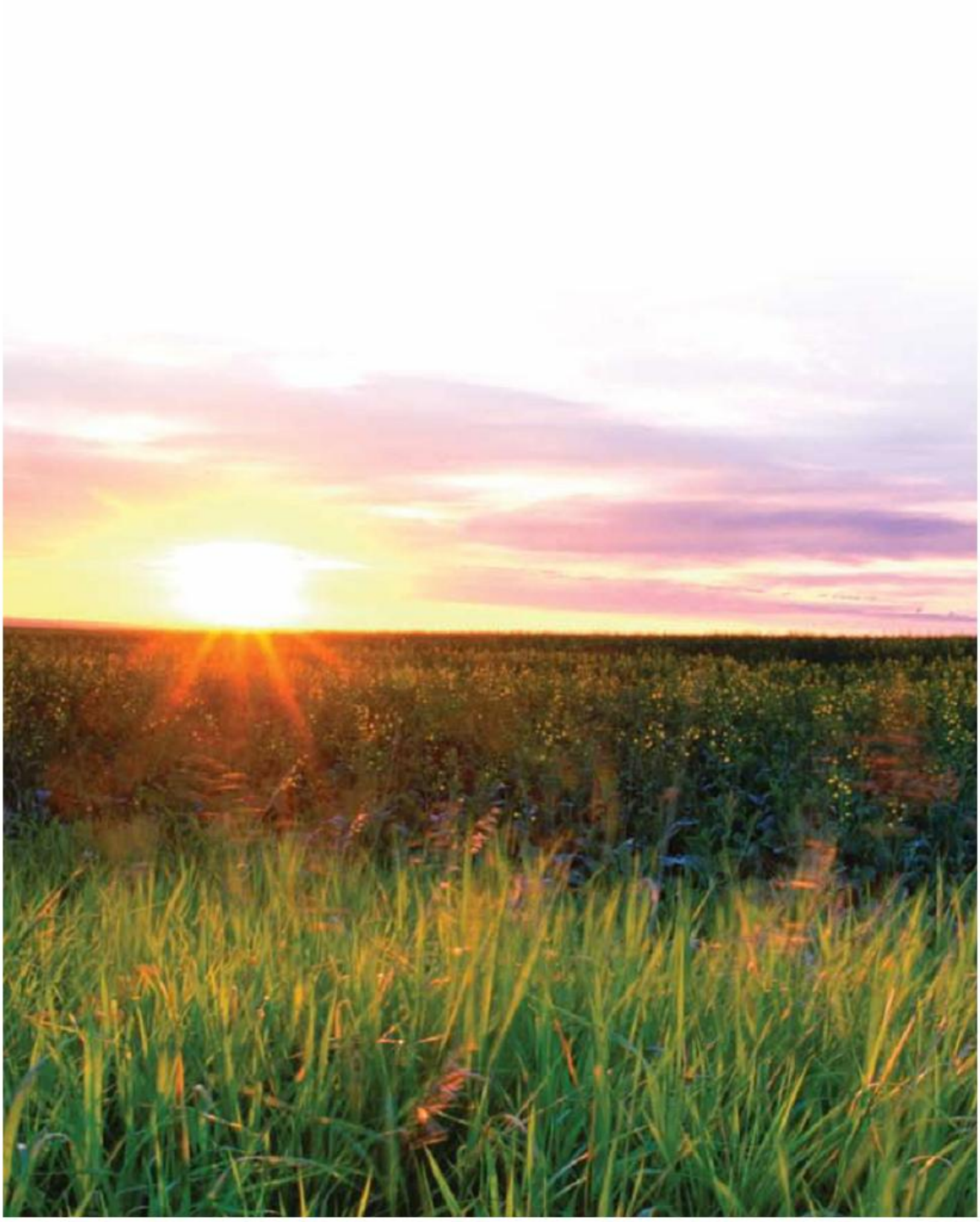
Alberta Health Services

Alberta Addiction and Mental Health Research Partnership Program

Alberta Centennial Addiction & Mental Health Research Chairs Program



Dr. Katherine Aitchison – Annual Report

June 30th 2012

EXECUTIVE SUMMARY

In September 2011, I took up post as the Alberta Centennial Addiction and Mental Health Research Chair in Mental Illness and Addictions. The focus of this Chair is on health services research, priority area Mental Illness and Addictions. In addition, the secondary focus is on Suicide Prevention. In both of these areas, a program of translational medicine is being conducted, in order to lead change and support evidence-based practice, resulting in health care innovations. The proposed program of research is promoting and strengthening working relationships between Alberta Health Services zones and between these and the Universities and relevant community agencies and policy-makers. This health services research program in addiction and mental health is contributing to the vision of the Alberta Addiction and Mental Health Research Partnership Program (AAMHRPP), that Alberta should be a leader in generating and applying world-class research to improve the mental health of its population. The mission of the program is to improve mental health outcomes for Albertans in the mental illness and addictions research priority theme, by advancing leading-edge knowledge and expediting its transfer into mental health promotion, prevention of illness, and innovative service delivery. This equates to the following goals: 1) increasing Alberta's excellence and output of addiction and mental health-related research findings; and 2) the translation of these findings into practice improvements. Significant contributions to advances in knowledge have been made and disseminated appropriately, in order to promote mental health and prevention of illness. Specifically, I have coauthored 12 data-based publications in mental health and addictions in peer-reviewed journals of international standing since September 2011, made many oral presentations, disseminated findings to colleagues, and contributed to lay summaries of the work. Some innovations in service delivery have been made.

