

international meeting for autism research

IMFAR 2006

Autism Ontario Supports Researchers at IMFAR 2006



Reports from Delegates



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IMFAR delegates pictured on cover (L to R)
Tracey McMullen, recipient of the Ontario Mental Health Foundation 2006-2008 Studentship Award sponsored by Autism Ontario, **Valorie Salimpoor**, recipient of Autism Ontario's 2003 Summer Studentship and an IMFAR Travel Bursary, and **Irene Drmic**, recipient of Autism Ontario's IMFAR Travel Bursary

Message from 2004-2006 Autism Ontario Research Chair

The past two years were a very exciting time to serve as chair of Autism Ontario's Research Committee. The generosity of community support for the **Together for Autism** campaign, the creativity and passion among students and their supervisors, the energy and commitment of the community leaders and autism researchers on our committee has led to exciting opportunities to support some very promising young investigators. Autism Ontario has shown great vision in dedicating support to these young scientists at the earliest stages of their careers, so they can become future leaders in autism research in Canada. It has become an example to other autism societies (and other research funders) across the country. It has truly been an honour to work with Autism Ontario during such a critical period of growth and renewal.

One new initiative of the Research Committee, was the creation of a Travel Bursary, to provide support for Ontario students and community leaders to help them attend the International Meeting for Autism Research (IMFAR) in Montreal, on June 1 to 3, 2006. IMFAR is currently the premier autism conference in the academic community. It brings together investigators and clinicians from around

the world to report new findings, discuss new technologies and other advances, and to foster collaboration and a sense of community as new research priorities and directions are established in the field. This was the first time IMFAR was held in Canada, and represented a watershed moment for the Canadian autism community, taking the 'world stage' in support of ASD research. The Committee felt that it was essential for students pursuing autism research careers to participate in this land-mark event, as well as community leaders (particularly parents) to bring back cutting-edge, evidence-based advances in autism (including treatment studies, and new understanding of under-lying neurobiology of ASD) to their own communities. In this special document which will be online at www.autismontario.com, you will read about the profound impact their attendance at IMFAR had on their understanding of ASD, their professional and research work, and (particularly for community leaders) in their advocacy and support roles with other families. Their experiences, which will have many long-term impacts, are a proud legacy for Autism Ontario and **Together for Autism**.

Dr. Lonnie Zwaigenbaum

**Autism Ontario
Research Committee 2006-07**

Dr. James Bebko (chair)*

Jennifer Cantello-Daw*

Linda Gibson

Ronald Harrison*

Dr. Jeanette Holden*

Dr. Mary Konstantareas*

Aliya Rahim

Dr. Glenn Rampton*

Margaret Spoelstra*

Dr. Kevin Stoddart*

Dr. Lonnie Zwaigenbaum (retired 2006)*

Jean Woolford – staff support

* Reviewed submissions for the Travel Bursary and selected the 19 successful candidates.

Autism Ontario and IMFAR

This is the first time that IMFAR has been held in Canada, which presented a unique opportunity to invest in the future of autism research by supporting current and future leaders in the ASD community in Ontario so that they could attend this informative meeting.

Autism Ontario offered a Travel Bursary program to support attendance at IMFAR. The following were the criteria.

1. Students researchers

Applicants are Ontario students who show leadership and achievement in ASD research. Preference will be given to graduate students, although under-graduate students with exceptional research experience will also be considered.

Preference will also be given to students who have submitted an abstract for presentation to IMFAR.

2. Community Leaders

Bursaries will also be awarded to parents and other individuals who have shown:

- Leadership in supporting and advocating for individuals with ASD and their families, and have demonstrated
- Commitment to bringing evidence-based information on ASD to their communities.

All recipients of the Travel Bursary are to provide a report about their experiences at the IMFAR conference.

Funds for this bursary were supported by Autism Ontario's Research Fund. The majority of the dollars for the Research Fund come directly from Autism Ontario's **Together for Autism®** Campaign, an annual fund-raising activity that supports research in Canada while heightening awareness about Autism Spectrum Disorders.



Reports

Leslie Broun
Tessen Clifford
Beth Craven-Thus
Amber Deveau
Timothy DeVito
Irene Drmic
Kelley Drummond
Katharine Filbert
Kristine Gracia
Jennifer Hoffman
Michelle Xiao-Qing Liu
Patrick Malenfant
Nancy Miles
Shelley Mitchell
Aliya Rahim
Valorie Salimpoor
Jill Shuster
Lee Steel
Hayley Wood

Report by:

Leslie Broun - Community Leader

It was a privilege to be able to attend the IMFAR Conference in Montreal and I am very grateful to Autism Ontario for assisting with a travel bursary. At the conference, the confrontation of so much detailed information in the areas of neuroscience, neurochemistry and neurobiology reinforced to me the commitment of the scientific community to understand and work towards unraveling the puzzle of ASD.

While my goal was to learn as much as possible that I can apply to the learning experience of our students with ASD, I was also able to broaden my understanding of the different expressions of autism. Interesting and particularly relevant points included:

- Various researchers reported a new understanding of ASD as a spectrum of “autisms.” Dr. Zwaigenbaum discussed trajectories of development and the fact that differences in expression may be due to even subtle differences in the times at which insults to the brain occur. This helps to explain how one child with ASD may seem so very different from another.
- Difficulty with imitation and motor planning was a recurring theme in many sessions. This is an area that can have significant effects on a child’s ability to perform academic tasks, as well as on their social participation, such as playing a school yard game. Children with ASD a person’s individual neurological centres may work efficiently, there is what Dr. Just describes as a “lower communication band-width” so that

need sufficient time and opportunity to observe how tasks, games or skills are physically executed, followed by patient rehearsal. This may be much more meaningful in the long run than forcing a child to take part in games for the social aspects when the child’s mental energy will be focused on trying to figure out what is actually going on and how he fits into the scenario. Observation and private rehearsal are “musts.”

- Perhaps the most powerful session for me was the one given by Dr. Marcel Just. He raised some interesting points:
 - According to his study, persons with ASD always think in pictures regardless of the sentence type. Words evoke pictures rather than detailed internal analysis with language.
 - When in dual-task mode, a “systems-wide resources constraint” kicks in. This reduces available resources (e.g. blood flow to specific areas of the brain) as an individual takes on more processing tasks. The main implication of this is that, in an instructional situation, we must consider how many processing modes we are asking the student to use.
 - Many persons with autism experience cortical under-connectivity of the processing centres in the brain. While the centres are not able to share and coordinate information and responses.

- His research showed that there was considerable discrepancy in neurological activity across the corpus callosum between neurotypical adolescents and those with ASD at the ages of 12 to 14, but this resolved considerably by the time both groups were approximately 18 – often a period of consolidation and settling that we witness in persons with ASD in their experience at school.

The opportunity to meet so many people in the field and to see samples of the work that is being done all over North America and other parts of the world was almost overwhelming. When I reflect on the last twenty years, I am truly impressed by the research and scholarship that is occurring. It bodes well for the future.

