
BIOGRAPHICAL SKETCH

Provide the following information for the key personnel and other significant contributors in the order listed on Form Page 2. Follow this format for each person. **DO NOT EXCEED FOUR PAGES.**

NAME M. Andrea Azcarate-Peril	POSITION TITLE Assistant Professor		
eRA COMMONS USER NAME Andrea_Azcarate			
EDUCATION/TRAINING <i>(Begin with baccalaureate or other initial professional education, such as nursing, and include postdoctoral training.)</i>			
INSTITUTION AND LOCATION	DEGREE <i>(if applicable)</i>	YEAR(s)	FIELD OF STUDY
Universidad Nacional de Misiones, Argentina	B. S	1995	Genetics
Universidad Nacional de Tucuman, Argentina		1996	Molecular Biology
Centro de Referencia para Lactobacilos, Tucuman, Argentina	Ph. D.	2000	Microbiology
Instituto de Agroqca. y Tec. de Alimentos, Valencia, Spain	Postdoctoral	2001	Molecular Biology
North Carolina State University, Raleigh, NC	Postdoctoral	2003	Molecular Microbiology

A. Personal Statement

The human-associated microbiota has a profound role in diseases affecting our society today, including Crohn's disease, colorectal cancer, cystic fibrosis, and diabetes. During the last four years, as assistant professor of Cell Biology and Physiology, and director of the Microbiome Core Facility, I have acquired considerable experience in the characterization of complex microbial populations, specifically the human-associated microbiota, using next generation sequencing approaches. This experience complements well my training in functional genomics and physiology of probiotics. My research program is focused on modulation of the microbiome by prebiotics and probiotics. Specifically, I am interested in identifying key players in the microbiome which abundance could be modified in non-invasive manners to prevent colorectal cancer. I have a broad background in Microbiology, with specific training in functional genomics of probiotic microorganisms. To date my research projects have culminated in over 20 publications in peer-reviewed journals and books, and over 20 presentations at national and international meetings.

B. Positions and Honors**Positions and Employment**

1996-2000	Ph.D. Centro de Referencia para Lactobacilos (CERELA), Tucuman, Argentina.
2000	Post-doctoral Research Associate. IATA, Valencia, Spain.
2001-2004	Post-doctoral Research Associate. NC State University, Raleigh, NC.
2004-2008	Senior Research Scientist. Department of Food, Bioprocessing, and Nutrition Sciences, NC State University, Raleigh, NC.
2008-Present	Assistant Professor. Department of Cell Biology and Physiology, University of North Carolina, Chapel Hill, NC
2008-Present	Director, Microbiome Core Facility. Department of Microbiology and Immunology, University of North Carolina, Chapel Hill, NC

Other experience, professional and honor associations

American Society of Microbiology

Editorial Board- Applied and Environmental Microbiology (2007-2009; 2010-2012).

Review Editor - Frontiers in MicroBioTechnology and Industrial Microbiology

Reviewer - Journal of Bacteriology, Molecular Microbiology, Clinical and Vaccine Immunology, American Journal of Physiology - Gastrointestinal and Liver Physiology, Infection and Immunity, BMC Microbiology, Microbiological Research.

Member of Sigma Xi, Scientific Research Society, North Carolina State University Chapter

Member of Gamma Sigma Delta, Honor Society of Agriculture, NC State University Chapter

Full member of the Center for Gastrointestinal Biology & Disease – University of North Carolina at Chapel Hill

Honors

1994-1996	Student Fellowship. Universidad Nacional de Tucumán, Tucumán, Argentina.
1989-1995	Valedictorian. B.S Genetics Universidad Nacional de Misiones, Argentina
1996-2000	CONICET Fellowship. Argentina. Financial support provided to complete Ph.D.
2001-2003	Postdoctoral Fellowship. CONICET, Argentina.
2008-2012	Junior Faculty Simmons (Minority) Scholar.

