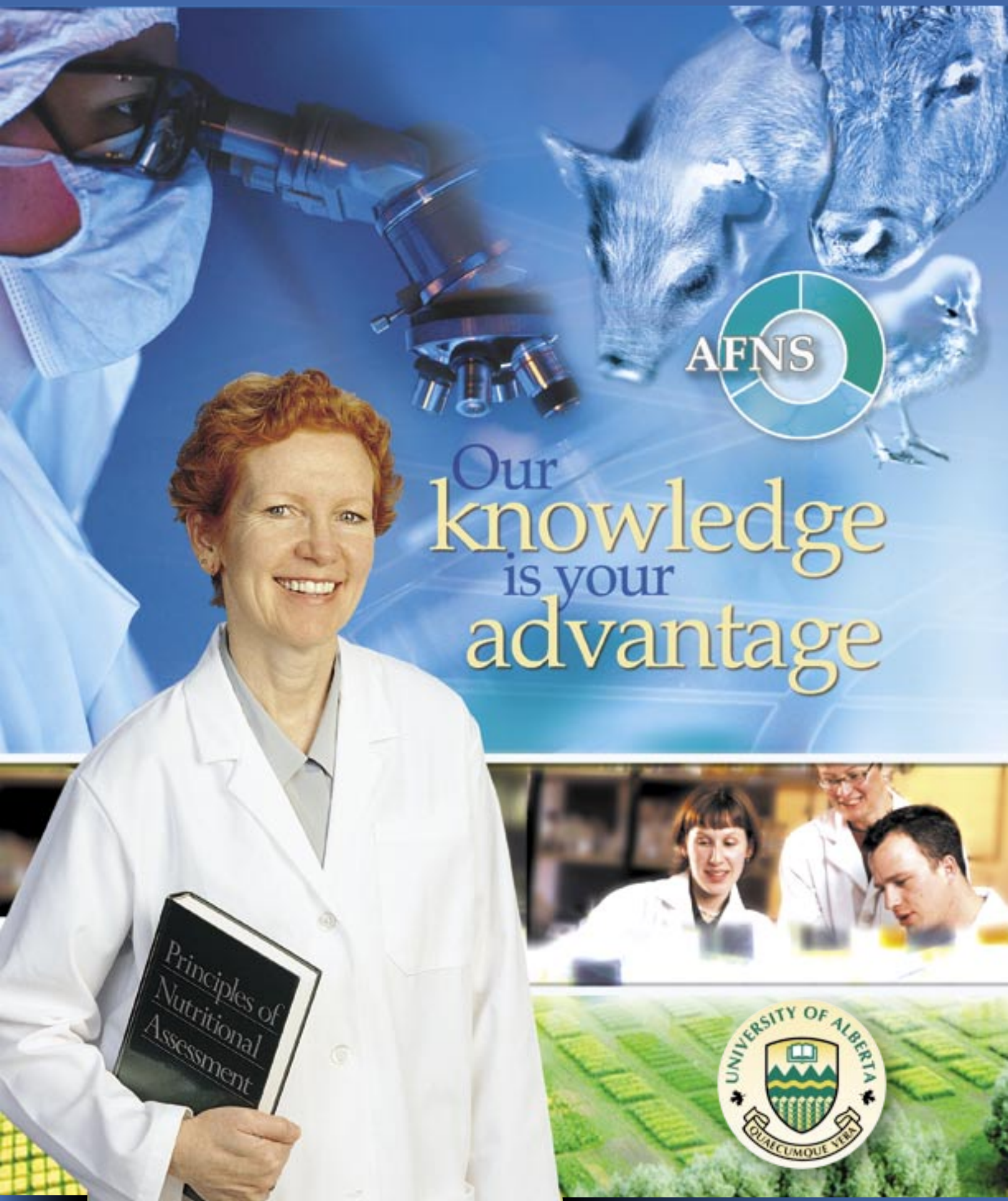
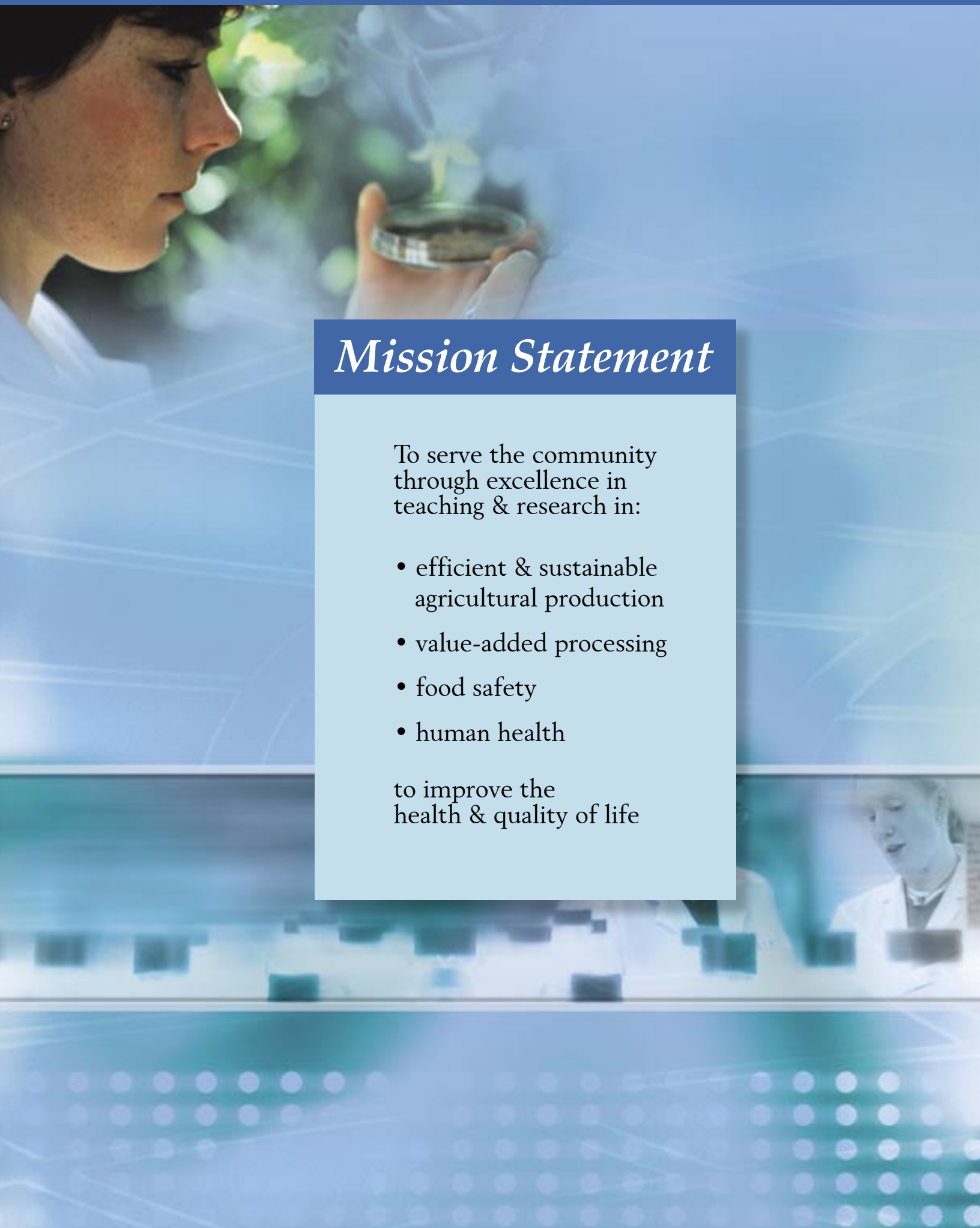
Department of Agricultural, Food and Nutritional Science



