NICOLE HARDY

née: Haverland

CONTACT

34516 Beaver Trl
Pequot Lakes, MN 56472
nickyhaverland@hotmail.com
218.371.0069

PROFILE

With natural curiosity and diverse training across disciplines, I bring great enthusiasm for everything science. On paper, I am a mass spectrometrist with an education in biology, chemistry, and technology; additional coursework in education and psychology; and professional development in business and leadership. However, beyond the resume and transcripts, I am a lifelong learner and educator across all stages of life: a volunteer reader for preschoolers, a preK-12 substitute teacher, a senior's water aerobics instructor, and a UMN Extension Master Gardener. After a brief pause in academics, I am now eager to put my training and education to use as a Minnesota State Senator.

KEY SKILLS

Strong communication skills * Team player * Critical thinker * Passionate lifelong learner & educator

ACTIVITIES & INTERESTS

Gardening * Reading * Volunteering * Domestic and International Travel

CITATIONS

02/16/2025	All	Since 2020
Citations	790	436
h-index	13	9
i10-index	14	9

EDUCATION

DOCTOR OF PHILOSOPHY
DEPT OF PHARMACOLOGY AND EXPERIMENTAL NEUROSCIENCE
UNIVERSITY OF NEBRASKA MEDICAL CENTER; OMAHA, NE; MAY 2014

BACHELOR OF ARTS, *MAGNA CUM LAUDE*
MAJORS IN BIOLOGY AND CHEMISTRY, MINOR IN PSYCHOLOGY
MINNESOTA STATE UNIVERSITY; MOORHEAD, MN; MAY 2009

EXPERIENCES

SUBSTITUTE TEACHER: 2024 - PRESENT
TEACHERS ON CALL A KELLY COMPANY – BLOOMINGTON, MN 55425
Substitute teacher for the Pequot Lakes (ISD 186) and Pine River (ISD 2174) school districts. Have had experiences from pre-K to 12, with and without lesson plans. Have developed working relationships with principals, teachers, and support staff to elevate my own substitute teaching performance.

POST-DOCTORAL ASSOCIATE: 2014 – 2017
NORTHWESTERN UNIVERSITY, DEPT OF CHEMISTRY - EVANSTON, IL
SUPERVISOR: NEIL KELLEHER
PLEASE CONTACT: DEPARTMENT OF CHEMISTRY – 847.467.2918
Designed and conducted research experiments; managed mass spectrometer (MS) maintenance, calibration, and method development; was immensely involved in the design, budgeting, and management of a new laboratory space; tested new methods for data analysis of large datasets, including methods for combining data from multiple datasets, transforming data, and exporting raw data; directly mentored summer intern students; assisted in the supervision and mentoring of graduate and undergraduate students; composed manuscripts and designed figures for publication; worked and collaborated in a multi-cultural setting.

GRADUATE STUDENT: 2009 – 2014
UNIVERSITY OF NEBRASKA MEDICAL CENTER, DEPT OF PHARMACOLOGY AND EXPERIMENTAL NEUROSCIENCE – OMAHA, NE
SUPERVISOR: PAWEL CIBOROWSKI (EMERITUS PROFESSOR)
PLEASE CONTACT: KIM MORRISON, HR – 402.559.4788
Was certified and followed biosafety level 2+/3 laboratory procedures for working with infectious agents and aseptic cell culture; processed samples for MS analysis and other assays; performed MS data analysis and established models for statistical methods in novel ways to identify patterns in large datasets; interpreted and integrated data using bioinformatic platforms; identified high-value targets for hypothesis testing following exploration of the data. Evidence of these techniques and abilities is best highlighted in Haverland NA, *et al* (2014).

VOLUNTEERISM AND OTHER ACTIVITIES

Pequot Lakes Community Library Board President; 2024-Present
Pequot Lakes Community Library Board Member, Vice President: 2024
Pequot Lakes Community Library Summer Reading Program Coordinator; late 2024-present
Pequot Lakes Community Education Water Aerobics instructor: 2024-present
Crow Wing County Master Gardener, U of MN Extension: 2024 – Present
Pequot Lakes Community Library Story Time Leader: 2022 - Present
Community Action of Pequot Lakes, Member: 2022 – Present
Eagle View Early Childhood Family Education Advisory Board; Pequot Lakes, MN: 2022 – 2023

Nicole (Haverland) Hardy

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nickyhaverland@hotmail.com

Education:

