

Matthew L. Bochman

Molecular and Cellular Biology Department

Research Area: DNA replication, recombination, and repair; fermentation (see end of CV)

ORCID ID: <https://orcid.org/0000-0002-2807-0452>



DEGREES

- 2003 B.S., *cum laude*, honors, and departmental distinction in Biology, Juniata College
- 2008 Ph.D., Molecular, Cellular, and Developmental Biology, University of Pittsburgh

APPOINTMENTS

UNDERGRADUATE

- 2001-2003 Writing Center Tutor, Juniata College
- 2002-2003 Teaching Assistant, Juniata College

GRADUATE

- 2004 Teaching Assistant, University of Pittsburgh

POSTDOC

- 2009-2013 Postdoctoral Research Fellow, Princeton University

FACULTY

- 2013-pres Assistant Professor, Molecular and Cellular Biochemistry Department, Indiana University
- 2013-pres Affiliate Assistant Professor, Biology Department, Indiana University
- 2014-pres Training Faculty, Graduate Training Program in Quantitative and Chemical Biology, Indiana University

FELLOWSHIPS AND AWARDS

- 1999 Bausch & Lomb Honorary Science Award
- 2002 Tri-Beta National Biological Honors Society, Lambda Epsilon Chapter
- 2002 Pfizer Summer Undergraduate Research Fellowship

2003	William J. von Liebig Student Research Award
2003	Dr. Andrew B. and Maria F. Brumbaugh Science Prize
2003	Best Poster, Biology, Juniata College Research Symposium
2004	Honorable Mention, poster, Department of Biological Sciences Retreat
2008	Travel Award, 5 th Salk/Caltech/USC Conference on DNA Replication
2008	Mary P. Edmonds Award for best graduate student authored paper
2010	Ruth L. Kirschstein NRSA for Individual Postdoctoral Fellows (F32) – declined
2010	American Cancer Society Postdoctoral Fellowship (PF-10-145-02-01) – accepted
2011	DeLill Nasser Award for Professional Development in Genetics
2012	F1000 Associate Faculty Member Travel Grant
2018	Trustees Teaching Award (Tenure Track Faculty group)

PUBLICATIONS

PUBLICATIONS, * = peer reviewed, † = at Indiana University, ‡ = co-corresponding authors

PRIMARY RESEARCH PUBLICATIONS

- 1.* Bochman, ML and Schwacha, A. (2007) [Differences in the single-stranded DNA binding activities of MCM2-7 and MCM467: MCM2 and MCM5 define a slow ATP-dependent step.](#) *Journal of Biological Chemistry*. Nov 16; 282 (46): 33795-33804. PMID: 17895243.
- 2.* Bochman, ML and Schwacha, A. (2008) [The Mcm2-7 complex has in vitro helicase activity.](#) *Molecular Cell*. Jul 25; 31 (2): 287-293. PMID: 18657510.
Evaluated at F1000: <http://f1000.com/prime/1116885>.
- 3.* Bochman, ML, Bell, SP, and Schwacha, A. (2008) [Subunit organization of Mcm2-7 and the unequal role of active sites in ATP hydrolysis and viability.](#) *Molecular and Cellular Biology*. Oct; 28 (19): 5565-5573. PMID: 18662997.
- 4.* Bochman, ML and Schwacha, A. (2010) [The Saccharomyces cerevisiae Mcm6/2 and Mcm5/3 ATPase active sites contribute to the function of the putative Mcm2-7 'gate'.](#) *Nucleic Acids Research*. Oct; 38 (18): 6078-6088. PMID: 20484375.
5. Bochman, ML, Paeschke, K, Garcia, PD, Zakian, VA. (2013) [Pif1 helicases: helping replication forks maneuver past replication barriers.](#) *The FASEB Journal*. vol. 27 no. 1 Supplement 95.1.
- 6.* Paeschke, K, Bochman, ML, Garcia, PD, Cejka, P, Friedman, KL, Kowalczykowski, SC, and Zakian, VA. (2013) [Pif1 family helicases suppress genome instability at G-quadruplex motifs.](#) *Nature*. May 23; 497 (7450): 458-462. PMID: 23657261.

Co-first authors**Subject of Nature News and Views article:**

<http://www.nature.com/nature/journal/v497/n7450/full/nature12244.html>

Evaluated at F1000: <http://f1000.com/prime/718243159>.

Press coverage: [Research at Princeton](#)

- 7.* Simon, N, Bochman, ML, Seguin, S, Brodsky, JL, Seibel, WL, and Schwacha, A. (2013) [Ciprofloxacin is an inhibitor of the Mcm2-7 replicative helicase](#). *Bioscience Reports*. Oct 7; 33 (5). Pii: e00072. PMID: 24001138.

Co-first authors.

