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Moss may hold stem cell programming clues

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Israeli and German scientists say they've discovered moss might provide information allowing researchers to better program stem cells for medical purposes.

Nir Ohad of Tel Aviv University and Professor Ralf Reski of the University of Freiburg said they discovered a new use for the polycomb group proteins found in moss. They said they determined the proteins play an important role in telling stem cells how to develop.

"We may not have found the switch that turns stem cells into tissue," Ohad said, "but we have found a key component which makes this switch work."

The scientists describe an ancient mechanism that alters the way DNA organizes inside a cell nucleus, which in turn, affects gene expression. That finding, they said, has important implications in stem cell therapies, which can go awry if implanted stem cells aren't reprogrammed properly.

The researchers suggest the basic function of the polycomb group proteins in moss is in regulating cell differentiation, describing the point at which a stem cell "decides" to become a leaf or flower, for example.

"As they develop, stem cells go from having a non-defined function to a specific one," Ohad said. "If you don't know how to manipulate the type of tissue you want to modulate, replace or heal, you might cause the malfunction of another type of tissue."

The study was reported recently in the journal Development.