

# James Masuoka, Ph.D.

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Midwestern State University  
Department of Biology  
3410 Taft Blvd.  
Wichita Falls, TX 76308  
(940) 397-4181 (Office)  
(940) 397-4831 (FAX)  
james.masuoka@msutexas.edu

## EDUCATION

### **PHS/NIAID Postdoctoral Research Fellow**

University of Virginia, 1995–1998

- ⊕ Regulation of cell surface hydrophobicity by remodeling of glycoprotein carbohydrate components

### **Ph.D. University of California, San Diego, 1994**

Biology, Area of Specialization: Biochemistry

- ⊕ “Determination of Intrinsic Stoichiometric Binding Constants for Metal-Protein Interactions”
- ⊕ Dissertation Advisor: Paul D. Saltman
- ⊕ Dissertation Committee: Russell F. Doolittle, Murray Goodman, Jeffrey B. Graham, Paul A. Price

### **B.S., with highest honors, Montana State University, 1985**

Microbiology with Chemistry Minor

### **Undergraduate Research**

Montana State University, Department of Microbiology, 1984–1985

- ⊕ Advisor: Sandra J. Ewald
- ⊕ Honors Thesis: “Inhibition of T Lymphocyte-Mediated Killing by the Anti-T200 Antibody, I3/2.4.a”

## PROFESSIONAL EXPERIENCE

### **Associate Professor of Biology**

Midwestern State University, Sept. 2014 – present

- ⊕ Teaching responsibilities for undergraduate and graduate courses
- ⊕ Mentoring undergraduate student research projects
- ⊕ Mentoring graduate student thesis research

### **Biology Department Graduate Coordinator**

Midwestern State University, Sept. 2014 – Aug. 2022, Sept 2024 – Aug 2025

- ⊕ Coordinated seven-year program review and report (2014)
- ⊕ Coordinated program policies with Graduate Council
- ⊕ Coordinated evaluation of graduate program applications
- ⊕ Served as academic adviser for all entering graduate students in the program

### **Assistant Professor of Biology**

Midwestern State University, Sept. 2007 – Aug. 2014

- ⊕ Teaching responsibilities for undergraduate and graduate courses
- ⊕ Mentoring undergraduate student research projects
- ⊕ Mentoring graduate student thesis research

### **Adjunct Faculty Instructor**

Germana Community College, Locust Grove, VA, Spring 2007

- ⊕ Teaching responsibilities for undergraduate course (Introductory Biology)

### **Instructor of Research**

University of Virginia Department of Pathology, 2003–2007

- ⊕ Role of surface components in *Candida albicans*-host interactions
- ⊕ Method development for identification of *C. albicans* surface structures
- ⊕ Method development of blotting techniques for oligosaccharide analysis

### **Research Associate**

University of Virginia Department of Pathology, 1998–2003

- ⊕ Disruption of glycosylation gene expression by gene knockout
- ⊕ Role of hydrophobic cell wall proteins in *C. albicans* pathogenesis

### **Research Assistant**

University of Virginia Department of Pathology, 1994–1995

- ⊕ Effect of nutrition (esp. trace metals) on fungal (*C. albicans*) morphology
- ⊕ Adaptation of existing platforms for conducting antifungal susceptibility assays

## RESEARCH &amp; SCHOLARLY ACTIVITY

**Publications: Review Articles**

- ⊕ **Masuoka, J.** (2004) "Surface Glycans of *Candida albicans* and Other Pathogenic Fungi: Physiological Roles, Clinical Uses and Experimental Challenges." *Clinical Microbiology Reviews* 17(2): 281–310.

