Toward a CURE
A RESEARCH UPDATE
Huntington's Disease Society of America
WINTER 2013

A Message from Louise Vetter, HDSA CEO

As we end 2013, I would like to take a moment to look back on a most exciting year. In April, we paid homage to the 20th Anniversary of the discovery of the gene that causes HD by hosting a special research symposium, with our champion in the Senate Kirsten Gillebrand, in an inspiring Congressional hearing room overlooking our nation's Capitol. Our honored speakers included Dr. Francis Collins, head of the National Institutes of Health and an early investigator in genetic diseases, two founding members of the HDSA Coalition for the Cure and key researchers in the HD gene discovery, Drs. James Gusella and Marcy MacDonald, as well as Dr. Nancy Wexler. Our symposium was webcast with a live audience of over 150 and is still available for viewing on the HDSA website (**www.hdsa.org/research**).

The following day, HDSA stormed the halls of Congress with more than 89 advocates from 30 states meeting with their Congressional leaders to advocate for the Huntington's Disease Parity Act (HR1015/S723). It was a great two-day event and a wonderful way for our families to share in the excitement of marking past milestones in HD research.

In June, HDSA announced the launch of a new research program that fosters collaboration between basic scientists and the HDSA Center of Excellence program. The Human Biology Project (HBP) is a new global fellowship program that provides support to young investigators at academic laboratories who have innovative projects that can benefit from data or samples generated at a specific HDSA Center of Excellence. By joining forces, the HDSA Fellow and Center of Excellence will pioneer new ground in HD research.

The response to our request for proposals was overwhelming, and our Scientific Advisory Board had a difficult time selecting from nearly 30 worthy proposals. We were pleased to see the enthusiasm that these young investigators brought to the partnership with our Centers of Excellence. Eleven of our 21 Centers were asked to participate in no less than 25 of the proposals that made it past round one.

In October, HDSA was proud to announce the first four projects that would be funded by the HBP. They include Dr. Jun Hua, Postdoctoral Research Associate at the Kennedy Krieger Institute who will focus on *Functional and neurovascular biomarkers for HD using MRI at 7T*. The Center collaborating with Dr. Hua is the HDSA Center of Excellence at Johns Hopkins. The second Fellowship will go to Dr. Tanya Garcia, Assistant Professor at Texas A&M Health Science Center. Dr. Garcia will study the *Improved definition and prediction of Huntington's disease motor-onset using advanced statistical models* and is partnering with the HDSA Center of excellence at Columbia University. Our third Fellowship recipient is Dr. Robert Boggio, Senior Research Scientist at IRBM Promidis in Italy. His project is *The Development of a novel, ultra sensitive bioassay for quantification of full-length mutant huntingtin in patient body fluids and analysis of different forms of huntingtin during disease progression*. Dr. Boggio is collaborating with the HDSA Centers of Excellence at the University of California Los Angeles, Ohio State University and the University of Alabama. The fourth award goes to Dr. Helen Budworth, Project Scientist at Lawrence Berkeley National Laboratory. Dr. Budworth will look at *Metabolomic and gene expression analysis of fatty acid metabolism biomarkers of Huntington's disease* and will partner with the HDSA Center of Excellence at Johns Hopkins.

We are very excited with this new research program – not only for the innovative science it will engender, but also for the promise it holds of training and recruiting new investigators for HD.

Though we have been blessed for the past twenty plus years with a group of dedicated researchers, we know that science demands new leadership regularly. If we are to keep HD on the forefront of research efforts at major institutions, including the NIH, then we must encourage young investigators to join this exciting and challenging field of study.

The Human Biology Project will provide the entry and opportunity for innovation while offering our esteemed senior scientists the means to educate and mentor those who are eager to follow in their footsteps.

As we close our 20th Anniversary commemorating the discovery of the HD gene, and usher in a new era in scientific research, we ask that you consider making your gift to HDSA today to support all of the new professionals in research and care who are the next generation of hope for HD.

Thank you for your continued support and partnership, and best wishes for the holiday season.

With holiday wishes,

Louise Vetter
Chief Executive Officer

Toward a CURE

In This Issue

The purpose of *Toward a Cure* is to provide information and opinion and to relay items of interest to individuals with Huntington's Disease and their families, healthcare professionals and interested friends and supporters.

The appearance of advertising, or the mention of commercial articles available for sale in articles published in this newsletter, is not an HDSA, Inc. guarantee or endorsement of the product or the claims made for the product by the manufacturer. Statements and opinions expressed in articles are not necessarily those of HDSA, Inc.

