Hello, English I Students! Attached is the work for our first week (April 20-April 24) of Distance Learning. It is an article from your StudySync textbook entitled Why We Love: The Nature and Chemistry of Romantic Love. Please contact me through email or Google Voice (text me! ☺) if you have questions during the daily office hours listed below.

Teacher	Email, Google Voice	Office Hours
Mr. Alford	halford@tusd.net (209) 597-8589	9 am to 11 am

Getting Started: Please fill out the following:

Step 1: Circle your Teacher and Class Period

Mr. Alford	**Mr. Alford**	**Mr. Alford**
English I	**English I**	**English I**
Period 3	**Period 4**	**Period 6**
Assignment 1	**Assignment 1**	**Assignment 1**

Step 2: Identify Yourself (Please print clearly)

Your Name:

Week 1 Assignment Directions: Annotate or highlight the text to read closely and assist with your assignments. Please do the following three assignments in the order they are listed. Let me know during my office hours if you have any questions.

Assignment #1: First Read: Why We Love: The Nature and Chemistry of Romantic Love (pages 427-431)

Assignment #2: Answer THINK QUESTIONS #1, 4, and 5 from p. 432

Assignment #3: Close Read: Answer FOCUS QUESTION #4 from p. 433

Assignment #4: WRITING PROMPT from p. 433 (about 200 words)

How to turn in:

You may turn in this packet by either taking a picture of this cover page and completed assignments and emailing it to your teacher any time on or before May 5th, or by dropping it off completed at school on May 5th.

Why We Love: THINK QUESTIONS

1. Refer to one or more details in paragraph 3 of the text to explain why the author chose to look specifically at these three chemicals in the brain--dopamine, norepinephrine, and serotonin--in her study of romantic love. Cite textual evidence to support your answer.

4. Use context to determine the meaning of the word **ruminations** as it is used in paragraph 15 of *Why We Love: The Nature and Chemistry of Romantic Love.* Write your definition of "ruminations"and tell how you determined the meaning of the word. Then confirm your inferred definition in a print or digital dictionary.
5. The word **caveats** as it is used in paragraph 22 of *Why We Love: The Nature and Chemistry of Romantic Love* comes directly from the Latin. Use context to try to figure out the meaning of this Latin word that has been borrowed into English. Write your definition of "caveats" and explain how you derived the meaning of the word. Then find its precise meaning in the dictionary.

FOCUS QUESTION:

4. Reread paragraph 21. How does the use of scientific or technical language make Dr. Fisher sound like an authority on the subject of the chemistry of love? How does the use of technical terms affect the style and tone of the text? How does this domain-specific vocabulary impact the reader, or audience? Highlight and annotate evidence that supports your responses.

WRITING PROMPT

What have you learned about the chemistry of love? In a short informative/explanatory essay, explain how Dr. Helen Fisher uses this text to ask and answer a question about why we love. How does she organize the text to help her develop and support her theory or ideas? How does her use of technical language add to the effectiveness and precision of her explanations? Begin with a clear topic, or thesis statement, to organize your ideas, and use evidence from the text and a strong conclusion to support your analysis. Include a clear text structure in your essay and use technical language, or domain-specific vocabulary, from the text to make your analysis clear, authoritative, and effective.

First Read: Why We Love: The Nature and Chemistry of Romantic Love

Read

From Chapter 3: Chemistry of Love: Scanning the Brain "in Love"

1 "There is the heat of Love, the pulsing rush of Longing, the lover's whisper, irresistible—magic to make the sanest man go mad." This magic that Homer sang of in *The Iliad* has started wars, sired dynasties, toppled kingdoms, and generated some of the world's finest literature and art. People sing for love, work for love, kill for love, live for love, and die for love. What causes this sorcery?

2 As you know, I have come to believe that romantic love is a universal human feeling, produced by specific chemicals and networks in the brain. But exactly which ones? Determined to shed some light on this magic that can make the sanest man go mad, I launched a multipart project in 1996 to collect scientific data on the chemistry and brain circuitry of romantic love. I assumed that many chemicals must be involved in one way or another. But I focused my investigation on dopamine and norepinephrine, as well as a related brain substance, serotonin.

3 I looked into the nature of these chemicals for two reasons: the attraction animals feel for particular mates is linked with elevated levels of dopamine and/or norepinephrine in the brain. More important, all three of these chemicals produce many of the sensations of human romantic passion.

Rock On, Sweet Dopamine

4 Take dopamine. Elevated levels of dopamine in the brain produce extremely focused attention, as well as unwavering motivation and goal-directed behaviors. These are central characteristics of romantic love. Lovers intensely focus on the beloved, often to the exclusion of all around them. Indeed, they concentrate so relentlessly on the positive qualities of the adored one that they easily overlook his or her negative traits, they even dote on specific events and objects shared with this sweetheart.

5 **Besotted** lovers also regard the beloved as novel and unique. And dopamine has been associated with learning about novel stimuli.

6 Central to romantic love is the lover's *preference* for the beloved. As you recall from chapter two, among prairie voles, this favoritism is associated with heightened levels of dopamine in specific brain regions. And it is not a leap of logic to suggest that if dopamine is associated with mate preference in prairie voles, it can play a role in partiality in people. As you recall, all mammals have basically the same brain machinery, although size, shape, and placement of brain parts definitely vary.

