AGENDA ITEM NO: 9.2

UNIVERSITY COUNCIL

PLANNING AND PRIORITIES COMMITTEE

REQUEST FOR DECISION

PRESENTED BY: Bob Tyler, Chair, Planning and Priorities Committee

DATE OF MEETING: April 18, 2013

SUBJECT: **Establishment of PRISM (Proteomics Research in Interactions and Structure of Macromolecules) as a Type A Centre in the College of Medicine.**

DECISION REQUESTED:

It is recommended:

That Council approve the establishment of PRISM (Proteomics Research in Interactions and Structure of Macromolecules) as a Type A Centre in the College of Medicine, effective April 18, 2013.

PURPOSE:

The Proteomics Research in Interactions and Structure of Macromolecules Centre will enhance the synergy amongst researchers engaged in protein science research, attract high-quality graduate students and provide summer studentship opportunities for undergraduate students.

CONSULTATION:

The Centres Subcommittee considered the proposal to establish PRISM on November 29, 2012, and the Planning and Priorities Committee considered revised versions of the proposal at its meetings on February 6 and March 20, 2013. Suggested revisions related to refinement of the budget, clarifying the purpose of the centre, and consulting with the Canadian Light Source, Inc. and the Saskatchewan Structural Sciences Centre, given the relationship and interaction of PRISM with these two entities.

SUMMARY:

The Planning and Priorities Committee supports the establishment of PRISM as a Type A centre. The Centre will intensify the efforts of protein science researchers within the College of Medicine and elsewhere through access to the specialized equipment in the Protein Characterization and Crystallization Facility (PCCF) housed within the Centre. The Centre is well resourced and will provide scholarship opportunities for

undergraduate and graduate students. The establishment of PRISM will aid the College of Medicine in its pursuit of greater research intensity.

ATTACHMENTS:

1. Proposal to establish PRISM

The Centres Policy and Guidelines may be found at:
www.usask.ca/university_secretary/policies/research/8_23.php

1. Name of the Centre: **Proteomics Research in Interactions and Structure of Macromolecules – PRISM**

2. Type of Centre: Type A, reporting to the Dean of the College of Medicine

3. Academic Plan

Goals and Objectives/Impact and Relationships

The Proteomics Research in Interactions and Structure of Macromolecules (PRISM) Centre has two main goals/objectives. These are aligned with the mission of the College of Medicine (CoM) to conduct vigorous research in the area of health sciences. **The first objective is to increase research intensity within the College in the area of protein science and to increase external funding for research activities. The second is to create a unique training and research environment to attract and retain outstanding graduate students, along with critical mass in the broad research area that will enable recruiting outstanding new faculty to the CoM and the University of Saskatchewan (U of S).**

The goals of PRISM are of prime importance not only to the CoM but also to the U of S as a whole, and will be achieved through greater collaboration within the CoM and across campus. PRISM will bring together structural biologists, biochemists, and molecular and cell biologists with common interests in the molecular organization of the cell and a molecular view of cellular mechanisms. In this way, PRISM will embrace and at the same time go beyond the new cluster-based organization of research activities being established within the CoM. Already there is significant activity at the U of S in areas of protein science such as structural biology and enzymology that has greatly intensified as a result of the presence of the Canadian Light Source (CLS), leading to hiring of new faculty in these disciplines. There are now five groups engaged in research in protein structure by X-ray diffraction in various colleges/departments, including the Department of Biochemistry, the Department of Chemistry, the College of Pharmacy and Nutrition, and the Western College of Veterinary Medicine, and one group using high-field NMR spectroscopy in the Department of Biochemistry. There also are several groups pursuing research in enzymology in the Departments of Chemistry and Biochemistry. There are a number of PIs in the Departments of Microbiology and Immunology, Pharmacology and Psychiatry, the College of Pharmacy and Nutrition, the Cancer Research Unit (Saskatchewan Cancer Agency), and the Vaccine and Infectious Disease Organization (VIDO) who are engaged in research requiring a molecular level view of their targets. These activities have important common denominators in protein expression, purification and characterization. Presently, however, the PIs involved in studies of proteins and protein-protein interactions have limited contact with each other. This said, several collaborations exist already between members of PRISM, e.g. Anderson-Moore, Palmer-Sanders, Sanders-Kaminskyj, and Cygler-Koester. Also, larger collaborative efforts exist among members of the SHRF Molecular Design Research Group, most of whom are participants in the current application. Further collaborations will develop naturally with the increased interactions between PRISM members and through co-supervised students and shared external funding.

