

Our
knowledge
is your
advantage





Dr. Ian Morrison, Dean

Leading Education & Research

In the past year AFNS has continued to pursue its vision of being a national leader - both in educating undergraduate and graduate students, and in supporting innovation in the agri-food system through world-class research that spans primary agricultural production through human health. Changes have included substantial revisions to the Nutrition and Food Science curriculum and recruitment of several outstanding new academic staff members across several disciplines. The Department's student numbers have expanded with increased enrolment in both the Pre-Veterinary Medicine and Nutrition and Food Science programs. With the generous support of both alumni and industry supporters, scholarship and bursary support for students continues to grow.

The Department remains attuned to the needs of both industry and the public and works hard at maintaining connections with stakeholder organizations including commodity associations, processors, regional health authorities and counterparts in both the provincial and federal governments. These linkages, coupled with our modern research facilities and strong support from the Province and University, have enabled AFNS to create a culture of excellence in teaching and research that is a credit to both the University of Alberta and our province. This report features the achievements of several of our staff members, including two of our students' perennial favourites and repeat winners of teaching awards, Frank Robinson and Erasmus Okine. Read on!

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Dr. John Kennelly, Chair

Investing in the future

This past year Alberta's beef industry has been deeply challenged by the fallout from the discovery of Bovine Spongiform Encephalopathy (BSE). This could not have come at a worse time for an industry already suffering from several years of drought. The challenges faced by the agricultural sector have highlighted the importance of diversifying the agrifood industry so we reduce our reliance on highly volatile commodity markets. AFNS is committed to providing the research and development foundation to help ensure the sustainable diversification of our agricultural resources. The creation of the Institute of Food and Agricultural Sciences, Alberta builds a framework that encourages collaboration and integration of our research and development efforts with those of Alberta Agriculture, Food and Rural Development and the Alberta Research Council.

facility for nutrition research that will increase our knowledge of nutrition and its relationship to health.

Construction of the \$24 million Agri-Food Discovery Place begins this fall. This specialized research center, focused on developing value-added food and non-food products from Alberta's abundant animals and crops, will open in the fall of 2005. The new Alberta Institute for Human Nutrition at the University of Alberta, headed by Dr. Clandinin, will establish a world class

AFNS scientists are developing ideas and building research capacity to lead the national agricultural industry to success and ensure our health. For example, Dr. Okine is looking at fat formation in beef cattle to increase marbling fat and decrease commercially undesirable back fat. Dr. Moore's innovative \$5 million Agricultural Genomics and Proteomics Centre is attracting international attention. AFNS plant scientists Drs. Rahman and Strelkov, are improving canola yield and quality, in part by identifying and developing strategies to control plant diseases. Drs. Bressler and Narine are experimenting with agricultural commodities to create novel and valuable products to expand traditional markets. Drs. Field and Bell are leading research in infant nutrition and fitness and health. These along with our other research programs and our aggressive recruitment of outstanding new staff are examples of how AFNS is helping to build a better future for Canadians.

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Feeling the Impact

Hold on to your hats! Agriculture in Alberta is about to make a major change for the benefit of us all. There is a new "kid on the block" - IFASA. IFASA, Institute of Food and Agricultural Sciences, Alberta is the "child" of creative thinking of three major research providers in Alberta:

- *Alberta Agriculture, Food and Rural Development (AAFRD),*
- *the UofA and*
- *the Alberta Research Council (ARC).*

In May 2003, the three partners agreed to consolidate their resources and jointly develop and deliver agricultural, agri-food and agri-industrial programs. Once established, IFASA will be an internationally recognized food and agricultural science "hub" to coordinate and deliver excellence in discovery, training and technology transfer and commercialization.

IFASA has already secured \$35 million over five years from the Provincial Government to initiate its programs and with strong interest from the industry and continued support from the Alberta Government; the institute will attract new partners and new funds. IFASA will also attract the most promising students with \$13 million in IFASA Graduate Student Scholarships and by providing exciting learning opportunities through the collaborative, inter-disciplinary and inter-institutional programs. In addition, IFASA will offer professional training for individuals already in the workforce. Students and professionals will become a sophisticated workforce in support of Alberta agri-industry.

Although the current planning framework for IFASA extends over five years, the institute is looking at establishing long-term relationships with current and new partners, including industry and the federal government that would extend well beyond the five years. This futuristic thinking and Alberta's long-term investment strategy will attract and retain the brightest minds in agri-food research to help Alberta build strategic areas of excellence for current and future needs.

IFASA is currently developing seven programs focused on two priorities for Alberta as outlined in the 2003 Agricultural Strategic Research and Innovation Framework: the Value-Added Products and the Sustainable Production Systems. However, IFASA has also recognized that this is only the beginning; there are more exciting and innovative programs to follow in the future.