Report by:

Tessen Clifford - Researcher

IMFAR was the first international conference I attended, and what a conference. There was so much new information, somewhat overwhelming at times, and so many people all with a common interest. I am really grateful that I had the opportunity to attend.

As a student in clinical psychology with interests in assessment and intervention for children with autism, the information presented at IMFAR greatly supplemented my knowledge in both research and applied areas. I attended a number of keynote speaker and symposium sessions, and learned how much we know, yet how much we don't know about autism. New and innovative research in areas like early detection, psychopharmacology, and intervention were the highlights of the conference for me. Not only is this information important for the general understanding of autism, but also for developing research projects, and working clinically with this population. I hope to incorporate what I learned about early interventions, and what still needs to be investigated in my own research at the PhD level. As well, I expect that the findings related to the early detection of autism and effective intervention will be useful for my

own clinical practice when I begin working in the field. I am hopeful that as more information is gathered, we will see that people with autism and their families continue to benefit from our increasing knowledge and understanding of this disorder.

A second highlight of the conference was having the opportunity to meet with many people in the field, especially those with interests similar to mine. I was overjoyed to have the chance to speak with several renowned international researchers about the topic of my poster, but while meeting with these researchers was quite exciting I was also pleased to find some new colleagues in the other researchers and students I met. It was quite an experience to attend a conference where you are surrounded by people with the same interests as you, who have been thinking about or grappling with the same issues as you. This conference is certainly the gathering place of all those interested in research in autism, and I think that only good can come from the sharing of knowledge that takes place at this type of conference.

I would like to thank the Autism Ontario for their support in funding my trip to IMFAR

Report by:

Beth Craven-Truss - Researcher

In reflection of what I took away from attending the IMFAR conference in Montreal, I would emphasize the feelings of challenge and motivation. Many of the keynote addresses, invited educational symposiums, and oral presentations highlighted the challenge of conducting excellent research in general and with a population of individuals with ASD. The heterogeneity of individuals diagnosed with ASD as well as the developmental nature of the disorder adds to the challenge in conducting sound research. For example, many of the impressive findings discussed came from years upon years of research conducted by a team of professionals. That being said, listening to experts describe their successful research programs provided motivation to pursue studies in this area. Also, many presenters expressed gratitude towards the children and families who participated in the studies over the years and it seemed as though some lasting and rewarding relationships were formed.

A personal highlight was attending Sally Rogers' (University of California Davis Medical Center) keynote address "Imitation Difficulties in Autism: Findings and Potential Mechanisms". The accumulation of years of work from her lab has shown that the imitation deficit often reported in autism

seems to span across ages and it is not related to a deficit in visual representation or memory. She explained that for children with ASD, imitation may not become automatic as it does in typically developing children. Video clips of typical children playing with matching sets of objects showed how strong the drive to act like others is and how early this occurs. She suggested that early imitation provides a foundation for understanding of 'self' and 'other'. An important purpose to imitation is providing a sense of 'togetherness', a back and forth interpersonal experience. In addition to the information presented, she showed the progression of a research program which can start with an initial question and lead to development of theoretical models and research studies to investigate the theory.

The conference was very informative on topics that ranged from genetics, to brain imaging, to behaviour. Beyond the content presented at IMFAR there was an evident passion and excitement expressed by many of the experts in the field. This provided motivation to students such as myself to pursue a career in ASD research. I would like to thank the ASO for their support in attending this conference. See you in Seattle, Washington for IMFAR 2007.

Report by:

Amber Deveau - Researcher

IMFAR was a great opportunity for me as both a researcher and a professional working in the field of autism to learn more about the recent research progress in the area of autism. The symposia offered three keynote address speakers, two of which were of extreme benefit to me. Thomas Insel provided a compelling talk on the pathophysiology of autism, explaining what we currently know in the area of autism and the gaps that require further research. He was able to explain the genetics associated with autism in a clear and concise manner, using layman terms for those without a strong scientific background. This was an area where I lacked sufficient knowledge, but after his talk I felt I had a better understanding of the genetic, environmental, and interactive etiologies of autism. The second keynote address by Sally Rogers was also of great benefit to me. She spoke about the imitation difficulties associated with autism that furthered my understanding of how imitation has been conceptualized. As an interventionist, I work with children to improve their imitation skills without knowledge of the mechanisms underlying the imitation problems. This talk has helped me to re-examine the way imitation is taught and has given me ideas on how to further a child's imitation skills.

The symposia also offered thematic lectures in a variety of important areas. I attended the lectures on early detection, psycho-

pharmacology, and psychosocial interventions. The Early Detection symposium provided me with the most recent knowledge in studies relating to how autism is detected. I have been following the research of Lonnie Zwaigenbaum, Sally Ozonoff, Amy Wetherby, and Wendy Stone since I started in the autism field six years ago and even more so in preparing my review of literature for my Master's thesis at the University of Guelph. Their talks kept me updated on their research and gave further insight into my review of literature. The psychopharmacology symposium was very interesting for me, especially since psychopharmacology has been receiving a huge amount of attention in the autism field within the last year. Families that I currently work with are exploring psycho-pharmacology and biomedical interventions (which was also a lecture of interest) and I am now able to share the knowledge gained at these talks with them. As a behaviour therapist, the symposium on psychosocial interventions was very beneficial to me. It provided me with further research on interventions for older children on the autism spectrum, which will allow me to better tailor my programming for the older, higher functioning kids that I work with.

There were also many oral sessions that I attended, one of which that was immensely helpful for my Master's thesis. Since I am looking at the communicative abilities and deficits of children with autism I found the

sessions on communicative acts of children with ASD and the session on the pragmatic aspects of communication in children with ASD very helpful in framing the analysis of my Master's research.

The poster sessions provided me with the opportunity to interact with experienced autism researchers from a variety of

disciplines. I was able to add to my knowledge concerning a variety of areas within autism, as well as add pertinent researchers to my autism reference list. The posters on the effectiveness of different intervention techniques and the vast amount of posters on communication in autism were extremely beneficial.

Report by:

Timothy DeVito - Researcher

I had the pleasure to attend IMFAR, held in Montreal, Quebec. The meeting has grown significantly over the past few years, both in the number of scientific presentations, as well as in general attendance. The conference provided an excellent cross-section of current trends in autism research, spanning the many and varied fields of investigation, including early detection, neuroimaging, genetics, perception and cognition, physiology, and treatment, among others.

