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The University of Saskatchewan has been a source of pride for its alumni and the people of the Province for almost a century. Today the institution stands at a defining moment in its history, facing many challenges, but also numerous opportunities. Intense competition, growing fiscal constraints, and a federally articulated innovation agenda combine to influence the way all universities will define themselves in the future.

Is it part of our tradition to compete? Are we limited to a provincial agenda? If Saskatchewan is to be a participant in the knowledge age, then we know we must continue to define ourselves as one of the nation’s major research universities.

The University embraces its role in contributing to Saskatchewan’s growth and prosperity. Our relationship with this province has profoundly shaped both the institution and Saskatchewan. We have a tremendous opportunity to distinguish ourselves from our peer institutions by focusing on the unique connection between our scholarly activities and our powerful sense of community. Our sense of place will inspire us to continue to pursue and support research and scholarly activities in areas of concern and interest to the people of Saskatchewan.

A substantial part of our responsibility as a cornerstone of Saskatchewan is seen through our commitment to meeting the needs of Aboriginal people. We plan to continue playing a leading role in Aboriginal education and research. We will encourage and support the academic ambitions of the province’s Aboriginal communities, working in partnership with them to realize the Province’s tremendous potential.

Tom Molloy

There has never been a more exciting time to be involved with the University. Rapid change and uncertainty have become the defining features of our world. Universities that flourish in the twenty-first century will be defined by the ability to recognize and respond to the changing needs of society without losing sight of their core values.

Ensuring that the University of Saskatchewan not only survives, but flourishes, has never been more of a challenge. Across North America, the rate of Ph.D. graduates has leveled off and only 30 to 40 per cent of those choose to enter academia rather than join the ranks of industry. With half of our faculty complement due for retirement in the next ten years, recruiting and retaining the mentors to shape tomorrow’s young minds is a serious issue.

The role of public funding in university education is also changing. Provincial funding of the University’s operating budget has fallen from 78.9 per cent in 1986-87 to just 63.2 per cent today. At the federal level, we have seen dollars increasingly directed away from core funding and towards targeted initiatives.

Maintaining accessibility to university education is an important issue for the people of this Province and enhancing student financial assistant remains a priority for the Board of Governors. The Board is also mindful of the delicate balance between access and quality, knowing that it’s not enough for students to attend university. The University of Saskatchewan must provide leading faculty, modern equipment, improved student services, and an enhanced student experience.

Our vision for the University of Saskatchewan must include access to a high quality education based on ability, not means, that enables our graduates to enrich their own lives and the communities in which they live.

Frank Quennell
Message from the President

The University of Saskatchewan is charting a course for its future, a course that will see this university take its place among the most distinguished universities in Canada and in the world. We have set high goals for ourselves and, working together, we will attain them.

For what will the University of Saskatchewan be known in its second century? What will distinguish it from the breadth of post-secondary institutions across the country and around the world?

First, the University of Saskatchewan will be known for its adherence to international standards in all its activities. Our academic programs will be assessed against the standards of the best. Strong universities assess themselves rigorously.

Second, The University of Saskatchewan will be known for its pre-eminence in specific areas of creative academic programming and scholarship. While no one university can aspire to be pre-eminent in all areas, the explicitly competitive environment of the new century requires us to excel in a few well-chosen areas, if we are to thrive. The selection of areas will evolve over time, as we build on our existing strengths and seize exciting new opportunities.

Third, the University of Saskatchewan will be known for its "sense of place." This university, more than most, has always nurtured connections with its community, connections which, far from limiting us, have enriched both the university and the province.

We have identified a set of strategic directions that flow from these defining features, directions that will lead to concrete strategies for action and serve as guideposts for us in our activities.

As we enter the information age, we will increasingly see a division between those who participate in the knowledge economy and those who are merely observers. If Saskatchewan is to be a participant, then this University must compete vigorously and effectively among the major research universities of the country. We will make strategic choices to actively shape our future in ways that are true to our origins and our history.

Peter MacKinnon

Seven years after the turn of the 20th century, Saskatoon was a community of a little more than 3,000 people, in a province scarcely two years old. Canada itself had a mere four decades of history as an independent country.

This was a community of pioneers, of visionaries. They shared a bold dream: create a university that reflects not the humble surroundings of the present, but the brightest hopes for our future. The vision was for a centre for advanced education and research, featuring first-class academic and professional programs. It would foster scholarship and serve the community through outreach. It would be a campus of outstanding beauty, the pride and hope of a young community, in a new province of tremendous potential.

The dream continues to inspire us; its renewal will guide us.

At the dawn of the 21st century, our pioneers work not with soil and plow, but with minds and ideas, exploring the frontiers of knowledge and teaching the next generation. Now, we look boldly again to the future, and we question. What do we want our university to be? What will our students need? For what will we be known? What will the words "University of Saskatchewan" evoke in the mind's eye?

These questions have been at the root of much debate and consideration this year. Ultimately, we have identified the features that define us, and developed strategies that will see us achieve ambitious dreams.

We remain true to the dream of our founders. We are a centre of advanced education and research, training young minds while exploring questions relevant to Saskatchewan and the world. History surrounds us in the greystone architecture, a reminder of where we come from, and who we are. Our future is all around us as well. It is in the faces of our students, in the eyes of our researchers. It is in the hands of our tradesmen, building some of the most advanced research facilities in the country.

