

# The Genetic Link

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In every individual, an estimated 25,000 genes are interacting in concert. These are tiny chromosomal components that define our personalities, physical characteristics, whom in our lineage we resemble, and even our health. In discussing arthritis, the logical question as it pertains to genes is: what do the two have in common? The short answer is: plenty. More and more studies are demonstrating that genes play a significant role in whether humans develop certain diseases and disabilities—including arthritis.

## OSTEOARTHRITIS AND GENETICS

Osteoarthritis, the most common type of arthritis, is often referred to as degenerative joint disease. Research has shown that genetics may play a vital role in the development of this form of arthritis. In fact, at least one study has demonstrated that genetic factors significantly contribute to arthritis of the hip in female patients.

A 2005 study reported in *Clinical Orthopaedics and Related Research* found that genetics appears to influence the development of osteoarthritis as well. That study, involving 49 families with at least one sibling presenting with osteoarthritis, found that the other offspring were three and a half times more likely to develop osteoarthritis than people who did not have a family history of the disease.

In a study cited by the American College of Rheumatology, which evaluated the role of genetics in osteoarthritis of the hand, investigators found that sisters of women diagnosed with the disease were twice as likely to develop osteoarthritis as the general public. Study findings were even more sobering when siblings had advanced disease. Then, the risk for the remaining siblings to develop osteoarthritis was five to seven times greater.

## GENETICS AND RHEUMATOID ARTHRITIS

In recent studies, rheumatoid arthritis, an often crippling, inflammatory form of osteoarthritis, has been shown to have both genetic and environmental origins. The immune system gene identified as HLA-DR4, which increases susceptibility to the disease, is found in 60 to 70 percent of rheumatoid arthritis patients of European ancestry compared with only 30 percent of patients in the general population. Studies of twins are helpful in aiding scientists to determine the degree of inheritance of rheumatoid arthritis. However, while some twin studies have been more conclusive in indicating heredity may be the determining factor in participants developing rheumatoid arthritis, others have posed a strong case for environmental factors playing a vital role. Additional investigation is needed to determine the definitive cause of this type of arthritis.

## OTHER RISK FACTORS AND THE GOOD NEWS

While arthritis is a complex disease that has no single cause, genetics appears to be one factor that contributes significantly to its onset. However, a variety of other factors, including gender, also appear to play a role. While 60 percent of all people who develop arthritis are women, gout, characterized by swelling and pain in a joint (particularly at the big toe), is a form of the disease more commonly found in men. Age, lifestyle and environmental factors also are critical in the development of arthritis.

Clearly, information gleaned from studying the genetic links between family members suffering with arthritis is giving scientists and physicians alike an edge in treating patients currently suffering with the disease and those who may develop it in the future. This knowledge may be a road map to new treatment regimens and strategies that will help reduce pain in patients and potentially prevent or delay the condition's onset. **EVENTS** Developments in Hip & Knee Arthritis Treatments Thursday, Nov 8, 6 to 7:30 p.m. John Velyvis, MD, Orthopedic Surgeon Annenberg Center for Health Sciences 760-568-1234 Sponsored by Guthy-Renker®