

# This Week's Citation Classic®

**Klein J.** The major histocompatibility complex of the mouse. *Science* 203:516-21, 1979.  
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Although the major histocompatibility locus (Mhc) was discovered as early as 1936 and its function became known in 1974, a great deal of confusion persisted for years in regard to its involvement in various immune responses. I formulated a unified hypothesis of the Mhc, according to which only two classes of Mhc loci exist, class I and class II, both participating in the recognition of foreign antigens by T lymphocytes. This hypothesis also provided an explanation for the extraordinary polymorphism of the Mhc loci. [The *SCI*® indicates that this paper has been cited in over 420 publications.]

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I wrote the paper in the early summer of 1979. In that year I moved from Dallas, Texas, to Tübingen, Federal Republic of Germany, and, while waiting for the laboratories to become fully operational, I used some of the time to interpret the then-available knowledge of the major histocompatibility locus (Mhc). I remember the time quite well because of the beautiful weather that allowed me to do most of the writing in the garden; I was pleased to have moved to such a pleasant climate. Little did I know that this summer would be exceptional and that all those following would turn out to be rainy, cold, and miserable—that, at least, is how I remember them.

I wrote the paper to advance a particular point of view. At that time there was still a great deal of discussion on how the immune response genes fit into the Mhc concept and on the meaning of the asso-

ciation of many other traits with the complex. My view was that there were only two classes of Mhc genes, which I designated class I and class II, and that virtually all the Mhc-associated traits, including the control of immune response, were controlled by one or the other class. Moreover, it seemed to me that principally both classes carried out the same function—to provide self-context for the recognition of nonself molecules. My colleagues and I formally proposed this "unifying hypothesis" of the Mhc in 1981.<sup>1</sup> This interpretation is now widely accepted.

I presume that one of the reasons this paper has been cited so often is that it introduced the now commonly used terms class I and class II. Actually, I had already introduced these terms two years earlier in an article written for a book that is not widely known.<sup>2</sup> I intentionally selected designations that are free of any functional implications. The common mistake people make is to choose names that are too specific, forgetting that, as our knowledge progresses, such designations often become anachronistic. The term "Ia loci," which is sometimes used instead of class II loci, is a good example. The Ia stands for immune response region associated, which is a double misnomer: first, there is no special immune response region in the Mhc, since the class I loci control immune response to the same degree as class II loci, and second, the loci are not associated with the region, they are the region. No such problems exist with the designations class I and class II. There can be classes of different things—people, potatoes, or loci. The designation is thus neutral, and I am therefore pleased that it has been accepted for the Mhc loci. (By the way, I used the abbreviation Mhc rather than MHC because the rules for genetic nomenclature<sup>3</sup> require that in a genetic symbol only the first letter is capitalized.)

1. Klein J, Juretić A, Baxevanis C N & Nagy Z A. The traditional and a new version of the mouse *H-2* complex. *Nature* 291:455-60, 1981. (Cited 295 times.)

2. Klein J. Evolution and function of the major histocompatibility complex: facts and speculations. (Götze D, ed.) *The major histocompatibility system in man and animals*. New York: Springer-Verlag, 1977. p. 339-78. (Cited 80 times.)

3. Lyon M F. Rules and guidelines for gene nomenclature. (Green M C, ed.) *Genetic variants and strains of the laboratory mouse*. Stuttgart, FRG: Gustav Fischer Verlag, 1981. p. 1-7.