



# FXRFC Newsletter

News for Friends of the Fragile X Research Foundation of Canada

Fall 2008 • Volume #12 • Issue #4

*With funding from the Fragile X Research Foundation of Canada, Dr. Min Zhuo's lab at the University of Toronto has discovered a new and important piece of the Fragile X "puzzle". This new breakthrough was featured in a full length article written by the Toronto Star's Health Reporter, Joseph Hall. The article was published in the August 28, 2008 edition of the Toronto Star. The following is Dr. Zhuo's Press Release.*

## U of T Researchers' Discovery Yields New Hope for Fragile X Syndrome Treatment

**TORONTO, ON** -- Researchers at the University of Toronto's Faculty of Medicine have uncovered a new link between the neurotransmitter dopamine and the genetic variation that causes the mental impairment known as Fragile X Syndrome, raising hope for new treatments for the little-known neuropsychiatric disorder.

In a paper published Aug. 28 in the journal *Neuron*, a team led by Prof. Min Zhuo, of the Department of Physiology, details the transmitter dopamine's interaction with the protein that causes Fragile X. The paper, entitled "FMRP acts as a key messenger for dopamine modulations in the forebrain," suggests dopamine moderation may provide a new therapy for the disorder.

Fragile X is an inherited condition characterized by anxiety, attention deficit, hyperactivity, social skill impairment and behaviors similar to autism. According to the Fragile X Research Foundation of Canada, it is the most common inherited form of mental impairment, affecting one in 4,000 males and one in 6,000 females. Most people who are affected by Fragile X have not been properly diagnosed, the organization says.

FXRFC is a nonprofit, tax-exempt charity run by parents and volunteer professionals. Fragile X syndrome is the most common form of inherited mental impairment and developmental disabilities, affecting approximately 1 in 2000 males and 1 in 4000 females. FXRFC's goal is to accelerate research aimed at the treatment of Fragile X, by direct funding of promising research projects and by raising awareness of this disorder.

### Table of Contents

- FXRFC Article in the Toronto Star . . . . . pgs. 1/2
- UC Riverside Scientists . . . . . pgs. 2/3
- Fragile X and Holiday Shopping . . . . . pg. 3
- Fragile X Fundraisers and Awareness . . . . . pg. 4/5
- Speaking to Your Child's Class . . . . . pgs. 6/7
- Support Groups . . . . . pg. 8



Fragile X is caused by a genetic mutation which triggers a lack of what is known as the Fragile X Mental Retardation Protein (FMRP). Dopamine plays a critical role in cognitive functions and neuropsychiatric pathology, including learning and memory, decision making, attention, and motor function. Prof. Zhuo's team examined the interaction between dopamine and the FMRP protein in mouse models and found that FMRP acts as a key intracellular messenger for dopamine receptors. The researchers treated mice lacking FMRP with drugs that activated dopamine receptors and they noticed a significant improvement in behavioural functions.

In short, the research suggests if dopamine is controlled, some of Fragile X's effect on patients may be reversed.

"By activating dopamine receptors, we found that some behaviours in the mouse model of Fragile X disease can be repaired or improved. So this suggests dopamine-related drugs could work as a treatment for patients with Fragile X Syndrome," said Dr. Zhuo. "A dopamine drug that interferes with FMRP signaling pathways may help to treat dopamine-related mental disorders such as Fragile X."

"This work has opened up the door on a potentially new therapeutic target for future treatment of Fragile X," said Dr. Carlo Paribello, President and Medical Director of the Fragile X Research Foundation, which funded the research.

*Among the contributors to this paper were Hansen Wang (Department of Physiology, Faculty of Medicine, University of Toronto) and Fang Liu (Department of Psychiatry, Faculty of Medicine, University of Toronto; Department of Neuroscience, Centre for Addiction and Mental Health).*

---

---

## **UC Riverside Scientists Use Mice to Find a Possible Treatment for Fragile X Syndrome**

A study published in the *Journal of Medical Genetics* (online edition) October 3, 2008 provides evidence that an autism spectrum disorder, Fragile X syndrome (FXS), might be treated with a common antibiotic, minocycline. University of California, Riverside Professors Iryna Ethell and Douglas Ethell, senior authors on the paper, report that minocycline has beneficial effects in a mouse model for FXS, and they suggest this drug as a promising therapeutic for patients with FXS.

