

CURRICULUM VITAE

PERSONAL INFORMATION

Elizabeth M. Gardner
Department of Food Science and Human Nutrition
236A GM Trout Bldg
Michigan State University
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EDUCATION

- 1994 The Medical College of Pennsylvania
Philadelphia, Pennsylvania
Major: Biochemistry (Biomedical Nutrition)
Degree: Ph.D.
Advisor: A. Catharine Ross, Ph.D.
- 1987 Chestnut Hill College
Philadelphia, Pennsylvania
Major: Biology
Degree: B.S.

POSTGRADUATE TRAINING

- 1994 – 1999 Postdoctoral Research Fellow, Microbiology and Immunology
MCP Hahnemann University School of Medicine, Philadelphia, PA
Advisor: Donna M. Murasko, Ph.D.

ACADEMIC APPOINTMENTS

- Jan, 2008 – Present Associate Professor of Food Science and Human Nutrition, Michigan State University, East Lansing, MI
- July, 2011 Awarded Tenure, Michigan State University
- Dec, 2007 – June, 2010 Adjunct Research Assistant Professor of Bioscience and Biotechnology
Drexel University, Philadelphia, PA
- July, 2005 – Dec, 2007 Director, Flow Cytometry Core, Bioscience and Biotechnology, Drexel University, Philadelphia, PA
- Sept, 2002 – Dec, 2007 Assistant Professor of Bioscience and Biotechnology
Drexel University, Philadelphia, PA
- July, 1999 – Aug, 2002 Research Assistant Professor, Microbiology and Immunology
MCP Hahnemann University School of Medicine, Philadelphia, PA
- Jan, 1996 – Dec, 2002 Manager, Flow Cytometry Core Laboratory, Microbiology and Immunology
School of Medicine, Philadelphia, PA

CURRENT MEMBERSHIPS IN PROFESSIONAL SOCIETIES

- 2015 New York Academy of Sciences
- 2010 AHCC International Research Association
- 2004 Gerontological Society of America
- 2000 American Association of Immunologists

1991 American Society for Nutrition (ASN), formerly known as American Institute of Nutrition; American Society for Nutritional Science

HONORS AND AWARDS

2013 Carl G. Smith Award for Faculty Excellence, endowed by Gerber Product Company, Food Science and Human Nutrition, Michigan State University

2011 Ruth L. Pike Lecture Series: Frontiers in Nutrition Research Award, Pennsylvania State University, University Park, PA

2007 Antelo Devereux Research Award for Young Faculty at Drexel University

2000 Mary DeWitt Pettit Fellowship of the Alumni/ae Association of Medical College of Pennsylvania

2000 Member of 10⁶ Club MCP Hahnemann University

1994 "Who's Who in International Medicine"

1989 – 1994 Howard Heinz Predoctoral Training Fellowship Medical College of Pennsylvania, Philadelphia, PA

1986 – 1987 Academic Dean's List, Chestnut Hill College, Philadelphia, PA

CONTRIBUTION TO SCIENCE

I have been an Associate Professor in the Department of Food Science and Human Nutrition at Michigan State University since 2008. Since 1994, my research has focused on the interplay between nutrition, aging, and the immune response to infectious disease, particularly influenza. The immune response to influenza vaccine is reduced with age, but also exhibits marked heterogeneity among individual responses of elderly individuals. In addition, nutritional status decreases with age. Therefore, my early research evaluated the impact of age and nutrition on the immune response to influenza vaccine in young and elderly individuals. These studies were significant because the interplay between nutrition, aging and the immune response to influenza, had not been the focus of influenza vaccination studies prior to my research. My publications indicated that nutritional status at the time of vaccination did not account for the heterogeneity or the reduced immune response of the elderly to influenza vaccination. However, in a subsequent publication, I found that racial background did, in fact, deleteriously impact the immune response of the elderly to influenza vaccination. These studies were integral because they were hallmark studies for future investigations on the impact of specific nutritional interventions on age-related changes in the immune response to vaccination as well as during primary infection in humans and in animal models.

