctoral Fellowship Program of the Austrian Academy of Sciences
9. 2010: European Research Area Industrial Biotechnology (ERA-IB) Program Invited Proposal Reviewer

### **Rutgers Graduate Program Affiliations**

1. Rutgers Graduate School - New Brunswick, Full Member
2. Rutgers Energy Institute - New Brunswick, Faculty Member
3. Rutgers Center for Nutrition, Microbiome, and Health - New Brunswick, Faculty Member
4. Rutgers Graduate Program in Quantitative Biomedicine - New Brunswick, Full Member
5. Rutgers Graduate Program in Biomedical Engineering - New Brunswick, Associate Member
6. Rutgers Graduate Program in Chemical and Biochemical Engineering - New Brunswick, Full Member

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### **Other Professional Activities**

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#### **Participation in Organizing or Chairing Conferences, Workshops, and Organizations**

1. 2011-ongoing: Chair/Co-chair of the '*Biological Conversions and Processes for Renewable Feedstocks*' session at American Institute of Chemical Engineers (AIChE) Annual Meeting sponsored by the Sustainable Engineering Forum.
2. 2011: Retreat Planning Committee Area 2 Lead at Department of Energy (DOE) sponsored Great Lakes Bioenergy Research Center Annual Retreat in South Bend (Indiana)

#### **Academic Journals Peer-Review and Editorial Board Service**

##### List of Journals Served to-date as Invited Reviewer (since 2005)

ACS Nano, ACS Omega, ACS Sustainable Chemistry & Engineering, AIChE Journal, Applied Biochemistry and Biotechnology, Biochemical Engineering Journal, Biochemistry, Biomacromolecules, Biomass and Bioenergy, Bioresource Technology, BioResources, Biotechnology Advances, Biotechnology and Applied Biochemistry, Biotechnology and Bioengineering, Biotechnology for Biofuels, Biotechnology Progress, Carbohydrate Polymers, Cellulose, Chemical and Biochemical Engineering Quarterly, Chemical Reviews, Energy and Environmental Science, Energy and Fuels, Energy, Enzyme and Microbial Technology, Journal of Chemical Technology & Biotechnology, Microbial Cell Factories, Nature Materials, PLoS ONE, Proceedings of the National Academy of Sciences USA, Process Biochemistry, Science Advances, The Plant Journal

##### Review editor (since 2011)

Served as invited review editor for *Frontiers in Energy Research* and *Frontiers in Bioengineering and Biotechnology* journals (Specialty Section: Bioenergy & Biofuels). See journal weblink for responsibilities of review editor (<http://home.frontiersin.org/about/publishing-model>).

List of Open Access Refereed Articles for Frontiers in Energy Research since 2015:

- <https://doi.org/10.3389/fenrg.2017.00005>
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