



Alberta Centennial  
Addiction & Mental Health  
Research Chairs Program



Dr. Katherine Aitchison – Annual Report

June 2015

## 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. The secondary focus is on Suicide Prevention. A program of translational medicine is being conducted in both of these areas 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, the Universities, 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 50 data-based publications in mental health and addictions in peer-reviewed journals of international standing, made multiple oral and poster presentations, and participated in other knowledge transfer activities including policy documentation (e.g., the Consensus Statement on Improving Mental Health Transitions), clinical practice guidelines (e.g., provincial antipsychotic safety monitoring recommendations), education of key stakeholders (e.g., presentations to the Edmonton Police Service, and to teachers and counselors), and public health education (e.g., how to help distressed and suicidal young people). Innovations in service delivery have been made. Public health work to which I have contributed appears to have made a significant impact on the number of lethalties owing to the consumption of ecstasy and related drugs.

Connecting this research program to Alberta Health Services (AHS) has been facilitated by my continued work as a psychiatrist within Alberta Health Services, and Co-clinical Director of the Edmonton Early Psychosis Intervention Clinic (EEPIC). Over the last year, I have seen a greater diversity of patients including more with comorbid substance use disorders, and spent more time on in-service teaching of Residents. This service now sits within transitional services, and continues to undergo development.

Connecting the research program to the government has been facilitated by the attendance of events involving Health Ministers, and the Lieutenant Governor (including the Lieutenant Governor's Circle on Mental Health and Addiction), and by liaison with other relevant agencies including the Solicitor General's Office and Health Canada.

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 of mental illness and addictions and with response to treatments thereof 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 to identify biological and psychosocial mediators and therefore appropriate prevention strategies, including young people.

Together with Drs. M. Somerville and P. Halloran, I have been awarded a Canadian Foundation for Innovation (CFI), John R. Evans Leaders Fund (JELF) grant titled "Pharmacogenetic translational biomarker discovery." I am also a Co-investigator on the following grants: Nova Scotia Health Research Foundation grant held by Dr. P. Tibbo, an Alberta Gambling Research Institute (AGRI) held by B. Lee, the "Prairie CRISM node proposal" (funded by the Canadian Institutes of Health Research (CIHR), Canadian Research Initiative in Substance Misuse (CRISM)) held by Dr. C.T. Wild, Dr. A. Aubry, Dr. C. A. Dell, and Dr. D.C. Hodgins. In addition, I am a member of the CRIO Population Resiliency Team grant held by Drs. D. Kingston and A. Greenshaw.

In the first area, students co-supervised by Dr. Purdon and I have worked with us to secure ethics committee approvals for their studies. One Master's in Psychiatry student project is nearing completion; this one has focused on delineating factors (including adverse childhood events) contributing to vulnerability to psychosis in young people. Three other Master's students are due to complete this coming year. We have presented data that show that variation in a particular gene (*COMT*) is associated with earlier age of onset of psychosis, where that is substance-induced.

In the second area, the Chair lab is now aiming to conduct genetic and pharmacogenetic association analysis in mental health and addictions more widely. The CFI grant will enable us to reach our goal of contributing to the ability of the Canadian health care system to meet mental health needs by innovative genetic testing leading to individualized prescribing based on genomic profile (known as pharmacogenomics). This will reduce the time to effective treatment, and is therefore predicted to reduce suicides and accidental deaths (which are currently the commonest causes of death in young people). Moreover, there will be an associated reduction in lost productivity days, i.e., a reduced economic burden to society. Genetically informed prescribing will also lead to a reduction in adverse reactions to medications, which in some cases may be fatal, and in others may lead to extensive hospitalization and other service costs. My Postdoctoral fellow has received a certification of completion of training from the manufacturer for running the DMETPlus microarray (a gene chip assay in which many genetic variants relevant to how the human body handles medications, dietary substances and environmental pollutants toxins can all be assayed together).

In the third area, I have continued to contribute to relevant papers (e.g., genetic, inflammatory, and neuroimaging correlates of response to stress in depression and psychosis) arising from the GENDEP study and other collaborative projects (such as STOP) in order to provide continued relevant background work. The purpose of the STOP study is to identify biological and psychosocial mediators of suicidality in children and young people. In the part which I have co-led, we have established that saliva is an appropriate type of sample for most types of genetic analysis and may be an effective surrogate source for epigenetic analysis in young people, optimized protocols, run assays including microarrays, and prepared a manuscript for publication (which includes University of Alberta collaborators). My work on ecstasy and novel psychoactive substances is relevant to suicide prevention. In the AGRI-funded project,

we will be assessing risk for suicide. Together with a graduate student, I hosted a pre-film introduction and post-film Q&A session (Edmonton, March 20, 2014) for “Science in the Cinema: It’s Kind of a Funny Story;” an event organized by Alberta Innovates: Health Solutions. The presentation addressed the general public, aiming to discuss myths and provide information on the topic of depression and suicidal ideation; an information document on this topic in lay terms has been provided to AIHS.

- See: <http://www.edmontonoutdoorclub.com/events/details.asp?eventid=3502>.

AHS personnel attended and all of the information leaflets provided were taken up by the audience. I have also contributed to the discussion on media reporting of suicides being held by the Canadian Psychiatric Association Research Committee, to which one of my graduate students is contributing.

My team now comprises a Research Coordinator, a Postdoctoral fellow, four Master’s students in Psychiatry, and in addition, I have supervised six undergraduates. These include three clinical research trainees: a resident in Psychiatry at the University of Alberta, a psychometrist, and a consultant-level psychiatrist. I have also been a preceptor for three Residents, worked with another Postdoctoral fellow on grant applications, and with other Research Associates from the University of Alberta. An undergraduate mentored by me went on to a highly competitive genetic counseling Master’s program. Five of my trainees have won awards: an Alberta Innovates: Health Solutions Summer Studentship (2013), a University of Alberta Undergraduate Research Initiative award (for a 2014 summer studentship), the Outstanding International Student Researcher Award (4<sup>th</sup> Annual Undergraduate Research Symposium, University of Alberta, 2014), two travel awards to attend and present at the 2014 Annual Pharmacogenetics in Psychiatry Meeting, and a Chair of Psychiatry’s Research Prize (2014).

In terms of scholarly activities, I am co-authoring a handbook on first episode psychosis, and am an invited contributor to a handbook on addiction. In addition, I have been a POSCE, OSCE, and A&D examiner, and as a graduate of the University of Alberta Humanism and Professionalism, I have been asked to facilitate small group reflective sessions for medical students. Over the last year my team has made over 30 conference presentations. I have also been asked to be a mentor for the 2015 CPA Junior Investigator Research Colloquium.

I have participated in many knowledge dissemination events, including presentations to the public and to teachers and school counselors at the invitation of AIHS, a meeting report posted on-line on the Schizophrenia Research Forum, a University of Alberta Hospital Adult Psychiatry Grand Round outlining the CFI-funded grant and related projects, and the Consensus Statement on Mental Health Transitions.

In terms of collaborations and networking over the last year, I attended the Canadian Psychiatric Association Annual Conference 2014 (including the Research Committee), the 47<sup>th</sup> Annual Summer Students Research Day at the University of Alberta (including providing training to the undergraduate members of my team regarding poster presentations), the Mental Health Transitions Conference (Jury Member), the Women and Children’s Health Research Institute (WCHRI) Research Day (at which several team members presented), the 9<sup>th</sup> International Conference on Early Psychosis with a clinical trainee, the American College of Neuropsychopharmacology, the Final Report Discussion of the Gap Analysis of Public Mental Health and Addictions Programs (GAP-MAP), the Addiction and Mental Health Strategic Clinical Network Research Meeting (February 2015), the 2015 Complementary and Alternative Medicine (CAM) Fair (at which a clinical trainee presented, and I engaged in networking with members of the new Integrative Health Institute at the University of Alberta), the Alberta Psychiatric Association 2015 Scientific Conference and Annual General Meeting (to which, as Scientific Program Co-chair, I invited several speakers, in addition to giving a talk myself, supervising a trainee’s presentation, and chairing two sessions), the 11<sup>th</sup> Annual Edmonton Mental Health Conference, the Western Molecular Diagnostic Conference held in Edmonton (at which I gave a presentation), an Affymetrix user group meeting in Vancouver (at which I gave a presentation on work conducted on the CFI-funded grant), the Society of

Biological Psychiatry's 70<sup>th</sup> Annual Meeting held in Toronto (supervising several trainee presentations), a poster presentation by a clinical trainee at the American Psychiatric Association 168<sup>th</sup> Annual Meeting (Toronto), the Flor-Henry Lecture series (including networking with local hosts), and the 14<sup>th</sup> Annual Psychiatry Research Day at the University of Alberta (supervising several trainee presentations). Together with B. Lee, in order to prepare for the AGRI-funded grant, I had the privilege of visiting Edmonton and Grand Prairie addiction facilities, including a residential treatment centre. For further details on all of the conferences listed, see the **Publications** section.

I have continued to liaise with the Schizophrenia Society (SSA) on behalf of the Department of Psychiatry, including visiting Iris Court with one of my trainees, forwarding material of potential interest, and taking part in fund-raising initiatives.

Over the last year, an Integrative Health Institute (IHI) has been established at the University of Alberta, and I am an IHI scholar. In addition, I hold leadership positions locally (Executive Committee for the Alberta Psychiatric Association; Co-chair of the Alberta Psychiatric Association Scientific Program Committee for the 2014 and 2015 Scientific Conference; AMA Section of General Psychiatry, Executive; Jury for the Institute of Health Economics Consensus Development Conference on Improving Mental Health Transitions; elected member, General Faculties Council, Faculty of Medicine and Dentistry); nationally (Canadian Substance Advisory Committee; Canadian Psychiatric Association, Research Committee); and internationally (invited member, Psychopharmacology Special Committee, Royal College of Psychiatrists, UK; Society of Biological Psychiatry Women's Leadership Group).