- 7.*† Bochman, ML, Paeschke, K, Chan, A, and Zakian, VA. (2014) [Hrq1, a homolog of the human RecQ4 helicase, acts catalytically and structurally to promote genome integrity](#). *Cell Reports*. Jan 30; 6 (2): 346-356. PMID: 24440721.

First author and corresponding author

Evaluated at F1000: <http://f1000.com/prime/718243159>.

Press coverage: [IU press release](#)

- 8.† Zakian, VA, Sabouri, N, Capra, T, McDonald, K, Cristea, I, Bochman, ML. (2014) [The fission yeast Pfh1 DNA helicase promotes fork progression through multiple types of replication obstacles](#). *The FASEB Journal*. vol. 28 no. 1 Supplement 236.1.

- 9.*† Zhou, R, Zhang, J, Bochman, ML, Zakian, VA, and Ha, T. (2014) [Periodic DNA patrolling underlies diverse functions of Pif1 on R-loops and G-rich DNA](#). *eLife*. Apr 29; 3: e02190. PMID: 24843019.

Highlighted paper in journal: <http://elifesciences.org/content/3/e02854>

- 10.*† Rogers, CM, Noguchi, H, Yamada, K, Takagi, Y, and Bochman, ML. (2017) [Yeast Hrq1 shares structural and functional homology with the disease-linked human RecQ4 helicase](#). *Nucleic Acids Research*. May 19; 45 (9): 5217-5230. PMID: 28334827.

- 11.*† Rogers, CM and Bochman, ML. (2017) [Saccharomyces cerevisiae Hrq1 helicase activity is affected by the sequence but not the length of single-stranded DNA](#). *Biochemistry and Biophysics Research Communications*. 486 (4): 1116–1121. PMID: 28385527.

Open access available at: <http://hdl.handle.net/2022/21360>

- 12.*† Andis, NM, Sausen, CW, Alladin, A, and Bochman, ML. (2018) [The WYL domain of the PIF1 helicase from the thermophilic bacterium Thermotoga elfii is an accessory single-stranded DNA binding module](#). *Biochemistry*. 57 (7): 1108-1118. PMID: 29341597.

Pre-print available at bioRxiv: <http://biorxiv.org/cgi/content/short/163188v2>

- 13.*† Hustmyer, CM, Simpson, C, Olney, SG, Bochman, ML, and van Kessel JC. (2018) [Promoter boundaries for the luxCDABE and betIBA-proXWV operons in Vibrio harveyi defined by RAIL: Rapid Arbitrary PCR Insertion Libraries](#). *Journal of Bacteriology*. 200 (11): e00724-17. PMID: 29531178.

Pre-print available at bioRxiv: <https://www.biorxiv.org/content/early/2017/11/30/227371>

Cover image: <http://jb.asm.org/content/200/13.cover-expansion>

Commentary in journal: <http://jb.asm.org/content/early/2018/03/07/JB.00039-18.long>

- 14.*†† Nero, TM, Dalia, TN, Wang, JC-Y, Bochman, ML†, and Dalia, AB†. (2018) [ComM is a hexameric helicase that promotes branch migration during natural transformation in diverse Gram-negative species](#). *Nucleic Acids Research*. 46 (12): 6099-6111. PMID: 29722872.

Structure deposited to wwPDB: EMD-8575

Pre-print available at bioRxiv: <http://biorxiv.org/content/early/2017/06/08/147660>

- 15.*† Nickens, DG, Rogers, CM, and Bochman, ML. [The *Saccharomyces cerevisiae* Hrq1 and Pif1 DNA helicases synergistically modulate telomerase activity *in vitro*](#). (accepted at *JBC*). PMID: 30068549.

Pre-print available at bioRxiv: <https://www.biorxiv.org/content/early/2018/05/21/327320>

RESEARCH MANUSCRIPTS SUBMITTED, IN REVIEW OR IN REVISION

1. †‡ Sausen, CW, Ononye, OE, Metcalf, SR, Balakrishnan‡, L, and Bochman, ML‡. Pif1 activity is regulated by lysine acetylation *in vivo* and *in vitro*. (in preparation).

REVIEWS AND BOOK CHAPTERS

- 1.* Bochman, ML and Schwacha, A. (2009) [The Mcm complex: unwinding the mechanism of a replicative helicase](#). *Microbiology and Molecular Biology Reviews*. Dec; 73 (4): 652-683. PMID: 19946136.
- 2.* Bochman, ML, Sabouri, N, and Zakian, VA. (2009) [Unwinding the functions of the Pif1 family helicases](#). *DNA Repair (Amst)*. Mar 2; 9 (3): 237-249. PMID: 20097624.
Top 10 most cited DNA repair articles since 2010: <http://www.journals.elsevier.com/dna-repair/most-cited-articles/>.
- 3.* Bochman, ML, Judge, CP, and Zakian, VA. (2011) [The Pif1 family in prokaryotes: what are our helicases doing in your bacteria?](#) *Molecular Biology of the Cell*. Jun 15; 22 (12): 1955-1959. PMID: 21670310.
- 4.* Bochman, ML, Paeschke, K, and Zakian, VA. (2012) [DNA secondary structures: stability and function of G-quadruplex structures](#). *Nature Reviews Genetics*. Nov; 13 (11): 770-780. PMID: 23032257.
- 5.† Rogers, CM, van Kessel, K, and Bochman, ML. (2014) [Helicases involved in DNA inter-strand crosslink repair](#). *OA Biology*. Feb 22; 2 (1): 4.
- 6.*† Bochman, ML. (2014) [Roles of DNA helicases in the maintenance of genome integrity](#). *Molecular and Cellular Oncology*. 1: 3, e963429.