Connecting this research program to Alberta Health Services (AHS) has been facilitated by my working as a Psychiatrist within Alberta Health Services (Specialist Registration with the College of Physicians and Surgeons of Alberta achieved), serving in the Edmonton Early Psychosis Intervention Clinic. In recent months I have been Clinical Director of this service.

Connecting the program to the government has been facilitated by the Launch of the Chair event at the University of Alberta (to which there were many invitees including government personnel), attendance of events involving Minister Horne and Premier Redford, and networking with individuals such AHS Board members. Several connections have also been made with the Edmonton Police Service and a letter from the Solicitor General's Office in regard to a proposed area of research has been received.

The research program has three main areas of focus: 1) Psychosis including the role of substance misuse in the genesis of psychosis, 2) Genetic and pharmacogenetic association analysis in depression and anxiety, and 3) Suicide Prevention. These areas specifically include: 1) Investigation of the interaction between adverse childhood experiences, recent adverse life events, genetic vulnerability and exposure to cannabis in individuals with psychotic illnesses (e.g., schizophrenia and bipolar affective disorder), 2) Identification of genetic factors associated with risk to mental illness and addictions and with response to treatments in order to enable appropriate health promotion and prevention strategies, including individually tailored treatments, and 3) Investigation of factors involved in suicidal behaviours, in order

identify biological and psychosocial mediators and therefore appropriate prevention strategies, including in young people.

In the first area, an ethics amendment to a study already being conducted (led by Dr. S. Purdon) was submitted to permit the inclusion of a measure of adverse childhood experiences and another of recent adverse life events. This was approved; data collection has commenced. Relevant candidate genes being studied include catechol-*O*-methyltransferase (COMT) neuronal PAS3 (NPAS3). Grants have been submitted for further work. I presented a review paper in this area to the Edmonton Schizophrenia Conference (September 2012) and this was published in an international journal in March 2012.

In the second area, collaboration with a study investigating biomarkers of response to naltrexone treatment for alcohol addiction has been initiated. Biohazards approval was achieved in January 2012. Recruitment has commenced. A grant to fund the infrastructure for genetic analysis has been submitted, with a proposal for pharmacogenetic translational biomarker discovery. This proposal aims to contribute to the optimization of service delivery through not only providing novel pharmacogenetic information in order to facilitate safe and effective treatment, but also by identifying genetically high risk individuals, for public health promotion and prevention strategies. In addition, collaboration with the GENDEP study has continued, which has resulted in several publications in this research area.

In the third area, the agreement of an international collaboration (the STOP study, www.stop-study.com) to the participation of the University of Alberta has been achieved. The purpose of this study is to identify biological and psychosocial mediators of suicidality in children and young people; my ongoing involvement with this study and co-leadership of the biological part of the study is facilitating contribution to this knowledge base. In the biological part, we have established that saliva is the most appropriate type of sample for genetic analysis in young people, and optimized protocols for conducting this. Results were presented at an international conference in New York (March 2012). Owing to my involvement in the STOP study, I was asked to be part of the Depression in Children and Young People Working Group of the Canadian Depression Research Intervention Network (CDRIN). In addition, there is continuing output from the GENDEP study on suicidality.

In terms of training of high quality personnel, I have recruited and supervised two Research Assistants since April 2012, supervised a Summer Student, and am recruiting to a Graduate studentship (MSc in Psychiatry). In addition, I have worked with a PostDoc to submit a proposal for an Alberta Addiction and Mental Health Research Network in Mental Illness and Addictions, and worked with a Research Associate. I have given a clinical teaching round (Psychiatry Grand Round) at University of Alberta and a seminar for the Department of Community Health Sciences/ Institute for Public Health seminar series, University of Calgary (May 2012).

I have participated in many knowledge dissemination events, including invited presentations to the Edmonton Schizophrenia Conference, the Launch Event for the Chair, presentations about the work of the Chair to the Universities of Lethbridge and Calgary and to the 2012 Addiction Day in Edmonton. In response to my presentation at the latter event (which included recent publications on the toxic effects of “ecstasy”), information about the rationale for advising oral rehydration solutions at “raves” was requested and provided to an Addictions Counsellor working in the Prevention area of Community and Youth Services. Information about

"ecstasy" and its toxic effects has also been disseminated to relevant services including Emergency Medicine, the Poison and Drug Information Service (Calgary), and the Chief Toxicologist.