7 **Ecstasy** is another outstanding trait of lovers. This, too, appears to be associated with dopamine. Elevated

concentrations of dopamine in the brain produce exhilaration, as well as many of the other feelings that lovers report—including increased energy, hyperactivity, sleeplessness, loss of appetite, trembling, a pounding heart, accelerated breathing, and sometimes mania, anxiety, or fear.

8 Dopamine involvement may even explain why love-stricken men and women become so dependent on their romantic relationship and why they crave emotional union with their beloved. Dependency and craving are symptoms of addiction—and all of the major addictions are associated with elevated levels of dopamine. Is romantic love an addiction? Yes; I think it is—a blissful dependency when one's love is returned, a painful, sorrowful, and often destructive craving when one's love is spurned.

9 In fact, dopamine may fuel the frantic effort a lover musters when he/she feels the love affair is in jeopardy. When a reward is delayed, dopamine-producing cells in the brain *increase* their work, pumping out more of this natural stimulant to energize the brain, focus attention, and drive the pursuer to strive even harder to acquire a reward: in this case, winning one's sweetheart. Dopamine, thy name is persistence.

10 Even the craving for sex with the beloved may be indirectly related to elevated levels of dopamine. As dopamine increases in the brain, it often drives up levels of testosterone, the hormone of sexual desire.

Norepinephrine's High

11 Norepinephrine, a chemical derived from dopamine, may also contribute to the lover's high. The effects of norepinephrine are varied, depending on the part of the brain it activates. Nevertheless, increasing levels of this stimulant generally produce exhilaration, excessive energy, sleeplessness, and loss of appetite—some of the basic characteristics of romantic love.

12 Increasing levels of norepinephrine could also explain why the lover can remember the smallest details of the beloved's actions and cherished moments spent together. This liquor is associated with increased memory for new stimuli.

13 A third chemical may also be involved in that "irresistible" feeling of magic Homer spoke of: serotonin.

Serotonin

14 A striking symptom of romantic love is incessant thinking about the beloved. Lovers cannot turn off their racing thoughts. Indeed, this single aspect of being in love is so intense that I use it as the litmus test of romantic passion. The first thing I ask anyone who tells me they are "in love" is, "What percentage of your waking hours do you think about your sweetheart?" Many say "over 90 percent." Some bashfully admit they never stop thinking about "him" or "her."

15 Lovers are obsessed. And doctors who treat individuals with most forms of obsessive-compulsive disorder prescribe SSRIs (selective serotonin reuptake inhibitors) such as Prozac or Zoloft, substances that *elevate* levels of serotonin in the brain. So I came to suspect that the lover's persistent, involuntary, irresistible

ruminations about a sweetheart might be associated with *low* levels of some type (there are at least fourteen variations) of this chemical compound.

16 There is some support for my reasoning. In 1999, scientists in Italy studied sixty individuals: twenty were men and women who had fallen in love in the previous six months; twenty others suffered from unmedicated obsessive-compulsive disorder (OCD); twenty more were normal, healthy individuals who were not in love and were used as controls. Both the in-love participants and those suffering from OCD were found to have significantly lower levels of serotonin than did the controls.

17 These scientists examined serotonin levels in components of the blood, however, rather than the brain. Until scientists document the activity of serotonin in specific brain regions, we cannot be sure of the role of serotonin in romantic love. Nevertheless, this experiment has established, for the first time, a possible connection between romantic love and *low* levels of bodily serotonin.

18 All those countless hours when your mind races like a mouse upon a treadmill may be associated with reduced levels of serotonin coursing through the highways of the brain.

19 And as a love affair intensifies, this irresistible, obsessive thinking can increase—due to a negative relationship between serotonin and its relatives, dopamine and norepinephrine. As levels of dopamine and norepinephrine climb, they can cause serotonin levels to plummet. This could explain why a lover's increasing romantic ecstasy actually intensifies the compulsion to daydream, fantasize, muse, ponder, obsess about a romantic partner.

A "Working" Hypothesis

20 Given the properties of these three related chemicals in the brain—dopamine, norepinephrine, and serotonin—I began to suspect that all played a role in human romantic passion.

21 The feelings of euphoria, sleeplessness, and loss of appetite, as well as the lover's intense energy, focused attention, driving motivation, and goal-oriented behaviors, his/her tendency to regard the beloved as novel and unique, and the lover's increased passion in the face of adversity might all be caused, in part, by heightened levels of dopamine and/or norepinephrine in the brain. And the lover's obsessive **cogitation** about the beloved might be due to decreased brain levels of some type of serotonin.

22 Now for the **caveats.** This theory is complicated by many facts: different doses of these chemicals can produce different effects. These substances do different things in different brain parts. Each interacts with the others in different ways under different circumstances. And each harmonizes with many other bodily systems and brain circuits, setting up complex chain reactions. Moreover, passionate romantic love takes a variety of graded forms, from pure elations when one's love is reciprocated to feelings of emptiness, despair, and often rage when one's love is thwarted. These chemicals undoubtedly vary in their concentrations and combinations as the relationship ebbs and flows.

23 Nevertheless, the distinct correlation between numerous characteristics of romantic love and the effects of these three brain substances led me to the following hypothesis: *this fire in the mind is caused by elevated levels of either dopamine or norepinephrine or both, as well as decreased levels of serotonin.* These chemicals form the backbone of obsessive, passionate, romantic love.

Excerpted from *Why We Love: The Nature and Chemistry of Romantic Love* by Helen Fisher, published by Henry Holt and Company.

Annotations