

S.03-91

SIMON FRASER UNIVERSITY
Senate Committee on University Priorities
Memorandum

TO: Senate

FROM: John Waterhouse
Chair, SCUP
Vice President, Academic



RE: CFI and CRC Strategic Research Plan

DATE: September 10, 2003

Please find attached copies of the CFI and CRC Strategic Research Plan and CFI and CRC Strategic Research Plan Summary documents which were reviewed by the Senate Committee on University Priorities (SCUP) at its May 14, 2003 meeting and subsequently approved. These documents are forwarded to Senate for information.

encl.

cc: B. Clayman, VP Research

NOTE:

CFI and CRC Strategic Research Plan attached. Summary is available on the Web at the following address: http://www.sfu.ca/vpresearch/crc/SRP_SUMMARY2003.htm

CFI AND CRC STRATEGIC RESEARCH PLAN
SIMON FRASER UNIVERSITY
25 May 2003

I. OBJECTIVES

The overall objective of our Strategic Research Plan (SRP) is for SFU to become recognized as the leading comprehensive research university in Canada. We are clearly already among the best, based in part on our successes in competitions for research support, awards earned by our faculty and achievements of our students and graduates. SFU's SRP has the following five specific objectives:

1. build upon our existing research strengths to enhance our capacity to promote world-class research and compete successfully for external funds.
2. support and create opportunities for the pursuit of new knowledge, discovery and innovation through provision of the necessary resources needed to support that pursuit;
3. promote strategic alliances and cross-disciplinary research within the University and seek new collaborations with all our communities to foster intellectual, social, cultural, and economic development in the province of BC, Canada and internationally;
4. recruit and retain outstanding faculty with appropriate gender representation to enhance research capacity and provide leadership for new initiatives and key research programs; and
5. recruit the best student researchers and enrich their learning experiences through participation in ground-breaking research and creation of new knowledge, so that they can participate fully in the knowledge society of the 21st Century.

Key to achieving our goal is the appointment and retention of researchers of the highest caliber and the acquisition of research infrastructure to support their research and that of their colleagues. The CRC and CFI programs are among the mechanisms which we employ to accomplish these two objectives. The present SRP comprises the unification of plans previously submitted to the two programs separately.

II. MAJOR THRUSTS FOR RESEARCH AND RESEARCH TRAINING

SFU recognizes the contributions of all researchers at, and associated with, the University. The ten research areas described below have been selected for inclusion in the SRP on the basis of their:

- current level of, or potential for, research excellence;
- ability to foster the development of innovative research programs;
- potential for collaboration among SFU researchers and external partners and;
- potential to establish regionally and nationally recognized niches of research excellence.

The following descriptions of the areas are relatively brief and therefore do not catalog the full range of individual or departmental contributors to the research thrusts. The order of presentation is alphabetical and does not imply prioritization.

Chemical and Structural Biology and Biological Physics: Many basic problems in biochemistry, molecular biology, evolution, primordial chemistry, pharmacology and biomedicine remain unsolved despite the impressive body of extant information on proteins, fats, nucleic acids and other biological molecules. To understand life processes at a more fundamental level, we need a deeper understanding of molecular properties, shapes, structures, affinities, actions and reactions. Researchers in SFU's Departments of Chemistry and Molecular Biology and Biochemistry and School of Kinesiology have international reputations in chemical and structural biology. They have been expanding knowledge of peptide synthesis, protein folding, ligand-receptor binding, macromolecular recognition, membrane dynamics and structure, combinatorial molecular biology and the structural properties and catalytic activities of DNA and RNA. A research group in the Department of Physics is also interested in DNA, chromosomes, proteins and membranes. Specialists in soft condensed matter physics, they have been gaining important insights into how individual steroids and fatty acids affect the properties of biological membranes and are revealing important physical details of DNA replication.

