

**Life Science 7: Review Packet for Distance Learning**

May 18 – May 22

*Time Allotment: 30 minutes per day*

Student Name: \_\_\_\_\_

Teacher Name: \_\_\_\_\_

## Packet Overview

| Date              | Objective(s)  | Page Number |
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| Monday, May 18    | 1. Analyze whether the sloth has limitations or if it's an efficient animal that ideally fills its role.                              | 2           |
| Tuesday, May 19   | 1. Assess the importance of the functions of the cardiovascular system.<br>2. Analyze the importance of respiratory system functions. | 5           |
| Wednesday, May 20 | 1. Assess the importance of the immune systems' three lines of defense.<br>2. Assess the overall function of human senses.            | 7           |
| Thursday, May 21  | 1. Judge the uniqueness of humanity based on Portman's description of human development.  | 9           |
| Friday, May 22    | 1. Judge the uniqueness of humanity.  | 11          |

**Additional Notes:** Welcome to the last packet for your 7<sup>th</sup> grade Life Science career. It really has been a challenging, yet extraordinarily joyful journey with you. You will hear more from Mr. Luke and I in a separate communication about our journey this year, so I will use this opportunity to talk about the goals for this review packet. This is not a review of the entire year! This packet is intended to go over the material from the last 9 weeks. While you have all done great work to dive deeply into the material from your homes, it does not have the same weight as being together and exploring together as a class community. We do not want you to end the course with a stone unturned or a concept left cloudy. Therefore, this packet will review material and explore concepts that you already know but that could be explored with more depth. I am so proud of your growth and the responsibility you have undertaken in this challenging of distance learning. Be well, my fine Great-Hearted scholars!

### Life Science Zoom Guided Instruction Hours:

**2<sup>nd</sup> Period: Monday & Wednesday, 11:00 am to 11:50 am**

**3<sup>rd</sup> Period: Monday & Wednesday, 1:00 pm to 1:50 pm**

**4<sup>th</sup> Period: Tuesday & Thursday, 10:00 am to 10:50 am**

**5<sup>th</sup> Period: Tuesday & Thursday, 11:00 am to 11:50 am**

**6<sup>th</sup> Period: Tuesday & Thursday, 1:00 pm to 1:50 pm**

### Academic Honesty

I certify that I completed this assignment independently in accordance with the GHNO Academy Honor Code.

*Student signature:*

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I certify that my student completed this assignment independently in accordance with the GHNO Academy Honor Code.

*Parent signature:*

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**Monday, May 18**

- Life Science Unit: Distance Learning Review Material
- Lesson 1: What it Means to be a Sloth
- Lesson timeline: **10 minutes** to read the concluding section of What it Means to Be a Sloth; **20 minutes** to answer discussion questions.

**Objective(s):** Be able to do this by the end of this lesson.

1. Analyze whether the sloth has limitations or if it's an efficient animal that ideally fills its role.

**I. Re-Read concluding section of What it Means to Be a Sloth (included below). (10 minutes).**

**13. Encircling the Unspeakable: The Animal as a Whole**

I'd like to return to the statements quoted at the beginning of this essay: George Louis Leclerc, Comte de Buffon was a well-known 18th-century French scientist. He studied many animals, among them the sloth, about which he said: "one more defect and they could not have existed" (quoted in Beebe 1926). He considered the sloth's remarkable characteristics to be defects. And they are, if you take the point of view of a horse, eagle, jaguar, or human being. But as naturalist William Beebe countered, "a sloth in Paris would doubtless fulfill the prophecy of the French scientist, but on the other hand, Buffon clinging upside down to a branch of a tree in the jungle would expire even sooner" (Beebe 1926 p. 13).

Buffon takes a standpoint outside the animal. I have followed Goethe's suggestion and tried to view the sloth on its own turf. He wrote: "Hence we conceive of the individual animal as a small world, existing for its own sake, by its own means. Every creature is its own reason to be. All its parts have a direct effect on one another, a relationship to one another, thereby constantly renewing the circle of life; thus we are justified in considering every animal physiologically perfect." (Goethe 1995, p. 121)

I have made use of comparison, but not to describe what the sloth "should" have in order to be a reasonable animal. The animals described by way of comparison shed light on the sloth, allowing its uniqueness to stand out all the more perceptibly. When Goethe calls an animal "perfect," he means that each animal has its own unique way of being — its specific integrity that we can try to understand. But this is no simple matter. Goethe recognized that "to express the being of a thing is a fruitless undertaking. We perceive effects and a complete natural history of these effects at best encircles the being of a thing. We labor in vein to describe a person's character, but when we draw together actions and deeds, a picture of character will emerge" (1995, p. 121; translation modified by CH). In trying to paint a picture of the sloth, I have discussed many details, because through them the whole lights up. Henri Bortoft puts it well when he says, "The way to the whole is into and through the parts. The whole is nowhere to be encountered except in the midst of the parts" (1996, p. 12).