We will not forget where we come from, or who we are. We will focus on our vision, and our purpose. We will renew the dream.
Early grads attest to success of Virtual College of Biotechnology

The now two-year-old Virtual College of Biotechnology has graduated 23 students, 18 with Bachelor of Commerce and five with Bachelor of Science degrees.

The VCB is a collaboration between the University and Saskatchewan Economic and Cooperative Development. Its focus is to highlight the scientific, ethical, commercial, social and legal issues related to biotechnology.

The biotechnology component of the degree provides grounding in scientific method, research and development. Elective courses allow students to explore social, economic, political and ethical aspects of this burgeoning industry.

Students first in student services

A new student-focused unit is being set up to deliver a marked improvement in meeting the needs of students and prospective students, while also offering more streamlined service to the University’s 14 colleges.

When the University’s Registrar and the Associate Vice-President of Student Affairs & Services retired in December 2001, the Vice-President Academic asked the two units to merge into one division. It was an opportunity to review processes, identify gaps and efficiencies, and consider new ways of doing business.

Dubbed the ROSS (Registrar’s Office and Student Services) project, a task force was formed in October 2001 to consult with students, prospective students, colleges, departments, and administrative units across the campus. Every group was asked about the services they accessed through the two offices and how they could be improved.

The information gathered by the task force was used to recommend a radically different structure and approach to student enrolment and support services. Once it’s entirely operational early next year, the new division, Student and Enrolment Services, will provide personalized service, timely and easy-to-use information, on-line service availability, quick turnaround time, and ‘one-stop shopping’.

New Student Information system under development

Student information processes are critical to the University since so much of our institution’s business relies on accurate, complete and timely data about our students.

The current system – really a collection of systems – was built in the mid 1980’s and is no longer adequate. In May 2001, the University’s Board of Governors gave the go ahead to investigate needs and options. This eight-month effort was a natural outgrowth of the emerging Enrolment Plan and of a growing emphasis on the student experience.

The Student Information (Si!) investigation involved consultation with over a hundred stakeholders – faculty, staff and students.

The needs assessment identified several priorities, including online, real-time Web-based access for students and other users; capacity to monitor student progress against program requirements; Web registration and fee assessment and payment for students; and extended capabilities for reporting and database queries by users in administrative and academic departments.

In January 2002, the Board accepted the recommendation to proceed, beginning with selecting a vendor. More than $1 million has been allocated this year to begin this 10-year $17 million project initiative.

Commerce students winning Canada and beyond

U of S Commerce students are among the best in the world and they aren’t afraid to prove it.

This year, Commerce students took first place honours at international and Canadian business planning competitions; they placed second at an international competition for business strategy; and they took first place at the Canadian Marketing Association’s annual student awards.

Students

Every student comes to university with a dream, a vision of what their future holds. We know that achieving their goals requires a world-class education, a superior student experience, and limitless opportunity – this is what our commitment to renewing the dream means for our students.
## Enrolment by college

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### A new approach to tuition

In May 2001, the Board of Governors approved a significant change in tuition policy for the University of Saskatchewan.

In past years, the University maintained a low tuition policy to maximize accessibility, resulting in tuitions that were among the lowest in the country for medical-doctoral institutions. While this approach maintained a high level of accessibility, an important public priority, it also threatened the equally critical priority of quality of the educational experience for our students.

In their May 2001 meeting, the Board approved a tuition policy to place University of Saskatchewan fees at the average for its peer group. Phased in over two years, this new policy will bring tuition fees for all University of Saskatchewan programs in line with those at medical-doctoral institutions across the country.

The additional revenue generated by this new policy will be used to recruit and retain leading faculty, update equipment and facilities, enhance student services, and to provide financial assistance for students who demonstrate both ability and need.

In 2001/02, tuition revenue accounted for 29 per cent of the university's operating budget.

### University of Saskatchewan tuition levels

![University of Saskatchewan tuition levels chart]

3.9% increase in enrolment over 2000/01
Invest in education. Invest in the future.

Everybody wins when corporate Canada makes an investment in post-secondary education. Students gain access to a better educational experience, and corporations themselves are rewarded with a smarter and more competitive labour pool.

Last year, major corporate gifts came from CIBC ($750,000); Shell Canada ($200,000); and CTV ($180,000).

"This kind of support highlights the University’s role in building tomorrow’s leaders," says U of S President Peter MacKinnon. "It demonstrates a strong commitment to the University and its students and recognizes the high-quality programs we provide here."

CIBC’s donation is helping the U of S establish the CIBC Centre for Agricultural Entrepreneurship, which will deliver intensive career-building programs in agribusiness.

Shell Canada’s endowment has led to the creation of four scholarships – three of them in Commerce and one in Engineering. The Engineering scholarship and one Commerce scholarship are designated for Aboriginal students.

CTV’s donation is helping build the Mobile and Ubiquitous Computing Laboratory, which will advance existing knowledge about wireless access to computers and other ‘smart’ devices.

Partnerships in Healthcare

Recognizing the interdependency among the education of health professionals, health research and the provision of health care services, the University of Saskatchewan has worked with partners to create the Saskatchewan Academic Health Sciences Network.

The goal of this Network is to achieve excellence in the education of health professionals, in health research and the provision of health care services to residents of Saskatchewan. Major developments in one of the five organizations that impact on the others will be dealt with through the Board of the Network.