While there was much to see this year, with multiple parallel sessions, my chief interest is in neuroimaging research, and I primarily concentrated on talks and posters addressing novel brain imaging studies of patients with autism. There were numerous such presentations, and it is encouraging to see the rapid growth in the number of groups engaged in neuroimaging research. Current neuroimaging studies in autism are focusing primarily on three avenues: anatomy (volume, shape, and folding patterns), function (especially social and language tasks), and connectivity (white matter tracts). Many groups are continuing the effort to identify abnormalities in shape and volume of the brain, and its various sub-structures. Many of the abnormalities previously identified are being independently replicated, while some groups have identified abnormalities using novel measures of brain morphology such as cortical thickness and degree of cortical folding. Recent functional studies of face processing in patients with autism continue

to demonstrate abnormal patterns of brain activation, revealing alternate processing strategies used by autistic patients to complete certain social functions. There has been a large and rapid increase in the number of groups using diffusion tensor MRI to assess the connectivity of the brain in autistic patients. This method allows for the quantification and visualization of the white matter tracts that connect the various regions of the cortex. It thereby allows one to assess the 'wiring' of the brain, an indication of how well the disparate regions of the cortex communicate with one another. Numerous groups have observed significant abnormalities in various white matter tracts in their patient groups, usually detecting a reduction in the degree of connectivity between various brain regions, including those involved in language processing, inter-hemispheric communication, and regions involved in social and emotional processing.

Our own presentation, reporting on MRI-based evidence for widespread dysfunction of cortical neurons and low cortical levels of the neurotransmitter glutamate, attracted interest from many attendees. Multiple groups are now in the preliminary stages of implementing a similar imaging protocol to assess the neurochemistry of their patients. Our research program also examines anatomical abnormalities, in both volume and shape, and our robust 3D data set will facilitate additional novel analysis approaches in

the future. We will soon be augmenting our imaging protocol to include both diffusion tensor imaging and myelin-water imaging; this will allow us to examine both the connectivity of cortical regions and to determine which cellular components of the white matter contribute to abnormal connectivity. No other group is presently employing this technique, and hopefully these data will provide unique insights into the cellular abnormalities of white matter that are now being consistently reported by numerous research groups. Additionally, collaboration with genetics researchers in the U.S. will allow us to determine to what degree genetic factors are responsible for the abnormal neurochemistry we have identified in

our patient group. The IMFAR conference provided the perfect opportunity to meet with our colleagues to initialize this collaboration.

IMFAR is a rapidly growing conference with many recent high-quality scientific presentations in every field of autism research. In addition to learning the latest results and trends in international neuroimaging work in autism, I had the opportunity to broaden my understanding of autism by attending lectures and discussions on other various aspects of autism research. The conference was well worth attending, and I am grateful to the Autism Ontario for providing me with the IMFAR travel bursary.

Report by:

Irene Drmic - Researcher

"Never doubt that a small group of thoughtful, committed citizens can change the world. Indeed, it's the only thing that ever has." - Margaret Mead

It is thanks to the generous support provided by the Autism Ontario Travel Bursary that I was able to attend the IMFAR Conference 2006. Attending IMFAR is an invaluable experience because it is the only international conference dedicated to research in all aspects of Autism Spectrum Disorders (hereafter the term autism will be used), including understanding the nature, etiology, and treatment of this disorder. Given that autism is a complex disorder and that various domains of functioning are affected, an interdisciplinary approach is taken with scientists from various disciplines. Attending IMFAR provides the opportunity to learn more broadly about research advancements. Additionally, this is a wonderful venue to learn about and share research findings quickly from leaders in the field.

I am very enthusiastic and dedicated to working with individuals with autism. I am a doctoral student at York University and I am currently working on my dissertation, which entails examining behavioural and electrophysiological aspects of attentional processes in children and adults with autism.

Attending IMFAR at this stage of my dissertation provided me with the opportunity to learn about the most recent research findings and to ascertain how my dissertation work fits into and extends the most current body of knowledge on autism. I also had the opportunity to talk to various students and leaders in the field about their research and my own research, and I found myself already getting excited and planning ideas for a postdoctoral research program.

I am very committed to conducting research with individuals with autism, and I am most appreciative that Autism Ontario is equally committed to supporting my development and the development of other students who are interested in understanding and treating autism. ASDs constitute a major health concern due to their prevalence, severity, and life-long impact. The importance of identifying methods by which autism can be identified and treated earlier in life is underscored by evidence that early intervention leads to improved outcomes for these children. IMFAR is a wonderful opportunity to share current research findings and generate new avenues of research to help elucidate this complex disorder in order to help improve the lives of children with autism and their families.

Report by:

Kelley Drummond - Researcher

As a first time participant at IMFAR, and a graduate student interested in autism research, it was exciting to be amidst prominent researchers and clinicians in the field. According to past attendees, the conference has grown and the amount of quality-driven research on individuals with ASD expands each year.

The conference was well organized and covered a broad area of topics. Research regarding the latest in genetic findings, early identification, and neuroimaging studies were presented over the 3-day symposium. The organizers selected excellent keynote speakers. The first keynote speaker, Dr. Thomas Insel from the National Institute of Mental Health, launched the symposium with a presentation on current research trends in the autism field. He recognized that although there have been considerable advances in genetic and developmental neurobiology studies, there is still a need to translate basic research findings into clinical applications.

Researchers also need to examine the course and outcome of the disorder to develop treatments and preventative programs. He called for a "coordinated, strategic effort" that brings together interdisciplinary teams of researchers, shared databases and protocols, and partnerships with families and advocacy groups. As a research coordinator at the Autism Research Unit in Toronto, it is comforting to know that many studies are trying to follow some of these guidelines.

In addition to keynote speakers, the conference included oral presentations on a variety of topics, including early detection and diagnosis, genetics and neuroimaging studies, psychosocial and psychopharmacological interventions, cognition and perception, as well as epidemiological trends and animal models of autism. Poster presentations also proved to be a great way to network and examine the latest research developments around the world.

It was an invaluable opportunity that allowed me to learn more about current research trends. More specifically and of interest to my studies, there appears to be inadequate information to target the special needs of older children and adolescents with ASD. Many posters and talks substantiated that long-term outcomes are variable and the developmental course of children with ASD is relatively unclear. Although there have been considerable advancements in early detection and intervention, more information about the individual differences in adolescents and adults with ASD is needed. My attendance at IMFAR 2006 furthered my background knowledge of research issues in the ASD field and provided me with new clinical information about early intervention and detection, cognitive abilities in individuals with ASD, and evidence-based interventions that can be effectively disseminated to the families of children with ASD that I work with in clinical and research settings.

I want to thank the Autism Ontario for this wonderful opportunity.

Report by:

Katharine M. Filbert - Researcher

As a participant of IMFAR, I had the opportunity to learn about current ground-breaking research in the field of ASDs.

The keynote addresses, educational and special symposia, poster sessions, and informal discussions with other conference attendees provided numerous learning arenas. These arenas covered such domains as early detection, genetics, neuroanatomy, cognition, perception, assessment, diagnosis, and interventions.

The diversity in topics allowed me to investigate areas other than those about which I am more familiar and sparked my desire to further examine such areas in my research. For example, I attended an oral session on genetics, involving discussion of family and twin studies. During this session, the "Autism Genome Project (AGP)", a large-scale international effort to assist in the identification of autism genes was discussed.

