

ANNA M. R. HAYES

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EDUCATION

Purdue University, West Lafayette, IN

Direct Enrollment for Doctoral Degree: Interdisciplinary Food Science Expected Graduation: August 2020

- Overall GPA: 3.99
- Andrews Fellowship Award Recipient
- Dual concentration – Foods for Health and Ingestive Behavior
- Graduate Research Assistant – Laboratory of Dr. Bruce Hamaker

St. Catherine University, St. Paul, MN

Bachelor of Science: Food and Nutrition Science; Bachelor of Arts: Spanish Graduation: May 2014

- Overall GPA: 4.00
- Class of 2014 Valedictorian
- Academic Dean's List – *Summa Cum Laude*
- Antonian Honors Program Scholar
- Recipient of Top Senior Honors Project Award

Pontificia Universidad Católica Madre y Maestra, Santiago, Dominican Republic January-April 2014

Liberal Arts Council on International Educational Exchange (CIEE) Study Abroad Program

Spring 2012 Semester, Full Spanish Immersion Program, 4-month Homestay with Dominican family

RESEARCH EXPERIENCE

Digestion of carbohydrate-based foods

- August 2014-present
- Devise research plan and conduct human studies assessing gastric emptying and glucose release profiles of traditional African and Western carbohydrate-rich foods
- Complete *in vitro* simulated gastric and intestinal digestions of traditional African and Western carbohydrate-rich foods, including work in a dynamic model of human digestion, the Human Gastric Simulator

Fundamental research of bioaccessibility and texture of starch in starch-based carbohydrate food systems

- September 2016-May 2019
- Analyze degree of starch fragmentation during different production methods of flours and starches
- Investigate and characterize re-associations of starch molecules during storage

Assessment of α -amylase sufficiency in moderately malnourished Malian children and healthy U.S. children

- April 2016-July 2016
- Assisted with completion of human study to assess and compare pancreatic α -amylase activity, gastric emptying rate, and digestibility of porridges among stunted and healthy children

Activation of the ileal brake with slowly digestible carbohydrates

- May 2015-August 2015
- Assisted with execution of human study to investigate relationships among digestive properties of various starch-based ingredients, gastric emptying rates, appetitive responses, and glucose release profiles

PUBLICATIONS

1. **Hayes AMR**, Swackhamer C, Mennah-Govela Y, Martinez MM, Diatta A, Bornhorst GM, Hamaker BR. (2019) Pearl millet (*Pennisetum glaucum*) couscous breaks down faster than wheat couscous in the Human Gastric Simulator, though has slower starch hydrolysis. *Food and Function*. **Submitted, under review.**

PUBLICATIONS, CONTINUED

2. Veile A, Kramer K, Fiese B, **Hayes A.** (2018) Session 1 discussion: Time allocation across subsistence economies. *Physiology & Behavior*. 193(B):209-210. doi: 10.1016/j.physbeh.2018.05.020.
3. Cisse F, Erickson DP, **Hayes AMR**, Opekun AR, Nichols BL, Hamaker BR. (2018) Traditional Malian solid foods made from sorghum and millet have markedly slower gastric emptying than rice, potato or pasta. *Nutrients*. 10:124. doi:10.3390/nu10020124.
4. Cisse F, Pletsch EA, Erickson DP, Chegeni M, **Hayes AMR**, Hamaker BR. (2017). Preload of slowly digestible carbohydrate microspheres decreases gastric emptying rate of subsequent meal in humans. *Nutr Res*. 45:46-51. doi:10.1016/j.nutres.2017.06.009.
5. **Hayes AMR**, Howe SC, Burgess-Champoux TL. (2015). Enhancing whole grain, fiber, and iron content of pancakes: Impacts on quality attributes and adult receptivity. *Journal of Student Research*. 4(2):36-43. Accessible from <http://www.jofsr.com/index.php/path/article/view/185>

BOOK CHAPTER

Hayes AMR, Jones JM. Cultural Differences in Processing and Consumption, in *Encyclopedia of Food Grains* (Second Edition), Academic Press, Oxford, 2016, p. 35-42. ISBN 9780123947864. <http://dx.doi.org/10.1016/B978-0-12-394437-5.00073-5>