Neurons within the brain communicate with each other at specialized contact sites called synapses. Many synapses occur on small mushroom-shaped structures called dendritic spines. During early development dendritic spines have immature finger-like shapes, but learning causes synapses to become stable and dendritic spines to take on a mature mushroom shape, which makes them more efficient. The brains of FXS patients, and mice that lack the FXS gene (*Fmr1*), show an overabundance of immature dendritic spines. In this new report, the UC Riverside team describes how enzymes called matrix metalloproteinases (MMP) contribute to a delay in dendritic spine maturation in the mouse model for FXS. Mature dendritic spines on neurons from normal mice become immature when exposed to the MMP-9, similar to untreated neurons from FXS mice. Importantly, MMP inhibitors cause the reverse, and they correct dendritic spine abnormalities in FXS mice. The most effective MMP inhibitor the researchers tested was minocycline, an antibiotic used primarily to treat acne. Young FXS mice treated



with minocycline showed an increase of dendritic spine maturation in the hippocampus, a brain area that is critical for learning and memory. The beneficial effects of minocycline on dendritic spines were also accompanied by changes in the behavior of young FXS mice. Minocycline-treated mice showed less anxiety and more strategic exploratory behaviors as compared to normal mice.

The study was funded by a grant from the FRAXA Research Foundation. Dr. Michael Tranfaglia, Chief Scientific Officer of FRAXA, called the findings, "...A triumph of translational research. This group has done something unique and incredibly valuable: they have identified an off-the-shelf treatment for fragile X through their basic research. By bringing their unique perspective to Fragile X research, they have helped us to understand why neurons are malformed in this disorder, and more importantly, how we can treat it. We were so impressed with this work, we just awarded Dr. Iryna Ethell the FRAXA Breakthrough Award for 2008. This is easily the most important scientific breakthrough in the Fragile X field in many years." These findings have already had an impact on future therapies, with the approval of a new clinical trial that will test minocycline in Fragile X patients. That trial has already been approved and will start at the Fragile X Clinic at Surrey Place Centre in Toronto, Ontario, Canada early in 2009. Dr. Carlo Paribello, Director of the trial, said that the study published today, "Will go a long way towards dispelling the idea that mental impairment is not something that can be treated. This work could lead to the first treatment that actually targets the underlying defect in Fragile X Syndrome and not just the symptoms."

*Participants who would like to volunteer for this trial may do so by contacting Leeping Tao at: 416-925-5141 ext.2326 or by email at [leeping.tao@surreyplace.on.ca](mailto:leeping.tao@surreyplace.on.ca).*



## Think Fragile X when doing your Holiday shopping...



With December here, we know that some busy families are turning their thoughts to holiday shopping. At the FXRFC, we would like to suggest you consider making a donation in someone special's name as an alternative to buying a gift. Some of our families do this on an annual basis, with both the sender and the recipient getting a letter from the Foundation making them aware that the donation has been received.

If you would like to include a small gift along with the donation, may we suggest a FXRFC cookbook that you could inscribe with a personal message.

All the recipes were sent in by friends and families touched by Fragile X. Cookbooks are available for \$10 by contacting the FXRFC Headquarters.

Simply call the FXRFC headquarters at (905) 453-9366, or e-mail us at: [fxrfc@on.aibn.com](mailto:fxrfc@on.aibn.com) and we can help you donate quickly, safely & easily.

**Happy Holidays!**



## Fundraising for the Fragile X Foundation of Canada Brady Millar Golf Tournament Raises Money for Fragile X

The Fragile X Research Foundation of Canada is always looking for opportunities to raise public awareness about Fragile X and are very grateful to those volunteers that work so hard to organize fundraising events to support Fragile X research. One such event was the “**2nd Annual ‘Golf for Brady’ Tournament**” organized by Tony Mercier in the Ottawa area. Carla Millar, Brady’s mom, sent in the following article about this wonderful fundraising event, which was also written up in the September 8, 2008 edition of the Pembroke Observer newspaper.