The AGP represents the largest collective sample of autism families available for research, and has yielded significant findings regarding specific chromosomes implicated in the presence of autism. Further investigation into these chromosomes holds promise in unravelling the genetic origins of the disorder, enabling effective treatment development. Indeed, with continued research, perhaps the current state of psychopharmacology

will move from treating specific symptoms of autism to treating its core symptoms.

In addition to biological markers of autism, sessions were also held encompassing current research in intervention. An underlying theme in these presentations entailed specific components associated with effective treatment delivery: early intervention, intensity of services, individualized and well-planned intervention, and parental involvement. This latter component was highlighted as being especially important for successful intervention. Although this idea is not new in the field of autism research, it is nonetheless a concept that necessitates constant affirmation in its importance. This sentiment was echoed in informal discussion between primary caregivers throughout the conference.

The remainder of sessions in which I participated involved an area of great personal interest: early detection/ development of autism. A symposium examining this domain chaired by Dr. Lonnie Zwaigenbaum was of particular interest to me, and represented the first of several sessions I would attend examining key signs of autism (e.g., repetitive behaviours).

A unifying theme throughout these sessions posited the emergence of autism between 6-19 months of age, with general agreement among clinicians of possible diagnosis at two years of age. The delivery of this point

was enhanced through the use of brief video-clips of children presenting with autistic symptoms and those without. Interestingly, there was a general consensus among the audience during these clips of the similarity between children in the videos and those with which they may have had experience, regardless of their country of origin.

In addition to speaking with primary caregivers, I had the honour of meeting several prominent researchers in the field, including Dr. Christopher Gillberg (University of Goteborg, Sweden; and University of Strathclyde, Glasgow, UK), Dr. Peter Szatmari (McMaster University, Hamilton, ON, Canada), and Dr. Lonnie Zwaigenbaum (McMaster University). Having the opportunity to speak face-to-face with these individuals, whose research I have read for years, was an experience I will not forget, and I hope to remain in contact with them throughout my academic and professional career.

During a video presentation for the recipient of the Lifetime Achievement Award, I was also able to put a face to a researcher who has had major influence in the field, Dr. Eric

Schopler. A friend and colleague of Dr. Schopler stated that his legacy would be in training young professionals on his theories of the parent as co-therapist for autism treatment. Speaking personally, I can say that Dr. Schopler's legacy will continue in the application of his theories to my research and practice.

In closing, I would like to extend my sincere appreciation to Autism Ontario, Dr. Lonnie Zwaigenbaum for informing me about the conference, and everyone involved in IMFAR for this amazing opportunity. I hope this represents the first of many IMFAR conferences I will attend, and intend to submit my research for presentation at future meetings. This being my first international conference, I learned that autism exists all over the world, and the importance of research into this area knows no boundaries. Indeed, there was a large increase in the number of conference participants this year, with over 900 people attending the meeting, making it the largest IMFAR to date. It is my hope that IMFAR and meetings like it will continue to grow as autism research gains the increasing attention it so deserves.

Report by:

Kristine Garcia - Researcher

This being the first international conference I have ever attended, I was looking forward to learning a great deal. As a graduate student in the molecular biology field, I was focused on learning about what neurobiological substrates have been studied in autism, through the neuroimaging, animal model, and genetic studies presented in the posters and oral sessions. Entering the poster sessions, I was amazed at the amount of research being conducted on many different potential pathways, in the brain and the rest of the body.

I attended the neuroimaging oral sessions, which were informative about what neuroanatomical areas were differentially activated in subjects with autism. It was interesting to learn how these areas were shown to correlate with some of the autistic behavioural characteristics. I also visited the posters that looked at potential neurochemical markers for autism. There were many studies that found abnormal amounts of proteins in individuals with autism compared to control subjects. This was of interest to me because my research involves examining neurochemical targets in brain tissue of subjects with autism. It was beneficial to learn about these other targets, and along with the multiple candidate genes that have been found associated with autism, supports the belief that multiple insults during development may be involved in its pathophysiology.

One of the most interesting research topics I learned about were the potential animal models. There were rat and mouse models that demonstrated some of the behavioural characteristics of autism, such as the decreased social interaction and repetitive behaviours. These models will be important in discovering what causes these behaviours, and may lead to new genetic and biological targets as well as a greater understanding of the currently associated targets in autism.

Another great experience for me was presenting a poster, where I received some helpful comments on my experiments. It was good to hear feedback from people at other institutions who may have novel suggestions, and to be able to show our findings.

Along with visiting posters and oral sessions that were pertinent to my research, I also visited posters and oral sessions in other fields that focused on the behavioural aspects of autism. I felt this was important, because as my research investigates the neurobiology of autism, I am not as informed about the current behavioural research and treatments. There were many posters that examined the behavioural characteristics in more detail, which is important for elucidating what neural pathways would be involved. A greater understanding of autism behaviours is important for both improving investigation of neurobiological targets and

improving diagnosis. There were also studies that examined the effect of this disorder on both the child and family. I thought it was important to visit these posters to get a greater appreciation and understanding of the human aspect in

autism. It made me realize that what we have all been researching, from many different fields, is important to not only gain more knowledge in science, but to help improve the lives of people affected by autism.

Report by:

Jennifer Hoffman - Researcher

I would like to thank the Autism Ontario for granting me the Student Travel Bursary to attend IMFAR 2006. With more than 900 participants, this meeting provided me a unique opportunity to exchange ideas and approaches to studying autism in an atmosphere focused on this disorder.

As I attended both the poster presentations and research talks at the conference, I was awed by the amount of research devoted to studying autism. This conference provided a great platform for interacting and sharing scientific knowledge with other researchers in the field. I was personally grateful for the opportunity to discuss my research with other scientists across several disciplines, and to explore new research methods that are potentially applicable to my studies.

Being a member of the scientific community, I think that it is essential to familiarize myself with the literature and ongoing research in the field. In particular, the presentations were a great opportunity to get an overall understanding of ongoing research. I am a graduate student with the Kilee Patchell-Evans Autism Research Group at the University of Western Ontario, a multidisciplinary team that is dedicated to studying underlying mechanisms of autism from several perspectives, including

biochemistry, pathology, and behaviour. Although I am involved with several studies, my primary interests include developing behavioural assays and quantifying locomotor activity of animals treated with compounds produced in the digestive system, which are potentially implicated in autism. As such, I was particularly interested and impressed with the series of lectures on *Mouse Models of Autism*, and they provided me with many valuable ideas and new strategies for designing animal behavioural tasks which may be relevant to studying core symptoms of autism, including behavioural rigidity, stereotyped movements, and hyperactivity.

Given the complex nature of autism, it is essential to approach this disorder from an interdisciplinary perspective, integrating current knowledge about underlying mechanisms involved in the symptoms of autism. The IMFAR conference provided a great opportunity to communicate with scientists across several disciplines, including biochemists, pathologists, and behaviourists. I appreciated the opportunity to attend the IMFAR conference and I am grateful to the Autism Ontario for subsidizing a portion this conference with the Autism Ontario Student Travel Bursary.