The Saskatchewan Health Research Foundation (SHRF) initiated some time ago the Research Group Program that supports a small group of researchers (8-10) in carrying out a well-defined research project. One such group is the Molecular Design Research Group (MDRG) that studies protein structure and function. PRISM has a different objective. It brings together a larger group of scientists with diverse research programs but with protein science as a common denominator. It is open to members whose research is already externally funded, and through new collaborations the intent is to increase the level of external funding. Major instruments residing in members' laboratories will be accessible to all PRISM members and specific activities and instrumentation that are common to several laboratories will be established as core facilities. The research themes of PRISM members are related to the understanding and utilization of molecular processes in the cell and in cell-cell interactions, and include: i) signal transduction and molecular mechanisms of cancer; ii) protein-protein interactions and molecular mechanism of pathogenicity; iii) molecular mechanisms of immunity and vaccine development; and iv) small molecular inhibitors of enzymes and molecular interactions as therapeutic agents.

PRISM will provide a forum for scientific discussion and presentation of current research activities in members' laboratories. It will organize joint seminars, develop an active invited speakers program, support and encourage participation by students in Science Day organized by the CoM and, in time, promote the introduction of new interdisciplinary graduate courses to the curriculum. A strong research environment within PRISM will attract higher calibre students. Ongoing scientific discussions will lead to new collaborations and successful applications for research funding. Securing financial support for graduate students is essential for PRISM and one of its first activities will be to identify funding opportunities for student support. The existence of a network of collaborations among PRISM members that will allow graduate students to obtain broad training in several areas is key to such funding. As discussed below, graduate stipends provided by the CoM initially will provide a nucleus for new collaborative projects and will be awarded to students who are co-supervised under such collaborations. PRISM will engage in discussions with other colleges in order to obtain additional funding dedicated to graduate students co-supervised by PRISM members.

PRISM will maintain the Protein Characterization and Crystallization Facility (PCCF) with a possible extension of activities to include high-throughput cloning and protein expression centred on the needs of CoM faculty (Appendix 1). The main purpose of PCCF is to increase the level of collaboration between PRISM members by providing access to specialized equipment guided by knowledgeable PhD-level staff. The CoM already provides support for PCCF through salary support for personnel. Two PhD-level scientists have been recruited to supervise the operation of the facility and specialized instruments have been purchased in support of the PCCF mandate. PRISM will continue efforts to obtain funding for additional equipment, as it is crucial that the equipment at PCCF be 'cutting-edge' not only at the present time but that it remains so in the future. PRISM will participate in an initiative to establish a mass spectrometry facility within the CoM with the capability to characterize small molecules, metabolites and peptides, and to extend this to the characterization of full-length proteins and their proteolytic fragments. Contacts have been established with the proteomics facility at the University of Regina (U of R) established last year under the direction of Dr. Mohan Babu, who joined the U of R from the internationally renowned group of Drs. A. Emili and J. Greenblatt at the Banting and Best Institute, University of Toronto.

In order to increase the research competitiveness of the U of S and the CoM, both nationally and internationally, the CoM is determined to increase the level and quality of research carried within the College and within the U of S, with a primary goal of substantially increasing the success rate for Tri-council funding. PRISM will pursue these goals through an increased level of internal and external collaboration, maintaining a joint facility to provide access to unique instrumentation and expertise relevant to PRISM members, and developing plans for new equipment acquisition and maintenance. A key element in PRISM's strategy is to provide a diverse training opportunity for undergraduate and graduate students that will result in an increase in the number of students at all levels, PhD students in particular. We believe that PRISM will become a magnet attracting excellent students from Canada and abroad.

Members of PRISM will be available to assist faculty engaged in undergraduate medical education who are planning to develop and deliver focused teaching modules within the M.D. program. This will aid in meeting accreditation standards pertaining to the application of the scientific method, observation of biomedical phenomena, and critical analysis of data (ED-12) and the principles and practice of translational research (ED-17A).