- For further details see: <http://www.albertahealthservices.ca/11182.asp>

## RESEARCH OVERVIEW

**Project #1:** *Psychosis including the role of substance misuse in the genesis of psychosis*

### **Objective(s)**

1. 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. Investigate whether or not these findings are generalizable to other ethnic groups including First Nations peoples.
3. 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 first five objectives of this project are being implemented by my CFI grant and this Chair program equipping my team to conduct genetic analyses to add value to collaborative projects involving Drs. S. Purdon and P. Tibbo (formerly Edmonton, now Halifax). These projects received funding from the Faculty of Medicine and Dentistry at the University of Alberta, the Canadian Institutes of Health Research, and the Nova Scotia Health Research Fund. An MSc student has analyzed data on measures of vulnerability to psychosis in a group of “normal” high school students, and found, for example, that adverse childhood events are significantly associated with cannabis consumption. In individuals with first episode psychosis ascertained in Edmonton and Halifax, we have found that the *COMT* Val158Met variant is associated with earlier age of onset of psychosis for substance-induced psychosis (Rossolatos, Wang et al., 2015).

## **Design and Methods**

Patients with a first episode of a psychotic illness have been recruited from Edmonton and Halifax. Data on cannabis use has been collected. Ethics committee approval for the analysis of anonymized archived data has been approved and the results of this presented (Purdon et al., 2014). Markers for genes relevant to the genetic vulnerability to the effects of adolescent cannabis consumption have been identified and assays run. Literature review has been conducted to determine the best candidate genes to study for an association with psychosis in addition to *NPAS3* (Wang et al., 2014b).

## **Outcomes and Key Findings**

In the clinical data, psychosis was associated with age of regular use of cannabis  $\leq 19$  years. There was 100% concordance between TaqMan and other SNP methodologies for available data. *COMT* genotype was a significant predictor of log age at diagnosis in the substance-induced psychotic disorder subsample (Aitchison et al., 2014; Rossolatos, Wang et al., 2015).

## **Conclusions**

The above described association should be regarded as preliminary until we can factor clusters into the analysis. The effect of *COMT* genotype was additive (with Val/Val being the youngest age of onset, followed by Val/Met followed by Met/Met) – in the same direction as that seen by Caspi et al. (2005). Should the association hold up, it would appear to be the first report of a GxE association between *COMT* and cannabis in a psychosis sample driven by the substance-induced psychosis subsample. There is evidence in recent years that the use of cannabis by young people and the potency thereof has increased. Such an association would deserve further exploration and investigation in similar datasets.

## **Project #2: Genetic and pharmacogenetic association analysis in depression and anxiety**

### **Objective(s)**

1. 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?
2. Is this finding generalizable to anxiety disorders, and what is the effect of ethnic group on anxiety?
3. Are genetic variants in other relevant candidate genes (e.g., in inflammatory pathways) associated with increased cardiovascular risk in depression and anxiety disorders?

4. 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?
5. Are the pharmacogenetic associations generalizable to other antidepressants and to anxiety disorders?

### **Description of the Project(s)**

The project entitled “Pharmacogenetic translational biomarker discovery” was funded by the Canadian Foundation for Innovation (CFI), which has enabled investment in state-of-the art technology including for microarray-based genotyping and copy number analysis. The Chair lab is now aiming to conduct genetic and pharmacogenetic association analysis in mental health and addictions more widely. We aim to contribute to the ability of the Canadian health care system to meet mental health needs by innovative genetic testing leading to individualized prescribing based on genomic profile (known as pharmacogenomics). This will reduce the time to effective treatment, and is therefore predicted to reduce the suicides and accidental deaths that are currently the most common causes of death in young people. Moreover, there will be an associated reduction in lost productivity days, i.e., a reduced economic burden to society. Genetically informed prescribing will also lead to a reduction in adverse reactions to medications, which in some cases may be fatal, and in others may lead to extensive hospitalization and other service costs.

### **Design and Methods**

Genotyping for an antipsychotic-associated weight gain (Almandil et al., submitted) and opioid substitution study has been completed. Gene chip work and ground-breaking copy number analysis data from the *CYP2D6* and *CYP2C19* loci have been presented both locally and at international conferences (Lee et al., 2013; Slomp et al., 2013; Carvalho Henriques et al., 2014, 2015). We have also genotyped samples collected as part of the CIHR-funded *NPAS3* study and analyzed data from this study (see above). We have cross-validated data using a PCR-RFLP (polymerase chain reaction – restriction fragment length polymorphism) assay, and optimized a long-PCR assay for the detection of *CYP2D6* variants that are undetectable using commonly used assay methods (Carvalho Henriques et al., 2014, 2015).

### **Outcomes and Key Findings**

Many oral and poster presentations have resulted from the above (see **Publications** section), papers have been published (e.g., Koola et al., 2014), and manuscripts are being drafted. In addition, I continue with my international collaborations that are productive in this area.

### **Conclusions**

Genetic and pharmacogenetic association analysis has been very fruitful to date; the CFI-IAE grant is facilitating continuation of this exciting program of work with training of Albertan highly qualified personnel.

### **Project #3: Suicide prevention**

#### **Objective(s)**

1. Can we replicate genetic associations with suicidal ideation (such as found in the GENDEP study, with *NTRK2* and *BDNF*) in Albertans with psychosis or depression, and are these associations generalizable across ethnic groups?



2. 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?
3. Will the incorporation of replicated clinical and biological associations into 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)***

With reference to the first objective, I have continued to contribute to relevant papers (e.g., genetic, inflammatory, and neuroimaging correlates of response to stress in depression and psychosis) arising from the GENDEP study and other collaborating projects in order to provide continued relevant background work. In “Suicidality: Treatment occurring in paediatrics” (STOP), I have co-lead completion of the work by Workpackage 3 and material has been prepared for presentation and publication. In terms of 3b), my continued international collaborations and involvement in meetings such as the Annual Pharmacogenetics in Psychiatry Meeting provide essential information regarding what associations have been replicated to date. Together with a Master’s student, I hosted a pre-film introduction and post-film Q&A session (Edmonton, March 20, 2014) for “Science in the Cinema: It’s Kind of a Funny Story;” an event organized by Alberta Innovates: Health Solutions (AIHS). The presentation was addressed to the general public aiming to discuss myths and provide information on the topic of depression and suicidal ideation (information in lay terms provided to AIHS), and was associated with good uptake of information leaflets provided by Alberta Health Services.

- See: <http://www.edmontonoutdoorclub.com/events/details.asp?eventid=3502>

### ***Design and Methods***

In Workpackage 3, “Establishing biological sampling methodology for investigation of mediators of suicidality,” quality control analysis was conducted on DNA (genetic material) extracted from various sample types (blood, cheek swab and saliva). This DNA was then further investigated with different types of genotyping, including microarray technology and epigenetic analysis. Sequencing conducted on DNA extracted from saliva sampled in Alberta (Dr. G. Macintyre, L. Luoma, and Dr. S. Purdon) has been included in the paper drafted.

### ***Outcomes and Key Findings***

- We have shown that the yield of DNA from 2.5 ml of saliva processed using Oragene kit in adults is approximately half of 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), genotyping using microarray technology, and sequencing. Interestingly, however, more detailed recent analysis of the microarray data shows that there may be some differential result by originating tissue type (Aitchison, Curran et al., in prep).
- 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 (Gassó et al., 2014).



## **Conclusions**

Methodology for the collection of DNA for genetic studies in children and adolescents has been established (including optimization of protocols for extraction of DNA from saliva and downstream processing), which should be useful for the AIHS-funded CRIO Team Grant on Population Resiliency.

## **IMPLICATIONS FOR POLICY OR PRACTICE**

1. Member, Scientific Advisory Committee: Enhancing Collaboration in Addiction and Mental Health, which produced a document on Collaborative Working in Addictions and Mental Health.
  - o See: <http://www.ccsa.ca/Resource%20Library/CCSA-Collaboration-Addiction-Mental-Health-Best-Advice-Report-2014-en.pdf>
2. Jury member and contributing author for a key policy document, "Consensus Statement on Improving Mental Health Transitions," Institute of Health Economics Consensus Statement, Volume 7, November 4-6, 2014, Edmonton, AB, Canada.
  - o Freely downloadable at:  
<http://www.ihe.ca/documents/IMHT%202014%20Consensus%20Statement.pdf>
3. Provided feedback on the GAP-MAP Final Report.
4. Provided feedback on the draft "Choosing Wisely" document for consultation.
5. In a webinar for Alberta Health Services Addiction and Mental Health Multidisciplinary Staff entitled Early Psychosis Intervention: Principles and Practice in which 111 participants participated from across the province, I outlined the benefits of early intervention in psychosis, guiding principles of care and implementation (such as the stress-vulnerability model of psychosis as described in Roper et al. (under revision), "start low, go slow" regarding medication dosing, and recovery oriented practice), the potential benefits of collaborative working between Child and Adolescent Psychiatry and Adult Psychiatry, and the need to pay attention to ethnic variations in pathways into care. From the feedback received, the webinar was successful, with participants appreciating the information presented, and the direct applicability of the research to clinical services. With my input, this webinar has since been synthesised into a document outlining the principles and practice of early intervention in psychosis by Dr. R. Hibbard (Zone Chief, Edmonton Addictions and Mental Health), for the benefit of local clinicians. I am working on an updated version of a book I previously coauthored (Aitchison et al., 1999) in the form of a clinician's guide to the treatment of first episode psychosis ("First Episode Psychosis," a clinical guide; Shivakumar & Aitchison, to be published by Oxford University Press).
6. Each of four MSc student trainees presented an Adult Psychiatry Grand Round at the University of Alberta, with good feedback.
7. In EEPIC, together with Drs. Purdon and 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; salient laboratory investigations (e.g., vitamin D and EKGs) have been added to the EEPIC clinical evaluation protocol, with more attention being paid to metabolic monitoring. Relevant research papers have continued to be provided to the team and others in Alberta. Over the last year our multidisciplinary clinical team meetings have continued to develop positively, we have had a greater breadth of patients being referred to us in terms of their ethnic background, a

clinical psychologist has been providing cognitive behavioural therapy and family therapy to our patients, and another psychiatrist has joined the team.