A second area of research has been investigating the effects of various dietary interventions, most notably calorie restriction (CR) and nutraceutical supplementation, on the NK cell response during the primary response to influenza infection or after influenza vaccination. My laboratory has established that dietary interventions can significantly impact the NK cell responses, such that the infectious disease process is either exacerbated or ameliorated. Importantly, we have shown that CR of either adult or aged mice deleteriously impacts NK cell responses and leads to increased susceptibility to influenza infection in a mouse model. My laboratory has also shown that re-feeding previously CR mice improves outcome to influenza infection in adult mice through improved NK cell function. These studies indicate that measuring NK cell function after various nutritional interventions may serve as a biomarker for the extent of immune response in humans, which may be a useful tool in predicting the outcome to infectious disease.

More recently, I have also mentored graduate students from Africa who were studying the impact of nutritional interventions on cognition and health. Importantly, a master's student in my laboratory developed a method to increase the vitamin A concentration in sweet potatoes as a means to improve the diet of young children in her village. To this end and given my expertise, I have an interest in working with early stage female scientists to develop methods to assess NK cell responses in vulnerable populations in Africa and to determine if nutritional intervention can improve outcome to infection. Methodologies are in place to begin these studies in my laboratory such that they can be applied to vulnerable African populations.

RESEARCH ACTIVITIES

PREVIOUSLY FUNDED GRANTS

RESEARCH GRANTS AS CO-INVESTIGATOR

FEDERAL AGENCIES

USAID	Food and Nutrition Technical Assistance (FANTA III)
	Principal Investigator: Perry Ng
	Deepa Thiagarajan
	Role: Co-Investigator (6% Effort)
	Total Direct Costs: \$3,205,852
	Total Costs: \$3,976,303.24
	Years of Award: January, 2012 – December, 2016

RESEARCH GRANTS AS PRINCIPAL INVESTIGATOR

FEDERAL AGENCIES

NIH (R01AG034949-01A1)	Natural Killer Cell Responses of Aged Mice to Primary Influenza Infection
	Role: Principal Investigator
	Total Direct Costs: \$1,112,372
	Total Costs: \$1,783,302
	Years of Award: September, 2010 - June, 2016

NIH (R15AG029637)	Innate Immunity to Influenza in Caloric Restricted Aged Mice
	Role: Principal Investigator (20% Effort)
	Total Direct Costs: \$123,000
	Total Costs: \$184,500
	Years of Award: September, 2007 – August, 2010

INDUSTRY/NON-PROFIT/FOUNDATIONS

AHCC Research	Testing of a Mushroom-Based Nutraceutical
	Role: Principal Investigator
	Total Direct Costs: \$24,000
	Total Costs: \$30,000
	Years of Award: March, 2012 – June, 2014

Amino Up	Supplementation with Active Hexose Correlated Compound (AHCC) along with Seasonal Influenza Vaccination in Healthy Subjects
	Role: Principal Investigator
	Total Costs: \$36,000
	Years of Award: September, 2010 – August, 2011

GTC Nutritionals	Galactooligosaccharide, Immune Strength, and Digestive Health in Older Adults over Cold and Flu Season"
	Principal Investigator: Bobbi Langkemp-Henken, Ph.D.
	Role: Subcontract
	Total Costs: \$28,000
	Years of Award: September, 2010 – August, 2011

GTC Nutritionals	Effect of Supplementation with GOS on the Natural Killer Cell Response in Young C57BL/6 Mice	Role	Principal Investigator
		Total Direct Costs	\$25,000 (Gift in Kind)
		Years of Award	July, 2009 – June, 2010
Amino Up	Effects of AHCC Supplementation on the Immune Response to Influenza Vaccination in Healthy Subjects	Role	Subcontract
		Total Costs	\$8,000 (Gift in Kind)
		Years of Award	September, 2009 – August, 2010

Papers Published (*indicates peer reviewed)

