Introduction

Bioprinting is where you print out a 3D object, body parts or organs. Along with this amazing technology are some positives which are helpful for the future of bioprinting. On the other hand, there are some negatives stopping its growth. In the past couple years, bioprinting has gained popularity with patients needing limbs or organs. There are many new possibilities for the future that will make it easier to have transplants in the future, but there are some deterrents.

Pros and Cons

Conversely, bioprinting can be beneficial to our health in the future. "Developing bioprinters that could print skin cells directly onto wounds and burn injuries" (Barnett) Being able to print into wounds could revolutionize bioprinting with new ways to help fix wounds and burns. Bioprinting on wounds and burns is important because it is easier and more efficient than current procedures of using a skin graft surgery. Bioprinting has become a more efficient option for wounds and burns. "Some 18 people die in the United States each day waiting in vain for transplants because of a shortage of donated organs" (Griggs). Bioprinting is important in this
case because it can end the need for organs by printing new ones with their own cells. Since 18 people die each and every day, instead of people dying, they could get an organ printed when the need it. [This is another way bioprinting can help our society.]

On the other hand, there are some flaws with bioprinting. Evidence states, "Currently it would take 10 days to print an average size liver" (Williams). With Bioprinting, it takes 10 day to print one liver for one person. These findings have important consequences for the movement of the technology of bioprinting. The slowness of the printing will make it hard to print organs for the people who need them. If this flaw doesn't get fixed, it could cause the downfall of this technology. According to Brandon Griggs, "A company has printed strips of human liver tissues in its lab, although they are still very small: four by four millimeter made in 40 minutes." Taking 40 minutes to print something less than a dime is another important factor to fixing the future of bioprinting. Without the capability to mass produce a liver or other organ, it won't satisfy the upcoming demand for organs. Therefore, if this flaw doesn't get fixed, the future of bioprinting could be very slim. "The problem with bioprinting 3D slabs of living tissues is that without blood vessels to deliver oxygen and nutrients the printed cells on the interior of the slab suffocated and die" (Hutchinson). Another flaw is some cells die in the process of bioprinting because they don't get enough air due to other cell lying on top of them which take away their oxygen. In conclusion, the suffocation of cells is an important issue to fix.

Cost

Despite the negatives, on the bright side, bioprinting costs will go down in a few years. "With more research, the price will lower over time" (Alec). The more time and research put into this technology will make it more effective and easier to supply the demand, making bioprinting cost less. This is a good thing because it will become cheap enough for people in the future. This
helps make it easier for doctors and patients waiting for organs or other body parts. "Higher costs make it so not everyone can just print an organ or anything whenever they want" (Leckart). What Leckart is saying is if the government puts a higher price on bioprinting, it will be hard for people to print something just because they want to. This makes it so only people who really need bioprinting can access it. In my own experience with a close friend of mine who needs a kidney transplant, it can cost around $260,000 dollars or more. Furthermore, increased bioprinting research will increase efficiency and reduce cost over years making it less expensive and more accessible for the future.

In other cases, bioprinting costs has negatively affected people. Evidence states, "...A piece of a liver tissue 3mm square and .5mm deep can sell for $2000 or more" ("Printing a Bit of Me"). A size of a liver tissue that is less than the size of a dime for $2000 dollar is an outrage to some people. It’s hard to buy something printed on a bioprinter if you're on a budget like most of America. If you wanted to buy an average size liver (7cm by 10cm) with the current technology, it would cost around $350,000 to print. This is a major flaw that must be fixed. "Not many Americans can afford to have a printed organ because of the high marked price" (Wakefield). What Wakefield says is completely accurate. If people can't pay to get something bioprinted, then the technology won't be used. This is another important problem. If people don’t invest in bioprinting, the technology won’t get enough money to move forward causing a downfall.

Conclusion

In the future, bioprinting will become a very controversial topic. Some will argue that printing body parts and organs is morally wrong. Others think bioprinting is a wonderful thing for the future that will be able to solve the need for organs and limbs. The two sides may never
see eye to eye, but despite the argument, bioprinting will have a big place in the future. Where the technology currently stands today does have some problems, but it also has some great things too.

Teacher’s Note:

Amy 6/14/2015 10:57 AM
Comment [23]: Writer concludes with the statement that bioprinting is part of our future, so it is important. She also concludes that there are two sides to this central idea.

Amy 6/14/2015 6:45 PM
Comment [24]: Students produced a print copy of informative text and a digital copy, not included here. The digital copy utilized the skills of included pictures and hyperlinks to add to the depth of the text.


This is an example of an advanced 8th grade Informative Essay. The writer weaves a lot of credible evidence into this complex topic and clearly explains both sides of the central idea. She is able to also include how this topic is important to her while clearly analyzing each piece of evidence. Overall she uses a point-by-point organization where each main idea includes both sides of the central idea. The overall quality of evidence and analysis of evidence make this an advanced essay.