8. Together with a Master's student and with input from Dr. Connie Prosser (Clinical Chemistry), I have provided detailed comments on the Antipsychotic Safety Monitoring Recommendation (Adult version), which have been communicated to AHS and the eClinician implementation group.
9. I provided feedback on the following AHS document for consultation: Restraint-Addiction and Mental Health, Child and Adolescent (draft, pre-consultation, February 2014).
10. I volunteered as an examiner for POSCEs at the University of Alberta, and, as part of that, provided local feedback on the Canadian low risk alcohol drinking guidelines.
11. As an OSCE examiner, I provided relevant literature to the examinees.
12. I have liaised with Jeff Coulombe in regard to specific queries around building eClinician interfaces, including privacy concerns.
13. Edmonton Police Service, the Royal Canadian Mounted Police, Canadian Centre for Substance Abuse, and other relevant organisations continue to be interested in the work by Dr. Hudson and I, with exchange of information occurring between parties in order to increase the standard of community awareness. Since making presentations in which I have outlined the importance of oral rehydration solutions being available at parties such as raves to prevent potentially lethal cerebral oedema, such solutions have been made available. Following the provision of a relevant case report and other research material, it is my understanding that first responders have been administering dantrolene to cases of suspected ecstasy administration in which there is increased muscle tone; this may have had a significant effect on morbidity and even mortality in such cases. This work and more conducted by many around the province appears to have been associated with a reduction in ecstasy-related fatalities since July 2012. New psychoactive substances are a growing concern; knowledge translation activities have continued in this area.
14. I have had a book chapter entitled "Genetics and Genomics in Addiction Research" commissioned (Handbook of Drug and Alcohol Studies, volume 2; Wolff K et al, eds), and am supervising graduate students in drafting this.
15. "Addiction and mental health in adolescents: it's not all about genes." Evening lecture by Aitchison and Sivapalan for high school science teachers and school counsellors: outreach evening coordinated by Alberta Innovates: Health Solutions (AIHS), December 18, 2014.

## **DIRECTIONS FOR FURTHER RESEARCH**

### ***Research Area 1: Psychosis including the role of substance misuse in the genesis of psychosis***

1. "NPAS3 in psychoses" studies. In collaboration with Dr. S. Purdon and colleagues, 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 (as described above, as an add-on to the CIHR and NSRF-funded NPAS3 studies). We are also taking forward the genetic association analysis with psychosis *per se*, and with other variables in the dataset (such as imaging phenotypes).
2. A Master's student is working on cognitive dysfunction associated with metabolic dysfunction in psychosis; this may occur both as an adverse drug reaction and also as part of illness processes.

3. A Master's student conducted an analysis of the anxiolytic effect of oxytocin in an ecstasy dataset from the UK and presented this as a poster to the CCNP. In two other datasets he has conducted more complex statistical analyses (Rooprai et al., 2015; Lodhi et al., submitted). He has also had an ethics application for analysis of biomarkers associated with metabolic dysfunction in psychosis approved, and conducted baseline analyses of a relevant dataset in collaboration with Dr. S. Purdon (including analysis of the effect of cannabis on such dysfunction).

### ***Research Area 2: Genetic and pharmacogenetic association analysis in depression and anxiety***

1. "Pharmacogenetic translational biomarker discovery" led by Dr. K.J. Aitchison, co-led by Drs. M. Somerville and P.F. Halloran; this grant is now funded by the Canadian Foundation for Innovation (CFI; John R. Evans Leaders Fund) with IAE providing provincial matching funding.
2. With the GENDEP samples now at the University of Alberta, we have a key opportunity to progress the project described in this grant. We will compare data from multiple different array platforms and TaqMan assays (including arrays and other assays already in the UK and those to be run at the University of Alberta), in order to more accurately characterise complex variants in *CYP2D6*, *CYP2C19*, and *ABCB1*, leading to innovative technology development for biomarker discovery and clinical translation.
3. "TRANSALC" study; University of Alberta Principal Investigator Dr. S. Dursun, collaborators Drs. J.T. Gillese, A. Greenshaw, C. Beaulieu, A. Wilman, M. Brown and K.J. Aitchison. The study involves neuroimaging and genetic markers of response to naltrexone; recruitment is being conducted at Henwood and other treatment centres. With the upgrade to our automated workstation that has been purchased on the CFI grant, we will set up the methodology for extraction of DNA from blood spots locally.
  - o See: <http://www.transalc.eu>

### ***Research Area 3: Suicide Prevention***

1. "Suicidality: Treatment occurring in paediatrics" (STOP) study including Workpackage 3, "Establishing biological sampling methodology for investigation of mediators of suicidality" has been co-led by Drs. K.J. Aitchison and S. Curran. A manuscript is being submitted for publication, and I continue to contribute to relevant papers arising from GENDEP and other collaborating projects.
2. The AGRI-funded grant is relevant to suicide prevention.
3. Knowledge translation/public health education in the area of consumption of ecstasy and new psychoactive substances is likely to have an effect on non-accidental death as well as on accidental death.
4. Provision of the website for the Collateral Damage Project to a colleague and others.
  - o See: <http://leftbehindbysuicide.org/>
5. For the "Science in the Cinema: It's Kind of a Funny Story," A Master's student and I generated some information for the public about depression and suicidal ideation and how to access help locally which have been forwarded to AIHS for review.
6. Continued input to guidelines for the media in reporting suicide, via my membership of the Canadian Psychiatric Association Research Committee. One of my Master's students is also active in this area, including presentations that he has made regarding cyberbullying (e.g., to the

CPA 2014 annual meeting, and to the Alberta Psychiatric Association, 2015 Annual Scientific Conference).

## **KNOWLEDGE TRANSFER ACTIVITIES**

### ***Presentations and Publications for the Research Community***

- 20 manuscripts published in 2014 – 2015, with a further three submitted and six under revision
- 37 conference presentations (June 2014 – June 2015, with a further one submitted); four invited oral presentations

### ***Communications to the University, Clinical and General Communities***

- “A Biomarker of Weight Gain in Young People Treated with Risperidone: A Potential Route for Prediction and Prevention.” Invited presentation to the 4<sup>th</sup> Mind-Body Interface International Symposium: One Step Ahead: Prevention and Prediction in Mental Health, Taipei, Taiwan, February 2014.
- “Exploring Biomarkers for Psychosis.” Oral presentation to the Alberta Psychiatric Association (APA) 2014 Annual Scientific Conference, Banff, March 2014.
- “Legal Highs & Designer Drug Use: A Canadian Perspective.” A. Hudson, M. Lalies, G. Baker, K. J. Aitchison, K. Wells. Oral presentation by Dr. Alan Hudson to a meeting convened by the Canadian Centre on Substance Abuse (CCSA), Novel Psychoactive Substances (NPS): Epidemiology of use and current knowledge exchange efforts, Ottawa, March 19, 2014.
- “Genetics as a research tool in addictions.” Invited presentation to the Alberta Gambling Research Institute’s 13<sup>th</sup> Annual Conference: Controversial Topics in Gambling, Banff, April 2014.
  - See:  
<http://www.abgambinginstitute.ualberta.ca/Events/2014Conference/ConferenceProgram2014.aspx>
  - Presentation freely downloadable at:  
[http://dspace.ucalgary.ca/jspui/bitstream/1880/49991/1/Aitcheson\\_AGRI\\_Conference\\_2014.pdf](http://dspace.ucalgary.ca/jspui/bitstream/1880/49991/1/Aitcheson_AGRI_Conference_2014.pdf)
- Lead submitter and co-chair of the following successful symposium:
  - Canadian College of Neuropsychopharmacology 37<sup>th</sup> Annual Meeting, June 18-21, 2014, Banff, Canada.
    - See <https://ccnp.ca/>
  - Symposium title: Translating the Healthy Active Lives (HeAL) Declaration for Young People with Psychosis into a Reality.
  - Chairs: Dr. S. E. Purdon & Dr. K. J. Aitchison.
  - Presentations:
    - Martin Vetter; Todd Anderson; Thomas J. Raedler (Calgary). “Cardiovascular risk-factors in schizophrenia.”

- Scot E. Purdon (Edmonton), Leslie Roper, Brett Granger, Carol Bolt, Adrian Heald, Kate Hibbard, Katherine J. Aitchison. “Metabolic dysfunction in young people with psychosis: a prospective longitudinal follow-up study.”
  - Adrian Heald (Manchester), Kyaw Sein, Simon Anderson, John Pendlebury, Mark Guy, Vinesh Narayan, Katherine J. Aitchison, Peter Haddad. “Lifestyle factors contributing to metabolic dysfunction in psychosis: There is hope for intervention.”
  - Noor B. Almandil, David Rossolatos, Caitlin Slomp, Ruth I. Ohlsen, Macey L. Murray, Abdulsalam A. Al-Sulaiman, Paul Gringras, Frank M. C. Besag, Katherine J. Aitchison\* (Edmonton), Ian C. K. Wong\*. “A biomarker of weight gain in young people treated with risperidone: a potential route for developing clinical recommendations.”
    - \*Joint senior authors
- “*Pharmacogenetics and Addiction*,” Lecture for PSY511 (given annually).
- Member, Scientific Advisory Committee: Enhancing Collaboration in Addiction and Mental Health, which produced a document on Collaborative Working in Addictions and Mental Health.
  - See: <http://www.ccsa.ca/Resource%20Library/CCSA-Collaboration-Addiction-Mental-Health-Best-Advice-Report-2014-en.pdf>
- Contribution to a news article from the University of Alberta, “Surge in designer drugs, tainted 'E' poses lethal risks,” February, 2014.
  - See: <http://news.ualberta.ca/newsarticles/2014/february/surge-in-designer-drugs-tainted-e-poses-lethal-risks>
- Interest in the above noted on Pacific Hills Treatment Centre website.
  - See: <http://www.pachills.com/blog/designer-drugs-flooding-canadian-market.aspx>
- “Science in the Cinema: *It’s Kind of a Funny Story*,” an event hosted by Alberta Innovates: Health Solutions. Together with a Master’s student, pre-film introduction and post-film Q&A session (Edmonton, March 20, 2014). Presentation addressed to the general public aiming to discuss myths and provide information on the topic of depression and suicidal ideation.
  - See: <http://www.edmontonoutdoorclub.com/events/details.asp?eventid=3502>
- Contribution to a news article in the Lethbridge Herald, “Couples therapy addresses addiction issues,” March, 2014.
  - See: <http://www.uleth.ca/prenticeinstitute/news/couples-therapy-addresses-addiction-issues>
- Article reporting Hudson et al., 2014.
  - See: <http://www.canada.com/news/time+talk+about+mdma/10111422/story.html>
- The 13th Annual Pharmacogenetics in Psychiatry Meeting Report by B. Carvalho Henriques\*, B. A. Heywood\*, A. K. Malhotra, K. J. Aitchison, 2014.
  - See: <http://www.schizophreniaforum.org/new/detail.asp?id=2129>
  - \*Joint first authors

