Q78

What is the application of Somatic Cell Nuclear Transfer Technology? (a) Production of biolarvicides (b) Manufacture of biodegradable plastics (c) Reproductive cloning of animals (d) Production of organisms free of diseases Official key: C.

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Science, technology, space, defence, IT - Prelims GS Paper I.

Explanation

(a)

Biolarvicides are microbial or botanical agents against mosquito larvae (for example Bti). They are not produced by somatic cell nuclear transfer. This option is not the key.

(b)

Biodegradable plastics (PHA, PLA) come from fermentation or petro-substitutes, not from SCNT. This option is therefore wrong.

(c) Official key

Somatic Cell Nuclear Transfer places a somatic nucleus into an enucleated egg so a clone can develop. Dolly the sheep is the textbook animal reproductive-cloning application. That is why (c) is the official key.

(d)

Disease-free organisms may be a breeding goal, but SCNT's defining application in this question is reproductive cloning, not pathogen-free production as such. This option is not the key.

Summary

Official key is (c) Reproductive cloning of animals. SCNT is the nuclear-transfer method used to clone mammals from a body cell. Biolarvicides and bioplastics are different biotech streams. Creating disease-free stock is not the name of the technique. Dolly (1996) is the landmark SCNT clone.

Related possible facts

These can be asked in a future Prelims paper.

Dolly
First mammal cloned from an adult somatic cell, 1996, Roslin Institute

Enucleation
Removal of the egg's own nucleus before transfer

Therapeutic cloning
SCNT to make embryonic stem cells, not a full animal

Bt / Bti
Bacterial insecticides; unrelated to nuclear transfer

iPS cells
Reprogrammed somatic cells; an alternative path without cloning an animal