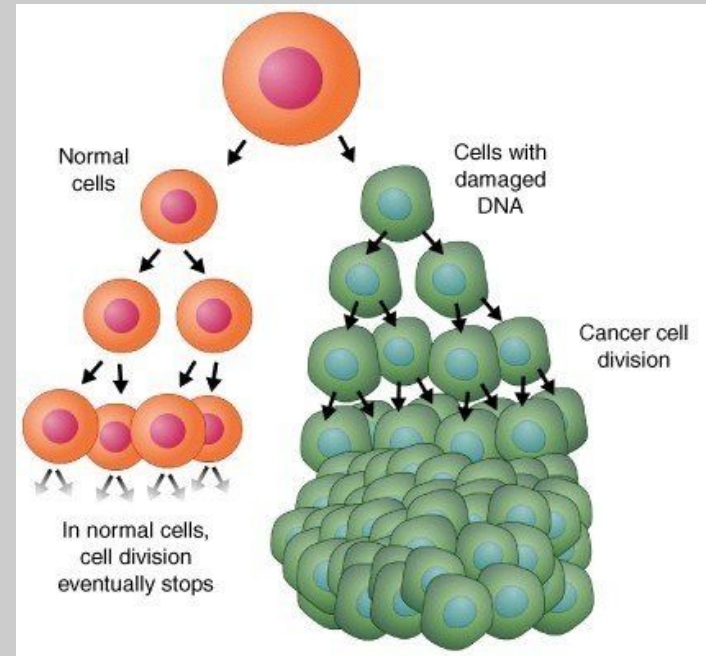


# The Role of Amygdalin in Treating Cancer *In* *Vitro*

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# What Is Cancer?

- ◀ Abnormal cell division
- ◀ Invade healthy cells
- ◀ Types differ



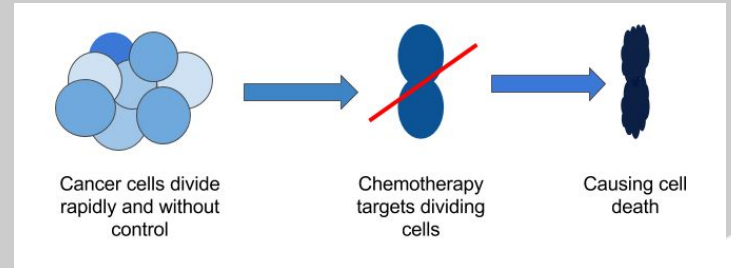
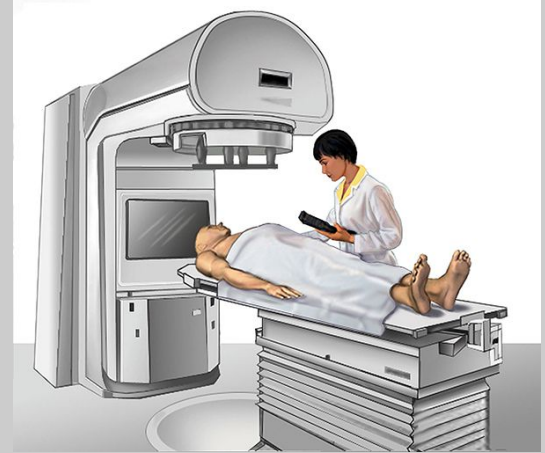
**Fig 1.** Creation of cancerous cells

	New Cases	Deaths
Lung Cancer	<b>234,030</b>	<b>154,050</b>
Breast Cancer	<b>330,080</b>	<b>40,920</b>
Prostate Cancer	<b>164,690</b>	<b>29,430</b>
Cervical Cancer	<b>13,420</b>	<b>4,170</b>