- “Pharmacogenetic translational biomarker discovery.” Presentation for Adult Psychiatry Grand Rounds, University of Alberta, October 8, 2014.
  - Available on Alberta Health Services (AHS) InView.
- Jury member and contributing author, "Consensus Statement on Improving Mental Health Transitions," Institute of Health Economics Consensus Statement, Volume 7, November 4-6, 2014, Edmonton, AB, Canada.
  - Freely downloadable at:
    - <http://www.ihe.ca/documents/IMHT%202014%20Consensus%20Statement.pdf>
- “Addiction and mental health in adolescents: It's not all about genes." Evening lecture by K. J. Aitchison and S. Sivapalan for high school science teachers and school counsellors: outreach evening coordinated by Alberta Innovates: Health Solutions (AIHS), December 18, 2014.
- “Early Psychosis Intervention: Principles and Practice.” Oral presentation by Dr. S. Sivapalan to the EEPIC Team on February 24, and March 3, 2015.
- “Early Intervention in Psychosis: Principles and Practice” (S. Sivapalan, S. E. Purdon, K. J. Aitchison); excerpts from this presented by Dr. Aitchison to the Edmonton Early Psychosis Intervention Clinic (EEPIC) Working Session on May 5, 2015.
- “Introduction to Schizophrenia. Nosology, Clinical Features, Cognitive dysfunction.” Lecture for Residents at the Northern Ontario School of Medicine (NOSM) Academic half-day, May 6, 2015.
- “Towards Pharmacogenomically Guided Treatment.” (K. J. Aitchison, S. E. Purdon, P. Tibbo, G. Macintyre with collaborators Dr. M. Somerville and P. Halloran). Oral Presentation for the Western Molecular Diagnostic Conference, Edmonton, Alberta, May 1, 2015.
- “The Affymetrix DMETPlus Assay™. Preliminary comparative data analysis.” (Y. Wang, K. J. Aitchison). Oral presentation for Affymetrix User Group, May 8, 2015, Vancouver, BC.
- Webpages:
  - Alberta Addiction and Mental Health Research Partnership Program:
    - <http://www.albertahealthservices.ca/11182.asp>
  - Department of Psychiatry, University of Alberta:
    - [www.psychiatry.med.ualberta.ca/AboutUs/FacultyMembers/AcademicStaff/Pages/default.aspx?P=225](http://www.psychiatry.med.ualberta.ca/AboutUs/FacultyMembers/AcademicStaff/Pages/default.aspx?P=225)
  - Department of Medical Genetics, University of Alberta:
    - [www.medicalgenetics.med.ualberta.ca](http://www.medicalgenetics.med.ualberta.ca)
  - Centre for Neuroscience, University of Alberta:
    - [www.neuroscience.ualberta.ca/en/People/Faculty.aspx](http://www.neuroscience.ualberta.ca/en/People/Faculty.aspx)
  - Integrative Health Institute, University of Alberta:
    - <http://uofa.ualberta.ca/integrative-health-institute/scholars/kathy-aitchison>

### ***Conference presentations***

- see **Publications** section.

### ***Other knowledge transfer activities***

- Continued liaison with TEC Edmonton, King's College London (UK) and Imperial College (London, UK) to progress arrangements to involve the University of Alberta in the ANNSERS license. Interest in using the measure expressed by local clinical service management.
- Material transfer agreement for the GENDEP samples signed with King's College London (UK) to permit transfer of samples to the University of Alberta. Samples transferred and work commenced.

### **LOCAL ACTIVITIES**

- A member of the Addiction and Mental Health Research Partnership Committee (September 2011 to current), with attendance of regular meetings of this Committee since taking up post, making a presentation at each.
- Presentations on the role of the Alberta Centennial Addiction and Mental Health Research Chair in Mental Illness and Addictions (see above).
- Seven Grand Rounds presented; supervised trainees to present several more.
- Regular attendee of Adult Psychiatry Grand Rounds, Department of Psychiatry, University of Alberta Rounds, with participation in the discussion.
- Adjunct Professor, Department of Medical Genetics, University of Alberta. Member, Medical Genetics Senior Staff Committee.
- Member of the Centre for Neuroscience, University of Alberta; member, Neuroscience and Mental Health Institute (NMHI), University of Alberta.
- Member, Women and Children's Health Research Institute (WCHRI), University of Alberta and part of a collaborative CFI grant application led by WCHRI.
- Scholar, Integrative Health Institute (IHI), University of Alberta.
- At the Alberta Hospital Edmonton Grand Round, interest in vitamin D measurement was expressed; relevant literature provided. The National Institute for Health and Care Excellence (NICE, UK) hosted a consultation in regard to implementing vitamin D guidance to prevent deficiency.
  - See: <http://www.guidance.nice.org.uk/PHG/71/EvidenceConsultation>
- Clinical Director, Edmonton Early Psychosis Intervention Clinic (EEPIC), including program planning meetings with EEPIC Director and Care Manager as required and meeting with staff members (including over a period of transition in the management structure).
- Alberta Hospital Edmonton Health Quality Council of Alberta Steering Committee: meetings and web conferences for the planning of the new YAETRS and ALC units, with provision of relevant material.
- Addiction and Mental Health Community Joint Physician & Leadership Committee
- Attendance of a meeting convened by Dr. R. Hibbard on the provision of youth mental health services; working together with colleagues to support this transitional period.
- Regional Mental Health Medical Staff Association.



- University of Alberta, Faculty of Medicine and Dentistry, Faculty Council, and elected member, General Faculties Council, Faculty of Medicine and Dentistry.
- Candidacy Exam Committee for a Medical Genetics Doctoral student.
- Examiner, POSCEs, OSCE, and A&D, University of Alberta.
- Master of Science in Psychiatry (MSc) Committees for my students.
- Networking activities in the Faculty of Medicine and Dentistry, University of Alberta and Alberta Health Services to establish research collaborations including but not limited to: Dr. S. E. Purdon, Dr. A. Greenshaw, Dr. M. Somerville, Dr. G. Baker, Dr. G. Macintyre, Dr. L. Postovit, Dr. P. Halloran, Dr. A. Hudson, Dr. K. Wells.

## PAN-ALBERTA COLLABORATIONS

- Member, CRIO Team grant (see **Awards** section).
- Collaboration led by Dr. B. Lee for a randomized controlled trial comparing outcomes of the use of congruence couple therapy for gambling disorder versus alcohol use disorder.
- Through prior visits to University of Calgary and University of Lethbridge, and ongoing networking at meetings, connections have been made that have been helpful for grant applications (e.g., with Dr. Hodgins, University of Calgary; Dr. Kovalchuk, University of Lethbridge).
- Initiation and maintenance of working relationships with various Government personnel and others in order to progress work aiming to reduce the toxic effects of stimulant use by young people in the province. It is hoped that this work will be taken further forward (with a visiting collaborator from the UK), e.g., in more knowledge transfer.
- Attendance of events involving Ministers of Health and of Wellness, and the Lieutenant Governor (including the Lieutenant Governor's Circle on Mental Health and Addiction).
- Addiction and Mental Health Research Partnership Committee (September 2011 to current).
- Member, Alberta Gambling Research Institute Board.
- Meetings with Louise Hayes, Manager, Organizational Liaison, First Nations Relations, Aboriginal Relations, Government of Alberta.
- Meetings with researchers interested in pharmacogenetics.
- Attended of relevant telehealth meetings.
- Member, Alberta Medical Association, Edmonton Zone Medical Staff Association, Alberta Psychiatric Association, and others (see **Executive Summary**).
- Attendance of Norlien Foundation events (e.g., invited panel member, closing session of two Symposia).
- Attendance of Gairdner Symposium, October 2012, and the 2014 Gairdner Neuroscience Symposium: Shedding New Light on Monoaminergic Signalling and Neuropsychiatric Disorders, May 2014.
- Communications with the Addiction and Mental Health Strategic Clinical Network.

- Attendance of the Department of Psychiatry Research Retreat, and the Department of Medical Genetics Research Retreat.
- Attendance at University of Alberta Research Days (e.g., Psychiatry, Women and Children's Health Research Institute, etc.).

### ***National Collaborations***

- CRISM (Canadian Research Initiative in Substance Misuse) Part of a successful application for a Prairie node (see grants).
  - See <http://www.cihr-irsc.gc.ca/e/44597.html>
- Member, Canadian Psychiatric Association Research Committee.
- Member, Scientific Advisory Committee: Enhancing Collaboration in Addiction and Mental Health. Canadian Centre on Substance Abuse, Canadian Executive Council on Addictions, Mental Health Commission of Canada. Contributor to a document on Collaborative Working in Addictions and Mental Health.
- Member, Canadian Depression Research Intervention Network.
- Member, network led by IHI for a CIHR-SPOR call.
- Visiting Professor, Northern Ontario School of Medicine, with an aim to collaborate in research and residency training.
- Collaboration with Drs. J. Kennedy and D. Mueller.

