Mingxun Wang

Phone: 650-646-4986
email: mwang87@gmail.com
URL: http://www.mingxunwang.com

Current position

Post Doctoral Scholar, Skaggs School of Pharmacy and Pharmaceutical Sciences, UC San Diego
Founder, Ometa Labs LLC, San Diego
Consultant, WWomics LLC, San Diego

Areas of specialization

Computer Engineering - Computer Science - Bioinformatics - Computational Mass Spectrometry

Education

2017 PH.D. in Computer Science, UC San Diego
2014 C PHIL. in Computer Science, UC San Diego
2013 MS in Computer Science, UC San Diego
2009 BS in Computer Engineering summa cum laude, University of Illinois

Publications & Talks

JOURNAL ARTICLES

2019 **Mingxun Wang**, Alan K. Jarmusch, Fernando Vargas, Alexander A. Aksenov, Julia Gauglitz, Kelly Weldon, Daniel Petras et al. "MASST: A Web-based Basic Mass Spectrometry Search Tool for Molecules to Search Public Data." ***Preprint in Biorxiv***

2019 Valentina Z. Petukhova, Alexandria N. Young, Jian Wang, **Mingxun Wang**, Andras Ladanyi, Rajul Kothari, Joanna E. Burdette, and Laura M. Sanchez. "Whole Cell MALDI Fingerprinting Is a Robust Tool for Differential Profiling of Two-Component Mammalian Cell Mixtures.", ***Journal of The American Society for Mass Spectrometry***

2018 Antonio Gonzalez, Jose A. Navas-Molina, Tomasz Kosciolek, Daniel McDonald, Yoshiki Vázquez-Baeza, Gail Ackermann, Jeff DeReus, Stefan Janssen, Austin D. Swafford, Stephanie B. Orchanian, Jon G. Sanders, Joshua Shorenstein, Hannes Holste, Semar Petrus, Adam Robbins-Pianka, Colin J. Brislawn, **Mingxun Wang**, Jai Ram Rideout, Evan Bolyen, Matthew Dillon, J. Gregory Caporaso, Pieter C. Dorrestein, and Rob Knight. "Qiita: rapid, web-enabled microbiome meta-analysis", ***Nature Methods***

2018 Ricardo R. da Silva, **Mingxun Wang**, Louis-Félix Nothias, Justin JJ van der Hooft, Andrés Mauricio Caraballo-Rodríguez, Evan Fox, Marcy J. Balunas, Jonathan L. Klassen, Norberto Peporine Lopes,

and Pieter C. Dorrestein. "Propagating annotations of molecular networks using in silico fragmentation" ***PLoS Computational Biology***

2018 Louis-Félix Nothias, Mélissa Nothias-Esposito, Ricardo da Silva, **Mingxun Wang**, Ivan Protsyuk, Zheng Zhang, Abi Sarvepalli et al. "Bioactivity-based molecular networking for the discovery of drug leads in natural product bioassay-guided fractionation." ***Journal of natural products***

2018 **Mingxun Wang**, Jian Wang, Jeremy Carver, Benjamin Pullman, Seong Cha, Nuno Bandeira, "Assembling the Community-Scale Discoverable Human Proteome", ***Cell Systems***

2017 Kerstin Scheubert, Franziska Hufsky, Daniel Petras, **Mingxun Wang**, Louis-Felix Nothias, Kai Duehrkop, Nuno Bandeira, Pieter Dorrestein, Sebastian Boecker, "Significance estimation for large scale untargeted metabolomics annotations", ***Nature Communications***

2017 Neha Garg, **Mingxun Wang**, Embriette Hyde, Ricardo R. da Silva, Alexey V. Melnik, Ivan Protsyuk, Amina Bouslimani, Yan Wei Lim, William Comstock, Richard Wong, Greg Humphrey, James Gaffney, Gail Ackermann, Timothy Spivey, Sharon S. Brouha, Nuno Bandeira, Grace Y. Lin, Forest Rohwer, Douglas J. Conrad, Theodore Alexandrov, Rob Knight, Pieter C. Dorrestein, "Three dimensional volume cartography of microbiome and metabolome data onto radiological images of the human lung", ***Cell Host Microbe***

2017 Tal Luzzatto Knaan, Neha Garg, **Mingxun Wang**, Evgenia Glukhov, Yao Peng, Gail Ackermann, Amnon Amir, Brendan M Duggan, Sergey Ryazanov, Lena Gerwick, Rob Knight, Theodore Alexandrov, Nuno Bandeira, William H Gerwick, Pieter C Dorrestein, "Digitizing mass spectrometry data to explore the chemical diversity and distribution of marine cyanobacteria and algae", ***eLife***

