

[I]

Read the following article carefully and answer the questions. For each question, choose ONE BEST answer. On your answer sheet, find the number of the question and fill in the space that corresponds to the number of the answer you have chosen. For Writing Answer Question “A”, write your answers in the corresponding spaces provided on the Writing Answer Sheet.

(Based on Jerome Groopman, M.D., and Pamela Hartzband, M.D.. 2017. “*The Power of Regret.*” The New England Journal of Medicine – Perspective.)

① When we consider regret in medicine, we typically think of the feeling that follows a poor clinical outcome. The possibility of regret shadows almost every medical decision a patient makes. At each step, from choosing a doctor or a hospital to accepting a diagnosis, embracing a prognosis, and selecting or declining a treatment, there is an element of uncertainty and therefore a risk of regret. To be sure, disappointment is an unavoidable aspect of making difficult choices; sometimes the results fall short of what we hope for. But disappointment is not associated with [Q2] and thus differs notably from regret. Regret with its core of [Q2] can be one of the greatest burdens in a patient’s life.

② When we began exploring this issue, we were surprised to discover that the experience of a poor outcome does not always result in regret. An acquaintance had knee surgery for chronic pain due to osteoarthritis*¹. The surgery was unsuccessful, and his pain was not made more bearable. Yet, though disappointed, he had no regret. He explained that he had followed a process, considered his options, and made an informed choice. Researchers describe “process regret” that occurs, for example, when patients do not consider information about all available choices before making a decision. This patient had avoided process regret and experienced no [Q2].

③ Some experiments have addressed various medical situations including cancer screening and treatment, prenatal testing, and elective surgery. In particular, this research has been invoked to explain the low rate of vaccination against illnesses such as influenza. “Omission bias” — the tendency toward inaction or inertia — reflects “anticipated regret” and results in many people avoiding influenza vaccination. While they’re feeling healthy, they anticipate the regret they would experience if they got sick from the injection. Even though the risk of side effects from the vaccine is low and symptoms are usually mild, many people omit the vaccination and take the risk of the later development of influenza.

④ On the other hand, “commission bias,” the tendency to believe that action is better than inaction, can result in regret arriving later when a bad outcome occurs — “experienced regret.” The psychologist George Loewenstein distinguishes between decision making in “hot” and “cold” emotional states. When we’re in pain or acutely anxious, we are “hot” and apt to make choices that we imagine will rapidly remedy our condition, which predisposes us to commission bias. In a hot state, patients may discount too deeply the risks posed by a treatment and overestimate its likelihood for success, paving the way for later regret if the outcome is poor. Patients who choose elective procedures while in a hot state and end up with a bad outcome may be at particular risk for regret due to commission bias.

⑤ Physicians are acutely aware of the element of uncertainty in medicine, but less often recognize its close companion, regret. Regret in all its forms can be a powerful undercurrent, moving patients to act in ways that may baffle us. We should recognize that anticipated regret can leave a patient mired in decisional conflict, unable to choose. For these patients, it is vital to bring anticipated regret to the surface by openly discussing their fears and helping them gain a clear perspective on the risks and benefits of their options in order to move forward. To mitigate the possibility of future experienced regret, doctors can try to reduce the emotional temperature and, when feasible, avoid having patients make their decisions while in a hot state. [Q5] in the most urgent circumstances, physicians can set in motion a deliberate process, exploring all treatment options to avert process regret. When patients are heavily influenced by others in making a decision, one can also be alert to the possibility of role regret.

⑥ Regret is typically viewed as a negative emotion. It is notable that existing patient regret scales have largely failed to assess for a positive impact of regret. However, awareness of regret can be positive or functional, a potent force in modifying behavior and enhancing decision making. Physicians can help their patients make better decisions by understanding the power of regret in all its forms.

*1 osteoarthritis: an inflammation, degeneration, and eventual loss of material (cartilage) in the bone joints.