This emergent picture of the whole does not and cannot encompass the totality of its characteristics. One can always discover new details. I am not striving for totality, but rather for wholeness. Our understanding hinges on our ability to overcome the isolation of separate facts

and to begin to fathom the animal as a whole, integrated organism. The whole is elusive, and yet, at every moment, potentially standing before the mind's eye. When we begin to see how all the facets of the animal are related to each other, then it comes alive for us. Or, putting it a bit differently, the animal begins to express something of its life in us. Every detail can begin to speak "sloth," not as a name, but as a qualitative concept that a definition can do little justice to.

I have tried to describe the sloth in a way that allows us to catch glimpses of its wholeness. I can now refer to such characteristics as slowness, inertia, blending in with the environment, receding or pulling in and not actively projecting outward. Each expression is a different way of pointing to the same coherent whole. Taken alone, as abstract concepts or definitions, they are empty. They are real only inasmuch as they light up within the description or perception of the animal's characteristics. But they are not things like a bone or an eye. They are, in context, vibrant concepts that reveal the animal's unique way of being.

Let's return to the sloth, high in the crown of a rain-forest tree, hanging from or nestled on a branch. In its outer aspect, it blends in with its environment. There are no sudden or loud movements. The sloth's green-tinged, mottled brown coat lets it optically recede into the wood and foliage of its surroundings. And like the tree bark, the sloth's fur is teeming with insect life. The sloth's body temperature rises and sinks with the ambient temperature.

The round form of its head is the anatomical image of the way in which the sloth does not actively project into its environment. There are no large, movable, reactive outer ears and the eyes are rarely, if ever, moved. The sloth has no protruding snout. It draws the scents of the environment, especially of the leaves it feeds upon, into its nose. But much of the day the sloth is curled up, unaware of the world around it. Even when awake, the sloth seems not to live as intensely in its body as other mammals, being quite insensitive to pain.

The sloth does not carry its own weight; rather, it clings to an outer support. Its skeletal system is not characterized by stability, but by looseness. This laxity allows the sloth to adopt positions that would be contortions in other animals. The sloth makes mostly steady pulling movements with its long limbs, a capacity based on the dominance of retractor muscles.

The sloth develops slowly in the womb and has a long, slow life. It moves slowly through the crowns, feeding on the leaves that surround it from all sides, bathing, as it were, in its food source. The leaves pass through the animal at an almost imperceptibly slow rate. The sloth's stomach is always filled with partially digested leaves. Even its dung disappears slowly, despite the warm and humid rain forest climate that normally accelerates decomposition processes.

The sloth brings slowness into the world.

## II. Discussion questions about reading (20 minutes)

1. Why did Holdrege conclude that the sloth was “one with its environment”?

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2. Describe four different attributes of the sloth’s behavior that demonstrate “slothfulness”.

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3. What connection is Holdrege trying to make when he says that sloth’s facial features do “not actively project into its environment”? Does it tell us anything about the sloth’s behavior or characteristics?

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4. Holdrege attempted to write in a way that “allows us to catch glimpses of its wholeness.” In your own words, how would you describe the wholeness of a sloth?

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5. Why did you think we would study the sloth in 7<sup>th</sup> grade Life Science (write at least 2 sentences)?

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**Tuesday, May 19**

- Life Science Unit: Distance Learning Review Material
- Lesson 2: Human Body Review: Cardiovascular and Respiratory Systems
- Lesson timeline: **5 minutes** to review textbook study guides and **25 minutes** to **answer discussion questions**

**Objective(s):** Be able to do this by the end of this lesson.

1. Assess the importance of the functions of the cardiovascular system.
2. Analyze the importance of respiratory system functions.

**I. Review Study Guide on page 425 of textbook and Section 1 on page 451 of textbook. (5 minutes)**

**II. Answer Discussion Questions below. (25 minutes)**

1. If pressure is needed to ensure that blood pumps to all parts of the body, why is high blood pressure considered an indicator of heart disease?