These chemists and physicists are generating important new opportunities for biotechnology and for pharmaceutical firms involved in drug design. In the near future, moreover, they will be able to enhance both their research potential and their opportunities for collaboration with the planned creation of the Centre for Biomolecular Interactions and Health Research. This ultra-modern facility will give researchers in a range of fields access to powerful and sophisticated bio-imaging and biophysical equipment. They will be able to perform x-ray crystallography on small molecules, produce images of bimolecular interactions and compute protein infrastructure with increased precision.

Economy: Good economic models are fundamental to the generation of good policy decisions, especially in today's globalized world, where a single event can have an impact on people thousands of miles away. Economic policy, analysis and development are strong research areas at SFU. Indeed, faculty researchers have been making significant contributions to the understanding and application of macro- and microeconomic theory - particularly as it applies to labour markets, industries, international trade, public institutions, demographics, development, resource extraction, education, public choices, urban life and the environment. Their insights are applied at the local, national and international levels.

While such research is housed mainly in the Departments of Economics and Geography and in the Faculty of Business Administration, there is extensive collaboration with researchers in other related units, including the School of Resource and Environmental Management and

Department of Political Science. Research at SFU consequently covers a wide range of important issues, ranging from sustainable resource development and the socio-economic well-being of resource-based communities, to the impacts of globalization on economic activity, to the effect of judicial systems on the economic behaviour of producers and consumers, to the cost and delivery of health care.

In 1990 SFU formed the Community Economic Development Centre, which collaborates with BC communities, individuals, institutions and organizations on research in local economic development. Two Centres are now in the planning stage. Researchers in the Centre for Research on Adaptive Behaviour in Economics, in association with three other SFU research clusters (the Behavioural Ecology Research Group, Centre for Public Policy Research and the Evolutionary Psychology Research Group), will employ modern survey techniques and computational methods, as well as studies involving human subjects, to determine how people learn, adapt and evolve in different economic environments. The Centre for Global Political Economy will increase opportunities for research collaborations in this important area. Both new Centres will facilitate collaboration and the dissemination of research results locally, nationally and internationally.

Education: The knowledge-based society of the 21st Century requires that universities expend considerable resources investigating means of improving access to, quality of and delivery of knowledge and learning. Research in Education addresses the fundamental practical and philosophical questions concerning what it is to be human, to be cultured and to be educated. In SFU's Faculty of Education, research expertise is especially strong in the areas of applied cognitive psychology, curriculum development, teacher education, child development, leadership, cultural studies and philosophical foundations. Researchers have been exploring the foundational questions concerning education and related work in Humanities and Social Sciences disciplines. They have also been exploring questions directly concerned with the coherence, viability and sensibility of major programs of research and scholarly inquiry that have been influencing educational theory and practice. Linked to these pursuits is research into the means to educational ends and questions of, for example, contemporary curriculum demands, school organization, teaching methods and the meaningful integration of emerging learning technologies. The Institute for Studies in Teacher Education focuses on research and inquiry among those involved in the SFU Professional Development Program.

Research covers a wide range of issues, including the social and cultural context of learning, individual development and its relation to curriculum; the nature of educational theory and types of research appropriate to different questions, adjudication of knowledge claims and research findings related to learning, development and other educational concepts, teacher-centered versus child-centred focus, moral and social education, including issues of diversity and difference, leadership and administration, critical thinking, and effective programs for youth at-risk and second language acquisition. The Centre for Education, Law and Society is situated in the Faculty of Education; its mandate includes research into the legal issues that are of concern to teachers and students.

Environment and Ecosystems: Critical environmental issues must be addressed in the 21st Century; these include pollution, habitat-destruction and a variety of geophysical processes that cause natural disasters, decline of species and climate change. There is a pressing need for more research into causes and effects and for in-depth studies of social attitudes, public policies and historic precedents that affect environmental planning. SFU has strong environment-oriented expertise in diverse disciplines, including Biology, Chemistry, Physics, Ecology, Forestry and Environmental Physiology, Toxicology, Biotechnology and Sustainability, Physical and Social Geography, Resource and Environmental Management and Earth Sciences. Some Computing Science and Geography researchers are specialists in remote sensing, geographic information systems and other advanced tools required in environmental research.

