



**Team Name: Spunky Scientists**

**Title: Cancer Prevention**

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**Age Group: 6-9**

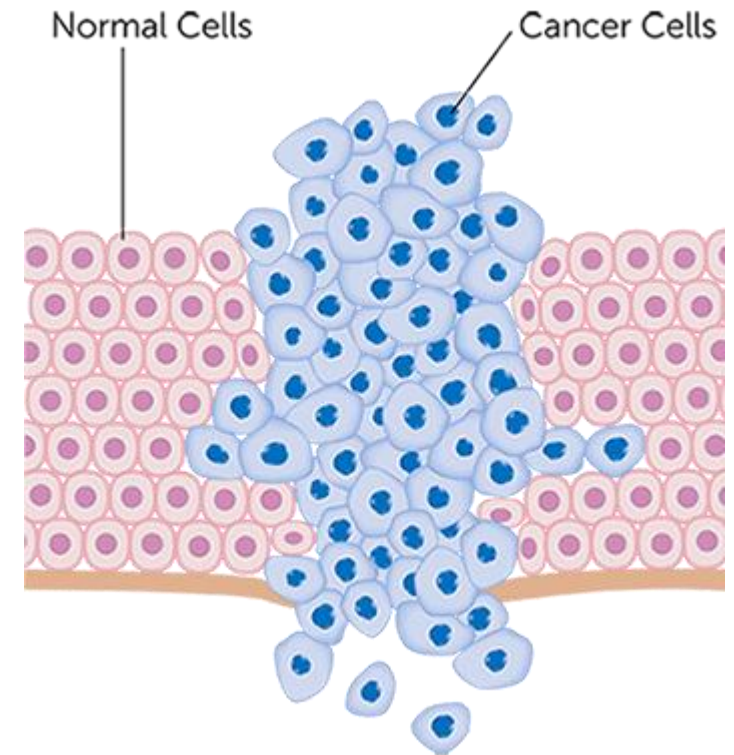
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# Abstract

- *Background:* Cancer is the 2<sup>nd</sup> leading cause of death in the United States of America.
- *Aim:* To understand which cancers are preventable and how?
- *Methods:* Literature review was performed. Sources included the website of CDC, ACS, WCRF, Pubmed and Uptodate.
- *Discussion:* Certain health behaviors – environmental exposures, physical activity, alcohol and tobacco use, and infections – impact cancer risk
- *Conclusion:* We will implement healthy lifestyle choices ourselves and educate others about the same

# Introduction – What is Cancer?

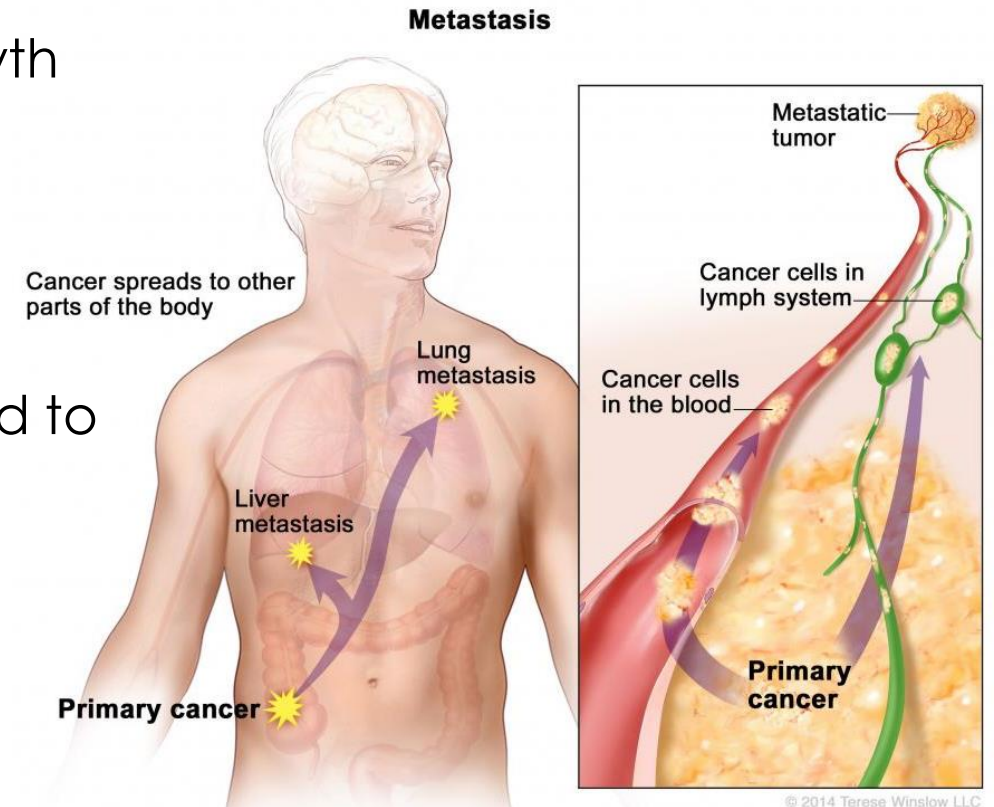
- Cancer is a collection of diseases where the body's cells begin to divide without stopping, and spread into surrounding tissues.
- It can begin anywhere in the body.
- Cancer forms when the orderly process of cell turnover is interrupted.
  - That is old cells survive when they should die, and new, abnormal cells grow in an uncontrolled manner<sup>1</sup>