C. **Peer-reviewed publications** (Selected from 26 peer-reviewed publications)

1. Altermann, E., Russell, W. M., **Azcarate-Peril, M. A.**, Barrangou, R., Buck, B. L., McAuliffe, O., Souther, N., Dobson, A., Duong, T., Callanan, M., Lick, S., Hamrick, A., Cano, R., Klaenhammer, T. R. (2005) Complete genome sequence of the probiotic lactic acid bacterium *Lactobacillus acidophilus* NCFM. Proc. Natl. Acad. Sci. U.S.A. 102: 3906-3912.
2. Bruno-Bárcena, J. M., **Azcárate-Peril, M. A.**, Klaenhammer, T. R., and Hassan, H. M. (2005) Marker-free chromosomal integration of the manganese superoxide dismutase gene (*sodA*) from *Streptococcus thermophilus* into *Lactobacillus gasserii* FEMS Microbiol. Lett. 246: 91-101.
3. **Azcarate-Peril, M. A.** McAuliffe, O., Altermann, E., Lick, S., Russell, W. M., and Klaenhammer T. R. (2005) Microarray analysis of a two-component regulatory system involved with acid resistance and proteolytic activity in *Lactobacillus acidophilus*. Appl. Environ. Microbiol. 71:5794-5804.
4. Barrangou, R., **Azcarate-Peril, M. A.**, Duong, T., Connors, S. B., Kelly, R. M., and Klaenhammer, T. R. (2006) Global analysis of carbohydrate utilization by *Lactobacillus acidophilus* using cDNA microarrays. Proc. Natl. Acad. Sci. U. S. A. 103: 3816-3821.
5. **Azcarate-Peril, M. A.**, Bruno-Bárcena, J. M. Hassan, H. M., and. Klaenhammer, T. R. (2006) Transcriptional analysis of oxalyl-CoA decarboxylase and formyl-CoA transferase genes from *Lactobacillus acidophilus*. Appl. Environ. Microbiol. 72:1891-1899.
6. **Azcarate-Peril, M. A.**, Altermann, E., Goh, Y. J., Tallon, R., Sanozky-Dawes, R. B., Pfeiler, E., O'Flaherty, S., Buck, B. L., Dobson, A., Duong, T., Miller, M. J., Barrangou, R., and Klaenhammer, T. R. (2008) Analysis of the genome sequence of *Lactobacillus gasserii* ATCC 33323 reveals the molecular basis of an autochthonous organism. Appl. Environ. Microbiol. 74: 4610-25.
7. Durmaz, E., Miller M. J., **Azcarate-Peril, M. A.**, Toon, S. P., and Klaenhammer, T. R. (2008) Genome Sequence and Characteristics of Lrm1, a prophage from industrial *Lactobacillus rhamnosus* strain M1. Appl. Environ. Microbiol. 74:4601-9.
8. **Azcarate-Peril, M. A.**, Tallon, R., and Klaenhammer, T. R. (2009) Temporal overall gene expression and probiotic attributes of *Lactobacillus acidophilus* during growth in milk. J. Dairy Sci. 92:870-876.
9. Goh, Y. J., **Azcarate-Peril, M. A.**, O'Flaherty, S., Durmaz, E., Valence, F., Jardin, J., Lortal, S. and Klaenhammer, T. R. (2009) Development and application of a upp-based counterselective gene replacement system for study of the S-layer protein SlpX in *Lactobacillus acidophilus* NCFM. Appl. Environ. Microbiol. 75:3093-105.
10. Bruno-Bárcena, J. M., **Azcarate-Peril, M. A.**, Hassan, H. M. (2010) Inactivation of manganese superoxide dismutase diminishes acid tolerance in bacteria. Appl. Environ. Microbiol. 76(9):2747-53.
11. Duong, T., Miller, M. J., Barrangou, R., **Azcarate-Peril, M. A.**, and Klaenhammer, T. R. (2010) Construction of vectors for inducible and constitutive gene expression in *Lactobacillus*. Microb. Biotechnol. 4(3): 357-367.

12. **Azcarate-Peril, M. A.**, Sikes, M. and Bruno-Bárcena, J. M. (2011) The intestinal microbiota, gastrointestinal environment and colorectal cancer: A putative role for probiotics in prevention of colorectal cancer? *Am. J. Physiol. Gastrointest. Liver. Physiol.* 301(3):G401-24.
13. **Azcarate-Peril, M. A.**, Foster, D. M., Cadenas, M. B., Stone, M. R., Jacobi, S. K., Stauffer, S. H., Pease, A., and Gookin, J. L. (2011) Acute necrotizing enterocolitis of preterm piglets is characterized by dysbiosis of ileum mucosa-associated bacteria. *Gut Microbes*. Volume 2, Issue 4 July/August 2011.
14. McCoy, A. N., Araújo-Pérez, F., **Azcárate-Peril, M. A.**, Yeh, J. J., Sandler, R. S., Keku, T. O. *Fusobacterium* is associated with colorectal adenomas and cancer. *PLoS ONE*. Accepted.
15. Devine, A. A., Speck, K. E., Gonzalez Pena, A., Knight, R., Helmrath, M., Lund, P. K., and **Azcarate-Peril, M. A.** Ileocecal resection dramatically affects the bacterial community of the murine small intestine and colon. *Gut Microbes*. Accepted.

D. Research Support

Ongoing Research Support

USDA-NIFA-AFRI-003449 (07/01/2012-06/30/2017)

Agriculture & Food Research Initiative: Food Safety (PI Hassan, Koci, Azcarate-Peril)

Development of novel *Salmonella* control practices and integrated education program to reduce Salmonellosis

NIH PA-08-190 (11/01/2012-10/31/2013)

Research Supplements to Promote Diversity in Health-Related Research (PI Lund)

Role of SOCS3 in probiotic action in colitis and colitis-associated cancer

Joint Genome Institute-Department of Energy –Community Sequencing Program

(PI: Bruno-Bárcena, CoPI Azcarate-Peril, CoPI Thon) (06/04/2010 - 06/03/2013)

“Genome sequencing and genomic comparison analyses of *C. acetobutylicum* ATCC 824-derivative strain SA-1 for optimization of biobutanol production”

University Research Council (PI Azcarate-Peril) (12/01/2010– 11/30/2012)

Impact of ileocecal resection ICR on bacterial diversity of small bowel and colon microbiota of conventionalized C57 Black 6 wild-type mice