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M1 immunology

Bioethics

Tutorial 2

**Exercise 1:** Intellectual Property Ethics in Biotechnology

1. The primary ethical concern in the patenting of biotechnological inventions is:

- A) Ensuring rapid commercialization.
- B) Balancing innovation with access to biotechnological advancements.
- C) Guaranteeing high profits for inventors.
- D) Preventing any form of competition.

2. Which statement best reflects an ethical argument against the patenting of genes?

- A) It encourages a competitive market.
- B) It restricts access to genetic information and technologies.
- C) It increases the cost of research.
- D) It is essential for funding genetic research.

3. Intellectual property rights in biotechnology are justified on the grounds of:

- A) Promoting scientific freedom.
- B) Encouraging innovation and investment in research.
- C) Ensuring that all genetic modifications are patented.
- D) Limiting access to genetic resources.

4. Case Study: A company patents a gene associated with a rare disease, controlling the market for testing and treatment. Discuss the ethical implications of this monopoly, considering access to care, innovation, and public health.

**Exercise 2:** Genetics Ethics

1. The ethical debate around genetic editing technologies like CRISPR-Cas9 often centers on:

- A) The potential for unintended genetic consequences.
- B) The accuracy of genetic editing.

C) The cost of genetic editing technologies.

D) The speed of genetic research.

2. In genetics ethics, the concept of 'genetic privacy' refers to:

A) The right to access one's genetic information.

B) The right to keep one's genetic information private.

C) The ability to change one's genetic information.

D) Public access to genetic databases.

3. Which of the following raises significant ethical concerns in prenatal genetic testing?

A) The potential for early disease intervention.

B) The accuracy of the tests.

C) The possibility of eugenic practices.

D) The cost of testing.

4. Case Study: A couple undergoes genetic testing and discovers their unborn child has a gene for a severe, incurable condition. Discuss the ethical considerations they face in deciding on the pregnancy's future, focusing on autonomy, beneficence, and non-maleficence.

**Exercise 3: Ethics of Genetically Modified Organisms (GMOs)**

1. The primary ethical concern with GMOs in agriculture is:

A) Enhancing the flavor of food.

B) Increasing the size of produce.

C) The potential impact on biodiversity and ecosystem health.

D) The cost of GMO seeds.

2. Which of the following is a key ethical argument in favor of developing GMOs?

A) They can lead to monopolies in the agriculture sector.

B) They have the potential to improve food security and nutritional outcomes.

C) They ensure the dominance of certain crops.

D) They reduce the need for chemical pesticides.

3. Case Study: A new GMO crop shows potential to significantly reduce malnutrition in a developing region but raises concerns about long-term ecological impacts. Discuss the ethical considerations

involved in deciding to implement this crop, considering global health, environmental sustainability, and local autonomy.

**Exercise 4: Abortion Ethics**

1. The ethical debate on abortion often hinges on the question of:

- A) The mother's health only.
- B) The fetus's rights versus the mother's rights.
- C) The availability of medical facilities.
- D) The societal impact of abortion.

2. Which principle is most challenged in the ethical discussions about abortion?

- A) Autonomy
- B) Beneficence
- C) Non-maleficence
- D) Justice

3. Case Study: A woman faces a high-risk pregnancy that endangers her life. Discuss the ethical considerations in her decision about abortion, focusing on autonomy, the principle of double effect, and societal implications.

**Exercise 5: Organ Bioethics**

1. The primary ethical concern in organ transplantation is:

- A) Ensuring the recipient's compatibility.
- B) The method of organ allocation.
- C) The cost of transplantation surgery.
- D) The surgical risks involved.

2. Which of the following best addresses the ethical issue of consent in organ donation?

- A) Presumed consent for everyone.
- B) Mandatory donation for certain age groups.
- C) Informed consent from the donor or next of kin.
- D) Financial incentives for donation.

3. Case Study: A shortage of available organs for transplantation leads to a debate over the ethics of a market-based approach to organ donation. Discuss the potential benefits and ethical concerns of such an approach, considering equity, consent, and exploitation.

**Exercise 6: Contemporary Bioethics Issues**

1. In the context of global health ethics, the principle of justice most directly concerns:

- A) The distribution of healthcare resources globally.
- B) The confidentiality of patient information.
- C) The autonomy of healthcare providers.
- D) The development of new medical technologies.

2. The use of artificial intelligence in healthcare raises ethical questions primarily about:

- A) The speed of technological advancement.
- B) Ensuring equitable access to AI-driven care.
- C) The replacement of human healthcare workers.
- D) The cost of AI technologies.

3. Case Study: An experimental treatment offers the only hope for a terminal condition but comes with high risks and a significant financial cost. Discuss the ethical considerations in offering or recommending this treatment, focusing on beneficence, non-maleficence, autonomy, and justice.