



**CALIFORNIA STATE SCIENCE FAIR
2004 PROJECT SUMMARY**

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Project Title Killing Cancer: The Effect of Galectin-7 Overexpression in Oral Cancer Cell Line	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals To examine the effect of galectin-7 overexpression in oral cancer cell line. Aim 1. Clone galectin-7/pcDNA3.1 expression vector Aim 2. Transfect into galectin-7/pcDNA3.1 or pcDNA3.1 into SCC4 and SCC9 Aim 3. Serum-starvation and assay for apoptosis (examine morphology, nuclear condensation and DNA fragmentation)</p> <p>Methods/Materials Our study has examined our hypothesis that exogenous expression of galectin-7 in oral cancer cell line will facilitate apoptosis. We tested this by constructing galectin-7 expression vector in pcDNA3.1 and transfecting it into SCC4 and SCC9 oral squamous cell carcinoma cell line. A 550-bp restriction fragment containing full-length galectin-7 was ligated into pcDNA3.1 mammalian expression vector. The recombinant construct was transformed into Escherichia coli DH5a strain and ampicillin resistant colonies were selected. Gal-7/pcDNA3.1 was digested with HindIII/BamHI and the restriction fragment fractionated on a 1% agarose gel. Transient transfection of gal-7/pcDNA3.1 resulted in expression of 700 bp gal-7 mRNA in SCC9 cells. Under serum starvation exogenous expression of gal-7 in SCC9 resulted in apoptosis sensitivity compared to cells with or without pcDNA3.1 vector.</p> <p>Results Plasmid isolation and subsequent restriction digest showed that some of the ampicillin resistant colonies contained the galectin-7/pcDNA3.1 construct. Analysis of transiently transfected cells showed that galectin-7 mRNA and galectin-7 protein were expressed in SCC4 and SCC9 that was transfected with galectin-7/pcDNA3.1. Serum starvation of SCC4 and SCC9 overexpressing galectin-7 resulted in cells with increased membrane blebbing along with cytosolic shrinkage.</p> <p>Conclusions/Discussion We conclude that overexpression of galectin-7 in oral cancer cells resulted in sensitivity to apoptosis. We plan to: ·Obtain results from cells transfected with pcDNA3.1 control that did not express neither mRNA or protein for galectin-7 ·Overexpress Galectin-7 in HPV16-Immortalized Human Oral Keratinocytes</p>	
Summary Statement Overexpression of galectin-7 in cancer cell line resulted in induction of apoptosis under serum-starvation.	
Help Received Advisor assisted in designing and carrying out experiment. Used lab equipment at King/Drew Medical Center under the supervision of Dr. Nishitani.	