The Huntington's Disease Society of America (HDSA) is a national not-for-profit organization. The Society is dedicated to eradicating Huntington's disease by promoting and supporting HD research; to helping families cope with the problems presented by HD; and to educating the public and healthcare professionals about HD.

HDSA is a member of the National Voluntary Health Agencies, the National Health Council, the National Organization of Rare Disorders, the International Huntington Association, the Alliance for Genetic Support Groups and the Independent Sector.

The Huntington's Disease Society of America meets all nine standards of the National Charities Information Bureau

Amaryllis Season is here!

Amaryllis bulbs are among the easiest bulbs to grow indoors and the most rewarding. These premium Dutch bulbs need minimal attention but you will be rewarded with spectacular blooms to brighten up the dark winter days. Planting Amaryllis and watching them grow is a fun activity for the entire family.

Amaryllis are available in individual kits for gift giving or cases of solid colors and assorted.

The COMPLETE KIT will contain everything you need to have your own spectacular Amaryllis this winter including: one 26/28 cm Amaryllis Bulb, decorative pot, professional growing medium, planting and aftercare instructions.

Each kit costs only $10.00.

Amaryllis make the perfect gift that can be enjoyed for many weeks.

Some gift ideas include:

- Thanksgiving
- Christmas
- Chanukah
- Housewarming
- Get Well
- Birthday
- Gifts for friends, teachers, co-workers

All proceeds support HDSA's fight to improve the lives of people affected by HD and their families.

Amaryllis can be purchased from your local chapter or on line at **www.hdsa.org.**

Huntington's Disease Society of America
Announces First-ever HD Human Biology Project Awards

By George Yohrling, PhD, Director of Medical and Scientific Affairs, HDSA

Over the course of the past year, the groundwork was laid to revitalize HD research efforts at HDSA. To enable this, HDSA established a world-class Scientific Advisory Board representing diverse expertise in neurodegenerative disease research and clinical functions to evaluate all scientific proposals to ensure they were of the highest scientific merit and properly addressed critical issues to help move the HD research community closer to promising therapies for HD. This work culminated this fall when the Huntington's Disease Society of America (HDSA) announced that four research grants were awarded to launch the Society's new research initiative, the Huntington's Disease Human Biology Project. Totaling $575,000, these grants emphasize the importance of bringing basic and clinical researchers together to facilitate HD experimentation beyond animal models into human data and with the participation of HD patients.

Uniquely, the HD Human Biology Project requires that all awardees propose to work in collaboration with at least one of the twenty-one HDSA Centers of Excellence across the USA. The HDSA Centers of Excellence are a select network of academic medical centers providing expert multi-disciplinary care to HD patients and families from health professionals with a deep passion in the area of Huntington's disease. These awards will foster innovative research to help the HD research community better understand the biology of Huntington's disease as it occurs in humans.

The Society is excited about the potential impact these studies can have on assessing potential disease-modifying therapies, as well as expanding our knowledge of the underlying causes of disease progression. To quote Louise Vetter, CEO of HDSA, "HDSA has a long history of supporting important HD science while simultaneously offering a broad catalog of programs to support families who are living with HD. Funded by the generosity of families who are committed to making a difference in the fight against HD, the Human Biology Project underscores our dedication to providing help for today and hope for tomorrow in order to bring our vision of a world free of Huntington's disease closer."

HDSA received top-notch applications from researchers from twelve different countries. Ultimately, grants were awarded to four research fellows. The winning projects include statistical modeling of clinical HD data to better predict HD onset, biomarker development, and metabolic profiling of HD patient samples to better understand disease pathology. The winners and titles of the 2013 HDSA HD Human Biology Project Fellowships are:

Dr. Tanya Garcia, Assistant Professor, Texas A&M Health Science Center: *Improved Definition and Prediction of Huntington's disease motor-onset using advanced statistical models.*

Collaboration with Dr. Karen Marder at HDSA Center of Excellence Columbia Presbyterian Hospital

Dr. Jun Hua, *Postdoctoral Research Associate, Kennedy Krieger Institute: Functional and Neurovascular biomarkers for HD using MRI at 7T.*

Collaboration with Dr. Chris Ross at HDSA Center of Excellence Johns Hopkins University

Dr. Robert Boggio, Senior Research Scientist, IRBM Promidis, Pomezia, Italy: *Development of a novel, ultra sensitive bioassay for quantification of full-length mutant huntingtin in patient body fluids and analysis of different forms of huntingtin during disease progression.*

Collaboration with Dr. Susan Perlman at HDSA Center of Excellence UCLA; Dr. Victor Sung at HDSA Center of Excellence University of Alabama, Birmingham; and Dr. Sandra Kostyk at HDSA Center of Excellence Ohio State University.