SFU scientists specializing in geophysical processes have been focusing on areas such as natural hazards, slope stability, terrain analysis, applied geomorphology and groundwater hydrology. The planned Centre for Natural Hazard Research will integrate scientific research on natural-hazards with public-policy research, a move that will enhance the ability of the scientists' results to inform public policy. Biology colleagues have been performing critical behavioural and physiological studies of plant, insect, marine and forest ecosystems, pest/disease management and control, habitat restoration and the management of wild populations, some using the Bamfield Marine Station (WCUMSS) on Vancouver Island's west coast) as a research base. Other faculty researchers are investigating relevant aboriginal issues, sustainable urban development, public policies relating to the environment, environmental economics, environmental history, environmental sustainability, tourism and recreation resource management. The Centre for Tourism Policy and Research, the Centre for Coastal Studies and the Centre for Wildlife Ecology provide leadership in these areas. Often, the research involves more than one Department and/or is linked to external partners such as BC Hydro, Fisheries and Oceans, Environment Canada, the Geological Survey of Canada, or other universities.

Health, Genomics and Physiological Sciences: War, international travel, crowded cities, antibiotic resistance, disease outbreaks (e.g. SARS), pollution and the ordinary stresses of modern life - all are creating new health and safety challenges for Canadians. Fortunately, the human genome map, advancing medical technologies and our increasingly detailed knowledge of biochemical processes offer exciting new possibilities for the prevention, diagnosis, cure and/or control of disease and illness. SFU is home to some of the world's top researchers in these areas. They represent diverse disciplines: Anthropology, Bioinformatics, Bioengineering, Biomedical Engineering, Cellular Biology, Cognitive Science, Computational Biology, Education, Genetics, Gerontology, History, Information Technology, Kinesiology, Management, Physics, Physiology, Psychology, Proteomics, Sociology and Women's Studies. Indeed, over 10% of faculty members (distributed across all five SFU Faculties) are involved in Health research. Among their individual research interests are genomics, population health and determinants of health, gerontology, social and biological roots of disease, mental health, diabetes, programmed cell death, clinical practice, health informatics, medical imaging, forensic science through entomology, diagnosis, rehabilitation, hereditary diseases, injury prevention, health-care systems and public health policy.

To consolidate these highly varied pursuits and to increase support and collaborative opportunities for health researchers, SFU established the Institute for Health Research and Education (IHRE) with its five "pillars" of a) basic biomedical, b) clinical interfaces, c) societies,

cultures and population health, d) health services and systems, and e) technology and health. IHRE is the basis for a proposed new Faculty of Health Studies. Once approved, this (sixth) Faculty will embrace present IHRE members, additional faculty appointments (including at least two Tier I and two Tier II CRCs) and new graduate programs in population health. As noted above, the new Centre for Biomolecular Interactions and Health Research (CBIHR) will provide disease and gene researchers with state-of-the-art bio-imaging and biophysical equipment.

History, Culture, Social Relations and Behaviour: SFU recognizes that research and scholarship in the social sciences, contemporary arts and humanities is vital to our future, as we face challenges never before encountered. Advancing technologies, urbanization and globalization are rapidly altering or destroying traditional social orders and rules. Thus, maintaining a civil society requires decisions and actions based on a deep understanding of the fundamental human condition. SFU has a strategic thrust in this area, with world-class scholars and researchers in the human sciences. Distributed across three Faculties (Arts, Applied Sciences and Education), they work in disciplines such as Anthropology, Archaeology, Contemporary Arts, Communication, Criminology, Education, English, Environmental History, French, History, Philosophy, Political Science, Psychology, Sociology and Women's Studies.