RESEARCH OVERVIEW

Project #1: *Psychosis Including the Role of Substance Misuse in the Genesis of Psychosis*

Objective(s)

1. To replicate the finding that a variant in the gene encoding catechol-*O*-methyltransferase (COMT) interacts with the consumption of cannabis (prior to 15 years) in the genesis of psychosis.
2. To investigate whether or not these findings are generalizable to other ethnic groups including First Nations peoples.
3. To extend the work to include other relevant genes and other environmental factors: adverse childhood experiences and recent adverse life events.
4. Are genetic variants in other relevant candidate genes (e.g. in the glutamate pathway) associated with increased risk of psychosis in Albertan adolescents at high risk of a psychotic disorder consuming substances of abuse?
5. Do genetic variants in relevant candidate genes (e.g. monoamine oxidase, *MAO*) moderate the effects of social adversity in the genesis of psychosis in such high risk adolescents, and do these findings differ by ethnic group?
6. Are genetic variants in cytochrome P450 enzymes associated with variation in serum levels of antipsychotics and with clinical response including adverse drug reactions to antipsychotics, and do these findings differ by ethnic group?

Description of the Project(s)

The project was developed as part of the Vision and Alignment Statement which was approved as part of the Chair appointment process. The first three objectives and objective 5 of this project are being implemented in collaboration with Dr. Purdon of the Edmonton Early Psychosis Intervention Clinic and Dr. G. Macintyre (University of Alberta), as the "gene-environment interaction study" (1a)*. In terms of objective 4, another candidate gene being studied is the NPAS3 gene, in a CIHR-funded grant (1b), with Dr. Purdon, Dr. Macintyre, Dr. K.G. Todd, and Dr. A. Mason), to which I have been added as a Collaborator. A further grant, which includes more extensive neuroimaging work as well as genetic studies, has been submitted for consideration for funding (1c), led by Dr. P. Tibbo, Dalhousie, Halifax.

Design and Methods

Patients with a first episode of a psychotic illness are being recruited across Edmonton. Appropriate measures (i.e., Adverse Childhood Experiences Questionnaire or ACE, Brief Life Events Questionnaire or BLEQ, and a measure currently being used by a multicentre European study on Gene-Environment interactions in Schizophrenia) have been provided. Ethics committee approval for the addition of the ACE and BLEQ has been obtained and data

collection commenced. Neuroimaging data collection under the supervision of Dr. Purdon and Dr. Tibbo continues. Saliva samples for genetic analysis are being collected.

Outcomes and Key Findings
Abstracts detailing recent output from areas described above have been submitted to the International Early Psychosis Association 2012 Conference.

Conclusions
This project is in progress.

*for further information on projects refer to section, "Directions for Further Research".

Project #2: *Genetic and Pharmacogenetic Association Analysis in Depression and Anxiety*

Objective(s)
a) Can we replicate the finding that depressive disorder moderates the effect of the *FTO* gene on body mass index in depressed Albertans, and is this association generalizable across ethnic groups, including First Nations peoples?
b) Is this finding generalizable to anxiety disorders, and what is the effect of ethnic group in anxiety?
c) Are genetic variants in other relevant candidate genes (e.g. in inflammatory pathways) associated with increased cardiovascular risk in depression and anxiety disorders?
d) Can we replicate the pharmacogenetic association findings of response and adverse effects to antidepressants from GENDEP and other studies in depressed Albertans, and are the findings generalizable across ethnic groups?
e) Are the pharmacogenetic associations generalizable to other antidepressants and to anxiety disorders?

Description of the Project(s)
A project entitled "Pharmacogenetic translational biomarker discovery" has been submitted to the Canadian Foundation for Innovation (CFI) for consideration of infrastructure funding for a program of pharmacogenetic translational biomarker discovery and addiction and mental health. This proposal aims to contribute to the optimization of service delivery through conducting pharmacogenetic association analyses in order to identify genetic variants which will assist clinicians in choosing which medication, at what dose, and for which patients. In addition, identifying individuals who are genetically at high risk of addictions and mental illness including suicide will enable appropriate health promotion and prevention interventions. Laboratory space has been provided in the new Katz Collaborative Centre for Pharmacy and Health Research within the University of Alberta's health and wellness research complex. Dr. Aitchison has been added to the TRANSALC study (2b) as a collaborator; the Chair lab will be conducting genotyping of a variant in a gene encoding an opioid receptor (OPMRI) which has previously been associated with response to naltrexone. Other psychiatrists and U of A faculty have been approached regarding related collaborations. In addition, grants in submission (e.g.

the CRIO Program grants, 2c and 2d) include genetic and pharmacogenetic association analyses, to be led by Dr. Aitchison's lab.

Design and Methods
Genetic and pharmacogenetic association analysis.

Outcomes and Key Findings
Four papers from the work of Dr. Aitchison collaborators have been published in 2012. Two papers on "ecstasy" demonstrate that individuals with particular variants of two genes are at increased risk of toxic effects of "ecstasy" (3,4-methylenedioxymethamphetamine, or MDMA). It is hoped to identify the frequency of such variants in various ethnic groups in Alberta.