1. Boss AP, Freeborn RA, Duriancik DM, Kennedy RC, **Gardner EM**, Rockwell CE. (2018). The Nrf2 activator tBHQ inhibits the activation of primary murine natural killer cells. *Food Chem Toxicol.*;121:231-236. PMID:30171972.
2. Duriancik DM, Tippet JJ, Morris JL, Roman BE, **Gardner EM**. (2018). Age, calorie restriction, and age of calorie restriction onset reduce maturation of natural killer cells in C57Bl/6 mice. *Nutr Res.*; 55:81-93. PMID: 29914631.
3. *Duriancik, D. M., **Gardner, E. M.** (2016). Energy restriction impairs dendritic cell development in C57BL/6J mice. *Mech Ageing Dev.* **154**:9-19.
4. *Clark, E.S., Flannery, B.M., **Gardner, E.M.**, Pestka, J.J. (2015). High sensitivity of aged mice to deoxynivalenol (vomitoxin)-induced anorexia corresponds to elevated proinflammatory cytokine and satiety hormone responses. *Toxins (Basel).* **7**:4199-4215. PMID 26492270.
5. *Beli, E., Duriancik, D.M., Clinthorne, J.F., Lee, T., Kim, S., **Gardner, E.M.** (2014). Natural killer cell development and maturation in aged mice. *Mech. Ageing Devel.* **135**:33-40.
6. *Clinthorne, J.F., Beli, E., Duriancik, D.M., **Gardner, E.M.** (2013). Natural killer cell maturation and function in C57Bl/6 mice is altered by caloric restriction. *J. Immunol.* **190**:712-22. Epub 2012 Dec 14.
5. *Gonipeta, B., Duriancik, D., Kim, E., **Gardner, E.**, Gangur V. (2013). Identification of T and B cell subsets that expand in the central and peripheral lymphoid organs during the establishment of nut allergy in an adjuvant-free mouse model. *ISRN Allergy*.
6. *Roman, B.E., Beli, E., Duriancik, D.M., **Gardner E.M.** (2013). Short-term supplementation with Active Hexose Correlated Compound (AHCC) improves the antibody response to influenza B vaccine *Nutr Res.* **33**:12-7. Epub 2012 Dec 4.
7. *Hwang, I., Kakarla, T., Duriancik, D.M., Choi, S., Cho, C., Lee T., Park H., Scott, J.M., Jo, M., Ortiz, T., French, A.R., Beli, E., **Gardner, E.M.**, Kim, S. (2012). Activation mechanisms of natural killer cell during influenza virus infection. *PloS One.* **7**: e51858. doi: 10.1371/journal.pone.0051858. Epub 2012 Dec 31.
8. *Gopalakrishnan A., Clinthorne J.F., Rondini E.A., McCaskey SJ, Gurzell E.A., Langohr I.M., **Gardner E.M.**, Fenton JI. S (2012). Supplementation with galacto-oligosaccharides increases the percentage of NK cells and reduces colitis severity in Smad3-deficient mice. *J Nutr.* **142**:1336-1342.
9. *Nogusa, S., Murasko, D.M., **Gardner, E.M.** (2012) Differential effects of stimulatory factors on natural killer cell activities of young and aged mice. *J Gerontol A Biol Sci Med Sci.* **67**: 947-954.

