

Rheumatoid arthritis, a complex multifactorial disease: on the way toward individualized medicine.

Glocker MO, Guthke R, Kekow J, Thiesen HJ (2006) Rheumatoid arthritis, a complex multifactorial disease: on the way toward individualized medicine. *Med Res Rev* 26(1), 63-87.

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Abstract

With the availability of the human genome sequence and those of related species like chimpanzee, mouse, and rat, data driven research for tackling the molecular grounds of rheumatoid arthritis (RA), a multifactorial polygenic disease, can be considered a realistic challenge to the scientific community. A comprehensive research strategy is presented enabling the integration of multiple research efforts on studying autoimmunity by so called systems biology approaches. An integrative scientific concept is discussed of how to unravel molecular mechanisms of complex diseases by making use of state-of-the-art methodologies in functional and comparative genomics. A continuous interchange of data-driven and hypothesis-driven research is adjoined to determine the nature of rheumatic diseases with autoimmune background. Instead of studying single genes and proteins, RNA and protein microarray profiles are currently obtained in numerous research projects producing read-outs termed gene signatures rather than DNA and/or protein markers. A comprehensive study of the RNA, protein, and metabolite regimes is undertaken that eventually will lead to a

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