2014–15 HIGHLIGHTS
After completing her PhD in the faculty six years ago, Brazilian Carla Prado returned as the newly appointed CAIP Chair for Nutrition, Food and Health. She’ll examine the interaction between abnormal body composition—ratios of muscle and fat tissues—and overall health, paying particular attention to the role food people eat plays on their body composition, and, in turn, on their health.

Her recent research indicates that abnormal body compositions can occur at all body weights and predict complications in clinical conditions such as diabetes and cancer. “In the future, body composition could be something that we can use during diagnosis to decide the treatment of a patient,” she says.

Carla Prado will examine the interaction between abnormal body composition and overall health.
Jens Walter, CAIP Chair for Nutrition, Microbes and Gastrointestinal Health, is starting two research programs to examine the relationship between gut bacteria populations and human health. The German researcher will examine the symbiotic relationship between gut microbes and their host. He’ll also identify how diet impacts the microbial communities in the gut and what consequences they have on human health.

Eventually, he anticipates he will design dietary strategies to target gut bacteria.

Walter noted animal models demonstrate gut bacteria can contribute to obesity and autoimmune disorders. He’s excited to bridge the gap between these animal models and human applications through his research programs.

CAIP was created in 2011 by the provincial government to recruit new research leaders to Alberta in food and nutrition, energy and the environment, water and neuroscience.
A new, joint research centre established by AFNS and one of China’s top agricultural university will focus on the development of climate change-resistant crops.

“The world’s population is going to hit nine billion by 2050,” explained Nat Kav, a plant biochemist and biotechnologist who will lead the effort. “Crop productivity is going down as a result of climate change, arable land is decreasing, in China and India, available land is in high demand, but many areas may be marginal, with high salt content and temperature changes. So if we are going to feed nine billion people, we need a serious effort to improve the productivity of crops.”

The Department is partnering with Northwest Agriculture & Forestry University, one of the top agriculture and forestry institutions in China. It has several of the country’s most important laboratories, particularly in the area of...
The Department’s programs continue to rank among the world’s best, according to the 2014 rankings from National Taiwan University, the world’s most respected university rankings.

Overall, the University of Alberta’s agriculture program was ranked 41st in the world. In the past four years, the University of Alberta’s agriculture program has consistently ranked between 39th and 41st.

In determining the rankings, National Taiwan University has subdivided the agriculture section into three sub-fields, namely agricultural sciences, environment/ecology, and plant and animal sciences. The U of A ranked 45th, 35th and 61st respectively.

“Our department is committed to research and teaching excellence and it’s gratifying to see all the hard work of our researchers being recognized,” said Ruurd Zijlstra, chair of the Department of AFNS.

National Taiwan University uses three criteria to determine the rankings, research excellence, research impact and research productivity.

Research excellence is the most heavily weighted criterion, at 40 per cent. It looks at the h-index of faculty members along with the number of highly cited papers and number of articles in high impact journals. Research impact accounts for 35 per cent of the ranking and looks at citations while research productivity, which is weighted at 25 per cent of the ranking, looks primarily at the number of published scholarly articles.

Agriculture program consistently among world’s best

In addition to providing access to each other’s research facilities and expertise, the centre will facilitate the exchange of information between the two institutions, the submission of joint research proposals to funders, and the joint supervision of graduate students. Over the next five years, it is hoped three to five students from both institutions will receive training through the centre.

crop science, said Kav. The U of A already has an undergraduate student agreement with the university, so there are now graduate students employed there “who are knowledgeable about our way of doing things.”

ALES Associate Dean, Academic, Nat Kav, will lead the faculty’s activities at the Agriculture and Food Innovation Joint Research Centre, a partnership between China’s Northwest Agriculture & Forestry University and the Department of AFNS.
A bite-sized lemon tart with a crust made of beans and peas earned AFNS food science students the top prize at the regional Mission ImPULSEible competition last year.

“There are a limited variety of gluten-free desserts in the market and we wanted to create a tasty and relatively healthier gluten-free dessert to meet market demands,” said Kaixing Tang, one of three students that formed the winning team.

The Peamon Tart has a traditional sour-sweet filling but its gluten-free shell is made from a mixture of canned pulses: red kidney beans, chickpeas, romano beans and great northern white beans.

It took the team between 30 and 40 hours to perfect the winning tart.

Competition judges evaluated the products submitted by three competing teams based on sensory and health attributes, innovative use of pulses, and the feasibility and marketability of the food item. The Peamon Tart entry marketed pulse benefits through a website and a jaunty low-budget video.

