***Stem-Cell Treatments***

Until recently, scientists thought that
the central nervous system could not repair
itself. Damage to this human body system
was thought to be permanent. New
research, however, has opened the door to
treating injuries and diseases of the central
nervous system. Some of this research
focuses on embryonic stem (ES) cells.

**Unspecialized Cells**

cells that can develop into many different
cell types. Scientists have found that ES
cells from fetal tissue have the potential to
develop into nearly every kind of cell in
the human body. They are “unprogrammed”
cells that can take on the characteristics of
specialized cells, including nerve or brain
cells that do not readily repair themselves.
This means ES cells might be able to repair
nerves, grow tissues, or grow entire organs.

**A Controversial Treatment**

ES cells that are programmed as nerve
or brain cells could be used to treat spinal
cord injuries, which occur to approximately
11,000 Americans each year. In addition,
they could potentially be used to treat
Alzheimer’s and Parkinson’s diseases.
However, ES cells are often taken from

aborted fetuses or from embryos made in
test tubes. Thus, use of ES cells raises
ethical and moral issues.

Scientists have attempted to address
these issues by using ES cells from the
embryos of animals such as mice and
hamsters. For example, using adult rats
with damaged spinal cords, scientists have
found that transplanted ES cells triggered
the production of myelin. Myelin is the
protective coating that insulates nerves.
This coating is often damaged or destroyed
in the nerves of people with spinal cord
injuries. If the coating were restored, the
function of the nerve might also be
restored. For people confined to a
wheelchair, that could mean regaining the
movement of a limb or control of bladder
function.

**Looking Ahead**

Scientists are encouraged by their rapid
progress with ES cell treatment. However,
many years of experimentation and
research lie ahead. Moral and ethical issues
must be addressed as well. In the meantime,
people who have sustained damage to their
central nervous systems continue to hold
out hope for a long-term cure.

**Applying Critical-Thinking Skills**

**Directions:** *Respond to each statement.*

**1. Explain** which characteristic of stem cells makes them suited to treating injuries or
diseases of the central nervous system.

**2. Compose** Use of ES cells remains a controversial issue. Write a letter to a newspaper
editor explaining your views on this issue. Support your letter with facts from the
article.