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Gene discovery points to new possibilities for the treatment of rheumatoid arthritis

Swedish researchers at the University of Lund and Arexis AB have identified a gene that plays a key role in arthritis development. This breakthrough, published in *Nature Genetics*, will be of crucial importance for the development of new therapies against rheumatoid arthritis (RA) as well as other severe inflammatory diseases such as multiple sclerosis.

RA is a chronic and debilitating autoimmune condition that results from a complex interplay between several genes and environmental factors. This complexity has eluded scientific efforts to identify the individual genes that contribute to disease development – until now. The research team headed by professor Rikard Holmdahl, one of Arexis' founders, made their discovery through detailed characterisation of specific rat strains that develop a condition similar to human RA. The identified gene, *Ncf1*, has been previously described, but has never before been associated with RA. It points to a novel mechanism that regulates disease severity and causes joint erosions, which are also typical manifestations of human RA. *Ncf1* produces a subunit of an enzyme complex that regulates the activation of T cells, a class of immune cells which are primary culprits in RA development. The information will now be exploited by Arexis in a drug discovery programme.

Professor Rikard Holmdahl says: "Due to the genetic heterogeneity of the human population, there has been a growing pessimism among scientists regarding the possibility of identifying genes associated with common diseases. We have now shown that our strategy works and that our extensive research efforts have been worthwhile. This research strategy will help us identify additional genes and provides detailed insight into their role in the disease process. At the same time, we are generating important research tools that enable us to develop novel and more specific therapies in a faster way.

"This demonstrates the power of genetics to pinpoint novel mechanisms that can be exploited in drug development. This new groundbreaking biological information gives us opportunities to develop more efficient and precise principles for RA therapy", says Dr. Lennart Hansson, CEO of Arexis.

Arexis AB is a drug discovery and development company pioneering the use of genetics in highly selected disease models to pinpoint the specific genes involved in multifactorial metabolic and inflammatory diseases. Founded in 1999, Arexis is dedicated to address unmet medical needs and deliver improved therapies based on effective and selective new drugs. The main office is located in Gothenburg.

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