

GENES ON THE MOVE



At Cold Spring Harbor Laboratory on Long Island, New York, **Barbara McClintock** spent more than half a century analyzing color differences and other variations in corn kernels (each of which is actually an embryonic corn plant). On the basis of mapping studies, analogous to those carried out with *Drosophila* in Morgan's laboratory, she deduced that the changes she observed were not the result of ordinary mutations. Instead, she postulated, the changes came about as a result of the



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movement of genes, or «controlling elements» that jumped from one place to another on the chromosome – or even from one chromosome to another.

The findings of McClintock's work, first published in 1952, were largely ignored. Like Mendel before her, she was a lonely traveler with an odd tale that did not fit into the scheme of things as then understood. James Watson, who has also worked at Cold Spring Harbor (first as a nineteen-year-old graduate student, then as its director for years and as its president), once described McClintock as «fiercely independent, beheld to no one». Despite the lack of recognition, she stubbornly pursued her research, sometimes working without pay. «It was fun», she said, «I could hardly wait to get up in the morning».

McClintock was more than vindicated by a rush of discoveries, some thirty years later, of a host of movable genetic elements such as those she had first postulated. «Jumping genes», or transposons, as they came to be known, move from place to place on the chromosome and influence the expression of other genes.

When she was 81 years old, McClintock received the Nobel Prize.

Her life did not change much, however. She continued her work at Cold Spring Harbor until shortly before her death at the age of ninety. «There are really three main figures in the history of genetics» Watson noted at a tribute to her the year before. «The tree M's: Mendel, Morgan, and McClintock. Gregor Mendel and Thomas Hunt Morgan showed us how regular the genome is, and Barbara McClintock showed us how irregular it is».

[Adapted from Helena Curtis & N. Sue Barnes, *Invitation to Biology* - Fifth Edition, Worth Publisher.]

Answer the following questions.

- A) Where and what had McClintock studied?
B) Who are the main figures on genetics, according to Watson? And why?