July 2017 Post-Doctoral Associate, Department of Chemistry, Northwestern University; Evanston, IL

April 2014 Ph.D., Pharmacology and Experimental Neuroscience, University of Nebraska Medical Center; Omaha, NE

May 2009 B.A., Double Major in Biology & Chemistry, Emphasis in Biochemistry & Biotechnology. Minor in Psychology (*Magna cum laude*) Minnesota State University Moorhead; Moorhead, MN

Continued Education and Certifications:

July 2017 Certificate, *Business for Scientists and Engineers* Executive Education, Kellogg School of Management at Northwestern University; Evanston, IL

May 2017 Coursework, *Leaders as Change Agents*, School of Professional Studies at Northwestern University, Evanston, IL

May 2017 Coursework, *RootCompass® Manager Development experience*, Office of Human Resources Learning & Organization Development Division at Northwestern University; Evanston, IL

May 2017 Certificate, *Feedback and Coaching for Peak Performance*, Office of Human Resources Learning & Organization Development Division at Northwestern University; Evanston, IL

June 2015 Responsible Conduct in Research (RCR) bioethics training completion. Northwestern University; Evanston, IL.

April 2013 Ingenuity Pathway Analysis (IPA) certified analyst.

Acknowledged for IPA analysis in Martinez-Skinner AL, et al. (2013) Functional proteome of macrophage carried nanoformulated antiretroviral therapy demonstrates enhanced particle carrying capacity. Journal of Proteome Research. Volume 12 (5), pages 2282–2294.

Dec 2010 Responsible Conduct in Research (RCR) bioethics training completion. University of Nebraska Medical Center; Omaha, NE.

Jan 2010 Biosafety level 3 (BSL-3) training completion (annual renewal, lapsed 2014)

Publications:

Peer-Reviewed Articles:

Grabowska K, Macur K, Zieschang S, Zaman L, **Haverland N**, Schissel A, Morsey B, Fox HS, and Ciborowski P. (2022). HIV-1 and methamphetamine alter galectins-1,-3, and-9 in human monocyte-derived macrophages. Journal of Neurovirology. Volume 28 (1), pages 99-112.

DeBoer J, Wojtkiewicz MS, **Haverland N**, Li Y, Harwood E, Leshen E, George JW, Ciborowski P, and Belshan M. (2018). Proteomic profiling of HIV-infected T-cells by SWATH mass spectrometry. Virology. Volume 516, pages 246-257.

Skinner OS, **Haverland NA**, Fornelli L, Melani RD, Do Vale LHF, Seckler HS, Doubleday PF, Schachner LF, Srzentic K, Kelleher NL, and Compton PD. (2018). Top-down characterization of endogenous protein complexes with native proteomics. Nature Chemical Biology. Volume 14 (1), pages 36-41.

Haverland NA, Waas M, Ntai, I, Keppel T, Gundry RL, and Kelleher NL. (2017). Cell surface proteomics of N-linked glycoproteins for typing of human lymphocytes. Proteomics. Volume 17 (19), pages 1700156.

Haverland NA, Skinner OS, Fellers RT, Tariq AA, Early BP, LeDuc RD, Fornelli L, Compton PD, and Kelleher NL. (2017). Defining gas-phase fragmentation propensities of intact proteins during native top-down mass spectrometry. Journal of the American Society for Mass Spectrometry. Volume 28 (6), pages 1203-1215.

Skinner OS, Havugimana PC, **Haverland NA**, Fornelli L, Early BP, Greer JB, Fellers RT, Durbin KR, Do Vale LHF, Melani RD, Seckler HS, Nelp MT, Belov ME, Horning SR, Makarov AA, LeDuc RD, Bandarian V, Compton PD, and Kelleher NL. (2016). An informatic framework for decoding protein complexes by top-down mass spectrometry. Nature Methods. Volume 13 (3), pages 237-240.

Goering AW, McClure RA, Doroghazi JR, Albright JC, **Haverland NA**, Zhang Y, Ju K-S, Thomson RJ, Metcalf WW, and Kelleher NL (2016). Metabologenomics: Correlation of microbial gene clusters with metabolites drives discovery of a nonribosomal peptide with an unusual amino acid monomer. ACS Central Science. Volume 2 (2), pages 99-108.

