The Foundation Newsletter

THE SCOTTISH RITE
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Learning Centres

Halifax Learning Centre to open in September 2006

Halifax Valley plans to open its Learning Centre for Dyslexic Children this September, says Harold Crosby, head of the project's steering committee. If everything goes according to plan, the Centre will open with eight students and six tutors. The steering committee is currently advertising for volunteers to take the extensive training program that will enable them to be qualified tutors.

The Centre will be located in two classrooms in a former school in Dartmouth near the entrance to the Angus L. Macdonald Bridge. Renovations are now under way to configure the space to meet the needs of the Centre.

Fund raising has gone very well and to date approximately $100,000 has been raised. These funds will be used to finance the renovations and the first year's operating expenses.

The Centre has a web site www.dyslexiacentrehalifax.com and project leaders have already had a request to enroll one student.

Like the Learning Centres in London and Windsor, students pay nothing for their tutoring.

London Learning Centre celebrates first graduation

Joy Graves, tutor trainer

Shirley Govan, Director of the London Learning Centre

A milestone was celebrated by parents, children and supporters November 28, 2005, when they witnessed the first graduation from the Scottish Rite Charitable Foundation Learning Centre in London at which Kayla Stephenson overcame her dyslexia for life.

"Our program provides free tutoring by professionally trained tutors using the Orton-Gillingham Approach, the most widely recommended method of overcoming dyslexia", said Robert Barnett, chairman of the centre's board, the first such centre in Canada. "Kayla is the program's very first graduate," he said.

Dyslexic children often have difficulty reading and spelling because they flip letters and get them out of sequence, among other things. This difficulty with reading hinders their ability to learn other subjects. In fact, dyslexia affects about 15% of the population in which key neural connections in the brain are absent between those different parts of the brain that enable people to read. The Orton-Gillingham Approach uses a highly structured multi-sensory approach to establish the missing neuro-pathways, thus enabling the person to read. "Once the pathways have been established, the problems caused by the Dyslexia are overcome, usually for life," explains Shirley Govan, Director of the London Centre.

The London centre opened in 2003 as part of a program to establish such Centres across Canada, providing new

continued on page 3

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What if doctors could treat mental retardation?

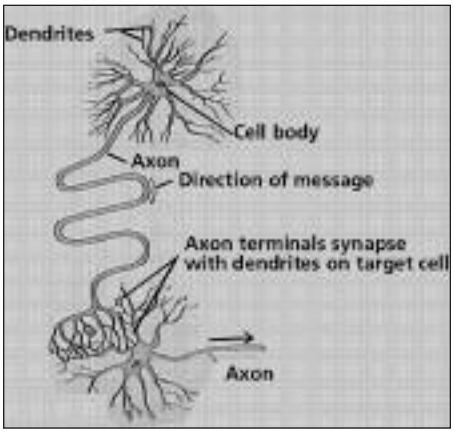
Dr. Christie's research is supported by a grant from the Scottish Rite Charitable Foundation.

Dr. Brian Christie: Exciting steps forward.

The most common inherited form of mental retardation is Fragile X Syndrome, which affects about one in 4,000 males and one in 8,000 females. Its victims suffer intellectual impairment, anxiety and mood swings, and behaviour problems similar to autistic children. But what if it could be treated? What if people with the affliction could be brought fully into the intellectual world using a sophisticated medical treatment? That prospect, formerly the stuff of science fiction, may become real in the foreseeable future. Dr. Brian Christie, Professor of Psychology and Neuroscience at the University of British Columbia, is taking exciting steps toward that goal with funding from the Scottish Rite Foundation.

Fragile-X Syndrome is a genetic disorder caused by a defect which shuts down a gene found on the X chromosome. Think of a gene as a section of DNA bearing the coded instructions for making a particular protein. Proteins drive the machinery of the body. Researchers call the protein that this gene is supposed to produce the Fragile-X Mental Retardation Protein (FMRP). Shut down its gene, and you're deleting the ability of the brain to make FMRP. Delete that protein; impair the mental behaviour – that's the connection. But precisely how the deletion of the protein causes the cascade of biochemical events leading to mental retardation is the question Dr. Christie hopes to answer. It's a complicated mystery that must be approached from fundamental principles, one step at a time. "Everything is exciting," said Dr. Christie. "What we're hoping to see is how the deletion of a protein affects the development of new neurons – neurogenesis – and also how it affects synaptic plasticity."

Synaptic plasticity refers to the ability of the brain cells, or neurons, to develop connections that allow signals to pass from one neuron to the next, via contact between their long tails, called axons, and a network of projections called dendrites.