Report by:

Michelle Xiao-Qing Liu - Researcher

On Thursday June 1, IMFAR was opened. For three full days, we were immersed in talks, posters, food, and social events. I would like to share some of my experiences with you, with the focus on the research topics from which I have learnt the most.

My research background is in genetic epidemiology which is a field that applies statistical methods to map susceptibility genes for complex diseases, including autism. Naturally, I am very interested in the talks related to genetics at IMFAR. There were two oral sessions on genetics and one educational symposium this year. The topics were very diverse ranging from molecular genetics to statistical genetics.

Despite the tremendous efforts from many scientists to find the genes for autism, we still do not know which genes cause this highly inheritable and devastating disease. The major reason of this may be the genetic heterogeneity of autism. This means that autism may be caused by different genes in different patients. A study group from Harvard Medical School showed the existence of genetic heterogeneity using 102 inbreeding families collected from multiple international centres (Morrow et al: Identification of autosomal recessive genes for familial autism and mental retardation). The families were selected to have more than one affected child to avoid *de novo mutations*. However, they still found that the

linked loci were very different across families.

For non-genetic talks, there were early detection, brain structure and neuroimaging, intervention and more. Autism is a disorder with many clinical phenotypes and no definite biological marker for its diagnosis. However, recent studies from neuroimaging and neurophysiology have begun to provide more and more evidence that significant differences in brain activity and brain structure can be observed between autistic children and normally developed children. These works were reflected in four oral sessions and one educational symposium at IMFAR this year. Physiological and anatomic findings are very significant not only because they will help us to understand how brain structures are related to certain behaviours in autism, but also because these autism-specific and measurable observations can be used as endophenotypes in genetic studies in the future. Endophenotypes such as blood glucose levels and blood pressure have been applied in the genetic studies of type 2 diabetes and cardiovascular disease, respectively. I believe endophenotypes can also help us to understand more about the genetic components in autism.

Since I got involved in autism research in 2004, this is the second time I attended IMFAR. Compared to the meeting in Boston last year, I was able to absorb more non-

genetic knowledge from the talks this year thanks to my training in the Autism Research Training (ART) program funded by CIHR and my research work on Autism Genome Project (AGP) during the past year.

I hope I can incorporate the knowledge I learnt from this meeting into my research projects and I will be able to contribute more to this exciting field.

Report by:

Patrick Malenfant - Researcher

Scientific progress is based on rapid sharing of findings and novel ideas among researchers. Attendees at IMFAR are among the most important and successful researchers in the field of autism. It was an unequalled opportunity to meet and discuss new findings, and to share ideas and information that may not be available in the published literature for months. As IMFAR was held in Montreal, several groups from across Canada were present. This allowed me to establish contacts that will prove to be indispensable for future collaboration when I finish my PhD and begin my career as a new researcher in the field of autism.

Scientific conferences include two types of presentations. First, the poster sessions, where researchers and trainees present their findings and discuss one-on-one with people interested in their research. Second, there are the platform presentations which are, for me, the most exciting part of the meeting. Everyone shows up with great enthusiasm, armed with their notepads and half a dozen pens, ready to take precious notes. Many of the speakers are very well known scientists, but a few students get the chance to live this experience at every conference. This year, I had the honour of being one of those students. It was an amazing experience to get to present my work in front of such a knowledgeable crowd. I received very valuable comments from many who took the time to comment on my research and ask questions. It was an unforgettable experience.

I was also able to gather an impressive amount of information from the different presentations and poster sessions. Since my PhD thesis is on the genetics of autism, I am summarizing a few of the presentations that I thought were very exciting and informative:

Increased Prevalence of Maternal Auto-antibodies Against Fetal Brain in Autism.

Dr Braunschweig presented findings that suggest that serum antibodies from mothers of children with autism react against fetal brain proteins, and may have negative effects during development. If replicable by others, detection of such antibodies may serve as an early indicator of autism risk. For geneticists, this is a good demonstration that not only should we be investigating the genes of individuals with autism, but also those of their parents, in this case, the mothers.

Identification of Autosomal Recessive Genes for Familial Autism and Mental Retardation

The results presented by Dr Morrow showed that linkage mapping in large, multiplex families who share common ancestors (i.e. with cousin-cousin marriages) was an efficient way of identifying autism-linked genes. Their approach was different from the classical statistical methods used in genetics research, and demonstrated the importance of having access to extended-family data.

Reduced MECP2 Expression is Frequent in Autism Frontal Cortex and Correlates with Aberrant MECP2 Promoter Methylation.

Raman P. Nagarajan from Dr Lasalle's laboratory at U.C. Davis School of Medicine presented evidence that although mutations were only found in the MECP2 gene (causes Rett syndrome) in rare cases, aberrant expression of MECP2 in a group of individuals with autism resulted from an epigenetic change (i.e. not depending on changes in DNA sequence). Taking into consideration these types of results should make genetics studies more complete.

Pharmacogenetic Testing in Children with ASD

Pharmacogenomics examines the influence of genetic variation on drug response in patients. Dr Manning-Courtney presented a study on the effect of variations in two genes (CYP2D6 and CYP2C19), which control how the body metabolizes several types of drugs.

In a group of individuals with autism, it was possible to predict the correct dosage of Risperdal based on the information provided by these sequence variants as the effects of the variations were similar to those observed in the general population. Given the high heterogeneity of ASDs, and increasingly important role of pharmacogenomics in the pharmaceutical industry, it was suggested that such studies may help to select and manage medications.

It is not only the information obtained at the meeting or the various new contacts made that makes attending meetings such as IMFAR so worthwhile, but also the fact that it allows one to witness how many talented people are pulling together towards the same goal. This is a huge morale booster that gives you the strength to work even harder on novel ideas and approaches to solve the puzzle of autism. I wish to thank Autism Ontario for supporting me and several other trainees to attend this year's meeting.

Report by:

Nancy Miles - Community Leader

What a privilege attending the IMFAR Conference. It was a wonderful experience to see what is happening in the world of autism research. Being in Montreal made it all the more special. Thank you, Autism Ontario, for the Travel Bursary.

The days started with keynote addresses designed to be easily understood by people of disciplines outside the topic field. The assembly then broke into a series of parallel presentations throughout the day featuring different themes. During breaks, there was no time to be idle as there were poster sessions to attend; the array of fields of study was amazing. Here one could talk directly with people about their research. If you wanted, you were walked through the information on the poster – which I indulged in! Your questions and comments were more than welcome, they were encouraged. It was interesting to be a bystander during poster discussions between researchers at these sessions.

The first keynote speech was an overview of what is presently known and unknown about autism, what direction research needs to take, and what it will take to get there. This set the tone for the conference. One of the goals of the keynote addresses was to expose researchers to information from areas of research outside of their own specialty. The range of topics was wide, from studies in early detection to neuroanatomy to a unifying

concept of autism to ...just so much. One regret I had is that I was not able to hear all the presentations (and the number of concurrent talks was downsized from last year! A lot is going on in the world of autism research!) There was just so much that was relevant to not only my academic interests, but to my own son with autism. The choices were hard. Sessions I did choose to attend pertained to neurophysiology, genetics and biomedical aspects.