REVIEW OR BOOK CHAPTER MANUSCRIPTS SUBMITTED, IN REVIEW OR IN REVISION

- 1.† Sausen, CW, Rogers, CM, and Bochman, ML. Thin-layer chromatography and real-time coupled assays to monitor ATP hydrolysis. (Submitted to *Methods in DNA Repair*).
- 2.† Rogers, CM, Sausen CW, and Bochman, ML. Gel-based assays for measuring DNA unwinding, annealing, and strand exchange. (Submitted to *Methods in DNA Repair*).

COMMENTARIES

- 1.† Bochman, ML and Schwacha, A. (2015) [DNA replication: Strand separation unravelled](#). *Nature*. Aug 13; 524 (7564): 166-167. PMID: 26222029.

BOOKS AND EDITED BOOKS

N.A.

EDITORSHIPS

N.A.

GRANTS

All funding is listed, chronologically:

PAST GRANTS

Apr 2015 – Mar 2016 Indiana University Collaborative Research Grant
 \$73,075 total costs
 Mechanism of the regulation of DNA replication by PIF1 family helicases.
 Co-PIs: Yuichiro Takagi (IUSM) and Amber L. Mosley (IUSM)

CURRENT GRANTS

Jul 2016 – Jun 2018
 (NCE to Jun 2019) Indiana Clinical and Translational Sciences Institute Collaboration in
 Translational Research (CTR) Pilot Grant
 \$75,000 total costs
 Mechanism of the regulation of DNA replication by PIF1 family helicases
 Role: PI

Jan 2017 – Dec 2020 American Cancer Society Research Scholar Grant
 \$788,000 total costs
 Determining the roles of the RecQ4 family helicases in genome maintenance.
 Role: PI

Aug 2018 – Jul 2019 Indiana Clinical and Translational Sciences Institute Pilot Funding for Research
 Use of Core Facilities
 \$9,718 total costs
 The Mechanism of Non-Fanconi Anemia DNA Inter-strand Crosslink Repair
 Role: PI

PENDING GRANTS

Jul 2019 – Jun 2024 National Institutes of Health R01
 \$ total costs
 Mechanisms of helicases and nucleases in DNA inter-strand crosslink repair
 Role: PI

Jul 2019 – Jun 2024 National Institutes of Health R01
 \$ total costs

Mechanisms of DNA in telomere maintenance
Role: PI

Jul 2019 – Jun 2024 National Institutes of Health R35
\$ total costs
DNA helicases and associated factors in genome stability
Role: PI

NOT AWARDED (applied for in 2017/2018)

Jul 2018 – Jun 2023 National Institutes of Health R35
\$1,857,182 total costs
RecQ4 helicases in genome stability
Role: PI

PATENTS, DISCLOSURES, AND ENTREPRENEURSHIP

PATENTS

N.A.

DISCLOSURES

N.A.

STUDENTS AND POSTDOCS TRAINED

Past Graduate Students (program):

Rakshin Kharwadkar (Biotech)	MS, 2015
Nicholas Andis (Biotech)	MS, 2017

Past Postdoctoral Researchers:

N.A.

Current Graduate Students (program):

Cody Rogers (MCB)	PhD; started 2013
Chris Sausen (MCB)	PhD; started 2015
Sara Metcalf (GCDB)	PhD; started 2016

Current Postdoctoral Researchers:

N.A.

Rotation Students (program):

Cody Rogers (MCB)	2013	Olivia Ballew (GCDB)	2014
James Haley (MCB)	2014	Matan Cohen (GCDB)	2014
Garrett Booher (MCB)	2014	Ankon Paul (GCDB)	2014
Andrew Loffer (GCDB)	2014	Reid Oshiro (Micro)	2014

Christopher Sausen (MCB)	2015	Sara Metcalf (GCDB)	2016
Caleb Starr (MCB)	2015	Ying-Chih Chuang (MCB)	2017
Brady Strittmatter (MCB)	2015	Jade Katinas (MCB)	2017
Rajkumar Dhanaraju (MCB)	2016	Mark Greci (GCDB)	2018

