

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

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|------|--|
| 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:

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|--|----------------------------------|
| 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 |
|------------|------|-------------------|------|

| | | | |
|------------------|------------------------|-------------------|----------------------------|
| 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 |

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|------------|---|
| 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 |
|-----------|---|

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. *Weisella 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

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| 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

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| 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

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| 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

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| 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, 218 (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

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| 2014-2015 | Flat 12 Bierwerks, Indianapolis, IN |
| 2014 | Wachusett Brewing Co., Westminister, 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

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

OTHER PROFESSIONAL ACTIVITIES