10. *McCaskey S.J., Rondini E.A., Clinthorne J., Langohr I.M., **Gardner E.M.**, Fenton JI. (2012). Increased presence of effector lymphocytes during Helicobacter hepaticus-induced colitis. *World J Gastroenterol.* **18**: 1459-1469.
11. *Beli E., Clinthorne J.F., Duriancik D.M., Hwang I., Kim S., **Gardner E.M.** (2011). Natural killer cell function is altered during the primary response of aged mice to influenza infection. *Mech. Ageing Dev.* **132**:503-510.
12. *Woodworth, H., McCaskey, S., Duriancik, D., Langohr, I., **Gardner, E.**, and Fenton, J. (2010). Dietary fish oil alters T lymphocyte cell populations and exacerbates disease in a mouse model of inflammatory colitis. *Cancer Res.* **70**: 7960-7969.
13. *Clinthorne, J.F., Adams D.J., Fenton J.I., Ritz B.W., **Gardner E.M.** (2010). Short-term refeeding of previously energy-restricted C57BL/6 male mice improves nutritional status and restores natural killer cell function after primary influenza infection. *J. Nutr.* **140**: 1495-1501.
14. *Simons, D.M., **Gardner, E.M.**, Lelkes, P. I. (2010). Intact T cell receptor signaling by CD4 T cells cultured. *J. Cell. Biochem.* **109**: 1201-1209.
15. *Kassim, S.H., Rajasagi, N.K., Ritz, B. W. Pruett, S., **Gardner, E.M.**, Chervenak R., and Jennings S.R. (2009). Dendritic cells are required for optimal activation of natural killer functions following primary infection with herpes simplex virus type-1 (HSV-1). *J. Virol.* **83**: 3175-3186.
16. *Simons D.M., **Gardner E.M.**, Lelkes P.I. (2009). Sub-mitogenic phorbol myristate acetate co-stimulation rescues the PHA-induced activation of both naïve and memory T cells cultured in the rotating-wall vessel bioreactor. *Cell Biol. Int.* **33**(8): 882-886.
17. *Nogusa, S, Ritz, B.W. Kassim S.H, Jennings S.R., **Gardner, E.M.** (2008). Characterization of age-related changes in natural killer cells during primary influenza infection. *Mech. Ageing. Devel.* **129**: 223-230.
18. *Ritz, B.W., Nogusa, S., Aktan, I., **Gardner, E.M.** (2008). Energy restriction impairs natural killer cell function and increases the severity of influenza infection in young adult male C57BL/6 mice. *J. Nutr.* **138**: 2269-2275.
19. *Gonzalez, E., **Gardner, E.**, Murasko, D. (2007). Recruitment and retention of older adults in influenza immunization study. *J. Cultural Diver.* **14**: 81-87.
20. ***Gardner, E.M.**, Gonzalez, E.W., Nogusa, S., Murasko, D.M. (2006) Age-related changes in the immune response to influenza vaccination in a racially Diverse, healthy elderly population. *Vaccine* **24**: 609-614.
21. *Langkamp-Henken, B., Wood, S.M., Herrlinger-Garcia, K.A., Stechmiller, J.K., Thomas, D.J., Bender, B.S., Schaller, J.P., ***Gardner, E.M.**, Murasko, D.M. (2006). Nutritional formula improved immune profiles in a nursing home population. *J. Amer. Geriatric Soc.* **54**: 1861-1870.
22. *Ritz, B.W., Nogusa, S., Ackerman, E.A., **Gardner, E.M.** (2006). Supplementation with active hexose correlated compound increases the innate immune response of young mice to primary influenza infection. *J. Nutr.* **36**: 2868-2873.
23. ***Gardner, E.M.** (2005). Caloric restriction decreases survival of aged mice in response to primary influenza infection. *J. Gerontol. A Biol. Sci.* **60**: 688-694.
24. *Ritz, B.W., Lelkes, P.I., **Gardner, E.M.** (2005). Functional recovery of peripheral blood mononuclear cells in modeled microgravity. *FASEB J.* **2**: 305-307.

