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The Time of Our Lives: a review of Jennifer Ackerman's novel *Sex Sleep Eat Drink Dream*

Jennifer Ackerman. *Sex Sleep Eat Drink Dream: A Day in the Life of Your Body.* New York: Houghton Mifflin Company, 2007, 253pp.

Sex Sleep Eat Drink Dream by Jennifer Ackerman vividly captures the science behind the typical events in the human body during a twenty-four hour day. We are all conscious to one degree or another how our body physically looks but what is occurring within? This narrative framework exams a wide array of scientific information that addresses topics of what is going on underneath our skin and within our minds, such as why some of us are able to get up at the crack of dawn with the first rays of light, whereas others crawl from the shelters of their covers to a pot of freshly brewed coffee at noon. As a science writer, Jennifer Ackerman writes to explain and interpret science for the general reader and expose them to news and research by blending scientific knowledge with her creative writing style. Her simplistic, yet informative and easy to follow writing approach, breaks down the workings of our internal "clocks" and human body processes as she migrates from "Morning" through "Afternoon" and into the "Night". The information is loosely organized by time of day, in a series of five sections, which makes the material contextually relevant since her emphasis is on studying circadian rhythms.

Our bodies are a series of carefully orchestrated cycles that we too easily lose touch with. We condition ourselves to ignore hunger, fatigue, tiredness, and illness all in pursuit of work and play. Often times it is not until we become sick and have lost the energy for the pressures of life that causes people to question what is going on inside. Like most people, Ackerman feel victim to the old philosophy of out of sight, out of mind. It was a simple case of the flu that inspired the production of this book, in hopes of answering the many questions regarding what drives the rhythms of life.

As a society driven by time it only makes sense that our body is like a clock. Robert Burton once said "We are not just time minded but time bodied, right down to our very core". The human body is composed of many internal clocks that have been pre-adapted to changes in our environment that control various functions, including when we sleep, eat, have sex or exercise. These rhythms also govern the control of body temperature, heart activity, hormone secretion, blood pressure, oxygen consumption and metabolism.

The master clock that regulates our twenty-four cycle is found in a region of the hypothalamus of the brain referred to as the suprachiasmatic nucleus (SCN). The SCN oversees the body's cyclic rhythms so that they run with persistent oscillation. Sunlight is used to as the dominant time giver; it sets the pacemaker to the shifting patterns of daylight and darkness. Thus, as the name circadian implies *circa* "around" and *diem* "day", these cycles run slightly more or less than one day.

Other internal clocks referred to as peripheral oscillators can be found in the liver, lungs, testis, connective tissue and muscle. Although these little clocks can be synchronized to the SCN, they are also able to act independently, which is apparent when we cross time zones or work into the night. Did you realize that "for every time zone you cross when traveling, it will take your body one day to catch up," explains Ackerman. You may be an adventurous eater, but when it comes to trying something new, you stomach may be stuck back a few time zones and not want to eat that new something.

Not only are our "clocks" influenced by external cues, but by genetic variations that govern timing. Small variations in genes could account for the difference between being an early bird or an owl. As the reader discovers, these two types of people differ in not only in their time of day of "peak alertness (11 A.M. for larks, 3 P.M. for owls), heart rate (11 A.M. for larks, 6P.M. for owls), and in favorite mealtime, favorite exercise time, and daily caffeine use (cups for larks, pots for owls)" but they also differ in their genetic makeup. Ackerman research has led us to discover that "our lark or owl tendencies are built right into our biology." According to Hans Van Dogen of the University of Pennsylvania, "the biological clocks of a morning type are more phase advanced than the biological clocks of evening types."

Sex, the first word in the title of the novel is discussed for a meager ten pages. Ackerman discussions range from the historical importance of sex and why when darkness falls the hours of intimacy prevails, to the orgasm and changes in the brain's activity during courtship and love. We learn that "a picture of a sweetheart activates the dopamine-rich reward system of the brain", which also responds during drug or alcohol use. Additionally, raised levels of noradrenalin and low serotonin that are symptomatic of people with obsessive compulsive disorder are found in these same, love struck individuals.