Q 1 . In paragraph ① (line 6), the underlined phrase fall short of is closest in meaning to —

- 1 . decrease
- 2 . drop off
- 3 . fail to satisfy
- 4 . hurry up
- 5 . shorten

Q 2 . In paragraphs ① (lines 7 and 8) and ② (line 8), which of the following could best be added to [Q2] ?

- 1 . diagnosis
- 2 . hope
- 3 . information
- 4 . self-blame
- 5 . treatment

Q 3 . Which of the following is true of the authors' descriptions in paragraphs ① and ② ?

- 1 . Patients cannot regret things even if a clinical outcome is poor.
- 2 . Regret in medicine is always associated with a poor clinical outcome.
- 3 . Disappointment after a poor clinical outcome always results in regret.
- 4 . Even if a clinical outcome is poor, patients may not regret things as long as they made an informed choice.
- 5 . "Process regret" occurs, for example, when patients experience an unsuccessful surgery after receiving informed consent.

Q 4 . Which of the following is true of the authors' descriptions in paragraphs ③ or ④ ?

- 1 . "Cold" emotional states of patients are the only risks of regret.
- 2 . Patients who disregard the risks of a particular treatment may have regret if the outcome is poor.
- 3 . "Omission bias" is solely associated with preventative medicine such as influenza vaccinations.
- 4 . People should not have influenza vaccinations in order to avoid the risk of getting sick from the actual injection process.
- 5 . To avoid the risk of regret due to "commission bias", patients should obtain treatment as soon as possible after a diagnosis.

Q 5 . In paragraph ⑤ (line 9), which of the following could best be added in [Q5] ?

- 1 . Although
- 2 . Despite
- 3 . Except
- 4 . If
- 5 . When

Q 6 . Which of the following is true of the authors' overall description in this article ?

- 1 . The existing patient regret scales are useful to assess for positive and negative impacts of regret.
- 2 . Since regret is very well recognized in recent studies, physicians should use its power in medicine.
- 3 . In order to avoid regret in medicine, patients should be very careful of choosing a doctor and a hospital.
- 4 . It is important to understand patient regret in all its forms for physicians to make better decisions in medicine.
- 5 . Patients always need to think only about "omission bias" and "commission bias" when they make a decision for treatments.

Writing Answer Question "A"

Based on the discussions in Article [I], write the appropriate single word regret and bias types (or the single word "None" if none apply) as applicable in the appropriate columns. The single word regret and bias type answers can be found in Article [I] and are also listed for your convenience in alphabetical order on the Writing Answer Sheet to choose from.

Be sure to read each situation in the first column on the Writing Answer Sheet carefully and then write your single word answers (that best fit each situation) in the second and third columns separately. (Please note, the first Situation labeled "Ex." is only an example that is included to help you better understand the instructions.)

[II]

Read the following article carefully and answer the questions. For each question, choose ONE BEST answer. On your answer sheet, find the number of the question and fill in the space that corresponds to the number of the answer you have chosen. For Writing Answer Question “B”, write your answer in the corresponding spaces provided on the Writing Answer Sheet.

(Based on Nassim Nicholas Taleb. 2012. “*Antifragile: Things That Gain from Disorder.*”)

- ① Some things benefit from shocks; they thrive and grow when exposed to volatility, randomness, disorder, and stressors and love adventure, risk, and uncertainty. Yet, in spite of the ubiquity of the phenomenon, there is no word for the exact opposite of fragile. Let us call it antifragile.
- ② Antifragility is beyond resilience or robustness. The resilient resists shocks and stays the same; the antifragile gets better. This property is behind everything that has changed with time: evolution, culture, ideas, revolutions, political systems, technological innovation, cultural and economic success, corporate survival, good recipes, the rise of cities, legal systems, equatorial forests, bacterial resistance . . . even our own existence as a species on this planet. And antifragility determines the boundary between what is living and organic (or complex), say, the human body, and what is inert, say, a physical object like the stapler on your desk.
- ③ It is easy to see things around us that like a measure of stressors and volatility: economic systems, your body, your nutrition (diabetes and many similar modern ailments seem to be associated with a lack of randomness in feeding and the absence of the stressor of occasional starvation), your psyche. There are even financial contracts that are antifragile: they are explicitly designed to benefit from market volatility.
- ④ Antifragility makes us understand fragility better. Just as we cannot improve health without reducing disease, or increase wealth without first decreasing losses, antifragility and fragility are degrees on a spectrum.
- ⑤ Consider the story of the wheeled suitcase. I carry a large wheeled suitcase mostly filled with books on almost all my travels. In June 2012, I was rolling that generic, heavy, book-filled suitcase outside the JFK international terminal and, looking at the small wheels at the bottom of the case and the metal handle that helps pull it, I suddenly remembered the days when I had to haul my book-stuffed luggage through the very same terminal, with regular stops to rest and let the lactic acid flow out of my sore arms. I could not afford a porter, and even if I could, I would not have felt comfortable doing it. I have been going through the same terminal for three decades, with and without wheels, and the contrast was eerie. It struck me how lacking in imagination we are: we had been putting our suitcases on top of a cart with wheels, but nobody thought of putting tiny wheels directly under the suitcase.