### ***International Collaborations***

- Addictions:
  - “Translational Neuroimaging in Alcoholism: Identification of Altered Brain Connectivity and Treatment Efficacy Predictors” (TRANSALC); Principal Investigator Dr. S. Dursun (Co-investigator); funders ERA-net NEURON and CIHR.
  - Collaboration with Dr. J. Marsden (Principal Investigator) and co-applicants (Drs. R. Ali, A. Somogyi, M. Kelleher, G. Stillwell) on a study entitled “Pharmacogenetics of response to opioid substitution therapy.”
  - Collaboration with Dr. K. Wolff on a study of nicotine with pharmacokinetic data.
  - Collaboration with Dr. P. Carnes and Dr. R. Isenberg (American Foundation for Addiction Research) on sexual addiction.
- Member, STOP Study
  - See: <http://www.stop-study.com>
- Previously Psychopharmacology Special Interest Group, Royal College of Psychiatrists, UK, now Psychopharmacology Special Committee: co-authorship of a Joint Report from a Working Group of the Royal College of Psychiatrists (Psychopharmacology Special Interest Group) and the British Association for Psychopharmacology on the use of benzodiazepines.
- Member, Royal College of Psychiatrists, UK, Pan-American Division.
- Continuing member of the GENDEP collaboration, Depression Studies Consortium, and MiData (Minimum Dataset in First Episode Psychosis) study group from King's College London, UK.

- Visiting Professor, Institute of Psychiatry, King's College London.
- Journal of Psychopharmacology, Editorial Board Member.
- Clinical Neuropsychiatry, Journal of Treatment Evaluation, Editorial Board Member.
- *Frontiers in Pharmacology*, Editorial Board Member.
- Collaboration with Dr. Felitti (USA) on the role of Adverse Childhood Experiences in the etiology and onset of psychosis (external advisor for Master's student).
- Collaborations on physical health in mental health conditions (and membership of the HeAL Working Group).
- Collaboration with Drs. I. C. K. Wong, F. Besag, M. Murray, and R. Ohlsen in the supervision of a doctoral student on a pharmacogenetic study of weight gain associated with the use of risperidone in children and adolescents.
- Together with Drs. X. Li, A. Greenshaw, G. Baker and others, setting up collaborations with China (e.g., Professor T. Li, Chengdu).
- Annual Pharmacogenetics in Psychiatry Meeting Organising Committee (Faculty), New York
  - See: <http://www.pharmacogeneticsinpsychiatry.com>

## NEXT STEPS FOR COLLABORATION AND DISSEMINATION

With the assistance of others, a solid foundation for the funded program of work has been laid so far – with good collaborative relationships – on top of which we have begun to build. The funding of the first major external grant has facilitated moving forward with the creation of a facility and a team with a skill set that will be in a position to be a resource for addiction and mental health in the province and beyond. With epigenetics being key to the etiology of addictions and mental health conditions more widely, my team has already conducted analysis of such data and we look forward to further developing these skills, in collaboration with others such as Dr. L. Postovit and Drs. I. and O. Kovalchuk. The work I have led as part of the STOP study paves the way for biological sampling even in difficult to sample groups such as children and adolescents – not only for epigenetic, but also for other relevant forms of analyses in Alberta, Canada, and internationally. The funded pharmacogenetic translational biomarker discovery project will enable Alberta to be at the leading edge of this field; we are already contributing to advancing the knowledge base and, via collaboration with molecular diagnostics, look forward to translating knowledge into clinical application. The technology is relevant to a wide variety of addiction and mental health applications and also to medicine and surgery in general. As we establish microarray analysis and related technologies at the University of Alberta, it is anticipated that together with the various institutes that I have joined, we will be able to maximize the return on the investment by leverage of more external funding. My interdisciplinary collaborative experience and style of working renders my team particularly suited for the types of funding calls that are currently emerging.

Continued knowledge transfer aimed at a variety of audiences – from public and other relevant end users to clinicians, researchers, and policy makers – will be undertaken. This will be done not only via the traditional routes of publication and presentation but also via other routes such as online communication. The latter has already been undertaken (e.g., websites, downloadable presentations); it is envisaged that this will increasingly become the medium of the future – for teaching, research, and even for clinical work in addictions and mental health.

## AWARDS

- Dr. Katherine Aitchison, Alberta Centennial Addiction and Mental Health Research Chair in Mental Illness and Addictions
  - Adjunct Professor, Department of Medical Genetics, University of Alberta
  - Member, Women and Children’s Research Institute, University of Alberta
  - Member, Integrative Health Institute, University of Alberta
  - FRCPsych, Royal College of Psychiatrists, UK
  - Visiting Professor, Institute of Psychiatry, King’s College London
  - Clinical Co-Director, Edmonton Early Psychosis Intervention Clinic (EEPIC)
  - Visiting Professor, Northern Ontario School of Medicine

## OTHER COLLABORATORS

Name	Position, Organization	Involved Projects
<b>Ali, Robert</b>	Associate Professor in Pharmacology, Adelaide University, Australia	“Pharmacogenetics of response to opioid substitution therapy.”
<b>Baker, Glen</b>	Professor, Psychiatry; Director NRU, University of Alberta	“Evaluating ‘ecstasy’ and new psychoactive substances in Alberta: From pharmacotoxicology to health policy.”
<b>Bartha, Robert</b>	Assistant Professor, Diagnostic and Nuclear Medicine, University of Western Ontario; Scientist, Robarts Research Institute	“NPAS3 variants in schizophrenia: A neuroimaging study.”
<b>Bernier, Denise</b>	Assistant Professor, Psychiatry, Dalhousie University	“NPAS3 variants in schizophrenia: A neuroimaging study.”
<b>*Besag, Frank</b>	Neuropsychiatrist, Visiting Clinical Professor, School of Pharmacology, University of London	“Weight gain associated with atypical antipsychotics in children and adolescents.”
<b>Beyea, Steven</b>	Research Officer, National Research Council of Canada; Adjunct Professor, University of New Brunswick	“NPAS3 variants in schizophrenia: A neuroimaging study.”

<b>Brown, Matthew</b>	Postdoctoral Fellow, Psychiatry, University of Alberta	“Translational neuroimaging in alcoholism: Identification of altered brain connectivity and treatment efficacy predictors (TRANSALC).”
<b>*Castro Fornieles, Josefina</b>	Child & Adolescent Psychiatry, CIBERSAM, Madrid, Spain	“Suicidality: Treatment occurring in paediatrics.”; Workpackage 3
<b>Cernak, Ibolja</b>	Canadian Military & Veterans' Chair in Clinical Rehabilitation, University of Alberta	“Personalized medicine approach in predicting and preventing traumatic brain injury and mental health impairment related functional problems in high-risk occupations.”
<b>*Coghill, David</b>	Reader, Child and Adolescent Psychiatry, University of Dundee, Scotland	“Suicidality: Treatment occurring in paediatrics.”; Workpackage 3
<b>*Craig, Ian</b>	Professor, Molecular Behavioural Genetics, King's College London, UK	“Suicidality: Treatment occurring in paediatrics.”; Workpackage 3
<b>*Curran, Sarah</b>	Clinical Senior Lecturer, Behavior Genetics, Institute of Psychiatry, King's College London, UK	“Suicidality: Treatment occurring in paediatrics.”; Workpackage 3
<b>Dursun, Serdar</b>	Professor, Psychiatry, University of Alberta	“Translational neuroimaging in alcoholism: Identification of altered brain connectivity and treatment efficacy predictors (TRANSALC).”
<b>*Felitti, Vincent J.</b>	California Institutes of Preventative Medicine	“Investigation of the roles of genetic vulnerability, cannabis use, adverse childhood experiences, and recent adverse life events in the onset of psychosis in young people.” (L Roper)
<b>*Flanagan, Robert J.</b>	Consultant, Clinical Scientist, Toxicology Unit, King's College Hospital NHS Foundation Trust, London; Honorary Professor of Analytical Toxicology, Queen Mary, University of London, UK; Adjunct Professor, Department of Psychiatry, University of Alberta	“Suicidality: Treatment occurring in paediatrics.”; Workpackage 3

<b>Galea, Sandro</b>	Professor and Chair, <a href="#">Epidemiology</a> , Columbia University	“Personalized medicine approach in predicting and preventing traumatic brain injury and mental health impairment related functional problems in high-risk occupations.”
<b>Gillese, John T.</b>	Consulting Psychiatrist, ABH Child, Adolescent and Family Services, Psychological and Assessment Services	“Translational neuroimaging in alcoholism: Identification of altered brain connectivity and treatment efficacy predictors (TRANSALC).”
<b>*Greenshaw, Andrew</b>	Professor, Psychiatry, University of Alberta	“Translational neuroimaging in alcoholism: Identification of altered brain connectivity and treatment efficacy predictors (TRANSALC).”; AGRI-funded grant; CRIO Team Grant
<b>*Halloran, Philip</b>	Professor, Alberta Transplant Applied Genomics Centre, University of Alberta	“Pharmacogenetic translational biomarker discovery.”
<b>*Hudson, Alan</b>	Associate Professor, Pharmacology, University of Alberta	“Evaluating ‘ecstasy’ and new psychoactive substances in Alberta: From pharmacotoxicology to health policy.”
<b>*Jones, Graham</b>	Chief Toxicologist, Government of Alberta	“Evaluating ‘ecstasy’ and new psychoactive substances in Alberta: From pharmacotoxicology to health policy.”
<b>Kelleher, Michael</b>	Consultant Psychiatrist Clinical Lead, Lambeth for Addictions, King’s College London, UK	“Pharmacogenetics of response to opioid substitution therapy.”
<b>Kennedy, James</b>	Professor, Centre for Addictions and Mental Health, University of Toronto	“Antipsychotic-induced weight gain and metabolic dysfunction: genetics, epigenetics, functional analyses and clinical testing.”
<b>*Lafuente, Amalia</b>	Professor, Pathology, Pharmacology and Microbiology, University of Barcelona	“Suicidality: Treatment occurring in paediatrics.”; Workpackage 3