Annual Report 2002 - 2003



Mission Statement

To serve the community through excellence in teaching & research in:

- efficient & sustainable agricultural production
- value-added processing
- food safety
- human health

to improve the health & quality of life

leadership

Ian Morrison, Dean

Building on excellence

The past year has been an exciting one for the Department of Agricultural, Food and Nutritional Science (AFNS) - with good reason. The signing of a Memorandum of Understanding with the province and the Alberta Research Council as well as the impending opening of Agri-Food Discovery Place are proof of the Department's successes in forging new relationships and in strengthening its academic and research programs.

The Department is positioning itself in areas where it is seen to be a national or international leader. The recent accolades given to Drs. Ron Ball for his internationally recognized work in nutritional science and John Kennelly as a North American leader in livestock science are examples of the stature of our faculty. Building on a strong foundation of academic excellence, the Department is also building new facilities such as the new Human Nutrition Research Centre which opened in 2002.

There are too few pages in this publication to tell every AFNS success story, but let this annual report offer a sample of the rich scope of activities in the Department. I trust that it will capture your interest and entice you to remain connected with the Department over the next year.

Ian Morrison – Dean
Faculty of Agriculture, Forestry, & Home Economics
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John Kennelly, Chair

Investing in the future

A world-class department attracts and retains the best staff and students and provides its scientists with the tools that allow them to be at the cutting edge of their disciplines. We are currently in the midst of a major faculty renewal initiative and we have invested more than $20 million in new infrastructure. The construction of Discovery Place in 2004 will bring our investment to nearly $40 million. Our staff continue to attract major provincial and national awards and grants, including the recently announced NSERC Food NCE that has significant involvement of AFNS staff. Another measure of our success is that AFNS is home to three spin-off companies that have attracted substantial funding from the public and private sector.

We look to the future with unprecedented optimism following the recent signing of the Memorandum of Understanding with AAFRD and ARC. This will reduce current fragmentation and will result in increased investment in Agri-Food R&D, truly positioning Alberta as a national leader. The Agri-Food industry is a cornerstone of the Alberta economy, and our department has a major role to play. Our vision is to provide the human resource needs and the technology to allow the economic and environmentally sustainable growth of this vital sector of the Alberta economy.

John Kennelly – Chair
Agricultural, Food and Nutritional Science (AFNS)
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Breaking news..... MOU agreement

The province and the university have joined forces in a first-of-its-kind agreement in Canada that will see a unique collaboration of top-class minds and resources. The U of A, Alberta Agriculture Food and Rural Development (AAFRD) and the Alberta Research Council have created the innovative Institute for Food, Agri-Industrial, and Agricultural Sciences of Alberta (IFAASA) – the partners have pooled $750 million to manage and deliver progressive research and education programs.