4. Proponents

Dr. Jane Alcorn, Associate Professor, College of Pharmacy and Nutrition and Toxicology Centre. She is interested in the developmental maturation of xenobiotic elimination mechanisms, in the role of pathophysiological or drug interactions on transporter function in polarized epithelial barriers such as the lactating mammary epithelium and in the discovery of therapies that modulate common risk factors of chronic disease. Her research utilizes a variety of pharmaceutical analysis, molecular biology and biochemical methods as well as cell culture systems and animal models in attempts to generate new understandings in these areas of investigation. ***Her research is supported by grants from NSERC and SHRF.***

Dr. Deborah Anderson, Senior Research Scientist, Saskatchewan Cancer Agency, Professor, Division of Oncology, Associate Member, Department of Biochemistry College of Medicine. Her laboratory is interested in receptor tyrosine kinases and their role in cancer. ***Her research is funded by the CIHR, the Canadian Breast Cancer Foundation and the Saskatchewan Cancer Agency. In addition, Dr. Anderson was recently awarded a CFI-LOF grant for a live cell confocal microscopy system.***

Dr. Linda Chelico, Assistant Professor, Microbiology and Immunology, College of Medicine. She focuses on a specific family of host restriction factors, the single-stranded (ss)DNA cytosine deaminases that can restrict HIV-1 replication by inducing mutagenesis and ultimately inactivating the proviral DNA. ***Dr. Chelico's research is supported by NSERC and CIHR.***

Dr. Ravindra Chibbar, Professor and Canada Research Chair in Molecular Biology for Crop Quality, Department of Plant Sciences, College of Agriculture and Bioresources. He is analyzing the structure and function relationships of proteins associated with abiotic stress tolerance and grain quality (carbohydrates) improvement in cereal and pulse crops. In particular he is interested in c-repeat binding factors (CBF) associated with low temperature tolerance in winter cereals, starch and non-starch polysaccharides biosynthetic enzymes in wheat and barley grains and raffinose family oligosaccharides (RFO) biosynthesis in lentil and chickpea seeds. ***His research is funded by CRC, Saskatchewan***

Pulse Growers, Western Grains Research Foundation in collaboration with NSERC (CRDPJ), Saskatchewan Agriculture Development, Agriculture and Agri-Food Canada.

Dr. Mirek Cygler, Professor, Department of Biochemistry College of Medicine, the Tier 1 Canada Research Chair in Molecular Medicine Using Synchrotron Light. He is pursuing research toward understanding molecular basis for the processes underlying mammalian host-pathogen interaction through the determination of three-dimensional structures of bacterial effectors and their complexes with host proteins. ***His research is supported by CRC, CFI, CIHR, and NSERC.***

Dr. Oleg Dmitriev, Professor, Department of Biochemistry College of Medicine, He applies Nuclear Magnetic Resonance Spectroscopy (NMR) to study molecular mechanisms of membrane transport proteins, in particular the interaction of the anticancer drug cisplatin with the metal binding domain of Wilson disease protein, ***His research is supported by CIHR and SHRF.***

Dr. Andrew Freywald, Associate Professor, Clinical Division, Division of Experimental Pathology, College of Medicine. His main research area is in cancer metastasis. Approximately 90% of cancer-related mortality is caused by the invasive and metastatic activities of malignant cells, and the work of his research group mostly focuses on the molecular mechanisms that determine cancer invasiveness and metastasis. ***His research is supported by CIHR.***

Dr. Ron Geyer, Associate Professor, Department of Biochemistry College of Medicine, He is a member of the *Translational Cancer Research (TCR) Cluster, Cancer Stem Cell Research Group, Advanced Diagnostics Research Laboratory and Saskatchewan Therapeutic Antibody Resource (STAR).* The aspect of Geyer's research that is most aligned with the Centre proposed here is the use of "synthetic" antibody technologies to rapidly generate antibodies against biological targets. ***His research is funded by CIHR, Leukemia and Lymphoma Society, Canadian Breast Cancer Foundation.***

Dr. Pawel Grochulski, Staff Scientist, Canadian Light Source, Adjunct Professor at the College of Pharmacy and Nutrition. He is interested in the application of synchrotron radiation to structural biology and in particular to structure-function relationships of biological molecules, mechanisms of enzymatic activities (including stereoselective enzymatic reactions), rational drug design and drug delivery systems. ***His work is supported by CIHR and SHRF.***

Dr. Susan Kaminskyj, Professor, Department of Biology, College of Arts and Sciences. She is interested in cell morphogenesis in experimental fungal model systems, particularly *Aspergillus nidulans*, cell composition/structure/function analysis at subcellular resolution, and plant-fungal interactions that contribute to survival and competitiveness, particularly in extreme environments. ***Her research is currently supported by a grant from NSERC.***

Dr. Wolfgang Koester, Research Scientist, VIDO, Adjunct Professor, Veterinary Microbiology, at the Western College of Veterinary Medicine. He is interested in interactions at the molecular level of pathogenic Gram-negative bacteria (such as *Salmonella*, *Campylobacter* and pathogenic *Escherichia coli* strains) with their host organisms. ***His research is supported by grants from CIHR and SCIDF.***