Zhang G, Guo D, Dash PK, Arainga M, Widerin JL, **Haverland N**, Knibbe-Holinger J, Martinez-Skinner A, Ciborowski P, Goodfellow VS, Wysocki TA, Wysocki BJ, Poluektova LY, Liu X-M, McMillan JM, Gorantla S, Gelbard HA, and Gendelman HE (2016). The mixed lineage kinase-3 inhibitor URMC-099 improves therapeutic outcomes for long-acting antiretroviral therapy. Nanomedicine: Nanotechnology, Biology and Medicine. Volume 12 (1), pages 109-122.

Li Y, Frederick KM, **Haverland NA**, Ciborowski P, and Belshan M (2016). Investigation of the HIV-1 Matrix interactome during virus replication. Proteomics – Clinical Applications. Volume 10 (2), pages 156-163.

Kelso ML, Elliot BR, **Haverland NA**, Ciborowski P, and Gendelman HE (2014). Granulocyte-macrophage colony-stimulating factor exerts protective and immunomodulatory effects in cortical trauma. Journal of Neuroimmunology. Volume 278, pages 162-173.

DeBoer J, Jagadish T, **Haverland NA**, Madson CJ, Ciborowski P, Belshan M (2014). Alterations in the nuclear proteome of HIV-1 infected T-cells. Virology. November 2014 issue, pages 409-420.

Haverland NA, Fox HS, and Ciborowski P (2014) Quantitative proteomics by SWATH-MS reveals altered transcription and translation regulator proteins in HIV-1-infected macrophages. Journal of Proteome Research. Volume 13 (4), pages 2109-2119.

Schweitzer CJ, Jagadish T, **Haverland N**, Ciborowski P, and Belshan M (2013) Proteomic analysis of early HIV-1 nucleoprotein complexes. Journal of Proteome Research. Volume 12 (2), pages 559-572.

Haverland N, Pottiez G, Wiederin J, and Ciborowski P (2010) Immunoreactivity of anti-gelsolin antibodies: Implications for biomarker validation. Journal of Translational Medicine. Volume 8, article 137.

Pottiez G, **Haverland N**, Ciborowski P (2010) Mass spectrometric characterization of gelsolin isoforms. Rapid Communications in Mass Spectrometry. Volume 24 (17), pages 2620-2624.

Book Chapters:

Haverland NA, Skinner OS, and Kelleher NL (2018). Mass Spectrometry. In: Bioanalytics: Analytical Methods and Concepts in Biochemistry and Molecular Biology. (Lottspeich F and Engels JW, eds.). John Wiley & Sons – invited contributor.

Haverland NA*, Villeneuve L*, Ciborowski P, and Fox HS (2016) The proteomic characterization of plasma or serum from HIV-infected patients. In: HIV protocols, 3rd edition. (VR Prasad and GV Kalpana, eds.) Humana Press, Inc. – invited contributor. *Equal contributions.

Haverland N and Ciborowski P (2010) Protein Profiling of the brain: Proteomics of isolated tissues and cells. In: Expression Profiling in Neuroscience. (Y. Karamanos, ed.) Humana Press, Inc. – invited contributor.

Presentations at Conferences & Webinars:

2017

Haverland NA, Skinner OS, Fornelli L, Tariq AA, Schachner LF, Compton PD, and Kelleher NL. Native Top-Down Mass Spectrometry Used for the Characterization of Novel Metal Binding by Endogenous Proteins and Complexes. The 65th American Society of Mass Spectrometry (ASMS) Conference on Mass Spectrometry and Allied Topics in Indianapolis, IN. June 4 – 8, 2017. **Oral Presentation.**

2016

Haverland NA, Skinner OS, Havugimana PC, Fornelli L, Early BP, Greer JB, Fellers RT, Durbin KR, Do Vale LHF, Melani RD, Seckler HS, Nelp M, LeDuc RD, Bandarian V, Compton PD, and Kelleher NL. An informatic framework for defining multi-proteoform complexes (MPCs) by native top-down mass spectrometry. The 64th American Society of Mass Spectrometry (ASMS) Conference on Mass Spectrometry and Allied Topics in San Antonio, TX. June 5 – 9, 2016. **Oral Presentation**.

2015

Haverland NA, Waas M, Toby T, Ntai I, Gundry R, and Kelleher NL. Barcoding primary human B-cells via analysis of membrane proteins on the cell surface. The 63rd American Society of Mass Spectrometry (ASMS) Conference on Mass Spectrometry and Allied Topics in St. Louis, MO. May 31-June 4, 2015. Poster presentation.