<b>*Macintyre, Georgina</b>	Senior Research Associate, Psychiatry, University of Alberta	“NPAS3 in psychoses.” (CIHR); “NPAS3 variants in schizophrenia: A neuroimaging study.” (NSHRF); “Suicidality: Treatment occurring in paediatrics.”; Workpackage 3
<b>Marsden, John</b>	Reader, Addiction Psychology, King’s College London, UK	“Pharmacogenetics of response to opioid substitution therapy.”
<b>McAllindon, David</b>	Technical officer, National Research Council of Canada	“NPAS3 variants in schizophrenia: A neuroimaging study.”
<b>Mueller, Daniel</b>	Centre for Addictions and Mental Health, University of Toronto	“Antipsychotic-induced weight gain and metabolic dysfunction: genetics, epigenetics, functional analyses and clinical testing.”
<b>*Paya-Cano, Jose L</b>	Psychiatry, King’s College London, UK	“Suicidality: Treatment occurring in paediatrics.”; Workpackage 3
<b>*Price, Thomas</b>	Lecturer in Statistical Genetics, King’s College London, UK	“Suicidality: Treatment occurring in paediatrics.”; Workpackage 3
<b>*Purdon, Scot</b>	Manager of EEPIC, AHS and Clinical Professor, Psychiatry, University of Alberta	“Investigation of the roles of genetic vulnerability, cannabis use, adverse childhood experiences, and recent adverse life events in the onset of psychosis in young people” and other MSc projects as above; “NPAS3 in psychoses” (CIHR); “NPAS3 variants in schizophrenia: A neuroimaging study.” (NSHRF)
<b>*Rietschel, Marcella</b>	Head, Division of Genetic Epidemiology in Psychiatry, Central Institute of Mental Health (CIHM), Mannheim, Germany	“Suicidality: Treatment occurring in paediatrics.”; Workpackage 3
<b>Santosh, Paramala</b>	Head of the Centre for International Paediatric Psychopharmacology, Great Ormond Street Hospital for Children	“Suicidality: Treatment occurring in paediatrics.”; Workpackage 3
<b>*Somerville, Martin</b>	Professor in Medical Genetics, University of Alberta	“Pharmacogenetic translational biomarker discovery.”



<b>Somogyi, Andrew</b>	Professor, Clinical and Experimental Pharmacology, University of Adelaide, Australia	“Pharmacogenetics of response to opioid substitution therapy.”
<b>Song, Xiaowei</b>	Biomedical Informatics, National Research Council of Canada	“NPAS3 variants in schizophrenia: A neuroimaging study.”
<b>Stillwell, Garry</b>	Study Coordinator, Psychiatry, King’s College London, UK	“Pharmacogenetics of response to opioid substitution therapy.”
<b>*Yarema, Mark</b>	Medical Director, Poison and Drug Information Service, Alberta Health Services	“Evaluating ‘ecstasy’ and new psychoactive substances in Alberta: From pharmacotoxicology to health policy.”
<b>Wang, JianLi</b>	Associate Professor, Psychiatry and Community Health Sciences, University of Calgary	“Improving the outcome of schizophrenia.”
<b>*Waugh, Earle H.</b>	Director, Centre for Cross-Cultural Health, University of Alberta	Potential collaboration in new Institute for Aboriginal Health and Alternative Medicine
<b>*Wells, Kristopher</b>	Assistant Professor, Educational Policy Studies, Faculty of Education, University of Alberta; Director, Programs & Services, Institute for Sexual Minority Studies and Services, University of Alberta	“Evaluating ‘ecstasy’ and new psychoactive substances in Alberta: From pharmacotoxicology to health policy.”
<b>Wild, Cameron</b>	Associate Dean of Research for the School of Public Health, University of Alberta; Professor of the Centre for Health Promotion Studies, University of Alberta	Canadian Research Initiative in Substance Misuse (CRISM)
<b>*Witt, Stephanie</b>	Psychologist, Assistant Scientific Director, Central Institute of Mental Health (CIHM), Mannheim, Germany	“Suicidality: Treatment occurring in paediatrics.”; Workpackage 3
<b>Wolff, Kim</b>	Reader, Addiction Science and Postgraduate Education, King’s College London, UK; Adjunct Professor, Department of Psychiatry, University of Alberta	“Ecstasy (MDMA)-induced hyponatremia is associated with genetic variants in CYP2D6 and COMT” and related publications.”; Nicotine study

**Wong, Ian**

Professor, Paediatric Pharmacy, School  
of Pharmacy, University of London;  
Director of the Centre for Paediatric  
Pharmacy Research, University of  
London

“Weight gain associated with  
atypical antipsychotics in children  
and adolescents.”

## PUBLICATIONS

### ***Journal Publications (2014 – 2015):***

1. Rossolatos, D., & Aitchison, K. J. (2014). Genomics for clinical utility: the future is near. *Genome Medicine* 6(1), 3.  
doi: 10.1186/gm522, <http://genomemedicine.com/content/6/1/3>, PMID: 24468134
2. Hudson, A., Lalies, M., Baker, G., Wells, K., & Aitchison, K. J. (2014). Ecstasy, Legal Highs, and Designer Drug Use: A Canadian Perspective. *Drug Science, Policy and Law*.  
doi:10.1177/2050324513509190
3. Koola, M. M., Tsapakis, E. M., Wright, P., Smith, S., Kerwin Rip, R. W., Nugent, K. L., & Aitchison, K. J. (2014). Association of tardive dyskinesia with variation in CYP2D6: Is there a role for active metabolites? *Journal of Psychopharmacology* 28(7), 665-670.  
PMID: 24595968
4. Tsapakis, E. M., Fernandes, C., Moran-Gates, T., Basu, A., Sugden, K., Aitchison, K. J., & Tarazi, F. I. (2014). Effects of antidepressant drug exposure on gene expression in the developing cerebral cortex. *Synapse* 68(5), 209-220.  
doi: 10.1002/syn.21732, PMID:24458505
5. Hodgson, K., Tansey, K., Dernovšek, M. Z., Hauser, J., Henigsberg, N., Maier, W., Mors, O., Placentino, A., Rietschel, M., Souery, D., Smith, R., Craig, I. W., Aitchison, K. J., Belsy, S., Davis, O. S., Uher, R., & McGuffin, P. (2014). Genetic differences in the cytochrome P450 enzymes and antidepressant treatment response. *Journal of Psychopharmacology* 28(2), 133-41.  
doi: 10.1177/0269881113512041, PMID:24257813
6. Hodgson, K., Uher, R., Crawford, A. A., Lewis, G., O'Donovan, M. C., Keers, R., Dernovšek, M. Z., Mors, O., Hauser, J., Souery, D., Maier, W., Henigsberg, N., Rietschel, M., Placentino, A., Aitchison, K. J., Farmer, A. E., Davis, O., & McGuffin, P. (2013). Genetic predictors of antidepressant side effects: A grouped candidate gene approach in the Genome-Based Therapeutic Drugs for Depression (GENDEP) study. *Journal of Psychopharmacology* 28(2), 142-50.  
doi: 10.1177/0269881113517957, PMID:24414086
7. Gassó, P., Pagerols, M., Flamarique, I., Castro-Fornieles, J., Rodriguez, N., Mas, S., Curran, S., Aitchison, K. J., Santosh, P., Lafuente, A., & STOP Consortium (2014). The effect of age on DNA concentration from whole saliva: Implications for the standard isolation method. *American Journal of Human Biology* 26(6), 859-862  
doi: 10.1002/ajhb.22593
8. Tansey, K. E., Rucker, J., Kavanagh, D. H., Guipponi, M., Perroud, N., Bondolfi, G., Domenici, E., Evans, D. M., Hauser, J., Henigsberg, N., Jerman, B., Maier, W., Mors, O., O'Donovan, M., Peters, T. J., Placentino, A., Rietschel, M., Souery, D., Aitchison, K. J., Craig, I., Farmer, A.,

- Wendland, J. R., Malafosse, A., Lewis, G., Lewis, C. M., Kapur, S., McGuffin, P. & Uher, R. (2013). Copy number variants and therapeutic response to antidepressant medication in major depressive disorder. *Pharmacogenomics Journal* 14, 395-399.  
doi: 10.1038/tpj.2013.51, PMID:24445990
9. Vyas, N. S., Ahn, K., Lee, Y., Ternouth, A., Simic, M., Stahl, D. R., & Aitchison, K. J. (2014). Association of KIBRA rs17070145 polymorphism with episodic memory in the early stages of a human neurodevelopmental disorder. *Psychiatry Research* 220, 37-43;  
doi: 10.1016
  10. Hung, C. F., Rivera, M., Craddock, N., Owen, M. J., Gill, M., Korszun, A., Maier, W., Mors, O., Preisig, M., Rice, J. P., Rietschel, M., Jones, L., Middleton, L., Aitchison, K. J., Davis, O. S. P., Breen, G., Lewis, C., Farmer, A., & McGuffin, P. (2014). Relationship between obesity and the risk of clinically significant depression: Mendelian randomisation study. *British Journal of Psychiatry* 205(1), 24-28  
doi: 10.1192/bjp.bp.113.130419, PMID:24809401
  11. Koola, M. M., Buchanan, R. W., Pillai, A., Aitchison, K. J., Weinberger, D. R., Aaronson, S. T., & Dickerson, F. B. (2014). Potential role of the combination of galantamine and memantine to improve cognition in schizophrenia. *Schizophrenia Research* 157(1-3), 84-89.  
doi: 10.1016/j.schres.2014.04.037, PMID:24878431
  12. Legge, R. M., Sendi, S., Cole, J. H., Cohen-Woods, S., Costafreda, S. G., Simmons, A., Farmer, A. E., Aitchison, K. J., McGuffin, P., & Fu, C. H. Y. (2015). Modulatory effects of brain-derived neurotrophic factor Val66Met polymorphism on prefrontal regions in major depressive disorder. *British Journal of Psychiatry* 206,1-6  
doi: 10.1192/bjp.bp.113.143529
  13. Zhang, J. P., Aitchison, K. J., & Malhotra, A. K. (2014). The 12<sup>th</sup> Annual Pharmacogenetics in Psychiatry Meeting Report. *Psychiatric Genetics* 24(5), 218-220  
doi: 10.1097/YPG.0000000000000041, PMID: 24859420
  14. Bernier, D., Macintyre, G., Bartha, R., Hanstock, C. C., McAllindon, D., Cox, D., Purdon, S., Aitchison, K. J., Rusak, B., & Tibbo, P. G. (2014). NPAS3 variants in schizophrenia: A neuroimaging study. *BMC Medical Genetics* 15, 37.  
doi: 10.1186/1471-2350-15-37, PMID:24674381
  15. Mullins, N., Hodgson, K., Tansey, K. E., Perroud, N., Maier, W., Mors, O., Rietschel, M., Hauser, J., Henigsberg, N., Souery, D., Aitchison, K. J., Farmer, A., McGuffin, P., Breen, G., Uher, R., & Lewis, C. (2014). Investigation of blood mRNA biomarkers for suicidality in an independent sample. *Translational Psychiatry* 4, e474.  
doi: 10.1038/tp.2014.112
  16. Sivapalan, S., Aitchison, K. J. (2014). Neurological structure variations in individuals with autism spectrum disorder: A review. *Bulletin of Clinical Psychopharmacology* 24(3), 268-275.
  17. Rucker, J. H. J., Tansey, K. E., Rivera, M., Pinto, D., Cohen-Woods, S., Uher, R., Aitchison, K. J., Craddock, N., Owen, M. J., Jones, L., Jones, I., Korszun, A., Barnes, M. R., Preisig, M., Mors, O., Gill, M., Maier, W., Rice, J., Rietschel, M., Holsboer, F., Farmer, A. E., Craig, I. W., Scherer, S. W., McGuffin, P., & Breen, G. (2015). Phenotypic association analyses with copy number variation in recurrent depressive disorder. *Biological Psychiatry*.  
doi: 10.1016/j.biopsych.2015.02.025, PMID: 25861698