The Network was endorsed by its five partners, including the Ministers of Health and Post-Secondary Education and Skills Training, during a signing ceremony in January 2002. The Network Board is a new concept to facilitate joint planning and decision making among these organizations. The importance of this integration was emphasized in the 2001 Fyke Report and in the Action Plan for Saskatchewan Health Care.

A high priority has been placed on creating a positive working relationship for physicians and other health professionals. This is seen to be an important step in improved recruitment and attracting highly qualified health professionals to this province.

Eight major goals have been established for the network and include the improved working relationships, initiatives to promote integration of service, education and research, and affiliations with other academic health centres. In the early stages, the Network identified the education of health sciences and research infrastructure requirements for health sciences education and research that will guide its future work, including the development of health sciences facilities.

The Saskatchewan Academic Health Sciences Network is comprised of the University of Saskatchewan, Saskatchewan Learning, Saskatchewan Health, Saskatoon District Health and the Regina Health District. The Network recognizes the importance of effective linkages with several organizations and is looking at ways to establish the connections.
University and Wanuskewin forge partnership

A memorandum of understanding, signed by the University and Wanuskewin Heritage Park in April, has set the stage for a stronger presence in Aboriginal education.

The University has long been involved at Wanuskewin, a site used for over 6,000 years by Aboriginal people as a gathering place and hunting ground. While much of this involvement has centred on archaeology and anthropology, the new agreement will foster further partnerships in cultural programming, research, Aboriginal awareness education and joint event sponsorship.

The Wanuskewin initiative is an outcome of the Conceptual Framework for Aboriginal Initiatives, which identified six areas of focus for the University to move forward with its commitment to meeting the needs of Aboriginal people: Academic Programs, Research Programs, Cultural Programs, Student Affairs, Community Outreach, and Coordination.

Demographics reveal the Aboriginal segment of the Saskatchewan population has more young people than any other. There are currently about 2,000 Aboriginal students at the University of Saskatchewan, a number that is expected to grow.

Project to address Aboriginal mental health needs

U of S psychology Professor Jim Waldram is part of the team developing the National Network for Aboriginal Mental Health Research. With federal funding support, the Network will develop research capacity to address Aboriginal mental health needs.

Waldram, the only Saskatchewan researcher included on the team, will investigate best practices for culturally appropriate mental health services.

RAWLINSON DONATES $1 MILLION TO ADVANCE ABORIGINAL BUSINESS EDUCATION

Gordon Rawlinson, CEO of Rawlco Radio and a U of S graduate, has donated $1 million to establish the Rawlco Resource Centre at the College of Commerce.

The centre will be a nucleus for the recruitment and retention of First Nations and Métis students who seek a business education and eventual Bachelor of Commerce degree.

“This magnificent gift will go a very long way to ensuring that the future of business in Saskatchewan has a strong foundation in the First Nations community,” said U of S President Peter MacKinnon.

Rawlinson received his Bachelor of Commerce degree from the U of S in 1968.

Aboriginal health research centre launched

In January 2002, the University of Saskatchewan, along with the Saskatchewan Indian Federated College and the University of Regina, was awarded a six-year, $3 million grant to develop an Aboriginal health research centre.

The centre, to be located at both universities, will focus on research in aboriginal health issues and work to increase opportunities for Aboriginal people to pursue training and research in the health field.

It will concentrate on community-generated research in the areas of chronic diseases, nutrition and lifestyle; Indigenous healing: addictions, mental health and the judicial system; health delivery and control; and prevention and environmental health.

The U of S will provide research expertise in northern medical services, nursing, community-based health research and Aboriginal justice. A wide spectrum of educational and research opportunities at the University will also provide better health delivery for Aboriginal people and communities as well as culturally appropriate training for new Aboriginal health researchers.

Aboriginal preparation program unique

A unique three-day course that prepares Aboriginal students to write the MBA program entry test is contributing to an increase in interest from Aboriginal students across Western Canada.

It is expected the course will help 10 to 15 Aboriginal students enter the College of Commerce MBA program annually.

Aboriginal Initiatives

Before rails, before roads, there were maps of knowledge and understanding, written in the minds and traditions of Aboriginal people. Ancient wisdom, combined with the lessons of today, will serve us in the future.
Great expectations—realized!

Every year, the U of S sends out a new group of graduates from a wide array of colleges and programs. While their fields of study may be different, these new alumni are all products of a university that prides itself on being one of the country’s best.

Many U of S graduates go on to become highly successful in their chosen careers. Meet four alumni who have achieved some especially notable accomplishments:

**Trent McConaghy**

Trent McConaghy (B.Sc. ’99, BE (EL) ’99) and a team of U of S colleagues formed a company called Analog Design Automation (ADA) to develop a commercial analog synthesis tool.

McConaghy and his team secured a government grant and venture capital from private companies like Intel, Synopsys, Royal Bank Capital, and High Street Planners. In 2000, ADA moved to Ottawa and now has more than 45 employees.

McConaghy is a recipient of the U of S’s Outstanding Young Alumni Award.

**Anne Parker**

Anne Parker (BA ’82, LL.B. ’85) never dreamed she’d be heading up trade policy for an international steel company. Yet, the former U of S law student now works in Chicago as IPSCO’s Vice-President of Trade Policy and Communications.

Parker became corporate counsel for IPSCO in 1987. She later became Director of Communications, and in 1998 moved into the area of trade policy. Today, her responsibilities include coordinating trade activity in a bi-national steel market facing countervail cases and antidumping rules.

