Cell Differentiation Quiz PDF

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Discuss the potential applications of induced pluripotent stem cells in regenerative medicine.

What are the main differences between embryonic stem cells and adult stem cells?

How can abnormalities in cell differentiation lead to diseases such as cancer?

What is the final stage of cell differentiation called?

◯ Stem cell stage

- ◯ Progenitor stage
- ◯ Terminal differentiation
- ◯ Initial differentiation

What is the primary process by which a less specialized cell becomes a more specialized cell type?

- ◯ mitosis
- ◯ cell differentiation
- ◯ apoptosis
- ◯ meiosis

What are some challenges associated with cell differentiation in research? (Select all that apply)

- ☐ Ethical considerations
- ☐ Technical difficulties
- ☐ Lack of funding
- ☐ Ensuring safety

Explain the significance of gene expression in the process of cell differentiation.

Describe the ethical considerations involved in the use of embryonic stem cells for research.

How do signal transduction pathways influence cell differentiation?

What factors guide cell differentiation? (Select all that apply)

- [ ] Genetic factors
- [ ] Environmental factors
- [ ] Photosynthesis
- [ ] Chemical signals

What is the role of epigenetic modifications in cell differentiation?

- ◯ To increase cell division
- ◯ To influence gene expression
- ◯ To cause cell death
- ◯ To enhance protein synthesis

Which of the following are stages of cell differentiation? (Select all that apply)

- [ ] Stem cell
- [ ] Progenitor cell
- [ ] Terminal differentiation
- [ ] Meiosis

What type of stem cells are found in adult tissues and are responsible for repair and maintenance?

- ◯ Embryonic stem cells
- ◯ Adult stem cells
- ◯ Induced pluripotent stem cells
- ◯ Totipotent stem cells

Which process involves reprogramming somatic cells to a pluripotent state?

- ◯ Cloning
- ◯ Meiosis
- ◯ Induced pluripotency

- ◯ Differentiation

Which type of stem cell is derived from the early embryo and is pluripotent?

- ◯ Adult stem cells
- ◯ Induced pluripotent stem cells
- ◯ Embyronic stem cells
- ◯ Progenitor cells

Which of the following are types of stem cells? (Select all that apply)

- ☐ Embyronic stem cells
- ☐ Adult stem cells
- ☐ Induced pluripotent stem cells
- ☐ Neuronal stem cells

Which of the following is NOT a mechanism involved in cell differentiation?

- ◯ Gene expression
- ◯ Signal transduction
- ◯ Epigenetic modifications
- ◯ Photosynthesis

Which of the following is a potential application of cell differentiation in medicine?

- ◯ Genetic modification
- ◯ Regenerative medicine
- ◯ Antibiotic production
- ◯ Vaccine development

Which diseases can result from abnormal cell differentiation? (Select all that apply)

- ☐ Cancer
- ☐ Diabetes
- ☐ Alzheimer's disease
- ☐ Hypertension

In which areas can differentiated cells be used for research and development? (Select all that apply)

- ☐ Disease modeling

- [ ] Drug testing
- [ ] Climate change studies
- [ ] Tissue engineering