**Fig 2.** Predicted number of diagnoses and deaths in the US in 2018 (American Cancer Society, 2018)

# Common Treatments

- ◀ Chemotherapy
- ◀ Radiation
- ◀ Surgery



**Fig 3.** Treatment methods

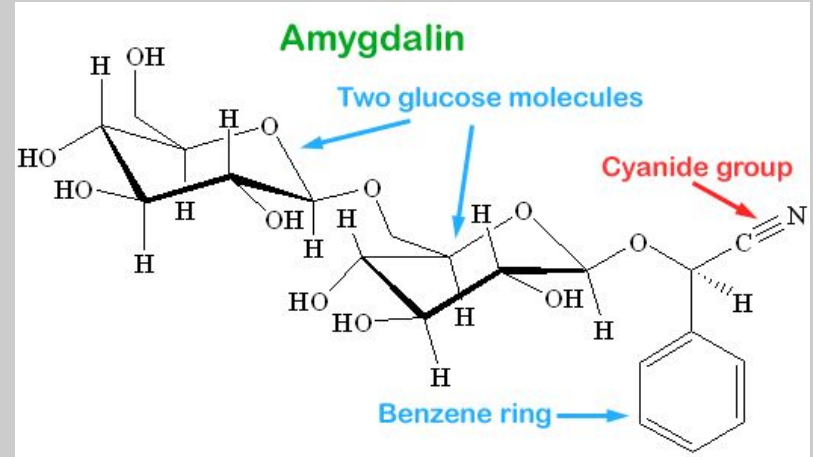


# Alternative Treatment Methods

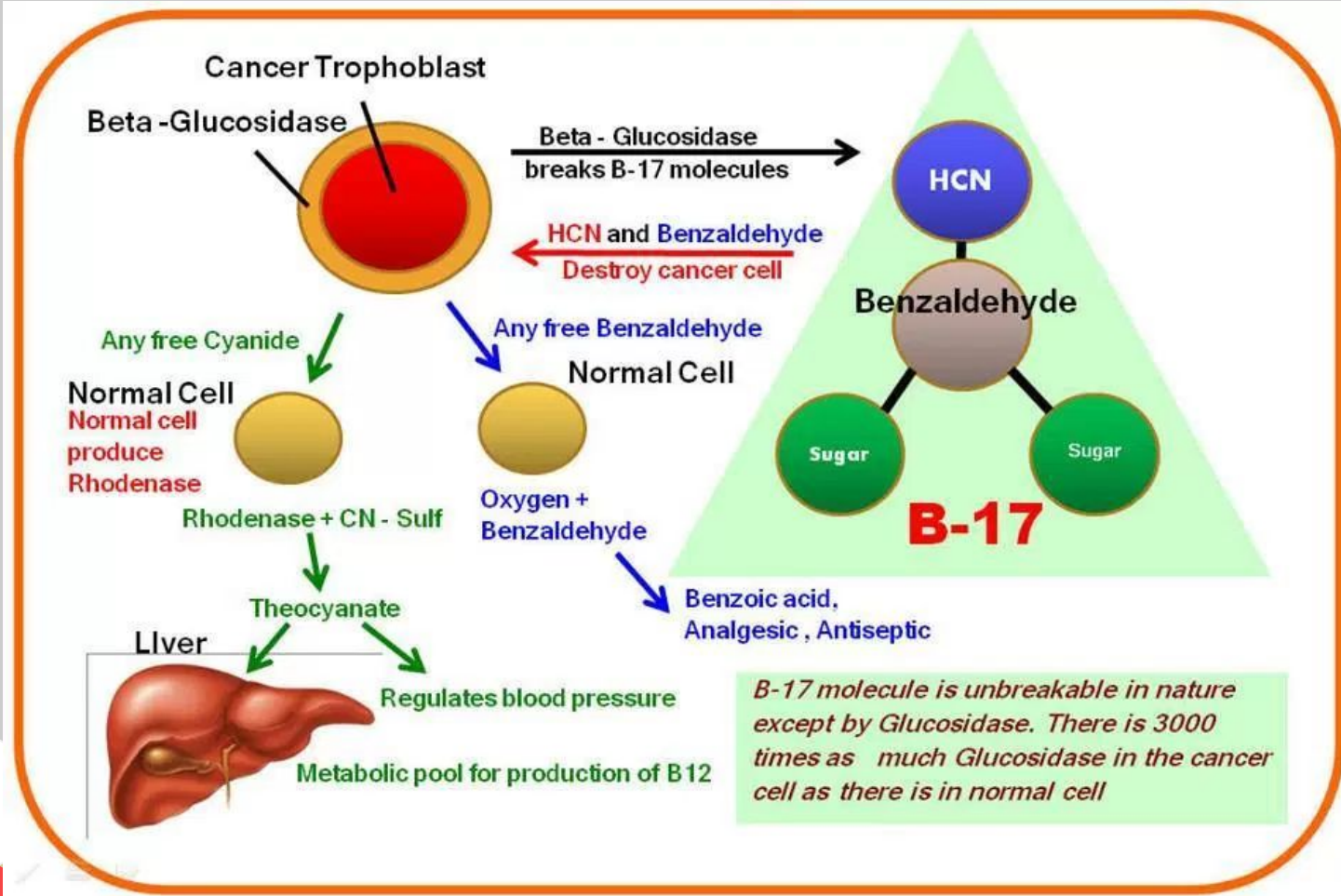
- ◀ Not mainstream medicine
- ◀ Performed by doctors with special practice
- ◀ Non-harmful to the body