**Dr. Freda Miller**

Dr. Freda Miller (B.Sc. ’79) is one of a growing number of influential scientists who received their education at the U of S. She is a professor of neurology and director of the Montreal Neurological Institute, and is known worldwide for her research on human stem cells.

Stem cells are usually generated from bone marrow or embryonic tissue, and there is considerable debate over the acceptability of producing human embryos for the purpose of research or treating another human being. Using Miller’s research, stem cells could be harvested without the use of a human embryo, alleviating the ethical dilemma.

**Ben Voss**

Ben Voss (BE ’99) wanted to become a successful engineer and give back to his community at the same time. The twenty-something met his goal by founding BDI Research Inc. and Clear-Green Biotechnologies, two Saskatchewan companies that are making a name in agricultural waste management.

Voss says the new technology fits his own vision of what agriculture can be.

“The fertilizer grows the crop that is fed to the pigs, which produce the waste, that is fed into the refinery, that produces energy and more fertilizer, in an endless loop,” says Voss.
A strong research tradition is a defining feature of our university’s history. That tradition is being renewed and strengthened throughout the campus. As our capacity grows, so does our potential.

**Attracting research dollars – a progress report**

Funding from the three federal granting councils – NSERCH, SSHRC and CIHR – is vital to the health and reputation of the University. Many federal resources flow according to an institution’s share of peer-adjudicated tri-council funds. For instance, tri-council funding affects our allocation of Canada Research Chairs and the associated CFI funds, as well as the amount of support provided to the University for the indirect costs of research.

Over the past five years, there has been a significant upward trend in the University’s ability to attract funding from the tri-council granting agencies. The University has shown particular improvement in awards from SSHRC. CIHR funding, after some years of real decline, is now showing some signs of recovery. NSERC funding is holding its own and the University continues to bring in more CFI dollars per capita than any other university in the country.

The Government of Saskatchewan has substantially increased its investments in university research, partly due to initiatives such as the CFI.

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**Fifteen minutes of fame**

Imagine taking the results of several years painstaking research and boiling it down into a fifteen-minute presentation. That’s what U of S postdoctoral students Shawn Ritchie, Scott Dehm, and Angie Hess did at the CIHR 2001 National Health Research Poster Competition at the University of Manitoba. Ritchie and Dehm took two of the four gold medals awarded for their cancer research, and Hess one of the six silver for her work in female reproduction.

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**VIDO expansion strengthens capacity**

Since 1975, the Veterinary Infectious Disease Organization (VIDO) at the University of Saskatchewan has developed and marketed seven vaccines, five of them world-firsts. It has been awarded 43 patents, with 17 pending. Its technology and products have been adopted in disease prevention programs around the world, reducing both animal suffering and economic losses. Through the development and commercialization of novel vaccines and vaccine delivery systems, VIDO has become an internationally recognized leader in infectious disease research.

Now a $17.2 million facility expansion is enabling VIDO to increase its research capacity in genomics, bioinformatics and vaccine formulation. The project will add 50,000 square feet of office and lab space to the existing 50,000 square foot facility. The new space will accommodate up to 60 new staff over the next five years, nearly doubling the current team of 85. New equipment coming on stream includes micro-array readers, micro-array spotters and DNA sequencers.

Matching contributions of $5.1 million from the Canada Foundation for Innovation and Province of Saskatchewan as well as $2 million from Western Diversification and $3 million of a Genome Canada grant, are making the expansion possible while $2 million from the Province of Alberta is being used to equip the new space. VIDO’s physical growth will strengthen its position as one of the world’s preeminent infectious disease and food safety institutes.

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**Funding highlights**

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<td>$31,564</td>
<td>$37,795</td>
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629% increase over 1997/98

“Over the past five years, there has been a significant upward trend in the University’s ability to attract funding from the tri-council granting agencies.”
**Improving cold tolerance focus of major crop research project**

Why do some crops tolerate cold or heat, drought or salinity better than others? It is a question researchers are determined to answer.

U of S plant scientist Graham Scoles was appointed coordinator of a $20 million project to study winter wheat and canola at the DNA levels in an attempt to uncover why and how the plants respond to environmental stresses. The multidisciplinary project, which could generate more than 40 new positions in Saskatoon, includes a number of U of S professors, researchers from other provinces, as well as adjunct professors/scientists at the National Research Council’s Plant Biotechnology Institute and the Agriculture and Agri-Food Canada research Centre, both located on campus.

The project is funded through Genome Prairie, one of five genomics centres established across Canada as part of the $300 million Genome Canada initiative. Genome Prairie currently funds projects in the genomics of wheat and canola, as well as the socioeconomic implications of such programs.

The magnitude of funding underlines the University of Saskatchewan’s undisputed reputation as a leader in agricultural research. Not only is Scoles’s project one of a handful of genomics project approved on the Prairies, it is the largest funded plant sciences project in the country. The long-range benefits for Canadian and world agriculture productivity could be tremendous.

**Chemical switch may signal treatment for high blood pressure**

An established leader in the effect of carbon monoxide on the cardiovascular system, U of S physiology professor Dr. Rui Wang recently caught the world’s attention with a new study. He and his team discovered that hydrogen sulfide gas naturally produced by the body is not simply a toxic gas, but a vascular dilator. The gas acts as a biological switch, relaxing contracted blood vessels and reducing blood pressure. The finding is pointing the way to potential new prevention and treatment options for high blood pressure.

