

# L.A.D.S.S. News

Newsletter of the Livingston Area Down Syndrome Society

4th Quarter 2004

## Amyloid Plaque

By David Melvin

Amyloid Plaque, what is it and how does it relate to Down syndrome. A relationship between Down syndrome and Alzheimer disease has been discussed for many years. Almost all persons with Down syndrome show evidence of Alzheimer like brain plaques after age 35 years of age. It is important to note however, that not all persons with Down syndrome go on to develop Alzheimer's.

Most individuals with Down syndrome, regardless of whether or not they develop Alzheimer's later in life, begin to develop amyloid plaques in their 20's. Researchers have been able to link these Down syndrome plaques to the extra copy of chromosome 21.

Chromosome 21 houses the amyloid precursor protein (APP) gene, one of the early-onset Alzheimer's disease genes. Malfunction of the APP gene causes abnormal processing of amyloid precursor protein. When amyloid precursor protein is processed abnormally, fragments of the protein, called beta amyloid, begin to accumulate in the brain and form the amyloid plaques found between nerve cells. Because individuals with Down syndrome have an extra copy of this gene, it is thought that not only is the APP gene malfunctioning but it also is overpowering beta amyloid protein. This leads to excessive development of plaques, eventually causing the onset of Alzheimer's symptoms.

Several studies have discussed apparent age-dependent pattern of plaque formation in both persons with Down syndrome and without Down syndrome. Younger persons with Down syndrome may have many diffuse plaques but not clinical dementia. Many elderly patients also have multiple diffuse plaques without exhibiting dementia. It is estimated that 15- 30% of persons with Down syndrome who are over 40 years develop dementia, but this number is difficult to substantiate given the special problems in diagnosing dementia in this population. Dementia is not easily detected

in persons with Down syndrome.

One good example that illustrates that not all persons with Down syndrome go on to develop Alzheimer's is that of Ms. Smith of the Chicago area. Ms. Smith lived a rich, full life and was still functioning well without apparent signs or symptoms of dementia when she died of complications from a broken hip at the age of 83 in 1994. She was believed to be the oldest person with Down syndrome living in the U.S.

Right now there are scientists in the United States that are racing to find a treatment for Alzheimer's. Their research will definitely have a significant impact on those with Down syndrome. This is research that is worth keeping a close eye on. ä

## Antioxidants

The presence of excess free radicals that damage brain nerve cells has been found in individuals with Down syndrome. Recently, scientists have found that antioxidants may help protect the brains of individuals with Alzheimer's from excess free radical damage to nerve cells. They also may prove to be helpful in protecting nerve cells of individuals with Down syndrome from Alzheimer's disease. ä

## Genetic Study Shows Down Syndrome Complicated

The results of a mouse-based study published Oct. 22 in *Science* by Johns Hopkins scientists suggest the genetics of Down syndrome may be far more complicated than thought, diminishing hopes for any near-term breakthroughs.

David L. Nelson, a professor of molecular and human genetics at Baylor College of Medicine who co-wrote an accompanying editorial in the journal, called the study findings "mixed news" for researchers working on Down syndrome.

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"The downside is that it makes it less likely that one or a few genes are mostly responsible for Down syndrome, which has been a cherished hope," Nelson said. "The upside is that it gives us a clearer view of how complicated the problem really is." ♥

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## Alzheimer's Drug May Boost Speech

U.S. researchers said a drug already approved for treating Alzheimer's disease might also boost expressive language skills in children with Down syndrome.

Researchers at Duke University Medical Center said language improvements stemming from the drug known as **donepezil hydrochloride** potentially could help improve learning in children with the condition.

In a 22-week trial, seven children with Down syndrome between ages 8 and 13 took the drug for 16 weeks. The children showed improvements in their ability to communicate thoughts and feelings, the Duke team reported.

The promising results warrant further research, but the team urged caution because the study was not conducted as a double-blind trial, in which the researchers and the patients' families could not know if their child was receiving the drug.

The team said they do not recommend prescribing the drug to children with Down syndrome until more rigorous studies are done. ☺

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## Periodontal Disease

Dr. Ahmed Khocht, associate professor of periodontics believes people with Down syndrome have genetic changes that produce more inflammation than normal, leading to gum disease. Eighty-five to 90 percent of people with Down syndrome have periodontal disease, and nothing else has explained the level of disease. He believes perhaps there is something in their system that produces more inflammation than normal. "If our theory is correct, then people with Down syndrome are at higher risk for other inflammation-related diseases as well, including cardiac problems," he said. By targeting the faulty inflammatory response--for instance, by prescribing anti-inflammatory medication--may have wide-ranging benefits for Down syndrome patients, Dr. Khocht said. ☺

## L.A.D.S.S Incorporated

It is with great pleasure that I announce that the Livingston Area Down Syndrome Society is now officially incorporated as a non-profit organization with the State of Illinois.

Our group attorney Tom Herr, of Pontiac, has filed all the appropriate paperwork. We are now awaiting official 501(c)3 status from the IRS. I have been told that it could take a few months before that status goes through. The official board members of the group are: David C. Melvin, Jim Martin, and E.J. Flanigan. David Melvin will discuss the incorporation process at our next meeting.

Also, the LADSS Website is up and running. You can now check up-to-date information about our group, including meeting dates, pictures, etc... online.

<http://www.ladss.org>

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### Our Next Meeting:

Sunday November 21<sup>st</sup>, 2:00 P.M., John. W. Albrecht St. James Hospital Conference Room (off of the lobby). RSVP by calling 815 689-2202 or Email: [david@ladss.org](mailto:david@ladss.org) by Nov. 14<sup>th</sup>, 2004

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