25. *Simons, D.M., **Gardner, E.M.**, Lelkes, P.I. (2005). Dynamic culture in a rotating wall vessel bioreactor differentially inhibits murine T lymphocyte activity by mitogenic stimuli upon return to static conditions in a time-dependent manner. *J. Appl. Physiol.* **100**: 1287-1292.
26. *Langkamp-Henken, B, Bender, B.S., **Gardner, E.M.**, Herrlinger-Garcia, K.A., Kelley, M.J., McEwen, J., Murasko, D.M., Schaller, J., Simpson, J.M., Stechmiller, J.K., Thomas, D., Wood, S.M. (2004). Nutritional formula-enhanced immune function and reduced days of symptoms of upper respiratory tract infection in seniors. *J. Amer. Geriatric Soc.* **52**: 3-12.
27. *Murasko, D.M., Bernstein, E.D, **Gardner, E.M.**, Gross, P., Munk, G., Dran, S., and Abrutyn, E. (2002). Role of humoral and cell-mediated immunity in protection from influenza disease after immunization of healthy elderly. *Exp. Gerontol.* **37**: 427-439.
28. *Po, J.L.Z., **Gardner, E.M.**, Anaraki, F., Katsikis, P.D., Murasko, D.M. (2002). Age-associated decrease in virus-specific CD8+ T lymphocytes during primary influenza infection. *Mech Ageing Devel.* **123**: 1167-1181.
29. ***Gardner, E.M.**, and Murasko, D.M. (2002). Age-related changes in type 1 and type 2 cytokine production in humans. *Biogerontol.* **3**: 271-290.
30. ***Gardner, E.M.**, Bernstein, E.D, Dran, S., Munk, G., Abrutyn, E., Murasko, D.M. (2001). Characterization of antibody responses to annual influenza vaccination over four years in a healthy elderly population. *Vaccine* **19**: 4610-4617.
31. *Li, M., Torres, C., Acuna-Castillo, R., Walter, R., **Gardner, E.M.**, Murasko, D.M., Sierra, F. (2001). A defect in ERK2 and JNK2 activation in aging mouse splenocytes. *J. Gerontol. Series A-Biol. Sci. Med. Sci.* **57**: B41-47.
32. ***Gardner, E.M.**, Bernstein, E.D., Popoff, K.A., Abrutyn, E., Murasko, D.M. (2000). Immune response to influenza vaccine in healthy elderly: Lack of association with plasma β -carotene, retinol, α -tocopherol or zinc. *Mech. Ageing Devel.* **117**: 29-45.
33. *Plett, P.A., **Gardner, E.M.**, Murasko D.M. (2000). Age-related changes in interferon- α/β receptor expression, binding, and induction of apoptosis in natural killer cells from C57BL/6 mice. *Mech. Ageing Devel.* **18**: 129-144.
34. *Bernstein, E.D., **Gardner, E.M.**, Abrutyn, E., Gross, P., Murasko, D.M. (1998). Cytokine production after influenza vaccination in a healthy elderly population. *Vaccine.* **16**: 1722-1731.
35. ***Gardner, E.M.**, Bernstein, E.D., Dorfman, M., Abrutyn, E., Murasko, D.M. (1997). The age-associated decline in immune function of healthy individuals is not related to changes in plasma concentrations of β -carotene, retinol, α -tocopherol or zinc. *Mech. Age. Devel.* **94**: 55-69.
36. ***Gardner, E.M.** , Ross, A.C. (1995). Immunological memory is established in nursling rats immunized with etanus toxoid, but is not affected by concurrent supplementation with vitamin A. *Amer. J. Clin. Nutr.* **62**: 1007-1012.
37. ***Gardner, E.M.**, Ross, A.C. (1993). Dietary vitamin A restriction produces marginal vitamin A status in young rats. *J. Nutr.* **123**: 1435-1444.

Invited Reviews

1. **Gardner, E.M.**, Clinthorne, J.F., Duriancik, D.M., Beli, E., Sutherland, B. (2011). Energy intake and response to infection with influenza. *Ann. Rev. Nutr.* **31**: 353-367.

2. **Gardner, E.M.**, Murasko, D.M. (2009). Age-related changes in Th1 and Th2 cytokines. In: Handbook on Immunosenescence: Basic Understanding and Clinical Applications. (Fulop, T.; Franceschi, C.; Hirokawa, K.; Pawelec, eds.) pp 753-70. Springer, USA.
3. *Ritz, B.W., **Gardner, E.M.** (2009). Nutraceuticals and immune restoration in the elderly. In: Handbook on Immunosenescence: Basic understanding and clinical applications. (Fulop, T.; Franceschi, C.; Hirokawa, K.; Pawelec, G eds). pp 1611-28. Springer, USA.
4. *Ritz, B.W., **Gardner, E.M.** (2006). Protein-energy malnutrition and energy restriction differentially affect viral immunity. *J.Nutr.* **136**: 1141-1144.

Books and Chapters

1. **Gardner, E.M.**, Murasko, D.M. (2019). Age-related changes in Th1 and Th2 cytokines. In: Handbook on Immunosenescence: Basic Understanding and Clinical Applications, 2nd Edition. (Fulop, T.; Franceschi, C.; Hirokawa, K.; Pawelec, eds.) pp 753-70. Springer, USA.

Murasko, D.M., **Gardner, E.M.** (2003). Immunology of aging. In: Principles of Geriatric Medicine and Gerontology, Fifth Edition (Hazzard, W.R., Blass, J.P., Halter, J.B., Ouslander, J.G., Tinetti, M.E., eds). pp 35-51. McGraw-Hill, New York, New York, USA.
2. Murasko, D.M., **Gardner, E.M.** (2002). Immunology and aging: Human. In: MacMillan Encyclopedia of Aging (Ekerdt, D.J., ed). New York, New York, USA.

