EST **Cloning**

**Background**

There are many kinds of cloning: natural, artificial plant cloning, animal, human and molecular.

**Global Context:**  Scientific and Technological Innovation

**Statement of Inquiry:** Scientific information and knowledge is used to enhance human existence.

**Factual Question:** What is cloning and what are its consequences?

**Conceptual Question:** How might humans be affected by cloning?

**Debatable Question:** Should scientists intervene intervene with living organisms?

**Approaches to Learning:**

* Thinking skills
* Communication skills
* Research skills

**Your task**

You will write a 500 word (2 pages double-spaced in regular font) essay discussing a type of cloning, its consequences and how the scientific community is trying the deal with the resulting issues.

Choose a type of cloning.

Here are some suggestions for research:

* What is the type of cloning you have chosen? When and where did this type first occur?
* What were the consequences on the living organisms when this type of cloning originated? Make sure the mention specific organisms.
* How are scientists continuing to deal with this type of cloning? How are they trying to minimize the impact on the living organisms?
* The impacts of cloning are not only felt on living organisms. There are also political, economical and sometimes ethical issues. How do those political, economical and ethical issues influences the actions of the scientists?

**Tuesday June 5th**

**Evaluation:** You will be evaluated based on MYP Criteria A and D.

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| **Criteria** | **7-8** | **5-6** | **3-4** | **1-2** |
| **A**  **Knowing and understanding** | **explain** scientific knowledge  apply scientific knowledge and understanding to **solve problems** set in  **familiar and unfamiliar situations**  **analyse** and **evaluate** information to make **scientifically supported judgments**. | **describe** scientific knowledge  apply scientific knowledge and understanding to **solve problems** set in **familiar situations** and **suggest solutions** to problems set in **unfamiliar situations**  **analyse** information to make **scientifically supported judgments**. | **outline** scientific knowledge  apply scientific knowledge and understanding to **solve problems** set in  **familiar situations**  **interpret** information to make **scientifically supported judgments**. | **state** scientific knowledge  apply scientific knowledge and understanding to **suggest solutions** to problems set in **familiar situations**  **interpret** information to make **judgments**. |
| **B**  **Inquiring and designing** | **explain** a problem or question to be tested by a scientific investigation  **formulate and explain** a testable hypothesis **using correct scientific reasoning**  **explain** how to manipulate the variables, and **explain** how **sufficient, relevant data** will be collected  **design** a **logical, complete and safe method** in which he or she **selects appropriate materials and equipment**. | **describe** a problem or question to be tested by a scientific investigation  **formulate and explain** a testable hypothesis **using scientific reasoning**  **describe** how to manipulate the variables, and **describe** how **sufficient, relevant data** will be collected  design a **complete and safe method** in which he or she selects **appropriate materials and equipment**. | **outline** a problem or question to be tested by a scientific investigation  **formulate** a testable hypothesis **using scientific reasoning**  **outline** how to manipulate the variables, and **outline** how **relevant data** will be collected  design a **safe method** in which he or she **selects materials and equipment**. | **state** a problem or question to be tested by a scientific investigation  **outline** a testable hypothesis  **outline** the variables  **design** a method, **with limited success.** |
| **C**  **Processing and evaluating** | **correctly collect, organize, transform and present** data in numerical and/ or visual forms  **accurately interpret** data and **explain** results **using correct scientific reasoning**  **evaluate** the validity of a hypothesis based on the outcome of a scientific investigation  **evaluate** the validity of the method based on the outcome of a scientific investigation  **explain** improvements or extensions to the method that would benefit the scientific investigation. | **correctly collect, organize and present** data in numerical and/or visual forms  **accurately interpret** data and **explain** results **using scientific reasoning**  **discuss** the validity of a hypothesis based on the outcome of a scientific investigation  **discuss** the validity of the method based on the outcome of a scientific investigation  **describe** improvements or extensions to the method that would benefit the scientific investigation. | **correctly collect and present** data in numerical and/or visual forms  **accurately interpret** data and **explain** results  **outline** the validity of a hypothesis based on the outcome of a scientific investigation  **outline** the validity of the method based on the outcome of a scientific investigation  **outline** improvements or extensions to the method that would benefit the scientific investigation. | **collect and present** data in numerical and/or visual forms  **interpret** data  **state** the validity of a hypothesis based on the outcome of a scientific investigation  **state** the validity of the method based on the outcome of a scientific investigation  **state** improvements or extensions to the method. |
| **D**  **Reflecting on the impacts of science** | **explain** the ways in which science is applied and used to address a specific problem or issue  **discuss and evaluate** the implications of using science and its application to solve a specific problem or issue, interacting with a factor  **consistently apply** scientific language to communicate understanding  **clearly and precisely**  document sources **completely**. | **describe** the ways in which science is applied and used to address a specific problem or issue  **discuss** the implications of using science and its application to solve a specific problem or issue, interacting with a factor  **usually apply** scientific language to communicate understanding clearly and precisely  **usually** document sources correctly. | **summarize** the ways in which science is applied and used to address a specific problem or issue  **describe** the implications of using science and its application to solve a specific problem or issue, interacting with a factor  **sometimes apply** scientific language to communicate understanding  **sometimes** document sources correctly. | **outline** the ways in which science is used to address a specific problem or issue  **outline** the implications of using science to solve a specific problem or issue, interacting with a factor  **apply** scientific language to communicate understanding but does so **with limited success**  document sources, with **limited success**. |