Dr. Jeremy Lee, Professor, Department of Biochemistry College of Medicine. He is using nanopore analysis of peptides and proteins as a method to understand their folding properties. He has recently shown that the recreational drug, methamphetamine or 'crack', can cause the misfolding of α-synuclein, which explains for the first time why crack users suffer from a high incidence of PD. ***His work is supported by NSERC and Parkinson Society.***

Dr. Adelaine Leung, Assistant Professor (new hire), Veterinary Biomedical Sciences, Western College of Veterinary Medicine. Her laboratory applies multidisciplinary approaches including structural biology, cell biology and *Drosophila* genetics to study neuropsychiatric diseases. Currently, she is investigating the structure and function of a protein called Disrupted In Schizophrenia 1 (DISC1), which has been implicated in a number of major mental disorders. ***She is applying for funding to SHRF, CIHR and CFI.***

Dr. Michele Loewen, Senior Research Officer, PBI, NRC, Adjunct Professor, Department of Biochemistry College of Medicine, She studies protein structure-function relationships using biochemical and biophysical methodologies. Targets of her work include hormone receptors involved in mediating stress and disease resistance, looking at both protein-protein and protein-ligand interactions. ***Her work is funded by NRC, NSERC and Valent Biosciences Corp.***

Dr. Yu Luo, Associate Professor, Department of Biochemistry College of Medicine. He is studying proteins of DNA repair pathways with the long-term aim of developing inhibitors for combating cancer and infectious diseases. *His research is supported by NSERC and SHRF*.

Dr. Stan Moore, Associate Professor, Department of Biochemistry, College of Medicine. His research interests are focused on two areas: 1) the flagellar protein export system of *Helicobacter pylori*, and 2) chromatin modifying enzyme complexes. Both systems involve multiple protein-protein interactions and protein targeting. ***His work is supported by NSERC and CIHR.***

Dr. Darrell Mousseau, Associate Professor, Department of Psychiatry, College of Medicine and Saskatchewan Research Chair in Alzheimer's disease and related dementias. His research focuses on post-translational regulation of cell function and fate within the context of neurodegenerative disorders, with a particular emphasis on Alzheimer disease (AD). Mousseau's major research objective at this juncture is to determine what biochemical events are common to depression and AD. ***He currently funded jointly by the Alzheimer Society of Saskatchewan and SHRF, and holds a grant from the Canadian Breast Cancer Foundation.***

Dr. Scott Napper, Associate Professor, Department of Biochemistry, College of Medicine and Research Scientist, VIDO. He is pursuing several translational projects with high potential for applications, namely *Development of a Vaccine for Prion Diseases, Retro-Inversion to Improve the Therapeutic Potential of Host Defense Peptides* and *Peptide Arrays for Kinome Analysis of Non-Traditional Animal Species*. Napper's research team has developed a vaccine that induces robust, conformation-specific immune responses to the misfolded conformation. He is currently pursuing kinome analysis of a number of livestock, plants, insects and human disease states (cancer, inflammation and infection)

through collaborations with Industrial Partners. ***He is funded through Genome Canada and through several industrial collaborations.***

Dr. David Palmer, Associate Professor and Chair, Department of Chemistry, College of Arts and Sciences and Associate Member of the Department of Biochemistry, College of Medicine. He is an enzymologist and bioorganic chemist with interests in protein structure-function relationships and applications in catalysis and medicinal chemistry. Dr. Palmer's lab uses synthetic organic chemistry, molecular biology, and kinetic analyses to study the interactions of enzymes with natural and designed substrates and inhibitors. His research focuses on enzymes that are targets for antibiotics or that synthesize antibiotics. ***Dr. Palmer's research is currently funded by NSERC, CIHR-RPP, SHRF, and the Canadian Breast Cancer Foundation, and he received a CFI New Investigator award in 2002.***

Dr. David Sanders, Associate Professor, Department of Chemistry, College of Arts and Sciences and Associate Member of the Department of Biochemistry, College of Medicine. He studies protein structure-function relationships using protein crystallography and enzymology. He has used these techniques to develop novel ligands for various proteins that have applications in human health. He is an established expert in the field of protein crystallography, particularly sugar nucleotide biosynthetic enzymes. ***His work is funded by NSERC, CIHR-RPP*** **and** ***SHRF*****.**

Dr. Scot Stone, Associate Professor, Department of Biochemistry, College of Medicine. He applies basic biomedical research to increase our knowledge about the fundamental biological processes involved in the synthesis of triacylglycerols (TG). TGs are a class of neutral lipids that represent the major storage form of energy in eukaryotic organisms. ***His research is supported by CIHR and Heart and Stroke Foundation.***

Dr. Wei Xiao, Professor, Department of Microbiology and Immunology, College of Medicine. He studies protein biochemistry and structures involved in K63-linked polyubiquitination. He has pioneered the structural analysis of the critical E2-E3 proteins involved in this process through collaboration with Mark Glover (crystallography) and Leo Spyracopoulos (NMR) at U. of Alberta. ***His research is funded by CIHR and NSERC***.