**U of S obesity study reveals growing problem**

A 2002 study by U of S Kinesiology Dean Mark Tremblay made national headlines and highlighted possible implications for Canadian healthcare.

The study confirms an alarming increase in the number of overweight and obese children between 1981 and 1996. These obese children tend to have more weight-related health problems when they carry the problem into adulthood.

The study was published in the International Journal of Obesity.
Genomics, DNA research add to VIDO’s global stature

In the largest grant ever given out by Genome Canada, VIDO was named project lead in a groundbreaking $27 million genomics project. Researchers will explore gene responses in cattle and poultry exposed to an infectious agent in an effort to develop better prevention strategies for human and animal infections. Every year, infectious diseases account for one third of all human deaths and billions of dollars in livestock losses.

The project is a unique collaboration. The majority of funding is being provided by Genome Canada and two private companies, Pyxis Genomics, Inc. (formerly Anigenics) of Chicago and Inimex of Vancouver. The University of British Columbia is a co-partner, and researchers from VIDO, U of S, Simon Fraser University, British Columbia Cancer Agency and University of Illinois will all participate. VIDO and the U of S will receive two thirds of the funding, UBC one third.

The grant brings total Genome Canada funds awarded to Saskatoon researchers to $55 million in just two years. More than $30 million will be spent in the province. The award reflects a growing awareness across Canada that, when it comes to world-class life sciences research, the U of S has unparalleled capacity.

The genomics project is one of several novel research directions at VIDO. Cutting-edge research into DNA vaccines is also gaining international attention because of its potential as a cost-effective alternative to other vaccines. In mouse models, DNA vaccines developed by VIDO researchers have worked successfully for a number of the viruses.

Exploring inner space

Dr. Kamiel Gabriel hopes to create a little bit of outer space deep beneath the Saskatchewan prairie: Canada’s first drop shaft for microgravity research.

At 1,000 metres, the shaft would be the longest in the world, yielding up to 12 seconds of free fall. This will allow researchers to do materials science research with near-zero gravity before using the more expensive option of traveling into space.

The facility was approved by the Canada Foundation for Innovation and awarded an $8.5 million grant, conditional on securing matching funds. Dr. Gabriel, an Associate Dean at the College of Engineering, reports interest in the drop shaft from Japanese researchers and the American space agency NASA. The facility will take about three years to build in an abandoned potash mine shaft at Patience Lake, 16 km east of Saskatoon.

Unique advantages for rural health research

In November 2001, the U of S Centre for Agricultural Medicine recast itself as the U of S Institute of Agricultural Rural and Environmental Health (LARE.H), embracing a broader mandate and the will to become a world leader in rural health and environments.

Since its inception in 1986, the Centre has built a solid reputation for research and extension programming regarding the health of farmers, farm workers, and their families. LARE.H will expand this focus to a wide-ranging program of research, education and service delivery, not only for the agricultural industry, but in rural industries such as mining and forestry.

LARE.H Director Dr. Jim Dosman says the University of Saskatchewan is uniquely suited to the institute’s aspirations. It is the only Canadian university that boasts all five health sciences colleges – medicine, dentistry, nursing, veterinary medicine, and pharmacy and nutrition. Saskatchewan is the country’s most rural province, and Saskatoon is one of the most prominent centres for agricultural research in Canada.
Diamond sparkle points the way

Akira Hirose is Director of the Plasma Physics Laboratory on campus, one of Canada’s leading plasma research facilities. His pioneering work in the industrial application of plasma technologies includes the synthesis of diamond grains and carbon nanotubes.

“Diamond is an ideal material for microelectronics because of its high thermal conductivity. And materials based on carbon nanostructures are stronger than steel, though much lighter,” said Hirose. Diamond could be used to make computer chips one-tenth the size of current silicon chips, while nanotubes - molecular wires capable of carrying a current - could be used in advanced electron microscopes.

With the funding provided by the Canada Research Chair in Plasma Science, and access to the Canadian Light Source, Hirose hopes to accelerate the pace of research. His findings could one day lead to significant improvements in the quality and durability of materials used in a range of medical and commercial applications.

The Canada Research Chairs (CRC) program continues to fire creative synergies across university departments and colleges. To date, $10 million has been awarded to the U of S for the creation of 11 new chairs, plus another $1.1 million in infrastructure funding from the Canada Foundation for Innovation (CFI). This represents a third of the 32 chairs allotted under the federal governments $900 million CRC program.

Zaheer Baber, SSHRC Chair in Sociology
Lorne Babiuk, CIHR Chair in Vaccinology
Ajay Dalai, NSERC Chair in Bio-Energy and Environmentally Friendly Chemical Processing
Louis Delbaere, CIHR Chair in Structural Biochemistry
Carl Gutwin, NSERC Chair in Next Generation Groupware
Akira Hirose, NSERC Chair in Plasma Science
Safa Kasap, NSERC Chair in Electronic Materials and Devices
Heinz-Bernhard Kraatz, NSERC Chair in Biomaterials
Jim Miller, SSHRC Chair in Native-Newcomer Relations
Alexander Moewes, NSERC Chair in Materials Science with Synchrotron Radiation
Evelyn J. Peters, SSHRC Chair in Geography
Clearing the air

Every year, Canada consumes 40 billion litres of diesel fuel. The emissions contain high levels of nitrogen and sulphur oxides, which contribute to air pollution and health problems. Ajay Dalai, Canada Research Chair in Bio-Energy and Environmentally-Friendly Chemical Processing, believes there is a better way to fuel the engines of prosperity: biodiesel.

Biodiesel combines low-grade canola oil or other oilseeds with alcohol to produce fuel from waste. It is not only environmentally friendly, its production could provide a lucrative new market for Saskatchewan oilseed producers and inject $400 million a year into the provincial economy.

Dalai is also working on developing environmentally friendly processing methods for reformulated gasoline, a project for which he won a PetroCanada Young Innovator Award in 2000.

"The Canada Research Chair allows us to pursue answers to important questions," Dalai says. "How do you get energy more economically, more environmentally-friendly? It is challenging and very exciting work."

Chairs pursue diverse programs: Babiuk addresses bioterrorism

With the tumultuous events of 2001, including hoof and mouth disease in Europe and anthrax in the United States, Lorne Babiuk has increasingly found himself called upon for his expertise not only in vaccinology, but biological warfare. He spoke at a Toronto conference on bioterrorism in January, and continues to address fears closer to home.

Babiuk is regarded as a leading expert in the development and commercialization of novel vaccines for the treatment of infectious diseases in livestock. He is Director of the Veterinary Infectious Disease Organization (VIDO), a professor of Veterinary Microbiology and holds a Canada Research Chair in Vaccinology.

"Vaccination has saved more lives than all other methods of controlling infectious diseases combined," he says. "With recent advances in immunology, molecular biology and genomics, we have an unprecedented opportunity to develop safer, more effective vaccines."

A map that includes Aboriginal people

"There have been aboriginal people in cities for at least five decades," says Evelyn Joy Peters. "It just hasn’t hit the consciousness of geographers that this is a group that is also there."

One of Canada’s most prominent social geographers, Peters came to the U of S from Queens University last fall to take up the Canada Research Chair in Identity and Diversity: the Aboriginal Experience. She is examining the socioeconomic circumstances of Aboriginal people living in urban areas and their quest for self-government. A recent CFI award of an additional $50,000 to develop a database on urban Aboriginal peoples highlights the importance of Peter’s work.

Until now, there have been models for various ethnic urban communities, but none for Aboriginals. Using census data, histories of Aboriginal urban settlement and firsthand interviews, Peters is developing that model.
Capital projects keep university competitive

Like any research-intensive and complex organization, the University of Saskatchewan must strike a strategic balance between new construction, renewal and maintenance.

In 2001-2002, the U of S capital budget included spending on both new and existing facilities, with an emphasis on projects that boost the university’s reputation for excellence.

Major investments of the 2001-2002 strategic capital plan included:

- $6.2 million for renewal, replacement, and deferred maintenance of buildings, land, and utilities.
- $1.3 million for critical teaching and research equipment.
- $1.9 million to upgrade the computer network and enhance communications technology in lecture theatres.
- $500,000 to help new faculty establish research programs (this continues a program begun in 1999, and helps the U of S become more competitive in recruiting top-quality faculty).
- $12 million for the Thorvaldson and Kinesiology building projects, including a special allocation from the provincial government. With the 2001-2002 contribution, this amounts to an additional $35 million from the Province. Both projects are scheduled for occupancy in Fall 2003.

Active construction projects include the Veterinary Infectious Disease Organization (VIDO) laboratory; the Western College of Veterinary Medicine MRI/Oncology Facility; the Chemical Engineering Building addition; the Saskatchewan Structural Sciences Centre; the Geology Library expansion; and the Computer Science Department renovation.
Master Plan lays strategy for campus planning and development

The University of Saskatchewan is known for both its brains and beauty.

In fact, the university’s picturesque atmosphere attracts new students and faculty, while the riverside location, tree-lined paths and gothic architecture draw sightseers every day.

The U of S has developed a Core Area Master Plan (CAMP@US) to ensure future development not only meets the University’s vision and strategic goals, but also keeps and enhances the campus outdoor spaces. The plan integrates a complex array of considerations such as space needs, funding, building and landscape design, traffic and parking, way finding and infrastructure requirements. Sustainable development is a core principle of the CAMP@US and ensures campus planning and development balances environmental, social, and financial values and objectives.

By the Spring of 2002, the planning team had undertaken discussions with various groups in the University community, as well as consultations with the City of Saskatoon, the Meewasin Valley Authority and Innovation Place. The planning also included extensive 2-D and 3-D mapping and modeling, and a comprehensive photographic tour of the University.

The Master Plan Interim Report was presented to a number of university groups and the public in March, 2002. Presentations of the final report are scheduled for the Fall of 2002.

Veterinary College adds $1.4 million radiation and MRI centre

In May 2002, the world’s first magnetic resonance imaging machine (MRI) for pets was lowered by crane into a new Western College of Veterinary Medicine (WCVM) facility.

The 10,000 kilogram MRI was one of the finishing touches to the new MRI and Radiation Therapy Centre, which will detect and treat cancer in small companion animals like cats and dogs.

The MRI unit is a joint venture of the University and the private sector. The facility opens new learning opportunities for U of S veterinary students while providing important services to clients.

Deferred maintenance: a $150 million problem

Universities across Canada are facing a massive bill for deferred maintenance, a problem that will cost an estimated $150 million at the University of Saskatchewan alone.