These researchers are widely recognized for their many important breakthroughs in the areas of history, technology and the arts, archaeology, human intelligence, perception, cognition and behaviour, First Nations issues, women's issues, multiculturalism, literature, urban environments, personal, national and cultural identities, immigration issues, philosophy, religion, the social effects of science and technology, and crime and criminality. They have provided important new insights into current world events, crime patterns, the neurological basis of thinking, human creativity, societal values, human motivation and other factors that shape how people think, act and react.

Their research is enhanced and extended by several Centres and Institutes that facilitate interdisciplinary collaborations. Examples are the Mental Health, Law and Policy Institute, the Institute for Canadian Urban Research Studies and the Vancouver Centre for Research on Immigration and Integration in the Metropolis. The latter is one of four Canadian research centres dedicated to studying the impact that immigrants to Canada have on local economies, the family, educational systems and the physical infrastructure of cities. Criminology has ties with the BC Forensic Psychiatric Services Commission, BC Corrections Branch, Ministry of the Attorney General and the UBC Law School.

Language, Communication and Information Dissemination: Every facet of Canadian society is being dramatically transformed by interconnected computers, satellite communication, fibre optics and other technologies that connect us virtually instantaneously to people and information anywhere in the world. An important issue is how to ensure that all citizens, no matter which language they speak, gain maximum benefit from this revolution in communication. To address this issue, SFU faculty researchers in Cognitive Science, Linguistics, Philosophy, Psychology, Computing Science and Education have been working to achieve a deeper understanding of the complexities of human language, communication and information dissemination. They have also made significant improvements in the communication technologies. Researchers are focusing on a wide range of areas such as phonetics and phonology, syntax and semantics, theoretical morphology, discourse analysis and pragmatics, cross-cultural communication, second language acquisition, computational linguistics, computer-assisted language learning, artificial intelligence, machine translation and the fundamental nature of human knowledge and being (epistemology and ontology). Of special interest are French language, literature and culture and the intersection of the three, First Nations languages, learning English as a second language, the dissemination of printed information and telematics.

Telematics, the convergence of telecommunications, networks and computer applications, is a major multidisciplinary research focus at SFU, with contributing faculty expertise located in the Schools of Communication, Engineering and Computing Science, the Departments of Mathematics, Statistics and Geography and the Faculty of Education. SFU researchers are developing exciting new computer applications for wireless telecommunications and geographic information systems and they are addressing important policy issues regarding implementation of computer-assisted learning and distance education. The Centre for Systems Science and the Centre for Experimental and Constructive Mathematics provide synergistic connections among telematics researchers.

Leadership, Governance, Management and Policy: Strong correlation exists between a socially and economically successful society and a governance system defined by rule of law, accountable institutions and public involvement. In today's rapidly changing multi-cultural society, leaders and institutions are challenged by a multiplicity of competing public needs, agendas and opinions. SFU researchers have been addressing important issues relating to leadership, governance, management and policy. Across the Faculties of Arts, Applied Sciences, Business Administration and Education, they work in a variety of contexts.

For example, the School of Criminology focuses on the justice system, youth law, family law and the legal profession. Researchers in the School won international acclaim for geographic crime profiling. Researchers in Political Science are achieving new insights into policy development processes, global governance, democratic institutions, accountability and legitimacy, while those in Women's Studies are recognized for their work on political and power relations. Faculty with expertise in Economics, Communication, Sociology, Geography, History, the Humanities, Business and Education have interests and a strong record of achievements in a wide range of areas such as attitudes toward risk and social status, management of technological change, welfare policy, mental health policy, immigration policy, ideological conflict, multicultural political theory, corporate strategy, Canadian merger policies, cognitive errors in decision-making, efficiency in public enterprise, applied ethics and ways that educators can encourage ideas-based, innovative leadership. The Faculty of Business Administration has an innovative program in Management of Technology, enhancing research in technology and innovation, including the strategic design, development, and management of technology-based organizations.

