

STACY A. MALAKER, PH.D.

Yale University Chemistry Department
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New Haven, CT 06511
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EDUCATION

- Ph.D. University of Virginia**, Chemistry, Charlottesville, VA **2014**
Dissertation Title: "Enrichment and Characterization of Post-Translationally Modified Peptides for the Development of Novel Cancer Immunotherapeutics" Advisor: Donald F. Hunt
- B.S. University of Michigan**, Biochemistry, Ann Arbor, MI **2009**
University of Michigan, Anthropology-Zoology, Ann Arbor, MI

RESEARCH INTERESTS

- Developing bioanalytical techniques to explore glycosylated peptides and proteins
- Utilizing high-resolution mass spectrometry to identify novel antigens in disease states with the ultimate goal of promoting health and longevity
- Creating unique solutions to study densely O-glycosylated proteins, called mucins, by mass spectrometry

RESEARCH EXPERIENCE

Assistant Professor **2021-Present**

Department of Chemistry – Yale University (New Haven, CT)

- Developing mass spectrometry technologies to unravel the complex role of mucin-domain glycoproteins in disease
- Advising postdoctoral fellows, graduate students, and undergraduate students in scientific exploration, manuscript preparation, and science communication
- Teaching undergraduate and graduate level analytical chemistry, chemical biology, and quantitative instrumentation

Postdoctoral Scholar **2016-2020**

Department of Chemistry – Stanford University (Stanford, CA)

Advisor: Professor Carolyn R. Bertozzi; Nobel Laureate

- Characterized metalloproteases that cleave mucin proteins to assist in proteomic classification and enrichment of mucin-like glycoproteins
- Operated, troubleshooted, and maintained a Thermo Orbitrap Fusion Tribrid high-resolution mass spectrometer
- Collaborated in several mass spectrometry-related projects, including bump-and-hole engineering for O-glycoproteomics, characterization of AAV viral capsid post-translational modifications, and site-localization of Siglec-7 glycan binding partners

Visiting Research Scientist **March-May 2018**

Protéomique, Réponse Inflammatoire & Spectrométrie de Masse– Université de Lille1 (Lille, France)

Advisors: Professors Michel Salzet et Isabelle Fournier

- Developed protocols for on-tissue glycan and glycopeptide imaging of canine glioma tissues by MALDI imaging mass spectrometry (IMS)
- Operated three MALDI-IMS instruments, including: Bruker UltraFlex, Bruker RapiFlex, and Thermo MALDI-Orbitrap
- Investigated macrophage reactivation through proprotein convertase 1/3 inhibition

Postdoctoral Research Associate **2014-2016**

Graduate Research Associate **2010-2014**

Department of Chemistry – University of Virginia (Charlottesville, VA)

Advisor: Professor Donald F. Hunt

- Developed phenylboronic acid solid phase extraction enrichment procedure to selectively isolate, enrich, and identify glycosylated MHC class I and II associated peptides
- Operated and maintained three low-resolution (LTQ) and four high-resolution mass spectrometers (Thermo Fusion Tribrid, LTQ-Velos Elite, LTQ-Orbitrap, LTQ-FTICR)

- Analyzed CAD, HCD, and ETD MS2 spectra by *de novo* sequencing, manual spectra interpretation, and validation of computer-based search algorithm results (Mascot, OMSSA, Byonic)

Visiting Research Scientist

April-May 2014

School of Immunity and Infection – University of Birmingham (Birmingham, United Kingdom)

Advisor: Professor Mark Cobbold

- Isolated human leukocyte antigen (HLA)-associated peptides from normal and tumor lung tissue samples
- Performed 7-day interferon- γ enzyme-linked immunospot (ELISpot) assays to measure immunogenicity of peptide antigens
- Executed intracellular cytokine staining (ICS) to assess memory T-cell responses

Peptide Synthesis Chemist

2005-2010

Advisor: Dr. Henriette Remmer

Protein Structure Facility – University of Michigan (Ann Arbor, MI)

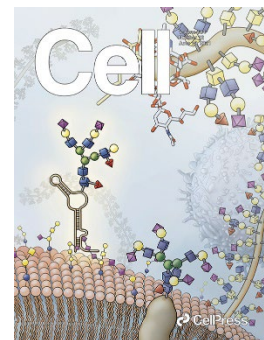
- Manufactured custom peptides including synthesis, purification, and quality control
- Operated multiple peptide synthesizers in addition to analytical and preparatory scale HPLCs
- Analyzed peptide samples via ESI-MS on an LCQ and MALDI-TOF for quality control
- Prepared and analyzed client protein samples for N-terminal sequencing via Edman degradation

YALE PUBLICATIONS

*denotes corresponding author †denotes equal contribution blue denotes trainees of the Malaker laboratory

37. Marie A. Hollenhorst, Katherine H. Tiemeyer, [Keira E. Mahoney](#), Kazuhiro Aoki, Mayumi Ishihara, [Sarah C. Lowery](#), [Valentina Rangel-Angarita](#), Carolyn R. Bertozzi*, and **Stacy A. Malaker***. Comprehensive analysis of glycoprotein Iba glycosylation. 2023, *Journal of Thrombosis and Haemostasis*, *In Press*. doi.org/10.1101/2022.07.19.500646
36. *Invited article for STAR Protocols*: Beatriz Calle, Edgar Gonzalez-Rodriguez, [Keira E. Mahoney](#), Anna Cioco, Chloe Roustan, Helen Flynn, **Stacy A. Malaker**, and Benjamin Schumann. Bump-and-hole engineering of human polypeptide N-acetylgalactosamine transferases to dissect their protein substrates and glycosylation sites in the living cell. *STAR Protocols*. 2023, *In Press*.
35. Anna Cioco, Beatriz Calle, Tatiana Rizou, [Sarah C. Lowery](#), Victoria Bridgeman, [Keira E. Mahoney](#), Andrea Marchesi, Ganka Bineva-Todd, Helen Flynn, Zhen Li, Omur Y. Tastan, Chloe Roustan, Thomas M. Wood, Tessa Keenan, Peter Both, Kun Huang, Fabio Parmeggiani, Ambrosius P. Snijders, Mark Skehel, Svend Kjaer, Martin A. Fascione, Carolyn R. Bertozzi, Sabine Flitsch, **Stacy A. Malaker**, Iliara Malanchi, and Benjamin Schumann. Cell-specific Bioorthogonal Tagging of Glycoproteins. *Nature Communications*. 2022, 13 (6237). doi.org/10.1038/s41467-022-33854-0
34. Brendon J. Medley, Leif Leclair, Nicole Thompson, [Keira E. Mahoney](#), Benjamin Pluvina, Matthew A. Parsons, John E. Burke, **Stacy A. Malaker**, Warren Wakarchuk, and Alisdair B. Boraston. A metzincin-like O-glycopeptidase from *Akkermansia muciniphila* requires the Tn antigen for cleavage of the peptide bond. *Journal of Biological Chemistry*. 2022, 298 (10): 102439. doi.org/10.1016/j.jbc.2022.102439
33. Ieva Bagdonaite†, **Stacy A. Malaker†**, Daniel A. Polasky†, Nicholas M. Riley†, Katrine Schjoldager, Sergey Y. Vakhrushev, Adnan Halim, Kiyoko F. Aoki-Kinoshita, Alexey I Nesvizhskii, Carolyn R. Bertozzi, Hans Wandall, Benjamin L. Parker, Morten Thaysen-Andersen, and Nichollas E. Scott. Glycoproteomics. *Nature Reviews Methods Primers*. 2022, 2 (1): 1-29.
32. **Stacy A. Malaker*†**, Nicholas M. Riley†, D. Judy Shon, Kayvon Pedram, Venkatesh Krishnan, Oliver Dorigo, and Carolyn R. Bertozzi*. Revealing the human mucinome. *Nature Communications*. 2022, 13 (1): 1-13.
 - Featured in *Trends in Microbiology* "Spotlight Article": Abigail E. Reeves, Mia L. Huang. Mucopedia 101: Capturing and assigning mucin-domain glycoproteins. doi.org/10.1016/j.tim.2022.09.004
31. *Invited review for "Carbohydrate Biopolymers" Special Issue*: [Deniz Ince](#), [Taryn M. Lucas](#), and **Stacy A. Malaker***. Current strategies for characterization of mucin-domain glycoproteins. *Current Opinion in Chemical Biology*. 2022, 69, 102174. **Among Top 10 "Most Downloaded Articles" from *Curr Op Chem Bio* – September 2022**