AWARDS TO MENTORED STUDENTS

2015	Women in STIM LLC Summer Fellowship awarded to undergraduate lab member Kara Osburn – declined
2015	Robert and Marjorie Mann Summer Scholarship awarded to undergraduate lab member Kara Osburn – accepted
2016	Spring College of Arts and Sciences Travel Award granted to graduate student Cody Rogers to attend the RECQ2016 meeting
2017	Peglow Travel Award granted to graduate students Cody Rogers and Christopher Sausen to attend the Keystone Symposia on DNA Replication and Recombination
2017	Frank W. Putnam Research Fellowship awarded to graduate student Cody Rogers
2018	College of Arts and Sciences Dissertation Research Fellowship awarded to graduate student Cody Rogers
2018	First place poster presentation at the CEWiT Poster Competition awarded to undergraduate researcher Kara Osburn

SERVICE ON GRADUATE ADVISORY COMMITTEES

Past Graduate Advisory Committees:

Chinmayi Chandrasekhara (MCB, PhD, 2016)	Ryan Over (MCB, MS, 2017)
Gabriel Gihana (GCDB)	Amanda Basham (GCDB, MS 2018)
James Haley (MCB, MS, 2017)	Nicholas Pulliam (MCB, PhD 2018)

Current Graduate Advisory Committees (program):

Ning Ding (MedSci)	PhD	Brady Strittmatter (MCB)	PhD
Taylor Nicholas (GCDB)	PhD	Wyatt Paulishak (MCB)	PhD
Matan Cohen (GCDB)	PhD	Justin Peterson (MCB)	PhD
Andrew Loffer (MCB)	PhD	JiHye Kim (GCDB)	PhD
Suba Rajendren (GCDB)	PhD	Rajkumar Dhanaraju (MCB)	PhD

UNDERGRADUATE RESEARCH MENTORED

Dan Leigey	2005	Jonathan Mitchell	2006
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Britney Fedor	2007-2008	Kara Osburn	2014-current (CEWiT REU)
Dalton Paluzzi	2007-2008		
Christian Windon	2009-2010	Sanjana Ravindran	2015 (Khorana Scholar)
Colleen Judge	2010-2011	Mindy Metz	2017-current
Daniel Cohen	2012-2013	Joseph Barry	2017-current
Nur Nisaa Ahmad	2013-2015	Nicholas Buehler	2017-current (Cox Scholar)
Ashna Alladin	2014 (Khorana Scholar)		

Current Undergraduate Advisory Committees:

Christine Hustmyer

OTHER TRAINING:

- 2015-pres Invited external PhD committee member for a graduate student (Donglai Shen) in the Department of Biological Sciences, Lehigh University
- 2016 IU Faculty Mentor for Afghan Scholar, Center for International Education, Development and Research (CIEDR), Afghanistan Junior Faculty Development Program, Institute of International Education, U.S. Department of State, January-March 2016
- 2017 External PhD thesis examiner for a graduate student (Ashley Harman) in the Department of Physiology, Anatomy and Microbiology, La Trobe University, Australia
- 2017-pres Invited external MS committee member for a graduate student (James Healy) in the Department of Biology, West Liberty University
- 2017-pres Invited external PhD committee member for a graduate student (Onyekachi Ononye) in the Biology Department, Indiana University-Purdue University Indianapolis
- 2018 Beckman Scholars Program invited mentor

CLASSROOM TEACHING

<u>Courses taught</u>	<u>Enrollment</u>	<u>Semester</u>	<u>Year</u>	<u>Evaluation[‡] (response ratio)</u>
B506 Integrated Biochemistry II *	14	Spring	2014	3.73; 3.74 (100%)
B501 Integrated Biochemistry I *	10	Fall	2014	
T270 Alcohol and the Science of Fermentation	17	Spring	2015	3.18; 3.52 (82.4%)
B501 Integrated Biochemistry I *	17	Fall	2015	3.32; 3.6 (58.8%)
T270 Alcohol and the Science of Fermentation	14	Spring	2016	3.42; 3.8 (57.1%)
B501 Integrated Biochemistry I *	14	Fall	2016	3.25; 3.5 (42.9%)
T270 Alcohol and the Science of Fermentation	13	Spring	2017	3.72; 3.9 (100%)
B501 Integrated Biochemistry I *	16	Fall	2017	2.80; 3.1 (100%)

* Team taught

‡ The evaluation scores are reported in X; Y format, where, X is the average of the first four evaluation items, and Y is the score of the fifth evaluation item.

