Researchers find tumor suppressor p53 controls signaling-mediated phagocytosis of apoptotic cells through DD1α

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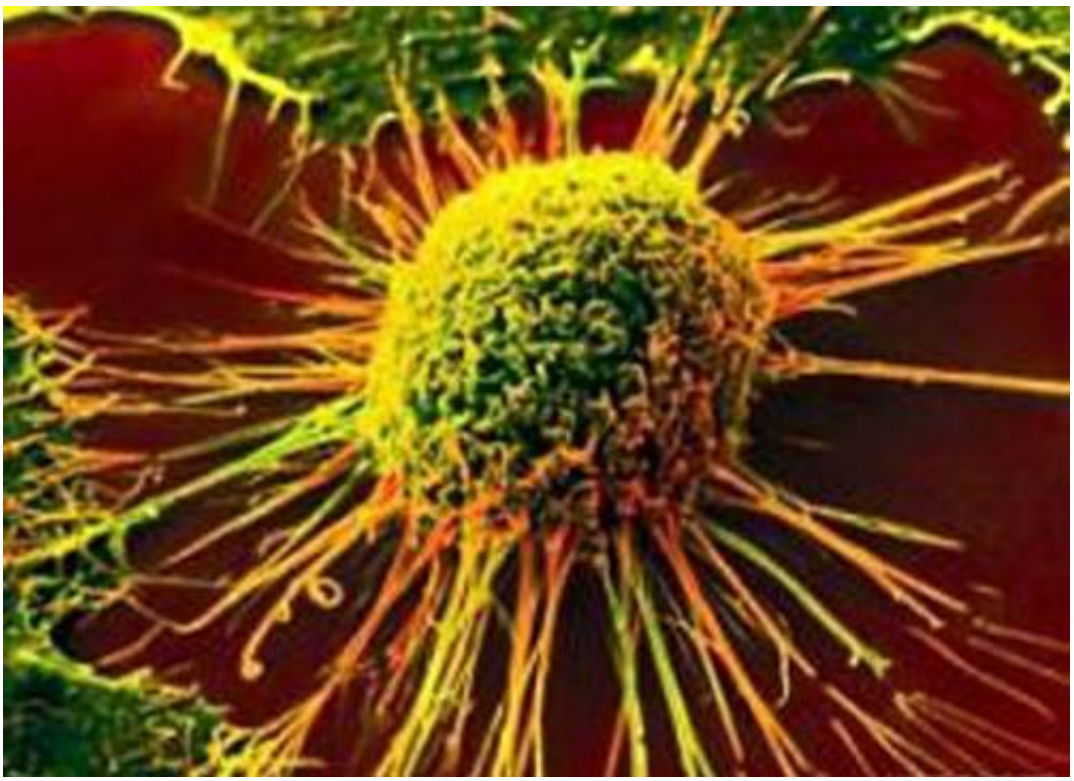

A team of researchers with affiliations to a number of research centers in the U.S. has found that the protein p53 serves as a controlling mechanism for apoptotic (naturally dying) cells through the immunoglobulin Death Domain 1α (DD1α). The group outlines their

research efforts and results in the journal *Science*. French medical researchers Laurence Zitvogel and Guido Kroemer offer a PERSPECTIVE piece on the work done by the team in the same journal edition.

In order to stay alive, living organisms continually generate new cells to replace those that die—the cells that die are continually collected and removed from the body—at least that is how it is supposed to work. When the cleanup goes astray it can lead to different types of immune diseases as the body comes to see those dead cells as foreign invaders and attacks them, leading to inflammation and a host of other problems. As the researchers note, as part of the normal cleaning up process, some degree of immune suppression occurs in order to allow for an orderly process, but how that fine line is managed is still somewhat of a mystery. In this new effort the researchers took a closer look at p53, a protein that is involved in controlling the cleaning up of dead cells, and more specifically, DD1α, another protein involved in the process, to see if they could determine the underlying mechanism.

In studying how the proteins function, the researchers found that p53 actually controls the transcription of DD1α in cells that are dying, and also in T cells and macrophages (large white blood cells) and in addition also serves as a cell receptor. To test the impact of DD1α in a living organism, the team caused it to be suppressed in several lab mice—doing so impaired dead cell clearing. They also found evidence of some tumor cells taking advantage of DD1α's functions, allowing them to suppress attacksw by T cells.

The results suggest that if doctors were given a way to control p53 and thus DD1α in patients afflicted with autoimmune diseases, it might be possible to bring the process of cell clearage under control, and thus alleviate symptoms.

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