Last year’s national winning team was also from AFNS. It won the $2,500 grand prize with Pulse Pops, a frozen treat consisting of chickpeas, pea butter and soy nuts, wrapped with black bean and cacao and rolled in chocolate and coconut. Previous national winners from AFNS include a team that developed gluten-free chips in 2**11**.

Mission ImPULSEible is an annual competition staged by Pulse Canada and the Alberta Pulse Growers to promote the benefits of pulses.

Unique pulse dessert takes home top prize

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Grad students take home first annual Alberta Barley scholarships

Two AFNS graduate students are among the first-ever recipients of a scholarship for their research benefitting the barley industry.

Masters student Laurel Perrott and PhD student Alireza Akhavan are two of the three recipients of the brand-new Alberta Barley Scholarships. Perrott’s project involves conducting intensive agronomic practices to increase yields for feed barley. The practices will take place over three years in four sites across Alberta and will include combining high fertilizer rates with plant growth regulators, foliar fungicides, high seeding rates and different barley varieties. The first field season was last summer.

“We’re hoping to find treatment synergies that increase barley production in Alberta and hopefully increase profitability for farmers too,” said Perrott.

Akhavan, who is in the fourth year of his PhD program, is studying the fungal pathogen that causes net blotch in barley, which he estimates costs Canadian barley producers about $100 million a year.

Specifically, his project is focused on genetic diversity, fungicide sensitivity and resistance screening. He is currently working on host resistance and fungicide application, which will benefit prairie barley producers, breeders and the industry.

“If we can reduce the yield loss due to this disease by even 10 per cent, I think I will have accomplished my mission,” he said.

Each Alberta Barley Scholarship is valued at $2,000. The award was established in 2014 to encourage emerging scientists conduct feed barley-related research.
Research Infrastructure

Animal geneticist Roy Berg gets his due
Fifty-four years after a young U of A animal geneticist obtained funding to buy a ranch, traveled the province and found the perfect piece of land to conduct his cattle research program, he got his due.

In August 2014, the Kinsella Research Station was re-named the Roy Berg Kinsella Research Station during a ceremony attended by more than 350 people.

Berg bought the 6,000-acre Kinsella Research Station, on behalf of the university, in 1960, with provincial government funding. He conducted what was at the time highly controversial research, using selective cross breeding on beef cattle to pass on desirable traits from a variety of breeds. It ultimately resulted in a 30 to 40 per cent increase in production.

In 2008, the research facility doubled in size when the university acquired the adjacent property. Today, it is the research home of Livestock Gentec, which seeks to constantly produce healthier, more productive livestock.

The Roy Berg Kinsella Research Station is one of several research facilities operated by the Department. Others include:

Agri-Food Discovery Place, a world class innovative research, training and technology transfer facility specializing in food safety, value-added processing and value-added bio-refining of food and industrial products.

The Crops and Land Resource Unit supports research in agronomy and breeding to improve the sustainable production and quality of forage, cereal, oilseed and horticulture crops.

The Human Nutrition Research Unit is a state-of-the-art research and training facility that supports nutrition research in, but not limited to, adult and child-related health concerns including diabetes, cancer, cardiovascular disease and obesity.

Clockwise from left: the newly re-named Roy Berg Kinsella Research Station; wheat crops on South Campus; poultry researcher Martin Zuidhof at the Poultry Research Centre; graduate students working in the Meat Safety and Processing Research Unit of Agri-Food Discovery Place.
The **Swine Research and Technology Centre** supports research in swine production efficiency and sustainability, feeds and feedstuff utilization, as well as reproduction and breeding herd management. It houses swine facilities, laboratories and a surgery and interpretive unit.

The 12,000-acre **Rangelands Research Institute – Mattheis Ranch** supports research in grazing system production, reclamation, drought management and water conservation, and business diversification, all with a goal of enhancing the long-term economic and environmental sustainability of rangeland.

The 800-acre **St. Albert Research Station**, located just north of St. Albert, supports agronomic and environmental research.

Other research infrastructure includes the plant growth facilities, the plant pathology lab and the many laboratories in the Agriculture/Forestry Centre and other university buildings that support research in food microbiology, product development, consumer and sensory evaluations, and genomics and proteomics.

The **Poultry Research Centre**, which supports research in reproductive efficiency, controlled environment, nutrition, production efficiency and economics, value-added product development, packaging and food safety. It houses a technology centre, a hatchery, environmental chambers and more.

The Department of Agricultural, Food & Nutritional Science supports research in swine production efficiency and sustainability, feeds and feedstuff utilization, as well as reproduction and breeding herd management. It houses swine facilities, laboratories and a surgery and interpretive unit.

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The following AFNS faculty members were awarded distinctions in 2014-15: