Freiser Memorial Lecture

Tuesday, February 20, 2024
3:30 p.m. ~ WTHR 320

"New Analytical Methods for the Chemical Characterization of Food and Their Relationship to Health"

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Bio: Dr. Carlito B. Lebrilla is a Distinguished Professor at the University of California, Davis in the Department of Chemistry and Biochemistry and Molecular Medicine in the School of Medicine. He received his BS degree from the University of California, Irvine and Ph.D. from the University of California, Berkeley. He was an Alexander von Humboldt Fellow and a NSF-NATO Fellow at the Technical University in Berlin. He returned to UC Irvine as a President's Fellow and is presently at UC Davis. He has served as Chair of the Chemistry Department. His research is in Analytical Chemistry focused on mass spectrometry with applications to clinical glycomics and biofunctional food. He has co-founded several start-ups in the areas of bioactive foods and disease biomarkers. He has been awarded the Field and Franklin Medal for outstanding contributions to mass spectrometry, Molecular and Cellular Proteomic Lectureship in Glycobiology, UCD Outstanding Researcher Award and UCD Innovator Award. He is also Co-chief Editor of Mass Spectrometry Reviews and has been on the editorial board of several mass spectrometry and analytical chemistry journals.

Abstract:

The characterization of the components of food trails significantly those of animal tissues. To understand the relationship between food and health, we need to characterize food as well as we currently characterize animal tissues. Newly developed analytical methods based on mass spectrometry will be presented that determine the structures of food to monitor the effects of food products in cell lines and cells of animal models. The methods include rapid throughput and automated liquid chromatography - mass spectrometry techniques that provide with quantitation the monosaccharide and linkage information of the carbohydrate components of food. An agnostic digestion method was also developed to determine rapidly and accurately the polysaccharide compositions of the foods. Combining these tools with our existing glycomic and glycoprotemic methods for tissues, we obtain unprecedented knowledge of how the components of food produce cellular and animal tissues. These methods have also been used for translating the science into startup companies that are producing the next generation of functional foods.

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