In support of these research activities and to encourage collaboration, SFU has established several Research Centres and Institutes. They

include the Centre for Policy Research on Science and Technology, the W.J. Van Dusen BC Business Studies Institute, the above-mentioned Centre for Tourism Policy and Research, the Institute of Governance Studies, the Institute for Studies in Criminal Justice Policy, the Mental Health, Law and Policy Institute, the International Centre for Criminal Law Reform and Criminal Justice Policy and a new Centre for Public Policy Research.

Materials Science: From the Stone Age to the Information Age, newly discovered and developed materials have played pivotal roles in the advancement of human civilization. Materials continue to be critically important. Future advances in information, biomedical, undersea, communication, fuel cell, microelectronic and other enabling technologies will require new and improved semiconductors, polymers, ceramics, metals, glasses and composites. Faculty in the Departments of Chemistry and Physics and the School of Engineering Science have a common interest in Materials Science. Their cumulative expertise lies in surface chemistry, lithography, ferroelectric materials, magnetic materials, biomaterials, materials growth and characterization and theoretical Chemistry and Physics. Chemistry researchers are working on new piezoelectric and ferroelectric devices, conducting polymers, proton-exchange membranes for fuel cells, photolithography, molecular magnetic materials and 'artificial noses.' Physics researchers are creating and studying materials with nanometer-size components, such as ultra-thin magnetic films, quantum wires and dots, molecular wires and nanoscale magnetic particles. A focus of Engineering Scientists is the development and characterization of new semiconductor devices and their applications.

SFU and UBC established the Pacific Centre for Advanced Materials and Microstructures as a focal point for expertise and research in advanced electronic and optical materials, surface science, superconductivity and microfabrication. In turn, its participating researchers have broadened the range of experimental and theoretical tools they can use (including muon spin resonance and synchrotron radiation) by collaborating with laser spectroscopists and researchers at TRIUMF and in the new BC Synchrotron Institute. The planned Centre for Research in Electronic Materials will enable SFU chemists and physicists to design and test new materials for information technology and other applications through advanced research in molecular electronics, photonics, and magnonics. The goal is to fill in fundamental knowledge gaps and develop a new approach to materials design. Also planned is another joint initiative with UBC - a Laboratory for Advanced Spectroscopy and Imaging Research (LASIR), which will contain state-of-the-art laser systems that materials scientists can employ in their investigations.

Technology and Computation: Advanced technologies and applied mathematics are deeply embedded in all aspects of our society, including government, science, medicine, industry, transportation, food production, manufacturing, sports and education. Research is needed, however, to produce more powerful computers, new medical treatments, seamless communications and other improvements. Researchers in SFU's Faculties of Applied Sciences and Science are well-known for their innovations in intelligent systems, microelectronics, telecommunications, robotics and computational mathematics. Located mainly in the Schools of Computing Science, Engineering Science and Kinesiology and the Department of Mathematics, they work in areas such as artificial intelligence, applied mathematics, software engineering, computer vision, biotechnology, bioinformatics optimization, human-computer interaction, database systems, wireless communications, multimedia, high-performance mathematics, remote sensing and geographic information systems. They build on a strong record of successes in high performance computing.

There is much collaboration among disciplines. For instance, researchers in Computing Science, Communication, Engineering Science, Kinesiology, Contemporary Arts and Psychology, Mathematics and Education are working together on research problems in multimedia - some in collaboration with NewMIC - the New Media Innovation Centre. The Institute of Applied Algorithms and Optimization Research brings together faculty from Computing Science, Mathematics and Business Administration. The MITACS NCE, PIMS, WestGrid and the Centre for Experimental and Constructive Mathematics link experts in Computing Science, Mathematics, Statistics, Contemporary Arts, Chemistry, Communication, Physics and Engineering Science.