**Publications: Peer-Reviewed Research Articles**

- ⊕ Shipley, M.M., **J. Masuoka**, D.B. McDonald, and J. Brink. (2017) "Work Sampling of University Academics in STEM Departments With and Without a Graduate Programme." *World Transactions on Engineering and Technology Education*. 15(1): 6–11.
- ⊕ Hazen, K.C., Dirks, D., **Masuoka, J.** (2009) "Determination of Echinocandin MICs for *Candida* Species in Less than Eight Hours: Comparison of the Rapid Susceptibility Assay with the Clinical and Laboratory Standards Institute's Broth Microdilution Assay." *Journal of Clinical Microbiology*. 47(12): 4043–4048.
- ⊕ Hazen, K.C., Singleton, D.R., **Masuoka, J.** (2007) "Influence of Outer Region Mannosylphosphorylation on *N*-glycan Formation by *Candida albicans*: Normal Acid-stable *N*-glycan Formation Requires Acid-labile Mannosylphosphate Addition." *Glycobiology*. 17(10): 1052-1060.
- ⊕ **Masuoka, J.**, Hazen, K.C. (2006) "Effect of Monosaccharide Composition, and Glycosidic Linkage Position and Anamericities on the Electrophoretic Mobility of Labeled Oligosaccharides." *Electrophoresis*. 27(2): 365-372.
- ⊕ Singleton, D.R., **Masuoka, J.**, Hazen, K.C. (2005) "Surface Hydrophobicity Changes of Two *Candida albicans* Serotype B *mnn4Δ* Mutants." *Eukaryotic Cell*. 4(4): 639-648.
- ⊕ **Masuoka, J.**, Hazen, K.C. (2004) "Cell Wall Mannan and Cell Surface Hydrophobicity in *Candida albicans* Serotype A and B Strains." *Infection and Immunity*. 72(11): 6230-6236.
- ⊕ **Masuoka, J.**, Guthrie, L.N.<sup>†</sup>, Hazen, K.C. (2002) "Complications in Cell-surface Labeling by Biotinylation of *Candida albicans* due to Avidin Conjugate Binding to Cell-wall Proteins." *Microbiology*. 148(4): 1073-1079. <sup>†</sup>Undergraduate co-author
- ⊕ Singleton, D.R., **Masuoka, J.**, Hazen, K.C. (2001) "Cloning and Analysis of a *Candida albicans* Gene That Affects Cell Surface Hydrophobicity." *Journal of Bacteriology*. 183(12): 3582-3588.
- ⊕ Hazen, K.C., Wu, J.G., **Masuoka, J.** (2001) "Comparison of Hydrophobic Properties Between *Candida albicans* and *Candida dubliniensis*." *Infection and Immunity*. 69(2): 779-786.
- ⊕ **Masuoka, J.**, Hazen, K.C. (1999) "Differences in the Acid-labile Component of *Candida albicans* Mannan from Hydrophobic and Hydrophilic Yeast Cells." *Glycobiology*. 9(11): 1281-1286.
- ⊕ **Masuoka, J.**, Wu, G., Glee, P.M., Hazen, K.C. (1999) "Inhibition of *Candida albicans* Attachment to Extracellular Matrix by Antibodies which Recognize Hydrophobic Cell Wall Proteins." *FEMS Immunology & Medical Microbiology* 24: 421-429.
- ⊕ **Masuoka, J.**, Glee, P.M., Hazen, K.C. (1998) "Preparative Isoelectric Focusing and Preparative Electrophoresis of Hydrophobic *Candida albicans* Cell Wall Proteins with In-

line Transfer to Polyvinylidene Difluoride Membranes for Sequencing.” *Electrophoresis*. 19: 675-678.

- ⊕ **Masuoka, J.**, Hazen, K.C. (1997) “Cell Wall Protein Mannosylation Determines *Candida albicans* Cell Surface Hydrophobicity.” *Microbiology*. 143: 3015-3021.
- ⊕ Glee, P.M., **Masuoka, J.**, Ozier, W.T. †, Hazen, K.C. (1996) “Presence of Multiple Laminin- and Fibronectin-binding Proteins in Cell Wall Extract of *Candida albicans*: Influence of Dialysis.” *Journal of Medical and Veterinary Mycology*. 34: 57-61.  
†Undergraduate co-author
- ⊕ Cort, T.†, **Masuoka, J.**, Lance, V., Saltman, P. (1995) “Plasma Zinc Concentrations in Snakes and Other Vertebrates Correlate with Specific Zinc-Binding Plasma Proteins.” *Journal of Zoology* (London). 236: 513-520. †Undergraduate co-author
- ⊕ Lance, V., Cort, T. †, **Masuoka, J.**, Lawson, R., Saltman, P. (1995) “Unusually High Zinc Concentrations in Snake Plasma, With Observations on Plasma Zinc Concentrations in Lizards, Turtles and Alligators.” *Journal of Zoology* (London). 235: 577-585.  
†Undergraduate co-author
- ⊕ **Masuoka, J.**, Saltman, P. (1994) “Zinc (II) and Copper (II) Binding to Serum Albumin: A Comparative Study of Dog, Bovine and Human Albumin.” *Journal of Biological Chemistry*. 269(41): 25557-25561.
- ⊕ **Masuoka, J.**, Hegenauer, J., Van Dyke, B.R., Saltman, P. (1993) “Intrinsic Stoichiometric Equilibrium Constants for the Binding of Zinc (II) and Copper (II) to the High Affinity Site of Bovine Serum Albumin.” *Journal of Biological Chemistry*. 268(29): 21533-21537.

