

# Andrea M. Liceaga

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## **Appointments**

Associate Professor –Department of Food Science, Purdue University (2015-present)  
Assistant Professor –Department of Food Science, Purdue University (2009-2014)  
Director, Sensory Evaluation Research Lab- Purdue University (2013-present)  
Postdoctoral Fellow –Food, Nutrition and Health Department (FNH), UBC (2008)  
Faculty Instructor –FNH, UBC and Distance Education and Technology-Open Learning Agency, UBC (1999-2009)  
Faculty Instructor –Food Technology Program, School of Health Sciences, British Columbia Institute of Technology (2005-2006)

## **Professional (Academic) Preparation**

The University of British Columbia	Food Science (Food Chemistry)	Ph.D.	2006
The University of British Columbia	Food Science (Food Microbiology)	M.Sc	1999
ITESM, Guaymas, Mexico	Biochemical Engineering	B.Sc.	1996

## **Expertise**

*Research:* Structure-function relationships and interactions of food proteins and peptides, cryopreservation and shelf-life extension of fresh and frozen fish and fish products; development of value-added products from under-utilized resources; bioactive peptides; sensory evaluation of foods and beverages; entomophagy protein applications, vibrational (Raman) spectroscopy.

*Education:* Distance education learning & development of on-line courses, application of new approaches (interactive, web-based, problem based learning, etc.) to encourage more student-based active learning of food science undergraduate classes.

## **Teaching Appointments at Purdue Univ:**

Undergraduate	Aquatic Products; Dairy Products/Processing; Sensory Science; Introduction to Food Science
Graduate	Sensory Evaluation Techniques;
Extension	Introduction to Food Science (online, distance education); Sensory Evaluation Applications

## **Professional Memberships**

American Society for Testing and Materials (ASTM)  
American Chemical Society (ACS).  
American Fisheries Society (AFS).  
Canadian Institute of Food Science and Technology (CIFST).  
Institute of Food Technologists (IFT).  
International Society for Nutraceuticals and Functional Foods (ISNFF).  
Society for Sensory Professionals (SSP)

## **Select Publications**

1. Nguyen, E., Jones, O., Kim, B., San Martin, F. and Liceaga, A.M. (2017). Impact of enzyme treatment microwave-assisted hydrolysis on functional and antioxidant properties of Rainbow trout (*Oncorhynchus mykiss*) by-products. *Journal of Fisheries Science* (accepted for publication on 01/06/2017).
2. Hall, F. G. Hall, F., Jones, O., O’Haire, M., and Liceaga, A. (2016). Functional properties of Tropical Banded cricket (*Grylodes sigillatus*) protein enzymatically hydrolyzed with Alcalase. *Journal of Food Chemistry*. (DOI: <http://dx.doi.org/10.1016/j.foodchem.2016.11.138>).
3. Ketnawa, S., Hall, F. G. and Liceaga, A.M. (2016). Effect of microwave treatment on antioxidant activity and antigenicity of fish frame protein hydrolysates. *Food and Bioprocess Technology*. (DOI: 10.1007/s11947-016-1841-8).
4. Kim, Y.H.B., Meyers, B., Kim, H-W., Liceaga, A., and Lemenager, R.P. (2017). Effects of stepwise dry/wet-aging and fast freezing on meat quality attributes of beef loins. *Meat Science*. 123, 57-63.

