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
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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