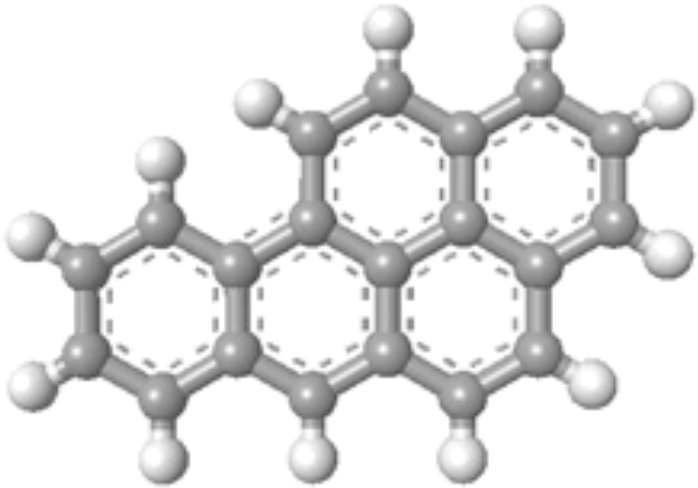
Diet and Cancer

The Causes of Prostate Cancer

Molecules that Damage DNA

- Oxidants
  - Reactive compounds containing oxygen
  - Produced as a normal by-product of metabolism
  - Can result from exposure to radiation, drugs, toxic substances
  - Damage DNA by
    - causing breaks in the helix
    - causing base deletions
- Damage due to oxidants is typically corrected by DNA repair enzymes
  - Click here for a review of DNA repair enzymes

- Polycyclic Aromatic Hydrocarbons
  - Chemical compounds composed of connected rings of carbon
  - Found in oils, coal, and as by-products from burning fuels
  - Toxicity varies with structure



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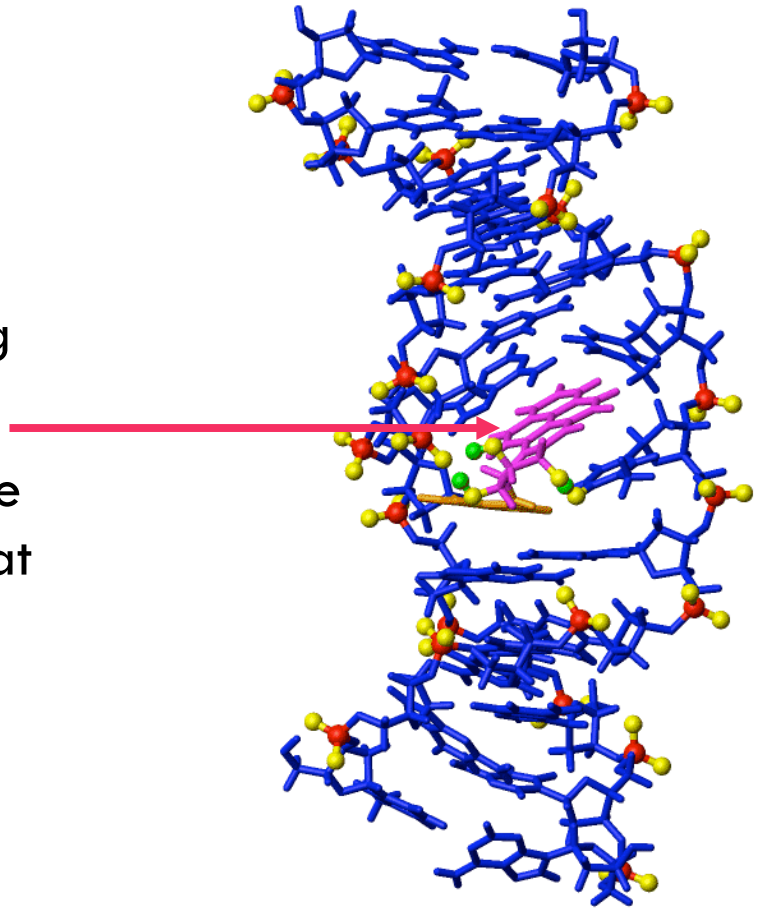
- Benzo[a]pyrene – a type of PAH
  - First human carcinogen identified
  - Damages DNA by inserting itself into the molecule
  - The interaction between the molecule and DNA occurs at a guanine nucleotide



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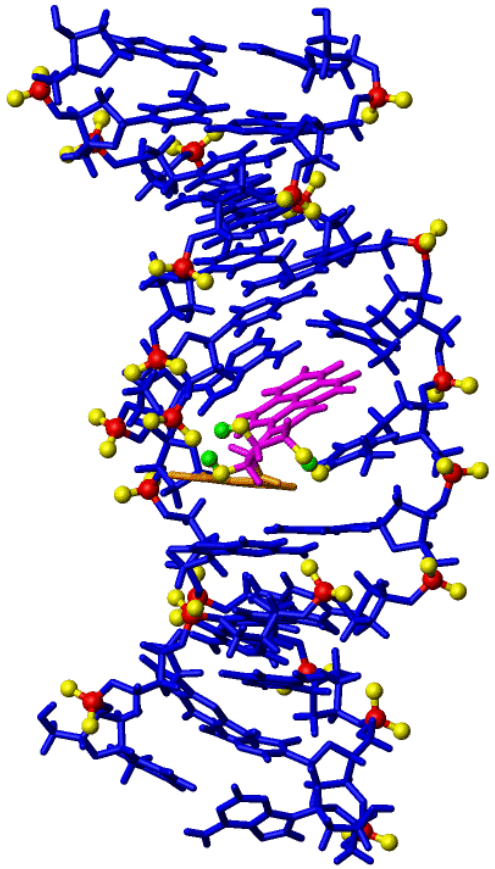
Mechanism of Damage by Benzo[a]pyrene

- Inside Cancer
  - Click "Causes and Prevention" from top menu
  - Click "Smoking" from tabs on left side of screen
  - Click on the arrow next to "Smoking Gun"
  - Read through slides 1-4



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