5. Jang H.L., Liceaga, A. and Yoon, K.Y. (2016). Isolation and characteristics of anti-inflammatory peptides from enzymatic hydrolysates of sandfish (*Arctoscopus japonicus*) protein. *Journal of Aquatic Food Products Technology*. DOI:10.1080/10498850.2016.1221015.
6. Jang H.L., Liceaga, A. and Yoon, K.Y. (2016). Purification, characterization and stability of an antioxidant peptide derived from sandfish (*Arctoscopus japonicus*) protein hydrolysates. *Journal of Functional Foods*. 20: 433-442.
7. Mueller, J. and Liceaga, A. (2016). Characterization and cryoprotection of invasive silver carp (*Hypophthalmichthys molitrix*) protein hydrolysates. *Journal of Aquatic Food Products Technology*. 25(1):131-143.
8. Thomson, S., Applegate, B., Martyn, R., and Liceaga, A. (2015). Analysis of seed vigor responses in soybean to invasive silver carp protein hydrolysate treatments. *American Journal of Experimental Agriculture*. 5(3):178-191.
9. Ho, K., Ferruzzi, M.G., Liceaga, A., San Martin-Gonzalez, M.F. (2015). Microwave-assisted extraction of all-trans-lycopene in tomato peels and effect of extraction conditions on carotenoid profile. *LWT - Food Science and Technology*. 62(1):160-168.
10. Liceaga, A., Ballard, T. and Estes, L. (2014). Increasing content knowledge and self-efficacy of high school educators through an online course in food science. *Journal of Food Science Education* 13(2):28-32.
11. Cardoso-Ugarte, G.A., Sosa-Morales, M.E., Ballard, T., Liceaga, A. and San Martin-Gonzalez, M. F. (2014). Microwave-Assisted Extraction of betalains from red beet (*Beta vulgaris*). *LWT - Food Science and Technology*. 59(1):276-282.
12. Malaypally, S.P., Kim, K-H., Ferruzzi, M., San Martin, F., Goforth, R., and Liceaga, A. (2015). Influence of Molecular Weight on Intracellular Antioxidant Activity of Invasive Silver Carp (*Hypophthalmichthys molitrix*) Protein Hydrolysates. *Journal of Functional Foods*. 18:1158-1166.
13. Moser, S.E., Liceaga, A., Jones, O. and Ferruzzi, M.G. The effect of individual milk proteins on bioaccessibility of green tea flavan-3-ols. *Food Res. Int* 66: 297-305.
14. Liceaga, A., Ballard, T., and Skura, B. (2011). Incorporating a modified problem-based learning exercise in a traditional lecture and lab-based dairy products course. *Journal of Food Science Education*, 10(2):19-22.
15. Cheung, I., Liceaga, A. and Li-Chan, E.C.Y. (2009). Application of protease-hydrolyzed Pacific hake (*Merluccius productus*) hydrolysates as cryoprotective agents in frozen Pacific cod fillet mince. *Journal of Food Science* 74(8): 588-594.
16. Wang, H., Liceaga-Gesualdo, A., and Li-Chan, E.C.Y. (2005). Physicochemical properties of muscle and natural actomyosin extracted from farmed Atlantic salmon (*Salmo salar*) stored at 4°C. *Journal of Food Biochemistry*, 29(1): 71-87.
17. Wang, H., Liceaga-Gesualdo, A., and Li-Chan, E.C.Y. (2003). Biochemical and physicochemical characteristics of natural actomyosin isolated from fresh, young Atlantic salmon (*Salmo salar*) fillets stored at 0 and 4°C. *Journal of Food Science*, 68(3): 784-789.
18. Liceaga-Gesualdo, A., Li-Chan, E.C.Y., and Skura, B.J. (2001). Antimicrobial effect of lactoferrin digest on spores of *Penicillium* spp. isolated from bottled water. *Food Research International*, 34: 501-506.
19. Liceaga-Gesualdo, A., Li-Chan, E.C.Y. (1999). Functional properties of fish protein hydrolysate from herring (*Clupea harengus*). *Journal of Food Science*, 64(6): 1000-1004.