Conclusions
Pharmacogenetic association analysis has been fruitful to date; funding has been sought to continue this locally.

*for further information on projects refer to section, "Directions for Further Research".

Project #3: *Suicide Prevention*

Objective(s)
a) Can we replicate genetic associations with suicidal ideation (such as found in the GENDEP study, with *NTRK2* and *BNDF*) in Albertans with psychosis or depression, and are these associations generalizable across ethnic groups?
b) Can we replicate other clinical and biological mediators (including illicit drug, epigenetic, and metabolomic markers) of suicidality as identified in the STOP Project in Albertans with psychosis or depression, and are these associations generalizable across ethnic groups? 4
c) Will the incorporation of replicated clinical and biological association in to an improved measure of risk of suicide have clinical utility in the prevention of suicidal behaviours and of completed suicides?

Description of the Project(s)
In the first subproject within this project (3a), "Suicidality: Treatment occurring in paediatrics" (STOP), Dr. Aitchison has continued her prior commitment to co-lead workpackage3, "Establishing biological sampling methodology for investigation of mediators of suicidality." This work package has now successfully delivered most of its deliverables on time, including establishing methodology for appropriate sample collection for genotyping in children and young people and conducting pilot genotyping including using microarray technology. Dr. Aitchison has led the supervision of the latter. Her involvement in this project led to her being invited to join the Depression in Childhood and Adolescence Working Group, Canadian Depression Research Intervention Network (CDRIN). Suicide prevention will be one of the areas of focus for the CDRIN. A grant of relevance to suicidal behaviours in young people ("brain determinants of high risk behavior in young people", 3b was submitted for consideration of

funding to CIHR in March 2012 with Dr. Aitchison and is due to be resubmitted in September 2012.

Design and Methods

In project 3a, together with collaborating centres, various techniques for sampling for genetic analysis were compared, with quality control analysis of the resulting genetic material (DNA) and pilot genotyping using various platforms. The project "Optimisation of sampling for CYP genotyping and analysis of CYP genotype as a predictor of steady state atomoxetine dose" contributed data regarding comparative analysis of cheek swabs vs. Oragene kit DNA. In addition, studies were undertaken to optimize methodology for the collection of various other biological samples relevant to the study of suicidal behaviours.

Outcomes and Key Findings

- We have shown that the yield from 2.5 ml of saliva processed using Oragene kit in adults is approximately half that from a 5 ml blood sample, the quality is good and "fit for purpose," specifically for a range of genomic applications, including single nucleotide polymorphism (SNP) analysis, variable number tandem repeat (VNTR) genotyping, long-range polymerase chain reaction (long-PCR), and genotyping using microarray technology.
- Methylation assays are possible on saliva processed using Oragene kit with the caveat that there are tissue-specific differences in methylation.
- For children <12years, a modified DNA extraction protocol should be employed.

Conclusions

Methodology for the collection of DNA for genetic studies in children and adolescents has been established.

*for further information on projects refer to section, "Directions for Further Research".

IMPLICATIONS FOR POLICY OR PRACTICE

- In EEPIC, together with Dr. Purdon and Dr. L. Urichuk, the following additions to service delivery have been made: more patients have been registered with Family Physicians with consent being sought to communicate with Family Physicians and other health professionals involved in their care; and more investigations (vitamin D, B12, and folate) have been added to the EEPIC clinical evaluation protocol, with further being under consideration. Relevant research papers have been provided to the team.
- Through presentations by Dr. Aitchison and by dissemination through the media by collaborators (Dr. A. Hudson and Dr. Jones), there has been an increased awareness of deaths in Alberta of young people associated with the consumption of pills sold as "ecstasy" (3,4-methylenedioxymethamphetamine, or MDMA). This has been associated with public education work by the Edmonton Police Service (e.g. posters in LRT stations).
- Dr. Aitchison co-authored two publications on "ecstasy" in 2012. One of these, "Ecstasy (MDMA)-induced hyponatremia is associated with genetic variants in CYP2D6 and COMT,"

was undertaken in the UK[6] and indicated that a public health implication (which may be employed already) is to have commercially available oral rehydration solutions available to those attending "raves" or similar events.

- Other research on the toxic effects of "ecstasy" and related substances has been disseminated to Emergency Medicine, the Poisons And Drug Information Service (Calgary), and the Chief Toxicologist by the Chair lab.
- In a recent paper arising from the GENDEP study (Genome-based therapeutic drugs for depression); it was found that a genotype of a relevant cytochrome P450 enzyme (CYP2C19) predicts steady-state escitalopram serum level. In another analysis from this study, it was found that the genotype of another relevant cytochrome P450 enzyme (CYP2D6) was associated with nausea on escitalopram. These findings were presented at a Psychiatry Grand Round at the University of Alberta and at the seminar to the Department of Community Health Sciences/ Institute for Public Health, University of Calgary.