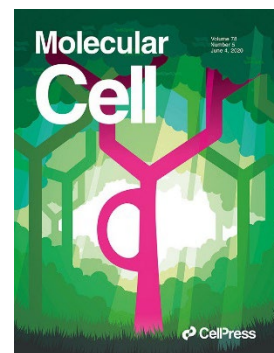
30. Yikun Yao, Girak Kim, Samantha Shafer, Zuoqia Chen, Satoshi Kubo, Yanlong Ji, Jialie Luo, Weiming Yang, Sebastian Perner, Chrysi Kanellopoulou, Ann Park, Ping Jiang, Safa Baris, Elif Karakoc Aydinler, Deniz Ertem, Daniel J. Mulde, Neil Warner, Anne M. Griffiths, Chani Topf-Olivestone, Michal Kori, Lael Werner, Jodie Ouahed, Michael Field, Chengyu Liu, Benjamin Schwarz, Sundar Ganesan, Jian Song, Henning Urlaub, Thomas Oellerich, **Stacy A. Malaker**, Lixin Zheng, Carolyn R. Bertozzi, Yu Zhang, Helen Matthews, Will Montgomery, Han-Yu Shih, Jiansheng iang, Scott Snapper, Aleixo M. Muise, Dror Shouval, Ahmet Ozen , Kuan-Ting Pan, Chuan Wu, and Michael J. Lenardo. Inherited defect in ST6GalNAc1 reveals roles of sialylation in intestinal homeostasis. *Cell*. 2022, 185 (7): 1172-1188.e28.
29. Daniela J. Carroll, Mary W. N. Burns, Lynda Mottram, Daniel C. Propheter, Andrew Boucher, Gabrielle M. Lessen, Ashwani Kumar, **Stacy A. Malaker**, Chao Xing, Lora V. Hooper, Ulf Yrlid, Jennifer J. Kohler. Interleukin-22 (IL-22) regulates B3GNT7 expression to induce fucosylation of glycoproteins in intestinal epithelial cells. *Journal of Biological Chemistry*. 2022, 298 (2): 101463.
28. Rajan Burt, Kimberly Lee, Borislav Dejanovic, Xiang Li, Johain Ounadjela, Anjana Rao, **Stacy A. Malaker**, Steven A. Carr, and Samuel A. Myers. Novel antibodies for the simple and efficient enrichment of native O-GlcNAc modified peptides. *Molecular and Cellular Proteomics*. 2021, 20 100167.
27. Sarah A. Penny, Jennifer G. Abelin, **Stacy A. Malaker**, Paisley T. Myers, Abu Z. Saeed, Lora G. Steadman, Dina L. Bai, Stephen T. Ward, Jeffrey Shabanowitz, Donald F. Hunt, and Mark Cobbold. Tumor infiltrating lymphocytes target HLA-I phosphopeptides derived from cancer signaling in colorectal cancer. *Frontiers Immunology*. 2021, 12:723566.
26. *Invited review for "Chemical Glycobiology" Special Issue: Valentina Rangel-Angarita and Stacy A. Malaker**. Mucinomics as the next frontier of mass spectrometry. *ACS Chemical Biology*. 2021, 16(10): 1866-1883.
25. **Stacy A. Malaker**[‡], Jusul Quanicco[‡], Antonella Raffo Romero, Firas Kobeissy, Soulaïmane Aboulouard, Dominique Tierny, Carolyn R. Bertozzi, Isabelle Fournier, and Michel Salzet. On-tissue spatially resolved glycoproteomics guided by N-glycan imaging reveal global dysregulation of canine glioma glycoproteomic landscape. *Cell Chemical Biology*. 2022, 29 (1): 30-42 e4.
24. Ryan A. Flynn, Kayvon Pedram, **Stacy A. Malaker**, Pedro J. Batista, Benjamin A.H. Smith, Alex G. Johnson, Benson M. George, Karim Majzoub, Peter W. Villalta, Jan E. Carette, and Carolyn R. Bertozzi. Small RNAs are modified with N-glycans and are primarily displayed on the surface of living cells. *Cell*. 2021, 184(10): 3109-3124.e22. doi.org/10.1016/j.cell.2021.04.023 **Featured in C&E News, HHMI News, The Scientist, Boston Children's Hospital Innovation News, and Stanford News. Featured on journal cover (see right)**
23. *Invited review article:* D. Judy Shon, Angel Kuo, Michael J. Ferracane, and **Stacy A. Malaker***. Classification, structural biology, and applications of mucin domain-targeting proteases. *Biochemical Journal*, 2021, 478(8): 1585-1603.
22. *Invited article for "Emerging Talent" Special Issue:* Beatriz Calle[‡], Ganka Bineva-Todd[‡], Andrea Marchesi[‡], Helen Flynn, Mattia Ghirardello, Omur Y. Tastan, Chloe Roustan, Junwon Choi, M. Carmen Galan, Benjamin Schumann*, and **Stacy A. Malaker***. Benefits of chemical sugar modifications introduced by click chemistry for glycoproteomic analyses. *Journal of the American Society for Mass Spectrometry*. 2021, 32(9): 3266-2375. **Human Proteome Organization (HUPO) Early Career Research Manuscript Competition - Finalist**
21. *Invited article:* Neil G. Rumachik, **Stacy A. Malaker***, and Nicole K. Paulk*. VectorMOD: method for bottom-up proteomic characterization of rAAV capsid PTMs and vector impurities. *Frontiers Immunology*. 2021, 12: 657795. doi: 10.3389/fimmu.2021.657795.
20. *Invited review article:* Anna Coice, **Stacy A. Malaker***, and Benjamin Schumann*. Generating Orthogonal Glycosyltransferase-Nucleotide Sugar Pairs as Next Generation Glycobiology Tools. *Current Opinion in Chemical Biology*. 2021, 60: 66-78.
19. Simon P. Wisnovsky, Leonhard Mockl, **Stacy A. Malaker**, Kayvon Pedram, Gaelen Hess, Nicholas M. Riley, Melissa



A. Gray, Benjamin A.H. Smith, Michael C. Bassik, W.E. Moerner, and Carolyn R. Bertozzi. Genome-wide CRISPR screens reveal a specific ligand for glycan-binding immune checkpoint receptor Siglec-7. Proceedings of the National Academy of Sciences USA. 2021, 118(5): e2015024118.

PUBLICATIONS PRIOR TO YALE

18. Melissa A. Gray, Michal A. Stanczak, Han Xiao, Johan F. A. Pijnenborg, Natalia R Mantuano, **Stacy A. Malaker**, Payton A. Weidenbacher, Caitlyn L. Miller, Julia T. Tanzo, Green Ahn, Elliot C. Woods, Heinz Läubli, and Carolyn R. Bertozzi. Targeted desialylation overcomes glyco-immune checkpoints and potentiates the anticancer immune response *in vivo*. Nature Chemical Biology. 2020; doi.org/10.1038/s41589-020-0622-x
17. Nicholas M. Riley, **Stacy A. Malaker**, and Carolyn R. Bertozzi. Electron-based dissociation is needed for O-glycopeptides derived from OpeRATOR proteolysis. Analytical Chemistry. 2020, 92(22): 14878-14884.
16. Marjoke F. Debets, Omur Y. Yastan, Simon P. Wisnovsky, **Stacy A. Malaker**, Nikolaos Angelis, Leonhard K.R. Moeckl, Junwon Choi, Helen Flynn, Lauren J.S. Wagner, Ganka Bineva-Todd, Aristotelis Antonopoulos, Anna Cioce, William M. Browne, Zhen Li, David C. Briggs, Holly L. Douglas, Gaelen T. Hess, Anthony J. Agbay, Chloe Roustan, Svend Kjaer, Stuart M. Haslam, Ambrosius P. Snijders, Michael C. Bassik, W.E. Moerner, Vivian S.W. Li, Carolyn R. Bertozzi, and Benjamin Schumann. Metabolic precision labeling enables selective probing of O-linked N-acetylgalactosamine glycosylation. Proceedings of the National Academy of Sciences USA. 2020, 117(41); 25293-25301.
15. Neil G. Rumachik, **Stacy A. Malaker**, Nicole Poweleit, Lucy Maynard, Christopher M. Adams, Ryan Leib, Giana Cirolia, Dennis Thomas, Susan Stamnes, Kathleen Holt, Patrick Sinn, Joseph L. DeRisi, Andrew P. May, and Nicole K. Paulk. Methods Matter -- Standard Production Platforms for Recombinant AAV Produce Chemically and Functionally Distinct Vectors. Molecular Therapy: Methods & Clinical Development. 2020; 18:98-118.
14. D. Judy Shon, **Stacy A. Malaker**, Kayvon Pedram, Emily Yang, Venkatesh Krishnan, Oliver Dorigo, and Carolyn R. Bertozzi. An Enzymatic Toolkit for Selective Proteolysis, Detection, and Visualization of Mucin-Domain Glycoproteins. Proceedings of the National Academy of Sciences USA. 2020; 117(35): 21299-21307.
13. Nicholas M. Riley, **Stacy A. Malaker**, Marc D. Driessen, and Carolyn R. Bertozzi. Optimal dissociation methods differ for N- and O-glycopeptides. Journal of Proteome Research. 2020; 19(8): 3286-3301. **Selected as ACS Editor's Choice, Featured in JPR "Rising Stars" special issue, Among JPR's "Most Read Articles in 2020"**
12. Benjamin Schumann, **Stacy A. Malaker**, Simon P. Wisnovsky, Marjoke F. Debets, Anthony J. Agbay, Daniel Fernandez, Lauren J. S. Wagner, Liang Lin, Zhen Li, Junwon Choi, Douglas M. Fox, Jessie M. Peh, Melissa A. Gray, Kayvon Pedram, Jennifer J. Kohler, Milan Mrksich, and Carolyn R. Bertozzi. Bump-and-Hole Engineering Identifies Specific Substrates of Glycosyltransferases in Living Cells. Molecular Cell, 2020; 78(5): 834-834 **Featured on the journal cover (see right)**
11. Ryan A. Flynn, Benjamin A.H. Smith, Alex Johnson, Kayvon Pedram, Benson M. George, **Stacy A. Malaker**, Karim Majzoub, Jan E. Carette, and Carolyn R. Bertozzi. Mammalian Y-RNAs are glycosylated at discrete guanosine residues with N-type glycans. bioRxiv 787614: doi.org/10.1101/787614 **Featured in Science News, C&E News, The Scientist, and Science Translational Medicine**
10. Junwon Choi, Lauren J. S. Wagner, Suzanne B. P. E. Timmermans, **Stacy A. Malaker**, Benjamin Schumann, Melissa A. Gray, Marjoke F. Debets, Megumi Takashima, Jase Gehring, and Carolyn R. Bertozzi. Engineering Orthogonal Polypeptide GalNAc-Transferase and UDP-Sugar Pairs. Journal of the American Chemical Society. 2019; 141(34): 13442-13453.
9. **Stacy A. Malaker**[‡], Kayvon Pedram[‡], Michael J. Ferracane, Barbara A. Bensing, Venkatesh Krishnan, Christian Pett, Jin Yu, Elliot C. Woods, Jessica R. Kramer, Ulrika Westerlind, Oliver Dorigo, and Carolyn R. Bertozzi. The mucin-selective protease StcE enables molecular and functional analysis of human cancer-associated mucins. Proceedings



of the National Academy of Sciences USA. 2019, 116(15): 7278-7287. **Featured in ChEM-H News**