Dr. Helen Budworth, Project Scientist, Lawrence Berkeley National Laboratory: *Metabolomic and gene expression analysis of fatty acid metabolism biomarkers of Huntington's disease.*

Collaboration with Dr. Chris Ross at HDSA Center of Excellence Johns Hopkins University

Human Biology Project Awards

(Continued from Page 3)

Summaries of 2013 HDSA-funded HD Human Biology Projects

Dr. Tanya Garcia, Assistant Professor, Texas A&M Health Science Center

Title: *Improved Definition and Prediction of Huntington's disease motor-onset using advanced statistical models.*

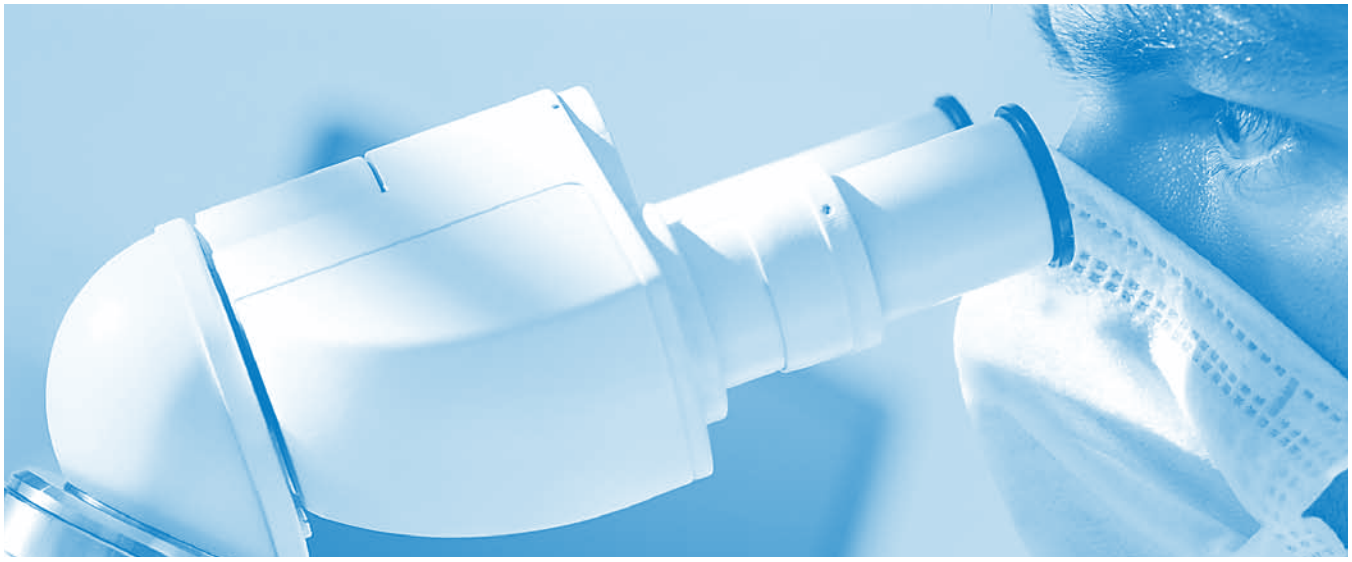
A vital area of clinical and statistical research that we will address is objectively defining disease-onset, and identifying salient biological markers that can track disease progression and predict when the disease starts. Such information will help to improve our understanding of HD, evaluate potential therapies, and provide appropriate genetic counseling to patients and their family members. Ongoing observational studies are finding promising biological markers, but no statistical model exists that comprehensively assesses the relationship between these markers and HD. To fill this gap, we will develop novel and advanced statistical models. The models will include (i) personalized motor-sign decline curves, and (ii) patient-specific factors such as genetic features, brain imaging measures, and cognitive performance. Modeling the dynamic worsening of motor-signs provides a new way to determine optimal treatment-intervention time periods, and even predict the likelihood of being diagnosed with HD in future time periods. Using modern statistical techniques, we will assess patient-specific markers so as to discover their usefulness in predicting HD motor-diagnosis. Our models will thus advance the fundamental understanding of HD, and outperform existing models in the clinical literature which only use genetic factors that determine whether, but not when the disease will begin.

