



KirbyGram

The latest news on Kirby Wilson and friends and the search for a cure for Sanfilippo Syndrome

June 2009

What is Sanfilippo Syndrome?

Sanfilippo Syndrome is one of seven Mucopolysaccharide (MPS) disorders. There are four different enzyme deficiencies that cause Sanfilippo. The Sanfilippo disorders are described as type A, B, C, or D. There is very little difference between the four types, though there have been a few very mild cases of the B form reported where the children have remained relatively healthy into early adult life.

Children with Sanfilippo are missing an essential enzyme that breaks down a complex body sugar called heparan sulfate. This sugar slowly builds in the brain, stopping normal development and causing hyperactivity, sleep disorders, loss of speech, dementia and typically, death before adulthood. There is no cure yet.

While Sanfilippo occurs once in 24,000 births, successful research into the disease could apply directly to many of 5,000 other genetic disorders.

KIRBY UPDATE

Kirby celebrated her 18th birthday on April 15th. Reflection on the many blessings Kirby has brought to the family filled the day. Brad and Sue remain in awe of Kirby's perseverance and find the spring season a truly fitting time of year for their child's special day. Sue explains, "Many of us think of spring as a time of rejuvenation and uplifting of our spirits from the cold bleakness of a long winter. The warmth of sunny days and the bright emerging colors of the season remind us of the power of nature and its resilient splendor year after year -- seemingly so simple.

"We now realize that Kirby's journey and gift to us are really quite similar. Year after year, she has shown us her perseverance against the disease that afflicts her and her quiet resolve to be happy. Her resilience from within to thrive for 18 years reminds us of the power of the sun's warmth. Her smile is as beautiful to us as any flower nature has created and brightens our days like no other -- seemingly so simple. Like spring, we see her power to revitalize and enliven those around her. She is a remarkable child who continues to nurture her family so that we may flourish."



18 years old!

FUNDRAISING NEWS

Marquette University's Student-Athletes Play Cupid for Kirby

Marquette University's Student-Athlete Advisory Council (SAAC) proved three's a charm when its members chose to fundraise for the Foundation for the third year in a row to honor fellow member Maggie Wilson's little sister, Kirby. This year's "Beating the Buzzer for Sanfilippo" was held at the February 14th Golden Eagles men's basketball game at the Bradley Center making Valentines Day that much sweeter for Kirby and children like her.

The students created a video clip on the Foundation, which was presented during the game. At the end of the evening, more than 50 student-athletes canvassed the crowd collecting over \$1,300. Sue Wilson comments, "Brad and I were able to attend this year's game and saw firsthand the enthusiasm this group of young adults had for their endeavor to help the little sister of one of their own. As I have said before, we are proud to have Maggie be a part of the giving environment Marquette University fosters in its students."

Puttin' on The Ritz

The Fourteenth Annual Sweetheart Dinner Dance was held for the third year at The Ritz-Carlton Chicago on February 6th with 145 people attending. Guests were treated to a champagne cocktail reception, an elegant dinner from The Ritz's award-winning chef and entertainment by Michael Lerich and his talented group of musicians. The combination of the evening's generous sponsors and the guests' zealous participation in the live and silent auctions enabled the Foundation to raise over \$46,000 for its mission to fund research.

"Brad and I give thanks to these devoted supporters, most of whom have attended for all fourteen years, for choosing our mission in spite of the effects the economic times have had on most all of us. In comparison to other not-for-profits, our following may be small, but this group's generosity and commitment have no boundaries as their presence this year proves."



Kirby's sister Maggie and cousin Molly are all smiles at the dance

A Taste of Vie for Kirby

Our thanks to renowned chef and Vie Restaurant owner Paul Virant and business manager Al Tamgara who chose the Foundation as Vie's charity of the month this past April. The Foundation received a donation each time a guest chose the tasting menu which was changed weekly throughout the month. It was special in many ways starting with the fact that April 15th marked Kirby's 18th birthday. Sue explains, "When Vie opened, we were thrilled to have a restaurant of this caliber choose Western Springs as its location. Now, the idea that Paul and Al thought enough of the Foundation and its mission to select it as one of the many recipients of their generosity throughout the year was an honor. It's another example of how fortunate Brad and I are to live in this caring community."

FUNDRAISING NEWS

The Foundation Gives Thanks

To **Margaret Dawe, Nicholas Megofna, Ray Donato, Ron Odrobinak, Roland Pisoni, William Hellenbach and Donna-Logan Gabel** who designated the Foundation as their charity of choice in their employer's United Way campaigns. Thanks for uniting for Kirby!

To **EN Engineering** for doubling employee **Ed Czekaj's** donation to the Foundation. It's a great match for Kirby!

To Brad's mom and sister, **Joanne Wilson** and **Linda McDonald** for their donations in fond memory of his aunt, **Mary Jean Ellis**.

To **Fred and Beth Angeli** for their donation in memory of **Marilyn Meyer**.

To **Barbara Bolduc** for her donations in memory of **Jimmy Coon** and **Evelyn Rahn**.

And to the many contributors who used the donation envelopes to give to the Foundation. Donations from our December newsletter totaled \$1,955!

