**Biology Revision: Cell Division**

Mastery Matrix Points

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| Define, locate and rank in terms of size, *‘Genes’, ‘Chromosomes’, ‘DNA’ and ‘nucleus’* |
| Explain the process of *‘mitosis’* and the ‘*cell cycle’* (when, where, how and why) |
| Describe what stem cells are, where they can be found and how the can be used |
| Explain the process of *‘therapeutic cloning’* |
| Evaluate the risks and benefits, including the social and ethical implications, of using stem cells in treatments |
| Explain how plants can be cloned from stem cells and the benefits of doing this |

Key Knowledge

Inside the nucleus is a chemical called \_\_\_\_\_. A length of DNA is called a \_\_\_\_\_. These genes make up \_\_\_\_\_\_\_\_. Humans have \_\_\_\_ pairs of chromosomes.

Definitions:

Mitosis -

Cell cycle –

Stem cell –

Therapeutic cloning -

|  |  |
| --- | --- |
| *Stage of cell cycle* | *What happens?* |
| Growth stage |  |
| Mitosis |  |
| Cytokinesis |  |

Job of the three types of stem cells

1. embryotic -

2. adult -

3. meristem (plan) –

Two conditions that might be cured by stem cells:

1

2

Understanding and Explaining

1. Chromosomes are found in pairs in most body cells. Describe where these 23 pairs of chromosomes come from.
2. Why is the cell cycle needed?
3. Explain the process of the cell cycle.
4. Compare the two types of stem cells found in animals, such as humans.
5. Where are adult stem cells found?
6. Name the undifferentiated cells found in plants. Where in plants are these found?
7. Therapeutic cloning can be used to produce an organ for transplant. Evaluate the pros and cons of using stem cells for therapeutic cloning.
8. Stem cells from meristems in plants can be used to produce clones of plants quickly and economically. Suggest two uses of cloning plants in this way.