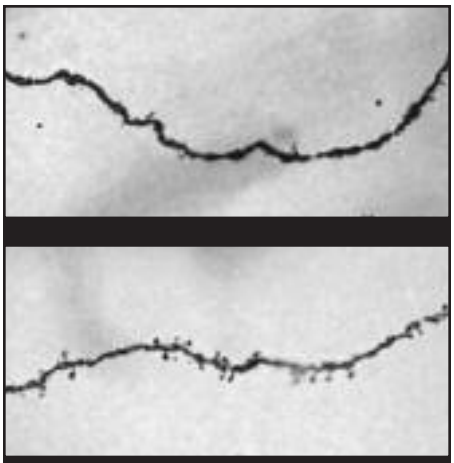


Dr. Christie uses the analogy of someone talking on the telephone: Speaking in a lower voice makes it more difficult for the listener to get the message. Speaking up strongly ensures that the message gets through. A proper level of synaptic plasticity ensures that the message, in this case a chemical signal jumping across the synapse from axon to dendrite, moves along its course through the brain. Normal mental processes require a strong signal. "When you have a potentiation of a communication pathway, it's like you hear everything louder. That's when the neurons can communicate more directly with one another." Christie suspects that a lowering of synaptic plasticity, with its degradation of that chemical signal, is what leads to the impaired and slowed thinking of mental retardation, in the brain of a man or a mouse.

To study Fragile-X Syndrome, Dr. Christie uses lab mice that have been genetically altered to delete the same FMR-1 gene responsible for this form of mental retardation in humans. Using this so-called 'knockout mouse model' of the human affliction, his research will examine how and why the missing gene leads to retardation.

But how do you measure mental retardation in a mouse? "We have a variety of behavioural tests. We have tests in which they have to remember where they are in an environment. We have other tests in which we look at the choices they make when they're in a maze, which gives us an idea how their conditioning might be affected."

In addition to changes in behaviour, Christie can see differences in the appearance of the neurons themselves. Those long dendrites have tiny spines on them, where they make the connections to adjacent neurons. And it's clear



High magnification reveals the spines along the dendrite of a normal mouse (top) and an FMR-1 knockout mouse (bottom). The bottom photo is more like the dendrite of an immature mouse, with many more spines.

that the abnormal mice have neurons with *more* spines than normal. That may seem counter-intuitive, but in fact it's logical. "Typically, in a normal developing animal – even a human – you have more spines when the animals are very young. As neurons find places to connect, the dendrites get rid of all the excess spines." So the continued presence of excess spines seems to reflect neurons that failed to grow and develop as they should.

What would neurons like this do to the thought process? They might confuse it with an overabundance of signals. Back to the telephone analogy: "It would be analogous to ten people trying to talk on the phone at the same time," Christie said. "At least," he added cautiously, "that's what we *think*." Whether that logical hypothesis holds true is one of the things he intends to check.

Could a chemical treatment that inhibits the formation of those excess spines on neurons cause the mice to regain the ability to form normal neuron connections, and thus escape the consequences of the lost gene? Might this become a treatment useful in people? In research taking place elsewhere in the world, there have already been tantalizing indications that this might be so. Yet despite the building excitement among researchers in this field, it remains difficult to obtain funding for it. "We were thrilled to get the Scottish Rite funding for this," said Dr. Christie.

Thrilled he may be, but like all good scientists, he is cautious. He doubts it will come down to using one chemical to block one bitter biochemical outcome and thus cure this form of mental retardation. The condition is too complicated for that to happen right away. Said Dr. Christie: "It looks like it affects hundreds of proteins, and this is just one of them."

A proud grandfather says thanks

Following is an edited version of a letter sent to the Scottish Rite Charitable Foundation.

I am the proud grandfather of Kayla Nicole Stephenson, a 12-year-old student of the London Centre. On November 28th, 2005, a Christmas concert was held in the Red Room of our Masonic Temple in London. This gala night was under the auspices of local Scottish Rite members. The program included recognition of past organizers, current and new tutors and the presentation of a certificate to Canada's first graduate of the program … my granddaughter.

The concert included a beautiful Christmas presentation by a mixed choir and a first class showing of Mocha Temple's Trumpet Band. To say the least, I was bursting with pride with the display of Masonic benevolence.

Being introduced to Masonry in 1956 (Kilwinning Lodge #64) followed by an ever impressive Ritual through 32nd Degree; I also took part as a member of the Mocha Temple Oriental Band when we took part in the 29th Degree work some years ago.