The “2nd Annual ‘Golf for Brady’ Tournament” was held on Monday August 18th at the Oaks of Cobden in Cobden Ontario. We had a great day and lots of fun despite some bad weather. We had more golfers than last year and once again an amazing amount of donations, prizes and big auction items given for the event. People are so generous to us it is humbling. We doubled our profits from last year and raised **\$12,700.00!**

*Thank you to everyone who participated and donated!  
A big thanks to Grandpa Tony who organized this wonderful event in honour of his little buddy Brady.*



---

## Fashion Show in the Middle of Nowhere Raises funds for Fragile X Research

“The Middle of Nowhere Fashion Trunk Show” was held on Sunday August 31st. It was hosted by Sal Awar and Jesse Redditt, owners of Middle of Nowhere International Café in Lapasse Ontario. Sal runs the café restaurant while his wife Jesse designs and sells her clothes in the attached shop. The food is amazing and the clothes are beautiful with an East Indian flare. They held a fashion show to promote her line of clothes. Admission was charged and they donated 25% of their profits to Fragile X Research. Although their café really is in the middle of nowhere, it is worth the trip. The food is wonderful and the clothes, jewellery, bags and more are original and gorgeous. **Thank you Sal and Jes for your generous donation of \$1,011.11!**

---



## Sisters Raise Fragile X Awareness in Saskatoon

Sisters Jamie & Amanda Fast along with Amanda's 5 year old son Colton, held an interview with Saskatoon's local Global TV News. The interview briefly covered Fragile X Syndrome and also mentioned the Fragile X Support group in Saskatchewan & its website. The interview aired on August 2nd on Saskatoon's Global News.

Colton Fast has Fragile X Syndrome and was diagnosed 2 years ago. Jamie and Amanda hope that the interview will help spread awareness about Fragile X as well as The Fragile X Research Foundation of Canada and the Saskatchewan support Group so that they can reach out to other families in Saskatchewan that are affected by this disorder. Their website address is [www.fragilexsask.ca](http://www.fragilexsask.ca).

---



## Meet the FXRFC's Newest Volunteers

*The Fragile X Research Foundation of Canada is pleased to welcome its newest volunteers, Jennifer Williams and Ian Shearer.*

Ian writes "During this summer's Fragile X picnic at Variety Village, my wife Jennifer and I were approached by Dr. Paribello. He asked if we would consider becoming the fundraising co-coordinators for the FXRFC. After a careful minute of reflection, we gladly accepted the challenge. As parents of two young boys diagnosed with Fragile X, we are acutely aware of how this genetic disorder affects families and the need for treatment.

Jennifer and I are fairly new to the world of fundraising but know that some of you have raised money over the years for the FXRFC. We would like to tap into that experience, amazing energy and the many resources of the Fragile X Community, all across the country. Our goal is to coordinate the fundraising efforts into a National Campaign. We will also be actively seeking the support of Canadian businesses that will sponsor the FXRFC in their research efforts.

Over the last year, the FXRFC's donations have *decreased by almost half*. In the coming months we will be asking for ideas from the Canadian Fragile X community on how best to raise additional funds for an organization that is so important to our families.

If you would like to help with the fundraising effort, or be informed of any fundraising events, please send us an email: [ianjenhome@sympatico.ca](mailto:ianjenhome@sympatico.ca) and we'll be sure to get in contact with you!!"

Jennifer and Ian have decided to kick off their holiday season with their own Fragile X Fundraiser. They are sending out their annual Christmas Card but this year, in a different format - electronic! The funds they would have spend on traditional paper cards, envelopes and postage will instead be donated to the FXRFC. Not only are they contributing to the Foundation, they are 'being green' by helping to reduce the almost 25% more paper waste that ends up in our land fills every December. Thank you Jennifer and Ian and we look forward to more great ideas in 2009!



## Speaking to your Child's Class about Fragile X

by Lori Beesley, Board of Directors, FXRFC

When our son Mitchell was younger, I would go to school with him one day in early October, after the school year had settled in, to speak to his class about him and Fragile X. It had such a positive impact the first year, that I was invited back every year to speak not only to his class but to every grade. It helped the children understand why Mitchell was Mitchell! At the end of my talk, every child in the class would go home with the following letter and I'm told it was discussed around many kitchen tables. Please consider doing this in your child's school and use anything here that "feels right." The exercise built bridges in his classroom and the school and raised awareness in our entire community.

*Hello, my name is Lori Beesley and my son Mitchell is in your child's class. Mitchell has a condition called Fragile X Syndrome. It is the number one cause of inherited mental impairment in the world, affecting approx. 1 in every 2,000 males and one in every 4,000 females, worldwide. It can exist silently for many generations before affecting someone, which is what happened in our family. We had no prior family history of this condition until it presented itself in Mitchell. He was diagnosed two days after his second birthday, from results of a simple blood test. It is a single gene defect on the bottom half of the X chromosome, and under the microscope, the site looks very fragmented, thus the name Fragile X Syndrome. I talked to your child's class today about Fragile X Syndrome, about Mitchell, and about our family and this is what I said:*

"Hi there, I'm Lori Beesley. and I'm here to talk to you about something called Fragile X Syndrome. It is the most common cause of *inherited* mental impairment in the whole world. In fact, there are thousands of boys and girls everywhere in the world that have Fragile X. To tell you the truth, I had never even heard of Fragile X until 6 years ago. Then a doctor told us that Mitchell had Fragile X Syndrome. I'm here to tell you about Mitchell, Fragile X, and how it affects our family.