L to R: Marlene Graham (ARC), President Rod Fraser (U of A), and Hon. Shirley McClellen (AAFRD)

Beef at its best

In simple terms, the International Genomic Initiative is trying to understand how cows work. In practical terms, the initiative will translate to clear commercial and economic benefits to Canada through the development and application of genomics technologies – a project AFNS's Dr. Stephen Moore is helping to propel onto the global scene.

Stephen Moore

As Canada's representative on the recently established Livestock Genome Sequence Standing Committee – established under the International Society for Animal Genetics – Moore is leading a province-wide initiative that has made considerable advances in strengthening the country's once-weak position in farm animal genomics. With help from agencies including Alberta Science and Research Authority, Alberta Beef Producers, the Beef Cattle Research Council and the Alberta Agricultural Research Institute, he has helped start a multi-million dollar program that is quickly gaining world recognition. At last count support was at more than $6 million, which brings the program on par with others around the world.

"There will be direct and measurable benefits to the Canadian livestock and associated industries through investment in genomics research and development," said Moore.

One of the areas being developed in Alberta is identifying genes and gene pathways that contribute to quantitative traits – such as growth and morphology, yield, fat content and tenderness. A second example of the work being done in Moore's lab is on expression mapping, which is used to identify genes affecting economically important traits. Bioinformatics tools will be used to analyze large data sets arising from the large arrays containing tens of thousands of genes.

Although Canada still has a lot of ground to make up on the international landscape, Moore and his research are off and running.

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Bovine Genomics Online:
www.afns.ualberta.ca/Hosted/Bovine_Genomics

Harnessing creativity

Another exciting venture under development is the Food Animal Research Initiative (FARI). FARI will deliver outcome-based, collaborative and interdisciplinary food animal research and train highly qualified personnel, in the context of a major strategic focus on sustainable food production. The leadership position of Alberta's livestock industry in Canada depends on the ability to compete in increasingly complex global agricultural markets. To respond to these challenges, FARI will bring together scientists and industry leaders to create sophisticated animal-based products for today's markets, making Alberta's livestock industry a national and international champion.

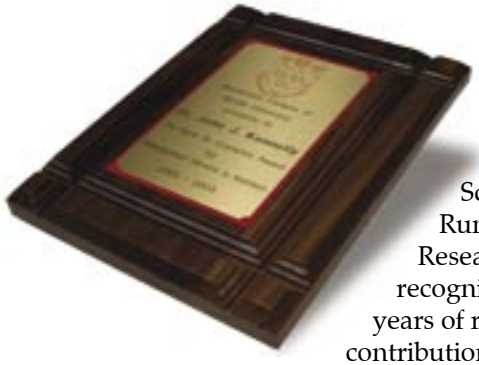
Since September 2002, a planning team made up of Dr. George Foxcroft, Dr. Bob Hudson, Dr. Stephen Moore and Dr. Iwona Pawlina, and funded by the Alberta Agriculture Research Institute (AARI), has worked with representatives from research organizations in Alberta and the Alberta Government. Their goal has been to develop the FARI vision – delivering internationally competitive, leading-edge discovery and applied research in areas of importance to Alberta's economic growth and social development.

Dr. Iwona Paulina (780) 492-7178, or iwona.paulina@ualberta.ca

achievement

AFNS Chair leads by example

Dr. John Kennelly has come a long way since he first stepped off the bus on a cold and blustery Edmonton winter in 1977. His first thought was *"what am I doing here...there is no way I'm going to stay in this place after I finish my PhD."* More than 26 years later not only has Kennelly remained at the University of Alberta but has moved his way up from student to professor to chair of AFNS and capped this year off with a collection of prestigious accolades.



One of those awards is the American Society of Animal Science 2002 Ruminant Nutrition Research Award in recognition of his 20 years of research and contributions to the field of ruminant nutrition. He is one of only two Canadians to have received this award – the other being the 1948 recipient, Earle Crampton. Coincidentally, Kennelly also received the 2002-2003 Earle Crampton Award, a tribute established by McGill University to honour the internationally renowned nutritionist and professor.

The list doesn't stop there. Last year Kennelly not only won an award at the Western Canadian Dairy Seminar but the organization named the honour after him with the now annual John Kennelly Award of Merit. He also was recognized by the International College of Nutrition with the Singh Felicitation Award. Despite this impressive acclaim, Kennelly is quick to acknowledge others for his success. *"I see myself accepting these awards on behalf of one large team."*

His innovative work includes developing nutritional strategies designed to modify the protein and fat content of milk in response to changing consumer demand. He has also developed methods of altering cows' diets so that they naturally produce increased levels of healthful fats such as the cancer-fighting agent CLA (conjugated linoleic acid) in their milk.

Dr. Kennelly
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On the ball

The sole reason Dr. Ron Ball chose to leave Ontario six years ago to come to the University of Alberta was the strength of AFNS and its research potential. If the number of awards he received last year is any indication, he clearly made the right choice.

Ball, a nutritional scientist with an expertise in swine, along with his collaborator Dr. Paul Pencharz from the University of Toronto brought the prestigious Osborne Mendel Award to Canada in 2002 for the first time ever. Presented by the American Society for Nutritional Sciences and funded by the International Life Sciences Institute, the award recognizes outstanding basic research accomplishments in nutrition.

Ball also claimed one of the most important awards given by the Canadian Society of Animal Science: the Canadian Animal Industries Award in extension and public service.

"This has probably been a career year," said Ball, who holds the Alberta Pork Producers Research Chair in Swine Nutrition. *"To get the highest award that the American Society gives out for basic research and the one from the Canadian Society of Animal Science, that recognizes my work outside the lab is a great honour because they are on such opposite ends of the spectrum."*

Ball had to make even more room on his curriculum vitae for the Alberta Pork Producers Spectra Award, which was given to him for his involvement and contributions to the province's pork industry.

Using the pig as a model for human nutrition, Ball has helped redefine amino acid requirements and to effect improvements in infant formulas and intravenous feeding for premature infants. This research has also led to an increase in the Recommended Dietary Intakes for protein and amino acids for humans.

Dr. Ball
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Making the grade

A good illustration of Jenny Fricke's stellar year was when she ran out of room to list her recent awards and scholarships on her Western College of Veterinary Medicine application. The resumé belonging to the 2003 Animal Science graduate belies her age and experience- this year alone she not only chalked up eight awards but only actually applied for one. The others were based on her marks and by recommendations from her professors, which speaks volumes about her achievements.

Jenny Fricke

Aside from the awards, Fricke leaves AFNS armed with consummate wealth of knowledge and expertise. For the summer she earned a prestigious Natural Sciences and Engineering Research Council of Canada (NSERC) grant, and is working in Dr. Ron Ball's lab studying piglet nutrition. In the fall she begins studies at the Western College of Veterinary Medicine and knows she will be better prepared than many of her colleagues.

"One of the best things about this program was that we did a lot of hands-on work that lets you experience what it is going to be like in the real world," said Fricke, who was co-president of the Pre-Vet Club, and held volunteer positions at the Leduc Veterinary Hospital and the U of A's swine and poultry units.

Fricke cites Drs. Erasmus Okine and Frank Robinson who went out of their way to help students. *"What I love about this department is that profs know you by your first name. It feels like a tight knit community".*

DID YOU KNOW:

"The AFNS Undergraduate Range Team placed 1st twice in North America over the past 5 years!"

Feeding a passion

Seeing how her father's changes to his diet positively affected his cholesterol levels was enough to interest Andrea Holwegner in the field of nutrition. Today she is using similar knowledge gained from her time in AFNS to help others lead healthier lives.

Andrea Holwegner

Holwegner, who earned her BSc in Nutrition and Food Sciences in 1999, is now president of Health Stand Consulting – a small Calgary business she started to cater to people's health and fitness needs.

What also attracted Holwegner to the field was the diversity within human nutrition, including the types of career choices. Her impressive resumé is evidence of that fact. As the registered dietitian and sports nutritionist for Calgary's Talisman Centre – formerly Lindsay Park Sports Centre – she developed all the nutrition services for the general public, athletes and coaches at the high-paced complex.

Drawing on skills she learned in university – discipline, leadership and thinking out of the box – has helped Holwegner become a successful entrepreneur. *"Since nutrition is a very grey area with no black or white principles, advanced nutrition courses pushed me to think and develop my own educated opinions,"* said Holwegner. *"There are two professors that stand out in the time I was at the U of A: Dr. Catherine Field and Dr. Linda McCargar. They were excellent instructors who challenged me to think further and differently about the field of nutrition and the nutrition messages we send to the public."*

Holwegner also took advantage of the department's co-ordinated internship program, which allowed her to complete a 16-month dietetic internship during her studies after which she became a registered dietitian.

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

learning

Making a better potato crop

Tracy Shinners-Carnelly did not waste any time using her PhD from AFNS to land an impressive job with the Manitoba government. Upon graduation from the U of A in 1999, Shinners-Carnelly accepted a position with Manitoba Agriculture and Food as a provincial plant pathologist. Since then she has become the Provincial Potato Pest Management Specialist where she works closely with growers and other potato industry stakeholders to ensure they are provided the most current information for disease management.

Shinners-Carnelly first became interested in the field while earning her bachelor's degree in agriculture from the Nova Scotia Agricultural College where her focus was in pest management. Her studies also included entomology, weed science and plant pathology – the study of the nature of diseases and their causes. She enjoyed the pathology aspect and decided to specialize in that area for her graduate work.

Two motives drew Shinners-Carnelly to the U of A. The first was that her supervisor, Dr. J.P. Tewari, was an internationally recognized researcher and had a wide variety of research experience. *"Joining his research group gave me exposure to many different aspects of plant pathology,"* she said. *"Secondly, AFNS and the U of A highly regarded the NSERC [Natural Sciences and Engineering Research Council of Canada] Postgraduate Scholarship I brought with me and provided additional financial incentives."*

Tracey Shinners-Carnelly

Her PhD research evaluated the potential to develop an environmentally friendly biological control for blackleg disease of canola. As well as arming her with the proper background knowledge to secure an influential position, Shinners-Carnelly also left the U of A with practical experience.

"Of the things that I learned at the U of A, what I use most are my communication skills which includes technical writing, oral presentations and personal networking within the scientific community."

Classroom skills at work

For most students, graduate work entails poring through volumes of books to prepare a thesis. But for Lisa Morin, her master's research was much more hands on: she developed a low-fat sausage product.

Lisa Morin

Morin created the sausage using barley beta-glucan as the fat replacer – not only creating a product lower in fat but with a cholesterol-lowering benefit as well. Research has shown that barley beta-glucan can lower blood cholesterol, as well as regulate blood glucose levels. Although Morin isn't sure if her product is being used commercially, the experience to develop it was invaluable and helped lead to a notable position with the Alberta government.

Initially, Morin entered AFNS to become a dietitian but after some food science classes, she found herself wanting to explore food chemistry and food safety issues instead. After three years in the food processing industry, she realized more education would be needed if she wanted to advance her career. She returned to school and two years later left AFNS with her Master's degree–an education that has served her well.

"The depth of knowledge in the department about food issues, such as food safety and new technologies, or agricultural issues was outstanding," said Morin. "The weekly graduate seminars and the guest speakers gave me the opportunity to expand my knowledge and background of many issues unrelated to my own research."

Morin completed her undergraduate degree in Food Science and Nutrition in 1995 and her MSc under Dr. Feral Temelli in 1999. She now holds the esteemed position of Research Officer for Alberta Agriculture, Food and Rural Development's Chief Provincial Veterinarian. Some of the recent issues she has had to investigate include Foot and Mouth Disease, West Nile Virus and Chronic Wasting Disease.

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

Commercial success

Knowing their work should not be left on the shelf, Dr. Thava Vasanthan and Dr. Feral Temelli sought innovative ways to turn their good ideas into reality. Rather than accepting the fact that their work required funding they didn't have, the AFNS researchers teamed up with two Canadian agencies and a new company was formed.

L to R: Dr. Feral Temelli and Dr. Thava Vasanthan

Cevena Bioproducts Inc. is backed by $2.3 million in seed money from industry partners Foragen Technologies Management Inc. and AVAC Ltd., which invest in agriculture initiatives, research, and new companies. The new spin-off company was initiated to further develop and commercialize a novel grain fractionation technology invented by Vasanthan and Temelli – until now the high-value products have been expensive to make, which has prohibited their use as food ingredients.

The company currently focuses on fractionation and value-added processing of oat and barley grains. Production of affordable, high quality beta-glucan and other high value products is currently Cevena's major thrust. Beta-glucan is a naturally occurring dietary fibre that can be used as a thickening agent. Vasanthan and Temelli have experimented using beta-glucan in an orange-juice-like beverage and now hope to use their technique to make a product that is affordable to the general public.

"Beta-glucan has a number of human health benefits. It has been shown to reduce serum cholesterol and could help efficiently manage diabetes. The commercial value of [purified beta-glucan] alone is hundreds of millions of dollars," said Vasanthan. *"We're very pleased to see the progress in the commercialization of our new fractionation technique."*

"Since the company has been formed we have made significant progress to fine tune our novel technology," said Temelli. *"Things have been going very well and we are moving closer to large-scale processing."*

As a nod to their work, Vasanthan and Temelli have been nominated for the ASTech-2003 Leadership Award for their research and teaching contributions to the grain industry.

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Dr. Vasanthan
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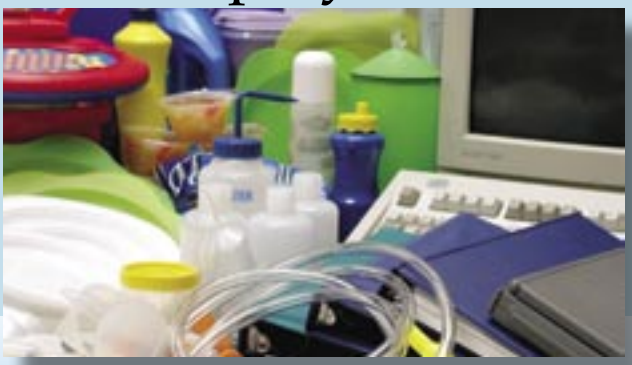
technology

Breaking news..... in biopolymers:



Turning crops into plastic sounds impossible, but for Dr. Suresh Narine it is an environmentally-friendly reality. Narine has developed renewable bioplastics, motor oil and hydraulic fluid from agricultural crops. Stay tuned to see what Narine will do with agricultural feedstock next.

Reaching beyond the bench

Lynn McMullen

To describe her work, you would need phrases like *"groundbreaking research," "a diverse range of outstanding accomplishments" and "forged new standards to ensure the safety of Alberta food products domestically and internationally."* These glowing and fitting words were heaped upon Dr. Lynn McMullen when she won the 2002 Growing Alberta Leadership Award in Food Safety. And rightly so.

McMullen is committed to educating students and consumers about food safety. Since 1994 when she started at the U of A, McMullen has been teaching HACCP (Hazard Analysis Critical Control Point), a systematic control program that is used by the food industry to ensure the safety of food. Over the years, with the assistance of the Alberta Food Processors' Association, she has developed a program that has over 200 students placed with food processors for hands-on experience in the development of a HACCP plan. Dr. McMullen is committed to ensuring that the food safety leaders of tomorrow have relevant and exciting instruction that they can put into practice in their careers.