The planned Institute for Advanced Research on Wireless Technologies will increase collaboration with international experts and accelerate wireless development by integrating advances in materials, devices, components and systems, and enable researchers around the world to test and share algorithms on a mobile wireless test-bed.

III. DEPLOYMENT OF CANADA RESEARCH CHAIRS AT SFU

The following table indicates the number of CRC's presently filled or planned for each thrust. In some cases, a particular CRC falls under research thrusts in addition to the primary one and this is indicated as well. A number of CRC's still remain to be assigned.

Research Thrust	Primary Area		Other Areas	
	Tier I Chairs	Tier II Chairs	Tier I Chairs	Tier II Chairs
Chemical and Structural Biology and Biological Physics	0	0	1	1
Economy	1	0	1	
Education	2	0	1	
Environment and Ecosystems	2	1	2	1
Health, Genomics and Physiological Sciences	2	3		1
History, Culture, Social Relations and Behaviour	1	1	1	
Language, Communication & Information Dissemination	2	0		
Leadership, Governance, Management and Policy	0	1	1	
Materials Science	1	2		
Technology and Computation	2	1	4	2
To Be Determined	9	13		

IV. GENDER REPRESENTATION

Policy Framework: Equity in gender representation is and has always been a critical component of SFU's approach to all appointments to faculty positions, including CRCs. This is operationalized in SFU Policy A10-01 "*Academic Appointments*," wherein are the following statements:

"The University is committed to an employment equity program so that no individual is denied access to employment opportunities for reasons unrelated to ability or qualifications."

"Departments shall employ appropriate strategies in order to encourage application by and consideration of individuals from designated groups which are under represented. Advertisements shall contain University-approved wording regarding employment equity and immigration regulations."

"The recommendation for appointment ... shall include: a detailed statement of the actual search and selection procedure including actions taken to seek out members of designated groups."

Implementation: These provisions are taken very seriously at all levels of review and in particular by the Vice President, Academic and his Academic Affairs office, the Associate Vice President, Policy, Equity and Legal, the University Appointments Committee, and the Academic Operations Committee of the SFU Board of Governors. In each case, evidence must be presented in advertising and recruitment strategies of reaching out to equity designated groups and in the documentation describing consideration of the candidates. Every search committee must have both genders represented. If the final short list has no female representation, then specific rationale must be provided for not short-listing each female applicant.

Proactive Steps: Amid concern about our record of appointing females to CRC positions, the Vice President, Academic has reinforced the message to the Deans that SFU must make aggressive efforts to increase the proportion of females being nominated for CRCs. In addition, two centrally held Chairs were allocated to the Faculties on the basis of a series of criteria, one of which was the likelihood of the proposal to attract female candidates.

Further Steps: Establishing Targets: The University has established the goal of achieving or exceeding the national average of gender participation by granting source by the conclusion of the CRC program. The following table identifies the national average and the resulting targets.

Granting Council Area	SFU's CRC Allocation	% Female – National Average	SFU's Female CRC Goal
NSERC	24	11%	3
SSHRC	15	28%	4
CIHR	4	18%	2

To facilitate reaching these targets, the University will allow targeted, non-advertised searches for all CRC positions where the Dean and the Department are able to develop a pre-advertisement list of strong female candidates. To ensure that appropriate resources are available to Departments to actively target female candidates, the Vice President, Academic will provide additional resources to the unit for the recruitment process, as required.

V. SUPPORT FOR THE DEVELOPMENT OF THESE RESEARCH AREAS

SFU has provided and will continue to provide very substantial support for developing research excellence in all these areas. It provides core infrastructure such as science workshops, an animal care facility and free access to its high-speed computer network. The SFU Library has been provided very substantial increases to its base funding in the last six years to compensate for the huge increases in the prices of

research serials and (to a lesser degree) monographs. Funding has also been provided to help fund massive increases in on-line access to serials in addition to the access provided through the CFI-funded Site Licence project.

