

Genetics of Vitiligo Susceptibility

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What causes vitiligo? One clue is that vitiligo is sometimes passed from one generation to another, suggesting there are genetic factors that determine whether or not an individual is susceptible to having vitiligo. This may depend on the genes they inherit from their parents. Unlike other "well known" genetic diseases involving single genes, such as cystic fibrosis, vitiligo and other autoimmune diseases appear to involve many susceptibility genes. Some of these genes might be important for the immune system, which normally patrols the body and eliminates infectious agents and tumor cells. But in some vitiligo patients the immune system appears to attack and destroy melanocytes, the pigment producing cells of the skin. Other vitiligo susceptibility genes might be involved in melanocyte function, as researchers have shown that there are biochemical differences in the skin cells of Vitiligo, patients. Finally, there are also probably environmental factors, such as viral infections or damage to the skin caused by sunburn or trauma, which may contribute to the onset and/or progression of vitiligo.

Our laboratory is trying to identify genes involved in vitiligo susceptibility. We have been using genetic association studies to identify vitiligo susceptibility genes. These studies compare gene variations present in vitiligo patients with those present in people that do not have vitiligo. If any gene variations are found more frequently in the patient group, a role in causing vitiligo is suggested. We are also looking for the inheritance of these gene variations in families. Finding gene variations that are nearly always inherited by persons with vitiligo can help to confirm that the gene is really involved. Our hope is that by identifying which genes are involved, what their normal function is, and what genetic changes are found in vitiligo patients, it may be possible to design new treatments based on understanding those genes. Knowing which genes are important may also allow genetic testing for individuals that might be predisposed to having vitiligo. In those cases environmental risk factors can be more carefully avoided.

We have excluded many genes that were originally suspected as having a role in causing vitiligo, but more importantly we have evidence that some genes may indeed be involved in vitiligo susceptibility. These genes include LMP7 and/or TAP1, which have been implicated in other autoimmune diseases and control how immune cells detect the presence of foreign or unusual proteins in cells, and CTLA4 and/or CD28, which regulate the activation of T lymphocytes of the immune system. These and other candidate genes are being studied further, but more families are needed to confirm most of these results.

We are continuing to collect blood samples from vitiligo patients and family members. Anybody with vitiligo is welcome to participate, but it will be especially helpful to have more families participate where both parents and perhaps a sibling are also available, regardless if they have vitiligo or not. We also need samples from all racial and ethnic backgrounds.

For more information about how you can participate, please see the website:
www.med.ufl.edu/path/faculty/mccormac/particip.html