18. Roprai, H. K., Ashkan, K., Brazil, L., Selway, R. P., Lodhi, R., Aitchison, K. J., Gullan, R. W., & Beaney, R. (2015). Role of a combination of seven micronutrients in the management of glioblastoma multiforme. *Clinical Oncology* 27(6); 370-371.  
doi: 10.1016/j.clon.2015.01.010, PMID: 25681869
19. Ferentinos, P., Koukounari, A., Power, R., Rivera, M., Uher, R., Craddock, N., Owen, M. J., Korszun, A., Jones, L., Jones, I., Gill, M., Rice, J. P., Ising, M., Maier, W., Mors, O., Rietschel, M., Preisig, M., Binder, E. B., Aitchison, K. J., Mendlewicz, J., Souery, D., Hauser, J., Henigsberg, N., Breen, G., Craig, I. W., Farmer, A. E., Müller-Myhsok, B., McGuffin, P., & Lewis, C. M. (2015). Familiality and SNP-heritability of age at onset and episodicity in major depressive disorder. *Psychological Medicine*.  
doi: 10.1017/S0033291715000215, PMID: 25698070
20. Hodgson, K., Tansey, K. E., Uher, R., Dernovsek, M. Z., Mors, O., Hauser, J., Souery, D., Maier, W., Henigsberg, N., Rietschel, M., Placentino, A., Craig, I. W., Aitchison, K. J., Farmer, A. E., Dobson, R., & McGuffin, P. (2015). Exploring the role of drug-metabolising enzymes in antidepressant side-effects. *Psychopharmacology (Berlin)*.  
doi: 10.1007/s00213-015-3898-x, PMID: 25761838
21. Malki, K., Maier, W., Rietschel, M., Mors, O., Hauser, J., Henigsberg, N., Dernovsek, M. Z., Souery, D., Stahl, D., Dobson, R., Aitchison, K. J., Farmer, A., Lewis, C. M., McGuffin, P., & Uher, R. (in prep). Combining clinical variables to optimize prediction of antidepressant treatment outcomes: a statistical learning approach.

#### **Conference Presentations (June 2014 – June 2015):**

1. Purdon, S. E., Roper, L., Granger, B., Bolt, C., Heald, A., Hibbard, K., & Aitchison, K. J. (2014, June). Metabolic dysfunction in young people with psychosis: A prospective longitudinal follow-up study. In S. E. Purdon & K. J. Aitchison (Chairs), *Translating the healthy active lives (HeAL) declaration for young people with psychosis into a reality*. Symposium conducted at the Canadian College of Neuropsychopharmacology 37<sup>th</sup> Annual Meeting, Banff, Alberta. <https://ccnp.ca/>
2. Heald, A. H., Sein, K., Anderson, S., Pendlebury, J., Guy, M., Narayan, V., Aitchison, K. J., & Haddad, P. (2014, June). Lifestyle factors contributing to metabolic dysfunction in psychosis: there is hope for intervention. In S. E. Purdon & K. J. Aitchison (Chairs), *Translating the healthy active lives (HeAL) declaration for young people with psychosis into a reality*. Symposium conducted at the Canadian College of Neuropsychopharmacology 37<sup>th</sup> Annual Meeting, Banff, Alberta. <https://ccnp.ca/>
3. Almandil, N. B., Rossolatos, D., Slomp, C. J., Ohlsen, R. I., Murray, M. L., Al-Sulaiman, A. A., Gringras, P., Besag, F. M. C., Aitchison, K. J.\* & Wong, I. C. K.\* (2014, June). A biomarker of weight gain in young people treated with risperidone: a potential route for developing clinical recommendations. In S. E. Purdon & K. J. Aitchison (Chairs), *Translating the healthy active lives (HeAL) declaration for young people with psychosis into a reality*. Symposium conducted at the Canadian College of Neuropsychopharmacology 37<sup>th</sup> Annual Meeting, Banff, Alberta.  
<https://ccnp.ca/>
  - \*Joint senior authors
4. Lodhi, R., Wolff, K., Tsapakis, E. M., Forsling, M., & Aitchison, K. J. (2014, June). *Baseline oxytocin levels predict change in anxiety post-clubbing*. Poster session presented at the Canadian College of Neuropsychopharmacology 37<sup>th</sup> Annual Meeting, Banff, Alberta.  
<https://ccnp.ca/>

5. Wang, Y., Rossolatos, D., Heywood, B., Carvalho Henriques, B., Bugbee, D., Dimitrijevic, A., Loverock, A., Bolt, C., Macintyre, G., Tibbo, P., Aitchison, K. J., & Purdon, S. E. (2014, June). *Exploring interactions between COMT, BDNF and AKT1 and cannabis consumption in the genesis of psychosis*. Poster session presented at the Canadian College of Neuropsychopharmacology 37th Annual Meeting, Banff, Alberta. <https://ccnp.ca/>
6. Almandil, N. B., Rossolatos, D., Slomp, C., Ohlsen, R. I., Murray, M. L., Al-Sulaiman, A. A., Gringras, P., Besag, F. M. C., Aitchison, K. J., & Wong, I. C. K. (2014, June). *The LEPR Arg223Arg variant is associated with weight gain in children and adolescents treated with risperidone*. Paper presented at Pharmacogenetics in Psychiatry 37<sup>th</sup> Annual Meeting, Hollywood, Florida.
  - Available at: [http://www.pharmacogeneticsinpsychiatry.com/images/PIP\\_Program\\_Book\\_FINAL.pdf](http://www.pharmacogeneticsinpsychiatry.com/images/PIP_Program_Book_FINAL.pdf)
7. Heywood, B., Carvalho Henriques, B., Rossolatos, D., Bugbee, D., Dimitrijevic, A., Loverock, A., Bolt, C., Macintyre, G., Tibbo, P., Aitchison, K. J., & Purdon, S. E. (2014, June). *Exploring interactions between COMT, BDNF and AKT1 and cannabis consumption in the genesis of psychosis*. Poster session presented at the Pharmacogenetics in Psychiatry 37<sup>th</sup> Annual Meeting, Hollywood, Florida.
  - Available at: [http://www.pharmacogeneticsinpsychiatry.com/images/PIP\\_Program\\_Book\\_FINAL.pdf](http://www.pharmacogeneticsinpsychiatry.com/images/PIP_Program_Book_FINAL.pdf)
8. Koola, M. M., Tsapakis, E. M., Williams, B. S., Scully, P., Quinn, J. J., Wright, P., Smith, S., Daly, A., Gill, M., Waddington, J. L., & Aitchison, K. J. (2014, June). *Brain-derived Neurotrophic Factor Val66Met Polymorphism and Antipsychotic-induced Tardive Dyskinesia*. Poster session presented at the Pharmacogenetics in Psychiatry 37<sup>th</sup> Annual Meeting, Hollywood, Florida.
  - Available at: [http://www.pharmacogeneticsinpsychiatry.com/images/PIP\\_Program\\_Book\\_FINAL.pdf](http://www.pharmacogeneticsinpsychiatry.com/images/PIP_Program_Book_FINAL.pdf)
9. Heywood, B. A., Lee, D., Wang, Y., Curran, S. C., Paya-Cano, J., Witt, S., Lafuente, A., Rietschel, M., Mors, O., Uher, R., Hauser, J., Czernski, P. M., Maier, W., Zobel, A. W., Rietschel, M., Kozel, D., Henigsberg, N., Souery, D., Giovannini, C., Farmer, A., Craig, I., Santosh, P., McGuffin, P., & Aitchison, K. J. (2014, October). *ABCB1: From Target Validation To Clinical Utility*. Poster session presented at the 47<sup>th</sup> Annual Summer Students' Research Day, Edmonton, Alberta.
10. Carvalho Henriques, B., Slomp, C., Rossolatos, D., Tsapakis, E., Curtis, L., Santosh, P., Paya-Cano, J., Curran, S., Craig, I., & Aitchison, K. J. (2014, October). *Characterization of CYP2D6 alleles through innovative PCR technology*. Poster session presented at the 47<sup>th</sup> Annual Summer Students' Research Day, Edmonton, Alberta.
11. Roper, L., Colman, I., Tibbo, P., Wild, C., Wolfe, J., Aitchison, K. J., & Purdon, S. E. (2014, November). *Stressful prenatal and childhood events and adolescent mental health*. Poster session presented at the Women and Children's Health Research Initiative Research Day, Edmonton, Alberta.
12. Carvalho Henriques, B., Slomp, C., Rossolatos, D., Tsapakis, E., Curtis, L., Santosh, P., Paya-Cano, J., Curran, S., Craig, I., & Aitchison, K. J. (2014, November). *CYP2D6: Detecting New Structures for Clinical Practice*. Poster session presented at the Women and Children's Health Research Institute Research Day, Edmonton, Alberta.