Dr. Jun Hua, Postdoctoral Research Associate, Kennedy Krieger Institute

Title: *Functional and Neurovascular biomarkers for HD using MRI at 7T.*

Reliable HD markers for disease progression monitoring and potential treatment assessment in the clinic, especially those present in the early stages of the disease, are of the utmost importance to the HD community. Magnetic resonance imaging (MRI) is a non-invasive, repeatable and versatile imaging technique that is capable of measuring a number of essential physiological parameters in the human brain. We will perform functional and neurovascular measurements using novel MRI techniques at ultrahigh field strength (7T) with enhanced sensitivity in prodromal (pre-symptomatic) and early affected HD patients and age-matched healthy controls. We will evaluate the suitability of the neurovascular readouts as imaging biomarkers in the early stages of HD. These studies will refine our understanding of functional and neurovascular abnormalities in prodromal and early HD populations. Furthermore, these parameters are expected to be important measures for tracking disease progression and assessing efficacy of huntingtin lowering strategies in the clinic.

(Continued on Page 11)



Driven From Her Heart to Research Fellowship

A special bond with her grandfather leads UI student to conduct Huntington disease research

By Sean Thompson/University of Iowa

University of Iowa senior Jolene Luther's face lights up as she talks about her grandfather and his major influence on her life.

Though William Holcomb died from Huntington disease in the fall of 2011, his impact continues to live on through Luther and the research she did this summer at the UI as a 2013 HDSA Donald A. King Summer Research Fellow.

The Belgium, Wis., native was one of two fellows selected by HDSA for this research initiative. The fellowships are intended to advance Huntington disease research while also ensuring the "best, brightest and most motivated young minds are introduced to Huntington disease and assist them as best we can so that they will join our fight against HD," said George Yohrling, Ph.D., HDSA Director of Medical and Scientific Affairs.

For 12 weeks this summer, Luther looked at MRI scans of Huntington disease research participants to identify whether or not there are increased levels of iron in the brain. She was mentored by UI HDSA COE Co-director Jane Paulsen, Ph.D., professor of psychiatry, neurology, psychology and neuroscience, and Hans Johnson Ph.D., assistant professor of psychiatry.

The relationship that defined a future fellow

A pre-med Spanish major, Luther has a love for medicine and science. But it's the special bond with her grandfather that Luther's mother, Stephanie Bernander, says led Luther to get involved in the Huntington disease research field.

"It's from her heart that she's driven to do this," Bernander said.

Luther says she and her grandfather were close from the start. They would go on many camping trips in Wyoming where Holcomb lived.

As his family had feared, Holcomb tested positive for HD when Luther was 11 years old. Her family had

(Continued on Page 6)

Driven From Her Heart

(Continued from Page 5)

great difficulty finding specialists and resources needed to properly care for their loved one.

"From there, I knew that I wanted to be that person that could help out a family who was struggling and didn't have the help that they needed," Luther said.

Memorializing through HD involvement

Luther felt empty the spring following her grandfather's passing and wanted to do something to honor him. She reached out to the UI HDSA COE and spent the summer working on writing projects as a public relations assistant. But she didn't stop there.

Luther's combination of high academic achievement, and her passion to do something special for the HD community, personifies the "ideal student" HDSA had envisioned for the fellowship.

Her fellowship research involved looking for increased iron levels in MRI scans of brains of people in the PREDICT-HD study who have tested positive for the HD gene but are not yet diagnosed with symptoms of HD (known as the prodromal stage of HD). These iron deposits are detectable on the scans by identifying dark, lower-intensity spots on the images known as hypointensities. Increased iron levels have already been identified in brains of people diagnosed with HD, Luther says, and also in a smaller study of prodromal individuals. Furthermore, increased iron levels are believed to be part of the disease process for neurodegenerative diseases like HD.

Taking the research one step further, Luther looked for any relationship between the amount of hypointensities in the brain scans and clinical or biological characteristics such as the UHDRS total motor score, CAG repeat length and CAP-score (an estimated proximity to age of motor diagnosis based on a calculation that accounts for age at the time of the study and CAG repeat length) for those same people. At the end of her 12-weeks of research, Luther says a statistical analysis showed a small correlation between the amount of hypointensities and total motor score, suggesting having more hypointensities may negatively affect HD functioning. There is more work to be done to reach a conclusion, but Luther's project has laid the groundwork for future research on this topic.

If the levels in prodromal individuals are higher overall than control participants and higher as a person progresses closer to estimated diagnosis, Luther says the iron deposits may be a biomarker or measure of disease progression for HD.

If this turns out to be the case, Yohrling says Luther and her mentors will have made an "incredibly significant" finding.