OTHER TEACHING

2016 Guest lecturer for Advanced Genetics (BIOL 375), Colgate University

UNIVERSITY AND DEPARTMENTAL SERVICE

<u>University Service:</u>	<u>Year</u>
Physical Biochemistry Instrumentation Facility (PBIF) Advisory Board	2018-current
Panelist: VPFAA/OVPR workshop on setting up a new lab	2018
<u>Departmental Service:</u>	<u>Year</u>
Faculty Search Committee	2013-15
Graduate Recruiting Committee	2013-current
GCMS Training Grant Committee	2014-15
Curriculum Committee for the Biochemistry Interdisciplinary Graduate Program	2015-current
Curriculum Committee for the MCB Department undergraduate degree	2015-current
Chair, Biochemistry Program Website Design Committee	2016-current

ON CAMPUS PRESENTATIONS

Aug, 2013	Evolutionarily conserved and divergent functions of Pif1 family helicases; BMB Research Club Series, Molecular and Cellular Biochemistry Department
Sep, 2013	Maintaining genome stability by preventing <i>de novo</i> telomere addition; Microphiles, Biology Department
Jan, 2015	DNA helicases and unzipped genes; 4 th FlooRRR Symposium, Simon Hall MSB1
Feb, 2017	Working as an Academic Consultant; Preparing Future Faculty Conference 2017
Oct, 2017	Don't PIF me off; Chromosome and Genome Biology Research Group seminar
Mar, 2018	Bread, Booze, and Biology: How Yeast has Changed the World ; Hutton Honors College Research Talk

SYMPOSIA AND CONFERENCE PRESENTATIONS

(* = Invited presentation rather than presentation chosen from abstracts)

Apr, 2003	National Conferences on Undergraduate Research
Oct, 2004	University of Pittsburgh Science 2004
Sep, 2005	Eukaryotic DNA Replication, Cold Spring Harbor
Oct, 2005	University of Pittsburgh Science 2005
Jul, 2006	Yeast Genetic and Molecular Biology Meeting
Oct, 2006	University of Pittsburgh Science 2006
Sep, 2007	Eukaryotic DNA Replication and Genome Maintenance, Cold Spring Harbor
Oct, 2007	University of Pittsburgh Science 2007
Feb, 2008	Keystone Symposia on DNA Replication and Recombination
Jun, 2008	DNA Replication and Genome Integrity, Salk Institute
Sep, 2009	Eukaryotic DNA Replication and Genome Maintenance, Cold Spring Harbor
Sep, 2011	Eukaryotic DNA Replication and Genome Maintenance, Cold Spring Harbor
Mar, 2012*	Gordon Conference on DNA Damage, Mutagenesis, and Cancer

Apr, 2012	Yeast Genetics and Molecular Biology Meeting
Mar, 2013	Keystone Symposia on Genomic Instability and DNA Repair
Apr, 2014*	ASBMB Thematic meeting in DNA Replication, Recombination, & Repair
Jun, 2015	17 th Annual Midwest DNA Repair Symposium
Mar, 2016*	2 nd Annual IUB Innovation Conference
May, 2016	Third International Meeting on RecQ Helicases in Biology and Disease
July, 2016	FASEB – Dynamic DNA Structures in Biology Meeting
Apr, 2017	Keystone Symposia on DNA Replication and Recombination
Sep, 2017	Eukaryotic DNA Replication and Genome Maintenance, Cold Spring Harbor
Feb, 2018	3 rd DNA Replication/Repair Structures and Cancer Conference, Fusion Conferences
Apr, 2018*	ASBMB Thematic meeting in DNA Replication, Recombination, & Repair

INVITED SEMINARS

Jun, 2008	Department of Biology, Juniata College, Huntingdon, PA
Sep, 2008	Helicases and Other Molecular Motors, University of Pittsburgh
Dec, 2008	Pittsburgh Chromatin Club
Jan, 2013	Department of Biological Sciences, Binghamton University
Jan, 2013	Molecular & Cellular Biochemistry Department, Indiana University
Oct, 2015	Indiana University Sustainability Scholars REU Mentoring Program
Feb, 2016	Biology Department, Indiana University-Purdue University Indianapolis
Apr, 2016	Biochemistry and Molecular Biology Department, Indiana University School of Medicine
Sep, 2016	Central Indiana Science Outreach – Café Inquiry
Nov, 2016	Department of Biochemistry, Molecular Biology and Biophysics, University of Minnesota
Feb, 2017	Biology Department, West Virginia University
May, 2017	Pathology Department Microbial Pathogenesis Seminar Series, University of Utah
Aug, 2017	Department of Biological Sciences, University of Pittsburgh
Oct, 2017	Department of Biological Sciences, Vanderbilt University
Jan, 2018	Department of Biochemistry and Molecular Genetics, University of Louisville School of Medicine

CONFERENCE AND CONFERENCE SESSION ORGANIZER

Jun, 2015	Session co-chair, “DNA Damage and Mutation”, 17 th Annual Midwest DNA Repair Symposium
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MEDIA APPEARANCES AND INTERVIEWS

Jan. 22, 2014	(Newspaper) IU biochem professor finds 2 cancer-fighting traits in yeast protein , Indiana Daily Student
June 3, 2015	(Newspaper) Professors receive translational research grants , Indiana Daily Student