Consultations

The concept of the Centre as presented here was discussed with the Chair of the Department of Biochemistry, Dr. Bill Roesler, and the Acting Dean of the CoM, Dr. Lou Qualtiere, both of whom support this application. The proposal has the full support of the CoM Committee on Research and Graduate Studies, and has been recommended for approval by the CoM Budget Committee and by the CoM Faculty Council.

Dr. Cygler presented the PRISM concept to the Vice-President Research, Dr. Karen Chad, who provided very positive feedback, in particular tying this initiative with the longer-term plan of creating a school of synchrotron science. The research-intensive environment that PRISM will promote is well aligned with the priorities of the CoM and the U of S, i.e. to increase the level of research and significantly raise the level of funding from external sources. A significant portion of the research activities of the scientists belonging to PRISM embraces two of the six signature areas that were selected by the U of S as being of principal importance: (1) Synchrotron

Sciences: Innovation in Health, Environment and Advanced Technologies, and (2) One Health: Solutions at the Animal-Human-Environment Interface.

5. Centre Management

The PRISM Centre will be managed by a Management Committee composed of the Centre Director and two elected members. The Director will be appointed by the Dean of the CoM for a three-year term with possible extension for an additional three-year term. The two elected members of the Management Committee will be elected by PRISM participants and serve for a 3-year period, with the possibility for re-election for a maximum of one additional 3-year term. To assure continuity of the operation of Management Committee through staggering appointments, the first term for elected members will be 2-year (1st member) and 1-year (2nd member). The past Director will serve as a non-voting advisor to this Management Committee to improve continuity.

The Division of Biomedical Sciences will provide assistance in managing the financial resources of PRISM. To this effect, the Division's Financial Analyst will provide help in financial management of PRISM funds as well continue to assist in managing Research Funds of all participants who hold positions in the College, including any collaborative research funds with participating faculty from other units. The Division will also help in managing student stipends, seminar programs and conferences, as well as provide minor clerical support to the Management Committee as needed.

6. Resources and Budget

The CoM provides salaries for two Ph.D.-level researchers to operate the PCCF for a five-year term, and has guaranteed to convert one of these positions to a continuing position in the fall of 2016. These researchers will not only help users in performing their experiments but will be also involved in the planning stage and will help with data interpretation. We consider such involvement with users as critical for the usefulness of this facility. In addition, the CoM has agreed to provide scholarships for six graduate students at 50%, with priority for PhD students with collaborative projects, and three summer student fellowships. These fellowships will be awarded through an open competition ***with selection criteria conforming to the CoM standard***. The remaining 50% of the scholarship will be provided by the two collaborating PIs (25% each) to assure their commitment to the joint project. The scholarships will be open to students of all PRISM PIs, independent of which college they belong to. The application process and evaluation criteria are being developed by the Fellowship Committee and will presented for approval by PRISM members (Appendix 2). The CoM will provide $30,000 annually in support of the activities of PRISM, to be used as decided by the management committee after consultation with all members. Discussions regarding financial support from other Colleges are ongoing.

The anticipated PRISM budget applicable to each of the first three years is presented below.

Purpose	**Amount/year**
PCCF scientist (5 years)	$ 70,000

PCCF scientist (3 years)	$ 50,000
Graduate student scholarships	$ 60,000
Summer fellowships	$ 13,500
PCCF operations	$ 10,000
Seminar program	$ 8,000
PRSIM research conference	$ 7,000
Administrative expenses	$ 5,000
TOTAL	$223,500

- Operating expenses of the Protein Characterization and Crystallization Facility to offset user fees ($10,000). We view this as a critical issue in the first two to three years of operation of the facility. User fees are frequently a barrier to widespread use of instrumentation. This is especially the case in the initial stage of the operation. This issue will be reviewed after two years of operation, in the summer of 2014.
- Support seminar program with 10 invited speakers. The seminars will be on a monthly basis with the exception of summer months. At least four speakers would be from outside of the U of S ($8,000).
- Support for a one-day conference dedicated to the research progress made by students working under the supervision of PRISM members. We will strive to engage in these meetings researchers from the Universities of Alberta, Calgary and Manitoba with research profiles similar to those of PRISM members. We anticipate that this meeting will attract over 100 participants. One or two keynote speakers will anchor the day ($7,000).
- Secretarial support and other administrative expenses ($5,000).

