Case Study D: The Case of Eric

Eric loved the fall because it meant the start of soccer season. Soccer was in his blood. He had played since he was five and now, at the age of 31, he was coaching children that very age. In his mind, nothing compared to seeing a five-year-old score his or her first goal—that awesome, untamed joy. Of course, he loved his family, his girlfriend of three years, and his job as a computer programmer, but working with kids was his unabashed passion.

It was on the soccer field that he first realized something was very wrong with his body, more specifically with his leg muscles.The kids thought it was incredibly funny when Eric tripped and fell several times during passing drills. But he knew there was definitely something amiss when his legs were trembling after practice.

It took him several weeks to get up the courage to go see his primary care doctor, Dr. Jonathan Drake, who had also been one of his college roommates. Jon was at first dismissive, joking, “Ah, Eric, you’re just getting old like the rest of us!” But he went ahead and ordered some blood tests. A week later, the test results showed nothing abnormal. But Eric, feeling a little panicked because he had tripped going down his apartment stairs twice that day, persuaded Jon to look further.

Jon referred Eric to a neurologist, Dr. Samantha Reiter. Eric felt fortunate to get an appointment that week and was encouraged by her take-charge approach. She took a complete family history, asked him dozens of questions about his symptoms and general health, and proceeded to schedule him for an MRI (magnetic resonance imaging) and an EMG (electromyogram).

The same day he got the results back from Dr. Reiter, just two months after first sprawling on the ground during soccer practice, his arm muscle started to twitch ever so slightly. It seemed like cruel fate that he should feel worse and have to sit in Dr. Reiter’s office, hearing but not really accepting her diagnosis. He did catch that she thought there were several possible causes for his symptoms, including (multiple sclerosis) and (muscular dystrophy), but the one she was favoring was ALS , amyotrophic lateral sclerosis, also known in the United States as Lou Gehrig’s disease. ALS was difficult to diagnose, but she was going to schedule him for a muscle biopsy in order to assess whether or not muscle damage was present in both the upper and lower body neurons. Deterioration had to be in both regions in order to make a clear diagnosis of ALS

The next time he saw Dr. Reiter, the results of the muscle biopsy were in and Eric brought his girlfriend LeAnne with him to the doctor’s office. Dr. Reiter, as usual, was very kind, but direct. “Eric, I am 95 percent sure you have sporadic ALS, meaning it is not hereditary. I have no intention of overwhelming you, as I know how difficult an adjustment this will be, but I also want you to be prepared for what lies ahead.” She proceeded to rattle off the frightening facts:

ALS is a fatal neuromuscular disease that affects between seven to 11 people out of every 100,000 (13 new cases are diagnosed every day)…. The cause is not known and the progression is generally rapid…. Eighty percent of ALS patients die within five years of diagnosis and 50 percent in 18 months….

“There is good and bad news about how the disease progresses,” Dr. Reiter continued. “The bad news is that the disease, by some yet unknown manner, gradually destroys voluntary motor neurons, which stimulate the muscles over which you have control. As the muscles receive fewer and fewer signals from these dying neurons, they weaken and atrophy. Probably, Eric, when you first noticed your symptoms on the soccer field, more than half of your motor neurons were already dead. The good news is the disease does not affect the heart, bowel, bladder or sexual function, and the younger a person is when diagnosed, the longer he or she lives. Also, there is a drug that slightly slows the progression of the disease.”

Dr. Reiter had been talking for about minutes when she paused and looked from Eric to LeAnne. Neither spoke, but she had seen that devastated look in a patient’s eyes before. She proceeded by saying, “I want to assure you that I will always be your advocate. I will monitor you weekly if need be, inform you of the latest treatments, and go head to head with the insurance agency if that is what it takes to make sure you live a comfortable life.” She had much more to tell him about possible treatments, but she thought it would be better if he went home and talked to his family and LeAnne. She gave him some material from the Association based in Calabasas Hills, California, recommended that he take a look at some web sites, and made an appointment with him for the following Monday.

All weekend Eric felt like he was in a fog. The most difficult part was telling his parents about his diagnosis and prognosis. He and his parents and his older sister Kerry were very close, living in Maryland their entire lives. Eric had attended the

University of Maryland for his computer science degree and Kerry received her biology degree from another local school, St. Mary's College. She was now working at Johns Hopkins School of Medicine as a research technician. They all ate Sunday dinner together twice a month after attending their town's Catholic church, and even took an annual family vacation to the Eastern Shore in June, after Kerry's two kids got out of school. As Eric repeated to his parents what Dr. Reiter had told him, in the back of his mind he was wondering if he would even be able to walk on the beach next June. His parents and sister insisted that they meet with Dr. Reiter too when Eric went for his Monday appointment. They wanted to ask the many questions that Eric hadn't dared to face, at least alone.

When Monday rolled around, Eric's sister, Kerry, had the longest list of questions. His parents wanted to know about prognosis and how the disease manifested, but Kerry was more interested in "the cure." She had gone on the Internet and found out much more about the approved drug, Rilutek, and creatine. She also read about the promise of embryonic stem cell therapy for curing diseases such as diabetes, Parkinson's, and ALS. Recent research with mice and rats had shown how promising this curative technique could be and Kerry wanted to find out from Dr. Reiter if any labs were ready to do human trials.

Your task is to finish the story by recording a discussion between the characters. All characters must talk. Your script must include answers to the following questions.

1. What is a stem cell?
2. What are the sources of stem cells?
3. What are the general characteristics of stem cells?
4. What are the advantages and disadvantages of using stem cells?
5. Why is there controversy surrounding the therapeutic use of embryonic stem cells?
6. What embryos are used as the source for embryonic stem cells?
7. What would happen to these embryos if they were not used in such treatments?
8. Taking into account the information you have learned, what decision will be made?