An everlasting connection

Bernander feels overwhelmed when she thinks about her daughter's pursuits in HD research and succumbs to tears when talking about it. In some ways, she says, Luther's work toward helping those with Huntington disease feels like the fulfillment of an unfulfilled dream of Bernander and her family, wishing at the time they could have done more to ease Holcomb's suffering.

"I think it would be easy to walk away at this point and just let [Huntington disease] fall from our lives," said Bernander, who is herself the Vice President of the HDSA Wisconsin Chapter. "To have Jolene be so committed, knowing that she likely won't have to face it in her personal life again, yet wanting to give back to all the other people that will experience what we did, it's beyond description just how proud I am of her."

"And I just know how proud my dad would be of her for everything she's doing. I know he's smiling down."

Luther's grandmother, Sue Holcomb, says this is exactly the way the kind and gentle William Holcomb would have wanted Luther to contribute to the HD community.

The Biology Behind the 2013 Nobel Prize
is "Under the Microscope" for Huntington's disease

By: Ramee Lee, PhD, Director of Molecular Networks, CHDI Foundation and George Yohrling, PhD, Director of Medical and Scientific Affairs, HDSA

This October, Drs. James Rothman, Randy Schekman, and Thomas Südhof were awarded the Nobel Prize in Medicine or Physiology for their landmark discoveries that are at the core of our basic understanding of how cargo, such as neurotransmitters, move within and between the cells in our body. To mobilize things from place to place in a cell, the body makes use of small, spherical structures called vesicles. These vesicles are like little membranous bubbles that package chemicals and can fuse to the cellular membrane to help get the chemicals out or inside of a cell. This results in a cellular message being turned on or off.

So why is this process so important? To answer this, let's use a couple of examples of particular interest for Huntington's disease (HD). Tetrabenazine (Xenazine), the only FDA-approved drug to treat the chorea associated with HD works by preventing the packaging of vesicles with the neurotransmitter, dopamine. It does this by inhibiting the Vesicular Monoamine Transporter 2 (VMAT2) protein that resides on the surface of vesicles. By blocking VMAT2, less dopamine can be packaged and released by cells. The result is the inhibition of the unwanted body movements in HD.

In addition to tetrabenazine, HD patients are routinely prescribed antidepressants to combat the anxiety and depression that are common in HD. Today's antidepressants work because they prevent cells from taking the neurotransmitter serotonin into cells. When serotonin levels build up outside cells, this triggers certain biological pathways into action that can result in decreased symptoms of anxiety and depression. The pioneering work of Rothman, Schekman and Südhof has paved the way for researchers to better understand and target this important cellular process with drugs to improve the human condition.

In cellular and animal models of HD, there is increasing evidence that the process of vesicle trafficking is dysfunctional in HD. The mutant huntingtin protein has been shown to bind many of the cellular proteins that Rothman, Schekman and Südhof reported to be essential for the proper movement of vesicles. To better understand this, the CHDI Foundation has initiated a focused inquiry into this area of research with experts in the field to determine what parts, if any, of this cellular machinery are broken in HD. If they identify a problem(s), it is possible that drugs could be used in an effort to restore normal vesicle function and could have a positive impact in HD.

Brain-derived neurotrophic factor (BDNF) is an important protein in the brain that plays a role in the survival of neurons and synapses and also in maintaining memory and learning. Normally, BDNF is packaged into vesicles in cortical neurons, transported and secreted to other areas of the brain to do its supportive jobs. In HD, the release of BDNF is thought to be impaired, and investigators such as Dr. Barbara Hempstead (Weill-Cornell Medical College) and Dr. Moses Chao (NYU) are targeting this mechanism to enhance the transport, and subsequently the activation of BDNF signaling pathways, in hopes of restoring synaptic health and cognitive function in HD. An additional approach is to increase BDNF levels through exercise and pharmacological means.

BDNF is one example of several different "cargos" whose transport is affected by the mutant huntingtin protein. Transport within a cell between two important structures called the endoplasmic reticulum (ER) and the Golgi complex is an essential first step in packaging cargo proteins into the proper secretory pathway for use within the cell or for extracellular release. Studies being performed by Dr. Folma Buss (University of Cambridge) aim to measure the rates of vesicle transport in this early part of the secretory pathway. The proper packaging of cargo in these initial steps relies almost exclusively on efficient packaging as the vesicles fuse and bud from the Golgi apparatus. If mutant huntingtin interferes with common machinery in early and late parts of the trafficking pathway, then perhaps similar targets could be intervention points for HD therapy.