8. *Invited book chapter*: **Stacy A. Malaker*** and Michael J. Ferracane. Mass Spectrometric Identification and Molecular Modeling of Glycopeptides Presented by MHC Class I and II Processing Pathways. In: Fulton K., Twine S. (eds) Immunoproteomics. Methods in Molecular Biology, 2019, vol 2024. Humana, New York, NY
7. *Invited book chapter*: Sarah A. Penny and **Stacy A. Malaker***. Isolation of Major Histocompatibility Complex (MHC)-Associated Peptides by Immunoaffinity Purification. In: Fulton K., Twine S. (eds) Immunoproteomics. Methods in Molecular Biology, 2019, vol 2024. Humana, New York, NY
6. Rebecca Pavlos, Elizabeth J. McKinnon, David A. Ostrov, Bjoern Peters, Soren Buus, David Koelle, Abha Chopra, Ryan Schutte, Craig Rive, Alec Redwood, Susana Restrepo, Austin Brace, Thomas Kaever, Paisley T. Myers, Ellen H. Spears, **Stacy A. Malaker**, Jeffrey Shabanowitz, Jing Yuan, Silvana Gaudieri, Donald F. Hunt, Mary Carrington, David W. Haas, Simon Mallal, and Elizabeth J. Phillips. Shared binding specificities of HLA Class I and Class II Alleles Associate with Cutaneous Nevirapine Hypersensitivity and Identify Novel Risk Alleles. Scientific Reports. 2017 Aug 17;7(1):8653. doi: 10.1038/s41598-017-08876-0.
5. **Stacy A. Malaker**[‡], Sarah A. Penny[‡], Lora Steadman, Paisley T. Myers, Justin C. Loke, Manoj Raghavan, Dina L. Bai, Jeffrey Shabanowitz, Donald F. Hunt, Mark Cobbold. Identification of glycopeptides as post-translationally modified neoantigens in leukemia. Cancer Immunology Research. 2017, 5(5): 376-384.
4. Tobias Bergmann, Mikaela Lindvall, Erin Moore, Eugene Moore, John Sidney, Donald Miller, Rebecca Tallmadge, Paisley T. Myers, **Stacy A. Malaker**, Jeffrey Shabanowitz, Nikolaus Osterrieder, Bjoern Peters, Donald F. Hunt, Douglas F. Antczak, and Alessandro Sette. Peptide binding motifs of two common equine class I MHC molecules in thoroughbred horses. Immunogenetics. 2017; 69(5): 351-358.
3. Malcolm JW Sim, **Stacy A. Malaker**, Ayesha Khan, Janet M. Stowell, Jeffrey Shabanowitz, Mary E. Peterson, Sumati Rajagopalan, Donald F. Hunt, Daniel M. Altmann, Eric O. Long, and Rosemary J. Boyton. Canonical and Cross-reactive Binding of NK Cell Inhibitory Receptors to HLA-C Allotypes Is Dictated by Peptides Bound to HLA-C. Frontiers Immunology. 2017, 8(193).
2. **Stacy A. Malaker**, Michael J. Ferracane, Florence R. Depontieu, Angela L. Zarling, Jeffrey Shabanowitz, Dina L. Bai, Suzanne Topalian, Victor H. Engelhard, and Donald F. Hunt. Identification and Characterization of Complex Glycosylated Peptides Presented by the MHC Class II Processing Pathway in Melanoma. Journal of Proteome Research. 2017, 16(1): 228-237. **Featured in JPR "Rising Stars" special issue**
1. Mark Cobbold, Hugo De La Pena, Andrew Norris, Joy Polefrone, James E. Turner, Jie Qian, A. Michelle English, Jennifer G. Abelin, **Stacy A. Malaker**, Angela L. Zarling, Hsing-Wen Huang, Sarah Penny, Sylvie Freeman, Jeffrey Shabanowitz, Guy Pratt, Charles Craddock, Michael E. Williams, Donald F. Hunt, and Victor H. Engelhard. MHC Class I-Associated Phosphopeptides Are the Targets of Memory-like Immunity in Leukemia. Science Translational Medicine. 5(203) 203ra125 (2013).

PREPRINTS AND MANUSCRIPTS UNDER REVIEW

7. Nicholas M. Riley** and **Stacy A. Malaker****. O-glycoproteomics: methods, challenges, and new opportunities. In: Struwe, W. (ed) Glycoprotein Analysis. Royal Society of Chemistry Publishing, 2023. Cambridge, United Kingdom
6. [Valentina Rangel-Angarita](#), [Keira E. Mahoney](#), [Deniz Ince](#), and **Stacy A. Malaker***. A systematic comparison of current bioinformatic tools for glycoproteomics data. 2022, bioRxiv: doi.org/10.1101/2022.03.15.484528
5. Thomas Nero, Xin Huang, Ranjuna Weerasekera, Alex Hinbest, Zhaowei Jiang, Longjun Wu, Cecilia Chak, Japinder Nijjer, Katherine Hutcheson, Isabella Gibaldi, Hang Yang, Nathan Gamble, **Stacy A. Malaker**, Rich Olson, and Jing Yan. A Tale of Two Adhesins: Molecular Mechanism of *Vibrio cholerae* Biofilm Adhesion. 2022, *Under Review*.
4. Kayvon Pedram, D. Judy Shon, Gabrielle S. Tender, Natalia R. Mantuano, Jason J. Northey, Kevin J. Metcalf, Simon P. Wisnovsky, Nicholas M. Riley, Giovanni C. Forcina, **Stacy A. Malaker**, Angel Kuo, Benson M. George, Caitlyn L. Miller, Kerriann M. Casey, José G. Vilches-Moure, Davey Huang, Valerie M. Weaver, Heinz Laübli, and Carolyn R.

Bertozzi. Design of a mucin-selective protease for targeted degradation of cancer-associated mucins. 2022, *Under Review*. bioRxiv: doi.org/10.1101/2022.05.20.492748

3. Michael J. Hollander, **Stacy A. Malaker**, Idalia Perez, Julia E. Maxson, Jennifer R. Cochran, Carolyn R. Bertozzi. Mutational screens highlight glycosylation as a modulator of colony-stimulating factor 3 receptor (CSF3R) activity. 2022, *Under Review*. bioRxiv: doi.org/10.1101/2022.08.01.502088
2. Edgar Gonzalez-Rodriguez, Mia Zol-Hanlon, Ganka Bineva-Todd, Andrea Marchesi, Mark Skehel, [Keira E. Mahoney](#), Chloë Roustan, Annabel Borg, Lucia Di Vagno, Svend Kjaer, Antoni G. Wrobel, Donald J. Bentone, Philipp Nawrath, Sabine L. Flitsch, Dhira Joshi, Andrés Manuel González-Ramírez, Katalin A. Wilkinson, Robert J. Wilkinson, Ramón Hurtado-Guerrero, **Stacy A. Malaker**, and Benjamin Schumann. O-Linked Sialoglycans Modulate the Proteolysis of SARS-CoV-2 Spike and Contribute to the Mutational Trajectory in Variants of Concern. 2022, *Under Review*. bioRxiv: doi.org/10.1101/2022.09.15.508093
1. Michael Boyce, **Stacy A. Malaker**, Nicholas M. Riley, Jennifer Kohler. The 2022 Nobel Prize in Chemistry – sweet! 2022, *Under Review*.