# Amygdalin

- ◀  $C_{20}H_{27}NO_{11}$
- ◀ Found in plants and seeds/pits



**Fig 4.** Structure of amygdalin



**Fig 5.** Process in which amygdalin is able to target and attack cancerous cells.

# Purpose

Investigate the effectiveness of amygdalin in treating lung, breast, prostate, and cervical cancer *in vitro*.







“

What is the role of  
amygdalin in treating lung,  
breast, prostate, and  
cervical cancer *in vitro*?



# Hypothesis

Amygdalin is effective in treating multiple types of cancer *in vitro*.

# Null

Amygdalin is not effective in treating multiple types of cancer *in vitro*.



# Methods

- ◀ Systematic literature review
  - ◀ Data collected from published peer reviewed articles
  - ◀ Data analysis: Excel
    - ◀ SD and t-test

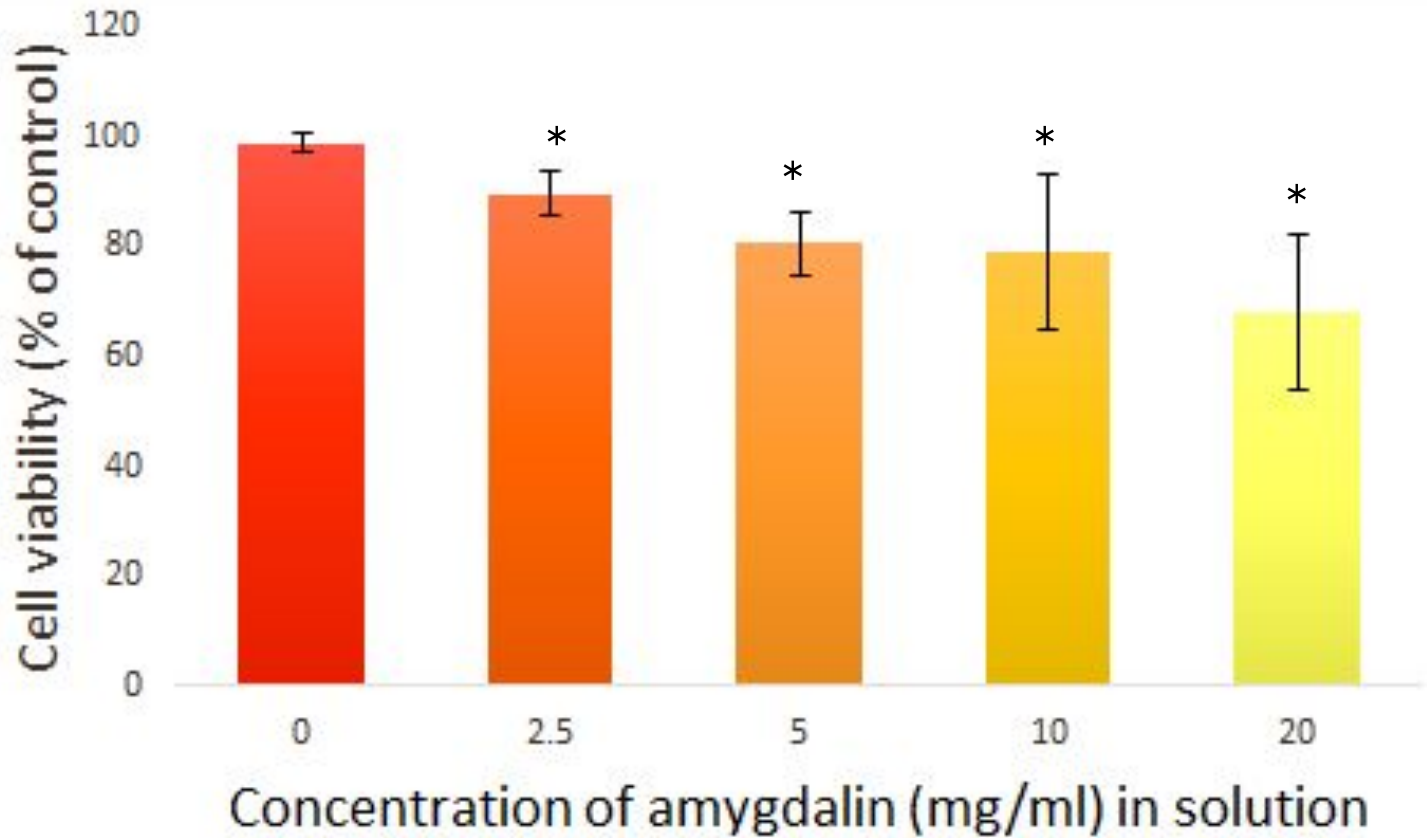