13. Lodhi, R., Roper, L., Granger, B., Bolt, C., Aitchison, K. J., & Purdon, S. (2014, November). *Antipsychotic associated metabolic syndrome: Clinical course and vulnerability factors*. Poster session presented at the Women and Children's Health Research Institute Research Day, Edmonton, Alberta.
14. Wang, Y., Heywood, B., Henriques, B., Rossolatos, D., Bugbee, D., Loverock, A., Bolt, C., Dimitrijevic, A., Macintyre, G., Tibbo, P., & Aitchison, K. J. (2014, November). *COMT genotype predicts age of diagnosis in substance-induced psychosis*. Poster session presented at the Women and Children's Health Research Institute Research Day, Edmonton, Alberta.
15. Carvalho Henriques, B., Slomp, C., Rossolatos, D., Tsapakis, E., Curtis, L., Santosh, P., Paya-Cano, J., Curran, S., Craig, I., & Aitchison, K. J. (2014, November). *CYP2D6: Detecting New Structures for Clinical Practice*. Poster session presented at the University of Alberta 4<sup>th</sup> Annual Undergraduate Research Symposium, Edmonton, Alberta.
  - Available at: <https://drive.google.com/file/d/0B0pPpKzoZQBmdW4zbkswU2JfZms/view?pli=1>
16. Lodhi, R., Roper, L., Granger, B., Bolt, C., Aitchison, K. J., & Purdon, S. (2014, November). *Antipsychotic associated metabolic syndrome: Clinical course and vulnerability factors*. Poster session presented at the 9<sup>th</sup> International Conference on Early Psychosis – To the Horizon, Tokyo, Japan.
17. Aitchison, K. J., Wang, Y., Rossolatos, D., Heywood, B., Carvalho Henriques, B., Bugbee, D., Dimitrijevic, A., Loverock, A., Bolt, C., Macintyre, G., Tibbo, P., & Purdon, S. E. (2014, December). *Exploring the interplay between COMT, BDNF and AKT1 and cannabis consumption in the genesis of psychosis*. Poster session presented at the American College of Neuropsychopharmacology, Phoenix, Arizona.
18. Lodhi, R.\* , Rooprai, H. K.\* , Ashkan, K., Brazil, L., Selway, R. P., Gullan, R. W., Beaney, R.# , & Aitchison, K. J.#. (2015, February). *Role of a combination of seven micronutrients in the management of Glioblastoma multiforme*. Poster session presented at the 2015 Complementary and Alternative Medicine (CAM) Fair, Edmonton, Alberta.
  - \*Joint first authors, #Joint senior authors
19. Aitchison, K. J., & Sivapalan, S. (2015, February, March, ongoing). *Early psychosis intervention: Principles and practice* [lecture]. Presentation at the EEPIC Team Meeting, Edmonton, Alberta.
20. Lodhi, R., Masand, S., Mir, A., Shivakumar, K., McAllister, V. D. M., O'Keane, V., Young, L. C., Heald, A. H., Sherwood, R., & Aitchison, K. J. (2015, March). *An increase in bone stability in an aripiprazole add-on or switching study*. Paper presented at the Alberta Psychiatric Association 2015 Scientific Conference and Annual General Meeting, Banff, Alberta.
  - See: <http://albertapsych.org/events/conference>
21. Sivapalan, S., Lodhi, R., Newton, V., Granger, B., Aitchison, K. J., & Purdon, S. E. (2015, March). *Domain-specific MCCB-assessed cognitive associations to symptoms of metabolic syndrome in patients referred to an early psychosis intervention clinic*. Poster session presented at the Alberta Psychiatric Association 2015 Scientific Conference and Annual General Meeting, Banff, Alberta.
  - See: <http://albertapsych.org/events/conference>
22. Rossolatos, D., & Aitchison, K. J. (2015, March). *The genetics of gambling: Where have we got to and where are we going?* Poster session presented at the 14<sup>th</sup> Annual Conference of the Alberta Gambling Research Institute, Banff, Alberta.



- See: <http://www.abgambinginstitute.ualberta.ca/en/Events/EventsArchive/2015Conference.aspx>
23. Aitchison, K. J., Purdon, S. E., Tibbo, P., Macintyre, G., Somerville, M., & Halloran, P. (2015, May). *Towards pharmacogenomically guided treatment*. Paper presented at the Western Molecular Diagnostic Conference, Edmonton, Alberta.
  24. Aitchison, K. J., & Sivapalan, S. (2015, May). *Early intervention in psychosis: Principles and practice (highlights)*. Paper presented at the Edmonton Early Psychosis Intervention Clinic (EEPIC) Working Session, Edmonton, Alberta.
  25. Aitchison, K. J. (2015, May). *Introduction to schizophrenia, nosology, clinical features, cognitive dysfunction* [lecture]. Presentation at the Northern Ontario School of Medicine (NOSM) Academic Half-day, Sudbury, Ontario.
  26. Aitchison, K. J., & Wang, Y. (2015, May). *The Affymetrix DMETPlus Assay™ preliminary comparative data analysis* [lecture]. Presentation at the Affymetrix user group, Vancouver, BC.
  27. Koola, M. M., Tsapakis, E., Williams, B., Scully, P., Quinn, J., Wright, P., Smith, S., Daly, A., Gill, M., Waddington, J., Kerwin, R. (RIP), & Aitchison, K. J. (2015, May). *Brain-derived neurotrophic factor val66met polymorphism and antipsychotic-induced tardive dyskinesia*. Poster session presented at the Society of Biological Psychiatry's 70<sup>th</sup> Annual Meeting, Toronto, Ontario.
  28. Carvalho Henriques, B., Wang, Y., Whitford, R., Slomp, C. J., Rossolatos, D., Paya-Cano, J., Curran, S. C., Santosh, P., Craig, I. W., & Aitchison, K. J. (2015, May). *CYP2D6: Detecting new structures for clinical practice*. Poster session presented at the Society of Biological Psychiatry's 70<sup>th</sup> Annual Meeting, Toronto, Ontario.
  29. Rossolatos, D., Carvalho Henriques, B., Tibbo, P., Bugbee, D., Purdon, S. E., Aitchison, K. J., Loverock, A., Bolt, C., Wang, Y., Dimitrijevic, A., Heywood, B., & Macintyre, G. (2015, May). *Exploring the interplay between COMT and cannabis consumption in psychotic disorders*. Poster session presented at the Society of Biological Psychiatry's 70<sup>th</sup> Annual Meeting, Toronto, Ontario.
  30. Lodhi, R., Masand, S., Mir, A., Shivakumar, K., McAllister, V. D. M., O'Keane, V., Young, L. C., Heald, A. H., Sherwood, R., & Aitchison, K. J. (2015, May). *An increase in bone stability in an aripiprazole add-on or switching study*. Poster session presented at the Society of Biological Psychiatry's 70<sup>th</sup> Annual Meeting, Toronto, Ontario.
  31. Sivapalan, S., Lodhi, R., Newton, V., Granger, B., Aitchison, K. J., & Purdon, S. E. (2015, May). *Domain-specific MCCB-assessed cognitive associations to symptoms of metabolic syndrome in patients referred to an early psychosis intervention clinic*. Poster session presented at the American Psychiatric Association 168<sup>th</sup> Annual Meeting, Toronto, Ontario.
    - See: <http://annualmeeting.psychiatry.org/scientific-program/poster-abstracts>
  32. Sivapalan, S., Lodhi, R., Newton, V., Granger, B., Aitchison, K. J., & Purdon, S. E. (2015, May). *Domain-specific MCCB-assessed cognitive associations to symptoms of metabolic syndrome in patients referred to an early psychosis intervention clinic*. Poster session presented at the 14<sup>th</sup> Annual Psychiatry Research Day, Edmonton Alberta.
  33. Carvalho Henriques, B., Wang, Y., Whitford, R., Slomp, C. J., Rossolatos, D., Paya-Cano, J., Curran, S., Santosh, P., Craig, I. W., & Aitchison, K. J. (2015, May). *CYP2D6: Detecting new structures for clinical practice*. Poster session presented at the 14<sup>th</sup> Annual Psychiatry Research Day, Edmonton Alberta.



34. Rossolatos, D., Carvalho Henriques, B., Tibbo, P., Bugbee, D., Purdon, S. E., Aitchison, K. J., Loverock, A., Bolt, C., Wang, Y., Dimitrijevic, A., Heywood, B., & Macintyre, G. (2015, May). *Exploring the interplay between COMT and cannabis consumption in psychotic disorders*. Paper presented at the 14<sup>th</sup> Annual Psychiatry Research Day, Edmonton Alberta.
35. Lodhi, R., Masand, S., Mir, A., Shivakumar, K., McAllister, V. D. M., O'Keane, V., Young, L. C., Heald, A. H., Sherwood, R., & Aitchison, K. J. (2015, May). *An increase in bone stability in an aripiprazole add-on or switching study*. Poster session presented at the 14<sup>th</sup> Annual Psychiatry Research Day, Edmonton Alberta.
36. Roper, L. J., Purdon, S. E., & Aitchison, K. J. (2015, May). *Vulnerabilities to psychosis in young people*. Poster session presented at the 14<sup>th</sup> Annual Psychiatry Research Day, Edmonton Alberta.
37. Wang, Y., Heywood, B., Gras K, Paya-Cano, J., Curran, S., Huezo-Diaz P, Santosh, P., Craig, I. W., & Aitchison, K. J. (2015, May). *Comparing ADME-related genes with various technologies*. Poster session presented at the 14<sup>th</sup> Annual Psychiatry Research Day, Edmonton Alberta.
38. Wang, Y., Macintyre, G., & Aitchison, K. J. (2015, October). *What do we learn from recent advances in the genetics of schizophrenia?* Paper presented at the Indo-Canadian Psychiatric Association at the Canadian Psychiatric Association Annual Conference, Vancouver, BC. Manuscript in press.

## **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 multi-sectoral group, representing service providers, academic researchers, policy-makers and consumer groups, working together to improve the coordination and implementation of practice-based mental health research in Alberta.

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

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