# Introduction

## A few definitions

- Tumor
  - Mass of tissue formed from abnormal cell growth
- Benign tumor
  - Tumor that does not invade nearby tissues or spread to distant tissues
- Malignant tumor
  - Tumor that invades nearby tissue or can spread to distant tissues – also known as **CANCER**
- Primary tumor
  - Original tumor (where cancer first forms)
- Metastasis
  - Spread of tumor to other sites (away from the primary tumor) through blood or lymph vessels
- Secondary tumor
  - Growth of cells formed from metastases in places away from the primary tumor<sup>1</sup>



# **Risk factors:**

## **Environmental Exposures – The Sun**

- Excess sun exposure causes cancer
- Over one million cases of skin cancer are diagnosed each year
- Tanning beds can give you skin cancer
- We should all wear hats, sunscreen, sunglasses, and protective clothing when in the sun<sup>2</sup>

# Risk Factors: Diet

- Several investigations have found that long-term inflammation is related to higher risk of cancer<sup>3</sup>
- Mediterranean diet (high intake of fruits and vegetables, nuts, legumes, whole wheat bread, fish and olive oil) decreases risk of cancer
- Vegetarian diet decreases risk of death from cancer
- Ultra-processed diets (packaged breads, packaged snacks, sodas, frozen meals, reconstituted meats) increase risk of cancer<sup>3</sup>



# Risk Factors: Diet

- Foods that **decrease** inflammation and **decrease** cancer risk
  - Turmeric/ginger
  - Onions/garlic
  - Omega-3 fatty acids (found in fish like salmon, sardines, tuna)
  - Whole grains
  - Dark leafy
  - Nuts
  - Chili peppers, tomatoes
  - Olive oil, Berries<sup>3</sup>
- Foods that **increase** inflammation and **increase** cancer risk
  - Processed sugars (desserts, pastries, sodas, fruit juices)
  - Saturated fats including red meats
  - Trans fats (processed and fast food)
  - Omega-6 fatty acids (oils like corn, sunflower, vegetable, soy)
  - Refined carbohydrates (white flour)<sup>4</sup>

# Risk Factors: Sedentary Lifestyle

- Decreased physical activity appears to increase the risk of cancer
- Over 60 percent of American adults are not regularly active<sup>2</sup>
- Exercise during certain periods of your life such as adolescence may offer additional protection against cancer particularly breast cancer