DIRECTIONS FOR FURTHER RESEARCH

1) *Psychosis including the role of substance misuse in the genesis of psychosis*

a) "Gene-environment interaction" study. In collaboration with Dr. Purdon, we will continue to investigate the roles of genetic vulnerability, cannabis use, adverse childhood experiences, and recent adverse life events in the onset of psychosis in young people. This study is being conducted as an add-on to the NPAS3 study (number 1b), see below) to which Dr. Purdon and Dr. Macintyre were already recruiting. Appropriate measures (i.e., Adverse Childhood Experiences or ACE, Brief Life Events Questionnaire, and EU Gene-Environment Interaction) have been sourced for the study. The ACE Questionnaire was kindly provided by the Norlien Foundation at the Recovery from Addiction Symposium, Banff, October 2011. This project has been offered as a Graduate Student (MSc in Psychiatry) project at the University of Alberta, and recruitment has begun.

b) "NPAS3 in psychoses" study (funded by CIHR, grant held by Dr. Todd et al. Co-Investigators included Dr. Purdon, Dr. Macintyre, and Dr. Mason, University of Alberta). Dr. Aitchison has been added as a Collaborator.

c) "NPAS3 variants in schizophrenia: a neuroimaging study". Collaboration led by Dr. Tibbo. The University of Alberta Co-Investigators are Dr. Purdon, Dr. Macintyre, and Dr. Aitchison. Grant under review by the Nova Scotia Health Research Fund.

d) "Risk of coronary heart disease in psychosis" study (Principal Investigator: Dr. Purdon). This is currently under re-review by the Mental Health Foundation. This includes genetic association analysis of relevant genes.

e) A Collaborative Project entitled “Integrated care of concurrent disorders” study which was submitted to the Alberta Innovates – Health Solutions (AI-HS) Collaborative Research and Innovation Opportunities (CRIO) Project call. The leaders were Dr. Purdon and Dr. D. Crockford, and Collaborators were Dr. D. Addington and Dr. Aitchison. The proposal was to create an integrated treatment program for psychosis and addiction services. Current gaps in concurrent disorder capability in EEPIC and Calgary Early Psychosis Treatment Service (CEPTS) were to be identified using an appropriate measure and addressed. Evidence-based interventions in psychosis and substance use disorders were to be expanded/made more consistently available where necessary, such as motivational interviewing; relapse prevention/cognitive behavioral therapy (CBT); 12-step facilitation; family and peer support; psychoeducation and pharmacotherapies. Outcomes were to be assessed before and after identified service gaps. This project was unfortunately was not funded; we will therefore be seeking alternative funding.

f) A CRIO Program grant entitled “Improving the outcome of schizophrenia” study, led by Dr. D. Addington, co-led by Dr. Aitchison and Dr. J.L. Wang with Dr. Patten and Dr. Urichuk.

2) *Genetic and pharmacogenetic association analysis in depression and anxiety*

a) “Pharmacogenetic translational biomarker discovery” is led by Dr. Aitchison and co-led by Dr. M. Somerville and Dr. P.F. Halloran. It is currently under review by the Canadian Foundation for Innovation’s Leadership Opportunity Fund.

b) “TRANSALC” study (www.transalc.eu). (The University of Alberta Principal Investigator is Dr. S. Dursun). The Collaborators are Dr. Gillese, Dr. A. Greenshaw, Dr. C. Beaulieu, Dr. A. Wilman, Dr. M. Brown and Dr. Aitchison. The study involves neuroimaging and genetic markers of response to naltrexone.

c) A CRIO Program application entitled “Evaluating ‘ecstasy’ and emerging stimulants in Alberta: from pharmacotoxicology to health policy,” led by Dr. Aitchison, Dr. Hudson, and Dr. Baker. Every year there are several deaths in Alberta of young people associated with the consumption of pills sold as “ecstasy” (3, 4-methylenedioxymethamphetamine, or MDMA) and other stimulants in the “rave scene," and a further number are admitted to hospital with significant morbidity. Since November 2011, there has been a sharp increase in events related to such substances, with so far 20 deaths for which toxicology has returned MDMA amongst the substances found and 27 people requiring hospital admission after one event alone. We are proposing an interdisciplinary, multi-institutional program of collaborative research with a focus on achieving solutions to this complex health problem, with appropriate involvement of end users and opportunities for interdisciplinary research training and mentorship. The scope of our proposal fits within the mental health and addiction thematic priority area of Alberta’s Health Research and Innovation Strategy, with an output of increased effectiveness and efficiency in Innovative Health Service Delivery. International collaboration will include researchers with relevant expertise. The core collaborative Program membership will comprise

5 researchers, who will work together with clinicians and other relevant stakeholders to deliver a comprehensive program of work spanning from pharmacology and toxicology to clinical protocols and public health policy.

d) A CRIO Program application entitled "Personalized medicine approach in predicting and preventing traumatic brain injury and mental health impairment related functional problems in high-risk occupations" study, led by Dr. I. Cernak, co-led by Dr. Aitchison and Dr. S. Galea.