2016 Yasset Perez-Riverol, Mingze Bai, Felipe da Veiga Leprevost, Silvano Squizzato, Young Mi Park, Kenneth Haug, Adam J Carroll, Dylan Spalding, Justin Paschall, **Mingxun Wang**, Noemi del-Toro, Tobias Ternent, Peng Zhang, Nicola Buso, Nuno Bandeira, Eric W Deutsch, David S Campbell, Ronald C Beavis, Reza M Salek, Ugis Sarkans, Robert Petryszak, Maria Keays, Ariana Barbera, Rafael C Jiménez, Alexey I Nesvizhskii, Susanna-Assunta Sansone, Christoph Steinbeck, Rodrigo Lopez, Juan Antonio Vizcaíno, Peipei Ping, Henning Hermjakob, "Omics Discovery Index – Discovering and Linking Public 'Omics' Datasets", ***Nature Biotechnology***

2016 Amina Bouslimania, Alexey V Melnik, Zhenjiang Xu, Amnon Amir, Ricardo R da Silva, **Mingxun Wang**, Nuno Bandeira, Theodore Alexandrov, Rob Knight, and Pieter C. Dorrestein, "Lifestyle chemistries from phones for individual profiling", ***Proceedings of the National Academy of Sciences***

2016 Gert Wohlgemuth, Sajjan S Mehta, Ramon F Mejia, Steffen Neumann, Diego Pedrosa, Tomáš Pluskal, Emma L Schymanski, Egon L Willighagen, Michael Wilson, David S Wishart, Masanori Arita, Pieter C. Dorrestein, Nuno Bandeira, **Mingxun Wang**, Tobias Schulze, Reza M Salek, Christoph Steinbeck, Venkata Chandrasekhar Nainala, Robert Mistrik, Takaaki Nishioka, Oliver Fiehn, "SPLASH, A hashed identifier for mass spectra", ***Nature Biotechnology***

2016 Eric W Deutsch, Attila Csordas, Zhi Sun, Andrew Jarnuczak, Yasset Perez-Riverol, Tobias Ternent, David S Campbell, Manuel Bernal-Llinares, Shujiro Okuda, Shin Kawano, Robert L Moritz, Jeremy J Carver, **Mingxun Wang**, Yasushi Ishihama, Nuno Bandeira, Henning Hermjakob, Juan Antonio Vizcaíno, "The ProteomeXchange consortium in 2017: supporting the cultural change in proteomics public data deposition", ***Nucleic Acids Research***

2016 **Mingxun Wang**, Jeremy J Carver, Vanessa V Phelan, Laura M Sanchez, Neha Garg, Yao Peng, Don Duy Nguyen, Jeramie Watrous, Clifford A Kapono, Tal Luzzatto-Knaan, Carla Porto, Amina Bouslimani, Alexey V Melnik, Michael J Meehan, Wei-Ting Liu, Max Crüsemann, Paul D Boudreau, Eduardo Esquenazi, Mario Sandoval-Calderón, Roland D Kersten, Laura A Pace, Robert A Quinn, Katherine R Duncan, Cheng-Chih Hsu, Dimitrios J Floros, Ronnie G Gavilan, Karin Kleigrewe, Trent Northen, Rachel J Dutton, Delphine Parrot, Erin E Carlson, Bertrand Aigle, Charlotte F Michelsen, Lars Jelsbak, Christian Sohlenkamp, Pavel Pevzner, Anna Edlund, Jeffrey McLean, Jörn Piel, Brian T Murphy, Lena Gerwick, Chih-Chuang Liaw, Yu-Liang Yang, Hans-Ulrich Humpf, Maria Maansson, Robert A Keyzers, Amy C Sims, Andrew R Johnson, Ashley M Sidebottom, Brian E Sedio, Andreas Klitgaard, Charles B Larson, Daniel Torres-Mendoza, David J Gonzalez, Denise B Silva, Lucas M Marques, Daniel P Demarque, Egle Pociute, Ellis C O'Neill, Enora Briand, Eric JN Helfrich, Eve A Granatosky, Evgenia Glukhov, Florian Ryffel, Hailey Houson, Hosein Mohimani, Jenan J Kharbush, Yi Zeng, Julia A Vorholt, Kenji L Kurita, Pep Charusanti, Kerry L McPhail, Kristian Fog Nielsen, Lisa Vuong, Maryam Elfeki, Matthew F Traxler, Niclas Engene, Nobuhiro Koyama, Oliver B Vining, Ralph Baric, Ricardo R Silva, Samantha J Mascuch, Sophie Tomasi, Stefan Jenkins, Venkat Macherla, Thomas Hoffman, Vinayak Agarwal, Philip G Williams, Jingqui Dai, Ram Neupane, Joshua Gurr, Andrés MC Rodríguez, Anne Lamsa, Chen Zhang, Kathleen Dorrestein, Brendan M Duggan, Jehad Almaliti, Pierre-Marie Allard, Prasad Phapale, Louis-Felix Nothias, Theodore Alexandrov, Marc Litaudon, Jean-Luc Wolfender, Jennifer E Kyle, Thomas O Metz, Tyler Peryea, Dac-Trung Nguyen, Danielle VanLeer, Paul Shinn, Ajit Jadhav, Rolf Müller, Katrina M Waters, Wenyuan Shi, Xueting Liu, Lixin Zhang, Rob Knight, Paul R Jensen, Bernhard Ø Palsson, Kit Pogliano, Roger G Linington, Marcelino Gutiérrez, Norberto P Lopes, William H Gerwick, Bradley S Moore, Pieter C Dorrestein, Nuno Bandeira, "Sharing and community curation of mass spectrometry data with Global Natural Products Social Molecular Networking", ***Nature Biotechnology***

2016 Waqas Nasir, Alejandro Gomez Toledo, Fredrik Noborn, Jonas Nilsson, **Mingxun Wang**, Nuno Bandeira, Goran Larson, "SweetNET: A bioinformatics workflow for glycopeptide MS/MS spectral analysis" ***Journal of Proteome Research***

2015 Amina Bouslimani, Carla Porto, Christopher M Rath, **Mingxun Wang**, Yurong Guo, Antonio Gonzalez, Donna Berg-Lyon, Gail Ackermann, Gitte Julie Moeller Christensen, Teruaki Nakatsuji, Lingjuan Zhang, Andrew W Borkowski, Michael J Meehan, Kathleen Dorrestein, Richard L Gallo, Nuno Bandeira, Rob Knight, Theodore Alexandrov, Pieter C Dorrestein, "Molecular cartography of the human skin surface in 3D", ***Proceedings of the National Academy of Sciences***

2015 Katherine R Duncan, Max Crüsemann, Anna Lechner, Anindita Sarkar, Jie Li, Nadine Ziemert, **Mingxun Wang**, Nuno Bandeira, Bradley S Moore, Pieter C Dorrestein, Paul R Jensen, "Molecular networking and pattern-based genome mining improves discovery of biosynthetic gene clusters and their products from Salinispora species", ***Chemistry Biology***

2014 Hosein Mohimani, Roland D Kersten, Wei-Ting Liu, **Mingxun Wang**, Samuel O Purvine, Si Wu, Heather M Brewer, Ljiljana Pasa-Tolic, Nuno Bandeira, Bradley S Moore, Pavel A Pevzner, Pieter C Dorrestein, "Automated genome mining of ribosomal peptide natural products", ***ACS Chemical Biology***

2013 **Mingxun Wang**, Nuno Bandeira, "Spectral library generating function for assessing spectrum-spectrum match significance", ***Journal of Proteome Research***

Conference Talks

2019 Skin Beauty Congress in San Francisco
2018 Skin Microbiome Congress in San Francisco
2018 ASP 2018 - Introduction to Global Natural Product Social (GNPS) Molecular Networking and 3D Visualization of Natural Product Data Workshop
2018 Metabolomics 2018 - Compound Identification Workshop
2018 ASM Oral Presentation - Sharing and Community Curation of Mass Spec Data with GNPS
2018 Skin Microbiome Congress in Boston
2017 ASMS Workshop - MassIVE Big Data Workshop
2017 ASM Workshop - Qiita and GNPS Analysis Workshop
2016 ASMS Oral - Collaborative Human Computing: The Next Generation Paradigm in Metabolomics
2016 ASMS Workshop - Big Data Workshop
2016 Sloan Microbiology of the Built Environment Data Analysis Workshop - Introduction to GNPS
2015 Plant Animal Genome Conference - GNPS - A Preview of the Future of Community Wide Collaboration and the Power of Social Networking in Mass Spectrometry
2013 RECOMB 2013 - Spectral Library Generating Function for Assessing Spectrum-Spectrum Match Significance