PATENTS

7. Methods Employing Mucin-Specific Proteases. Carolyn R. Bertozzi, **Stacy A. Malaker**, Kayvon Pedram, and D. Judy Shon. US Provisional Patent Number 17/291,376.
Licensed by Sigma Aldrich: P/N SAE0202
6. Identification of class I MHC associated glycopeptides as targets for cancer immunotherapy. Donald F. Hunt, Jeffrey Shabanowitz, **Stacy A. Malaker**, Mark Cobbold, and Sarah Penny. US Provisional Patent Number 15/750,607.
5. Target peptides for immunotherapy and diagnostics. Donald F. Hunt, Jeffrey Shabanowitz, **Stacy A. Malaker**, Victor H. Engelhard, Angela Zarling, Kara L. Cummings, Rebecca C. Obeng, and Mark Cobbold. Patent Number US09561266.
4. Composition useful for treating or preventing cancer and melanoma in patient comprises synthetic target peptides. Donald F. Hunt, Jeffrey Shabanowitz, **Stacy A. Malaker**, Victor H. Engelhard, Angela Zarling, Kara L. Cummings, Rebecca C. Obeng, and Mark Cobbold. Patent Numbers WO2014036562-A2, WO2014036562-A3, CA2883569-A1, AU2013308409-A1, EP2897631-A2, US2015224182-A1, HK1212237-A0, US9561266-B2, US2017333541-A1.
3. Composition for treating a proliferative disease comprises a tetanus peptide and synthetic target peptides. Donald F. Hunt, Jeffrey Shabanowitz, **Stacy A. Malaker**, Victor H. Engelhard, Angela Zarling, Kara L. Cummings, Rebecca C. Obeng, and Mark Cobbold. Patent Number WO2015034519-A1.
2. Composition for treating and/or preventing cancer, e.g., leukemia comprises Class I Major Histocompatibility Complex associated glycopeptides. Donald F. Hunt, Jeffrey Shabanowitz, **Stacy A. Malaker**, Mark Cobbold, and Sarah A. Penny. Patent Numbers WO2017027403-A1; CA2995103-A1; AU2016306304-A1.
1. Composition useful for treating hepatocellular carcinoma and esophageal cancer, comprises synthetic target peptides comprising specific amino acid sequences. Donald F. Hunt, Jeffrey Shabanowitz, Paisley T. Myers, Mark Cobbold, Nico Buttner, **Stacy A. Malaker**, Sarah A. Penny. Patent Number WO2017192969-A1.

HONORS AND AWARDS

2021	Human Proteome Organization Early Career Researcher Manuscript Competition – Finalist
2021	Royal Society for Chemistry - Chemistry Biology Interface Division Horizon Prize
2021	American Society for Biochemistry and Molecular Biology (ASBMB) Early Career Faculty Award
2021	Rising Stars in Proteomics and Metabolomics: 40 under 40
2019	Society for Glycobiology Annual Conference Travel Award
2019	Gordon Research Conference in Glycobiology; Poster Award
2018	Helena Anna Henzl-Gabor Young Women in Science Travel Grant
2018	SUMS Research Symposium Poster; First Place

2018 France-Stanford Center for Interdisciplinary Studies Visiting Junior Scholar Fellowship
 2017-2019 NIH F32 Ruth L. Kirschstein National Research Service Award (NRSA)
 2017-2018 NIH T32 Stanford School of Medicine Immunology Training Grant (Declined)
 2017 Helena Anna Henzl-Gabor Young Women in Science Travel Grant
 2016 Stanford University Mass Spectrometry Seed Grant
 2016 National Research Council (NRC) Research Associateship Award (Declined)
 2015 University of Virginia CGS/ProQuest Distinguished Dissertation Nominee
 2015 University of Virginia Post Doc Symposium Oral Presentation; Third Place
 2013-2014 Achievement Rewards for College Scientists (ARCS), Danaher Scholar
 2014 University of Virginia 3 Minute Thesis; First Place
 2014 Huskey Research Symposium Oral Presentation; First Place
 2014 Washington-Baltimore Mass Spectrometry Discussion Group Travel Award
 2014 Robert J. Huskey Travel Fellowship Recipient
 2013 Huskey Research Symposium Poster; First Place
 2013 Pratt Fellowship
 2010-2013 University of Virginia Chemistry Department Fellowship
 2010 Alpha Chi Sigma Presidential Award
 2009 University of Michigan Angell Scholar
 2007-2009 University of Michigan Honors

RESEARCH SUPPORT

Current

- 2022-2027 NIGMS Maximizing Investigators' Research Award, R35**
 Aberrant glycosylation is a hallmark of cancer and contributes to the ability of transformed cells to escape immune surveillance and proliferate uncontrollably. However, mechanisms underlying these processes are not well understood, in part because glycosylation is exceptionally difficult to study. To bridge this disparity, we strive to understand how glycosylation contributes to downregulation of immune signaling, how altered glycans vary spatially within and around tumors, and how data processing can be streamlined in glycoproteomic experiments.
- 2023-2024 Lion Heart Center for Cancer Research Pilot Grant; Yale Cancer Center**
 In collaboration with Craig Crews, we received \$50K seed funding to study how PROTAC treatment affects MHC class I peptide presentation in order to develop combination immunotherapies in cancer
- 2021-2026 Yale Science Development Fund**
 Dedicated funds for the purchase mass spectrometers
 Unrestricted funds for personnel and research expenditure
- 2021-2026 Projet de recherche international INSERM edition 2020**
 GhostGly aims to study, in the physiopathology of cancer, the function of a recently discovered new class of proteins (Alternative Proteins or AltProts) which are issued from alternative translation frames. In this context, we will use MS-based methodology to identify protein partners of AltProts.
- 2021-2023 Yale Endowed Postdoctoral Fellowship in the Biological Sciences**
 Two years of support for postdoctoral associates to investigate the immune mucinome

Completed

- 2021-2022 Yale SEAS/Science Program to Advance Research Collaboration (SPARC)**
 In collaboration with Noah Palm, we received \$25K seed funding to spearhead research investigating how mucin structure is altered in inflammatory bowel disease.
- 2017-2019 NIGMS National Research Service Award, F32**
 PI: Stacy A. Malaker
 Title: An enzymatic approach to study cancer-associated cell-surface glycoproteins: exploration of mucin-degrading bacterial metalloproteases.

Description: Aberrant glycosylation is a universal feature of cancer and contributes to the ability of malignant cells to evade the immune system. The mechanism by which this occurs is not well understood, likely due to the challenges associated with studying glycosylation. The proposed research aims to develop methods that help identify glycosylated targets on tumor cells that contribute to immune suppression.

2017-2018 NIH T32 Stanford School of Medicine Immunology Training Grant (Declined)
2016 Stanford University Mass Spectrometry Seed Grant
2016 National Research Council (NRC) Research Associateship Award (Declined)
2013-2014 Achievement Rewards for College Scientists (ARCS), Danaher Scholar
2013 University of Virginia Pratt Fellowship
2010-2013 University of Virginia Chemistry Department Fellowship

ORAL PRESENTATIONS

61. Invited speaker: **Stacy A. Malaker**. Title TBD. 2023 Yale Chemical Biology Symposium. 27 October, 2023. New Haven, CT. *Invited by Jason Crawford*
60. Invited speaker: **Stacy A. Malaker**. Title TBD. Fall 2023 USC Seminar Series. 19 October, 2023. Los Angeles, CA. *Invited by Matthew Pratt*
59. Invited speaker: **Stacy A. Malaker**. Title TBD. Fall 2023 American Chemical Society CARB Division Symposium on "Advancing Women's Health through Glycoscience". 21 August, 2023. San Francisco, CA. *Invited by Kamil Godula, Catherine Grimes, and Steve Townsend*
58. Invited speaker: **Stacy A. Malaker**. Title TBD. 2023 High-Throughput Chemistry and Chemical Biology Gordon Research Conference. 3 August, 2023. Colby-Sawyer College, New London, NH. *Invited by Brian Paegel, Ann Rowley, and Deb Rothman*
57. Invited speaker: **Stacy A. Malaker**. Title TBD. 2023 Beilstein Glycobioinformatics Symposium. 19 June, 2023. Limburg and der Lahn, Germany. *Invited by Elisa Fadda and Ben Schumann*
56. Keynote speaker: **Stacy A. Malaker**. Title TBD. 2023 GlycoNet Canadian Glycomics Symposium. 10 May, 2023. Edmonton, Alberta CA. *Invited by Simon Wisnovsky*
55. Invited seminar speaker: **Stacy A. Malaker**. Title TBD. Developmental Therapeutics, Yale Comprehensive Cancer Center. 13 April, 2023. Indianapolis, IN. *Invited by Karen Anderson*
54. Invited speaker: **Stacy A. Malaker**. Title TBD. 2023 ACS Spring Meeting: Joint CARB-CELL Symposium - "Transforming glycoscience: where do we stand". 26 March, 2023. Indianapolis, IN. *Invited by Clay Bennett*
53. Invited speaker: **Stacy A. Malaker**. Title TBD. 2023 PittCon Annual Meeting: Advancing Glycobiology through Mass Spectrometry. 20 March, 2023. Philadelphia, PA. *Invited by Albert Heck*
52. Invited speaker: **Stacy A. Malaker**. Title TBD. 2023 Gordon Research Conference: Glycobiology. Glycoinformatics, Glycomics and Glycoproteomics. 13 March, 2023. Ventura, CA. *Invited by Vlad Panin and Kiyoko Aoki-Kinoshita*
51. Invited speaker: **Stacy A. Malaker**. Mucinomics as the next frontier of mass spectrometry. 2022 International HUPO Annual Meeting. 6 December, 2022. Cancun, Mexico. *Invited by Klaus Lindpaintner*
50. Invited speaker: **Stacy A. Malaker**. Mucinomics as the next frontier of mass spectrometry. 2022 Eastern Analytical Symposium. 15 November, 2022. Plainsboro, NJ. *Invited by Jeremy Balsbaugh*
49. Invited speaker: **Stacy A. Malaker**. Mucinomics as the next frontier of mass spectrometry. GlyGen Seminar Series. 1 November, 2022. New Haven, CT. *Invited by Michael Tiemeyer*
48. Invited speaker: **Stacy A. Malaker**. Mucinomics as the next frontier of mass spectrometry. Yale School of Medicine Dean's Workshop on Mass Spectrometry. 25 October, 2022. New Haven, CT. *Invited by Tony Koleske*