CHDI is also tracking novel types of cellular discharge and fusion that may hold therapeutic potential for HD. For example, efforts are underway to better understand a special type of vesicle called an

The Biology Behind the 2013 Nobel Prize

(Continued from Page 7)

exosome that our bodies create to transport cellular material. Exosomes are vesicles that are present in many types of biological fluids, including blood and urine. Exosomes utilize a unique path of export from the cell to release its cargo. Exploratory investigations are underway by Dr. Neil Aronin (University of Massachusetts Medical School) to unlock the potential of exosomes as potential delivery vesicles to carry desired therapeutics into the brain. By understanding how this unconventional mode of secretion and uptake is altered in HD, the hope is that dysregulated cargoes that are trapped within these types of vesicles can be modulated to bring benefit to HD patients.

It is important to recognize that we are in the VERY early days of better understanding if this area of biology that garnered the Nobel Prize is altered in HD. Although some of these transport mechanisms remain elusive, this is an important area of biology. If specific vesicular dysfunctions in HD can be identified and confirmed by the basic biological studies currently underway with CHDI and their collaborators, these studies could one day yield therapeutic opportunities for HD patients.

Clinical and Observational Trials and Research Studies

Clinical and Observational Trials and Research Studies

What is a clinical trial and why is it important to participate?

A clinical trial is research using volunteers to answer specific disease questions or to test treatments. By volunteering, you contribute to medical research and treatment advances which, in turn, will help and provide hope to others.

There are two types of trials – observational and interventional. An observational study observes the natural course of HD while an interventional trial investigates whether a specific supplement, current drug or new experimental drug or treatment is safe and effective.

There is a critical need for volunteers to take part in trials so researchers can quickly learn if a treatment is effective. If it is, then they can move closer to approval; if not, then the scientist can move on to other possibilities.

The trials and studies that are currently recruiting are listed below along with contact information for each. Please consider becoming a participant in research today!

ENROLL-HD: is an international study that will accelerate the development of therapies for HD by:

- Compiling uniform clinical data and biological samples critical to better understanding the natural history of HD;
- Building an even more comprehensive database of HD information

- Serving as a platform to facilitate clinical sub-studies and the development and validation of novel assessment tools for HD
- Expediting recruitment in global clinical trials of candidate therapies in the coming years.

ENROLL-HD is open to everyone in the HD community.

There are currently 40 sites for ENROLL-HD in the US. To find a site close to you, please go to: **www.enroll-hd.org**

FIRST-HD: is a phase III trial of an investigational drug called SD-809 Extended Release in persons who have a diagnosis of HD. First-HD will look at how safe, tolerable and effective SD-809 ER is compared to a placebo in reducing chorea. The study will be enrolling participants who have been diagnosed with HD, have never taken tetrabenaziine (Xenazine® Nitoman®), and have chorea. The trial will last about 4 months. There are currently 10 sites in the US with more being added daily. To find a site near you, go to **www.huntington-study-group.org** or call **800-487-7671**.

HDQLIFE: the Validation of the Huntington Disease Related Quality of Life Measure is an observational study that uses a variety of tests and questionnaires to measure a participant's quality of life related to their social, mental, physical and cognitive health. Researchers hope to develop a new measure to evaluate quality of life for those affected by HD. Once the measure has been refined and validated by this study, researchers will use it in clinical trials to see if quality of life improves as a result of treatment.

There are currently 7 sites in the US. To be eligible, you must be positive for the HD gene and been clinically diagnosed with HD. For more information, contact HDQLIFE study team at **734-764-0644** or email **PMR-HDstudy@med.umich.edu.**

Role of Genetic Counselors in the Lives of Those At Risk for Huntington Disease:
This study is being conducted by a student pursuing a Master's degree at the University of Maryland in Baltimore. The study will look at how children of parents with HD first found out about the disease and their own family history. The main goal is to see if having a genetic counselor present when parents first tell their children of the diagnosis has an effect on how much information the children are given and how they cope with the information. The study is being conducted as a survey that will take about 30 minutes to complete. The survey is anonymous. If you are interested in participating, go to: **www.surveymonkey/s/5K8KS7B**.

Psychological Effects of Presymptomatic Testing in Huntington Disease and Their Effects on Familiar and Romantic Relationships:
This study is being conducted by a student pursuing a Master's degree at the University of California, Irvine. The study will improve understanding of how individuals are affected by the presymptomatic testing process and will provide context that will be useful to genetic counselors who work with people who are considering testing for HD. The study is being conducted as a survey and is open to anyone over the age of 18 who has had presymptomatic testing for HD. If you are interested in participating, go to **www.surveymonkey.com/s/HDSA_survey** or call Heather Voigt at **714-456-5837** for more information.