Invited Talks

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| July, 2014 | The 22nd International Congress on Nutrition and Integrative Medicine, Sapporo, JA, "The Effect of AHCC on Immune Function in a Mouse Model." |
| Nov, 2012 | Iowa State University, Department of Immunobiology, Graduate Student Seminar Series "Aging and Energy Restriction Impact the Natural Killer Cell Response to Primary Influenza Infection." |
| Oct, 2012 | Nestle, Lausanne, Switzerland, Invited Attendee, 9th Nestlé International Nutrition Symposium. |
| July, 2012 | The 20th International Congress on Nutrition and Integrative Medicine, Sapporo, JA, "AHCC Supplementation of Energy-restricted Mice May Improve Natural Killer Cell Function during Primary Influenza Infection." |
| Sept, 2011 | Linus Pauling Institute, Oregon State University, Corvallis, OR, Diet and Optimum Health Conference "The Impact of Nutrition on the Immune Response to Influenza" |
| July, 2011 | FASEB Summer Research Conference Nutritional Immunology: Role in Health and Disease, Carefree, AZ, "The Effects of Caloric Restriction and Aging on Immunity." |
| June, 2011 | Fifth Annual Division of Aging Biology New Investigators Forum, Bethesda, MD, "Natural Killer Cell Responses of Aged Mice to Primary Influenza Infection. " |
| April 2011 | Ruth L. Pike Lecture Series: Frontiers in Nutrition Research Award, Pennsylvania State University, University Park, PA, "Energy Restriction and the Primary Response to Influenza Infection: Does it Hinder or Help?" |
| Feb, 2011 | Michigan State University, Department of Food Science and Human Nutrition, GM Trout Visiting Scholar Lecture Series "Responsible Conduct in Research: It's Our Obligation as Scientists and Scholars." |

- Oct, 2010 Iowa State University, Department of Food Science and Human Nutrition, Modern Views of Nutrition Seminar Series “The Role of Prebiotics in Immune Function.”
- Aug, 2010 Michigan State University Department of Geriatrics, Division of Family Medicine Research Collaborative Meeting “Age-Related Changes in the Primary Response to Influenza Infection: A Critical Role for Natural Killer Cells.”
- June, 2010 9th Vahouny Dietary Fiber Symposium “Galacto-oligosaccharides modulate gastrointestinal and systemic lymphocyte populations and reduce the severity of colitis in SMAD3 (-/-) mice.”
- June, 2010 Ohio State University Center for Microbial Interface Biology “Natural killer cell responses of aged mice to primary influenza infection: You can’t live without them!”
- June, 2009 Scientific Advisory Board Meeting, GTC Nutritionals, Golden, CO “Nutrition and immunity: An overview.”
- March, 2009 Michigan State University, Department of Food Science and Human Nutrition “Natural killer cell response to influenza infection in aged mice.”
- Mar, 2009 Drexel University College of Medicine, Department of Microbiology and Immunology. “Natural killer cell response to influenza infection in aged mice.”
- Feb, 2009 Conference on Immunosenescence and Vaccination in the Aged, CDC Atlanta, GA “Effects of age, race and nutritional status on the immune response to influenza vaccination”
- Oct, 2008 Nathan Shock Center of Excellence on Aging, Annual Meeting, San Antonio, TX “Caloric restriction and the innate immune response to influenza infection in aged mice”
- July, 2008 Michigan State University, University Laboratory Animal Resources, Understanding the immune response to influenza infection: Role of Age and Nutrition”
- April, 2008 Experimental Biology Minisymposium. “Nutritional control of immunity in human health and chronic disease”
- Feb, 2008 Michigan State University, Department of Food Science and Human Nutrition, “Caloric restriction alters the primary innate immune response to influenza infection in mice.”
- Feb, 2008 Michigan State University, Center for Integrative Toxicology, “Age-related changes in natural killer cells after primary influenza infection in mice.”
- Aug, 2007 FASEB Summer Research Conference Nutritional Immunology: Its Role in Health and Disease, Tucson, AZ, “Caloric restriction and the innate immune response to influenza infection in aged mice.” July 28-August 2, 2007.
- July, 2007 Amino Up Corporation, Sapporo, Japan “Nutritional modulation of the immune response to influenza: Mechanisms and therapeutic targets.”
- April, 2007 Michigan State University, Department of Food Science and Human Nutrition, “The innate immune response to influenza infection in aged calorically-restricted mice.”
- July, 2006 Amino Up Corporation, Sapporo, Japan, “Nutritional modulation of the immune response to influenza: Mechanisms and therapeutic targets.”