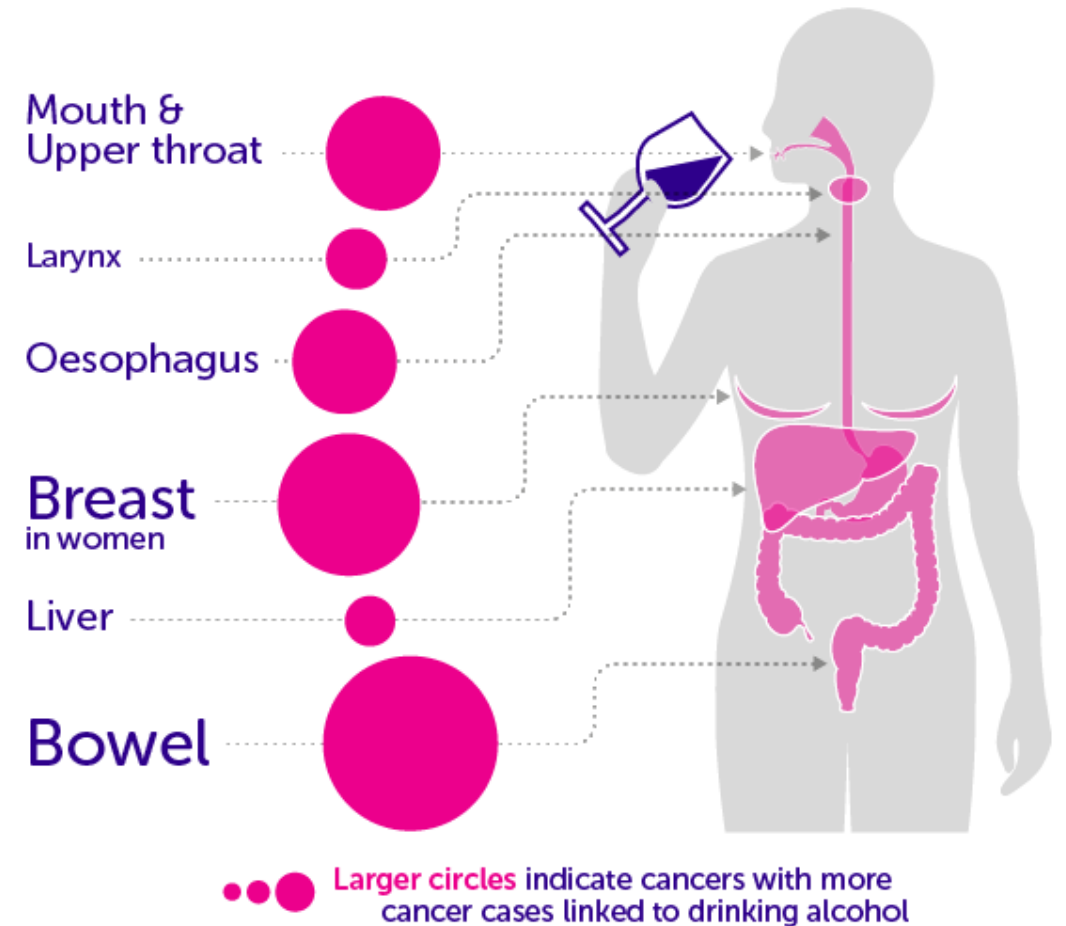
# Risk Factors: Obesity

- In 2016 1/3 of all adults in the USA were obese.
- The number of obese Americans is growing.
- Obesity is the second most common cause of preventable cancer in the USA only behind tobacco.<sup>2</sup>
- If you are obese and you lose weight, your risk of cancer decreases.
- Obesity causes low level inflammation.

# Risk Factors: Alcohol

- Consuming alcohol increases the risk of cancers of the mouth, throat, esophagus, larynx, liver, colon and breast

## ALCOHOL CAN CAUSE SEVEN TYPES OF CANCER



Drinking less alcohol could prevent 12,800 cancer cases per year in the UK

# Risk Factors: Alcohol

- Highest risk is in people who are heavy drinkers.
- Risk of cancer is increased even with low level of alcohol consumption.<sup>5</sup>
- World Cancer Research Fund recommends

**“For cancer prevention, it’s best not to drink alcohol.”<sup>6</sup>**



<sup>6</sup>Alcohol use and burden for 195 countries and territories, 1990–2016: a systematic analysis for the Global Burden of Disease Study 2016