47. Invited speaker: **Stacy A. Malaker**. Mucinomics as the next frontier of mass spectrometry. Boston Glycobiology Discussion Group (BGDG) Summer Seminar Series. 25 August, 2022. Virtual Seminar from New Haven, CT. *Invited by Manveen K. Sethi*
46. Invited seminar speaker: **Stacy A. Malaker**. Revealing the human mucinome. InterVenn Bioscience Seminar Series. 23 August, 2022. South San Francisco, CA. *Invited by Klaus Lindpaintner*
45. Invited seminar speaker: **Stacy A. Malaker**. Revealing the human mucinome. Utrecht University Seminar Series. 29 July, 2022. Utrecht, The Netherlands. *Invited by Albert Heck*
44. Invited speaker: **Stacy A. Malaker**. Mucinomics as the next frontier of mass spectrometry. 2022 Mucins in Health and Disease International Conference. 27 July, 2022. Utrecht, The Netherlands. *Invited by Thaher Pelaseyed*
43. Keynote speaker: **Stacy A. Malaker**. Revealing the human mucinome. 2022 Chicago Mass Spec Day 2022. 15 July, 2022. Chicago, IL. *Invited by Jane Thibeault and Trent Peters-Clarke*
42. Invited speaker: **Stacy A. Malaker**. Revealing the human mucinome. NIH Proteomics Interest Group Seminar Series. 14 June, 2022. Bethesda, MD. *Invited by Yan Wang*
41. Invited speaker: **Stacy A. Malaker**. Revealing the human mucinome. 2022 NIH & FDA Glycosciences Day: Clinical and Translational Glycoproteomics or Clinical Glycoscience. 13 June, 2022. Bethesda, MD. *Invited by Radoslav Goldman*
40. Invited seminar speaker: **Stacy A. Malaker**. Mucinomics as the next frontier of mass spectrometry. Spring 2022 NCI Seminar Series: Molecular Discovery Seminar Series for the Chemical Biology Laboratory. 26 May, 2022. Virtual Seminar from New Haven, CT. *Invited by Joe Barchi*
39. Invited speaker: **Stacy A. Malaker**. A systematic comparison of current bioinformatic tools for glycoproteomics data. NIH Common Fund Tools for Glycoscience Program: Glycoinformatics at the Interface of Disease and Data. 27 April, 2022. Virtual Seminar from New Haven, CT. *Invited by Michael Tiemeyer and Raja Mazumder*
38. Invited speaker: **Stacy A. Malaker**. Mucinomics as the next frontier of mass spectrometry. Michigan Chemistry 215H. 24 March, 2022. Virtual seminar from San Diego, CA. *Invited by John Montgomery*
37. Invited speaker: **Stacy A. Malaker**. Mucinomics as the next frontier of mass spectrometry. Spring ACS Meeting, 2022: Glycosylated Proteins and their Role in Health and Disease. 22 March, 2022. San Diego, CA. *Invited by Ronghu Wu*
36. Invited speaker: **Stacy A. Malaker**. Mucinomics as the next frontier of mass spectrometry. PittCon Annual Meeting, 2022: Advances in Mucin Analysis. 6 March, 2022. Atlanta, GA. *Invited by Rebecca Whelan. CANCELED*
35. Invited seminar speaker: **Stacy A. Malaker**. Revealing the human mucinome. University of Victoria Seminar Series. 4 March, 2022. Virtual seminar from New Haven, CT. *Invited by Alisdair Boraston*
34. Invited speaker: **Stacy A. Malaker**. Revealing the human mucinome. Yale Biological and Biomedical Sciences (BBS) Spring 2022 e-Lecture Series. 22 February, 2022. Virtual presentation from New Haven, CT. *Invited by Ngozi Damilola Akingbesote*
33. Invited seminar speaker: **Stacy A. Malaker**. Revealing the human mucinome. Yale Cancer Center Seminar Series. 11 February, 2022. New Haven, CT. *Invited by Carla Rothlin*
32. Invited speaker: **Stacy A. Malaker**. Revealing the human mucinome. NIH Alliance of Glycobiologists. 8 February, 2022. New Haven, CT. *Invited by Karl Kreuger*
31. **Stacy A. Malaker**, Nicholas M. Riley, D. Judy Shon, Kayvon Pedram, and Carolyn R. Bertozzi. Revealing the human mucinome. PacifiChem 2021. New Frontiers in Biological Mass Spectrometry. 18 December, 2021. Virtual seminar from New Haven, CT.

30. Invited speaker: **Stacy A. Malaker**. Benefits of chemical sugar modifications introduced by click chemistry for glycoproteomic analyses. HUPO Reconnect 2021. 17 November, 2021. Virtual seminar from New Haven, CT. *Invited by Ruth Huttenhain*
29. Invited speaker: **Stacy A. Malaker**. Revealing the human mucinome. Society for Glycobiology Annual Meeting: Glycoengineering and Applied Glycobiology. 07 November, 2021. San Diego, CA. *Invited by Nancy Dahms*
28. **Stacy A. Malaker**, Nicholas M. Riley, D. Judy Shon, Kayvon Pedram, and Carolyn R. Bertozzi. Revealing the human mucinome. American Society for Mass Spectrometry Annual Conference on Mass Spectrometry and Allied Topics; Glycopeptides and Glycoproteins. 03 November, 2021. Philadelphia, PA.
27. Invited speaker: **Stacy A. Malaker**. Revealing the human mucinome. 6th Annual Latin American Glycobiology Conference: Biotechnology and Chemical Biology. 07 October, 2021. Virtual seminar from New Haven, CT. *Invited by Fabrizio Chiodo*
26. Invited speaker: **Stacy A. Malaker**. Revealing the cancer-associated human mucinome. NIH Symposium: The Glycobiology of Cancer. 17 September, 2021. Virtual seminar from Stanford, CA. *Invited by Pamela Mario*.
25. **Stacy A. Malaker**, Nicholas M. Riley, D. Judy Shon, Kayvon Pedram, Venkatesh Krishnan, Oliver Dorigo, and Carolyn R. Bertozzi. Revealing the human mucinome. EuroCarb 2021. 18 July, 2021. Paris, France. *POSTPONED*
24. **Stacy A. Malaker**, Nicholas M. Riley, D. Judy Shon, Kayvon Pedram, and Carolyn R. Bertozzi. Revealing the human mucinome. New England Glyco-Chemistry Day. 16 July, 2021. Virtual conference from New Haven, CT.
23. Invited seminar speaker: **Stacy A. Malaker**. Revealing the human mucinome. University of Copenhagen Center for Glycomics. 02 June, 2021. Virtual seminar from New Haven, CT. *Invited by Henrik Clausen*
22. **Stacy A. Malaker**, Nicholas M. Riley, D. Judy Shon, Kayvon Pedram, and Carolyn R. Bertozzi. Novel mucinomics strategy reveals molecular signatures of cancer in cellular systems and ovarian cancer patient ascites fluid. Experimental Biology 2021: ASBMB Annual Conference. Glycobiology: Analysis and Physiology. 28 April, 2021. Virtual presentation from New Haven, CT.
21. **Stacy A. Malaker**, Nicholas M. Riley, D. Judy Shon, Kayvon Pedram, and Carolyn R. Bertozzi. Revealing the human mucinome. JAWS Chemistry Webinar Series. 27 April, 2021. Virtual presentation from New Haven, CT.
20. Invited speaker: **Stacy A. Malaker**. Revealing the cancer-associated mucinome. Biology/Disease Human Proteome Project of HUPO: Webinar Series. 26 April, 2021. Virtual seminar from New Haven, CT. *Invited by Nicolle Packer as Junior Faculty "Emerging Talent" in Glycoproteomics*
19. Invited seminar speaker: **Stacy A. Malaker**. Revealing the human mucinome. Georgetown Chemistry Seminar Series. 22 April, 2021. Virtual seminar from New Haven, CT. *Invited by Esther Braselmann*
18. **Stacy A. Malaker**, Nicholas M. Riley, D. Judy Shon, Kayvon Pedram, and Carolyn R. Bertozzi. Novel mucinomics strategy reveals molecular signatures of cancer in cellular systems and ovarian cancer patient ascites fluid. US HUPO Annual Conference. 10 March, 2021. Virtual presentation from New Haven, CT.
17. Invited seminar speaker: **Stacy A. Malaker**. Revealing the human mucinome. Maynooth Chemistry Seminar Series. 26 February, 2021. Virtual seminar from New Haven, CT. *Invited by Elisa Fadda*
16. **Stacy A. Malaker**, Jusal Quanico, Antonella Raffo Romero, Firas Kobeissy, Soulaïmane Aboulouard, Dominique Tierny, Carolyn R. Bertozzi, Isabelle Fournier, Michel Salzet. On-tissue spatially-resolved glycoproteomics guided by N-glycan imaging reveal global dysregulation of canine glioma glycoproteomic landscape. SoCal Mass Spectrometry Symposium. 1 December, 2020. Virtual presentation from Stanford, CA.
15. **Stacy A. Malaker**, Jusal Quanico, Antonella Raffo Romero, Firas Kobeissy, Soulaïmane Aboulouard, Dominique Tierny, Carolyn R. Bertozzi, Isabelle Fournier, Michel Salzet. On-tissue spatially-resolved glycoproteomics guided by N-glycan imaging reveal global dysregulation of canine glioma glycoproteomic landscape. Society for Glycobiology

Annual Meeting. 10 November, 2020. Virtual presentation from Stanford, CA.