In the Value-Added Products area, IFASA is developing:

- *Value Enhanced Meats and Meat Products Program,*
- *Food, Food Ingredient and Fermentation Products Program,*
- *Health, Wellness and Performance Products Program and*
- *Bioproducts Program.*

In the Sustainable Production Systems area, IFASA is developing:

- *Feed Quality and Feed Supply Program ,*
- *Genomics Program and*
- *Nutrient Management and Environment Program.*

What will result from IFASA's activities? IFASA programs will deliver new technologies, new products and develop a modern workforce, ready to meet the challenges facing our agri-food industry in the 21st century.

Like with all children, IFASA needs time to grow and develop, but with this collaborative effort from IFASA partners and with contributions of scientists from other research institutions in Alberta, IFASA is shaping up for an official launch in January of 2005, with the IFASA Graduate Student Scholarships to be announced in the fall of 2004.

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Age of Discovery



Agri-Food Discovery Place

- Meat Safety and Processing Research Centre;
- Crops Utilization & Enhanced Industrial Materials Research Centre

Agri-Food Discovery Place (AFDP) begins construction in the fall of 2004. It will be a world-class facility for leading-edge research in meat safety and processing, crop utilization, and advanced materials and bioprocessing. At a cost of \$18.2 million, it will consist of over 5,000 sq. m. of pre-pilot, laboratory, support and office space. The facility is designed to provide an intermediate step between laboratory scale research and pilot plant scale product development currently available at other locations in Alberta.

The meat processing industry in Alberta employs over 7,000 Albertans and markets \$4.6 billion annually to domestic and international markets. Retaining Alberta's

reputation for producing safe, high-quality food is critical to our economy. Research conducted in the Meat Safety and Processing Research Centre will focus on the proper handling and microbial contamination of meat: new processing technologies and innovative packaging methods to improve the safety of the food system and reduce foodborne illness; and technologies for developing value-added meat products. The processing area is a biocontainment area for work with foodborne pathogens, the first of its kind in Western Canada.

Functional foods and bioproducts (*including biofuels and bioplastics*) are priority areas. Isolating crop components with health benefits and incorporating them into new food products is an important part of the value-added food industry. With the depletion of the world's non-renewable resources and the demand for biodegradable products, the use of agricultural materials for specialized industrial materials is on the rise. The focus of the research programs conducted at the Crop Utilization and Enhanced Industrial Materials Research Centre will be on primary (*dry processing*), secondary (*wet separation processes*) and tertiary (*conversion processes*) levels of processing, targeting novel process development for crops. The Centre will be unique in bringing all of the above aspects together under one roof to maximize value addition to Canadian crops.

Richard Smith
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Pig Science Centre Opens

*Did you know that it is impossible to sweat like a pig?
Or that a pig sty is actually a clean living area?*

The fact that pigs don't have sweat glands and keep a neat home are but a sampling of the tantalizing trivia awaiting your discovery at the new Alberta Pork Industry Interpretive Centre, which opened at the Swine Research and Technology Centre at the University of Alberta's Edmonton Research Station.

Through interactive displays, children and the general public now have an opportunity to learn about the pork industry, from how pigs are cared for, to what they eat, how they are housed and even what is done with the manure they produce.

"Thirty years ago everyone had some connection to a farm. But today they never see the inside of a barn," says Paul Hodgman of Alberta Pork. Having a hog production facility in a major metropolitan centre is an excellent opportunity for members of the public to learn how farms work, and is a natural fit for the University of Alberta's teaching and research activities. The 150 m² facility, primarily focussed at students in Grades 4 to 6, is funded by Alberta Pork and the Alberta Livestock Industry Development Fund.

The centre is open to the public free of charge. Contact Alberta Pork at (780) 474-8288 for tours.

Dr. George Foxcroft (780) 492-7661 or george.foxcroft@ualberta.ca

Functional Food on Hooves

Dr. Erasmus Okine's comprehensive ruminant nutrition and metabolism research program is diverse. One of his objectives is to better understand the process of fatty acid synthesis with the aim of developing systems to produce high quality beef. "Consumers also want to know the health benefits of their food," Dr. Okine explains. That's why he's collaborating with researchers from AFNS, Alberta Agriculture, Food and Rural Development and Agriculture and Agrifood Canada to study conjugated linoleic acid (CLA).

Tests in animals and in-vitro human cell lines have shown CLA to have powerful anticarcinogenic properties. CLA is a by-product from microbes processing linoleic acid in the cow's rumen. Dr. Okine's challenge is to understand the process of fat formation and deposition in beef cattle so as to maximize CLA production and incorporation into beef, resulting in more marbling fat and less of the commercially undesirable back fat.