#### Publications: Non-Peer-Reviewed Articles

- ⊕ **Masuoka, J.**, Hazen, K.C. (1997) “Isolation and Preparation for Sequencing of Hydrophobic *Candida albicans* Cell Wall Proteins by In-line Transfer from Continuous Elution Preparative Gel Electrophoresis to PVDF Membranes.” Bio-Rad Laboratories, Inc. Application Note: US/EG Bulletin 2168.
- ⊕ **Masuoka, J.**, Glee, P.M., Hazen, K.C. (1995) “Preparative SDS Gel Electrophoresis of Hydrophobic Cell Wall Proteins from *Candida albicans*.” Bio-Rad Laboratories, Inc. Application Note: US/EG Bulletin 1953.

#### Invited Talks

- ⊕ **Masuoka, J.** “Fantastic Fungi!” Presented at River Bend Nature Center, Wichita Falls, TX. Part of RBNC’s “Sip n’ Science” series, July 21, 2023.
- ⊕ **Masuoka, J.** “*Candida albicans*: Something Old, Something New in Host-Fungal Interactions.” Invited talk at the University of Texas at Arlington Department of Biology Seminar. March 29, 2018.
- ⊕ **Masuoka, J.** “My Mentors and What I’ve Learned from Them.” Undergraduate Research and Creative Activity Forum. Kickoff Dinner Keynote Address. April 25, 2018.

#### Presentations

- ⊕ **Masuoka, J.** (2024) “A Fluorescence-Based Spectrophotometer for Determining DNA Concentration.”
  - Celebration of Scholarship, Midwestern State University.

- ⊕ McLaughlin, K., **Masuoka, J.** (2014) "Survey for the Presence of *Naegleria fowleri* in Wichita Falls, Texas Area Lakes."
  - Joint Integrative Biology Workshop V, Wichita Falls, TX
- ⊕ Owen, J.C., Rincón-Zachary, M., Willeby, S., **Masuoka, J.** (2012). "UGROW: Engaging Students in Undergraduate Research."
  - THECB Reinventing Instruction and Learning Conference, Austin, TX
- ⊕ **Masuoka, J.**, Hazen, K.C. (2006) "Normal Secondary Branch Formation in the Outer Chain of *Candida albicans* N-Glycans Requires Tertiary Branch Mannosylphosphorylation."
  - Society for Glycobiology Annual Meeting, Universal City, CA
- ⊕ **Masuoka, J.**, Hazen, K.C. (2006) "Candidate Fibril Proteins from the *Candida albicans* Cell Surface."
  - 8<sup>th</sup> American Society for Microbiology Conference on *Candida* and Candidiasis, Denver, CO
- ⊕ **Masuoka, J.**, Hazen, K.C. (2004) "Identification of Candidate Surface Fibril Proteins from *Candida albicans* Yeast Cells."
  - 7<sup>th</sup> American Society for Microbiology Conference on *Candida* and Candidiasis, Austin, TX
- ⊕ **Masuoka, J.**, Singleton, D. R., Hobson, R. P., Gow, N. A. R., Hazen, K.C. (2003) "Development and Characterization of an *MNN4* Knockout in a *Candida albicans* Serotype B Strain."
  - 103<sup>rd</sup> General Meeting of the American Society for Microbiology, Washington, DC
- ⊕ **Masuoka, J.**, Hazen, K. C. (2002) "Comparison of acid-stable mannan from hydrophobic and hydrophilic *Candida albicans* cell wall."
  - 6<sup>th</sup> American Society for Microbiology Conference on *Candida* and Candidiasis, Tampa, FL
- ⊕ **Masuoka, J.**, Guthrie, L. N., Hazen, K. C. (2001) "Avidin Binding to *Candida albicans* Cell Wall Proteins in the Absence of a Biotin Label."
  - 101<sup>st</sup> General Meeting of the American Society for Microbiology, Orlando, FL
- ⊕ **Masuoka, J.**, Hazen, K.C. (2000) "Comparison of *Candida albicans* and *Candida dubliniensis* Cell Wall Mannan and Cell Surface Hydrophobicity."
  - Society for Glycobiology Annual Meeting, Boston, MA
- ⊕ **Masuoka, J.**, Hazen, K.C. (2000) "Comparison of Cell Surface Hydrophobicity and Cell Wall Mannan from *Candida albicans* and *Candida dubliniensis*."
  - American Society for Microbiology Region II Meeting, Lewes, DE
- ⊕ **Masuoka, J.**, Hazen, K.C. (1999) "Analysis of Acid-labile Mannan from Hydrophobic and Hydrophilic *Candida albicans* Yeast Cells."
  - American Society for Microbiology Conference on *Candida* and Candidiasis, Charleston, SC
- ⊕ **Masuoka, J.**, Wu, G., Hazen, K.C. (1998) "Evidence that Hydrophobic Interactions Mediate *Candida albicans* Adhesion to Extracellular Matrix Proteins."
  - 98<sup>th</sup> General Meeting of the American Society for Microbiology, Atlanta, GA
- ⊕ **Masuoka, J.**, Hazen, K.C. (1996) "Analysis of *Candida albicans* Mannosylation Variants: Mannan Composition and Cell Surface Hydrophobicity."