Poster Presentations

2017 ASP - GNPS: High Throughput Mass Spectrometry Dereplication and Discovery with Molecular Networking and Crowd Sourced Annotation
2017 ASMS - Assembling the community-scale discoverable human proteome
2016 Gordon Research Seminar/Conference Chemistry Biology of Peptides - Exploring the Highly Post Translationally Modified Peptide Space with Molecular Networks
2015 ASMS - GNPS: Charting Molecular Families and Structure of Tens of Thousands of Mass Spectrometry Runs
2014 ASMS - GNPS: Global Natural Product Molecular Social Networking – Enabling High Throughput Compound Discovery
2013 ASMS - Beyond Exact Match Spectral Library Search: Mutation Tolerant Search
2012 ASMS - Spectral Library Generating Function: Assessing the Signicance of Spectral Similarity

Service

2017 **Session Moderator** - US Human Proteome Organization (HUPO) - Metaproteomics
2016 **Session Moderator** - Summer Research Conference at UC San Diego
2016 **Session Moderator** - Gordon Research Seminar/Conference Chemistry Biology of Peptides
2014/2015 **Committee Member** - Proteomics Standards Initiative - defined standard representation and file formats for bioinformatics tools in proteomics and metabolomics
2012 **Organizing Committee** - RECOMB Satellite Conference on Computational Proteomics
2012-2017 **Reviewer** - RECOMB - Research in Computational Molecular Biology
Reviewer - Nature Methods
Reviewer - Molecular Cellular Proteomics
Reviewer - Journal of Proteome Research
Reviewer - Bioinformatics
Reviewer - Organic Geochemistry
2013-2016 **Community Science Outreach** - Fleet Science Center

Research Experience

Bandeira Lab - Computer Science and Engineering - UC San Diego

2015 - 2016 Visualized microbe/molecular distribution of the lung in Cystic Fibrosis
2015 - 2016 Mapped microbe/molecular distribution in the gut microbiome
2015 - 2016 Developed algorithms to build peptide reference spectral libraries
2014 - 2016 Designed and developed mass spectrometry living data repository for Proteomics (MassIVE)
2013 - 2016 Designed and developed crowd sourced analysis platform for natural products research (GNPS)
2010 - 2012 Developed methods for assessing spectral matching significance in peptide library searches

Zhong Lab - Bioengineering - University of Illinois

2009 - 2010 Developed software to map bisulfite reads to reference genomes to detect methylation patterns

Teaching

UC San Diego

2015 **Teaching Assistant** - Computer Science and Engineering 100 - Advanced Data Structures, Instructors: Nuno Bandeira and Debashis Sahoo
2014/2015 **Instructor** - Extension Academic Connections - Introduction to Bioinformatics
2014-2016 **Guest Lecturer** - School of Pharmacy and Pharmaceutical Sciences 205 - Pharmacy Informatics
2013-2016 **Guest Lecturer** - Biology 4 - Introductory Biology Lab

University of Illinois

2009 - Spring **Lab Tutor** - ECE 391 - Computer Systems Engineering, Instructor: Nikita Borisov
2009 - Fall **Lab Tutor** - ECE 391 - Computer Systems Engineering, Instructor: Steve Lumetta

Work Experience

2010 **Software Engineer** - Nuvixa Inc. (now Personify Inc.)
2010 **Software Engineer Intern** - Qualcomm Inc.
2008/2009 **Software Development Engineering Intern** - Amazon.com

Extracurriculars

UC San Diego Chamber Singers

2013-2018 Ensemble Member

UC San Diego A Cappella - Acamazing

2010-2011 Founding Member
2011-2012 President and Musical Director
2012-2013 Leadership Mentor

Web Video Platform - Potato Surfer

2014 Project Leader - Designed and developed website, Android App, and Chromecast app.

Folk Music Duo - Marlena and the Wang

2011/2012 Arranged, rehearsed, performed, and recorded folk music as a folk music duo with Marlena Fecho.

Alan Alda Center for Communicating Science - Stony Brook University

2015 Trained to improve science communication skills using improvisation exercises

Reuben H. Fleet Science Center

2014-2016 Community Science Outreach - Two Scientists Walk into a Bar

Honors and Awards

2014 CSE 25th Anniversary - Excellent Presentation Award
2012 San Diego Fellowship
2010/2011 UC San Diego CSE Department Fellowship E. C. Jordan Award
2009 Brian Sophie Leung Scholarship
2008 Henry O. Koehler Merit Scholarship
2006 University Achievement Scholarship

Societies and Honoraries

Tau Beta Pi, Engineering Honor Society Historian
IEEE, Institute of Electrical and Electronics Engineers Publicity Chair
Eta Kappa Nu, Electrical Engineering Honor Society Member

Language Competency

English - Native
Mandarin - Conversational