# *In Vitro*

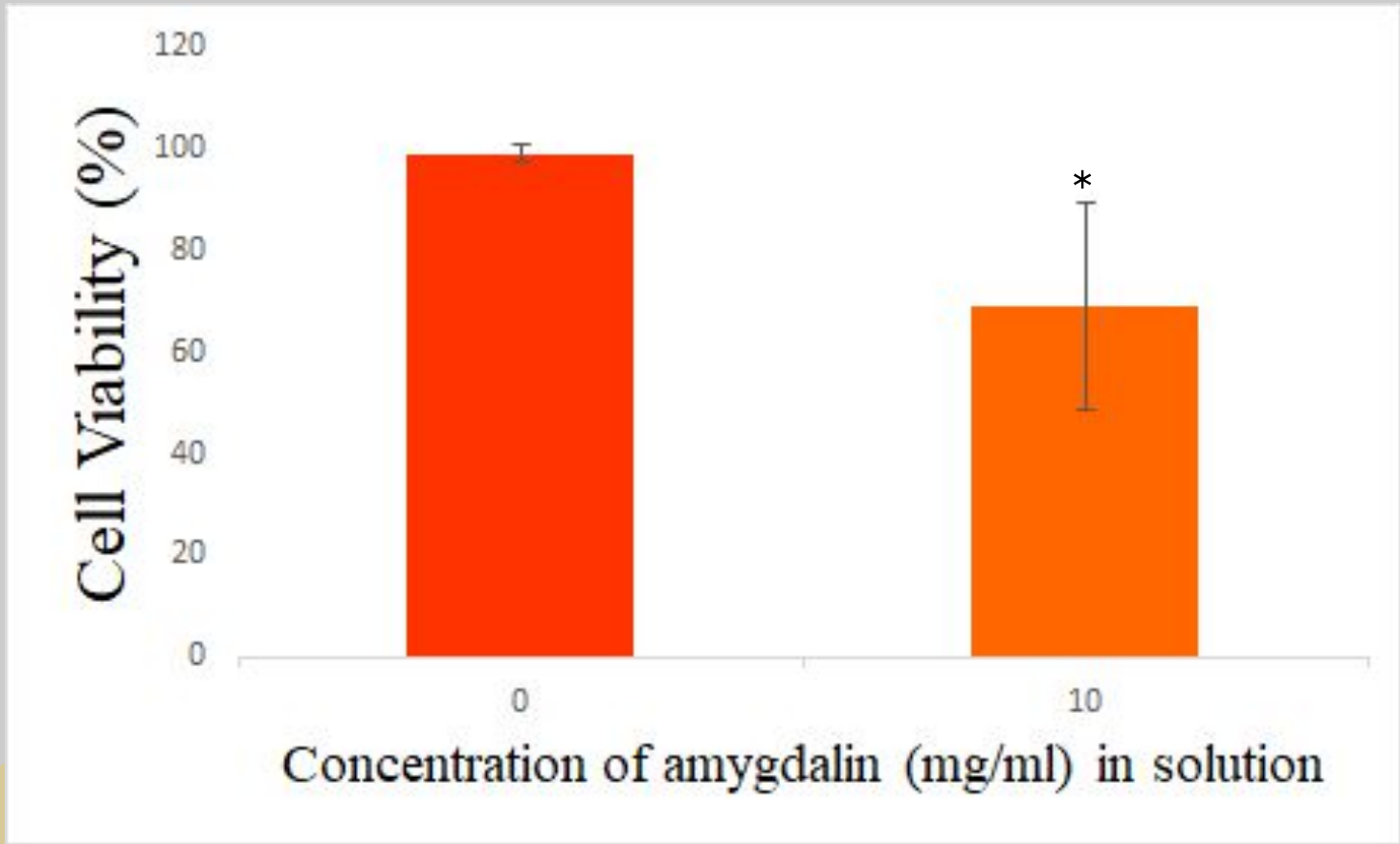
- ◀ Solutions
  - ◀ Control- 0 mg/ml amygdalin
  - ◀ Test- 2.5, 5, 10, 20 mg/ml amygdalin
- ◀ 24 hour treatment
- ◀ Cell viability

# Results

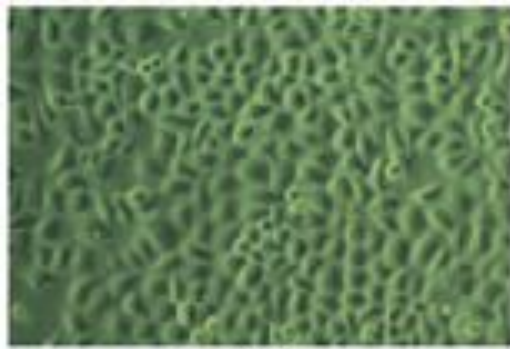




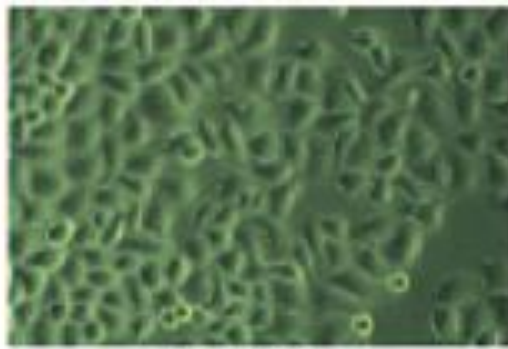
**Fig 6.** The effectiveness of amygdalin in treating cancer cells (Chen et al., 2012; Moon et al., 2016; Qian, Xie, & Wang, 2015)