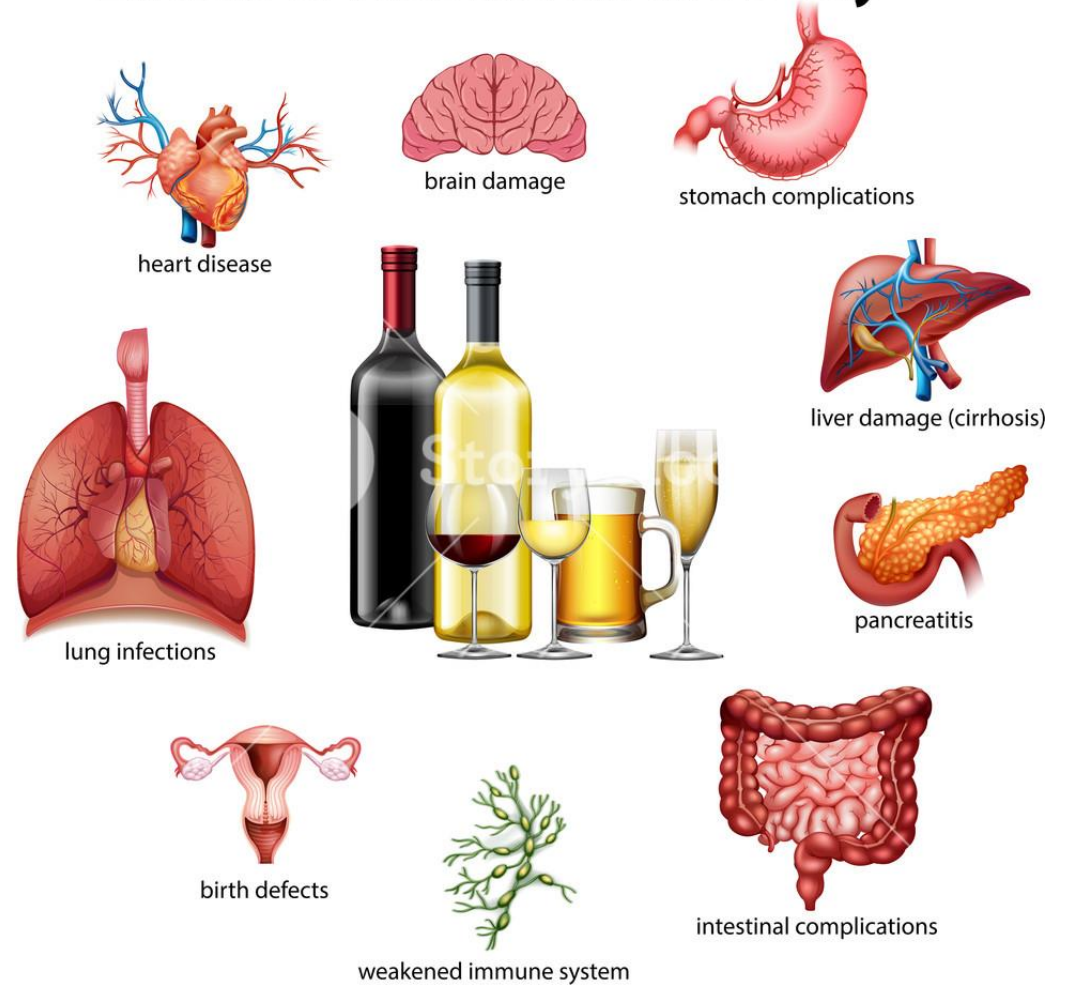
[GBD 2016 Alcohol Collaborators](#)<sup>†</sup>

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# Risk Factors: Alcohol

- Other harmful effects of alcohol.
- Alcohol does not protect against heart disease or prolong life.<sup>7,8</sup>
- Cancer risk doesn't depend on kind of alcohol