3) *Suicide Prevention*

a) "Suicidality: Treatment occurring in paediatrics" (STOP) study including workpackage3, "Establishing biological sampling methodology for investigation of mediators of suicidality." (co-led by Dr. Aitchison and Dr. S. Curran).

b) "Brain determinants of high risk behaviour in young people" study (the Principal Investigator is Dr. Dursun). The co-applicants are Dr. Greenshaw, Dr. Aitchison, Dr. Beaulieu, Dr. F. Dolcos, Dr. E. Fujiwara, Dr. R. Greiner, Dr. O. Hodlevskyy, Dr. P. Silverstone, Dr. M. Spetch, Dr. C. Wild, and Dr. Wilman. The study includes neurobiological (imaging, genetics) and socioenviornmental factors (including early adverse events). The grant will be resubmitted to CIHR in September.

c) Collaboration with Dr. Thompson.

I am currently recruiting to a Graduate studentship (MSc in Psychiatry) and further graduate students and postdoctoral fellows will be recruited.

KNOWLEDGE TRANSFER ACTIVITIES

- "Cognitive Deficits in Schizophrenia: Genetic Clues to Management." Invited presentation to the Edmonton Schizophrenia Conference 2011 (The Neurobiology of Schizophrenia), Edmonton, September 2011.

- Alberta Centennial Addiction and Mental Health Research Chair." Presentation at the Launch Event for this Chair, Edmonton, November 2011.
    - Public event for the launch of the Alberta Addiction and Mental Health Research Chair in Mental Illness and Addictions, University of Alberta, 18th November 2011, http://www.med.ualberta.ca/Home/NewsEvents/News/article.cfm?ID=2316
    - http://www.albertahealthservices.ca/5982.asp

- "Research-to-practice spotlight: Alberta Centennial Addiction and Mental Health Research Chair welcomed". Contributions to the Addiction and Mental Health Research Partnership Program Newsletter, *On the Horizon, Addiction and Mental Health: Linking Research and Practice*, 16th December 2012, and further issues in April 2012 and June 2012.

http://www.industrymailout.com/Industry/LandingPage.aspx?id=845230&p=1

http://www.industrymailout.com/Industry/View.aspx?id=296844&print=1&p=3aab

http://www.industrymailout.com/Industry/LandingPage.aspx?id=845241&lm=38314067&q=455637714&qz=51bf669ee962356aea13446d75add059

http://www.industrymailout.com/Industry/LandingPage.aspx?id=968530&lm=36317870&q=479907825&qz=bbdb5f444867fcf08e9aa178e9fb30df

- Webpages:
  http://www.psychiatry.med.ualberta.ca/AboutUs/FacultyMembers/AcademicStaff/Pages/default.aspx?P=225

  http://www.mentalhealthresearch.ca/KeyInitiatives/Chairs/Pages/MentalIllnessandAddictionsResearchChair.aspx

- Aitchison KJ, Curran SC, Paya-Cano J, Witt S, Lafuente A, Price T, Mill J, Santosh P, Rietschel M, and Craig IW. "Establishing biological sampling methodology for pharmacogenomics in young people." Oral presentation to the 11th Annual Pharmacogenetics in Psychiatry Meeting, New York, March 2012.

- Powell TR, Schalkwyk LC, Heffernan AL, Breen G, Lawrence T, Price T, Farmer A, Aitchison KJ, Craig I, Danese A, Pariante C, Lewis C, McGuffin P, Uher R, Tansey K, and D'Souza UM. "Identifying transcriptomic biomarkers for response to escitalopram in the inflammatory cytokine pathway". Poster presentation to the 11th Annual Pharmacogenetics in Psychiatry Meeting, New York, March 2012.

- "The Alberta Centennial Addiction and Mental Health Research Chair in Mental Illness and Addictions: A Provincial Opportunity." Presentation at the Faculty of Health Sciences Luncheon, University of Lethbridge, Lethbridge, March 2012.

- "The Alberta Centennial Addiction and Mental Health Research Chair in Mental Illness and Addictions: Update". Presentation at the University of Calgary, March 2012.

- "Alberta Centennial Addiction and Mental Health Research Chair in Mental Illness and Addictions: An Update". Presentation at the 2012 Addiction Day, Alberta Health Services, Edmonton, April 2012.

- Contribution to the Alberta Innovates – Health Solutions' Research News Magazine, "*Opening Minds on Mental Illness and Addictions,*" Spring 2012, http://www.aihealthsolutions.ca/researchnews/pdf/Res%20News.Spring2012.pdf

- "Clinical lessons from GENDEP for the treatment of depression." Department of Community Health Sciences/ Institute for Public Health seminar series, University of Calgary, Calgary, May 2012.

- "Genetic and Pharmacogenetic Analyses in Psychiatry." Department of Psychiatry Grand Rounds Presentation, University of Alberta, Edmonton, May 2012.