When someone has Fragile X, it means that before they were born, their brain didn't grow the same way that most people's do. Their brain is the same shape and size as everyone else's, there is just a little, tiny part inside their body that is different. That tiny part makes them act differently and learn differently. Have you ever been in class and the teacher is explaining something, it might be science or math, and you just don't get it? You are trying to understand and you just can't? Put up your hand if that's ever happened to you. I know that it used to happen to me too. You know what I would do? I would ask someone else to explain it to me, a friend or my mom or dad. When that person explained it to me, I would get it. I'll bet that you know what I mean. The reason that you "get it" is because that other person explained it in a different way, and another part of your brain understood.

People with Fragile X can have a really hard time learning things in the classroom. Sometimes they have to learn the same thing over and over, explained in lots of different ways before they "get it". When we were teaching Mitchell what a dog was, we had a book with a picture of a dog and we'd point to it and say "dog". After a while, Mitchell knew that picture was a dog. Then, one day we were at the store and there was a dog tied up. I pointed to it and said "dog". Well, Mitchell looked at me like I was CRAZY. I knew that he thought that "dog" meant the picture in the book. This dog was brown, the one in the book was black & white, this dog said "woof" and the one in the book didn't say anything, this dog moved and wagged his tail, and the one in the book always stayed in the same spot. We realized that we needed to try something new. Next time, when we looked at the book, we said "woof". Then Mitchell learned that dogs make a noise. Every time we saw a real dog, we said "woof" and one day Mitchell said "dog". He finally got it. It took Mitchell a long time to learn about dogs, but now he knows and understands all about dogs, and lots of other animals. Somethings he learns things faster, some slower, just like all of you.

Fragile X makes people act differently too. Their brain lets in too much information all at the same time and they can

get upset. Have you ever been watching t.v. all alone, when all the sudden your brother or sister starts talking to you, then your mom tells you to do something, then your dad starts up the lawn mower outside, then the phone rings and ALL you want to do is just watch t.v.? How does that make you feel? Pretty upset? Kind of mad? Does it make you want to yell at everything? You know what? People with Fragile X feel that way a lot of the time. Right now you are all sitting nicely and listening to me. If you have Fragile X, your brain has trouble focusing on one thing. Right now, they might be smelling the floor cleaner, watching someone fidget, feeling the tag in the back of their shirt and trying to pay attention to me all at the same time, and that makes them feel the way you do when you get upset, trying to watch t.v. They can be trying so hard to figure out how to handle all that stuff happening to them, that they forget how to act appropriately, or the way they should. They might flap their hands like this (demo), stand up when they should be sitting, or yell out when they should be quiet. It is their way of dealing with the way they are feeling. Sometimes it can make them feel better, and then sometimes it can make them even more upset. Sometimes Mitchell gets upset about something that happened to him a little while ago, but it's just sinking in now. That is part of the mystery of living with Mitchell. We have to try to help him learn how to handle things that upset him, in a way that can help him feel better next time.

I know that some of you have asked me why Mitchell won't say Hi to you if you see him outside of school, maybe in the park or up at the plaza. There is a very good explanation for that. I want everyone to think of someone famous right now - a sports person, a movie or t.v. star, a singer - your hero. Now imagine that you are sitting having dinner with your family and the doorbell rings. You answer and the person you were just thinking of is standing right in front of you, saying hello! Would you just say "Hi, come on in"? No. Your brain would be so busy thinking "*Why are they here? How did they get here? OH MY GOODNESS!*" The person would be standing in front of you and you are not saying anything. Well, to Mitchell, all of you are *HIS* heroes. When he sees you outside of school, he's not expecting it and so it throws him a curve. Kind of like seeing your teacher at

the grocery store - you might be feel weird and awkward. What you don't know is that a minute after you say Hi to Mitchell, he usually says Hi back to you, but you miss it. That's why his dad or say "Hi" for him, since we know he really wants to.