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2. Describe at least two ways in which the cardiovascular and respiratory systems are complementary?

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3. Why is glucose (a nutrient derived from the break down of food) considered to be part of respiration?

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4. Imagine that you are a molecule of oxygen that is getting ready to enter the human body from the outside air. Describe this molecule's journey from outside the body to the end point of entering a muscle cell in your leg so that you can run a race.

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5. Explain how the structure of the alveoli is related to their function of gas exchange.

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**Wednesday, May 20**

- Life Science Unit: Distance Learning Review Material
- Lesson 3: Immune System and Nervous System
- Lesson timeline: **10 minutes** to review material; **20 minutes** to complete discussion questions.

**Objective(s):** Be able to do this by the end of this lesson.

1. Assess the importance of the immune systems’ three lines of defense.
2. Assess the overall function of human senses.

**I. Review the Study Guide on page 481 of textbook and review the Study Guide on page 517 of textbook. (10 minutes)**

**II. Answer discussion questions. (20 minutes)**

1. Given all the sources of pathogens, name as many things as you can that must be sterilized in a hospital operating room.

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2. Your grandmother might tell you that you need to wear a coat on a chilly day to prevent you from catching a cold. Is there any truth to this sentiment? Why or why not?

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3. The textbook described balance as one of our senses. In the lesson packet on the nervous system you were asked to give your opinion on whether or not balance is a “sense”. No matter what your opinion is, think about all the things that balance is involved in during our day-to-day lives. Describe 4 daily occurrences that require your “sense of balance”. (By daily, I don’t mean that you are a high-wire acrobat...I mean things that we do every day!)

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4. Describe how lenses in eyeglasses correct nearsightedness and farsightedness.

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5. The textbook described that the image on your retina is upside down, but that our brain reverses it so that we interpret it as right-side up. Provide your hypothesis as to why this occurs.

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**Thursday, May 21**

- Life Science Unit: Distance Learning Review Material
- Lesson 4: A Zoologist Looks at Humankind
- Lesson timeline: **5 minutes** to read the concluding chapter of the text; **25 minutes** to answer discussion questions of *A Zoologist Looks at Humankind*.

**Objective(s):** Be able to do this by the end of this lesson.

1. Judge the uniqueness of humanity based on Portman’s description of human development.

**I. Read the excerpt below from *A Zoologist Looks at Humankind* by Adolf Portman. (5 minutes)**

Concluding Excerpt from *A Zoologist Looks at Humankind*:

**Oneness of Developmental Events**

Ungulates and apes, seals and whales—all mature in seclusion, in the mother’s body. Perhaps this assertion strikes us as doubtful, given what we know of the juvenile period of higher animals, of the period of experimentation and learning within the group, of the impressive early phase of an ape’s life, and of the life of an anthropoid ape in particular. That is why we must consider the singular nature of our own birth state, the high multiplier factor of our brain, and the different proportions of limbs and torso in order to understand the uniqueness of our early situation. For a moment, we must focus intently on the situation we find when we study mammals other than humans to establish the developmental norms of the animal group; we must try to imagine the developing human spending the important maturation period of its first year of life in the dark, moist, uniform warmth of its mother’s womb. Only then, by contrasting that vision with the reality of human development that is before us, will we understand the completely special, separate nature of our mode of development. Then, as we reflect on these things, the unusual, intimate relationship that exists between the special nature of human behavior and the remarkable, atypical development of our children will become apparent step by step. It will gradually become clear that world-open behavior of the mature form is directly related to early contact with the richness of the world, an opportunity available only to the human!

**II. Answer discussion questions. (25 minutes)**

1. Provide your interpretation of what Portman means in his final sentence, “It will gradually become clear that world-open behavior of the mature form is directly related to early contact with the richness of the world, an opportunity available only to the human!” (At least 3 sentences)

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2. What point is Portman trying to illustrate by the following quotation?

“There is no difference between the appropriate formation of the hooves and legs of a foal or a fawn and the developmental mode of its posture, locomotion and voice. In young harbor seals, the hydrodynamic form of the body takes shape in the same way as do the drive to swim and the correct mode of operation of the paddle-shaped limbs.”

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3. We have discussed several species of animal that are considered “closely related” to humans (Holdrege claimed the elephant was one of our closest animal relatives; Portman describes apes, gorillas, orangutans). However, these examples are fully precocial newborns. Human newborns are basically altricial. Please reconcile this conundrum.

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4. What was your favorite section or reading of the Life Science curriculum? Why?

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