

Free radical cell death switch identified

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U.S. scientists say they've found a molecular pathway that might cause stroke, diabetes, heart and neurodegenerative disease and even the aging process.

Harvard Medical School researchers identified a pathway by which oxidative stress triggers cell death -- a finding that could pave the way for new drug targets and diagnostic strategies for age-related diseases.

"A common molecular denominator in aging and many age-related diseases is oxidative stress," said the study's lead author Dr. Azad Bonni, an associate professor of pathology.

Bonni says humans and other organisms depend on oxygen to produce energy for normal cell functions. A cell's engine, the mitochondria, converts oxygen into energy but that process also leaves a kind of exhaust product known as free radicals.

When free radicals are not destroyed by antioxidants, they create oxidative stress and, as a person ages, the body is unable to fight the process.

A lifetime of oxidative stress leads to general cellular deterioration associated with aging and degenerative diseases.

Bonni and his research team say they've defined how a molecular chain-of-events links oxidative-stress signals to cell death in brain neurons.

The findings are detailed in the June 2 issue of the journal *Cell*.

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