CONCEPT: RADIOISOTOPES

● **Radioactive isotopes** are atoms where the nucleus is unstable, and can emit _____

□ There are three types of radiation that can be released

- Emission of *alpha particles* results in loss of two protons and two neutrons

- Emission of *beta particles* results in the loss of an electron

- Emission of *gamma particles* results in the loss of photons, changing the energy state of nucleus

- **Autoradiography** is a technique that detects isotopes in biological materials (cell, gel, filter)

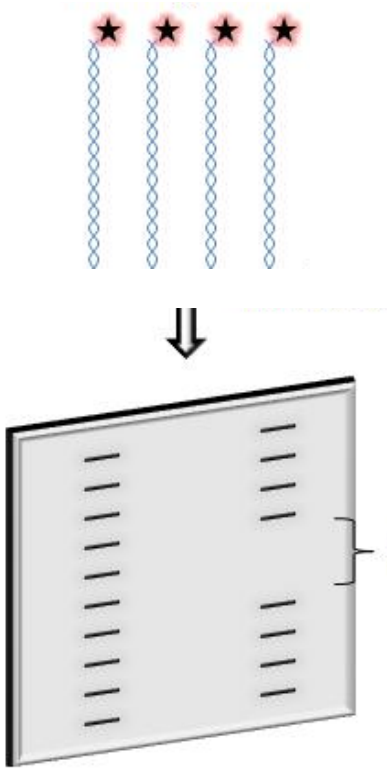
□ Radioactive isotopes can be attached onto _____ .

- Determine quantity of molecules in a cell

- Determine location of molecules in a cell

- Follow the movement of a molecule in a cell over time or in response to an environmental stimulus

EXAMPLE: Radioisotope labeled molecules visualized on a gel



PRACTICE:

1. Which of the following types of radiation results in the loss of an electron?
    a. Emission of alpha particles
    b. Emission of beta particles
    c. Emission of gamma particles

2. Which of the following characteristics can a radioisotope NOT determine?
    a. The quantity of molecules in a cell
    b. The location of molecules in the cell
    c. The size of a single molecule in the cell
    d. The movement of a molecule in the cell