ENDOWMENT PURPOSE
The John E. Kinsella Chair in Food, Nutrition and Health was established in 1994, after Dean Kinsella’s passing. The endowment was created using funds provided by General Foods that originally supported the late Professor Kinsella’s research in food science and human nutrition, with specific focus on the interrelationships between food, nutrition, and health. In keeping with Kinsella’s long-standing support and cultivation of junior faculty, the Kinsella Chair recognizes outstanding faculty members during the development stages of their careers.

RESEARCH
This generous endowment is instrumental in my ability to support graduate and postdoctoral scholarship and research focused on developing a comprehensive understanding of the chemistry of food in order to interpret the impact contemporary agronomic and post-harvest processing techniques have on quality and chemical food safety. This information can be then used to optimize the quality of fresh and especially processed foods and is critical for improving global health. During this past year our research efforts have focused on:

1. Identifying the basic chemical changes in composition that occur in tree nuts in response to moisture damage. Tree nuts exposed to moisture post-harvest can develop a discoloration and unpleasant taste upon roasting. Unfortunately, this concealed damage (CD) is not apparent until after roasting and there is currently no way to monitor CD in raw nuts. To address this, our lab is developing simple assay procedures (i.e. UV/IR) that will enable the industry to monitor for CD in raw almonds.

2. Developing analytical methods for quantifying trace levels of amygdalin (a compound responsible for the bitterness of almonds) in a range of sweet, semi-bitter and bitter almonds. The values we have generated, now enable phenotype classification to be based upon an analytical value and can help identify phenotypes for breeding purposes.

3. Identifying the composition of volatile compounds and amygdalin in almond samples taken from the tomb of Tutankhamun (~1330 BC); the hull of a Byzantine shipwreck (~410 AD) and from the Kew Gardens (~1800). Our data help to
understand how almonds were used and consumed in ancient times.

4. Develop novel macroreticular resin-based methods for debittering olive fruit under lowwater conditions; to enhance the quality/healthfulness of California style black ripe olives and improve the sustainability of this water intensive process.

TEACHING
Teaching is the most rewarding aspect of my career. I am responsible for three courses at UC Davis:

1. The Chemical and Physical Analysis of Foods (FST103): This is an upper-division core course in the Food Science curriculum. I thoroughly enjoy teaching this course, which meets three hours per week for general lectures and has four weekly three-hour laboratory sections, as it promotes one-on-one time with students. I have worked to improve the analytical capabilities of the teaching laboratory in order to raise the competency and marketability of our graduating seniors. I strive to keep lecture topics relevant and focused on addressing contemporary needs of the industry. Food manufacturing has changed at an unprecedented rate and is now a globalized endeavor. Ingredients are increasingly purchased abroad, through brokers, and manufactured in food products in the US. This past year, I incorporated information on how analytical chemistry can be used to support supply chain management and ingredient sourcing (e.g. validation, authentication, certificates of analysis, etc.). The students responded very positively to this new presentation of information as it links the chemistry they learn in the classroom directly to contemporary food manufacturing issues.

2. Food Toxicology (FST128): This is an upper-division course offered in both Food Science & Technology and Environmental Toxicology. This course meets three hours per week and covers basic principles of pharmacology and toxicology, animal, plant and marine toxins, toxicants arising from food processing and now, global issues in food adulteration. I continue to develop new curricula for this course to keep it dynamic. New lectures include: Global Food Sourcing & Adulteration-The Melamine Story; Food Colorants: Natural vs. Certified Dyes, and Ingredients and Additives.

3. Food, Folklore and Health (FST10): This is a large (~450-525 student), fast paced undergraduate freshman course. This course meets three hours a week and is ton of fun to teach. I strive to bring current insights into the curriculum lecturing on topics such as: Contemporary Food Movements: Industrial Agriculture, Organic Foods, Local Foods and Food & the Obesity Epidemic. Teaching a freshman course this size has required a very different approach to conveying information. I keep students engaged by incorporating videos, practice questions, pictures and humor into the lecture materials.

My teaching commitments extend far beyond the classroom and teaching laboratories. I have been very active mentoring undergraduate and graduate students (4 students), a postdoctoral scholar and several visiting scholars from Greece, China and Spain. I am Master Advisor for the Food Science & Technology major, and advisor in the Agricultural and Environmental Chemistry and Food Science graduate groups.

STUDENT TRAINING
This past year, Dr. Jihyun (Jeannie) Lee was supported in-part through the Kinsella Endowment as a postdoctoral scholar. Jeannie's research focused on developing UPLC-QTOF-MS methods for identifying and quantifying target and nontarget secondary plant metabolites and toxins in foods for authentication, safety and biological relevance. During this past year Jeannie published 2 manuscripts (Quantification of Amygdalin in Nonbitter, Semibitter, and
Bitter Almonds (Prunus dulcis) by UHPLC-(ESI)QqQ MS/MS, J Agric Food Chem. 2013; HS-SPME GC/MS characterization of volatiles in raw and dry-roasted almonds (Prunus dulcis), Food Chemistry, 2013. Kinsella funding was also used to support the research activities of Cristian Rogel-Castello, a graduate student on an international scholarship from Chile; and the research activities and salaries of Suthawan Charoenprasert, a graduate student from Thailand and Rebecca Johnson, a graduate student from the US.

UPCOMING ACTIVITIES
These funds will further support Jihyun Lee, Cristian Rogel-Castello, Suthawan Charoenprasert and Rebecca Johnson so that they can continue pursuing research and scholarship activities including presenting at the National Meeting of the American Chemical Society, April 2015.

SPECIAL ENDOWMENT USE
The Kinsella Endowment has largely been used to support the salaries and research activities (e.g. supplies, chemicals standards, waste removal, etc.) of students as discussed above. In the coming year, we hope to leverage some of the endowment funding to purchase an auto-sampler for our existing GC/MS and potentially a used UHPLC-MS/MS system from Agilent Technologies.