

Quiz: Week 1 Lecture 3
Principles of Electronic Nanobiosensors
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Answer the **five questions** below by choosing the **one, best answer**.

- 1) A sensor has a very high capture rate (k_F) of biomolecules. The concentration of biomolecules close to the sensor surface (ρ_s) will be
 - a) Very high.
 - b) Same as the bulk value.
 - c) Very low.
 - d) Surface concentration is unrelated to capture rate

- 2) A label-based sensor relies on
 - a) Additional molecules added to the target biomolecule.
 - b) Mass or charge of the target biomolecule.
 - c) Spin of the target biomolecule.
 - d) None of the above.

- 3) A potentiometric sensor measures the following quantity of a target biomolecule.
 - a) Mass.
 - b) Electron affinity.
 - c) Spin.
 - d) Charge

- 4) The geometry of electrostatics is defined as the following
 - a) Is relevant only for potentiometric sensors.
 - b) Explain how geometric arrangement of charges define the performance of a sensor.
 - c) Explains why a smaller diameter potentiometric sensor has improved performance.
 - d) All of the above.

(continued on next page)
Quiz: Week 1 Lecture 4 (continued)

- 5) The performance of a nanobiosensor can be understood in analogy to the jellyfish because
- a) Jellyfish is a self-assembled organism, just like many nanobiosensors.
 - b) Both rely on diffusion (and tailor their geometries accordingly) to efficiently capture particles from the surrounding environment.
 - c) Both rely on electrical stimuli to signal particle capture.
 - d) The internal operation of a jellyfish is analogous to that of a biosensor.

End of quiz. This quiz contains 5 questions.