RESEARCHERS DISCOVER NEW TREATMENTS FOR NF1 OPTIC GLIOMAS

Children with Neurofibromatosis type 1 (NF1) develop optic gliomas which can cause reduced vision. Currently, treatments for these brain tumors involve the use of chemotherapies originally designed to slow the growth of similar cancers in children without NF1. With the identification of the *NF1* gene, it is now possible to envision using treatments specifically targeted to the kinds of brain tumors arising in children with NF1.

Using *Nf1* genetically-engineered mice, Dr. Aparna Kaul, a post-doctoral fellow in the laboratory of Dr. David Gutmann, recently showed that two therapies that block the activity of RAS effector proteins are effective treatments for optic glioma. Previous studies performed nearly 20 years ago revealed that the *NF1* gene controls cell growth by suppressing the activity of a protein called RAS. RAS, in turn, transmits its growth-promoting signal through two effector molecules, AKT and MEK.

Dr. Kaul demonstrated that drugs that block either AKT or MEK activity are effective at reducing optic glioma growth. Importantly, she shows that both AKT and MEK work to activate the same protein complex, called the mammalian target of rapamycin (mTOR) complex.

This finding builds upon previous work in Dr. Gutmann's laboratory, which revealed that mTOR inhibition reduced optic glioma growth in mice. Based on these preclinical results, mTOR inhibitors are now being evaluated as potential therapies for gliomas in children with NF1. Moreover, Dr. Joseph Toonen, a post-doctoral fellow in Dr. Gutmann's laboratory, demonstrated that MEK or AKT inhibition in *Nf1* genetically-engineered mice also improved the retinal dysfunction that underlies reduced vision. In light of these exciting findings, a clinical trial is now being launched to evaluate MEK inhibitors for NF1 optic glioma.
HEC-TV INNOVATIONS FEATURES WASHINGTON UNIVERSITY NF CENTER

It was months in the making, with film crews set up in the research laboratory, at our clinical program at St. Louis Children’s Hospital and even at our jazz music-motor therapy program, Beat NF. HEC-TV associates were hard at work, recording candid interviews and capturing meaningful moments among the Washington University NF Center physicians, therapists, researchers, patients and their families.

The outcome: an in-depth look at the multidisciplinary team approach we take to treating Neurofibromatosis type 1 (NF1), the life-changing relationships we form with our families and the groundbreaking research which makes it all possible.

Cordell Whitlock of HEC-TV approached Dr. David H. Gutmann, MD, PhD, Director of the Washington University Neurofibromatosis (NF) Center, back in May 2014 with his idea to feature our unique and innovative approach to treating NF1.

Dr. Gutmann was excited by the opportunity to raise awareness about this condition to the public and highlight the struggles and triumphs experienced by families who are affected by it. I think I can speak for everyone here at the Washington University NF Center when I say we are grateful to Cordell and the HEC-TV team for putting together such an incredible piece, and we are so thankful to have the opportunity to make such a positive difference in the lives of our patients every day.

Dining Out for NF
FUNDRAISER BENEFITS NF RESEARCH

The Washington University NF Center thanks the Brennan family for hosting the first ever “Dining Out for NF” event at their family restaurant, JJ Twig’s - O’Fallon, MO.

We sincerely appreciate all of the support from our families and friends in helping us provide exceptional care through groundbreaking research.

We couldn’t do it without your help!
Understanding how plexiform neurofibromas form is an important step towards identifying new treatments for these common tumors in children and adults with neurofibromatosis type 1 (NF1). Plexiform neurofibromas are benign tumors that arise from cells surrounding the developing nerve.

A recent study spearheaded by Dr. Lu Le at the University of Texas-Southwestern revealed that these tumors likely arise from a small population of immature cells that eventually give rise to Schwann cells. Loss of Nf1 gene function in these Schwann cell precursors is sufficient for a plexiform neurofibroma to develop in a mouse.

**NEW STUDY UNCOVERS POTENTIAL ORIGIN OF PLEXIFORM NEUROFIBROMAS IN MICE**

Leveraging this exciting finding, they developed methods to screen promising drugs for the treatment of plexiform neurofibromas. This report was published in the prestigious journal *Cancer Cell*.

Accompanying this landmark paper was an invited editorial by Dr. David Gutmann, Director of the Washington University NF Center. The importance of Dr. Le’s findings and their relevance to future treatments for NF1-associated plexiform neurofibromas was discussed. Congratulations to Dr. Le and his colleagues.
This newsletter is provided through the generosity of the Doris and Donald Schnuck Fund for Children in Need and the St. Louis Children's Hospital Foundation.

**MARK YOUR CALENDAR!**
Interested in attending any of these events? RSVP to Kirsten Brouillet at brouilletk@neuro.wustl.edu today!

**CLUB NF ACTS WITH COCA!**
Attend an exciting morning of musical theatre where each child will have an opportunity to work with two teaching artists from COCA: a music artist and a theatre artist. Groups will take turns learning a musical number from a Broadway show and will be directed in a short scene. The morning will end with a group rehearsal and the opportunity to share with parents.

**WHO:** Children grades K-8 with NF1 and their siblings

**WHEN:** Saturday, April 4, 2015, 9:30 a.m. - noon

**WHERE:** Parkway South High School, 801 Hanna Road, Manchester, MO 63021

**APRIL 4th**

**JUNE 6th - CLUB NF PLAYS CHESS**
*More details coming soon!

**SPRING 2015 BEAT NF SESSIONS**
Join us at the upcoming spring sessions of Beat NF Together—a toddler and parent jazz music therapy group focused on developing social skills, attentions skills and motor skills in toddlers with NF1 while fostering parent child interactions and jazz appreciation.

**WHO:** Toddlers (2.5 - 5 years) with NF1 and their parents/caregivers

**WHEN:** Wednesday mornings April 1 - April 29
9:30 - 10:45 AM

**WHERE:** The Harold and Dorothy Steward Center for Jazz
3536 Washington Ave., St. Louis, MO 63103

**STAY CONNECTED >>**
nfcenter.wustl.edu