- American Society for Microbiology Conference on Candida and Candidiasis: Biology, Pathogenesis and Management, San Diego, CA
- ⊕ **Masuoka, J.**, Glee, P.M., Hazen, K.C. (1995) "Analysis of *Candida albicans* Mannosylation Variants: Influence of Glycosylation on Cell Surface Hydrophobicity."
  - 95<sup>th</sup> General Meeting of the American Society for Microbiology, Washington, DC
- ⊕ **Masuoka, J.**, Van Dyke, B.R., Hegenauer, J., Saltman, P. (1991) "A Novel Zinc-Binding Serum Protein from Albacore (*Thunnus alalunga*). Is it Species-specific?"
  - 42nd Annual Tuna Conference, Lake Arrowhead, CA

## GRANTS & AWARDS

### 2022 MSU Intramural Award:

- ⊕ "Qubit Spectrophotometer."
- ⊕ Requested: \$4027
- ⊕ Outcome: Awarded (spectrophotometer purchased Dec 2022)

### 2011 MSU Intramural Award:

- ⊕ "Surface Fibril Glycoproteins in *Candida albicans* Pathogenesis."
- ⊕ Requested: \$4,980
- ⊕ Outcome: Awarded

### 1994 National Institute for Allergy & Infectious Diseases (National Research Service Award):

- ⊕ "*C. albicans* Surface Hydrophobicity and Glycosylation."
- ⊕ Outcome: Awarded (\$73,200)

## AWARDS & HONORS

- ⊕ National Research Service Award, NIH: 1995–1998
- ⊕ Tuna Conference Scholarship (Travel Award): 1991
- ⊕ Frank B. Cotner Award for Microbiology, Montana State University: 1983
- ⊕ Alpha Lambda Delta Scholarship, Montana State University: 1982
- ⊕ Midwestern State University Biology Professor of the Year (student award): 2009–2010; 2012–2013 (co-recipient with Dr. Dana Mills); 2013 – 2014, 2023 – 2024
- ⊕ Beta Beta Beta: inducted 2007
- ⊕ Phi Kappa Phi: inducted 1984
- ⊕ Mortar Board: inducted 1984
- ⊕ Alpha Lambda Delta: inducted 1982

## PROFESSIONAL AFFILIATIONS

- ⊕ American Association for the Advancement of Science: 1990
- ⊕ American Institute of Fisheries Research Biologists (Associate): 1990
- ⊕ American Society for Microbiology (National): 1989
- ⊕ American Society for Microbiology (Texas Branch): 2007
- ⊕ American Society for Microbiology (Virginia Branch): 1997–2007
- ⊕ Medical Mycological Society of the Americas: 2005
- ⊕ Texas Academy of Science: 2008
- ⊕ Texas Society for Microscopy: 2017