To the Families Working Together for the Cure

We thank **Angelo's House** for its donation in honor of Grace Bellontine.

Once again, **Anna Kidwell**, mother to **Brooke and Ashleigh** made the drive from their home in Kentucky to Chicago to help with the Sweetheart Dinner Dance. Not only did she arrive with her usual bounty of items for the auction and lend her artistic talents to the day's set-up but chose, with her husband **Dave** to be a sponsor in honor of their own sweethearts.



*Brooke with her sister Callie (above);
Ashleigh (below).*



Kent and Judy Bible celebrated the Kidwell girls' birthdays with a donation in their honor to the Foundation.

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FUNDRAISING NEWS

(continued from page 3)



Kimberly with a lot to give!

And to the **Fowler Family** of Shelby Twp., Michigan whose generosity goes far beyond the Foundation. **Kimberly**, Steve and Betsy Fowler's daughter who is afflicted with Sanfilippo, recently donated her hair to **Wigs 4 Kids**, which supports local children suffering hair loss due to medical conditions. In Betsy's words, "We hope this can be used to bring smiles to other children." What an incredibly thoughtful gift from a very special girl who also celebrated her 21st birthday this past December. Our best wishes to Kimberly.

News From Connecticut

As Gene and Cynthia Logan's days remain focused on Rhianna and her needs, their community continues to fundraise in her honor.

The Foundation received over \$1,400 in donations from Cynthia's letter which was written for the December KirbyGram.

Diane Couture, Rhianna's "Auntie Di" donated to the Foundation in lieu of "lots of gifts this holiday."

Laurie Delvaglio sent a donation in appreciation of the kindness shown by Rhianna's grandfather, "Poppi."

An Artisan's Marketplace in Plainville, Connecticut collected over \$1,200 with its annual holiday fundraisers, Stars for Hope and Ornaments for Hope as **Cassille's Restaurant** continues to raise funds with its cash jar.

Sue comments, "As Kirby's mother I know what the Logans' days can be like but I also know the uplifting feeling I get hearing of or seeing the kindness of others toward our family. The people of Plainville can rest assured that their compassion brings a bright spot to the Logan's days and their efforts are sincerely appreciated."



Rhianna and Grandma "Mimi"

RESEARCH UPDATE

Robert K. Yu, Ph.D., Med.Sc.D
Institute of Molecular Medicine
and Genetics, Medical College
of Georgia

Development of Stem Cell Transplantation
Therapy for Sanfilippo Disease:
Recent Advances in Cell-based Gene
Therapy – May, 2009

Dr. Yu and his team have engaged in studying the basic biology of neural stem cells in preparation for developing a cell transplantation therapy to alleviate the devastating effects of many neurodegenerative disorders, including Sanfilippo disease (Mucopolysaccharidosis III). The stem cells are derived from the inner cell mass in the blastocytes at early embryonic stages. In recent years, it has been recognized that stem cells can also be harvested from other sources, such as the umbilical cord blood. These stem cells are self-renewable and pluripotent, meaning they can be developed into different cell types, such as nerve, muscle, and bone cells, etc. Dr. Yu has induced them to differentiate into neural stem cells (NSCs) or neural progenitor cells (NPCs) that are committed to developing into brain cells. For this reason, they can be harvested and transplanted into damaged brain and to re-populate the damaged areas. The transplantation therapy therefore represents a viable therapeutic approach for repairing the injured brain tissues. Dr. Yu and his team have learned much about the properties of the NSCs/NPCs and how they become populated and interact properly with each other in test tubes. In particular, he is focusing on the role of cell surface molecules called gangliosides. These molecules are critical in determining the properties of cells and the way they become different types of nerve cells. More importantly, they play many crucial roles in determining how

nerve cells interact with each other, so once the cells are transplanted into damaged brain, they can integrate with existing brain cells. This basic knowledge is essential because Dr. Yu wants to make sure the donor cells survive, migrate, and grow normally within the recipient's brain, and he wants to avoid abnormal growth of these cells, such as tumor growth. The work is therefore highly relevant to disease treatment. In the past year, Dr. Yu and his team of investigators have successfully transplanted these cells into the brain of animal models with MPSIII to see if they can correct the storage of heparan sulfate. Preliminary studies have shown that these cells grow and integrate inside the brain after transplantation. More importantly, the recipient animals survive the transplantation surgery for a prolonged time. Animals with MPS appear to have improved biological function, as assessed by behavioral tests, which is very encouraging.

In addition to the above, Dr. Yu and his team have started to explore a new technique, the so-called "transposon or piggyBac" technology, for gene therapy. This is a novel way to replace missing or defective genes, such as those missing in MPSIII, into the host chromosomes. This technique is gaining momentum in the gene therapy field. Embryonic stem (ES) cells may also be amenable to ex vivo engineering by DNA modifications that render them more suitable for gene therapy. Preliminary results from Dr. Yu's laboratory have shown that it is feasible to fortify ES cells with specific enzymes that are missing in MPSIII using this technique. He plans to transplant those engineered cells into animal brain in order to restore the biological functions in the diseased tissue. He is keenly aware that the safety and efficacy of these strategies must be fully evaluated before their use in humans with MPSIII.