Her devotion doesn't end there. McMullen was also recognized for her research to ensure the safety and integrity of Alberta's food supply at home and around the world. McMullen continues to play an integral role in CanBiocin Inc., a spin-off company that she has been involved with since its inception. *"It has been extremely rewarding to be involved in a start-up company and see the results of research become commercial reality,"* said McMullen.

McMullen continues to tackle new challenges and her latest one is the Meat Safety and Processing Research Centre as part of Agri-Food Discovery Place. *"The new facility will allow us to develop multiple controls to improve the safety of meat products. Any developments in this area will benefit the industry and consumers."*

Dr. McMullen
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Real-life learning

Before they even collect their diplomas, many students in AFNS's Nutrition and Food Sciences program have already developed professional skills through real world work experience.

In order for a dietitian to start a career he or she must not only finish academic training but also complete an internship in the field – often a difficult task with limited space available. For the last 13 years, the U of A has run an integrated internship that allows students to begin training after their third year of university, not after graduation as is usually the case. The successful program now has 22 provincial placement spots reserved for U of A students, up from the initial six in 1990.

The program requires students to complete four professional practice courses, allowing students to develop skills in food service management, community nutrition, and clinical dietetics. It is also mandatory for the future dietitians to complete a rural practice experience.

Maureen McKay with Dietetic Interns

"Students gain an understanding of the unique character of rural facilities and the need to learn generalist skills in all areas of dietetic practice, as well as the more specialized approaches used in urban hospitals," said Maureen McKay, dietetic internship co-ordinator for AFNS. *"We've also lengthened the time in the community nutrition rotation, which reflects the changing focus in health care to one of health promotion and disease prevention."*

Making partnerships, sharing their enthusiasm, and gaining experience are a few reasons why the program has been such a success – another example of how AFNS kickstarts its students' careers.

Maureen McKay
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The right equation

Discoursing with academics and interacting with students are two reasons Dr. Laki Goonewardene found AFNS appealing. On loan from Alberta Agriculture, Food and Rural Development (AAFRD), Goonewardene is one of the newest members to the Department where he teaches biometrical techniques. His arrival is part of an initiative to develop a closer working relationship between AAFRD and the University.

Laki Goonewardene

Goonewardene's area of expertise is biometrics and genetics, with a specialization in cattle breeding. As a teacher at the University three days a week and a researcher with the government the remaining time, Goonewardene says he is striking the right balance to assist the province with its mandate of helping the agriculture industry grow. *"By being at the University, I feel I have the ability to contribute to that growth by talking to the actual people who are doing much of the groundbreaking diverse research. And the University is such a stimulating environment – students question you and force you to think differently than you might in government."*

At AAFRD, Goonewardene spends much of his time analysing data from field experiments. At the University, he teaches students how he does it. Despite its difficulty, statistics is an important part of the research puzzle, he says. *"You can collect all the data and do all the experimentation you want, but if you cannot make the data speak to you, you can do nothing with it."*

Dr. Goonewardene
(780) 492-0171 or laki.goonewardene@gov.ab.ca,
or laki.goonewardene@ualberta.ca

Weeding out the issues

More proof of the strong partnership between the Department and Alberta Agriculture, Food and Rural Development lies in Dr. Linda Hall's shared position. The weed scientist has been at the University since 2001 but still maintains her role with AAFRD.

"Because the two organizations are very complementary, there are many opportunities for synergy in both research and teaching," says Hall, who has been teaching a course on Herbicide Physiology at AFNS for six years and recently added Weed Science and the plant science CapStone Course to her teaching responsibilities.

Linda Hall

Hall's own research is diverse. She heads several projects on management of emerging problem weeds, including field violet and annual sowthistle. She is part of a team that has just completed the second major weed survey of the Province of Alberta and is writing papers on her findings. Hall also works in herbicide resistance which has led her to observe the shifts in weed populations and changes in crop management.

Her latest focus is on gene flow in transgenic plants with novel traits and the resulting impact on weediness and invasiveness. She believes research in this area is critical. *"Biosafety issues are the biggest impediment to crop diversification in Western Canada".*

For producers on the prairies, Hall's work will provide integrated weed management solutions. It will also monitor and predict problems arising from changes in cropping practices. For the average Albertan, that means Hall and her colleagues are reducing environmental loading of pesticides.

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or linda.hall@ualberta.ca

opportunity

Diversity is key

Ask any newcomer to the Department about its appeal and the answer is always the same: diversity. Dr. Rong-Cai Yang is no different. One of the newest AFNS members seconded from Alberta Agriculture, Food and Rural Development, he looks forward to collaborating with the wide range of scholars AFNS boasts.

Rong-Cai Yang

Yang is in the field of statistical genomics with a background in quantitative genetics and breeding. He joined AAFRD as a research scientist and biostatistician in 1997 and has been an adjunct professor in the University's Department of Renewable Resources since that time. His immediate plans are to work with Dr. Stephen Moore's bovine genomics group. One of the first efforts in this collaboration is the development of a new graduate course *"Advanced Quantitative Genomics"* that will be offered next year.

Yang's long-term goal at the University is to develop new statistical methods or theories to analyze data for genomic mapping. Although the genomes of human and several other organisms are now completely sequenced, the biggest challenge is *"to extract useful information from that mass of data,"* says Yang, whose research would apply to animals and plants as well. *"I'm trying to contribute to the development of new methods to identify new genes. That is my hope and dream."*

Dr. Yang
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Weighty research

For Dr. Noreen Willows, it was the international reputation of one of AFNS's scholars that drew the dynamic new researcher to the university and today they are working together on important health promotion work.