Note: This article is for informational purposes only. If you have a question about any study, please contact the study coordinator directly.

For more information please contact Robert Coffey in HDSA's National Headquarters at 1-800-345-HDSA (4372) ext. 210 or via e-mail at ***coffeyr@hdsa.org*** or visit our website at **www.hdsa.org/convention.**

Many Ways **to Give**

There are many ways for you to make a contribution to help HDSA improve the lives of people with Huntington's disease and their families.

- **Make a one-time Donation or a Tribute/ Memorial Gift to honor a friend or relative or the memory of a loved one:** Please visit our website, ***www.hdsa.org*** and click on the **"How to Help" icon**– select donate on the left side of the page. This will take you to a secure page where you can make a **direct donation** to HDSA.

  Or you can use the donation envelope located in this newsletter.

- **Donate Appreciated Stock and/or Mutual Funds:** Earn a charitable tax deduction for the full fair market value of the gift while you lower your capital gains taxes.
  - For information on how to make a stock or mutual fund donation please call 1-800-345-HDSA (4372), extension 235.

- **Establish a Family Fund:** Join with friends and relatives and pool your resources to honor your family or remember a loved one and make your donated dollars work harder than you could individually.
  - For information on how to establish a Family Fund please call 1-800-345-HDSA (4372), extension 235.

- **Make a Planned Gift:** Join the **HDSA Heritage Club:**
  - Remember HDSA in your Will or Estate Plans,
  - Establish a HDSA **Charitable Remainder Annuity Trust,** Charitable Lead Trust, **Charitable Remainder Trust, Charitable Remainder Unitrust,**
  - Name HDSA as a beneficiary of your retirement plan,
  - Name HDSA as a beneficiary of your life insurance policy,

  For information on making a planned gift to HDSA please call 1-800-345-HDSA (4372), extension 235.

- **Work Place Giving**
  - **Matching Gifts:** Your employer or organization may be part of the **HDSA Program,** which can double your donation.
    - To check if your Company has a matching gift program click on the **"How to Help" icon** – select Matching Gifts on the left side of the page. This will take you to a page where you can enter the name of your employer to see if they have matching gift program. If your employer is not listed, you can ask our Matching Gift list provider, Hep Development Services, to do a search to see if they have a matching gift program.
  - **United Way/Community Health Charities/ Combined Federal Campaign:** Giving at work through payroll deductions to support HDSA is simple and there are many convenient ways to contribute. Check to see if your employer participates in any of these workplace giving programs.
  - To donate through the Combined Federal Campaign (CFC) designate your contribution to the Huntington's Disease Society of America, CFC ID # 11238

- **Become a Corporate Partner:** Businesses of all sizes can help bring us closer to the day when there will be the last generation with HD.
  - Give a cash or grant donation.
  - Join an event: Participate or become a sponsor of the hundreds of HDSA events around the country, such as our Team Hope Walks or Celebration of Hope Galas.
  - Workplace Giving: Encourage employee giving through payroll deductions and show your employees that you support their philanthropic efforts by contributing a company match of the ir gift.

- **Donate Your Vehicle:** Call toll free 888-HDSA-151/888-437-2151 or e-mail ***donations@charitableautoresources.com*** to speak to an HDSA Vehicle Donation Representative. Our representative will schedule a pickup that's convenient for you, and provide you with confirmation of your donation.
  - Or visit our website, ***www.hdsa.org*** and click on the **"How You Can Help"** icon to donate your vehicle online. Select the Vehicle donation page, which will take you to a secure page where you can choose to make an online vehicle donation to HDSA.

Please visit our website regularly and browse the **HDSA Marketplace.** Purchasing a Care2Cure Bracelet or Necklace, amaryllis plant, golf polo shirt and other merchandise makes a difference – and helps us build awareness at the same time.