A surprise to me was discovering all the research happening in Canadian universities. There was Queens University, of course, with Dr. Holden and her protégé's genetic studies, McGill and McMaster, but also at Western which had some studies posted about glutathione, propionic acid and oxidative stress being possible factors in autism. I had a lengthy conversation with Dr. MacFabe and Dr. Rodriguez-Capote from Western and discussed how Vitamin C affects my son and how that relates to their studies.

The passion and keen interest made this a very dynamic place to be. Of note was the age range of the presenters in the oral and poster sessions, very young post grads alongside seasoned mentors. Also, there were researchers from Denmark, Ireland, France, England, Israel, Germany, Turkey, Australia, Netherlands, Norway, Finland, Belgium, China, Scotland, etc. It was all very heartening to see the extent and range of the

effort being made to understand autism. As a parent of a young man with autism it is comforting to think of what this all may lead to one day.

Of course, what all this research translates into is yet to be seen, but I left the IMFAR

feeling certain that causes and effective treatments will be developed, and that people with autism are closer to being truly understood and reaching their potential in this world.

Report by:

Shelley Mitchell - Researcher

My Learning Experience - Key Concepts - A Synopsis by Theme

Early Detection and Diagnosis of ASD

There is a growing number of studies in the United States and Canada addressing the detection and diagnosis of ASD under the age of 18 months using three general methodologies: *retrospective* analysis of videotapes combined with parent report, *prospective* developmental surveillance of high risk samples and general *population screening*. In the past, a great deal of information has been gathered about the early development of children with ASD by reviewing videotapes of children who later were diagnosed with ASD. Many of these retrospective studies focused on videotapes from "First Birthday" parties. Dr. Lonnie Zwaigenbaum (McMaster University) presented data on the *prospective* "Infant Sib" study, which aims to identify characteristics of ASD using the Autism Observation scale for Infants (AOSI) in a high-risk sample of children who have a sibling with ASD.

Prospectively monitoring the development of this high-risk sample allows more accurate evaluation of a broad range of developmental domains. As well, prospective parent reports of their infant's behaviour, allows more accurate descriptions of parent-infant social interaction. While characteristics of ASD are certainly evident in the first year of life, the trajectory of children over the first 12 to 24 months of life is variable and often presents challenges in accurate diagnosis.

Ethical issues arise particularly in communications with families regarding their child's development given this variability.

Using data from prospective studies, Dr. Sally Ozonoff (M.I.N.D. Institute) studied videotapes of infants under the age of 12 months in order to observe closely for characteristics that had been identified in studies of high-risk samples of children. Results from this *retrospective* study indicated that some infants later diagnosed with ASD showed difficulties in face and affect processing, but not all infants had this difficulty. These findings were consistent with findings in the prospective studies, which also show that characteristics predictive of ASD are not reliably observed at 6 months of age. Dr. Amy Wetherby presented research results of an ongoing general *population screening* project to identify children at risk for ASD. Children were screened generally for communication delays by sending parents questionnaires regarding their child's communication abilities in the first year of life. If there were concerns identified at the first level screening, parents were sent the Infant Toddler Checklist, an autism specific questionnaire. Specifically, characteristics such as showing, sharing enjoyment, coordination of verbal and non-verbal behaviour and response to name were

inventoried. Dr. Wetherby reported that the ITC is showing promise as an autism specific screening tool with good sensitivity (.93) and specificity (.83). At 12 months of age, social difficulties (showing, sharing affect, response to name etc.) appeared to specifically differentiate children with Developmental Disability (DD), ASD and typically developing children, rather than speech production and symbolic behaviour. Repetitive and stereotypical movements did not differentiate these populations at this young age. Dr. Wetherby also cautioned however that general population screening still only identifies approximately 20% of children with developmental disabilities.

Dr. Wendy Stone, also researched the reliability of an autism-specific screening tool; the Screening Tool for Autism in Two-year-olds (STAT). This tool is a clinician-administered measure rather than a questionnaire and was given to a group of infants considered to be high-risk for developing autism by virtue of having an older sibling with ASD. Early results indicated that this tool also has promise for use with children as young as 15 months. This is considerably younger than the Autism Diagnostic Observation Schedule. Finally, Dr. Grace Baranek and her colleagues, compared the diagnostic agreement between the AOSI, a clinician-administered autism-specific assessment tool, and the First year Inventory (FYI), a parent questionnaire, to evaluate whether the FYI has a role as part of the broad developmental surveillance of children in identifying ASD. While the data are not robust, a correlation was shown between the AOSI and the FYI.

Other studies focused on identifying behavioural presentations that may help in differentiating populations. Pamela Ventola, using the Modified Checklist for Autism in Toddler (M-CHAT), studied children who failed this screening tool to determine whether behaviours could be identified that would help differentially diagnose ASD, DD and Developmental Language Disorders (DLD). Children were evaluated across other domains using standardized measures. Results indicated that while children with ASD, DD and DLD have similar characteristics; children with ASD have specific and different areas of difficulty. Elizabeth Crais and her group, looked specifically at the development of gestures in children with ASD and typically developing children to determine whether gestural behaviour could differentiate these two groups. There were clear differences between children with ASD and typically developing children as early as 9-12 months. Children with ASD had relatively good social interaction gestures but significant weaknesses in behaviour regulation and joint attention gestures. The group differences in use of gestures continued to increase over time. Use of gestures at 12 months of age was predictive of score on the Vineland Adaptive Behavior Scales (VABS) in the preschool years. These data have significant implications for early intervention.

Imitation/Memory/Repetitive Motor Behaviour

Antonia Hamilton with Uta Frith and her colleagues presented a very interesting study looking at imitation in children with ASD. Impairments in imitation have been clearly identified in children with ASD, however, conclusions about why children with ASD have difficulty with some

imitation tasks and not others remain elusive. Results of the study revealed that children with ASD were able to imitate as well as matched controls if the imitation task was goal directed or required recognizing a gesture or planning a short motor sequence. Children with ASD had significant difficulty however, when required to imitate body postures. They also had difficulty with tasks requiring them to shift perspective and/or orientation. For example, children with ASD were not able to accurately imitate action-objects sequences when seated across from a clinician, having great difficulty with ipsilateral and contralateral distinctions. There are new theories suggesting that children with ASD have motor neuron dysfunction rather than core imitation deficits.

A case presentation describing an adult with autism who demonstrated an exceptional ability to recall his experiences by date. Other unique abilities related to memory of dates were described. The purpose of the study was to evaluate the underlying cognitive processes that were employed by this young man in order to recall both dates and event-related dates with such accuracy. The researcher concluded that unlike typical adults, this young man was likely storing information related to his own repetitive interest, namely dates, using episodic memory rather than semantic memory. So, rather than recalling this information as a *fact* as most adults would try to do, this young man had stored this very detailed information in the part of the memory related to *experience*: he merely stored the information as date related experiences.