⑥ Can you imagine that it took close to six thousand years between the invention of the wheel (by, we assume, the Mesopotamians) and this brilliant implementation (by some luggage maker in a drab industrial suburb)? And billions of hours spent by travelers like myself schlepping luggage through corridors full of rude customs officers. Indeed, though extremely consequential, we are talking about something trivial: a very simple technology.

⑦ But the technology is only trivial retrospectively—not prospectively. There is something sneaky in the process of discovery and implementation—something people usually call evolution. We are managed by small (or large) accidental changes, more accidental than we admit. We talk big but hardly have any imagination, except for a few visionaries who seem to recognize the optionality of things. We need some randomness to help us out—with a double dose of antifragility. For randomness plays a role at two levels: the invention and the implementation. The first point is not overly surprising, though we play down the role of chance, especially when it comes to our own discoveries.

⑧ It took me a lifetime to figure out the second point: implementation does not necessarily proceed [Q11] invention. It, too, requires luck and circumstances. The history of medicine is littered with the strange sequence of discovery of a cure followed, much later, by the implementation—as if the two were completely separate ventures, the second harder, much harder, than the first. This is where all you need is the wisdom to realize what you have on your hands.

⑨ There is a category of things that we can call half-invented and taking the half-invented into the invented is often the real breakthrough. Sometimes you need a visionary to figure out what to do with a discovery, a vision that he/she and only he/she can have. For instance, take the computer mouse, or what is called the graphical interface: it took Steve Jobs to put it on your desk, then laptop—only he had a vision of the dialectic between images and humans—later adding sounds to a trilectic. The things, as they say, that are “staring at us.”

⑩ As we saw with stories of the wheel, antifragility (thanks to the asymmetry effects of trial and error) supersedes intelligence. But *some* intelligence is needed. From discussions on rationality, we can see that all we need is the ability to accept that what we have on our hands is better than what we had before—in other words, to recognize the existence of the option. And from the history of technology, this ability to use the option given to us by antifragility is not guaranteed: things can be looking at us for a long time. We saw the gap between the wheel and its use. Medical researchers call such lag the “translational gap,” the time difference between formal discovery and first implementation, which, if anything, owing to excessive noise and academic interests, has been shown to be lengthening in modern times.

⑪ The historian David Wootton relates a gap of two centuries between the discovery of germs and the acceptance of germs as a cause of disease, a delay of thirty years between the germ theory of putrefaction and the development of antisepsis, and a delay of sixty years between antisepsis and drug therapy.

Q 7. Paragraphs ①, ②, ③ and ④ taken together make the point that —

1. Life and lifeless objects have no separation.
2. Economic and biological systems are completely dissimilar.
3. The new terminology being discussed represents a new way of thinking.
4. Previous common language usage adequately describes a paradigm shift.
5. Legal and economic systems are inherently strong and stable regardless of outside influences.

Q 8. In paragraph ⑤ (line 5), when the underlined word haul is pronounced, which of the following has the same vowel sound ?