PRISM members will have active and well-funded research programs and represent a critical mass guaranteeing the success of the Centre. We foresee the expansion of the Centre through two mechanisms: (1) accepting additional members already working at U of S and (2) recruiting of new faculty in research areas where we foresee future growth. These include membrane protein crystallography, molecular dynamics by NMR spectroscopy, computational biochemistry and bioinformatics (will explore possibility for a joint appointment with the Department of Computer Science), and protein-protein interactions within cells and using advanced microscopy methodology (TIRF, PALM, STORM and super-resolution microscopy). The CoM has already approved one new faculty position, which will be advertised in the near future, and hiring will follow the process developed for Canada Research Chairs.

We will approach SHRF and discuss with them the possibility of financial support of PRISM's activities, in particular for infrastructure maintenance and student support.

Financial support for PRISM will be initially reviewed annually for the first three years, at which time a longer term financial plan will be developed based on PRISM's ability to secure external funding for its operations.

7. Support

This proposal has been discussed with the Acting Dean of CoM, Dr. Lou Qualtiere, who is very supportive of this concept and who views the PRISM Centre as a vehicle to increase research intensity within the College.

8. Governance

The day-to-day activities of the Centre will be supervised by the Management Committee led by the Centre Director. *Ad hoc* committees for specific tasks will be elected by all PRISM members, e.g. for awarding internal scholarships. A report on PRISM's activities will be provided to the Dean annually.

A Research Advisory Committee of three prominent external researchers has been established to help in defining the future directions of PRISM.

9. Systematic Assessment

PRISM will be subject to systematic review as specified in the University's *Policy on Centres*. A review will be conducted every four years as part of the integrated planning process in the College of Medicine.

Appendix 1

Protein Characterization and Crystallization Facility (PCCF)

Many faculty members within the College of Medicine are involved in research toward understanding of a variety of diseases at the molecular level. This research encompasses facets of human health and disease ranging from bacterial infections, chronic diseases to cancer and psychiatric illness. Many of these investigations require expression and characterization of proteins of interest to the researchers. The instrumentation for biophysical characterization of proteins is expensive and requires a specialized knowledge not only to operate the instruments but, most importantly, to interpret the acquired data.

In order to provide expanded support for researchers whose research requires or benefits from investigation of proteins *in vitro* the College of Medicine has established the Protein Characterization and Crystallization Facility (PCCF). The concept of this facility is not only to assemble the instrumentation required for protein cloning and expression, purification, characterization and crystallization but also to assure the expertise to aid the researchers in all these steps. The facility has been established through funding from CFI (M. Cygler) and the College of Medicine (salary support). The immediate and primary users of PCCF are the members of the PRISM Centre. However, the PCCF is open to all U of S faculty within the available instrument and personnel capacity.

The focus of the PCC Facility is on techniques specific for protein characterization and crystallization. The instruments already present include the shaker-incubators for bacterial cell cultures, the liquid handling robot (Biomek FX) for high throughput cloning and small-scale expression testing, dynamic light scattering instrument with a plate reader, crystallization robots (Gryphon and Oryx), crystallization plate hotel (CrystalFarm), isothermal titration calorimeter (nanoITC). Instruments that are on order include circular dichroism spectrometer (Chirascan Plus) and crystallization solution mixer.

PCCF is geared toward the needs of PRISM members, predominantly biologists and biochemists, and is localized in the D-wing of the Health Sciences Building in close proximity to the majority of its current and potential users. The main emphasis of PCCF is on expanding the use of biophysical methods to study proteins. While the Ph.D.-level personnel will help with setting up the experiment, their more important contribution will be to help with interpretation of the resulting data. This is a key feature of PCCF since most users are not experts in the available techniques and may have difficulty in extracting meaningful information from the obtained data.

The PRISM members will also continue accessing the instrumentation at the Saskatchewan Structural Sciences Centre (SSSC), such as the 600 MHz NMR spectrometer, mass spectrometry, and potentially the EPR instrumentation. PCCF and SSSC established already a fruitful collaboration to assure providing the best access to unique instrumentation for UofS researchers. Our joint efforts to obtain funds for instrument upgrades and replacement through CFI was very successful. The CFI grant awarded in the 2012 competition will fund among others the X-ray single-crystal diffraction instrument (located at PCCF) and Surface Plasmon Resonance instrument (located at SSSC), which will be shared by PCCF and SSSC users.