Repetitive behaviours both with and without objects were inventoried in children with ASD, DD and typically developing children to determine whether types of repetitive motor behaviour would differentiate the experimental groups. Results indicated that repetitive motor behaviours were not correlated with developmental level; however, children with ASD showed more repetitive movements with objects which children with DD, which can be seen as early as 12 months of age. These results contribute to other research describing the behaviour characteristics of ASD that may contribute to early and differential diagnosis.

Psychosocial Interventions

A framework for the development of a model of intervention and the steps required to appropriately research an intervention were outlined. It was recommended that first, a treatment technique or model should be developed. Next, initial efficacy studies should be conducted to determine if the treatment is effective (single case design, multiple baseline design, reversal design). If the treatment shows promise, a manual or description of the treatment should be developed to determine whether the treatment techniques could be operationalized so that other people can also learn and implement the same treatment. Randomized controlled trials should then follow. Outcomes in a community setting should then be measured.

Report by:

Aliya Rahim - Community Leader

The Evolving Prevalence of Autism

Based on presentation by: Marshalyn Yeargin-Allsopp, MD National Center on Birth Defects and Developmental Disabilities Centers for Disease Control and Prevention

Epidemiology is the study of factors affecting health and illness of individuals and populations. In studying epidemiology, one hopes to provide evidence-based information about public health research. In the context of autism, public health research aims to identify questions such as: "Why is autism rising?" "Can we count the number of children with autism?" As well as, what research do we have that responds to these questions?

To provide further answers to many of the above questions, it is necessary to measure the frequency of autism. This is done by measuring either the prevalence or incidence of autism. Prevalence refers to the total number of cases of a given disease in a specified population at a specified time, whereas incidence refers to the number of new cases of disease occurring in a population during a defined time interval. It is important to note that "incidence reflects more accurately than prevalence the underlying risk of disease which is useful in etiologic studies," but it is "difficult to establish incidence since the exact onset of autism is difficult to determine." When the average duration of the disorder is unchanging, prevalence approximates incidence.

Why is the prevalence of autism rising?

Some of the proposed reasons about the increase of autism are:

- (1) changes in availability of trained professionals and specialized services;
- (2) changes in diagnostic criteria over time;
- (3) increased awareness in the community;
- (4) the recognition that Autism Spectrum Disorder (ASD) can be co-morbid with other diagnoses such as higher intellectual functioning, mental retardation and a myriad of other medical and psychiatric disorders. In addition, there is the question whether there is in fact a true increase in incidence.

Research on autism prevalence can be derived from a number of sources, including:

- (1) single administrative sources, such as databases and state-wide agencies that compile lists of services for children who have developmental disorders;
- (2) community services that administer standardized assessments to children who screen positive within a screening of all children in a particular community. These surveys yield the highest results of prevalence estimates.
- (3) Multi-source record reviews, such as population-based screenings; and
- (4) national estimates from surveys.

Part of the difficulty associated with assessing prevalence of autism is that ASD diagnostic classification systems have changed since the 1950s. Kanner (1956) proposed that there was a lack of effective contact, a desire for sameness, a fascination with objects, and a presence of mutism and non-communicative language before the age of 30 months. Rutter (1978) emphasized a delayed and unusual social and language development, and early onset and unusual behaviours. The Diagnostic and Statistical Manual III (DSM-III) (1980) classified autism as a developmental rather than a psychiatric disorder. In 1987, the DSM-III-Revised introduced the concepts of Pervasive

Developmental Disorders (PDD) and PDD-Not Otherwise Specified. More recently, the ICD-10 (1992) expanded the PDD diagnostic criteria to include autism, atypical autism, Rett syndrome, childhood disintegrative disorder, Asperger syndrome and other PDDs.

Although there are more children being diagnosed with autism, there is still much research that needs to be done to assess how the changes in our diagnostic criteria, along with the changes in our communities, services and the like, affect autism as it pertains to public health.

Report by:

Valorie Salimpoor - Researcher

IMFAR is a one of kind conference as it brings together cutting-edge research relating to the behavioural, psychological, cognitive, genetic, biomedical, neuroanatomical, and neurochemical basis of autism spectrum disorder, with a larger focus on etiology, early detection, and intervention.

There is something for everyone as this conference includes a broad variety of poster sessions, educational symposia, oral sessions, and top researchers in the field of autism as guest speakers. I was particularly enthusiastic about meeting some of the well-respected names in the field whose research I had been closely following for the past few years, have the opportunity to ask them questions about their research, and learn about

new topics and studies in the field. Aside from the tremendous educational value of the conference, I was able to get acquainted and network with many other students who share similar interests, with whom I plan to continue contact and potentially collaborate in the years to come.

In sharing my research on frontal lobe and executive function in children with Asperger Syndrome with other scientist and experts in the field, I was given extremely useful feedback from different perspectives, as well as innovative ideas for further research in the future. My attendance at this conference was made possible by the generous bursary provided by the Autism Ontario.

Report by:

Jill Shuster - Researcher

I was fortunate to have the opportunity to attend IMFAR. I attended presentations about a variety of topics related to autism given by researchers from all over the world who share a passion for research in autism. I was introduced to new topics, such as psychopharmacology and sleep as they are related to autism. I also learned about different approaches and results in areas that I am more familiar with, such as early detection and intervention. For example, I work at the Autism Research Unit at the Hospital for Children, where an instrument is being developed to assess symptoms of autism in babies from 6 to 18 months. I enjoyed hearing how approaches and findings in our lab compared to those from other labs in the United States. As a research assistant on a genetics of autism study, it was interesting to hear the summary of the Autism Genome Project that our lab is part of.

I am a graduate student in the Clinical-Developmental psychology program at York University and have completed my first year. While my Masters thesis is currently underway, I am looking for new ideas and approaches to help shape my doctoral thesis. I had the opportunity to meet and discuss with researchers who are pursuing research that is similar to mine. I met a researcher

from Belgium who is comparing samples of children with autism and attention-deficit-hyperactive disorder (ADHD) on tasks of executive functioning. I enjoyed hearing about how she approached this comparison as well as some of her preliminary results. In addition to discussing research related to my area of interest, I also enjoyed talking about the results and implications of studies presented at the conference with my colleagues.

Overall, I appreciated being immersed in research related to autism as it helped me visualize the direction in which the research is heading. As well, some of the presentations provided clarification of more controversial topics such as the prevalence of autism and the earliest age that a reliable diagnosis can be given. As a graduate student with an interest in autism research, I enjoyed meeting other graduate students who are at different stages in their careers and have come from different backgrounds in the field of autism. I enjoyed hearing about their experiences within this field as well as within their individual programs. Finally, learning about research in the field of autism and meeting a variety of researchers added to my enthusiasm for autism research. I look forward to attending future conferences.

Report by:

Lee Steel - Community Leader

As a parent of a 15-year-old son with autism and in my position as Parent Liaison at the Autism Research Unit at the Hospital for Sick Children, I am privileged to see first hand the benefits of research. We all share the desire to understand ASD and how best to support and educate our children, adolescents and adults. We seek answers on treatment options, the effects of diet, intervention strategies, immunization, best school practices, ways to foster friendship and encourage self-esteem and independence.