## Effects of Alcohol on the Body



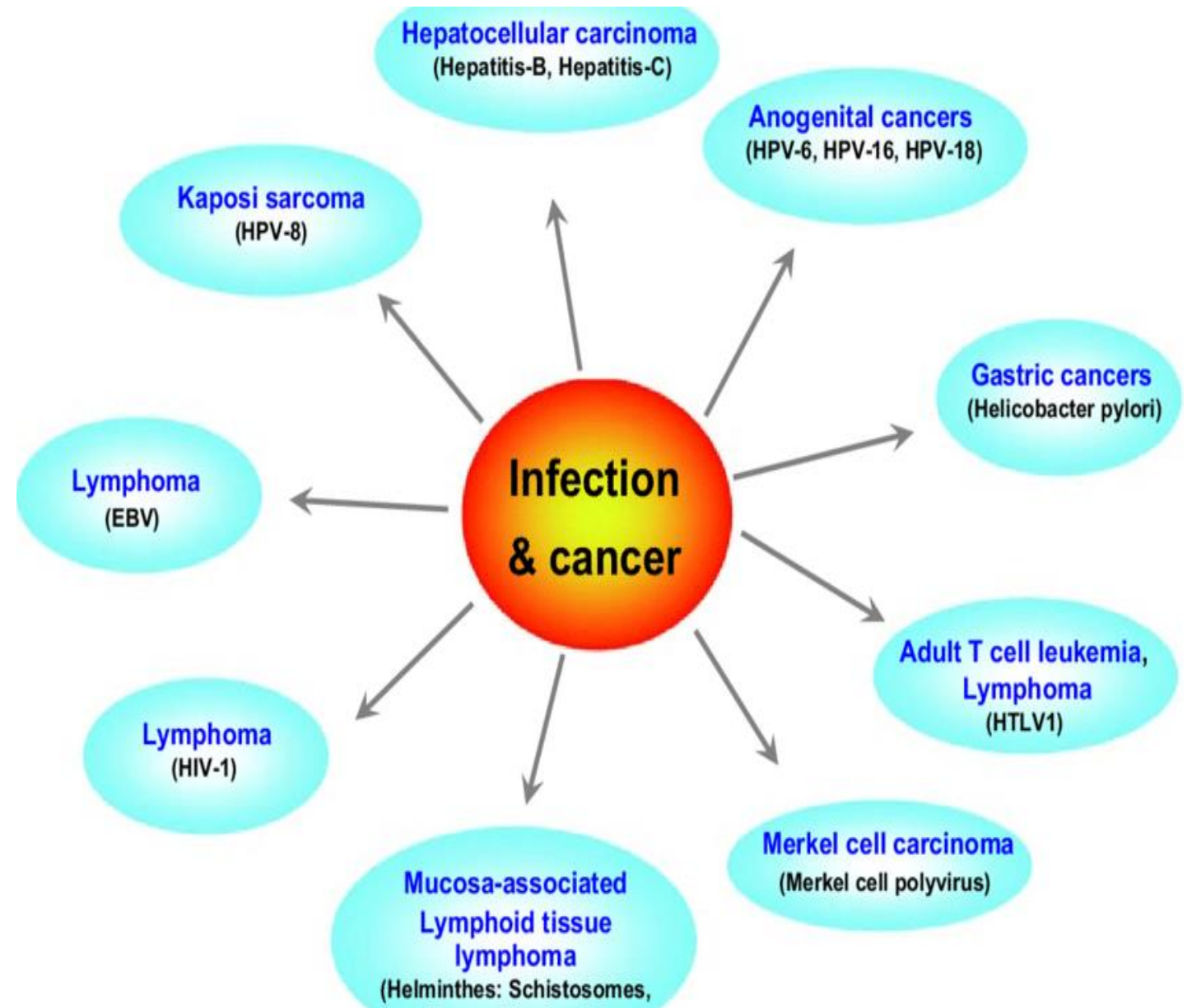
# Risk Factors: Tobacco

- Tobacco use is the most preventable cause of cancer.<sup>2</sup>
- Smokers lose an average of 13 years off of their life due to smoking.
- Smoking can cause cancer all over your body but most commonly in your lungs.
- All kinds of tobacco cause cancer. This includes pipes, cigarettes, cigars, dipping, and second hand smoke.
- It is important to teach kids to not smoke.

# Risk Factors: Infections

- Hepatitis B and C virus causes liver cancer
- Human papilloma virus causes tonsillar cancer
- HIV, EBV and HTLV 1 cause lymphoma
- H. pylori causes stomach cancer

**Vaccinate against  
Hepatitis B , Hepatitis C  
and HPV.<sup>1</sup>**



# Preventable cancers

- **4 in 10** cancer cases can be prevented.
- Most preventable cancers are...
  - Oral cavity cancer
  - Lung
  - Skin
  - Cervical
  - Bowel
  - Liver

**4 IN 10 CANCER CASES  
CAN BE PREVENTED...**



Circle size here is not relative to other infographics based on Brown et al 2018.  
Source: Brown et al, British Journal of Cancer, 2018

LET'S BEAT CANCER SOONER  
[cruk.org/prevention](http://cruk.org/prevention)



# Conclusion

- Many cancers are preventable. Try to prevent them.
- Basic lifestyle changes can have a tremendous impact on the rates of cancer.
- Some things people recommend:
  1. Avoid Tobacco
  2. Maintain a healthy weight
  3. Eat a healthy diet rich in fruits and vegetables
  4. Limit alcohol
  5. Avoid excess sun
  6. Vaccinate against infections



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