

## Genetics and MS

### **93. What is risk of developing of MS?**

An individual's risk of developing MS increases several-fold if a close family member has MS. While the risk of developing MS for a person in the United States is approximately 1 in 500 (0.2%), the risk for a person who has a parent with MS increases to about 1 in 40 (2.5%). Thus, the risk increases significantly for a person whose parent has MS, but still remains relatively low.

In families in which MS occurs in many relatives, the risks for any given individual are significantly higher than they are for an individual who has no family members with MS. The calculation of the exact risk is complex and not well understood. The identical twin of a person with MS has a 25% to 30% risk of acquiring MS, while a fraternal twin's risk of acquiring MS is about 5%.

### **94. What is incidence of African-Americans (AAs) and MS?**

The incidence of MS in native continental Africans is almost zero. However, that risk changes in the African-Americans. Although it is unclear why MS is seen more commonly in African-Americans than continental Africans, it is partly contributed by the genetic admixture from inter-racial marriages. Several genetic studies have pointed to this possible factor. However, this remains as one possible risk factor and certainly does not explain the risk of MS in African-Americans in its entirety. The influence of environmental factors remains largely unknown and could contribute to the development of MS in African-Americans.

Several studies have also suggested that MS in African-Americans tends to be more aggressive. The frequency of relapses and the rate of progression seem to be faster than Caucasians. Moreover, it has also been suggested that African-Americans with MS tend to respond less favorably to treatments than Caucasians. These observations need to be replicated in larger number of patients in prospectively designed studies.

Several large studies are now underway to better understand and treat MS in African-Americans.

### **95. What is the association between MS and other autoimmune diseases?**

In general, having one autoimmune disease like MS raises the chance of having a second autoimmune disease. Overall, the risk remains low but it is slightly higher than a person with no autoimmune disease. Examples of other autoimmune diseases are myasthenia gravis, type I diabetes, Crohn's disease, rheumatoid arthritis, and lupus. Studies have shown the genetic risk factor of autoimmune diseases is associated to certain genes that regulate immune system. One such region is called HLA-DR2, and has been consistently associated with MS and other autoimmune diseases.