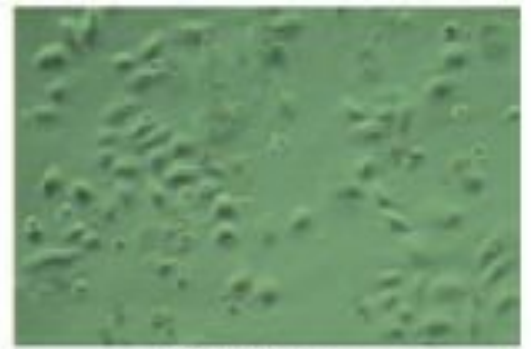
**Fig 7.** Cell viability after 10 mg/ml treatment(Chen et al., 2012; Kim et al., 2006; Moon et al., 2016; Qian, Xie, & Wang, 2015)



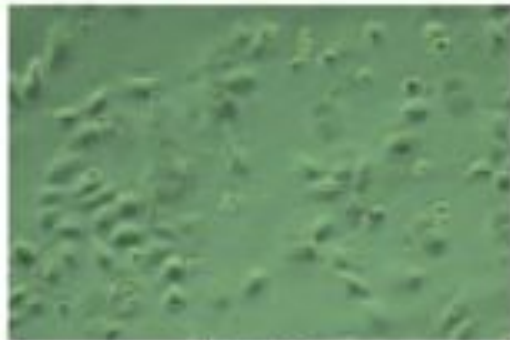
0 mg/mL



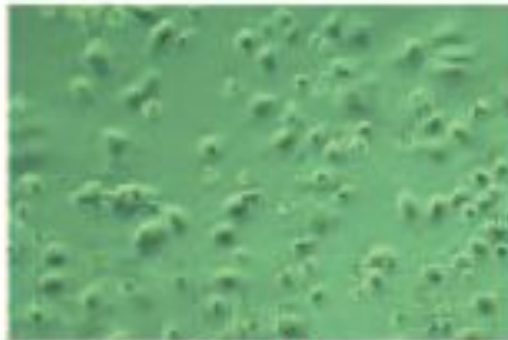
1.25 mg/mL



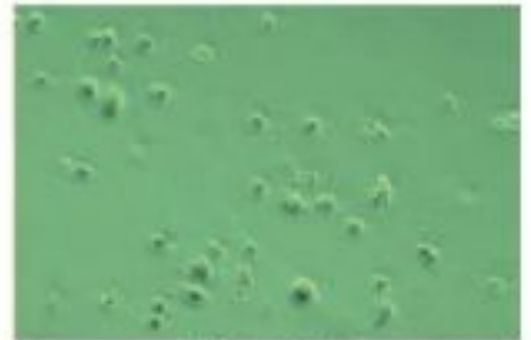
2.5 mg/mL



5 mg/mL



10 mg/mL



20 mg/mL

**Concentration of amygdalin**

**Fig 8.** HeLa cells under a microscope after being treated with amygdalin for 24 hrs (Chen et al., 2012).





# Sources of Error

- ◀ Access to data
- ◀ Not able to conduct meta-analysis



# Discussion

- ◀ Cell viability decreased
- ◀ Concentrations of amygdalin
- ◀ Shape and size of cancer cells

# Conclusion

- ◀ Effective treatment
- ◀ Concentration increase  
=  
cell viability decrease



# Further Work

More Research

Clinical Trials

Implementation

◀ Further *in vitro* studies

◀ Test subjects with cancer

◀ Alternative medicine

# Acknowledgements

A special thanks to Dr. Dane Mohl at Amgen, Dr. Harry Saunders, Dr. Nikki Malhotra and Ms. Michelle Magnusson for their help throughout this course.

