HD Therapeutics Conference 2013 Updates: Day 1

Day 1 of our coverage of the Huntington's Disease Therapeutics Conference

By Dr Jeff Carroll **April 09, 2013** **Edited by Professor Ed Wild**

Our first daily report from the annual Huntington's Disease Therapeutics Conference in Venice, Italy. We'll be bringing you live updates via Twitter over the next two days. You can use HDBuzz.net, comment on Facebook or tweet @HDBuzzFeed to send us questions, comments and queries.

9:00 - Buonasera from Venice, where HDBuzz will be tweeting the latest Huntington's disease research news from the annual therapeutics conference

9:08 - Huntington's disease therapeutics conference kicks off with a session on systems biology

The therapeutics conference is being held in the European city of Venice this year.

9:09 - Systems biology tries to understand networks of connected chemicals and processes, rather than focusing narrowly on one thing

9:10 - The hope is that this systems approach will help us better understand Huntington's disease and develop and test treatments

9:12 - **Robert Pacifici** of CHDI: one tiny change, the HD mutation, causes lots of changes in the biology of people who carry it

10:35 - **Jim Rosinski** of CHDI: new technologies are being used to get better understanding of HD, like RNA sequencing - what genes are on/off

10:38 - **Rosinski**: "Amazing things are possible now" and the HD gene gives us a head start for understanding the disease

10:38 - HD drug development company CHDI is integrating techniques from engineering and computer science to better understand HD

12:10 - **Lesley Jones** is studying HD mice to understand how much they look like HD patients. In many important ways they're similar.

12:16 - **William Yang** is using mouse brains to map out which proteins the HD protein interacts with. More targets for drug developers

12:29 - Collecting all this data from HD patients and animals poses computational challenges, that **Steve Horvath** is working hard to fix

12:43 - With nearly 300 researchers attending, this is the biggest ever HD therapeutics conference

14:33 - Why do we have an HD gene at all? **Elena Cattaneo** is studying diverse animals, including sea urchins, to try to understand

14:53 - According to **Dr Cattaneo**, the normal HD gene seems to have important roles during the development of the brain

15:10 - If the HD gene is important for brain development, what happens in brains of people born with the HD mutation? **Peg Nopoulos** studies this

15:11 - **Nopoulos'** HD-KIDS study follows school-age kids at risk for HD. Gene testing is done without anyone involved finding their result

15:14 - **Nopoulos**: major brain changes occur throughout childhood

15:19 - **Nopoulos**: KIDS-HD allows us to study not just HD but also the role of huntingtin in normal brain development

15:20 - Even in HD-negative people, there is variation in the number of CAG repeats in the huntingtin gene.

15:25 - In kids who don't have the HD mutation, some aspects of thinking and behavior are subtly influenced by CAG repeat length.

There are nearly 300 researchers at the conference this year - making this the biggest Huntington's Disease therapeutics conference ever held.

15:28 - Some brain areas are also affected by the number of CAG repeats in the HD gene - in kids who are **NEGATIVE** for the HD mutation.

15:29 - Fascinating insights into the core mystery of Huntington's disease from**Nopoulos**: what does the normal huntingtin protein do?

15:33 - In kids who DO carry the HD mutation,**Nopoulos** finds subtle changes that are compensated for, but are their brains more vulnerable?

15:50 - Audience question from statistician raises concerns that statistical methods used to test **Nopoulos'** data may not be rigorous enough for small sample

16:25 - **Jeff Macklis** of Harvard studies the neurons connecting brain's cortex (crinkly surface) to the basal ganglia (movement control bit)

16:44 - **Macklis**: understanding of how different cell types become neurons and how they function has improved dramatically in past 5 years

17:16 - **Ali Brivanlou** of Rockefeller University is an expert on human development. Huntingtin protein is found in the very earliest embryo cells

17:17 - Using RNA sequencing, **Brivanlou** has identified 4 new RNA message molecules for huntingtin in embryo cells. These could produce new proteins

17:18 - **Brivanlou's** 'new' huntingtin molecules are created by reading the huntingtin gene in different ways to create 'spliced' RNA messages

17:20 - The function of these new huntingtin forms in embryonic cells is not known. Remember we're talking about normal, not mutant huntingtin here.

17:31 - **Brivanlou**: Embryos without huntingtin die after a week of development, but why? It changes the response to growth molecules

17:34 - **Brivanlou**: huntingtin has an influence on the metabolism of embryos - that's how they use energy & do chemical reactions.

17:38 - **Brivanlou**: in embryos with the HD mutation, sugar metabolism is unexpectedly altered. It's unclear whether this affects development

17:43 - Today's biggest news: Roche & Isis sign $30million deal to take gene silencing drugs for HD to trials

Sunset conclusions

On the opening day of the biggest ever Huntington's disease therapeutics conference, we heard a lot about studying the complexities of the brain, and the role of the huntingtin protein, still mysterious twenty years after its discovery - but not very much about drugs. But understanding how the brain develops and works, and 'knowing the enemy' - the mutant huntingtin protein and its damaging effects - are both crucial if we are going to safely and rapidly develop the treatments we're all working towards. You never know where the next big idea will come from, and it's from fundamental, imaginative research of the kind we've hear about today that bright new ideas for possible treatments may well spring up.

The authors have no conflicts of interest to declare.For more information about our disclosure policy see our FAQ...

GLOSSARY

huntingtin protein The protein produced by the HD gene.

gene silencing An approach to treating HD that uses targeted molecules to tell cells not to produce the harmful huntingtin protein

therapeutics treatments

CAG repeat The stretch of DNA at the beginning of the HD gene, which contains the sequence CAG repeated many times, and is abnormally long in people who will develop HD

metabolism The process of cells taking in nutrients and turning them into energy and building blocks to build and repair cells.

neuron Brain cells that store and transmit information

embryo the earliest stage during the development of a baby, when it consists of just a few cells

RNA the chemical, similar to DNA, that makes up the 'message' molecules that cells use as working copies of genes, when manufacturing proteins.