Dr. Erasmus Okine

Besides Dr. Okine's leading research program, he has also won two prestigious awards which highlight his commitment to teaching. The Student's Union Award for Leadership in Undergraduate Teaching Excellence (SALUTE) recognizes the powerful positive connection he has made with his students. The Animal Industries Award in Extension and Public Service was also presented to Dr. Okine in 2003 because of his career contributions to the animal industries of Canada in technology transfer, leadership, and education in animal science. As both a researcher and teacher, Dr. Okine makes the AFNS community a great place to learn!

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Uncovering the Truth

Tackling controversy to discover the truth is a scientist's job. AFNS scientist, Dr. Bob Christopherson has focused his research on understanding how a major industrial pollutant, sulphur dioxide (SO_2), impacts cattle health and metabolism.

Dr. Christopherson's work is the first to directly link animal health to SO_2 , a component of sour gas. His three year study, done in collaboration with scientists from the Alberta Research Council, tested cattle pulmonary exposure to SO_2 . The lowest weekly average exposure to SO_2 was 0.175 ppm with episodic exposures ranging from 1 to 20 ppm.



Dr. Bob Christopherson

"Even at low levels of sulphur dioxide, cattle have greater feed requirements and suppressed immune function which might make them more susceptible to infection," explains Dr. Christopherson. Plasma

concentrations of Vitamin E were also decreased in the cattle exposed to SO_2 . This response may indicate more need for Vitamin E, which is an antioxidant that may help fight oxidative stress resulting from SO_2 exposure.

The Alberta Beef Producers Canada-Alberta Beef Industry Development Fund, Alberta Agricultural Research Institute and NSERC have all supported Dr. Christopherson's research.

The Laird W. McElroy Metabolism and Environmental Research Centre, located at the Edmonton Research Station was essential for this work as it has specialized facilities to assess gas exchange in livestock.

Dr. Robert Christopherson
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Teaching in a Living Classroom

Examining the inside of a combine is just one of the opportunities students had in Dr. Linda Hall's Plant Science 499 class: Cropping Systems. Part of the challenge in the curriculum is a detailed analysis that examines the strengths, weaknesses, opportunities and threats facing a real Alberta farm. *"I'm challenging the students to take all of the information that they've learned in previous years—including crop rotation, fertility, soils, economics, environmental farm planning and agronomic issues—and put that knowledge into a crop systems framework,"* says Dr. Hall.

"You can learn all about the advantages of a diverse crop rotation, but the challenge is to implement that in Oyen, for example, where they only get ten inches of water per year." Dr. Hall explains. Together, the students visit three farms in diverse climates that they will analyze during the course. Besides the practical part of the analysis, they build team skills and gain an understanding of who else is working in the industry. Guest lecturers in the course include farmers, agronomists and scientists who are linked to the various cropping systems that the students study. *"The farmers that we studied were very, very good, so I don't think we offered them any surprises,"* says Dr. Hall. *"What we did was impress them with the professionalism of the students."*



Dr. Linda Hall

Teaching is a strength in the community of AFNS. Dr. Hall's hands-on approach to learning is building competent, professional agricultural leaders who can understand modern farming in a holistic way.

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Research Makes Sense

The Faculty of Agriculture, Forestry, & Home Economics prides itself in enhancing the future opportunities for undergraduate research initiatives. Dr. Frank Robinson, winner of numerous undergraduate and graduate teaching awards, has been working to promote student research.



Dr. Frank Robinson

Student research projects increase student satisfaction, provide team work experience, create networking opportunities for students and introduce them to the research environment. Student research projects also help undergraduate students develop skills in research techniques and integrate and reinforce concepts covered in other courses.

"We are encouraging students to gain confidence and expertise in an area and to communicate their knowledge to fellow students, faculty, and in some cases, to industry," says Dr. Robinson. *"It's about critical thinking rather than regulation."* Students report that they gained life-long skills in their undergraduate research projects which they did not encounter any other place in their undergraduate program.

Dr. Frank Robinson (780) 492-3234 or frank.robinson@ualberta.ca

DID YOU KNOW?

"Poultry team was awarded with the World's Poultry Science Education Award at a ceremony in Istanbul, Turkey in June 2004. The significant cash prize that accompanied the award will be used to develop accessible and easily understood poultry production lessons for people around the world who raise poultry."

The Fatty Acid Formula

In 2003, after more than a decade of research, companies in Canada and the US are allowed to market formula with fat balance that helps improve a baby's brain function, vision and immunity. This new value-added product is available to consumers due, in part, to the work of AFNS researcher Catherine Field. Adding the fats arachidonic acid (AA) and docosahexaenoic acid (DHA) in baby formula has been an essential requirement in other parts of the world such as Europe since around 1999, according to Dr. Field.