14. Invited speaker: **Stacy A. Malaker**. Defining the "mucinome": Enzyme toolkit for selective enrichment and analysis of mucin-domain glycoproteins. MIT Glycobiology Club. 21 May, 2020. Virtual seminar from Stanford, CA. *Invited by Spenser D. Brucks*
13. Invited speaker: **Stacy A. Malaker**. Enzyme toolkit for exploration of the mucinome. Macquarie University Seminar Series. 11 February, 2020. Sydney, Australia. *Invited by Morten Thaysen-Andersen*
12. Invited speaker: **Stacy A. Malaker**. Enzyme toolkit for exploration of the mucinome. Australian Proteomics Society: Lorne Proteomics Symposium. 08 February, 2020. Lorne, Australia. *Invited by Nicholas E. Scott*
11. **Stacy A. Malaker**, D. Judy Shon, Nicholas M. Riley, Kayvon Pedram, and Carolyn R. Bertozzi. Enzyme toolkit for selective enrichment and analysis of mucin-domain glycoproteins. Society for Glycobiology Annual Meeting. 03 November, 2019. Phoenix, AZ.
10. Invited speaker: **Stacy A. Malaker**. Enzyme toolkit for selective enrichment and analysis of mucin-domain glycoproteins. Rising Stars in Chemical Biology Symposium. 20 September, 2019. Salt Lake City, UT. *Invited by Michael S. Kay*
9. Invited speaker: **Stacy A. Malaker**, Kayvon Pedram, Judy Shon, and Carolyn R. Bertozzi. Mucin-selective protease StcE enables analysis of human cancer-associated mucins. University of Copenhagen Center for Glycomics. 05 April, 2019. Copenhagen, Denmark. *Invited by Adnan Halim*
8. **Stacy A. Malaker**, Kayvon Pedram, and Carolyn R. Bertozzi. Stanford University Mass Spectrometry Research Symposium. 04 October, 2018. Stanford, CA.
7. **Stacy A. Malaker**, Kayvon Pedram, and Carolyn R. Bertozzi. A mucin-specific protease improves mass spectrometric analysis of mucin-type O-glycoproteins. American Society for Mass Spectrometry Annual Conference on Mass Spectrometry and Allied Topics; Glycopeptides and Glycoproteins. 07 June, 2018. San Diego, CA.
6. Invited speaker: **Stacy A. Malaker**. Investigating aberrant glycosylation in cancer using mass spectrometry: Insight for cancer immunotherapy design. ACS National Meeting, ACS Award in Analytical Chemistry: Symposium in honor of Donald F. Hunt. 03 April, 2017. San Francisco, CA. *Invited by John R. Yates III*
5. **Stacy A. Malaker**, Kayvon Pedram, Carolyn R. Bertozzi. Uncovering the glycocalyx: insight from a bacterial mucinase. Stanford University ChEM-H Postdoc Retreat. 02 May, 2107. Sonoma, CA.
4. **Stacy A. Malaker**, Sarah A Penny, Mark Cobbold, Jeffrey Shabanowitz, and Donald F. Hunt. Identification and Characterization of Tumor-Specific Glycopeptides for the Development of Novel Cancer Immunotherapeutics. UVA Postdoc Research Symposium. 01 May, 2015. Charlottesville, VA
3. **Stacy A. Malaker**, Sarah A Penny, Dina Bai, Weihang Wang, Mark Cobbold, Jeffrey Shabanowitz, and Donald F. Hunt. New Methodology for the Enrichment and Characterization of O-GlcNAcylated Peptides. Washington-Baltimore Mass Spectrometry Group. 23 June, 2014. Columbia, MD.
2. **Stacy A. Malaker**, Sarah A Penny, Dina Bai, Weihang Wang, Mark Cobbold, Jeffrey Shabanowitz, and Donald F. Hunt. New Methodology for the Enrichment and Characterization of O-GlcNAcylated Peptides. ASMS Annual Conference on Mass Spectrometry and Allied Topics; Post-translational Modifications: Isolation, Enrichment, and Derivatization. 16 June, 2014. Baltimore, MD.
1. **Stacy A. Malaker**, Sarah A Penny, Mark Cobbold, Jeffrey Shabanowitz, and Donald F. Hunt. New Methodology for the Enrichment and Characterization of O-GlcNAcylated Peptides. Huskey Research Exhibition; Cancer, Infectious Disease, Drug Design. 18 March, 2014. Charlottesville, VA.

POSTER PRESENTATIONS

19. **Stacy A. Malaker**, Nicholas M. Riley, D. Judy Shon, Kayvon Pedram, and Carolyn R. Bertozzi. Revealing the human mucinome. Virtual Podium Asia Pacific-Proteomics, Metabolomics, and Lipidomics. 1 December, 2021. Virtual conference from New Haven, CT. **Selected for short talk**
18. **Stacy A. Malaker**, Nicholas M. Riley, D. Judy Shon, Kayvon Pedram, and Carolyn R. Bertozzi. Revealing the human mucinome. New England Glyco-Chemistry Day. 16 July, 2021. Virtual conference from New Haven, CT. **Selected for short talk**
17. **Stacy A. Malaker**, Nicholas M. Riley, D. Judy Shon, Kayvon Pedram, and Carolyn R. Bertozzi. Revealing the human mucinome. NIH & FDA Glycoscience Research Day. 01 June, 2021. Virtual conference from New Haven, CT.
16. **Stacy A. Malaker**, Nicholas M. Riley, D. Judy Shon, Kayvon Pedram, and Carolyn R. Bertozzi. Revealing the human mucinome. RSC Chemical Biology Symposium 2021. 10 May, 2021. Virtual conference from New Haven, CT.
15. **Stacy A. Malaker**, Nicholas M. Riley, D. Judy Shon, Kayvon Pedram, and Carolyn R. Bertozzi. Novel mucinomics strategy reveals molecular signatures of cancer in cellular systems and ovarian cancer patient ascites fluid. US HUPO Annual Conference. 10 March, 2021. Virtual conference from New Haven, CT. **Selected for lightning talk**
14. **Stacy A. Malaker**, Jusal Quanico, Antonella Raffo Romero, Firas Kobeissy, Soulaïmane Aboulouard, Dominique Tierny, Carolyn R. Bertozzi, Isabelle Fournier, Michel Salzet. On-tissue spatially-resolved glycoproteomics guided by N-glycan imaging reveal global dysregulation of canine glioma glycoproteomic landscape. Midwest Carbohydrate Symposium. 20 November, 2020. Virtual conference from Stanford, CA. **Selected for short talk**
13. **Stacy A. Malaker**, Jusal Quanico, Antonella Raffo Romero, Firas Kobeissy, Soulaïmane Aboulouard, Dominique Tierny, Carolyn R. Bertozzi, Isabelle Fournier, Michel Salzet. On-tissue spatially-resolved glycoproteomics guided by N-glycan imaging reveal global dysregulation of canine glioma glycoproteomic landscape. Society for Glycobiology Annual Meeting. 10 November, 2020. Virtual conference from Stanford, CA. **Selected for short talk**
12. **Stacy A. Malaker**, Jusal Quanico, Antonella Raffo Romero, Firas Kobeissy, Soulaïmane Aboulouard, Dominique Tierny, Carolyn R. Bertozzi, Isabelle Fournier, Michel Salzet. On-tissue spatially-resolved glycoproteomics guided by N-glycan imaging reveal global dysregulation of canine glioma glycoproteomic landscape. Stanford University Mass Spectrometry Research Symposium. 28 October, 2020. Virtual conference from Stanford, CA.
11. **Stacy A. Malaker**, Judy Shon, Kayvon Pedram, Nicholas M. Riley, and Carolyn R. Bertozzi. Enzyme toolkit for selective enrichment and analysis of mucin-domain glycoproteins. Society for Glycobiology Annual Meeting. 3 November, 2019. Phoenix, AZ. **Selected for SFG Travel Award and short talk**
10. **Stacy A. Malaker**, Judy Shon, Kayvon Pedram, Nicholas M. Riley, and Carolyn R. Bertozzi. Enzyme toolkit for selective enrichment and analysis of mucin-domain glycoproteins. Stanford Microbiome Symposium. 4 September, 2019. Stanford, CA.
9. **Stacy A. Malaker**, Judy Shon, Kayvon Pedram, Nicholas M. Riley, and Carolyn R. Bertozzi. Enzyme toolkit for selective enrichment and analysis of mucin-domain glycoproteins. Mass Spectrometry in Health and Life Sciences: Molecular and Cellular Proteomics. 19 August, 2019. San Francisco, CA.
8. **Stacy A. Malaker**, Judy Shon, Kayvon Pedram, Nicholas M. Riley, and Carolyn R. Bertozzi. Enzyme toolkit for selective enrichment and analysis of mucin-domain glycoproteins. ASMS Annual Conference on Mass Spectrometry and Allied Topics; Glycoproteins I. 05 June 2019. Atlanta, GA.
7. **Stacy A. Malaker**, Kayvon Pedram, Michael J. Ferracane, Barbara A. Bensing, Eliot C. Woods, Jessica R. Kramer, Ulrika Westerlind, Oliver Dorigo, and Carolyn R. Bertozzi. A mucin-specific protease improves mass spectrometric analysis of mucin-domain glycoproteins. Keystone Symposium: Proteomics and its Application to Translational and Precision Medicine. 09 April, 2019. Stockholm, Sweden.
6. **Stacy A. Malaker**, Kayvon Pedram, Michael J. Ferracane, Barbara A. Bensing, Eliot C. Woods, Jessica R. Kramer,