Please accept my heartiest congratulations to the Scottish Rite (Charitable) Foundation for introducing this tremendous aid to afflicted children.

Yours in faith,
Gerald L. Stephenson
London

London Learning Centre

continued from page 1

hope for children with dyslexia. "With the opening of the Scottish Rite Learning Centre in London, a new era began in Canada in helping children with dyslexia to overcome their learning difficulties and become more successful members of society," said Barnett.

Although there are commercial tutoring centres working to remediate Dyslexia, this is the only program known in Canada to train tutors without charge, and to provide free remedial tutoring by certificated tutors trained in the Orton-Gillingham Approach, the most effective system known.

The Learning Centre is located in the Masonic Temple on Dufferin Ave. and is funded by the Scottish Rite Charitable Foundation, which was created by the Scottish Rite Freemasons, and by local supporters. "Children who are accepted into the program have one hour of tutoring at a time, twice a week after school, and this rigorous multi-sensory program is very successful in providing dyslexic children with coping skills for life," said Don Fick, the Executive Director of the Program for Canada.

Parents of children with dyslexia need only contact the London Centre to make application for their children, and those qualified can be accepted as soon as we enough trained volunteer tutors," noted Barnett. A new group of tutors was trained in January of 2006 and new children were accepted for tutoring this month.

Visit the centre's website http://clients.pppoe.ca/~scottishrite/.

Rat fever research aims to reduce seizure damage

Dr. Carmant's research is supported by the Scottish Rite Charitable Foundation.

The most common form of treatment-resistant epilepsy in children originates in the temporal lobe of the brain, beneath the temple. A new treatment for it may be on the way sooner rather than later, thanks to research at the Department of Pediatrics, St. Justine Hospital Research Centre in Montreal, where Dr. Lionel Carmant, with funding from the Scottish Rite Foundation, is working with feverish rats.

"In humans, prolonged febrile seizures are known to be a risk factor for temporal lobe epilepsy," said Dr. Carmant. Prolonged is the key word here – many children get bouts of fever, often unexplained, "but nobody has explained why some kids get *prolonged* febrile seizures." Yet the prolonged nature of some seizures seems to be the key to the connection with epilepsy, which brings us to Dr. Carmant's lab rats.

He's working with special rats that have a congenital birth defect; a brain lesion in the temporal lobe. Because of that minor brain damage it's easy to induce a feverish seizure more prolonged than would be the case in a normal rat. "We have been able to show that these animals go on to develop temporal lobe epilepsy."

Dr. Carmant now knows it's not just any febrile seizure that does epilepsy-inducing damage, it's the long ones. Shortening their length using common drugs called benzodiazepines can change the picture. At least in rats. "We've been stopping the seizure very quickly with benzodiazepines – Valium. We are about to confirm that preventing the prolonged seizure prevents the brain damage and the epilepsy."

It's an exciting result, and not just for rats. "I think it's going to be clear that we need to prevent prolonged febrile seizures in humans." If that does become clear, treatments can be designed around it. If a child has a short-lived febrile seizure, that could warn doctors to treat future episodes with Valium or a related drug. But if the first seizure is prolonged enough to do the damage – termed an 'insult' in medicalese – that causes the epilepsy, such treatment may not be enough. "We have developed a drug that has the potential, even if given after the insult, to prevent the appearance of the epilepsy."

It's hard to get funding for this exciting line of research, he added. "It's so hard, because it's very innovative. People trust what has already been done," said Dr. Carmant. "I thank the Foundation a million times."

Fundraising Walkathons set for May 27/28

The walkathons to raise money for new Scottish Rite Learning Centres happen across the country this year on Saturday, May 27, except in Toronto, where the event is being held on Sunday, May 28.

Andy Anderson of London, Ontario, director of the walkathon, reminds all Valleys that the money raised by the walkathons goes to the Learning Centre Expansion Fund, not existing centres.

Stephen Magwood, co-chair, along with George Knapp, of the Toronto walkathon is hoping for a large turnout as the event is being promoted to students of both the Toronto Public and Catholic school boards. The 5-kilometre walk will start in the city's west-end Centennial Park where entertainment and BBQs will encourage the walkers to return. The organizing committee has also arranged for information tents in the park where participants can learn about dyslexia, how it can be managed, and how it affects adults who have not had tutoring to overcome the affliction.

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Note: Toronto Valley has created a walkathon website www.dyslexia-walkathon.ca that all Valleys can link to. Bro. Magwood can provide further information.