Dr. Catherine Field

Over the past 6 years, Dr. Field and her colleagues, Tom Clandinin from AFNS and John Van Aerde from the Department of Pediatrics have conducted studies in both preterm and full term infants to determine the balance of AA and DHA fatty acids that ensures optimum growth and immune development. Dr. Field says "babies appear to have a specific requirement for fats like DHA and AA while they're young due to their rapid growth". Studies from the US, Europe and Australia have reported that babies fed formula containing AA and DHA score a couple of points higher on IQ tests as compared to their peers fed traditional formulas.

Dr. Field continues to conduct research on improving infant formulas and is now extending these studies to identify compounds that might improve immune function at weaning. Together with Ceneva Inc. she is examining the addition of beta-glucans to the diet on the ability to resist infections. In these studies and those funded by the CIHR to examine the amino acid glutamine, she is conducting studies in a novel piglet model at the University of Alberta, Metabolic Unit. The piglet is a useful animal model of the human infant to do studies on the importance of diet to the intestine and immune system.

Dr. Field hopes to determine if these food components/nutrients will help reduce the incidence of bacterial infection in infants. Dehydration due to diarrhea is the leading cause of infant hospitalization in the developed world and is the leading cause of infant death in developing countries.

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Taking Steps Towards Fitness

There is a saying that every journey begins with a single step. A new University of Alberta program wants to help people with Type 2 diabetes count their steps as they make lifestyle changes to help control their diabetes.

Healthy eating and physical activity are cornerstones in diabetes management, but making lifestyle changes that stick can be difficult. New research by Drs. Rhonda Bell and Linda McCargar are at the forefront of finding new, straight-forward ways to adopt a healthier lifestyle. It started several years ago, when Dr. Catrine Tudor-Locke, working with Dr. Bell, developed a pedometer-based walking program, called the First Step Program (FSP). Although successful at helping people with Type 2 diabetes increase their physical activity, changes in health indicators over the 16 weeks of the FSP were small. Thus, the FSP really is that - a first step toward a healthier lifestyle.

The new programs build on the successful part of the FSP. The first new program, First Step - First Bite, combines the FSP with information about diet, to help people optimize their blood glucose control and decrease their risk of cardiovascular disease. The simple nutrition message of "eat a low GI diet" is intertwined into the FSP. The second new program, aptly called "The Second Step Program", is still in the preliminary stages. It builds on the FSP and incorporates duration and intensity or speed into the walking goals established in the FSP. A close partnership with colleagues in Physical Education will allow the objective testing and monitoring of how close people can come to achieving their physical activity goals.



U of A On the Move pedometer

All of these programs also have implications for people without diabetes who wish to become more physically active. Last year, U of A On The Move was launched after the U of A Board of Governors asked university administrators to find

ways to implement recommendations from the report of the University Senate's Task Force on Health and Wellness.

Dr. Rhonda Bell (780) 492-7742 or rhonda.bell@ualberta.ca

Growing Market for Saskatoons

Despite being known as a unique and flavourful fruit, fresh saskatoon berries are not available at the grocery store. That will change if Dr. Jocelyn Ozga has her way. "Saskatoons lose their flavour within hours after harvesting", Dr. Ozga explains. "Fresh saskatoons are either unavailable, or of poor quality when they are bought fresh." Dr. Ozga is trying to determine the main flavour components of saskatoon fruit. She is also experimenting with special films, to extend shelf-life and saskatoon fruit flavour, in collaboration with Dr. Wendy Wismer, Sensory Scientist in AFNS.

"By enclosing the fruit in plastic films made of polymers which restrict the amount of oxygen available to the fruit, we can slow down the respiration rate of the saskatoon berries. This decreases the breakdown of the flavour volatiles and other flavour components". Too little oxygen will cause the fruit to use anaerobic respiration, producing ethanol and lactic acid, which make for bad flavour. *"There is a delicate balance."* says Dr. Ozga. She is experimenting with a modified atmospheric packaging that will reduce oxygen levels and increase carbon dioxide surrounding the fruit while still allowing for aerobic respiration.

Dr. Jocelyn Ozga



Saskatoon berries

The fruit also contains antioxidants. Antioxidants protect cells by trapping damaging free-radicals, implicated in heart disease

and cancer. Dr. Ozga is attempting to determine the type and amount of the antioxidant anthocyanins, which are the compounds that give the berries their characteristic purple-blue colour. *"We're profiling the anthocyanins across the developmental period as the fruit matures and gains colour,"* she says. Funding for Dr. Ozga's research is provided by the Alberta Consortium, with the majority coming from AVAC Ltd.