- Feb, 2006 Drexel University College of Medicine, Department of Neurology, Philadelphia, PA, "Nutritional intervention and the immune response to influenza: Does it hinder or help?"
- Feb, 2005 Wyeth Nutritionals, Collegeville, PA, "Understanding the role of nutrition on the immune response to influenza vaccination in the elderly."
- Sept, 2004 University of the Sciences, Department of Pharmacology, Philadelphia, PA. "The effects of caloric restriction on the immune response to influenza in aged mice."
- April, 2004 Drexel University College of Medicine, Department of Microbiology and Immunology, Philadelphia, PA. "The immune response to influenza: A study of mice and men."
- Jan, 2003 Drexel University, College of Arts and Sciences, Dean's Seminar Series, Philadelphia, PA. "The immune response to influenza: A study of mice and men."
- April, 2001 Philadelphia College of Osteopathic Medicine, Philadelphia, PA. "Aging and the immune response: Role of nutrition."
- Feb, 2001 Penn State University, Department of Nutrition, University Park, PA. "Aging and the immune response to influenza vaccination: Role of nutrition."
- May, 1996 Mead Johnson Nutritionals, Evansville, IN. "Relationship between nutritional status and immune function in healthy elderly individuals."

Mass Media Interviews and Publications

- 2016 Interview with Nicole Heslip, Brownfield Ag News for America, Media. CAN EATING MORE CALORIES HELP FIGHT INFLUENZA? <http://brownfieldagnews.com/2016/03/04/can-eating-more-calories-help-fight-influenza>
- 2015 "Loosening the Belt: Fighting Influenza with Higher Calorie Diets. MSU Ag Bio Research, 2015 Annual Report, pages 44-46
- 2010 "Eat and Be Merry", Marie Claire Magazine, pg 218, Nov 2010 issue
Interview, Self Magazine (Nov 2010 issue)
MAES Annual Report, Faculty Spotlight for Aging NIH Grant

ADVISING

CURRENT

Assistant Professors

- 2015 –2020 Wei Li, Ph.D.
Sarah Comstock, Ph.D.
David M. Duriancik, Ph.D.

Doctoral Students

- 2017 Allison Boss

Doctoral Thesis Committees

- 2016 Robert Freeborn

Undergraduates

- 2019 Shixiang Yu

PAST

Post-Doctoral Research Associates

2009 – 2014 David M. Duriancik, Ph.D.

Doctoral Students Graduated

2013 Jonathan Clinthorne
2012 Eleni Beli
2010 Shoko Nogusa
2007 Barry W. Ritz
2007 Donald M. Simons

Master's Students Graduated

2019 Mengke Fan
2014 Glory Mhalu (**Africa**)
2013 Brooke Roman

Thesis Committees

Doctoral Students

2015 Theresia Jumbe (Chair, **Africa**)
2015 Erica Clarke (Graduated)
2014 Eric Gurzell (Graduated)

Master's Students

2016 Kim Fake
2015 Tatum Goldufsky
2014 Sarah Hite

Undergraduates

2018, Claudia Salwin
2017, Alek Ostrander
2016 Hannah Laur
2015 Allison Boss
Marcos Oliveira
2012 Maxwell Miller
Andrew Albert
2011 Jason Spencer
Maxwell Miller
Anita Gopalakrishnan
2010 Anita Gopalakrishnan
Jason Spencer
Carrie Sutter
Ryan Van Hattum
Hillary Woodworth
2009 Rachel Klein
Susan Frontczak
Molly Russell
Haley Aldrich
Jason Spencer
Carrie Sutter
Yao Yiyuan
2008 Jonathan Clinthorne
Hanna Webb
Robert Homan