Deferred maintenance is a term describing the cost of catching up on critical repairs to buildings, lands, and infrastructure that were neglected as universities coped with reduced federal and provincial funding during the 1990s.

The Canada Senate has released a report with seven proposals to deal with this national issue. It’s estimated that deferred maintenance will cost Canadian universities at least $3.2 billion.

The U of S, recognizing its important role as steward of a valuable public asset, recently completed an exhaustive inventory and condition audit of all physical plant. This comprehensive tool is now used to strategically plan all capital activities to minimize life-cycle costs and to provide a safe, attractive, comfortable, and reliable physical environment for learning and discovery activities.

Both the Canadian Alliance of Student Associations and the Canadian Association of University Business Officers are calling for federal assistance.

Although the current funding is much appreciated, and is used in a strategic and leveraged fashion, failure to deal with this accelerating deferred maintenance problem in a significant way will have a direct negative impact on teaching and research activities at the University of Saskatchewan.
Our future has never been brighter, in part because of the opportunities presented by the Canadian Light Source, the nation’s first synchrotron. Saskatchewan expertise and unprecedented Canadian collaboration lie behind this transformational research facility.

**Building a high-tech business**

Building the administrative infrastructure for Canada’s first synchrotron can be as big an undertaking as getting the actual bricks and mortar in place.

The University of Saskatchewan established a wholly owned corporation, Canadian Light Source Inc (CLSI), to operate this important national scientific facility. The board of directors of CLSI has members drawn from across the country and representing a wide range of scientific and industrial backgrounds. Among other things, CLSI is responsible for signing all licensing agreements with the Canadian Nuclear Safety Commission and promoting the facility to the international research community.

Staffing of this cutting edge facility is an ongoing challenge. Core expertise is provided through the synchrotron’s origin as the Saskatchewan Accelerator Laboratory, whose linear accelerator (linac) provides the electron source for the new facility. However, staff numbers have tripled to 75 since the project was launched. Many of these new employees, although highly qualified, had limited synchrotron-specific experience and needed on-the-job training.

Despite the challenges, CLSI, like the building it occupies, is poised for full operation in 2004.
Back to fundamentals
Far upstream of the industrial production floor is Dr. Alexander Moewes, Canada Research Chair in Materials Science with Synchrotron Radiation. Dr. Moewes, associate professor of physics and engineering physics, uses soft x-ray emission spectroscopy (XES) to study the fundamental electronic structure of materials. Dr. Moewes's work is at the leading end of the research and development pipeline, producing basic understanding of structure that will allow design of materials with novel electronic, optical, magnetic, photochemical and catalytic properties.

The secret world of bacteria
For Dr. Scott Napper, assistant professor in the Department of Biochemistry, synchrotron light is the key to understanding how bacteria function. Dr. Napper, also a research scientist with the Veterinary Infectious Disease Organization (VIDO), is exploring how bacteria use proteins to transport sugars into their cells – basically, how bacteria eat. In the process, he has uncovered a promising line of research that may explain how bacteria become virulent, as well as how they develop antibiotic resistance. This knowledge may point the way to new drug therapies.

The shape of drugs to come
Dr. Louis Delbaere, professor and head of the Department of Biochemistry, is heading the team designing the protein crystallography beamline at the Canadian Light Source.

Dr. Delbaere, Canada Research Chair in Structural Biochemistry, studies the shape and function of proteins. These proteins may be involved in important metabolic pathways, or turn out to be useful pharmaceutical targets. If so, the knowledge gained through synchrotron research will help other researchers design new drugs.

Better, safer polymers
Polymers surround us, from plastic bags in grocery stores to foam in car seats, to the tires that keep the car on the road. Dr. Stephen Urquhart, assistant professor in the Department of Chemistry, uses synchrotron-based x-ray microscopy to understand polymers better, and in particular, how they behave when mixed together. Different polymers can behave like oil and vinegar – a bad thing, for instance, when the compounds involved are part of a car tire. Dr. Urquhart's work has direct application in creating better, safer consumer products.
Major milestones achieved on schedule

Work on the U of S owned Canadian Light Source synchrotron achieved two significant milestones this year.

The linear accelerator, which produces electrons to feed the machine, received approval to operate from Canada’s Nuclear Safety Commission, and underwent the first tests in September, 2001. Three months of additional testing were required before the linac was certified as ready to feed electrons into the synchrotron booster ring.

Delivery and installation of the components for the booster ring was also completed. This includes the powerful magnets that direct the electron beam around the ring. Commissioning of the ring is scheduled for the summer of 2002.

A partnership from sea to sea and beyond

Canada’s first synchrotron enjoys an unprecedented level of support across the country and beyond. Governments at the federal, provincial, and municipal levels are contributing, and 18 universities across the country are providing their support, with expertise and, in some cases, funding.

The Canadian Light Source, at $173.5 million Canada’s largest science project in 30 years, is on time and on budget on the way to full commissioning by 2004.

Award-winning engineering

Daunting engineering challenges posed by the Canadian Light Source (CLS) synchrotron project are spurring innovation.

The project earned two awards this year. Lead contractor, UMA Engineering received an award of excellence for technical innovation from the Consulting Engineers of Saskatchewan for its work.

Using local engineering talent, UMA built a floor the size of a football field that must stay level to within 35 microns, or less than half the width of a human hair. They also constructed a booster and storage ring enclosure that delivers precise temperature control – a constant 27°C – with no more than one tenth of a degree of variance.