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Plastic Canola?

Is it really possible to turn canola oil into biodegradable plastic? Dr. Suresh Narine, AFNS Associate Professor and Director of the Alberta BioPlastics Network is making it happen. *"This project has received much attention because of the implications for lucrative returns to the canola industry,"* explains Dr. Narine.



Dr. Suresh Narine

Multi-institutional collaboration has been one of the key reasons why Dr. Narine has had so much success. The BioPlastics Network is composed of individuals from AFNS, the Department of Chemical and Materials Engineering, Alberta Agriculture, Food and Rural Development, the Centre for Agri-Industrial Technology, Alberta

Research Council, Alberta Economic Development, Environment Canada, Agriculture and Agri-Food Canada, Toma and Bouma Management Consultants, and the Alberta Canola Producers Commission. Dr. Narine describes that *"the research is now at the stage where we are beginning to construct a pilot facility, to scale up the processes developed in the lab. Additionally, research is being conducted on improving the efficiency of the process and the functionality of the plastics produced."*

With multiple research projects happening, Dr. Narine is always interested in having talented, dynamic, and motivated people join his research group. At the moment, he has opportunities for graduate students with an MSc or BSc in Chemistry or Physics. If you are interested in direct industrial applications for your graduate work, you should meet with Dr. Narine.

Dr. Suresh Narine (780) 492-9081 or suresh.narine@ualberta.ca



BioPlastics Research

Birds and the Bees in the 21st Century

Imagine what it would cost to charter your own plane from France?

Prairie swine producers could pay up to \$100,000 to bring live pigs embryos from France to the Canadian Prairies, in order to introduce new genetics to their herds. For Alberta's swine industry, Dr. Michael Dyck, Reproductive Physiologist is working on making embryo transfer more accessible by establishing efficient and reliable techniques.



Dr. Michael Dyck

Dr. Dyck brings both a strong scientific and business background to his position in reproductive physiology and biotechnology. As a laboratory director with TGN Biotech, in Ste. Foy, Quebec, he has had practical experience with embryo transfer, freezing boar semen, molecular biology, and generating transgenic mice and pigs. *"I can take technology that is not normally used in the industry and look for places where it can be applied to improve animal reproduction efficiency,"* Dr Dyck explains.

For AFNS, Dr. Dyck's expertise will complement the scientific activities happening at the Swine Research and Technology Centre. He will also expand on the current undergraduate animal science training by offering an entire course about the reproduction of domestic livestock, focusing on anatomy, physiology and reproductive endocrinology.

Dr. Michael Dyck (780) 492-0047 or michael.dyck@ualberta.ca

Biocatalyst Pioneer



Dr. David Bressler

"Agricultural waste is not a problem, but an opportunity" says Dr. David Bressler, the new assistant professor in Bio/Food Engineering whose position is jointly funded by Alberta Agriculture, Food and Rural Development's Centre for Agri-Industrial Technology (CAIT) and AFNS. Dr. Bressler's goal is to generate value-added products from agricultural waste-streams using catalysis and especially biocatalysis.

"Since the BSE crisis hit Alberta, there has been a real push to create new uses for animal by-products, such as tallow," Dr. Bressler explains. The traditional treatment for tallow was to add it back to animal feed. Scientists and the public now question the food safety

A Hero for Bovine



Dr. Burim Ametaj

Can I come and work as a visiting scientist? Are there any more positions available?

These are questions that colleagues of Dr. Burim Ametaj ask him because of the international reputation of AFNS in beef and dairy research. Along with the chance to work closely with AFNS researchers, Dr. Ametaj was also attracted to Alberta because of the strong support for research shown by the recent establishment of the Institute for Food and Agricultural Science, Alberta (IFASA).

Dr. Ametaj's research addresses human-made problems in dairy cattle production. *"We are giving unnaturally high-grain diets to our dairy cows during parturition to quickly restore the energy lost to the milk. The high proportion of starch compared to cellulose is negatively changing the balance of microflora in the cow's rumen,"* Dr. Ametaj explains. The boom in the population of starch degrading microbes means an increase in microbe-produced toxins, which may result in diseased animals. One approach to prevent disease is to immunize the animals for some of the toxins, so the cow's immune system can destroy the toxin before it gets sick. Dr. Ametaj's doctoral training at Iowa State University in ruminant physiology and nutritional immunology, and post doctoral experience in metabolic disorders of farm animals makes this approach possible.

The AFNS community welcomes Dr. Ametaj as a researcher and teacher. His responsible attitude towards animal welfare and his creative thinking are assets to the department.

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Understanding Plant Disease

Sometimes the most decimating problems to crops are caused by organisms tinier than we can see. Dr. Stephen Strelkov is uncovering their secrets as AFNS's Assistant Professor in Plant Pathology.