PROFESSIONAL PRESENTATIONS

1. **Hayes AMR**, Gozzi F, Hamaker BR. (2019, July 9-13). Slow gastric emptying rate for pearl millet-based foods in Mali is not observed in a U.S. population, though shows a slow digestion property. Society for the Study of Ingestive Behavior Annual Meeting, Utrecht, Netherlands. (poster presentation by Hayes AMR)
2. Hudson JL, Braun E, Wang Y, **Hayes AMR**, Hill ER, Couture SC, Douglas SM, Reister EJ, Hunter SR, Cheon E, McGowan B, Gunaratna, Mattes RD, Higgins KA. (2019, June 8-11). Systematic review and meta-analysis on the effect of portion size and ingestive frequency on energy intake and body weight among adults in randomized controlled trials. Nutrition 2019. American Society for Nutrition Annual Meeting, Baltimore, Maryland, USA. (poster presentation by collective group)
3. Chegeni M, **Hayes AMR**, Gonzalez TD, Manderfeld MM, Menon R, Holschuh N, Lim J, Hamaker BR. (2018, October 21-23). Slowly digestible carbohydrates reduce gastric emptying in humans suggesting activation of the ileal brake. *Cereals & Grains* 18. AACC International Meeting, London, UK. (poster presentation by Hayes AMR)
4. Torres-Aguilar P, Yopez X, **Hayes AMR**, Martínez MM, Hamaker BR. (2018, October 21-23). Effect of pearl millet extrusion on the formation of amylose-lipid complexes and their slow digestion property. *Cereals & Grains* 18. AACC International Meeting, London, UK. (oral presentation by Torres-Aguilar P/Hamaker BR)
5. **Hayes AMR**, Swackhamer C, Martínez MM, Mennah-Govela YA, Bornhorst GM, Hamaker BR. (2018, July 15-18). Breakdown rate of couscous made from pearl millet versus wheat in a simulated gastric environment linked to gastric emptying. Institute of Food Technologists Annual Expo (IFT18), Chicago, IL, USA. (poster presentation by Hayes AMR)

PROFESSIONAL PRESENTATIONS, CONTINUED

6. **Hayes AMR**, Martínez MM, Swackhamer C, Mennah-Govela YA, Bornhorst GM, Hamaker BR. (2018, April 9-12). Insights to the delayed gastric emptying rate and slow digestibility of pearl millet couscous. Sorghum in the 21st Century, Cape Town, South Africa. (poster presentation by Hayes AMR)
7. **Hayes AMR**, Martínez MM, Hamaker BR. (2017, October 8). Investigating the slow digesting property of pearl millet couscous. Cereals 17. American Association of Cereal Chemists International (AACCI) Annual Meeting, San Diego, CA, USA. (oral presentation by Hayes AMR)
8. Martínez MM, Bertoft E, **Hayes AMR**, Hamaker BR. (2017, October 8). “Zipper model” explains intermolecular re-associations of starch molecules. Cereals 17, AACCI Annual Meeting, San Diego, CA, USA. (oral presentation by Martínez MM)
9. Martínez MM, Bertoft E, **Hayes AMR**, Hamaker BR. (2017, October 7). “Zipper model” explains intermolecular re-associations of starch molecules. Starch Roundtable, San Diego, CA, USA. (oral presentation by Martínez MM)
10. **Hayes AMR**, Mattes RD. (2017, October 2-4). The effect of snacking on lipid metabolic biomarkers: a review. The Pace of Life and Feeding: Health Implications. Ingestive Behavior Research Center (IBRC) International Conference, West Lafayette, IN, USA. (poster presentation by Hayes AMR)
11. Cisse F, Erickson DP, Opekun AR, Nichols BL, **Hayes AMR**, Hamaker BR. (2015, October 18-21). Sorghum and millet exhibit slower gastric emptying than pasta, potatoes, and rice. American Association of Cereal Chemists International Centennial Meeting, Minneapolis, MN. (poster display)
12. **Hayes AMR**, Marquart L, Maschoff B. (2014). Fast-casual restaurant surveillance - Whole grain menu offerings and opportunities. Grains for Health Foundation (GHF) GrainUp Consortium 2014 annual meeting, Minneapolis, MN. (oral presentation by Hayes AMR)
13. **Hayes AMR**, Burgess-Champoux TL. (2014). Enhancing the nutritional quality of flour tortillas: An investigation of consumer receptivity to a fortified tortilla product. National Conference on Undergraduate Research (NCUR) 2014, Lexington, KY. (oral presentation by Hayes AMR and NCUR Proceedings 2014 publication: <http://www.ncurproceedings.org/ojs/index.php/NCUR2014/article/view/952/498>)
14. **Hayes AMR**, Burgess-Champoux TL. (2014). Enhancing the nutritional quality of flour tortillas: An investigation of consumer receptivity to a fortified tortilla product. St. Catherine University Antonian Honors Project Seminar. St. Paul, MN. (oral presentation by Hayes AMR and St. Catherine University SOPHIA publication: http://sophia.stkate.edu/shas_honors/32/)
15. **Hayes AMR**, Burgess-Champoux TL. (2014). Enhancing the nutritional quality of flour tortillas: An investigation of consumer receptivity to a fortified tortilla product. Minnesota Academy of Nutrition and Dietetics (MAND) 2014 annual meeting, St. Cloud, MN. (poster presentation by Hayes AMR)
16. **Hayes AMR**, Burgess-Champoux T. (2014). The efficacy of alternative treatments in maintaining metabolic control of Glycogen Storage Disease (GSD) Type I: A systematic review. Minnesota Academy of Nutrition and Dietetics (MAND) 2014 annual meeting, St. Cloud, MN. (poster presentation by Hayes AMR)
17. **Hayes AMR**, Howe SC, Burgess-Champoux TL. (2013). Enhancing whole grain, fiber, and iron content of pancakes: Impacts on quality attributes and adult receptivity. Minnesota Academy of Nutrition and Dietetics (MAND) 2013 annual meeting, Bloomington, MN. (poster presentation by Hayes AMR)