PROFESSIONAL SERVICE

GRANT AND FUNDING REVIEW PANELS

- 2014 *Ad hoc* grant proposal reviewer for the Indiana Clinical and Translational Sciences Institute
 2016 *Ad hoc* grant proposal reviewer for the Biotechnology and Biological Sciences Research council (BBRSC), UK
 2016 *Ad hoc* grant proposal reviewer for the Wellcome trust/DBT India Alliance Fellowship
 2018 *Ad hoc* reviewer for the American Cancer Society DNA Mechanisms in Cancer study section

MANUSCRIPT REVIEWER

2013-pres *Ad hoc* reviewer for manuscripts submitted to:

<i>Annals of Food Processing & Preservation</i>	<i>Molecular Cell</i>
<i>BioMed Research International</i>	<i>Molecular Phylogenetics & Evolution</i>
<i>EMBO Journal</i>	<i>Nature Communications</i> (x2)
<i>F1000 Research</i>	<i>Nature Structure and Molecular Biology</i>
<i>FEBS Letters</i> (x2)	<i>Nucleic Acids Research</i> (x6)
<i>Genes</i>	<i>PLoS Biology</i>
<i>Genetics</i>	<i>PLoS Pathogens</i>
<i>International Journal of Molecular Sciences</i>	<i>Scientific Reports</i>
<i>Journal of Biochemistry</i>	<i>Virus Evolution</i>
<i>Journal of Visualized Experiments</i>	<i>Virus Research</i>
<i>Molecular and Cellular Probes</i>	

CONSULTING ACTIVITIES

N.A.

SOCIETY MEMBERSHIPS

- 2009-2013 New York Academy of Sciences
 2012-pres Genetics Society of America
 2013-pres American Society for Biochemistry and Molecular Biology

EDITORIAL BOARDS

- 2009-2013 Freelance Associate Editor, Write Science Right
 2009-2013 Senior Editor and Content Reviewer, American Journal Experts
 2009-2016 Senior Freelance Editor, NOBOLive Editor

OTHER PROFESSIONAL ACTIVITIES

- 2002-2003 *Ad hoc* member, Tri-Beta Biological Honors Society committee for organization of the Juniata College Research Symposium
 2004-2007 Chair, Biological Sciences Social Hour Committee
 2006 Treasurer, Biological Sciences Graduate Student Organization
 2009-2013 F1000Prime Associate Faculty Member

Bochman CV
2012-2013

Member, Princeton Imaging and Analysis Center User Committee

OTHER PROFESSIONAL ACTIVITIES RELATED TO FERMENTATION SCIENCE

FELLOWSHIPS AND AWARDS

2017 Fermentation Travel Award, Multidisciplinary Digital Publishing Institute

PUBLICATIONS

PUBLICATIONS, * = peer reviewed, † = at Indiana University, ‡ = co-corresponding authors

PRIMARY RESEARCH PUBLICATIONS

- 1.*† Rogers, CM, Veatch, D, Covey, A, Staton, C, and Bochman, ML. (2016) [Terminal acidic shock inhibits sour beer bottle conditioning by *Saccharomyces cerevisiae*](#). *Food Microbiology*. Aug; 57: 151-158. PMID: 27052714.
Undergraduate author.
Inside IU Featured Spotlight: http://inside.iu.edu/spotlights-profiles/featured/2016-03-30-matt-bochman.shtml?utm_source=2016-03-30&utm_medium=newsletter&utm_content=Matt-Bochman-IU-Bloomington&utm_campaign=2016-inside-iu-distribution
Press coverage: [IU press release](#), [IU blog](#), [Indiana on Tap](#), [NUVO](#), [Herald Times](#), [Indianapolis Business Journal](#), [Inside Indiana Business \(TV segment\)](#), [Indy Star](#), [BuzzFeed](#)
Podcasts: [Through the Gates](#) (IU Provost's Office), [The Sour Hour](#) (The Brewing Network)
- 2.*† Osburn, K, Ahmad, NN, and Bochman, ML. (2016) [The wild, wild world of wild yeast](#). *Zymurgy*. May/June; 39 (3): 81-88.
Undergraduate authors.
- 3.† Osburn, K, Ahmad, NN, and Bochman, ML. (2016) Bio-prospecting, selection, and analysis of wild yeasts for ethanol fermentation. *American Homebrewers Association*. Published online at <http://www.homebrewersassociation.org/community/research-and-education-fund/completed-proposals/>. April 26, 2016.
Undergraduate authors.
- 4.*† Osburn, K, Amaral, J, Metcalf, SR, Nickens, DM, Rogers, CM, Sausen, CJ, Caputo, R, Miller, J, Li, H, Tennesen, JM, and Bochman, ML. (2018) [Primary souring: a novel bacteria-free method for sour beer production](#). *Food Microbiology*. Apr; 70: 76-84. PMID: 29173643.
 Preprint available at bioRxiv: <http://biorxiv.org/content/early/2017/03/27/121103>
Undergraduate author
Press coverage: [Microbiome Digest](#) (blog), [The Node](#) (blog), Science News ([blog](#) & [magazine pieces](#))
Top 20 most downloaded article: <https://www.journals.elsevier.com/food-microbiology/most-downloaded-articles>
- 5.*† Barry, JP, Metz, MS, Hughey, J, Quirk, A, and Bochman, ML. (2018) [Two novel strains of *Torulaspora delbrueckii* isolated from the honey bee gut microbiome and their use in honey fermentation](#). *Fermentation*. 4(2), 22; doi:10.3390/fermentation4020022.
 Preprint at bioRxiv: <http://biorxiv.org/cgi/content/short/264317v2>
Undergraduate authors
Cover image: <http://www.mdpi.com/2311-5637/4/2>
Press coverage: [Microbiome Digest](#) (blog)

