Quiz: Engineering blood vessels to fight cardiovascular diseases

1. Atherosclerosis occurs primarily in ____________.
   - A. veins
   - B. capillaries
   - C. arteries
   - D. all of the above

2. Which is considered the first cellular event in the progression of atherosclerosis?
   - A. Macrophage transformation
   - B. Monocyte transmigration
   - C. Smooth muscle cell migration
   - D. Endothelial cell permeability

3. What type of mechanical stress causes endothelial cells to orient themselves in the same direction?
   - A. hoop/circumferential stress
   - B. shear stress
   - C. compressive stress
   - D. tensile stress

4. In what percent of the population does stiffening of the blood vessels occur?
   - A. 25%
   - B. 40%
   - C. 80%
   - D. 100%

5. Which is not a risk factor for atherosclerosis?
   - A. cancer
   - B. diabetes
   - C. smoking
   - D. hypercholesterolemia

6. The ____________ of an artery contributes most to its mechanical strength.
   - A. intima
   - B. media
   - C. adventitia
   - D. lumen
7. Vessel stiffening results in ____________.
   A. increased blood pressure
   B. decreased blood pressure
   C. increased cholesterol
   D. laminar blood flow

8. The ratio of stress to strain is called ____________.
   A. Young’s modulus
   B. Poisson’s ratio
   C. Creep
   D. Bending strength

9. A liquid polymer solution can easily be turned into a gel by adding ____________.
   A. a detergent
   B. an emulsifier
   C. a crosslinker
   D. an organic solvent

10. Blood vessels are similar to gels in that they act as ____________ materials.
    A. viscoelastic
    B. elastic
    C. isotropic
    D. compressible