An important role of PCCF is to increase the level of collaboration between labs working on protein expression and characterization, and in particular to expand the application of structural biology methods in research carried at U of S. The presence of Canadian Light Source on the U of S campus gives a unique opportunity and advantage for structural biology research to the investigators at U of S. There are already strong ties between several PRISM members and the CLS and we will work on strengthening this relationship.

Appendix 2

PRISM SCHOLARSHIP ELIGIBILITY

Last Edited December 17, 2012

Criteria for Awarding a PRISM Scholarship:

A. Acceptance into the graduate program

For a student to be eligible, they must be have been accepted by CGSR as a fully qualified graduate student into the graduate program of a University of Saskatchewan Department. The student must be accepted into a graduate program prior to the deadline for taking up the award (September 1, in the year of the application).

B. Supervisors and commitment of financial support

The student must be either:

Co-supervised by two supervisors, both of whom must be PRISM members.

OR

Supervised by one main supervisor, and also by a strong collaborator, both of whom must be PRISM members.

Both co-supervisors (or supervisor and strong collaborator) must agree to provide equal financial support necessary to complete the graduate program.

The total amount of the scholarship that the student will receive must meet or exceed $20,000 per year.

The PRISM scholarship will provide:	$10,000 per year (50%) for each of two years
Supervisor One	$5,000 per year (25%)
Supervisor Two (or strong collaborator)	$5,000 per year (25%)

The student may not also hold a major salary award from another source (e.g. CIHR, NSERC, College of Medicine), concurrently with a PRISM scholarship, but may receive devolved scholarship funds from home Department(s). These devolved funds may be used to reduce (in equal parts) the contributions provided by the two supervisors. The contribution of $10,000 per year from the PRISM scholarship will remain the same.

C. Number of years of eligibility and time in program

1. M.Sc. Students – Must be less than two years in program at the time of application.
2. Ph.D. Students – Must be less than two years in Ph.D. program at the time of application.
3. M.Sc. transferred to Ph.D. Scholarships - maximum 4 years (2 years at M.Sc. and 2 years at Ph.D. levels) years of support, not beyond the 5th year in the program. Thus, students can be eligible to apply for a total of two 2-year PRISM scholarships, one as a M.Sc. student, and a second after transfer into a Ph.D. program.

D. Academic standing

1. Applicants holding degrees from Canadian or U.S. universities:

   M.Sc. students - A GPA of 80% (or equivalent) over the final 60 cu of undergraduate study is required. A student not meeting this academic requirement, but who achieves an 80% average or better in at least 3 cu of 800-level coursework during the first year of M.Sc. study, will be considered to have met the academic requirement for a PRISM scholarship in their second year of study.

   Ph.D. students - Marks of M.Sc. study. A GPA of 80% (or equivalent) is required.

   M.Sc. students who transferred to a Ph.D. program - Eligibility during the M.Sc. and Ph.D. portions of the program are the same as described above.

2. Graduates of educational systems outside Canada and the U.S.:

   The academic standing of these students can be difficult to evaluate and equate to North American standards. Therefore, new students will be considered for the PRISM scholarship only after they have taken at least one course at the University of Saskatchewan and attained mark(s) of at least 80% and their GPA from home Institution is 80% or higher.

E. Satisfactory progress in research

In order for students already enrolled in the graduate program at the U of S to receive a PRISM scholarship, satisfactory progress in their course work and research is required. Since the advisory committee is in the best position to evaluate this, all advisory committees must make a recommendation at the annual advisory committee meeting as to whether the student has met this requirement. The decision, by vote if necessary, will be documented in the minutes of the meeting and used in the decision to award a scholarship. Similar requirements will apply for the student to be eligible to receive the second installment of his/her PRISM scholarship.

Note - for obvious reasons, new students will not have to meet this requirement.

Canadian Light Source
Centre canadien de rayonnement synchrotron

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February 22, 2013

Professor Miroslaw Cygler
Department of Biochemistry,
University of Saskatchewan
107 Wiggins Road, Saskatoon
SK S7N 5E5 Canada

Dear Professor Cygler,

I am writing in strong support of the new Centre for Proteomics Research in Interactions and Structure of Macromolecules (PRISM) at the University of Saskatchewan. There is a clear synergy between PRISM and the facilities available at the Canadian Light Source (CLS), particularly the CMCF beamlines, 08ID-1 and 08B1-1. These are world class facilities determining the crystal structure of proteins, and they are unique in Canada. The list of the founding members of the PRISM is very impressive and I am very happy that Dr. Pawel Grochulski of the CLS is one of them.