Dr. Stephen Strelkov

"Tan spot and other leaf spotting diseases of wheat can cause significant yield losses," Dr. Strelkov explains. Since many farmers use conservation tillage methods, the fungus stays on the field in the wheat stubble and can reinfect plants from year to year. Dr. Strelkov's previous research pinpointed one of the toxins that the fungal pathogen uses to cause damage to the wheat. NSERC has awarded Dr. Strelkov a five year Discovery Grant to study the toxin's sequence, expression, and structure so that we can learn more about the virulence in the pathogen. The research will provide us with strategies to prevent infection of the wheat and also a comprehensive model of plant-pathogen interactions.

As a plant pathologist, Dr. Strelkov is also at the forefront in the study of new crop diseases that threaten Alberta's agricultural production. Recently, clubroot of crucifers was discovered in several canola fields in the St. Albert region. The damage potential this disease has to the canola industry in Alberta is serious. Dr. Strelkov is in the process of identifying the race and genetic variability of the current pathogen population so that the disease can be contained.

Dr. Strelkov is looking forward to expanding his lab and meeting the challenges of protecting our prairie crops.

Dr. Stephen Strelkov
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Building a Secure Future for Canola

Dr. Habibur Rahman recently joined AFNS as Associate Professor of Canola Breeding, leaving his position as the Senior Breeder of Canola at Danisco Seed in Denmark. He was attracted by the challenges of canola breeding, research, and teaching in a university environment. AFNS offers many opportunities for Dr. Rahman to collaborate. *"If I develop a product which needs to be assessed for extraction, processing and purification feasibilities, or I need to make a feeding trial with this product, I don't need to go outside of the department because expertise from various disciplines are here. It makes a chain from the start to the end of the process very effective."*



Dr. Habibur Rahman

One of Dr. Rahman's challenges is to increase the value of canola for farmers. Hybrid canola cultivars, compared to traditional line cultivars, are increasing market share in Europe. The same is also happening in Canada because of hybrid canola's higher yield potential and other benefits.

"Farmers will be paying a higher price (50 – 100% more) for hybrid seeds compared to seeds of conventional cultivars. They should also get higher returns for the extra dollars that they pay for hybrid seeds," Dr. Rahman explains. Dr. Rahman plans to focus his research on developing value-added products in canola. *"Canola has always been an oil-producing crop. However, there are scopes for developing different health and wellness and other value-added products in canola oil and seed meal, which will make the whole canola seed more valuable and diversify the industry."*

Dr. Rahman is enthusiastic about building collaborations within the AFNS community and with scientists from different research institutes in Alberta.

Dr. Habibur Rahman
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implications of this procedure, so new opportunities for these commodities need to be explored. Dr. Bressler is working on thermal processing of tallow through a biocatalytic process to something similar to bio-diesel fuel. *"You have to always be looking ahead to see what could be applied and see what is economically competitive with the chemical process."*

Dr. Bressler's unique background with degrees in microbiology and biotechnology and extensive experience in chemical engineering, along with his helpful attitude has sparked the interest of collaborators across the campus and the province.

Dr. David Bressler (780) 492-4986 or david.bressler@ualberta.ca

Dedication to the Goal

Did you know what you wanted to become when you were 18?

Chantal Dionne was certain that she was going to be a dietitian. It wasn't until later in life that the opportunity to complete her studies in nutrition with AFNS became a possibility. With the help of her family, especially her husband, Chantal was able to focus on her dream.

Dr. Linda McCargar suggested that Chantal, mother of three boys, use her BSc in biochemistry as a platform to launch into studying nutrition with AFNS. One of the benefits of the AFNS coordinated dietetics program is that students combine coursework and practical experience to meet the requirements to become a Registered Dietitian all at one time. For Chantal, that still meant she had to commute from Cold Lake to Edmonton three times a week for her first year. Later on, she moved to Edmonton temporarily to finish the program as a fulltime student.



Chantal Dionne

Chantal's success as a dietitian trained by AFNS is due to her determination and encompassing knowledge about nutrition, health, and food science. As part of the comprehensive role she plays as the community nutritionist for the Frog Lake Band in Frog Lake, Alberta. She has emphasized physical activity and developed a workplace wellness program in her organization. Chantal's respect for the community in which she works has proven to be an asset and is best shown by her enthusiastic attitude. *"It is a privilege to work with First Nations people. Their unique culture has helped me to develop a more interactive teaching approach."*

DID YOU KNOW?

"The world Poultry Science Association created an Undergraduate award category due to the continued and overwhelming success of the U of A students!"