As a community-based researcher who predominantly works with Aboriginal communities, Willows wanted to work with Dr. Kim Raine, currently director of the Centre for Health Promotion Studies at the University of Alberta. Raine's credentials as a top research scholar on social determinants of health as well as her considerable theoretical contributions to a social-change based approach to health promotion, were enough to attract Willows from McGill University to Edmonton.

Noreen Willows

Willows' interest are in First Nations' health, maternal and child nutrition, food security and the relationship between culture and food choice. Her current research projects include a focus to determine the socio-cultural and biological cause of overweight in Cree children. Part of that project includes developing a database to document the early childhood growth of children in James Bay, Quebec. *"This data will help us understand the biological reasons that children grow the way they do,"* said Willows, who will also investigate cultural perceptions of high body weight. *"Learning the answers to some of these questions could lead to effective and culturally sensitive interventions to prevent and treat obesity."*

This study is significant considering diabetes is emerging as a serious health problem among Canadian aboriginal children, caused by excess body weight.

Dr. Willows
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DID YOU KNOW:

"AFNS is recruiting 10 new academics in 2003!"

Consolidating knowledge

Echoing the World Health Organization statement that nutrition is a fundamental pillar of human life, development, health and well-being across the entire lifespan, AFNS has upped the ante in nutrition research. The department recently opened the Human Nutrition Research Centre – a one-of-a-kind facility in western Canada that will establish the University of Alberta as a nucleus for advanced training and research in human nutrition.

Researchers – including 10 faculty members, 30 graduate students and a number of research assistants, associates, and post-doctoral fellows – will focus on three strategic areas, says director Dr. Linda McCargar. They will make contributions to a multidisciplinary diabetes institute – an initiative that involves many groups on campus and for which the U of A is recognized world-wide. They will work on a new Alberta Palliative Care Research Initiative, directed by Dr. Vickie Baracos. And they will conduct research in the area of nutrition and child health, studying the impact of nutrition on the growth and development of infants, children and adolescents.

Linda McCargar

Metabolic study – Human Nutrition Research Centre

"Collectively, the Centre covers a wide range of research interests, all of which ultimately focus on improving the health and quality of Canadians' lives," said McCargar.

The facility also provides a central location for study volunteers participating in food science and nutritional science research projects. Researchers have the capacity for drawing blood, testing metabolic rates and collecting body composition measurements by DEXA – a state-of-the-art low-dose x-ray machine that can differentiate the body components of bone, lean and fat tissue. The centre also houses a metabolic kitchen and dining area for use when food is provided as part of a research study, two overnight stay rooms and designated space which is used for counseling, focus groups or interviews.

"It provides us with the capability to do comprehensive and accurate nutritional assessments all under one roof, for added convenience of study participants," said McCargar.

The Alberta Innovation and Science Research Infrastructure Program funded construction of the Centre while the Natural Science and Engineering Research Council of Canada and Alberta Heritage Foundation for Medical Research supported equipment purchases.

Dr. McCargar
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health

Sewing Seeds of excellence

If there is potential to improve a plant or crop, it is likely an AFNS researcher is trying to find out how. In the last few years, the Department has beefed up its crop and plant science expertise and a sampling of current projects highlights the top-notch work.

Wheat breeder, Dr. Dean Spaner adds to that pool of knowledge by improving the genetics and agronomy of wheat, specifically for early maturity and straw strength. In the northern region of the prairies, earliness is a requirement so this work has the potential to benefit many farmers. He is also breeding wheat that can be used in the province's emerging organic environment.

For the past five years Dr. Jane King has focused on a number of legume crops that can be used in forage production or in diversified cropping systems. She is working with two new clovers that are largely untried in Canada to increase the profitability of Canada's beef and dairy industries and decrease input cost for farmers. *"Increasing the amount of clover in a pasture can increase the amount of biomass produced and the quality of the material the animal is grazing," said King*, who is also working with the Alberta Pulse Growers to test fava beans as an alternative crop for the wetter parts of the province.

Another progressive mind studying crops belongs to Dr. Jocelyn Ozga. While her research interests vary, part of her time is spent developing a reliable gene transfer system for peas with the goal of turning them into novel agricultural products. She is also trying to determine the neutraceutical properties of the saskatoon berry and to optimize post-harvest flavour development and packaging of that fruit. To aid with that endeavor and to study how plant hormones may regulate fruit development, she has pioneered an innovative system to study fruit growth – her research team is the only one putting it to use.

Always working to improve canola through traditional and biotech methods, Dr. Gary Stringam and his research team recently registered a new variety of canola-Cougar CL-resistant to a specific herbicide. *"We are trying to gain diversity and variability - if you don't have that, you can't make progress or be competitive,"* said Stringam. When he is not busy building a canola seed, Stringam is also developing molecular markers to track disease resistance from one species to another.

Dr. Jalpa Tewari, plant pathologist, focuses on the study of weedy relatives of the canola family which have traits that will be useful in building a genetic base for resistance to diseases such as blackspot. *"Nature has already done all the work for us,"* says Tewari. These plants grow in areas ideal for blackspot development, but they show no signs of the disease. This renowned pathologist has collaborated with scientists across Canada and around the world.

