

2007 Ohio Student Research Forum

Wright State University
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RESEARCH ABSTRACT FORM

TITLE: Regulation of Apoptosis by Caspase-3**AUTHOR:** Mitila Arasu**MENTOR(S):** Andrea I. Doseff**INSTITUTION:** The Ohio State University

Apoptosis is the term associated with programmed cell death, an essential suicidal system occurring daily with our bodies. This process is carried out in such a way as to safely dispose of cellular fragments. A vital example of such a mechanism includes the fact that apoptosis is primarily responsible for maintaining homeostasis, along with the upkeep of the proper number of cells within the immune system. When examining other such biological functions, apoptosis can take on a form of either positive or negative connotations. In terms of the former stance, cellular suicide is a key factor in the development of an organism's phalanges, confirming the observation that suppressed apoptosis in vertebrates result in webbed digits. On the opposite end of the spectrum, Alzheimer's disease is a product of excessive cell death. In previous studies, scientists have concluded that caspases, specific cysteine proteases, play an essential role in cell apoptosis. It has been previously noted that caspase-3 activation during apoptosis depends on its phosphorylation by PKC β . In order to study the role of phosphorylated caspase-3 in cellular fate, an alanine mutation was created at three different sites. The mutant was then amplified during a PCR reaction, cloned using a pENTR-D/TOPO vector, purified, screened using restriction enzymes, and investigated using kinase assays. Positive clones were sent for sequencing, and will later be transfected into mammalian breast cancer cells. .