Incubating Young Researchers

"We hypothesized that the modern egg strain compared with an unselected strain would have higher heat production during incubation due to a higher metabolism because of a faster developing embryo."

That's how Janet Montgomery of Edmonton explains a project she completed under the tutelage of Dr. Gaylene Fasenko, an Assistant Professor of Poultry Embryology and Chick Quality in AFNS.

As a 3rd year animal science major of the BSc Agriculture program, Janet jumped at the opportunity to work one-on-one with Dr. Fasenko. *"It's great to get a taste for what it would be like to do Masters research in a field I'm interested in."* Janet turned the interesting into the extraordinary when she took her research summary to the poster competition of the Southern Poultry Science Association meeting in Atlanta, Georgia in January 2004.

Judges awarded her project (*Comparing shell and air cell temperatures of incubating eggs from modern and old broiler genetic strains.*) first place amidst a field of MSc and PhD students. Dr. Fasenko proudly speaks of what Janet has accomplished. *"It is almost unheard of that a 3rd year undergraduate student would win an award of this nature."*



Janet's research findings are being submitted for publication in the Journal of Applied Poultry Research; a rare and outstanding achievement for an undergraduate student.

For undergraduate program information, please contact Student Services Office at (780) 492-4933 or 1-800-804-6417 (Western Canada) or questions.afhe@ualberta.ca

AFNS, an Easy Choice!

An enthusiastic supervisor, three scholarships, and the opportunity to experiment with plants in an applied research project – that was what attracted Marilyn Johnstone, a recent MSc Graduate, to study under AFNS Associate Professor of Horticulture and Plant Physiology, Dr. Jocelyn Ozga.

“When I realized that I could receive a monthly stipend to help pay for my living expenses, and that I would qualify for additional scholarships within the department, I easily made my decision to join AFNS,” Marilyn says.



Marilyn Johnstone

“I had focused my search on schools that offered graduate studies in botany. When I finally received their information, I didn’t see myself doing the basic scientific research described in many of the projects. Someone suggested that I inquire about AFNS because people also studied plants in an applied way. They also have additional funding sources available to graduate students.”

As a graduate student, Marilyn found the multi-disciplinary and collaborative approach in AFNS to be extremely stimulating. *“Any question that I had about nutrition or food science was answered. Conversely, I was able to contribute with my knowledge of plants.”* She encourages any potential graduate students who are interested in applied research to contact the graduate student coordinator, Jody Forslund for more information about opportunities within the department. Marilyn is currently employed as a Research Officer with Alberta Agricultural Research Institute in Edmonton.

Taking Knowledge Around the Globe

A surprise invitation to apply for an academic food science position was all it took for AFNS doctoral graduate Dr. Todor Vasiljevic to start a new career in Australia.



Dr. Todor Vasiljevic

As a Lecturer in Food Science and Technology, Dr. Vasiljevic currently teaches Functional Foods, Animal Food Processing, Food Microbiology and Food Analysis at Victoria University, Melbourne. Before he came to AFNS, Dr. Vasiljevic started graduate studies in cereal science, but had to abandon his program at the University

of Banjaluka due to the war in Bosnia. He resumed his doctoral training in AFNS under the supervision of Drs. Paul Jelen and Lynn McMullen and focused on lactose hydrolysis in dairy products. *“I gained an excellent understanding of dairy science and technology, food fermentation and lactic acid bacteria,”* explains Dr. Vasiljevic.

In addition to the comprehensive training in food science that Dr. Vasiljevic received in AFNS, he also won multiple departmental, provincial and national scholarships to help him throughout his program. *“During my graduate studies, I realized what kind of research was being performed at AFNS and what kind of impact that research had throughout the world,”* says Dr. Vasiljevic. He continues building AFNS’s international reputation by teaching and leading research in Australia.

For graduate program information, please contact Student Support at (780) 492-5131 or jody.forslund@ualberta.ca

DID YOU KNOW?

“On any given week within the Human Nutrition Research Centre, there are up to 4 technicians and 12 graduate students working on over 10 different research studies?”

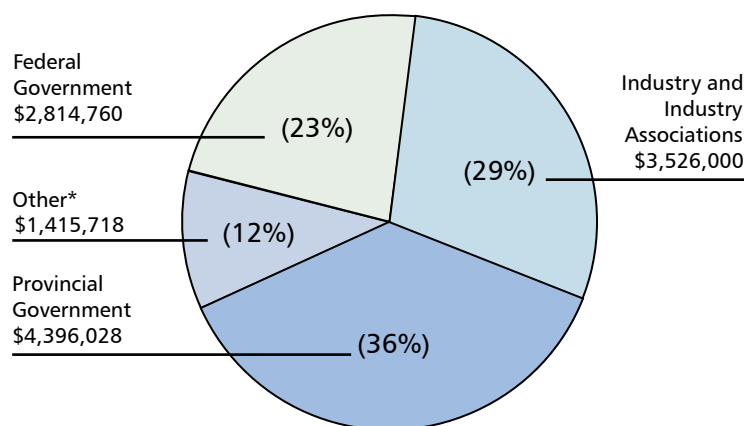
Summary of funds

2003/04
Operating Budget \$6,392,774

Distribution of Operating Budget

- 66% Academic & Teaching Support
- 10% Administration & Computing Support
- 13% Central Laboratories
- 11% Research Stations