WORK & TEACHING EXPERIENCE

Graduate Research Assistant

August 2014-present

Department of Food Science, Purdue University, West Lafayette, IN

Whistler Center for Carbohydrate Research, Purdue University, West Lafayette, IN

- Design and conduct food and nutrition science related experiments in the laboratory of Dr. Bruce Hamaker
- Assist other students and scholars with use and organization of lab equipment
- *Note: Medical leave of absence from Fall 2015 through Summer 2016*

Graduate Teaching Instructor

January-May 2019

Department of Food Science, Purdue University, West Lafayette, IN

- Designed and carried out FS 162 Introduction to Food Processing Course
- Incorporated a mixture of lectures, laboratory activities/experiments in the Pilot Plant and Product Development Laboratory, guest speakers, and field trips (Conagra and Frito-Lay) into the course curriculum
- Integrated a semester-long group product development project with components of marketing pitches, group presentations, and individual written reports
- Earned the Certificate of Practice in College Teaching from Purdue University

Manuscript Editor/Reviser

October 2016-April 2018

West Lafayette, IN

- Reviewed and edited manuscripts, ensuring adherence to proper English grammatical rules and appropriate scientific style

Science, Basic Statistics, & Physics Tutor

August 2012-May 2014

O'Neill Center for Academic Development, St. Catherine University, St. Paul, MN

Department of Mathematics & Physics, St. Catherine University, St. Paul, MN

- Assisted students with coursework in general chemistry, organic chemistry, biochemistry, biology, psychology, basic statistics, and calculus-based physics
- Assessed and accommodated students' strengths/weaknesses, identified unique needs for help, and developed efficient strategies to help multiple students with diverse backgrounds

Orientation Leader

August 2011-September 2013

St. Catherine University Orientation Team, St. Paul, MN

- Guided and assisted incoming first-year students in transitioning from high school to college
- Volunteered at campus and community service events throughout the academic year

Research & Development - Food Science Intern

May 2013-August 2013

Michael Foods, Inc., Gaylord, MN

- Conducted projects relating to eggs as food ingredients – liquid egg products, liquid and dried enzyme-modified egg products, while maintaining accurate and detailed records of all tasks undertaken
- Learned and applied analytical methods for pH, free fatty acid, viscosity, salt, color, solids/moisture, and texture using various sample products
- Presented a completed project to the Research & Development staff at Michael Foods and to students and faculty at St. Catherine University

Inorganic Laboratory Intern

May 2011-August 2012

Minnesota Valley Testing Laboratories, New Ulm, MN

- Prepared potable water samples and filtered water samples for metals analyses
- Performed analyses for moisture (vacuum oven method), fat (Mojonnier method), salt, and scorched particles
- Maintained a clean work environment, ensured calibration of lab instruments, and assisted other workers

Youth Soccer Referee

May 2006-May 2013

New Ulm Area Youth Soccer Association, New Ulm, MN

- Officiated soccer games in compliance with rules of the Minnesota Youth Soccer Association
- Maintained fun and safe environment for athletes, coaches, fans, and other officials