1. bowel
2. down
3. house
4. poll
5. tall

Q 9. In paragraph ⑥ (line 5), the underlined word consequential is closest in meaning to —

1. cheerful
2. popular
3. significant
4. strange
5. useful

Q10. In paragraph ⑦ (line 7), the underlined words play down are closest in meaning to —

1. discount
2. enjoy
3. indicate
4. know
5. respect

Q11. In paragraph ⑧ (line 2), which of the following could best be added to [Q11] ?

1. against
2. at
3. from
4. into
5. on

Q12. Which of the following does NOT correspond to the author's descriptions in paragraphs ⑧ and ⑨ ?

1. Implementation is not always paired with inventions.
2. Discovering something is much harder than actually utilizing it.
3. It is necessary to carefully look at a discovery to make it more useful.
4. Some medical treatments have been established from implementation.
5. Steve Jobs could find out how to interface computers with human activities

Q13. Which of the following is true of the author's descriptions in any of the last three paragraphs of the article ?

1. We should be careful to find the impossibility behind the facts.
2. It is easy to complete new treatment methods if they remain half-discovered.
3. Intelligence is not necessary for implementation when accidental effects work well.
4. Academic interests are indispensable prerequisites for the development of new technology.
5. Medical research is often experiencing "translational gaps," because things are sometimes taken for granted for extended periods of time.

Writing Answer Question "B"

On the Writing Answer Sheet, put the following words into the proper order necessary to complete the summary sentence about Article [II]. Please put them in the order that makes the best sense within the context of the entire article. Write your answer in the space provided in the Writing Answer Question "B" section. The word "Large" should be the first word, the word "from" should be the fifth word, the phrase "something is" should comprise the eighth and ninth words, and the word "until" should be the eleventh word.

[discovered] [exist] [gaps] [implementation] [occurs] [often] [the] [time]

Large [] [] [] from [] [] something is [] until []
[].

[III]

Read the following article carefully and answer the questions. For each question, choose ONE BEST answer. On your answer sheet, find the number of the question and fill in the space that corresponds to the number of the answer you have chosen. For Writing Answer Question “C”, write your answers in the corresponding spaces provided on the Writing Answer Sheet.

(Based on Michael G. Cordingley. 2017. “*Viruses: Agents of Evolutionary Invention.*”)

① Viruses play an inextricable role in the evolution of all life. They are not themselves life-forms, a fact that is difficult to reconcile with the complexity and vitality of the events they trigger in their hosts. Like [Q15], viruses depend on their living hosts for the arsenal needed to support their campaign to replicate their genetic information. Their fundamental need is energy. The cell is a source of energetically rich components and structures that viruses must tap to fuel their propagation. The genius of viruses is to incorporate the energy of living systems into their energy-rich and highly “ordered” virus particles, returning “disorder” to their environment. Their encoded information multiplies and evolves in the slipstream and at the expense of energy from living organisms. Viruses may only be sophisticated [Q16a] in this reaction [Q16b], obeying the laws of thermodynamics, but their evolution is governed by the same laws of Darwinian evolution that rule the living world.

② The viral metagenome*¹ is the greatest repository of novel existing genetic information in the [Q17]. The creation of this genetic diversity is a feat unequalled by any of the three domains of life*², and much of it remains dark matter. As a consequence of its promiscuity and continued diversification it will continue to be the dominant source of genetic innovation in the [Q17]. The viruses that we know about are a significant minority; the oceanic virome*³, the viromes*³ of rodents, bats, and primates, and our own viromes*³ are certainly more complex than yet documented and will inevitably be sources of future evolutionary innovation. The virus metagenome*¹ will continue to fuel evolution, particularly in response to change. Change, interpreted in its broadest sense, will be the [Q19] that unlocks the evolutionary invention of the viral metagenome*¹ and the capacity of viruses for rapid and opportunistic evolutionary change.

③ There should be a broader appreciation of viruses: they are not simply life’s pathogens. They are life’s obligate partners and a formidable force in nature on our planet. As you contemplate the ocean under a setting sun, consider the multitude of virus particles in each milliliter of seawater; flying over wilderness forestry, consider the collective viromes*³ of its living inhabitants. The stunning number and diversity of viruses in our environment should engender in us greater awe that we are safe among these multitudes than fear that they will harm us.