2014

Haverland N and Ciborowski P. SWATH-MS for quantitative proteomics of nucleic acid binding and regulatory proteins. AB SCIEX invited webinar; **worldwide broadcast**. May 6, 2014.

Haverland N, Fox HS, and Ciborowski P. Quantitative proteomics by SWATH-MS reveals altered transcription and translation regulator proteins in HIV-1-infected macrophages. University of Nebraska Centers for Virology annual FLYSWAT retreat in Nebraska City, NE. March 23-24. **Oral presentation.**

2013

Haverland N & Ciborowski P. SWATH-MS for targeted proteomic profiling of transcription regulators in HIV-1-infected macrophages. The 9th Annual International Student Research Forum in Brisbane, Australia. October 14-16. **Oral presentation**.

Haverland N & Ciborowski P. Global analysis of transcription regulator proteins reveals novel insights into altered cell signaling cascades in HIV-1-infected macrophages. The Gordon Research Conference on Posttranslational Modification Networks in Hong Kong, China. July 28 - August 2. Poster presentation.

Haverland N & Ciborowski P. The host response to viral infection: Targeted proteomic profiling of transcription regulator proteins in HIV-1-infected macrophages. University of Nebraska Centers for Virology annual FLYSWAT retreat in Nebraska City, NE. March 17-18. Poster presentation.

2012

Haverland N & Ciborowski P. Elucidating the host response in monocyte-derived macrophages following HIV infection: a systems biology-based approach. The 8th International Workshop for HIV, Cells of Macrophage/Dendritic Lineage, and Other Reservoirs: Pathogenic and Therapeutic Implications in Stresa, Italy. May 10-12. Poster presentation.

Haverland N & Ciborowski P. Nuclear proteomics to decipher the host response in macrophages following HIV-1 infection. 43rd Annual Midwest Student Biomedical Research Forum in Omaha, NE. February 18. Oral Presentation and abstract. And at the University of Nebraska Centers for Virology annual FLYSWAT retreat in Nebraska City, NE. March 18-19, 2012. **Oral presentation**.

2011

Haverland N & Ciborowski P. A systems biology approach for understanding the host response in macrophages following HIV-1 infection. The 7th Annual International Student Research Forum in Tokyo, Japan. October 11-13. Oral presentation and abstract. And at the 1st annual UNMC-Tongji University Student Forum in Shanghai, China. October 16. **Oral presentation**.

Haverland N & Ciborowski P. A holistic approach for understanding the host response in macrophages following HIV-1 infection. The Gordon Conference for Cellular Systems Biology in Davidson, NC. July 24-29. Poster presentation.

2009

Haverland N & Rodenbaugh DW. Chronic Paraplegia is associated with abnormal cardiac autonomic balance and changes in baroreflex control in normotensive rats. 2009 Experimental Biology Meeting in New Orleans, LA. April 18-22. Poster presentation.

Additional Co-Authored Conference Abstracts:

Skinner O, Melani R, Fornelli L, **Haverland N**, Do Vale LHF, Seckler H, Doubleday P, Schachner L, Kelleher NL, and Compton P. A native proteomics platform for untargeted identification and characterization of protein complexes. The 64th American Society of Mass Spectrometry (ASMS) Conference on Mass Spectrometry and Allied Topics in San Antonio, TX. June 5 – 9, 2016. Oral Presentation.

Goering AW, McClure RA, Doroghazi JR, Ju K-S, Albright JC, **Haverland NA**, Zhang Y, Thomson RJ, Metcalf WW, and Kelleher NL (2016). High-throughput discovery of new natural products and their biosynthetic gene clusters using a metabologenomics approach. The 64th American Society of Mass Spectrometry (ASMS) Conference on Mass Spectrometry and Allied Topics in San Antonio, TX. June 5 – 9, 2016. Oral Presentation.

Haverland N and Ciborowski P. Targeted quantitative proteomics (SWATH-MS) reveals novel insights for reprogramming of transcription regulator proteins in HIV-1-infected macrophages. 12th International Symposium on NeuroVirology in Washington DC. October 29 – Nov 2, 2013. Poster presentation.

Wojtkiewicz M*, **Haverland N***, Winkler J, Wiederin J, Villeneuve L, Stauch K, Fox HS and Ciborowski P (*equal contribution). Developing a Protein Library for SWATH-based Proteomic Profiling. The 61st American Society of Mass Spectrometry (ASMS) Conference on Mass Spectrometry and Allied Topics in Minneapolis, MN. June 9-13, 2013.