Ulrika Westerlind, Oliver Dorigo, and Carolyn R. Bertozzi. The mucin-selective protease StcE enables molecular and functional analysis of human cancer-associated mucins. Gordon Research Conference: Glycobiology. 12 March, 2019. Barga, Italy. **Selected for GRC Poster Award**

5. **Stacy A. Malaker**, Kayvon Pedram, and Carolyn R. Bertozzi. A mucin-specific protease improves mass spectrometric analysis of mucin-type O-glycoproteins. Stanford University Mass Spectrometry Research Symposium. 04 October, 2018. Stanford, CA. **Selected for SUMS First Place Poster Award**
4. **Stacy A. Malaker**, Michael J. Ferracane, Florence R. Depontieu, Angela L. Zarling, Jeffrey Shabanowitz, Dina L. Bai, Victor H. Engelhard, Suzanne Topalian, and Donald F. Hunt. Identification and Characterization of Complex Glycosylated Peptides Presented by the MHC Class II Processing Pathway in Melanoma. ASMS Annual Conference on Mass Spectrometry and Allied Topics; Glycoproteins I. 07 June, 2016. San Antonio, TX.
3. **Stacy A. Malaker**, Sarah Penny, Jeffrey Shabanowitz, Mark Cobbold, and Donald F. Hunt. Enrichment of O-GlcNAcylated Peptide Antigens as Novel Candidates for Cancer Immunotherapy. Achievement Rewards for College Scientists Award Reception. 23 October, 2013. Washington, D.C.
2. **Stacy A. Malaker**, Andrew W. Dawdy, Sarah Penny, Dina Bai, Peng Wu, Jeffrey Shabanowitz, Mark Cobbold, and Donald F. Hunt. Enrichment of O-GlcNAcylated Peptide Antigens as Novel Candidates for Cancer Immunotherapy. UVA Chemistry Department Third Year Poster Session. 11 April, 2013. Charlottesville, VA.
1. **Stacy A. Malaker**, Andrew W. Dawdy, Jennifer G. Abelin, Sarah Penny, Dina Bai, Peng Wu, Jeffrey Shabanowitz, Mark Cobbold, and Donald F. Hunt. Identification of Novel Peptide Antigens as Candidates for Cancer Immunotherapy. UVA Huskey Research Symposium. 03 April, 2013. Charlottesville, VA. **Selected for First Place Poster Award**

SELECTED MENTORSHIP, SERVICE, AND DIVERSITY OUTREACH

- **Co-Chair, Human Glycoproteomics Initiative Study** **2021 – present**
The Human Glycoproteomics Initiative (HGI) was established in 2017 and aims to increase the understanding of the functional significance of glycosylation. This can only be achieved when the proteomics community has well integrated analytical and informatics tools available to accurately sequence glycopeptides. I was invited by Morten Thaysen-Anderson, Nicki Packer, and Daniel Kolarich to lead the second HGI study, where we will be comparing across glycoproteomic software developers to determine accuracy and consistency across programs.
- **USA Representative at the International Glycoconjugate Organization** **2022 – present**
As the IGO Representative, my activities concentrate on establishing an efficient communication channel between the Society for Glycobiology (SFG) and IGO leaderships and representing the interests of the SFG in the IGO community. This involves attending IGO conferences, business meetings, and reporting to the SFG Executive Committee or Board of Directors on the state of affairs
- **American Society for Mass Spectrometry (ASMS) Education Committee** **2022 – present**
The committee is responsible for fostering educational opportunities within ASMS. The committee directly advises the Board on short courses, fall workshop, educational videos, and other printed or online collateral related to education.
- **Faculty advisor, International Chemical Biology Society (ICBS) Yale Chapter** **2022 - present**
The International Chemical Biology Society (ICBS) is an organization dedicated to promoting research and educational opportunities at the interface of chemistry and biology. As a founding member and faculty advisor, I oversee graduate students and postdocs in organizing ICBS events at Yale.
- **Mentor, Women in Science at Yale (WISAY) Postdoc Mentoring Program** **2021 – present**
I meet once per month to mentor ~4-6 female postdocs from Yale. As a mentor, I am advising postdocs in their career development, helping to prepare them for independent careers, and assisting in the preparation of their application materials for academic jobs.
- **Mentor, Yale Postdoc Association (YPA) Postdoc Mentoring Program** **2022 – present**

I meet once per month to mentor 4 postdocs from Yale. As a mentor, I am advising postdocs in their career development, helping to prepare them for independent careers, and assisting in the preparation of their application materials for academic jobs.

- **Mentor, Females in Mass Spectrometry (FeMS) Mentorship Program** **2020 - present**
Small groups meet once per month to mentor ~5-10 mentees from around the world for 6 months. As a mentor, I have shared my experiences as a woman in the field of mass spectrometry and on the academic job market. I have also advised students and postdocs in their career development.
- **Awards Committee, Females in Mass Spectrometry (FeMS)** **2021 - present**
A subgroup of FeMS organizes awards for students and postdocs in the mass spec field; we develop ideas for the awards, target group for the award, advertise and also select awardees.
- **Executive Committee, Yale Chemical Biology Interface Training Grant** **2022 - present**
Responsible for reviewing incoming graduate student applications to evaluate which trainees should be recommended each year for the CBI training grant program
- **Science, Technology and Research Scholars (STARS) Board Member and Mentor** **2021- present**
The STARS Program, administered by the Yale College Dean's Office, is designed to support women, minority, economically underprivileged, and other historically underrepresented students in the sciences, engineering, and mathematics. The program seeks to improve student performance and persistence rates in all STEM disciplines.
- **Session Chair, International Symposium on Glycoconjugates "Glyco26"** **August 2023**
Chaired the "Mucins and microbiome" session at the International Symposium on Glycoconjugates "Glyco26" in Taipei, Taiwan. Invited by Vlad Panin (SFG President) to chair the session; responsible for selecting invited speakers and introducing the session.
- **Session Chair, HUPO World Congress Annual Meeting 2022** **December 2022**
Chaired the "Glycopeptides and Glycoproteins" session at the World HUPO Annual Meeting in Cancun, Mexico. Invited by Sergio Encarnación-Guevara and Luis Manuel Teran to chair the session; responsible for selecting abstracts and introducing speakers.
- **Panelist, Alpha Chi Sigma Professional Development Panel** **November 2022**
Served as a panelist for Alpha Chi Sigma, Alpha Beta Chapter. Undergraduate students looking to enter the academic job market asked questions about careers and job searching in academia, with a focus on R1 Institutions.
- **Session Chair, ASMS Annual Meeting 2022** **June 2022**
Chaired the "Glycopeptides and Glycoproteins" session at the ASMS Annual Meeting in Minneapolis. Invited by Julia Laskin to chair the session; responsible for selecting abstracts and introducing speakers.
- **Panelist, Women+ in Chemistry at Yale (WiCh+) Chemistry Graduate School Panel** **April 2022**
Served as a panelist for the WiCh+ panel for undergraduates interested in attending graduate school in chemistry. Answered questions regarding graduate programs and gave advice regarding selecting programs
- **Panelist, Yale College Dean's Office PhD Workshop** **April 2022**
Served as a panelist for the YCDO PhD Workshop for undergraduates interested in attending graduate school. Answered questions regarding graduate programs and gave advice regarding selecting programs.
- **Session Co-Organizer, "Glycobiology at the Cutting Edge" ASBMB 2022** **April 2022**
Co-organized the "Glycobiology at the Cutting Edge" symposium for ASBMB 2022 with Nadine Samara (NIH). Together, we were responsible for developing the symposium theme and content. We also invited speakers and were responsible for running the symposium.
- **Session Co-Organizer, "Advances in Mucin Analysis" PittCon 2022** **March 2022**
Co-organized the "Advances in Mucin Analysis" symposium for PittCon 2022 with Rebecca Whelan (Notre Dame). Together, we were responsible for developing the symposium theme, content, and application to PittCon organizers. We also invited speakers and were responsible for running the symposium. (Event canceled due to COVID)