④ The balancing of benefit versus threat to humanity is a fruitless task. The viral metagenome*¹ will contain new and useful gene functionalities for biomedicine; viruses may become essential biomedical tools and phages*⁴ will continue to optimize the health of our oceans, ensuring optimal primary production. Viruses may also accelerate the development of antibiotic drug resistance in the post-antibiotic era and emerging viruses may threaten our [Q21] and challenge our society economically and socially. Simply comparing these pros and cons, however, does not do justice to viruses and acknowledge their rightful place in nature.

⑤ In humility, we should acknowledge that we are one and the same with viruses, products of Darwinian evolution. Jonathan Swift, the Irish poet (1667–1745) who would have been a skeptic of evolution, wrote: “That the universe was formed by a fortuitous concourse of atoms, I will no more believe than that the accidental jumbling of the alphabet would fall into a most ingenious treatise of philosophy.” Viruses and life are, however, just such a “treatise of philosophy,” born in random events and selected under nature’s universal laws of thermodynamics and natural selection.

⑥ Life and viruses are inseparable. Viruses are life’s complement, sometimes dangerous but always beautiful in design. All autonomous self-sustaining replicating systems that generate their own energy will foster various forms of interdependency. Viruses are the inescapable by-products of life’s success on the planet. We owe our own evolution to them; the fossils of many are recognizable in endogenous retroviruses and endogenous viral elements that were certainly powerful influences in the evolution of our ancestors. Like viruses and prokaryotes, we are also a patchwork of genes, acquired by inheritance and horizontal gene transfer during our evolution from the primitive RNA-based world.

⑦ It is a common saying that “beauty is in the eye of the beholder.” It is a natural response to a visual queue: a sunset, the drape of a designer dress, or the pattern of a silk tie, but it can also be found in a line of poetry, a particularly effective kitchen implement, or even the ruthless efficiency of a firearm. The latter are uniquely human acknowledgments of beauty in design. It is humanity that allows us to recognize the beauty in the evolutionary design of viruses. They are unique products of evolution, the inevitable consequence of life, infectious egotistical genetic information that taps into life and the laws of nature to fuel evolutionary invention.

*¹ viral/virus metagenome: all viral DNA that exists in environmental samples.

*² three domains of life: 古細菌, 細菌, 真核生物.

*³ virome(s): the collection of viruses contained within an organism or environment.

*⁴ phages: viruses that infect bacteria.

Q14. What is the intended meaning of the underlined phrase in paragraph ① (line 2) difficult to reconcile ?

1. The two must become friends.
2. Distinguishing between organisms is not a complex task.
3. The creation of highly detailed systems result in limited optional roles.
4. Preconceived notions can influence perspectives on biological processes.
5. The amount of energy expended coincides with how life doesn't influence life.

Q15. In paragraph ① (line 3), which of the following phrases best fits into [Q15] ?

1. atypical voters
2. soliciting tours
3. cells disrupting
4. invading armies
5. penetrating insights

Q16. In paragraph ① (line 10), which of the following contains a set of words that could be best added in [Q16a] and [Q16b], respectively ?

	Q16a	Q16b
1.	chemistries	division
2.	disassociations	attachment
3.	organs	ecology
4.	products	ladder
5.	substances	mixture

Q17. In paragraph ② (lines 2 and 5), which word could best be inserted in both spaces marked [Q17] ?

1. biosphere
2. layers
3. margins
4. scenery
5. undercurrents

Q18. In paragraph ②, what meaning does the author wish to convey by using the underlined words dark matter in line 3 ?

1. It is something unknown.
2. Understanding is achieved.
3. Colors influence knowledge.
4. Principles are easily separated.
5. Determining differences is paramount.

Q19. In paragraph ② (line 10), which word can best be inserted into the space marked [Q19] ?

1. activator
2. drawback
3. enemy
4. suppressor
5. volunteer

Q20. Which of the following statements is true regarding paragraph ③ ?

