1. (a) Erythrocytes: SEM, AFM, SICM (not fluorescence microscopy, since hemoglobin will interfere with the fluorescence signal); macrophages, neurons and epithelial cells: AFM, SICM (SEM is not good, since preparation of these cells for SEM studies can significantly change cell properties). LIM will not be applicable in all cases, since nanoparticles are to small to be detected by this technique.

   (b) Fluorescent microscopy (SEM and AFM give information about cell surface only). TEM, but the preparation of cells can affect significantly cell state.

2. (a) SEM – modification of cell shape and poor visibility of nanoparticles; AFM and SICM – mechanical removal of nanoparticles from the cell surface by probe. AFM can affect cell shape if cells are in living conditions.

   (b) Application of fluorescent microscopy: photodamage.

3. Shape: in all cases it is better to use SICM, since it allows to work in liquid with living cells with the minimal cell damage during scanning procedure. Cytoplasm structure: fluorescent two-photon microscopy.

4. Application of silver or gold nanoparticles to cells (for example, erythrocytes) is used in surface-enhanced Raman spectroscopy to enhance Raman scattering from cell molecules (Hb).