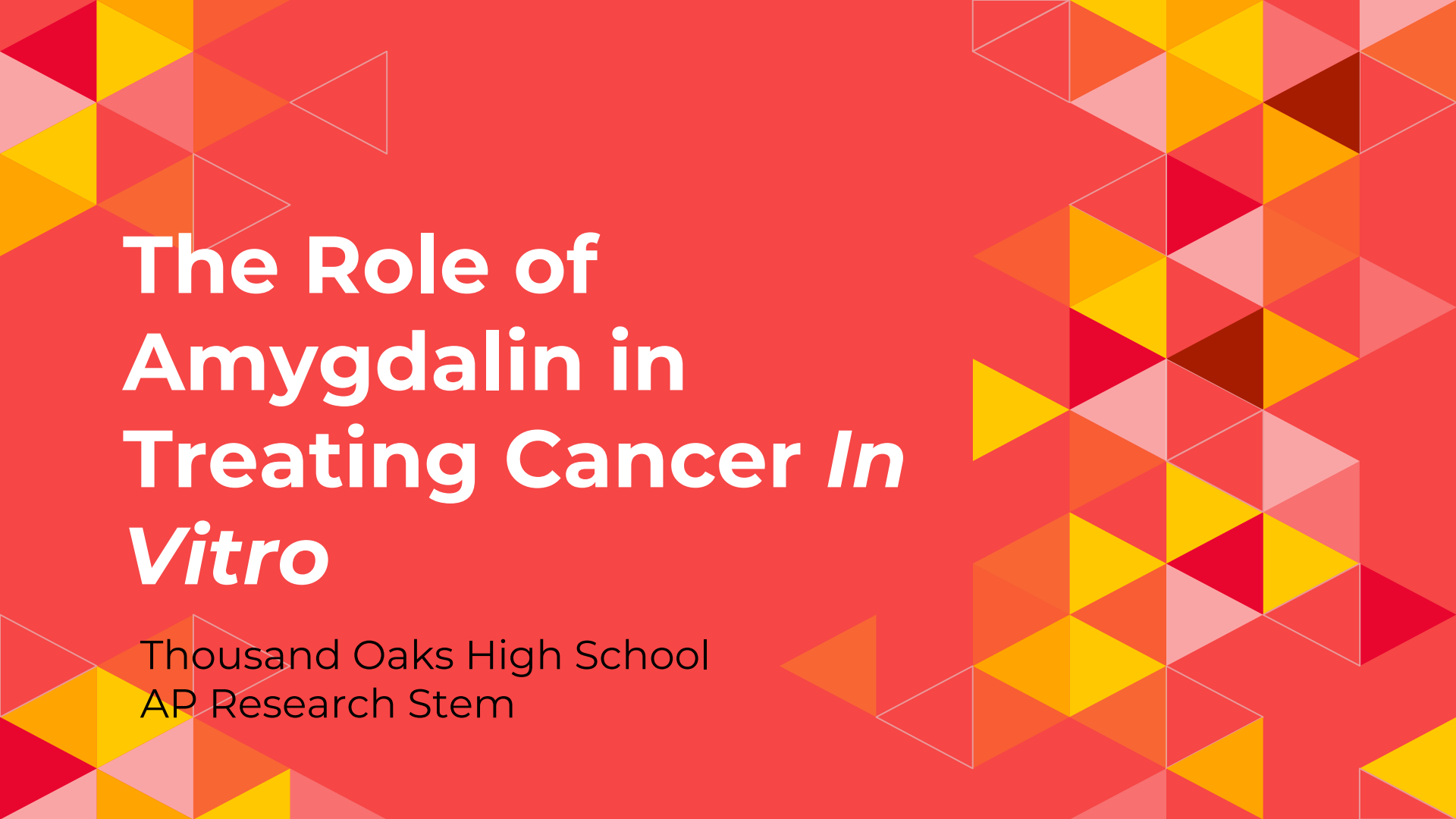


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