1. Conditions for biological life are highly restrictive.
2. The danger posed by viral life-forms is greatly underestimated.
3. Sunsets, the sea, and the sky are not common domains for viruses.
4. The persuasiveness of life can be found only in limited territorial locales.
5. The highly varied types of biology that pervade our environment is worthy of appreciation.

Q21. In paragraph ④ (line 6), which of the following words could be inserted into [Q21] to best complete the intended meaning of the sentence ?

1. comfortableness
2. farsightedness
3. gracefulness
4. intrusiveness
5. madness

Q22. In paragraph ④, what is meant by the underlined phrase not do justice to in line 7 ?

1. Social fairness is a factor that is rarely considered in such evaluations.
2. Inequalities are eliminated when distinguishing differences are considered.
3. Socioeconomic imbalances in the world are natural occurrences and expected.
4. The violation of rights in the natural world is an inevitable consequence of diligent studies.
5. Built-in unfairness and the overlooking of deeper connections will appear even when carefully analyzing the reality of the situation.

Q23. What is the point the author is trying to make by comparing the words of a poet to scientific principles in paragraph ⑤ ?

1. Life origins are the result of happenstance.
2. Atoms and alphabets are completely unlike.
3. Natural law does not extend to the principles of literature.
4. Poetry makes thermodynamics completely understandable.
5. Evolutionary concepts have a strong basis and are validated in philosophy.

Q24. Which of the following statements is true of paragraph ⑥ ?

1. Prehistoric circumstances are rare to identify.
2. Transverse movement does not coincide with life.
3. Parasitic relationships are always perfect in the viral world.
4. Our common evolutionary origins over time are demonstrable.
5. Beneficial relationships are the sole arrangement in coadaptation with other life forms on this planet.

Q25. In paragraph ⑦, what is meant by the portion of the sentence underlined in line 5 ?

1. Charity is a quality that is forever encouraged.
2. The quality of kindness is the driving force in life.
3. Dispassionate analysis is the only requisite in science.
4. Empathy must be forgotten when examining interrelationships.
5. By virtue of our intelligence we are able to discern deeper perspectives.

Q26. Which of the following is NOT true of the entire article ?

1. Simplicity can thrive in the biological world.
2. Pro and con comparisons justifying life-forms are done in vain.
3. Complexity is the singular criterion that influences life the most.
4. Dangerous and harmful things may possess a subjective elegance.
5. The general concept of self-centeredness at the gene level is a driving factor in propelling evolutionary changes.

Writing Answer Question “C” (includes C1 and C2)

On the Writing Answer Sheet, write the appropriate word in the blocks provided in the Writing Answer Question “C” (C1 and C2) section to complete the summary sentences below. C1 requires exactly nine letters and C2 requires exactly six letters. The words required appear in the main text. You must use the appropriate word, exactly as it appears in the main text, that correctly best completes the meaning and context of the sentence. Please write clearly. Each word begins with the letter “p”.

There seems to be a preoccupation with viruses as existing apart from us solely as [C1]. However, they are as much a part of our [C2] as human beings are.

[IV]

Read the following question carefully and answer the question. Choose ONE BEST answer. On your answer sheet, find the number of the question and fill in the space that corresponds to the number of the answer you have chosen. The following question pertains to all three articles (I , II , and III).

Q27. Which of the following expresses a statement that correctly summarizes and could be considered representative of the overall concepts for all three articles (I , II , and III) ?

- 1 . Complex developments always stem from the opposite principles of strength, treatment, and evolutionary progress.
- 2 . Controlled predictable influences result in reinforced global health with a minimum of negative guilt development.
- 3 . Behavior modification is under operation on individual as well as larger community scales and results in a greatly improved future form.
- 4 . Bold decision making is required in order to ensure the best possible results based on a dispassionate independent examination of all possibilities influencing the decisions.
- 5 . A certain degree of chaos or uncertainty carries with it an inherent risk in terms of future developments and decisions, while at the same time potential benefits for improved outcomes.