Farmhand

January 1998-August 2014

Evergreen Farm, Lafayette, MN

EXTRACURRICULAR ACTIVITIES & COMMUNITY INVOLVEMENT

- Purdue University College of Agriculture Graduate Student Advisory Board August 2019-present
- Representative for the Department of Food Science
 - Provide input on programs and activities that will enhance the graduate experience
 - Promote excellence and professionalism in graduate education for all students
- Institute of Food Technologists (IFT) September 2013-present
- Student member; member of the Student Association, Indiana Section, and Great Plains Sub-Section (former member of Minnesota Section)
 - Promote food initiatives on campus and through social media for World Food Day
 - Fundraising outreach volunteer for Feeding Tomorrow IFT program's "Give \$75 for the 75th Campaign"
 - Feeding Tomorrow Graduate Scholarship Recipient, 2014-2015 & 2018-2019
 - College Bowl team member 2014-2016
 - Student Session Monitor at IFT16 Annual Conference
 - Carbohydrate Division Student Volunteer
 - Newsletter contributor (2016-present), Student Outreach Lead (2018-2020)
- Institute of Food Technologists Student Association (IFTSA) July 2018-present
- Area Meeting Co-chair, Midwest Area, 2018-2019
 - Purdue IFTSA Chapter President, 2018-2019
- American Association of Cereal Chemists International (AACCI), Student member April 2015-present
Name changed to Cereals & Grains Association, September 2019
- AACCI Student Association President, 2019-2020
 - AACCI Student Association Vice President, 2018-2019
 - AACCI Board of Directors – Student Representative, 2018-2019
 - Online Communicator for AACCI Student Association, 2017-2018
 - Travel Award Recipient to Cereals 17 and Cereals & Grains 18, Annual Meetings in 2017 and 2018
- Purdue University Food Science Graduate Student Association August 2014-present
- President, June 2018-2019
 - Treasurer, September 2014-May 2015
 - Organize and facilitate enriching opportunities for 80+ fellow graduate students
 - Wrote successful grant to obtain funding through the Purdue Graduate Student Government
 - Assisted at various events – Molecular Gastronomy night, Wine & Cheese night, International Dinner, Holiday Party, Breakfast hours, etc.
 - Purdue University AgWeek and Spring Fest planner and volunteer
- Purdue University Ingestive Behavior Graduate Student Association August 2014-present
- Treasurer, September 2017-2018
 - Event Planner, May 2015-September 2017
- St. Thomas Aquinas Catholic Center at Purdue University August 2014-present
- Mass lector
 - Mass cantor and choir member
- Purdue Graduate Student Government (PGSG) September 2014-October 2015
- Academic & Professional Development (APD) committee member, September 2014-April 2015
 - APD co-chair, April 2015-October 2015
 - Planned and facilitated Public Speaking & Poster Presentation Workshops and the Next Generation Scholars Event for 80 middle school youth
 - Head organizer of Etiquette Seminar for 50 graduate students (April 7, 2015)
- St. Catherine University Student Publication: *The Wheel* August 2011-May 2014
- Copy Editor – edited bi-weekly paper and ensured Associated Press (AP) style of formatting was followed
 - Served as a representative of *The Wheel* and St. Catherine University at campus and community events

EXTRACURRICULAR ACTIVITIES & COMMUNITY INVOLVEMENT, CONTINUED

- St. Catherine University Nutrition & Exercise Science Club May 2013-May 2014
- Co-officer, May 2013-2014
 - Planned and organized club events and activities, including maintaining detailed member records and minutes of meetings, publicizing upcoming events, and facilitating workshops
 - Facilitated nutrition and exercise related initiatives (5K runs), food demos, and health challenges
- St. Catherine University Colleges Against Cancer Student Organization September 2010-May 2014
- Fundraising committee co-chair, September 2012-May 2014
 - Planned, organized, and publicized campus-wide Relay for Life event
 - Raised awareness of cancer through campus events and fundraisers, such as Breast Cancer Awareness and Paint the Campus Purple
- Interfaith Outreach & Community Partners (IOCP) Food Shelf January 2014-April 2014
- Served as volunteer food shelf assistant – stocked and organized shelves, assisted clients with shopping, bagged groceries
 - Presented a food demo to clients using food products readily available at the food shelf
- 4-H Program for Youth Development August 1998-August 2011
- Youth leader with various club, county, and state involvements
 - Volunteered at county, city, and other local events
 - Minnesota State Fair recipient of highest honors with consumer education, swine, and health projects

