



# FIA NEWS

April 2007  
Volume 4

*A Newsletter for the Familial Intracranial Aneurysm Study*



## **Study Update from the Principal Investigator** **Joseph Broderick, M.D.**

The FIA Study, the largest study of the genetics of brain aneurysm in the world (currently more than 450 families), has made tremendous contributions to our understanding of why and in whom brain aneurysms form. In this news letter, we have summaries from several of our investigators about some important initial findings that will be presented in San Francisco in February at the International American Stroke Association meeting.

Bob Brown, MD and John Huston, MD summarize that in our FIA families nearly 20% of persons without a known aneurysm who have smoked or have hypertension have an unsuspected aneurysm by MR angiography. This will definitely impact how family members in similar families are screened in the future. Tatiana Foroud, PhD and I will be presenting data regarding several areas of our chromosomes that may harbor the genes related to development of aneurysms. We will also show how smoking seems to increase the impact of certain genetic regions (so please stop smoking if you still do!!). Finally, Dan Woo, MD will present data about how aneurysms seem to appear earlier (younger people) in succeeding generations. This may also eventually affect who and when people are screened.

While we have made great strides, we are now moving forward in several exciting ways. One such way includes using a brand new technology for identification of at-risk genes that incorporates 500,000 markers across our chromosomes (about 100 x as many as we used in the data presented by Dr. Foroud). We hope that this will help use nail down the specific genes related to brain aneurysms. We will also plan to recruit 300 new families in a second Phase of the study (FIA II) since we will need to confirm any genes found to be important in the first group of families and possibly to find other genes as well. We have applied for additional funding at the NIH this fall.

None of this would be possible without the tremendous participation of our patients, their families, and our dedicated group of study coordinators and investigators. We are proud to work with such an exceptional group of people.

Joe Broderick  
Principal Investigator, FIA Study

### **Visit the New and Improved FIA Website**

The FIA website, [www.fiastudy.org](http://www.fiastudy.org), is an online information center for anyone seeking more information. The site has general information, past newsletters, links to other brain aneurysm sites and site locations with email addresses to contact a center near you. The study is not currently enrolling new families, but we still would like to hear from you.

### **For more information on the FIA Study, please contact:**

Laura R. Sauerbeck, RN, BSN, MS, CCRC  
Assistant Professor of Research  
University of Cincinnati  
Cincinnati, Ohio 45267  
Toll Free: 800-503-3427  
Email: [Laura.sauerbeck@uc.edu](mailto:Laura.sauerbeck@uc.edu)

## Progress in Understanding the Genetics of Intracranial Aneurysms

By: Tatiana Foroud, PhD

By studying close relatives of individuals who have had a ruptured intracranial aneurysm, several studies have shown that genes are an important risk factor for IA. These studies have estimated that the siblings, parents and children of an individual with a ruptured aneurysm have a two to four time higher risk of also having an aneurysm as compared with an individual from the general population. The focus of the FIA study is to identify genes that either increase or decrease an individual's risk of developing an intracranial aneurysm. In order to identify these genes, the FIA study is focused on identify and studying families in which multiple members have had an intracranial aneurysm. Through the generous participation of individuals and families, the FIA study has been able to recruit and study over 400 families.



For the past 4 years, we have been studying the genetic material, or deoxyribonucleic acid (DNA) from the families who have participated in the FIA Study. The techniques in the laboratory have advanced rapidly in the past few years. In the past, researchers would only be able to study a few hundred spots of DNA selected from the total of 3 million base pairs of DNA. Very recently, new tools have allowed researchers to study thousands of DNA spots in the time it used to take to do a few hundred. As a result, the FIA Study researchers were recently able to complete analyses that compared the DNA from nearly 6,000 different DNA positions. The goal of the analyses that were performed was to sort through the data from these 6,000 DNA positions and identify a few positions that appeared to be inherited in common by family members with intracranial aneurysms. If such regions can be found, they would suggest that a gene or genes affecting the risk for IA resides on that chromosome.

We presented results from our initial analyses at the Stroke Meeting which was held in February. Our analyses suggest that parts of chromosomes 4, 7, 8 and 12 may harbor a gene or genes that increase the risk for intracranial aneurysms. We performed further analyses and the data suggest that the genes in three of these four regions might have greater effect in those families that smoke heavily. This is added incentive to consider smoking cessation programs in order to decrease the risk for an intracranial aneurysm.

We look forward to continuing to update you and your family on the results of data from the FIA Study. Thank you for your continued support of this important study. You are critical to the successful identification of genes that contribute to the risk for IA.



### MRA Update

The FIA Study offers a study MRA to high-risk family members who are not diagnosed with an aneurysm. As of March 31, 2007, 476 study MRAs have been done, and 94 (19.7%) family members have been identified as having a previously unknown aneurysm.

Dr Robert Brown of the Mayo Clinic has looked at who may be at risk for having an aneurysm. He found that in the FIA study siblings (brothers/sisters) of a person with a known aneurysm, who are older than 30 years of age, are female and have a history of smoking or high blood pressure are at increased risk of having a brain aneurysm on the screening MRA. These findings have been submitted for publication.

### Informative Websites

Please see <http://clinicaltrials.gov> and search "Familial Aneurysm" to see the current progress of the study.

Two great websites for aneurysm support written by those who share the same experiences.  
<http://www.bafound.org>, <http://www.westga.edu/~wmaples>