RESEARCH MANUSCRIPTS SUBMITTED, IN REVIEW OR IN REVISION

- 1.† Osburn, K, Caputo, R, Miller, J, and Bochman, ML. *Saccharomyces cerevisiae* strain YH166: a novel wild yeast for the production of tropical fruit sensory attributes in beer. (**submitted to *Fermentation***).
Preprint available at bioRxiv: <http://biorxiv.org/content/early/2017/06/13/149732>
Undergraduate author
- 2.† Young, J, Edwards, JC, Andis, NM, and Bochman, ML. *Weissella cibaria* dominates bacterial populations during sour mashing. (**in preparation**).
Press coverage: [NUVO](#)

GRANTS

All funding is listed, chronologically:

CURRENT GRANTS

Jan 2018 – Dec 2018 American Mead Makers Association Research Grant
\$4,000 total costs
Testing fermentation and sensory outcomes of souring mead using bacteria-free yeasts
Role: Co-PI

PAST GRANTS

Aug 2014 – Jul 2015 American Homebrewers Association Research and Education Fund
\$1,200 total costs
Active and passive isolation of ethanol-tolerant wild yeasts.
Role: PI

May 2015 – Apr 2016 Johnson Center for Entrepreneurship in Biotechnology Pilot Grant
\$13,355 total costs
Bio-prospecting, selection, and analysis of wild yeasts for use in the craft beer industry.
Role: PI

Jul 2016 – Jun 2017 Experiment.com crowdfunding campaign
\$5,746 total costs
[Mapping the sour beer microbiome](#)
Role: PI

NOT AWARDED (applied for in 2017/2018)

Jan 2017 – Dec 2017 Brewers Association Craft Beer Research and Service Grant
\$10,000 total costs
Mapping the detrimental effects of serial yeast re-pitching to overcome current generation limits
Role: PI

June 2017 – May 2018	Johnson Center for Innovation and Translational Research Pilot Grant \$25,000 total costs Production of lactic acid by wild yeast isolates of five different species Role: PI
July 2018 – June 2019	American Society for Brewing Chemists Research Council Grant \$25,000 total costs A multi-omics approach to understand lactic acid production by heterofermentative yeast Role: PI

PATENTS, DISCLOSURES, AND ENTREPRENEURSHIP

PATENTS

N.A.

DISCLOSURES

2015-073	Six wild yeast strains with desirable fermentation characteristics
2015-131	Four wild yeast strains with desirable fermentation characteristics
2017-171	Heterofermentative Isolates of <i>Lachancea thermotolerans</i>

ENTREPRENEURSHIP

2015	Co-founder of Wild Pitch Yeast: Start-up company formed in collaboration with Rob Caputo and Justin Miller (Black Acre Brewing Co.) to commercialize wild yeasts with desirable brewing characteristics and provide yeast consulting services.
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SCIENCE OUTREACH PRESENTATIONS

Sep, 2014	Defining “Drink Local” ; Girls Pint Out, Flat 12 Bierwerks
May, 2016	Wild Pitch presents: Hunting for yeast ; Great Fermentations Big Brew Day 2016
Sep, 2016	Yeast research: from the bench to the brewery ; Café Inquiry, Central Indiana Science Outreach (CINSO)
Oct, 2016	The Science of Beer ; Science on Tap Bloomington
Apr, 2017	Sour Beer Fermentation; Upland Brewing Company Sour Wild and Funk Fest 2017
Apr, 2017	Indiana University College of Arts and Sciences Food for Thought Series, Office of Advancement
Nov, 2017	Indiana University College of Arts and Sciences Food for Thought Series, Office of Advancement
Nov, 2017	A Biochemist walks into a bar... ; Science Café Bloomington
Apr, 2018	Practical Yeast Handling; Bloomington Hop Jockeys monthly meeting
May, 2018	WonderLab After Dark: Beers & Brews , WonderLab Museum of Science, Health, and Technology

ON CAMPUS PRESENTATIONS

Oct, 2017 Local yeasts for local beverages; IU Food Institute

INVITED SYMPOSIA AND CONFERENCE PRESENTATIONS
 (* = Invited presentation rather than presentation chosen from abstracts)