- "Ecstasy: The "love drug" –Or is it?" Faculty Presentation for the 11th Annual Psychiatry Research Day, University of Alberta, Edmonton, June 2012.

LOCAL ACTIVITIES

- A member of the Addiction and Mental Health Research Partnership Committee (Sept 2011 to current)

- "Cognitive deficits in schizophrenia: genetic clues to management." Invited presentation to the Edmonton Schizophrenia Conference 2011 (The Neurobiology of Schizophrenia), Edmonton, September 2011.

- Panel member at the Recovery From Addictions Symposium; October 21, 2011.

- Public event for the launch of the Alberta Addiction and Mental Health Research Chair in Mental Illness and Addictions, University of Alberta; November 18, 2011, http://www.med.ualberta.ca/Home/NewsEvents/News/article.cfm?ID=2316.

- Attended the Norlien Foundation hosted dinner in Calgary; November 2011.

- Attended a Research Network Meeting in Banff; December 2011.

- Attended an EEPIC-CEPTS meeting in Calgary; February 2012.

- Attended the Power of Partnership at the University of Calgary; March 2012.

- Presented about the work of the Chair to the Universities of Lethbridge and Calgary; March 2012.

- "Alberta Centennial Addiction and Mental Health Research Chair in Mental Illness and Addictions: an Update." Presentation at the 2012 Addiction Day, Alberta Health Services, Edmonton, April 2012.

- Panel member at the 2012 Early Brain & Biological Development Symposium, Banff, May 2012.

- Attended the Alberta Innovates – Health Solutions "Making Connections" conference, Jasper, June 2012.

- "'Ecstasy': the 'love drug' or is it?" Oral presentation at Psychiatry Research Day, University of Alberta, Edmonton, June 26, 2012.

- Judge at Psychiatry Research Day, University of Alberta, Edmonton, June 26, 2012.

PAN-ALBERTA COLLABORATION

Alberta

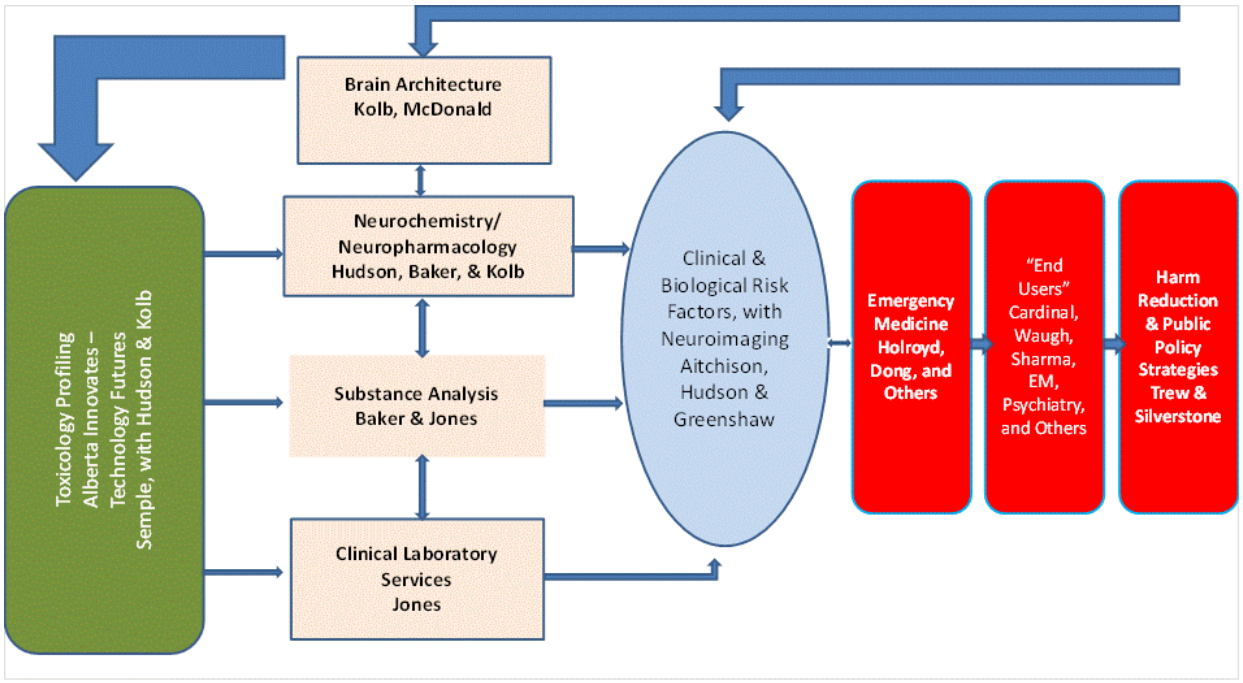
- In response to a call for proposals for an Alberta Addiction and Mental Health Research Network, with the assistance of Dr. Brown (PostDoc), together with Dr. R. Hibbard, I submitted a proposal for a Research Network in Mental Illness and Addictions.