Jagadish T, **Haverland N**, Pottiez G, Wiederin J, Fox H and Ciborowski P. Plasma Gelsolin and HIV-1 Infected Macrophage: Implications for Chronic Neuroinflammation. The 11th International Symposium on NeuroVirology. New York, NY, May 29 – June 2, 2012.

Haverland N, Burns A, Pottiez G and Ciborowski P. Exposing alterations in the nuclear proteome of HIV-infected human monocyte-derived macrophages. International Conference & Exhibition in Virology-2011 hosted by the Omics Group in Baltimore, MD. September 5-7, 2011.

Pottiez G, Burns A, **Haverland N**, Rozek W, and Ciborowski P. Mass spectrometric characterization of gelsolin and its interacting domains. The 59th American Society of Mass Spectrometry (ASMS) Conference on Mass Spectrometry and Allied Topics in Denver, CO. June 5-9, 2011.

Haverland N & Ciborowski P. Gelsolin: Promoter of the macrophage proinflammatory phenotype. 42nd Annual Midwest Student Biomedical Research Forum in Omaha, NE. February 19, 2011.

Honors, Awards and Funding:

2013	Travel Award to the 9th Annual International Student Research Forum in Brisbane, Australia
2013	Travel Award and registration scholarship for the 2013 Gordon Research Conference on Posttranslational Modification Networks in Hong Kong, China
2012-2014	Patterson Fellowship, a competitive UNMC intercampus fellowship
2012-2014	Nebraska Regents tuition fellowship recipient
2012	Travel award to the 8th International Workshop for HIV, Cells of Macrophage/Dendritic Lineage, and Other Reservoirs: Pathogenic & Therapeutic Implications in Stresa, Italy
2011	Travel Award to the 7th Annual International Student Research Forum in Tokyo, Japan
2009	Travel Award to the 2009 Experimental Biology Meeting in New Orleans, LA
2008	Minnesota State University Moorhead College of Social and Natural Sciences Competitive Fellowship in Biotechnology

Collegiate Teaching Experience / Invited Lectures:

Oct 2012	"Applied Bioinformatics for Proteomics Datasets" for Applied Bioinformatics (BIOI3000); University of Nebraska at Omaha. Course Instructor: D. Kiran Bastola, Ph.D.
Feb & Oct 2012	"Bioinformatics: Mass Spectrometry and Proteomics" for Introduction to Bioinformatics (BioI1000); University of Nebraska at Omaha. Course Instructor: D. Kiran Bastola, Ph.D.

Research Experiences:

Northwestern University

Mentor: Neil Kelleher, Ph.D.

- Native mass spectrometry for the analysis of intact protein complexes
- Testing and application of informatic platforms used for the analysis of top-down (intact protein) mass spectrometry data
- Development of protein-based barcodes for mapping B cell differentiation at high resolution
- Characterization of a novel copper(I) binding protein using native proteomics

University of Nebraska Medical Center

Mentor: Pawel Ciborowski, Ph.D.

- Proteomic alterations of the macrophage following HIV-1 infection and methamphetamine exposure
    - Ph.D. Dissertation Topic
    - In collaboration with Howard Fox, M.D., Ph.D.; Department of Pharmacology and Experimental Neuroscience at UNMC
- Characterization of the effects of nanoformulated antiretroviral therapies on HIV-1-infected macrophages
    - In collaboration with Howard Gendelman, M.D.; Department of Pharmacology and Experimental Neuroscience at UNMC
- Identification of novel cellular components of pre-integration complexes formed during early HIV-1 infection of T-cells
    - In collaboration with Michael Belshan, Ph.D.; Department of Medical Microbiology and Immunology at Creighton University in Omaha, NE.

Minnesota State University Moorhead

Mentor: David Rodenbaugh, PhD

- Chronic paraplegia, abnormal cardiac autonomic balance, and changes in baroreflex control in normotensive rats
    - B.A. capstone research project

Mentor: Kathryn Wise, PhD

- Analysis of the effects of an advanced solar disinfection system on *Escherichia Coli*.
    - Recipient of a MSUM College of Social and Natural Sciences competitive grant

Perham High School

Mentors: Mrs. Beth Schwarz (Former Superintendent of Schools; ISD 166) and Dr. Ellen Brisch (MSUM, Professor of Biology)

- The effects of thimerosal on developing chick embryos.
    - Various regional and state awards including a travel award to the International Science and Engineering Fair (ISEF), 2004; Portland, OR.