I'm confident that the presence of CLS will be a significant attractor in the recruitment of high quality graduate students to the Centre. They will be able to obtain intensive hands-on training at our annual Mx Data Collection School, and they will grow to become experts with powerful synchrotron techniques as they conduct research at our beamlines.

The research activities of PRISM will help to further intensify research at the Canadian Light Source. Several PRISM members are already actively engaged in research using the CLS, and the Centre will bring researchers together creating exciting new opportunities for innovation in this important area of research. I wish you and your colleagues success with this initiative.

Best regards,

Thomas Ellis
Director of Research
Canadian Light Source Inc.

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Date: April 3, 2013 1:23:31 PM CST
To: "Cygler, Miroslaw" <miroslaw.cygler@usask.ca>
Cc: "Basinger, James" <jim.basinger@usask.ca>
Subject: Letter of support for PRISM

Dear Mirek,

I am pleased to write in support of the proposed Centre on Proteomics Research in Interactions and Structure of Macromolecules (PRISM). The goals of PRISM and the Saskatchewan Structural Sciences Centre (SSSC) are similar in that both U of S Centres strive to increase research intensity, to increase research productivity, to provide a thriving research and training environment with state of the art facilities. Your Centre is specifically focused on protein structure and function, while the SSSC has a broader mandate and serves the research community engaged in the study of composition and properties of organic and inorganic materials, and molecular structures of small and macromolecules, including proteins.

There is an opportunity now, with the development of PRISM and reorganization of the management structure of the SSSC, to work together to reinforce the goals of both Centres. I particularly appreciate your agreement to join the new SSSC Management Committee (MC) as representative of the biomedical protein research community in the College of Medicine. This Committee is now being constituted and will include members from all the different user communities and instrument suites. The SSSC MC will be the forum for ensuring open access to all SSSC facilities and instruments, for planning future equipment upgrades, for building user capacity, for discussing and developing strategies to deal with operational and administrative issues and will provide a venue for promoting interdisciplinary research.

Many of the researchers listed as potential PRISM members are also using the SSSC. I anticipate the interactions will grow in the future and I look forward to working with you as PRISM develops.

Regards,

Sue

Sue Abrams, Ph.D.
University of Saskatchewan
Adjunct Professor
Department of Chemistry
Director (acting)
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October 25, 2012

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Bob Tyler, Chair
Centres Subcommittee, Planning and Priorities Committee
212 Peter McKinnon Building
107 Administration Place
Saskatoon, SK S7N 5A2

RE: Letter of support for the Establishment of the PRISM Type A Centre

On behalf of the College of Medicine I am pleased to support the establishment of a new Type A Centre of Proteomics Research in Interactions and Structure of Macromolecules – PRISM – reporting to the Dean of the College of Medicine. The proposal was discussed at length at the College's Budget, Planning, and Priorities committee on July 31st and unanimously approved by the College's Faculty Council on September 26th, 2012.

I would like to add my strongest support to this new initiative. PRISM Centre has two main objectives:

(1) To intensify research activity in the area of protein science at the University through increased level of internal collaborations within the College of Medicine and across the campus. PRISM brings together structural biologists, biochemists, molecular and cell biologists with common interests in molecular organization of the cell and the molecular view of cellular mechanisms.
(2) To create a unique training setting and supportive research environment to attract and retain outstanding graduate students and to create a critical mass in the broad research area that will allow recruiting outstanding new faculty to the College of Medicine (CoM) and the University of Saskatchewan (U of S).

Research activities of the scientists belonging to PRISM fall into two of the six signature areas that were selected by the U of S as being of principal importance in the future. These two areas are: (1) Synchrotron Sciences: Innovation in Health, Environment and Advanced Technologies, and (2) One Health: Solutions at the Animal-Human-Environment Interface.

The researchers associated with PRISM are all externally funded and maintain vigorous research program. The Centre objectives are in line with the goal of the University of Saskatchewan to increase research intensity within the University and its environment provides new opportunities for collaborative research.

I want to confirm the financial commitments included in the Prism proposal including 3 graduate student and 3 summer student fellowship's, and an annual budget for the center of 30.000 dollars and an award of a new faculty position to support the group. Further faculty positions will be subject to review of the centers' activity over the next several years.

Sincerely,

Lou Qualtiere, PhD
Acting Dean, College of Medicine

LFQ/lmb

cc. Miroslaw Cygler