### **Conference Presentations**

- Hall, Jones, F.G., O.G., O’Haire, M.E., and Liceaga, A.M. (2016). Functional properties of tropical banded cricket (*Gryllobates sigillatus*) protein hydrolyzed using a commercial protease. Food Factor Conference. Barcelona, Spain.
- Ketnawa, S. and Liceaga, A. (2016). Effect of microwave treatments on antioxidant activity and antigenicity of fish frame protein hydrolysates. International Conference and Exhibition on Nutraceuticals and Functional Foods. Orlando, FL.
- Patois, C. and Liceaga, A. M. (2016). Consumer liking and descriptive analysis of French and American-made camembert and brie cheeses by American panelists. Seventh European Conference on Sensory and Consumer Research, EuroSense. Dijon, France.
- Rivera, S., Jones, O. and Liceaga, A. (2016). Antioxidant properties of whole hemp seed (*Cannabis sativa*) protein hydrolysates. Annual Meeting of the Institute of Food Technologists. Chicago, IL.
- Nguyen, E., Jones, O., Kim, B., San Martin-Gonzalez, F., and Liceaga, A. (2016). Antioxidant activity and functional properties of microwave-assisted Rainbow trout (*Oncorhynchus mykiss*) by-product hydrolysates. World Fisheries Congress. Busan, Republic of South Korea.
- Nguyen, E., Jones, O., Kim, B., San Martin-Gonzalez, F., and Liceaga, A. (2015). Enhanced functional properties and antioxidant activity of Rainbow trout (*Oncorhynchus mykiss*) by-product hydrolysates derived from microwave-assisted hydrolysis. Trans-Atlantic Fisheries Technology Conference. Nantes, France.

- Nguyen, E., Jones, O., Kim, B., San Martin-Gonzalez, F., and Liceaga, A. (2015). Effect of Microwave-assisted Hydrolysis on Functional Properties of Rainbow Trout (*Oncorhynchus mykiss*) by-product Hydrolysates. Annual Meeting of the Institute of Food Technologists. Chicago, IL.
- Liceaga, A. and Tahergorabi, R. (2014). Effect of an accelerated-reaction microwave system on functional properties of fish protein hydrolysates. Iberoamerican Conference on Food Engineering (CIBIA). Valencia, Spain.
- Liceaga, A., Ballard, T. and Estes, L. (2013). Increasing content knowledge of high school educators through an course in food science. Annual Meeting of the Institute of Food Technologists. Chicago, IL.
- Cummins, M., Harvey, E., Whittemore, J. and Liceaga, A. (2013). Application of fish protein hydrolysates for the fortification of a ready-to-eat therapeutic food. Annual Meeting of the Institute of Food Technologists. Chicago, IL.
- Mueller, J. and Liceaga, A. (2012). Fish protein hydrolysates from invasive silver carp (*Hypophthalmichthys molitrix*) impart cryoprotection in frozen fish mince from Atlantic cod (*Gadhus morhua*). Annual Meeting of the Institute of Food Technologists. Las Vegas, NV.
- Malaypally S. P., and Liceaga A. (2012). Antioxidant properties and amino acid composition of invasive Silver carp (*Hypophthalmichthys molitrix*) protein hydrolysates. Annual Meeting of the Canadian Institute of Food Science and Technology. Montreal, QC.
- Liceaga, A. (2010). Teaching Food Science Curricula to High School Educators to Promote Food Science Among High School Students. Annual Meeting of the Institute of Food Technologists, Chicago, IL.
- Liceaga, A. and Ballard, T. (2010). Encouraging reasoning about course subject matter by incorporating problem-based learning in traditional lecture and lab-based courses. Annual Meeting of the Institute of Food Technologists. Chicago, IL.
- Liceaga, A. and Li-Chan, E.C.Y. (June 2009). Tools for teaching and learning in introductory food science courses for large classes: Lessons learned over the years. Annual meeting of the Institute of Food Technologists. Anaheim, CA.
- Liceaga, A., Cheung, I.W. and Li-Chan, E.C.Y. (June 2009). Application of protease-hydrolyzed Pacific hake hydrolysates as cryoprotective agents in frozen Pacific cod fillet mince. Annual meeting of the Institute of Food Technologists. Anaheim, CA.
- Liceaga-Gesualdo, A. and Li-Chan, E.C.Y. (July 2005). Temperature-induced conformational behaviour of fish antifreeze glycoprotein (AFGP) and type-I antifreeze protein in solution, studied by Raman spectroscopy. Society for Cryobiology, 42<sup>nd</sup> Annual Meeting. Minneapolis, MN.
- Liceaga-Gesualdo, A., Creagh, L. and Li-Chan, E.C.Y. (July 2005). Physicochemical properties of frozen ling cod (*Ophiodon elongatus*) as affected by fish antifreeze proteins and other cryoprotective agents. Annual meeting of the Institute of Food Technologists. New Orleans, LA.
- Liceaga-Gesualdo, A. and Li-Chan, E.C.Y. (February 2005). Effects of antifreeze proteins on protein structure of frozen ling cod (*Ophiodon elongatus*) mince. Pacific Fisheries Technologists 56<sup>th</sup> Annual Meeting. Vancouver, BC.