In comparison to the section on sex, the topic of sleep and dreaming is discussed in approximately one third of the chapters of the book. This makes sense, because approximately one third of our life is spent sleeping, thus emphasizing the importance of it for our survival. Ironically, for as much time as we spend sleeping, we know very little about its actual primary purpose. Its' astonishingly complex and can affect both body and mind, suggesting that it may be more important than diet, exercise and even heredity. Ackerman's detailed analysis of the five stages of REM and non-REM may put some people to sleep for she goes a little too in depth. However just are your eye began to droop, Ackerman delivers another bit of startling insight. We learn, "we are poor judges of our own sleepiness and its impact on our functioning. We tend not to recognize the signals of serious fatigue or realize the effect it has on how we listen, read, calculate, talk, operate machinery or drive. And most of us have forgotten what it really feels like to be awake." With our fast paced society today, most of us do not slow down,

but rather continue to take on more and more responsibilities until we experience a nervous breakdown.

If sleep is so important, why are we cutting ourselves short? Studies have shown the importance of sleep on learning, memory, alertness, mood and productivity. So, why is it that the amount of sleep we get per night has historically "decreased by an hour or two in the past fifty years, so that people are getting less than seven hours of sleep a night during the work week"? Some companies are beginning to recognize the benefit of sleep on work performance. In countries including Japan, Europe and the United States scheduled "nap time" have begun to be included into the work schedule. Researchers have found that "just fifteen to twenty minutes of rest sometime between 1 P.M. and 2:30 P.M. can relieve fatigue and boost cognitive performance."

Everyone dreams, and any other belief of the contrary is most likely due to poor recall. These short few pages dedicated to the topic of dreams are jam packed with theories and facts. Have you ever wondered where these strange, vivid hallucinations come from or what part of the brain dreaming activates? We learn that the "cortico regions essential to visuospatial processing are activated and may contribute to the sense of virtual navigation. Also, active are the amygdala and the limbic system, both central in the feelings of emotion that so often accompany a dream story." Furthermore, Tore Nielsen, of the Dream and Nightmare Laboratory, "suspects that nightmares may in some cases arise from circadian rhythm disturbances."

Sleep is not the only element essential for our survival, but food and drink are of equal importance. We are all familiar with hunger pangs but have you ever thought where they originate? It was once thought that the drive to eat originated solely in the stomach. However, in a recent study disturbances in the brain occur in response to hunger. Additionally, these areas of activity differ in men and women. Researchers found that during a fast "all subjects showed more abundant blood flow in the hypothalamus, a brain region known to regulate the basic physiological response to hunger. But men showed more activity in the paralimbic areas, associated with emotion, than women." In response, "men may experience more reward from eating than women do."

Hunger is one thing; appetite or the desire to eat, quite another. We not only eat because we are hungry, but because food looks and smells good, boredom, or even because of our mood. Most of us lean towards the familiar. Although comfort foods have the appeal of familiarity, they can also offer some boost to mood, depending on the types of substances they contain. Examples of such foods include tuna, salmon, and walnuts are rich in omega-3-fatty acids which have been shown to work as well as prescription drugs at lifting mood, found researcher

William Carlezon and a team at Harvard. While these “healthy” foods may have psychological benefits, you may wonder if there is any benefit to eating those deliciously buttery and fattening foods. Ackerman so kindly answers this question with a simple yes. “Researchers have found that foods rich in butter, oil and other kinds of fat can reduce the perception of pain.”

Overall, the book compiled a wealth of information into a series of short chapters, making these scientific topics easy to interpret for the general public. It not only is a great user manual for the body, but it can also be a sort of self help book in the sense of what not to do at certain hours in the day. For example, do not take a test first thing in the morning or late at night, because your “cognitive performance peaks between the hours of 10A.M. and noon”.

As was with any book, it is not perfect. The addition of personal stories of her family seem out of place, and contextually irrelevant. For example, in “The Doldrums” chapter Ackerman remembers peeking out behind the curtain and watching her mother sleep with her eyes open and body erect because she is too worn out from providing constant care to her family and handicapped daughter. This example on the topic of fatigue could have been left out without the message being loss. Another awkward story that was a waste of paper was the short section on color blindness and her time spent observing our ancestral relative, the chimpanzee. Although, Ackerman does cover some bodily functions like laughing, yawning, the hiccups or farting, she did not include anything about crying or sneezing, which both seem contextually important in a daily cycle. The title of the book may be a bit misleading with the first thing in the title being sex because there is little talk about it in a physical sense but also in regards to gender differences. However, there is plenty of discussion about sleep and dreaming.

Whether you are completely new to the topic of circadian rhythms and chronobiology, or already possess an extensive background in these areas, you can find Jennifer Ackerman’s novel *Sex Sleep Eat Drink Dream* a delightfully fun and easy read on the functions of our bodies in a twenty four hour day. The material is informative and thorough, yet made accessible to all readers. Ackerman’s extensive endnotes can also be used as a great tool if you are interested in expanding your knowledge beyond the scope of this book.