

Supporting Reasoning sheet

1. COVID-19 Contact Tracing

- Goal: Break the chain of disease transmission.
- Positive individuals should isolate to prevent infecting others.
- Early testing and self-testing allow rapid identification and isolation.
- Successful contact tracing depends on:
 - Public cooperation
 - Reliable information
 - Testing availability
 - Privacy and ethical practice

Scientific Principle

- Epidemiology
- Infection Prevention and Control (IPC)
- Public Health Surveillance

2. Artificial Intelligence in Medical Imaging

- AI improves diagnostic accuracy.
- AI serves as a second opinion for radiologists.
- AI literacy increases confidence in technology.
- Human-centered AI improves acceptance.
- Ethical considerations include transparency, trust, and professional responsibility.

Scientific Principle

- Machine Learning
- Clinical Decision Support Systems
- Technology Acceptance Model (TAM)
- UTAUT

3. Stem Cell Therapy for Parkinson's Disease

- Human embryonic stem cells differentiate into dopaminergic neurons.
- Quality markers:
 - LMX1A
 - EN1
- Growth factors:
 - SHH
 - FGF8b
- Manufactured under GMP conditions.
- Preclinical studies:
 - No tumor formation
 - Improved motor function in rats

Scientific Principle

- Stem Cell Differentiation
- Cell Replacement Therapy
- Good Manufacturing Practice (GMP)

4. Urban Ecology

- studies interactions between cities and ecosystems.
- Africa is rapidly urbanizing
- Research distribution is uneven.
- GDP influences publication output.
- International collaboration is recommended.

Scientific Principle

- Urban Ecology
- Biodiversity Conservation
- Systematic Literature Review

General Reasoning Strategy

1. Identify the key concept in the question.
2. Match evidence from the article.
3. Apply the relevant scientific principle.
4. Select the answer most consistent with the evidence.