All of these efforts have been assisted in recent years by funding of the indirect costs of research, first by the Province of B.C. and then by the federal government. SFU Faculties and central administration unite to provide generous start-up grants to new faculty members and research administration grants to researchers with substantial external funding. SFU provides start-up funding for faculty members and for new research institutes and centres. It also has a network of Grants Facilitators in each Faculty to assist researchers in preparing applications for external funding. The establishment of the Institute of Molecular Biology and Biochemistry was accompanied by very substantial base funding and construction of a dedicated building. More recently, the recognition of existing health research and the goal of major expansion in this area were supported by major base funding to IHRE. The Advancement office has given high priority to generating donations for specific research projects. We are seeking creative solutions to the shortages of space that result from Provincial under-funding of capital projects. In part to assist students complete their research programs, we have assigned a significant portion of the revenues that result from increases in tuition to financial aid.

VI. INTER-INSTITUTIONAL AND INTER-SECTORAL COLLABORATIONS

SFU has forged significant synergistic research alliances with other universities inside and outside B.C., as well as innovative collaborations with a wide range of community partners. Some prominent examples include SFU's role as:

- ◆ a founding member of TRIUMF and PIMS
- ◆ a founding member of the Western Canadian Universities Marine Science Society (WCUMSS)
- ◆ host of the Mathematics of Information Technology and Complex Systems (MITACS) NCE and an active participant in eight other NCE's. SFU hosted the now-concluded TeleLearning NCE
- ◆ host of the international M^cDonnell Project in Philosophy and the Neurosciences
- ◆ one of four Canadian universities participating in a major SSHRC/MRCI-funded project to document the History of the Book in Canada.

VII. ASSESSMENT

The committee of academic Deans, together with the Vice Presidents, Academic and Research will assess SFU's success in meeting the objectives outlined in the SRP. The assessment will occur primarily at the institutional level. The University will evaluate the overall successfulness of the SRP according to the goals and suggested indicators outlined below for each of the SRP's five objectives.

- (1) Existing research programs should demonstrate clear evidence of enhancement. Major research discoveries, increased publication activity in leading peer-reviewed journals and monographs from scholarly presses, recognition of research excellence by the academic and non-academic community, and heightened success in obtaining external research funding, will all be taken as such evidence.
- (2) Innovative new research programs should have begun and, where possible, there should be indications of early successes.
- (3) Research that brings together researchers from across traditional disciplines and which promotes strategic alliances both within and outside the University should be on the rise and there should be increased successes in technology/knowledge transfer.
- (4) Outstanding scholars will be leading elements of the major research thrusts. An increasing faculty complement, expanding research productivity, and the attraction to the University of both senior and junior researchers who participate in the research programs will be viewed as a clear sign of success.
- (5) Enhanced incorporation of research into graduate and undergraduate studies, expansion of the participation of excellent students in research programs, increased student understanding of diverse research approaches, paradigms, and perspectives, and heightened satisfaction by graduates in their educational experiences will all be seen as indications of the University's success.

On the basis of the review, an updated SRP will be developed through the process described in more detail below and the updated SRP will then be forwarded to the CRC/CFI Secretariat.

VIII. INSTITUTIONAL PLANNING AND APPROVAL PROCESS

SFU developed a comprehensive, bottom-up academic planning process in 1997/1998. Each Department prepares a three-year plan, highlighting among other things research directions, staff requirements and infrastructure needs. These plans informed the 3-year plans of SFU's five Faculties, which in turn were incorporated into a single planning document for the University. The (then) most senior academic planning body, the Senate Committee on Academic Planning, reviewed this document. The year 2003/04 marks the start of the third iteration of this three-year academic planning process.

On the basis of these planning documents and the previous CFI SRP and CRC SRP, this SRP has been collaboratively developed by the academic Deans (in consultation with their Departments/Schools), the Vice Presidents, Academic and Research and the President. It has been reviewed and approved by the Senate Committee on University Priorities, the most senior academic planning body.