Whether it is developing innovative grazing systems or gauging grassland response to wild fire (Dr. Edward Bork), investigating the role proteins play in relation to water deficits, extreme temperatures and stresses (Dr. Nat Kav) or minimizing the damage of insect pests on Canola
(Dr. Lloyd Dosdall), AFNS is doing it. The seeds of excellence are quickly taking root.

For further information please contact (780) 492-3239

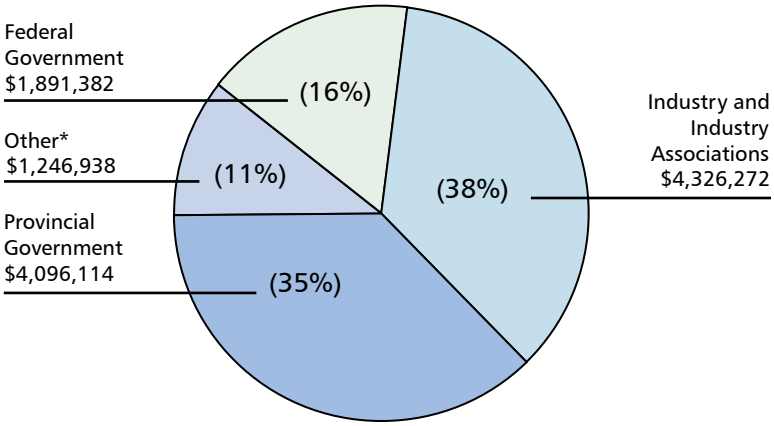
Summary of funds

2002/03
Operating Budget **$5,780,608**

Distribution of Operating Budget

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

2002/03
Research Funding **$11,560,706**



** Non-Profit, Research Endowment, Other Government*

Academic Staff

48 Professors
22 Adjunct Professors
7 Postdoctoral Fellows
24 Research Associates

Undergraduates enrolled in degree programs:

241 BSc Agriculture (Includes Pre-Veterinary Medicine)
34 BSc Agricultural/Food Business Management
261 BSc Nutrition & Food Sciences

536 Total

Graduate Student Enrolment

71 MSc
57 PhD
1 MEng
3 MAg

132 Total

Central Laboratories include:

- Agri-food Materials Science Centre
- Food Science Facilities
- Livestock Genomics Facility
- Molecular Biology & Biotechnology Centre
- Nutrition and Metabolism Facilities
- Human Nutrition Centre
- Plant Growth Facilities
- Small Animal Facilities

Research Stations include:

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

Dr. Paul Jelen with students

facts & figures

Gwen Allison
Food and Dairy Microbiology

Ronald Ball
Nutrition
Swine and Human

Vickie Baracos
Protein Metabolism

Tapan Basu
Nutritional Biochemistry

Rhonda Bell
Human Nutrition

Peter Blenis
Forest and Plant Pathology

Robert Christopherson
Animal Physiology

Tom Clandinin
Human Nutrition

Walter Dixon
Protein Biochemistry and Molecular Biology

Lloyd Dosdall
AAFRD
Associate Professor in Agricultural Entomology

Gaylene Fasenko
Poultry Embryology and Chick Quality

John Feddes
Animal Housing

Catherine Field
Nutirition and Metabolism

George Foxcroft
Reproductive Physiology [Swine]

Laki Goonewardene
AAFRD Adjunct Professor in Biometrics [Beef]

Linda Hall
AAFRD
Adjunct Professor in Weed Science

Robert Hudson
Wildlife Productivity and Management

Paul Jelen
Food Process Engineering and Dairy Technology

Nat Kav
Plant Biochemistry and Proteomics

John Kennelly
Dairy Cattle Nutrition and Metabolism

Jane King
Forage Agronomy/ Physiology

Douglas Korver
Poultry Nutrition

Jerry Leonard
Bioresource Engineering

Linda McCargar
Clinical Nutrition

Lynn McMullen
Food Microbiology

Stephen Moore
Beef Cattle Genomics

Ian Morrison
Weed Science

Ann Naeth
Vegetation and Reclamation Applied Ecology

Suresh Narine
AVAC Professorship in Food Rheology

Erasmus Okine
AAFRD
Associate Professorship in Ruminant Nutrition and Metabolism

Buncha Ooraikul
Food Processing

Jocelyn Ozga
Horticulture and Plant Physiology

Lech Ozimek
Dairy Processing and Technology

Mick Price
Livestock Growth and Meat Production

Kim Raine
Community Nutrition

Frank Robinson
Poultry Management and Physiology

Willem Sauer
Animal Nutrition

Jeong Sim
Poultry Technology

Dean Spaner
Crop Breeding and Agronomy

Peter Sporns
Food Chemistry

Gary Stringam
Canola Breeding and Biotechnology

Gerald Tannock
AVAC
Professorship in Dairy Microbiology and Probiotics

Feral Temelli
Food Processing and Quality

Jalpa (J.P.) Tewari
Plant Pathology

Thavaratnam Vasanthan
Cereals, Fats and Oils

Noreen Willows
Community Nutrition

Wendy Wismer
Sensory and Consumer Science

Rong-Cai Yang
AAFRD Adjunct Professor in Statistical Genomics