- Member, Youth Mental Health Working Group, Campus Alberta Neuroscience. CRIO submission planned, to be led by Dr. J. Addington, first Alberta Centennial Addiction and Mental Health Research Chair.

- "Brain determinants of high risk behaviour in young people" study (the Principal Investigator is Dr. Dursun). The co-applicants are Dr. Greenshaw, Dr. Aitchison, Dr. Beaulieu, Dr. Dolcos, Dr. Fujiwara, Dr. Greiner, Dr. Hodlevskyy, Dr. Silverstone, Dr. Spetch, Dr. Wild, and Dr. Wilman. The study includes neurobiological (imaging, genetics) and socioenviornmental factors (including early adverse events). The grant will be resubmitted to CIHR in September.

- A CRIO Program application entitled "Personalized medicine approach in predicting and preventing traumatic brain injury and mental health impairment related functional problems in high-risk occupations" study, led by Dr. Cernak, co-led by Dr. Aitchison and Dr. S. Galea.

- The CRIO Program application entitled "Evaluating 'ecstasy' and emerging stimulants in Alberta: from pharmacotoxicology to health policy" is a truly pan-Alberta collaboration, see outline below:



National Collaboration

- Attended the Canadian Depression Research Intervention Network meeting (including membership of the Depression in Childhood and Adolescence Working Group) in Ottawa; February 2012.

International Collaboration

- A member of the STOP Study Steering Group (www.stop-study.com, November 2010 to current)

- Continuing member of the GENDEP collaboration

NEXT STEPS FOR COLLABORATION AND DISSEMINATION

- "Pharmacological theories of schizophrenia: an evolving field?" Invited presentation for the 20th Annual Edmonton Schizophrenia Conference (2012).

- Di Nicola M, Cattaneo A, Hepgul N, Di Forti M, Aitchison KJ, Murray RM, Dazzan P, Pariante CM, Mondelli V "Serum and gene expression profile of cytokines in first-episode psychosis." *Brain, Behabior, Immunity*, in press.

In addition, international activities are as follows:

- Annual Pharmacogenetics in Psychiatry Meeting Organising Committee (Faculty), New York (www.pharmacogeneticsinpsychiatry.com)

- Collaboration with Dr. J. Marsden (Principal Investigator) and co-applicants (Dr. R. Ali, Dr. A. Somogyi, Dr. M. Kelleher, Dr. G. Stillwell) on a study entitled "Pharmacogenetics of response to opioid substitution therapy"

- Koola MM, Tsapakis EM, Wright P, Smith S, Makoff AJ, Kerwin RW, and Aitchison KJ. Association Between CYP2D6 Gene Dosage and Tardive Dyskinesia in English Caucasians. Submitted for presentation to the XXth World Congress of Psychiatric Genetics, Hamburg, October 2012.

- Aitchison KJ, Curran SC, Paya-Cano J, Witt S, Lafuente A, Price T, Mill J, Santosh P, Rietschel M, and Craig IW. Establishing biological sampling methodology for pharmacogenomics in young people. Accepted for poster presentation to the XXth World Congress of Psychiatric Genetics, Hamburg, October 2012.

- Ayotte B, Marcinkevics D, Aitchison KJ, Beierbach A, Bolt C, Colman I, Cote C, Lanfreniere D, Tibbo P, Wild C, Wolfe J, and Purdon SE. Stressful Prenatal and Childhood Events and Adolescent Mental Health. Submitted for presentation to the 8th International Conference on Early Psychosis, San Francisco, October 2012.

- Purdon SE, Roper L, Aitchison KJ, Banasch J, Bolt C, Cote C, Goddard K, Hibbard K, Lafreniere D, Oswald R, Purser S, and Tibbo P. Barriers to Care and Duration of Untreated Psychosis in a First-Episode Psychosis Sample. Submitted for presentation to the 8th International Conference on Early Psychosis, San Francisco, October 2012.

- Purser S, Tibbo P, Aitchison KJ, Lafreniere D, Robertson R, Roper L, and Purdon SE. Utilization of Health Services and the Cost of Pathways to Care in First-Episode Psychosis in Alberta. Submitted for presentation to the 8th International Conference on Early Psychosis, San Francisco, October 2012.

PUBLICATIONS

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About the Alberta Addiction and Mental Health Research Partnership Program

The *Alberta Addiction and Mental Health Research Partnership Program* is comprised of a broad-based multisectoral group, representing service providers, academic researchers, policy-makers and consumer groups, working together to improve the coordination and implementation of practice-based addiction and mental health research in Alberta.

The mission of the Research Partnership Program is to improve addiction and mental health outcomes for Albertans along identified research priority themes, by generating evidence and expediting its transfer into mental health promotion, prevention of addiction and mental illness, and innovative service delivery.

The Research Partnership Program sets out to increase Alberta's excellence and output of addiction and mental health research findings, and to better translate of these findings into practice improvements.