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# **Foods and nutrition in health promotion and chronic disease prevention**

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# CHRONIC DISEASE

- Kill 41 million people each year, equivalent to 71% of all deaths globally.
- Cardiovascular diseases account for most NCD deaths, or 17.9 million people annually, followed by cancers (9.0 million), and diabetes (1.6 million).
- Tobacco use, physical inactivity, alcohol and unhealthy diets all increase the risk of dying from a NCD



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# CAUSE/RISK FACTORS

- Aging
- Environment unfavorable
- Low physical activity
- Obesity, Central Obesity
- Pro-inflammatory
- Genetics
- Unhealthy Diets



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# AGING



aging is the greatest  
risk factor for a  
majority of chronic  
diseases



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# ENVIRONMENT UNFAVORABLE



- Tobacco smoke, other smoke
- Radiation, such as ultraviolet rays from the sun
- Aflatoxin, asbestos, benzene etc.

Unfavorable substances are in the air we breathe, the water we drink, the food we eat, or the materials we use to do our jobs.



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# LOW PHYSICAL ACTIVITY





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# OBESITY, CENTRAL OBESITY



WC: female <80 cm  
male <90 cm





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# PROINFLAMMATORY

Proinflammatory cytokines:

- TNF- $\alpha$
- IL-6
- CRP
- RBP4, TTR

Related with T2DM, Coronary heart disease





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# GENETICS





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## MTHFR polymorphism

- mutation of gene MTHFR (677C->T) reduce the enzyme activity
- compare to wild type CC, TT is low risk, CT is high risk to CRC
- Because TT need high folate, among low folate, TT is the most high risk and *vice versa*
- In TT group, low folate status increase risk



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# EXPRESS OF CYTOKINE GENE

Mutant of gene polymorphism and trend to develop T2DM

- rs2794521 for CRP;  
mutant AG and GG > AA 1.15 times
- rs1799964 for TNF;  
mutant TC and CC > TT 1.14 times
- rs1800796 for IL6;  
mutant CG and GG < 0.51 times



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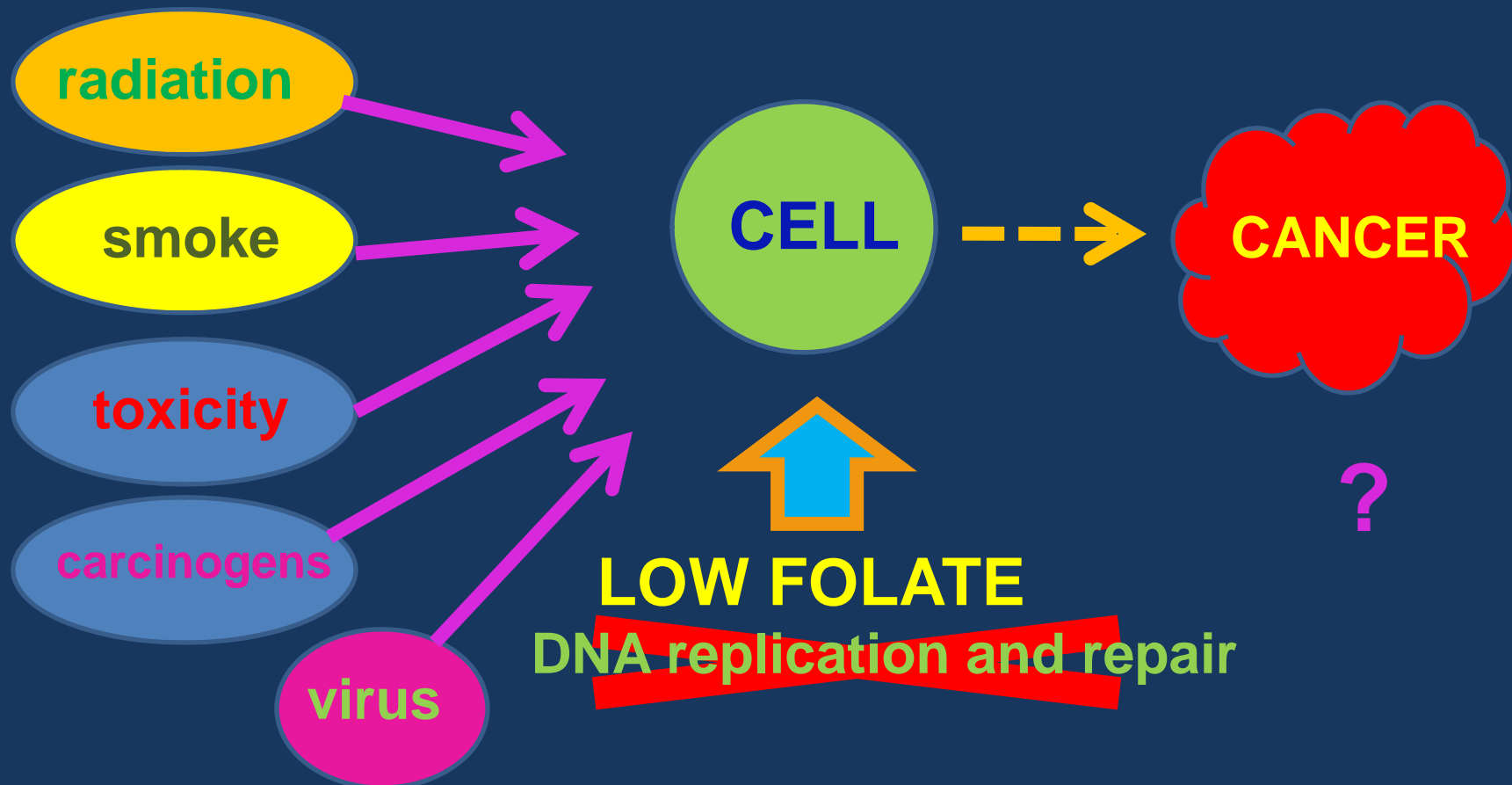
# UNHEALTHY DIETS





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# LOW FOLATE AND CANCER RISK





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# **HEALTH PROMOTION TO PREVENT CHRONIC DISEASES**

- **Don't use tobacco and avoid others toxic enviroment**
- **Maintain a healthy weight and be physically active**
- **Avoid risky behaviors**
- **Get regular medical care**



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# PHYSICALLY ACTIVE



**EXERCISE**  
**150 mins/week**



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# HEALTHY FOODS



- Small size of meats
- Complex carbohydrate
- Fruits and vegetables