### **Invited Talks and Workshops**

**Liceaga, A.** Understanding Sensory Analysis for Product Knowledge and Consumer Acceptance. Dean’s Advisory Council. West Lafayette, IN (March 2015).

**Liceaga, A.** Functional Properties of fish protein hydrolysates derived from an accelerated microwave reactor. IberoAmerican Conference of Food Engineering (CIBIA). Valencia, Spain. (January 2014)

**Liceaga, A.** Comparative characterization of invasive silver carp (*Hypophthalmichthys molitrix*) protein hydrolysates from multiple enzyme systems. International Society for Nutraceuticals and Functional Foods, Kona, HI (Dec 2012).

**Liceaga, A.** “Understanding sensory analysis for product knowledge and consumer acceptance”. Presented at Grand Challenge 9: Biofortification Projects Information Exchange Session. Seattle, WA. October 24, 2010.

**Liceaga, A.** “Sensory Evaluation: Applications and Techniques for Foods and Beverages”. Workshops offered throughout the year (2010-present).

### **Press Releases**

1. “What’s being done about Asian carp?” aired August 27, 2010. *WLFI, Ch.18, West Lafayette*. [http://www.wlfi.com/dpp/living\\_green/local-wlfi-lafayette-whats-being-done-about-asian-carp](http://www.wlfi.com/dpp/living_green/local-wlfi-lafayette-whats-being-done-about-asian-carp)
2. “Number of invasive Asian carp grow in Wabash river” August 30, 2010. *The Exponent*.
3. “Carp tortilla not as fishy as you think- Purdue Professor uses Asian carp as food ingredient” aired March 9, 2011. *WLFI, Ch.18, West Lafayette*. [http://www.wlfi.com/dpp/living\\_green/wlfi-lafayette-carp-tortilla-not-as-fishy-as-you-think](http://www.wlfi.com/dpp/living_green/wlfi-lafayette-carp-tortilla-not-as-fishy-as-you-think)
4. “If you can’t beat ’em, eat ’em?” September 20, 2011. *The Journal & Courier*. Lafayette, IN.

## **Extension:**

### • **Workshops, short courses**

- a. Sensory Evaluation Techniques and Applications for the food industry. Workshops offered to several food companies in Mexico, including Nestle-Mexico, Sigma Foods, ConAgra, Kraft, Coca-Cola, among others.
- b. Introduction to Food Science (FS 690). Online course offered once a year (summer) to high school educators and general public interested in improving their content knowledge and self-efficacy in the field of Food Science.
- c. Purdue Aquaculture & Sustainable Seafood (PASS) group dedicated to provide assistance to aquaculturists within the State of Indiana. Series of webinars and workshops on “aquatic waste utilization” and “maximizing the value of under-utilized aquatic resources and their by-products”.

## **Evidence of National or International Scholarly Activities**

- **Member of the Higher Education Review Board (HERB)** by the Institute of Food Technologists.

- **Member of Editorial Board:**

*Journal of Aquatic Food Product Technology*

*Journal of Food Science Education*

- **Member of the following voting-committee and subcommittees of the ASTM-  
International:**

E18 - Sensory Evaluation

E18.04 - Fundamentals of Sensory

E18.05 - Sensory Applications--General

E18.06 - Food and Beverage Evaluation

E18.07 - Personal Care and Household Evaluation

- **Ad Hoc Reviewer for Journals**

1. Journal of Aquatic Food Product Technology

2. Journal of Food Science

3. Journal of Food Science Education

4. Journal of Dairy Science

5. FEMS Microbiology Letters

6. Food Research International

7. Food Control

8. Agriculture

9. LWT-Food Science and Technology

## **Awards and honors received**

- Dr. Jack Long Undergraduate Teaching Award in Food Science 2014, 2015
- Undergraduate Counselor Award, Food Science Department 2014, 2015