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Restriction-Modification Systems

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I. A CUT ABOVE (AND ANOTHER BELOW)

In 1978 the Nobel Prize for Physiology or Medicine was awarded to Werner Arber, Daniel Nathans, and Hamilton Smith "for the discovery of restriction enzymes and their application to problems of molecular genetics" (for more information, visit <http://www.nobel.se/laureates/medicine-1978.html>). While most excellent science is never recognized by a Nobel Prize, and though many scientists have contributed to our understanding of restriction-modification systems

(not least the coworkers of the prize winners), the Nobels do indicate the importance of this field of study as well as identifying some of its key pioneers.

Werner Arber discovered restriction enzymes during the 1960s, nicely illustrating the point that discoveries of major importance can be made as completely unanticipated benefits of pursuing basic research problems. Dr. Arber was trying to understand a phenomenon of bacteriophage biology that had been seen in the previous decade. The term "restriction" comes from the observation that some strains of *E. coli*