The last thing I want to talk to you about is YOU! Mitchell's dad and I want to tell you that we feel really lucky that Mitchell goes to a school where so many of you try to help him. You are all the best teachers that Mitchell has. He will watch you, and see how you do things, then he will know how to do those same things. If Mitchell is doing something that he shouldn't be, or acting silly, you can all help him learn the right way to do it, or a better way to behave. He will listen to you. Even though Mitchell's brain may not work in the same way as yours, his HEART does. He likes having lots of friends, to play and to laugh with, just like all of you. He likes to ride his bike and scooter, watch videos, and go to the park, just like all of you. He has his good days and his bad days, just like all of you. It's nice to know that he has people here that care about him and help him through the bad days and laugh with him on the good days. Mitchell and everyone else who has Fragile X has special needs, but we know that as long as Mitchell has people like you around him, he will have a good life! Thank you."

I then took questions the children had about Mitchell and answered everything as best and as honestly as I could. We decided to send this letter home to you in case your child talks to you about Mitchell and we wanted you to be informed. I serve on the Board of Directors for the Fragile X Research Foundation of Canada and Chris is on the Board of Directors for Community Living Toronto, as well as chairing their Education Committee. We are very open about talking to your child (or you) if they have any questions about Fragile X Syndrome or Mitchell. Thank you to you and your child for your patience and understanding.

- The Beesley Family - Chris & Lori, Mitchell & Erin  
(416) 261-2666

*If anyone would like to discuss this letter or the experience of talking to their child's class or school, feel free to contact us at the phone number above - Lori & Chris Beesley*

## **XXXX-tra Special People!**

*The FXRFC Newsletter often publishes stories about the people that have sparked the formation and inspired the growth of the FXRFC. If you have a story about a child or adult with Fragile X, please send it to us with a picture of the X-tra Special Person to share with our readers. Tell us a funny or heart-warming story, or share a success, no matter how small. Maybe your story will encourage others who live with an X-tra Special person and brighten someone's day.*

---

---

### **FXRFC Support Groups**

We are very interested in starting support groups in the other provinces and territories and will provide assistance to anyone able to help out. If you would like to network with other parents of children with Fragile X, or if you would like to volunteer for fundraising events in your area, please contact any of the people below.

#### **National Headquarters**

167 Queen St. W. Brampton,  
Ontario, Canada L6Y 1M5  
Phone: (905) 453-9366  
E-mail: fxrfc@on.aibn.com.

#### **Quebec**

Evelyn Lockett  
32 Lakeview, Baie d'Urfe,  
Quebec H9X 3B1  
Phone: (514) 457-3284  
E-mail:  
evelyn\_lockett@hotmail.com

#### **Fundraising and Public Awareness Contacts**

Kirsten J. Madsen  
4022 West 28th Ave. Vancouver BC V6S 1S8  
E-mail: k.j.madsen@telus.net - cell 604-607-5480 - office 604-683-1211 (collect calls accepted)

#### **Ontario**

**Kitchener-Waterloo**  
Teresa Burch, Co-ordinator  
62 Corfield Drive, Kitchener,  
Ontario N2A 3W9  
Phone: (519) 894-3689

#### **Alberta Support Group**

Beverly Delion  
103 Sunlake Way SE  
Calgary, Alberta  
T2X 3E4  
Phone: (403) 256-8252

#### **Saskatchewan Support Group**

Jamie Fast  
1608-B Preston Ave  
Saskatoon, Saskatchewan  
S7H 2V8  
Phone: (306) 374-2225  
E-mail: jamie.fast@usask.ca.

#### **British Columbia**

Pam Winthrop  
7968-112A Street, Delta, BC  
V4C 4Y6  
Phone: (604) 590-6822  
E-mail: pwinthrop@hotmail.com  
Web:  
<http://fragilexbc.tripod.com/fragilexbca>

---

### **FXRFC Newsletter**

This newsletter is published regularly and is sent to friends of the Fragile X Research Foundation of Canada (FXRFC). Permission is granted to reproduce and distribute this newsletter for noncommercial purposes.

The Fragile X Research Foundation of Canada (FXRFC) is a national, nonprofit, tax-exempt organization; Charitable # 88643 3762 RR0001. You can become a friend of the FXRFC for a tax-deductible donation of \$35 or more per year. The FXRFC is a 100% volunteer organization run by parents and professionals - which means more of your donation goes directly towards research. We accept VISA and Mastercard payments; simply phone (905) 453-9366 and provide the details. You may send your cheque or money order to:

The Fragile X Research Foundation of Canada • 167 Queen St. W., Brampton, ON, Canada L6Y 1M5  
*Come visit our site on the web at: <http://www.fragile-x.ca>*

---