2003/04
Research Funding \$12,152,506



* Non-Profit, Research Endowment, Other Government

Academic Staff

- 54 Professors
- 27 Adjunct Professors
- 12 Postdoctoral Fellows
- 23 Research Associates

Undergraduates enrolled in degree programs:

- 287 BSc Agriculture (Includes Pre-Veterinary Medicine)
- 35 BSc Agricultural/Food Business Management
- 357 BSc Nutrition & Food Sciences

679 Total

Graduate Student Enrolment

- 63 MSc
- 56 PhD
- 3 MAg / MEng
- 2 Other

124 Total

Central Laboratories include:

- Agri-food Materials Science Centre
- Food Science facilities
- Agricultural Genomics & Proteomics Centre
- Molecular Biology & Biotechnology Centre
- Nutrition & Metabolism facilities
- Human Nutrition Research Centre
- Plant Growth facilities
- Small Animal facilities

Research Stations include:

- Edmonton Research Station
 - Alberta Poultry Research Centre
 - Crops & Land Resources Centre
 - Dairy Research & Technology Centre
 - Laird W. McElroy Metabolism & Environmental Research Centre
 - Swine Research & Technology Centre
 - Enclosed Composting Facility
 - Feedmill
- Ministik Field Station
- University of Alberta Kinsella Research Ranch



Metabolic testing in the Human Nutrition Research Centre

New Professors on the Block

**Burim Ametaj**Ruminant Nutritional
Immunology**Ronald Ball**Swine & Human
Nutrition**Tapan Basu**

Nutritional Biochemistry

Rhonda Bell

Human Nutrition

Peter Blenis

Forest & Plant Pathology

Ed Bork

Range Management

David Bressler

Bio/Food Engineering

Robert Christopherson

Animal Physiology

Tom Clandinin

Human Nutrition

Walter DixonProtein Biochemistry &
Molecular Biology**Lorriane Doepel**Dairy Nutrition &
Metabolism**Lloyd Doslall**

Agricultural Entomology

Michael DyckSwine Reproductive
Physiology**Gaylene Fasenko**Poultry Embryology &
Chick Quality**John Feddes**

Animal Housing

Catherine Field

Nutrition & Metabolism

George FoxcroftSwine Reproductive
Physiology**Laki Goonewardene**

Beef Biometrics

Linda Hall

Weed Science

Robert HudsonWildlife Productivity and
Management**Paul Jelen**Food Process Engineering
and Dairy Technology**Nat Kav**Plant Biochemistry &
Proteomics**John Kennelly**Dairy Nutrition &
Metabolism**Jane King**Forage Agronomy/
Physiology**Douglas Korver**

Poultry Nutrition

Jerry Leonard

Bio/Resource Engineering

Linda McCargar

Clinical Nutrition

Lynn McMullen

Food Microbiology

Stephen Moore

Beef Genomics

Ian Morrison

Weed Science

Anne NaethVegetation &
Reclamation**Suresh Narine**

Food Rheology

Masahito ObaFeed Utilization, Dairy
Nutrition**Erasmus Okine**Ruminant Nutrition &
Metabolism**Buncha Ooraikul**

Food Processing

Jocelyn OzgaHorticulture & Plant
Physiology**Lech Ozimek**Dairy Processing &
Technology**Mick Price**Livestock Growth & Meat
Production**Spencer Proctor**

Human Nutrition

Kim Raine

Community Nutrition

Habibur RahmanConola Breeding &
Biotechnology**Frank Robinson**Poultry Management &
Physiology**Willem Sauer**

Animal Nutrition

Jeong Sim

Poultry Technology

Dean SpanerCrop Breeding &
Agronomy**Peter Sporns**

Food Chemistry

Stephen Strelkov

Plant Pathology

Gerald TannockDairy Microbiology &
Probiotics**Feral Temelli**Food Processing &
Quality**Thavaratnam Vasanthan**

Cereals, Fats & Oils

Randall WeselakeAgricultural
Biotechnology**Noreen Willows**

Community Nutrition

Wendy WismerSensory & Consumer
Science**Rong-Cai Yang**

Statistical Genomics