Then, in early May 2002, UMA along with the University of Saskatchewan and the CLS were honored with an Exceptional Engineering/Geoscience Project Award by the Association of Professional Engineers and Geoscientists of Saskatchewan (APEGS).

The Exceptional Engineering/Geoscience Project Award was established in 2001 to recognize accomplishments in engineering and/or geoscience. The project team must be made up of predominantly Saskatchewan engineers or geoscientists. The project may be located inside or outside Saskatchewan.
In 1977, Saskatchewan leaders envisioned a place where university and private sector could converge to generate endless possibilities for a small province. Today, Innovation Place has surpassed all expectations and continues to be an important part of our future.

Building bridges to the marketplace
To bring a successful product to market, start with a rich source of ideas. Provide the tools for innovation, and plant them in an environment where people with similar research interests interact with each other on a daily basis.

This is the philosophy behind Innovation Place, Saskatoon’s research and development park, located on the northern edge of the University of Saskatchewan campus. Created by an agreement between the University of Saskatchewan and the provincial government in 1977, the park has grown to 23 buildings, housing over 115 companies and agencies, including several enterprises spun off directly from University research.

Over 2,200 people are employed at Innovation Place, one of North America’s most successful research clusters. Here, you will find people working in biotechnology, pharmaceuticals, information technology, telecommunications, resources and environment. All are experts in their fields and many are graduates of the University of Saskatchewan.

Chip maker connects with University network
In the interconnected world of computer networking, Saskatoon is becoming an important node of research and development.

In the Concourse building at Innovation Place, PMC-Sierra Research and Design Centre is building faster, more efficient connections between the computer networks that make up the Internet.

PMC-Sierra set up shop in Saskatoon in 1998 after acquiring technology from Hypercore Technologies, a company founded by University of Saskatchewan graduates. The Hypercore group, including Doug Konkin, Carl McCrosky, Ken Sailor, Jeff Roe and Ian Barrett, form the nucleus of PMC-Sierra’s Saskatoon presence.

With more than 30 employees occupying over 9,000 square feet, the PMC-Sierra Research and Design Centre designs integrated circuits for high speed computer networking. An example is its revolutionary Chess chip, which collapses racks worth of equipment, increasing efficiency while saving space and money.

The University of Saskatchewan has been key to the Centre’s success. Over half of its employees are U of S grads. The company funds graduate research, and strong working relationships have developed with the departments of Computer Science and Electrical Engineering.

PMC Sierra, based in Santa Clara, California, has offices worldwide. It posted revenues of $489 million in 2001.
**ALviva cultivates university connection**

ALviva Pharmaceuticals Inc. may offer hope for victims of neurodegenerative diseases. The company has developed an extensive library of bioactive compounds, many of which may stop nerve cells from dying en masse. This process, called apoptosis, is associated with the effects of Alzheimer's and Parkinson's disease, as well as much of the havoc wrought by strokes.

Company President, Dr. Alan Boulton, explains that clinical tests of the first compound may begin by late 2003 or early 2004. This apoptosis inhibitor was developed at the University and licensed by University of Saskatchewan Technologies Ltd. (UST).

Dr. Boulton, a former professor of Psychiatry at the University, says the network of expertise at the University is a huge advantage for ALviva. Whether it's direct collaboration and problem solving, or simply a source of help and new ideas, the connection is invaluable. Some of this expertise is on the payroll: fully half of ALviva's staff are local talent.

Innovation Place also is a marked advantage, offering world-class labs and offices tailored to company needs, in a city that offers a five minute commute to work by car – or half an hour on foot through Meewasin Valley riverside park.

**Needle-free delivery**

If Dr. Marianna Foldvari has her way, vaccination will mean sticking a patch on your arm, not a needle in your arm.

Dr. Foldvari is founder of PharmaDerm Laboratories Ltd., a company she launched on the strength of her research at the University of Saskatchewan. The company, located at Innovation Place, specializes in needle-free delivery systems for both drugs and vaccines.

PharmaDerm is concentrating on three product lines. The first, a patch to deliver interferon-a, is currently in clinical trials. Interferon-a is used to treat human papilloma virus (HPV), a disease that can cause genital warts and is linked to cervical cancer. A similar patch is being developed to deliver insulin to diabetics.

Dr. Foldvari and her team are working on needle-free vaccine delivery systems. The expertise of the Veterinary Infectious Disease Organization (VIDO), owned by the University of Saskatchewan, has been invaluable in this regard. A comfortable collaboration has tested novel antigens and adjuvants in small and large animals, using both patches and intranasal sprays.

Although PharmaDerm was purchased by Ontario-based Helix Biopharma Corp. in 2000, Dr. Foldvari explains there was never a strong case to move the company out of Saskatoon. Here, she can continue to draw on her strong network at the University, where she is a Professor in the Department of Pharmacy. This relationship is critical for post-commercialization research, where drug developers find out how the drug or vaccine works. If this work is done in the beginning, Dr. Foldvari explains, the company gains a competitive advantage.

**Phenomenome discovers Saskatoon advantage**

Phenomenome Discoveries Inc. specializes in non-targeted metabolic profiling for the agriculture, biotechnology and related industries. Chief Financial Officer John Hyshka says their Innovation Place location lets them do business at half the cost of setting up in the United States. He also cites qualified grads from the University of Saskatchewan as a key advantage for Phenomenome’s business.