RESEARCH UPDATE

In addition to the above animal studies, Dr. Yu established the first state-supported Umbilical Cord Blood Stem Cell Bank in the State of Georgia three years ago. This bank promises to provide researchers with viable human stem cells, which can be harvested from cord blood. In fact, the State of Georgia has reaffirmed its commitment to cord blood stem cell collection and research by appropriating additional funds, which amounts to \$1.3 million, to support this facility in 2009 alone. In 2008, Governor Sonny Perdue appointed Dr. Yu as a member of the Commission of Saving the Cure for a term of three years. The purpose of this commission is to provide guidance on clinical and basic stem cell research in Georgia. It is anticipated that there will be sufficient stem cells for the treatment of a variety of diseases, including Sanfilippo disease, in the near future.

Svitlana Garbuzova-Davis, Ph.D., D.Sc.
Paul R Sanberg, Ph. D., D.Sc.
Center of Excellence for Aging & Brain Repair - Department of Neurosurgery
University of South Florida

During the last few years, our research group at the University of South Florida has studied the potential of human umbilical cord blood (hUCB) stem cells to treat various neurodegenerative disorders (stroke, ALS, Parkinson's disease), as well as brain and spinal cord injuries. Data suggest that these cells are able to repair a damaged or defective nervous system.

In Sanfilippo Syndrome type B, a deficiency of the Naglu enzyme leads to accumulation of heparan sulfate, a major feature of this disease. We have previously shown that human umbilical cord blood cells reduced disease-related changes after intravenous (iv) injection into Naglu-deficient mice, probably

due to delivery of the missing enzyme. Although administered cells were found widely distributed among different brain structures, the mechanism of cell migration to the brain is still unclear. One possibility is that cell migration to damaged areas of the brain occurs due to "signaling" substances in damaged tissues, substances that attract the transplanted cells. Another possible mechanism of transplant cell migration may be crossing of a damaged blood-brain barrier (BBB). However, no data exist about the BBB condition in Sanfilippo. The aim of this study was to determine whether the BBB is damaged in a mouse model of Sanfilippo type B at different stages of disease. Evans Blue (EB) dye was iv injected into Naglu mice to assess BBB integrity at early or late stage disease. Wild type mice (controls) were also injected at the same ages. After 30 minutes mice were euthanatized and the brains were examined for EB leakage. Also, immunohistochemical staining for albumin was performed in serial brain sections. Results showed EB and albumin vascular leakage in various brain structures of early and late symptomatic Naglu mice, males and females. More leakage was found in late symptomatic mice. Results suggest that the BBB is compromised in MPS III B mice even at early disease stage. These novel findings point to functional alterations of the BBB in a mouse model of MPS III B. One important aspect of these findings is that the BBB damage was determined in brain structures with known disease-related changes. However, structural dysfunction of BBB is uncertain. Future studies should include structural analysis of brain microvessels in Naglu mice by electron microscope. Determining structural and functional BBB damage in MPS III B is important not only for examining transplant cell migration, but it is also crucial to understanding additional mechanisms of disease and to developing pharmacological and cellular treatments.

FUNDRAISING OPPORTUNITIES

A Match For Kirby

Does your company have a matching gift program? It could double your support of the Foundation.

United Way Can Be For Kirby, Too

Does your company have United Way pledges at your workplace? Although we are not a United Way member, you can designate The Children's Medical Research Foundation as your recipient, and the funds will be forwarded to us through the United Way Campaign! Simply give your local United Way agency the Foundation name, address and our Federal ID #36-4033667.

Give Kirby Security

Tired of taxes? The Foundation now has a brokerage account available that allows you to donate appreciated securities. Why pay tax on the gains when you can realize a charitable deduction of the full market value of your stocks

and it's for Kirby, too! Contact Sue Wilson at (708) 784-0631 to learn more.

Celebrate, And Make It For Kirby

Is there a special birthday coming up for a family member or friend? Are you looking for an alternative to the typical "over the hill" gift? Be different. In lieu of gifts, donate to The Children's Medical Research Foundation. Kirby always loves a party!

Go Kasual For Kirby

Tired of wearing those heels, hose or ties five days a week? Why not suggest a **"Go Kasual For Kirby Day"** to your employer? It's a great way to give a "relaxing feel" to a workday and raise funds for the Foundation. Simply send a memo to co-workers explaining the day and set the "fee" to participate.

Still in school but want to help? How about a **"Hat Day"** done the same way! It's fun for the kids and a great way for them to participate in a good cause. No "fee," just leave an amount up to them.

SAVE THE DATE

15th Annual Sweetheart Dinner Dance

Plans will soon be underway for the 15th Annual Sweetheart Dinner Dance to be held February 5, 2010 at the Four Seasons Hotel in Chicago.

Reservations will be \$225 per person and must be made in advance.

Please contact the Foundation at (708) 784-0631 for further details and to learn how you can help to make it a "sweetheart" of a night for Kirby and others like her.

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