Human Biology Project Awards

(Continued from Page 4)

Dr. Robert Boggio, Senior Research Scientist, IRBM Promidis, Pomezia, Italy

Title: *Development of a novel, ultra sensitive bioassay for quantification of full-length mutant huntingtin in patient body fluids and analysis of different forms of huntingtin during disease progression.*

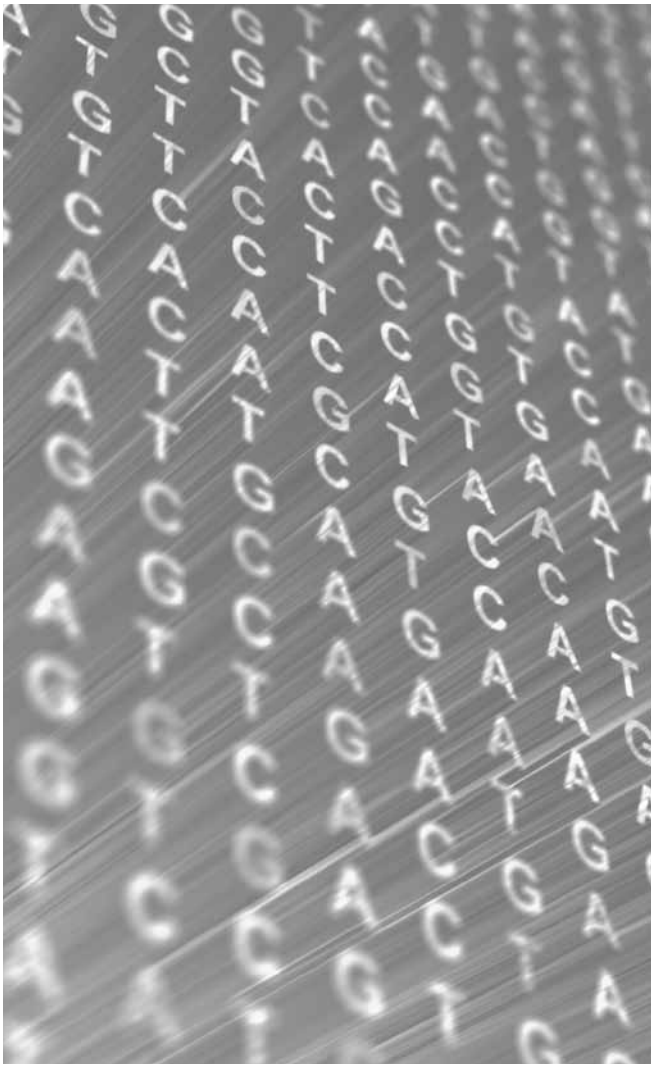
The long preclinical and clinical phases of Huntington's disease provide opportunities of early therapeutic interventions for disease-modifying therapies. A major obstacle to achieving this goal is the lack of quantitative, robust and reliable biomarkers for use in primary diagnosis, monitoring disease progression, patient stratification and evaluating efficacy of therapeutics in the clinic. Promidis is developing novel, sensitive, quantitative and robust immunoassay to enable quantification of mutant huntingtin protein levels in body fluids of patients, in particular cerebral spinal fluid (CSF) and plasma. The aim of this project is to develop a novel huntingtin immunoassay specifically recognizing "full length mutant huntingtin" and to assess the levels of huntingtin during disease progression in human bio-fluids such as plasma, Peripheral Blood Mononuclear Cells (PBMCs) and CSF in patient samples provided by HDSA Centers of Excellence.

The development of ultra-sensitive assays for huntingtin can impact HD drug development on several levels: 1) Characterization of wild-type and mutant huntingtin in clinically relevant samples will provide a baseline for huntingtin levels at different stages of disease and can support stratification of patient populations for clinical trials. 2) Quantitative detection of huntingtin in the CSF (as a surrogate of brain tissue) may provide evidence of treatment efficacy of huntingtin lowering therapies in the central nervous system. 3) Assays for quantification of wild-type and mutant huntingtin (including its different structural conformations and fragments) can be used to better understand the pathophysiology of HD and may lead to the identification of novel treatment targets.

Dr. Helen Budworth, Project Scientist, Lawrence Berkeley National Laboratory

Title: *Metabolomic and gene expression analysis of fatty acid metabolism biomarkers of Huntington's disease.*

Since HD primarily affects the brain, monitoring the onset of symptoms and progression of the disease are extremely difficult. Biological markers of disease that are present in the blood of patients would be of great utility in tracking the disease and also in testing how effective prospective therapies are. Huntington's disease is known to affect a patient's metabolism. For example, patients often experience dramatic weight loss despite increased caloric intake. Therefore, we will use metabolic markers of disease that are present in the blood, such as fatty acids, to help us better track disease progression and test effectiveness of novel therapies. This metabolic profile will be integrated with a gene expression profile from the same human HD blood to create a "metabolomic signature" for HD.



Huntington's Disease
Society of America
505 Eighth Avenue Ste 902, New York, NY 10018