Mar, 2016* Brewers of Indiana Guild Annual Conference
 Aug, 2016* World Brewing Congress
 Mar, 2017* Brewers of Indiana Guild Annual Conference
 Jul, 2017* Master Brewers Association of America
 Jul, 2017* Society for Industrial Microbiology and Biotechnology Annual Meeting
 Aug, 2018* Brewing Summit, Yeast Workshop

INVITED SEMINARS

May, 2017 Chemistry Department, Hanover College
 May, 2017 *Zymurgy* Live, American Homebrewers Association,
<https://www.homebrewersassociation.org/events/mapping-sour-beer-microbiome/>

CONFERENCE AND CONFERENCE SESSION ORGANIZER

Mar, 2017 Session chair, "Brewers Make Wort, Yeast Makes Beer, 3rd Annual Indiana Craft Brewers Conference

MEDIA APPEARANCES AND INTERVIEWS

Apr. 19, 2016 (Newspaper) [Drinks with: The IU biochemist that saved Upland's sour beer](#), The Indianapolis Star
 May 4, 2016 (Podcast) [Episode 33](#), The Sour Hour
 May 12, 2016 (Podcast) [Leveling Up Local Beer With Backyard Yeast](#), Earth Eats, WFIU
 Oct. 25, 2016 (Newspaper) [The Science of Beer](#), Indiana Daily Student
 Nov. 11, 2016 (Blog) [The Sour Beer Microbiome – Exploring Tiny Fermenters](#), This Is An Experiment, Experiment.com
 Dec. 7, 2016 (E-newsletter) [Most Clicked Specialty Newsletter Stories: 2016](#), iNside Edge E-Newsletter, Inside Indiana Business (**#1 most clicked story**)
 Jan. 16, 2017 (Website) [Cardinal Spirits Tiki Rum](#), Got Rum? Rum Reviews
 Feb. 4, 2017 (Podcast) [No Hops In A Gruit. This Beer Has Ginger, Honey, Rosemary](#), Earth Eats, WFIU
 May 19, 2017 (Website) [Honey Schnapps: How we made it](#), The Drop, Cardinal Spirits
 May 24, 2017 (Website) [Giving Beer a Fresh Tart](#), Cook's Science
 Jun 7, 2017 (Website) [How Midwestern Spirit is Driving Craft Distilleries](#), Wine Enthusiast
 Aug. 25, 2017 (Website) [Wild yeasts are brewing up batches of trendy beers](#), Science News
 Oct. 2, 2017 (Website) [The Taming of the Brew: How Sour Beer Is Driving a Microbial Gold Rush](#), The Salt, NPR

Dec. 8, 2017 (Podcast)	Yeast Hunting with Matt Bochman , Earth Eats, WFIU
Jan. 15, 2018 (Website)	Yeast only sour beer: is this the future of sour beer? , Craft Beer Joe
Jan. 17, 2018 (Website)	The story behind a yeast-only beer, produced by a yeast strain that makes lactic acid , Craft Brewing Business (Featured story)
Feb., 2018 (Blog)	The Weekly Tasted: Saucy Brew Works Drifter , Craft Beer and Brewing Magazine
Mar. 6, 2018 (Podcast)	Episode #003 , Milk the Funk “The Podcast”
Mar. 23, 2018 (Website)	Genetically Modified Yeast that Produce Hop Flavors – Does This Matter to You? , Indiana On Tap
Mar. 26, 2018 (Website)	Celebrating the Herb of the Year: Hops , NUVO
May 2, 2018 (Blog)	Lactic Acid yeast: Hanseniaspora and Wickerhamomyces , The Mad Fermentationist
June 1, 2018 (Magazine)	Raising a Glass to Craft beer, Indiana University Alumni Magazine
July 1, 2018 (Magazine)	Homebrew Homecoming, Zymurgy Magazine (July/August 2018), American Homebrewers Association
July 13, 2018 (Podcast)	Collecting Yeast, Making Cider , Earth Eats, WFIU

PROFESSIONAL SERVICE

MANUSCRIPT REVIEWER

2013-pres *Ad hoc* reviewer for manuscripts submitted to:

Annals of Food Processing & Preservation

F1000 Research

Fermentation

Journal of the American Society of Brewing Chemists

CONSULTING ACTIVITIES

2014-2015	Flat 12 Bierwerks, Indianapolis, IN
2014	Wachusett Brewing Co., Westminster, MA
2015-pres	Upland Brewing Company, Bloomington, IN
2015-pres	Cardinal Spirits, Bloomington, IN
2015	Central State Brewing, Indianapolis, IN
2016	3 Floyds Brewing Company, Munster, IN
2016-pres	Cascade Brewing Company, Portland, OR

SOCIETY MEMBERSHIPS

2013-2017	Brewers Association
2014-pres	American Homebrewers Association
2016-pres	American Society of Brewing Chemists

OTHER PROFESSIONAL ACTIVITIES