AWARDS & ACCOMPLISHMENTS

- Purdue Graduate Student Government Travel Grant Recipient (top tier), August 2019
- Phi Kappa Phi Honor Society Inductee, October 2019
 - Through Phi Kappa Phi chapter at St. Catherine University to commemorate installation of new chapter at the University in 2019
- Institute of Food Technologists (IFT) Carbohydrate Division, Outstanding Service Award, 2019
- Purdue University Certificate of Practice in College Teaching, 2019
- Cereals & Grains 18 (AACC International Annual Meeting), Nutrition Division Best Student Research Award, 2018
- Institute of Food Technologists Annual Food Expo (IFT18), Poster Competition Finalist, 2018
- Institute of Food Technologists (IFT) Feeding Tomorrow Graduate Scholarship Recipient, 2018-2019
- Phi Tau Sigma Honors Society Chapter of the Year, 2018
 - Awarded to Hoosier Chapter at Purdue University
 - Chapter President, with lead role in completing and submitting nomination materials for this honor
- Phi Tau Sigma Honors Society for Food Science and Technology Inductee, June 2015
- Institute of Food Technologists (IFT) Feeding Tomorrow Graduate Scholarship Recipient, 2014-2015
- Andrews Fellowship Recipient (2-year award), Purdue University, 2014
- St. Catherine University Mary E. McCahill Memorial Award Recipient, May 2014
 - Most prestigious award of St. Catherine University
 - Presented to a senior student who has consistently demonstrated outstanding leadership, academic excellence, loyalty and service to the university throughout her years
- St. Catherine University Class of 2014 Valedictorian
- St. Catherine University Academic Dean's List - *Summa Cum Laude* Latin Honors, September 2010-May 2014
- St. Catherine University Antonian Honors Program Scholar, September 2010-May 2014
- St. Catherine University Top Senior Honors Project Award Recipient, May 2014
- St. Catherine University Baccalaureate Student Commencement Speaker Nominee, March 2014
- St. Catherine University Bonnie Jean Kelly and Joan Kelly Award for Excellence in Scholarly Writing – Honorable Mention, May 2014
- Phi Beta Kappa (PBK) Liberal Arts Honor Society Inductee, March 2014

AWARDS & ACCOMPLISHMENTS, CONTINUED

- Kappa Gamma Pi (KGP) Catholic College Graduate Honor Society Inductee, March 2014
- Sigma Delta Pi (SDP) Spanish Honor Society Inductee, April 2013
 - Chapter President, April 2013-May 2014
- Kappa Omicron Nu (KON) Human Sciences Honor Society Inductee, April 2012
 - Chapter Vice President, May 2013-2014
- Minnesota Soybean Research & Promotion Council Scholarship Recipient, April 2013
- Sister James Agnes Fogarty Home Economic Scholarship Recipient, April 2012 & April 2013
- Mayo Innovation Scholar, November 2012-April 2013
 - Mayo Innovation Scholars Program, Rochester, MN
 - Initiative of the Medtronic Foundation, Mayo Clinic, & MN Private College Council
 - Collaborated with a team of three other undergraduate students and one graduate student to conduct research on an assigned inventive topic
 - Presented conclusions in paper and presentation format to professionals at Mayo Clinic
- St. Catherine University Freshman Chemistry Award Recipient, May 2011
- Catholic Order of Foresters Scholarship Recipient, May 2010
- Citizens Bank Minnesota Scholarship Recipient, May 2010
- Cathedral High School Valedictorian, May 2010
- Minnesota State Science & Engineering Fair Presenter, April 2005 & April 2006
 - Minnesota Academy of Science Best Overall 8th Grade Paper, April 2006

RECENT VOLUNTEERING & SERVICE

- Purdue Student Food Insecurity Committee member, May 2019-present
- Lafayette Regional Science and Engineering Fair Judge, March 6, 2015; March 3, 2017; March 2, 2018; March 8, 2019
- Purdue Extension Booth Volunteer at the Indiana State Fair, 2016 and 2017
- Food Finders – J.P. Lisack Community Food Pantry bi-weekly volunteer, Lafayette, IN, June 2016-2017
- IFT Student Session Monitor, IFT16, Chicago, IL, July 16-19, 2016
- Springification/Boiler Blast community outreach event volunteer, Purdue University, April 9, 2016
- Food Finders Food Bank volunteer, Lafayette, IN, March 31, 2016
- Project Move Out volunteer, Purdue University, May 9, 2015
- Martin Luther King, Jr. Day of Service volunteer, Purdue University, January 19, 2015; January 16, 2017