- **Session Chair, PacifiChem 2021** **December 2021**
 Co-chaired the "New Frontiers in Biological Mass Spectrometry" session with John Yates III (Scripps). Invited by Yates to chair the session; responsible for selecting abstracts and introducing speakers.
- **Session Chair, Society for Glycobiology 2021** **November 2021**
 Chaired the "Glycoengineering and Applied Glycobiology" session. Invited by Nancy Dahms to chair the session; responsible for introducing speakers and coordinating virtual/in-person speakers.
- **Society for Glycobiology Mentoring Session** **November 2021**
 Served as a mentor for undergraduate students, graduate students, and postdocs looking forward to the next steps in their academic career. Mentoring continued throughout the meeting by helping those new to the field navigate networking and poster sessions.
- **Panelist, Job Seeker Panel for Stanford Jumpstart Your Academic Career** **September 2021**
 Served as a panelist for the course "Jumpstart Your Academic Career" at Stanford University. Graduate students and postdocs looking to enter the academic job market asked questions about careers and job searching in academia, with a focus on STEM fields.
- **Panelist, FeMS Job Interviewing Panel** **May 2021**
 Served as a panelist for FeMS. Undergraduate students, graduate students, and postdocs looking to enter the academic job market asked questions about careers and job searching in academia, with a focus on R1 Institutions.
- **Undergraduate Poster Judge, ASBMB Annual meeting** **April 2021**
 Served as a poster judge for the ASBMB Annual Meeting. Met with three undergraduate students, judged posters, evaluated presentation skills, and provided feedback to those in the competition.
- **Interviewee, "Random Walks" Podcast** **March 2021**
 The Random Walks Podcast that seeks to convey the diverse perspectives of people in academia to undergraduate students in Mumbai, India. In my interview, I shared my experiences as a first-generation college student and provided advice to the audience about starting careers in academia.
- **Session Chair, US HUPO Annual Meeting** **March 2021**
 Co-chaired the "Stem Cell Proteomics and Chemical Proteomics in Drug Discovery" session with Melanie Patterson. Invited by Ying Ge (Wisconsin) to chair the session; responsible for selecting abstracts and introducing speakers.
- **Host, Women in Science at Yale (WISAY) "Academic Chats"** **January 2021**
 The Academic Chats are a series of virtual one-hour meet-ups for graduate students and postdocs to discuss topics related to the academic job market with someone who has recently obtained an academic job. I hosted an event in January 2021 and answered questions from Yale affiliates about my recent job search.
- **Proposal Judge, ENVISION by WiSTEM** **January 2021**
 Served as a proposal judge for ENVISION Winter 2020 Competition. Women in STEM is a student-run, nation-wide organization that strives to support female high school students interested in STEM careers by providing members with networking and mentorship opportunities. ENVISION is a semester-long proposal-writing competition wherein Women in STEM members must work in teams of four or less to write a research proposal.
- **Faculty Representative, Yale Chemistry Diversity and Climate Committee** **2020 - present**
 As a faculty member, I help with new initiatives for the department, for example: creating posters and social media to celebrate diversity in our department, organizing anti-racism seminars, compiling outreach/mentoring/recruiting opportunities for the department website, organizing a seminar on Individual Development Plans. We also discuss community discussions on diversity and community values to continue a commitment to DEI within the department.
- **Faculty Representative, Yale Chemistry Visiting Day Committee** **2020 - present**
 Help to organize and plan the two sets of virtual visiting days (Feb 11/12 and March 11/12) for prospective graduate students. We also are responsible for generating video content and operation of the visiting days.
- **Faculty Representative, Yale Chemistry Graduate Admissions Committee** **2020-present**

Responsible for reviewing, scoring, and giving feedback on graduate applications in the chemical biology track. Worked with several other professors to provide recommendations to the larger chemistry community.

- **Panelist, Alpha Chi Sigma Professional Development Panel** **November 2020**
Served as a panelist for Alpha Chi Sigma, Alpha Beta Chapter. Undergraduate students looking to enter the academic job market asked questions about careers and job searching in academia, with a focus on R1 Institutions.
- **Faculty Representative and Emcee, 50WAY150 Women in Chemistry** **November 2020**
The symposium was a celebration of women's contributions to chemistry and the history of women chemists at Yale. In the symposium, we recognized these and other groundbreaking women inside and outside Yale with a series of short inspirational presentations. My role as a faculty member was to help assist graduate students in organizing the symposium. I also served as the event emcee.
- **Organizer, ASMS Emerging Talent Special Webinar Series** **November 2020**
The event was a weeklong online program to feature Emerging Talent within the mass spec community. As an organizer, I was responsible for selecting postdocs and graduate students to be featured in the webinar series, as well as facilitating the webinars. Finally, I provided advice on faculty job searches in a panel event.
- **Interviewee, ATHENA "College Insider" Podcast** **November 2020**
ATHENA is a special outreach program founded by the Women in STEM Initiative (WiSTEM) that focuses on female students from minority-dominant and under-resourced high schools. In my interview, I shared my experiences as a first-generation college student and provided college advice to the audience.
- **Member, Stanford ChEM-H DEI Club** **2020 – 2021**
This bi-weekly journal club focuses on topics related to BIPOC and the structural barriers to success that they face, as well as issues related to DEI, generally. Some goals for these meetings include identifying instances of racial injustice in our own lives, as well as developing tools to become anti-racist.
- **Panelist, New R1 Faculty for Yale Chemistry Professional Development** **August 2020**
Served as a panelist for the Yale Professional Development Network in chemistry. Graduate students and postdocs looking to enter the academic job market asked questions about careers and job searching in academia, with a focus on R1 Institutions.
- **Panelist, Job Seeker Panel for Stanford Jumpstart Your Academic Career** **May 2020**
Served as a panelist for the course "Jumpstart Your Academic Career" at Stanford University. Graduate students and postdocs looking to enter the academic job market asked questions about careers and job searching in academia, with a focus on STEM fields.
- **Poster Judge, Stanford University Mass Spectrometry Symposium** **October 2019**
Served as a judge for graduate and postdoc posters presented at the annual SUMS Symposium at Stanford. Provided feedback and scored posters to pick winners of the symposium.

TEACHING EXPERIENCE

Experimental Physical Methods in Molecular Sciences II (CHEM 575) **Fall 2022** *Yale University Department of Chemistry (New Haven, CT)*

- Applications of modern experimental physical methods to molecular science. Emphasis is placed on interpreting experimental data obtained by various physical methods to gain structural and dynamic information to solve problems at the molecular level. A wide range of methods will be covered, such as nonlinear spectroscopy, optical imaging, vibrational spectroscopy, NMR, and electrochemical methods. Discussions will focus on current and classic literature in the fields.

Chemical Biology and Bioanalytical Chemistry Laboratory (CHEM 355L) **Spring 2022, 2023** *Yale University Department of Chemistry (New Haven, CT)*

- The goal of the Chemical Biology and Bioanalytical Chemistry Laboratory is to involve students in the challenge and excitement of instrumentation analysis before such research opportunities might normally be available. Students work in teams and are assigned an unknown protein. They express, purify, and characterize their assigned protein

via affinity chromatography, NMR, X-ray scattering, and mass spectrometry. This course is heavily reliant on the Chemical and Biophysical Instrumentation Center (CBIC), where students get hands-on experience with instruments. The semester culminates with students writing a manuscript in JACS format, followed by a conference-style poster session.

Fundamentals of Chemical Biology (CHEM 419/519)

Fall 2021, 2022

Yale University Department of Chemistry (New Haven, CT)

- Chemical biology is a rapidly developing field at the interface of chemical and biological sciences. This subject deals with how chemistry can be applied to manipulate and study biological problems using a combination of experimental techniques ranging from organic chemistry, analytical chemistry, biochemistry, molecular biology, biophysical chemistry, and cell biology. The purpose of this course is to teach students the core skills that are used by scientists at the interface of chemistry and biology. The course will transition into Chemical Biology II, where students will learn more about therapeutic applications of chemical biology.

Biochemistry Laboratory Teaching Assistant

2010-2011

University of Virginia Department of Chemistry (Charlottesville, VA)

- Assisted in the design and implementation of students' research experiments that explore proteins from the hyperthermophilic bacterium *Thermatoga maritima* in order to characterize their unknown functions
- Supervised and instructed students in biological chemistry techniques including UV spectroscopy, SDS-PAGE, cell culture, and protein expression

REVIEWING ACTIVITY

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| <ul style="list-style-type: none">• ACS Central Science• ACS Nano• Journal of the American Chemical Society• Nature Communications• Science Advances• Journal for the ImmunoTherapy of Cancer• Chemical Science• Theranostics• Clinical and Translational Medicine• Proc Nat Acad Sci USA• Cell Chemical Biology• Frontiers Immunology• Translational Research• Analytical Chemistry• Current Opinion in Structural Biology• Analytical Chimica Acta• Biochemical Society Transactions• Journal of Organic Chemistry | <ul style="list-style-type: none">• ACS Chemical Biology• Journal of Translational Medicine• Frontiers in Chemistry• Scientific Reports• Journal of Proteome Research• Biochemical Journal• Proteomics• RSC Advances• ACS Omega• Analytical and Bioanalytical Chemistry• Journal of the American Society for Mass Spectrometry• Journal of Chromatography B• Journal of Insect Science• Glycomaterials Innovation Platform (GlycoMIP)• IBISA (France)• European Research Council (ERC) |
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PROFESSIONAL AFFILIATIONS AND COURSEWORK

- American Society for Biochemistry and Molecular Biology – Member (2021- Present)
- US HUPO – Member (2021 – Present)
- Human Proteome Organization – Member (2020-Present)
- Society for Glycobiology – Member (2019-Present)
- ChemRxiv – Research Associate (2019-Present)
- American Chemical Society – Member (2016-Present)
 - ACS Analytical Division
 - ACS CARB
- American Society for Mass Spectrometry – Member (2014-Present)
- Alpha Chi Sigma – Brother (2006-Present)
- Yale Faculty Coaching (June-August, 2021)

- Yale/NIH Mentor Training for Faculty (May-June, 2021)
- Yale Science & Labs Learning Community (February, 2021)
- ACS New Faculty Workshop (August, 2020)
- ACS Reviewer Lab (November, 2020)
- Glycomics and Glycoproteomics Training Course (October, 2017)