Cancer is a disease in which abnormal cells segregate without control and are able to attack other normal tissues [1]. Despite advancements in the medical field towards dealing with chronic illnesses, the current approach to treating and diagnosing cancer is of the least developing areas. Cancer, like any other infection, starts from a single cell which dies because of mutation i.e. change in DNA structure. In addition to infecting cells of a single site, malignant cancer imposes a significant threat on all tissues of the body due to its ability to spread by metastasis and affect more than its site of origin.

Despite the advances in the field of medicine, the current approach to treating cancer remains challenging [2]. Nanotechnology is a promising candidate to improve the treatment of cancer [3]. The potential legacy of cancer nanotechnology: cellular selection, [4]

There is a risk of inconsistency while manufacturing nanoparticles [4].

### Problems

- Lack of specificity: Nano-particles solely target cancer cells and can, hence, replace existing methods of cancer treatment [3].
- Toxicity: Nano-particles, like any agent being injected into the body, carry the risk of introducing toxins that can infect healthy tissues in the body. The ability of nanoparticles to remain stable within the body without breaking down is one of the main challenges to ensure the administration of nanotechnology for cancer therapy [4].
- Cost: High costs associated with the bulk production of nanoparticles and the cost of hiring well skilled staff to operate the system make nanotechnology an expensive option [4].
- Quality control: There is a risk of inconsistency while manufacturing nanoparticles [4].

### Solutions

- Improve specificity: Continual testing and research on nano-particles is a key solution [5].
- Reduce toxicity levels: Toxicological challenges including the stability of nanoparticles and the toxins that could be introduced into the body. This can, however, be resolved by careful designing of the particles and paying attention to their shape, surface area and potential to generate oxygen species, as mentioned by Xia et al. and cited in [4].
- Minimize cost of manufacturing and treatment: The burden of high costs can be reduced by the collaboration of other corporations with the pharmaceutical industry. Chemotherapy, the current method of medication, is also expensive [4].
- Set a minimum quality standard: As regulatory authorities become more familiar with the production of nanoparticles, the setting of an acceptable standard to their quality will become easier [4].

### References