

Respond to the following prompt:

Cell engineering is producing many great therapies like CAR T cell therapy (see Carl June's [TED talk](#)). However, Carl June does not get into ethical concerns behind cell engineering. What are some of the ethical concerns behind cell engineering and what might be some unintended consequences from cell engineering?

The first ethical issue is the unintended consequences for the patient, like Carl June mentioned the first two patients had severe cytokine release syndrome (CRS) and if it was not, in his own words, by “sheer coincidence” that a recent arthritis therapy had been approved to reduce elevated levels of IL-6, the outcome for Emily Whitehead would have been different. According to cancer.org, another side effect of CAR T-cell therapies, which is still not understood; is the severe neurologic side effects, or immune effector cell-associated neurotoxicity syndrome (ICANS); this includes seizures, and impaired speech.

Additionally, treatments developed through cell engineering, like described in the TED Talk, can be very expensive. This means not everyone can afford them, making it hard for everyone to get equal access to these new therapies. At this price tag, these costs could be a burden for the government and individuals, and this issue is even more significant in developing countries.

There are also ethical questions about how we use and modify cells. For instance, stem cell engineering, a part of cell engineering, has been particularly controversial. The lawsuit “Sherley vs. Sebelius” over the NIH guidelines, shows that some people are worried we haven’t fully addressed all ethical issues. They argue that the current Dickey-Wicker amendment which limits the use of federal funds for research where embryos are destroyed, might still have gaps that need to be fixed.