We know policy makers base their decisions on the best scientific evidence. The more credible the evidence, the more confident parents and policy makers can be in their decisions. I encourage parents to look to researchers as partners to answer their many and varied questions. The issues parents bring to the attention of their clinicians, Autism Ontario, and research organizations will often impact what is studied. For example, the impact of immunization, various drug trials, intervention and treatment methods and the genetics of autism have been and continue to be studied in the hope of answering these vital questions.

Research often takes time and some results may help future children more than our own immediate families. However, most researchers make an effort to make their research as relevant to you and your child as possible. Parents can be involved in research in

various ways depending upon their time and availability. Your involvement may directly influence your child, other children you may have, or your children's future children and, as such, even your limited time and availability is important. Perhaps you only have the time to be involved in research that requires you to complete questionnaires, or you may have time to be involved in research that is more long term and requires a number of visits, perhaps including blood work. If you are part of a longer term project, where you have scheduled visits throughout the study, it is important that you try to attend all of your appointments, as missed appointments may affect the data. If you have scheduling conflicts, most research teams will try to accommodate you at a better time.

Looking at much of the research presented, early identification was certainly the top priority. However, parents and individuals on the spectrum know that there are many other needs and ages that require study and research. It is our united voices that will determine what other areas of research are studied. We need to advise our clinicians and research organizations regarding the issues we feel need to be studied. It is reassuring to know that researchers are not biased by belief systems, their hearts or anecdotal information. They strive to remain objective and let the evidence speak for itself. As a parent it is difficult for me to

differentiate between what “looks” scientific and credible and what actually is. The book “Controversial Therapies for Developmental Disabilities” 2005, edited by Jacobson, Foxx and Mulick may be helpful.

I encourage all parents to look into how they can best support ASD research. Our children with ASD, their siblings and generations to come will benefit from our willingness to give our time and our voice to those issues that need vital answers.

Report by:

Hayley Wood - Researcher

I am a graduate student in the clinical child psychology program at the Ontario Institute for Studies in Education of the University of Toronto. Both my clinical and my research interests are in the area of autism. I was able to attend the IMFAR conference 2006, thanks to the support of the Autism Ontario. The conference was a highly stimulating and rewarding experience. I was provided with exposure to diverse and multidisciplinary research in the area of ASD being undertaken on an international level.

I was pleased to have had the opportunity to gain exposure to research seeking to understand issues of differential diagnosis of ASD in the context of comorbid medical and genetic syndromes. The poster sessions included some interesting studies on the presentation of ASD or ASD symptoms in the context of specific genetic syndromes (22q11 duplication syndrome and William's syndrome). It often appears that the manifestation of ASD symptomatology is considered to be a consequence of the genetic syndrome itself. Parsing out the behavioural symptoms characteristic of ASD from the phenotypic presentation of the syndrome can be extremely challenging. Poster presenters made clear the need for further research into the nature of ASD presentation in individuals with specific genetic syndromes. Accurate characterization of the nature of expression of ASD symptoms, in the context of comorbid genetic or medical disorders, is important in increasing awareness among

health care providers and in enhancing identification and treatment initiatives. Research in this area holds the potential to facilitate the effective identification of ASD as well as to elucidate the potential neurobiological factors that might underlie the pathogenesis of ASD.

The invited educational symposium on psychopharmacology included a fascinating talk on the use of antiepileptic drugs in individuals with ASD. The discussion included consideration of the potential mechanisms of action of antiepileptic drugs, and the relevance to our understanding of the neurobiological basis of ASD. The antiepileptic drugs discussed are known to have a common effect on the inhibitory neurotransmitter GABA. Reference was made to the research exploring the role of compromised GABA neurotransmission to the neuroanatomical and neurobiological abnormalities identified in individuals with ASD. The functioning of GABA is essential for brain development, facilitating synaptic communication, and playing a critical role in the synchronization of brain activity. The discussion included consideration of the sequelae of disruptions in the functional integrity of GABA for the eventual connectivity and synaptic circuitry of the brain. Discussion of how perturbations in the functioning of GABA could culminate in the impairments in social, language, and behaviour characteristic of ASD was undertaken.

Consideration of the use of antiepileptic drugs in ASD also points up the importance of considering the common co-occurrence of epilepsy or epileptiform abnormalities and ASD. This frequent comorbidity may suggest the potential of a common neurochemical substrate which may underlie these disorders. This is an area of research I think is extremely promising, holding as it does

tremendous potential for understanding the neurological basis of ASD and for the development of treatment initiatives for affected individuals.

I am sincerely grateful to the Autism Ontario for their support, without which it would not have been possible for me to attend IMFAR.

Information about IMFAR*

The purpose of IMFAR (International Meeting for Autism Research) is to foster research in all aspects of autism spectrum disorders.

Scientific progress in a field requires that scientists can share their findings quickly. As autism science spreads across the globe, and as the length of time it takes to publish findings can involve a year or more, we need to find new ways to share research findings quickly. IMFAR was convened for the first time in November 2001, to provide autism researchers from around the world with a focused opportunity to share the rapidly moving scientific investigation of autism.

Until that meeting, autism researchers competed with many other groups for the opportunity to share their work at large scientific meetings that covered a wide range of topics. While other meetings provided some opportunity to share high quality autism research, none of them focused specifically on autism. Yet funding for autism science is increasing steadily and autism research is proliferating, highlighted by two NIH initiatives: the Collaborative Programs of Excellence in Autism (CPEA) and the STAART Centers. Stimulating more scientific progress in understanding autism requires a dedicated yearly venue for autism researchers to share their findings and their resources.

Scientific progress in autism also requires the continuous development of new scientists, from many disciplines such as biological and behavioural sciences, and increasing the number and expertise. Given the complex biological and behavioural nature of autism,

interdisciplinary training and ongoing mentoring of new scientists and promising graduate students is necessary to recruit talented young people in autism research. We want to provide them with the motivation and mentoring needed to focus a career on autism and related developmental disorders. Having an annual interdisciplinary meeting focused on scientific progress in understanding and treating autism provides an unparalleled opportunity for recognizing, supporting, and motivating talented graduate students and postdoctoral fellows into a career in autism research.

Specific aims of the meeting:

1. One purpose of IMFAR is to promote exchange of the latest scientific findings and to stimulate research progress in understanding the nature, causes, and treatments for autism around the world.
2. A second aim of the meeting is to foster dialogue among autism scientists across disciplines and across methods. Autism affects people's functioning in virtually every domain and it requires interdisciplinary research collaboration to truly understand this complex disorder.
3. The third aim is to promote the training and development of new autism scientists. The meeting provides an opportunity for pre- and postdoctoral trainees and young investigators to interact with experienced autism scientists, for the benefit of all.

** IMFAR information taken from 2006 Conference Highlights*