

Precision

Nanoparticle Boardgame



Backstory

- Our tiniest enemies are some of the hardest to fight. Cancer starts when gene changes make one cell or a few cells begin to grow and multiply too much. This may cause a growth called a tumour. Doctors still don't have good weapons to quash the tumour cells responsible. Many cancers are cured. But in some people cancer can return. Cancer drugs such as chemotherapy, need to be powerfully toxic to kill all the tumour cells. But they also can kill healthy cells, sometimes which can lead to side effects. Now scientists have teamed up with engineers and figured out how to slay many types of harmful tumours. Their new weapon of choice: nanoparticles.
- Your job as scientists is to find a way to seal cancer drugs inside the nanoparticles so the drugs won't harm the healthy cells while traveling through the bloodstream. They hold that medicine securely until they reach a tumour and deliver the drug to the cancer site to ensure that the medicine is released only where it's needed. Finally, leave the body without causing any serious side effects.



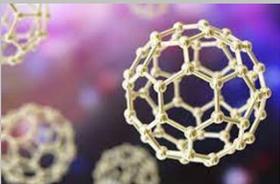
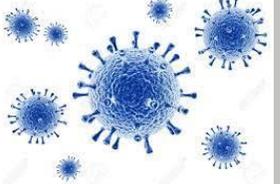
Instructions

- Aim
 - + Get into the body, deliver the drug to the tumour (kill the tumour) and get out of the body without leaving any toxic side effects. Make sure you collect as many points as possible.
- To start, select your nanoparticle at random from the 4 character cards. It will come with different strengths or weaknesses, so don't forget to read your card carefully before you start playing. Place it on the face up so you don't forget what it says.
- All counters must start the game on the enter the body space. Throw the dice to progress round the board. Go in any order you like!
- Win
 - + The game ends after all players cross the finish line, then players total all their points - the winner is the one with the most. You only get points if you directly land on "leave the body efficiently."
- Points
 - + Add and subtract points depending on where you land- keep a scorecard
 - + Do not forget to look at your character card details
 - + If you have to move backwards or stay where are, you don't collect or lose additional points until you move forwards again on your next go.
- Age 7+
- 2-4 players
- Materials
 - + Board
 - + 4 x Counters
 - + 4 x character cards (1 for each player)
 - + Paper (score card) and pen

- + Dice



Players

Nanoparticle	Big	Small	Targeted	Nanobot
Character trait	Worker	Speedy	Meticulous	Navigator
Description	You constantly release drug when you land on ALL cells. For every roll of the dice subtract one. For example, if you roll a 1, then move 0 steps.	You constantly release drug when you land on ALL cells. For every roll of the dice add two. For example, if you roll a 3, then move 5 steps.	You ONLY release drug when you land on a tumour cell or Metastatic site.	You ONLY release drug inside a tumour cell. On your first go, you don't throw the dice but take the nanobot passageway and collect the points. You are the only player that can use this passageway.
				



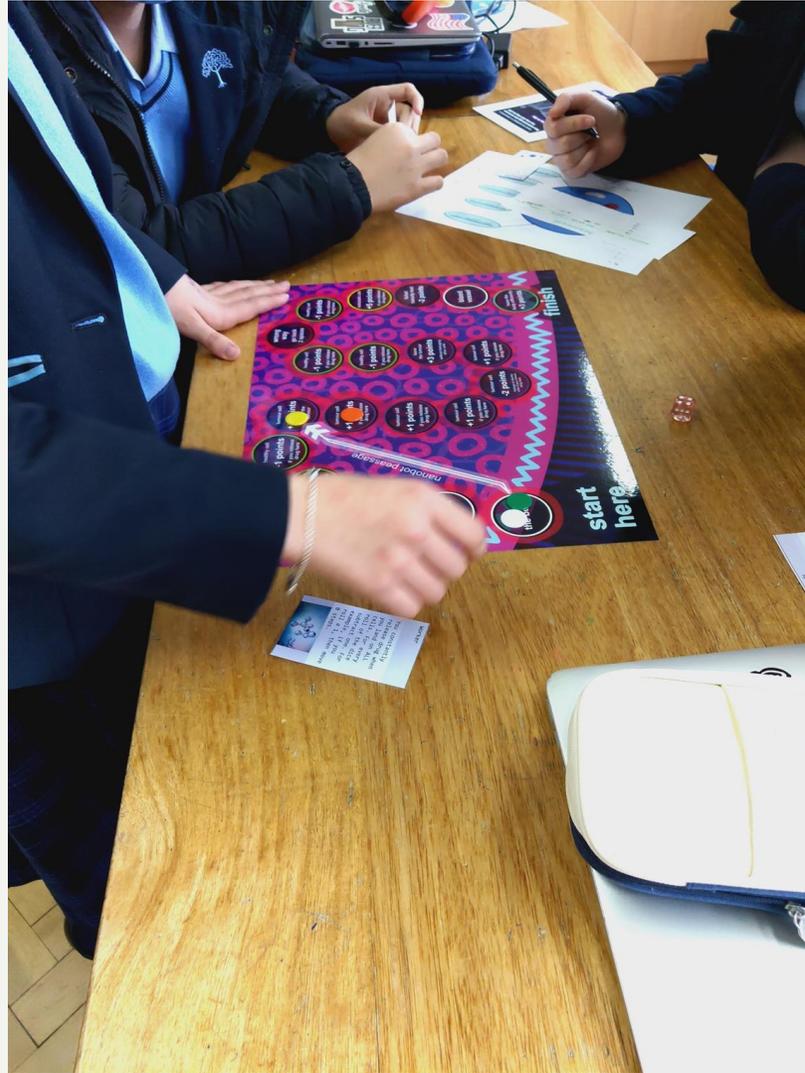
The Game

Precision -
Nanoparticle
Drug
delivery
game



The Game

...in action



Glossary

- Biology - The study of living things. The scientists who study them are known as biologists.
- Cancer - Any of more than 100 different diseases, each characterized by the rapid, uncontrolled growth of abnormal cells. The development and growth of cancers, also known as malignancies, can lead to tumours, pain and death.
- Cell - The smallest structural and functional unit of an organism. Typically, too small to see with the unaided eye, it consists of a watery fluid surrounded by a membrane or wall. Depending on their size, animals are made of anywhere from thousands to trillions of cells. Most organisms, such as yeasts, molds, bacteria and some algae, are composed of only one cell.
- Drug (Chemotherapy) - A chemical treatment that's most often used to kill cancer cells in the body. Chemotherapy can have many unpleasant side effects as it kills not only cancer cells but many healthy cells as well.
- Gene - a unit of heredity which is transferred from a parent to offspring and is held to determine some characteristic of the offspring.
- Engineer - A person who uses science to solve problems. As a verb, to engineer means to design a device, material or process that will solve some problem or unmet need.
- Immune system - The collection of cells and their responses that help the body fight off infections and deal with foreign substances that may provoke allergies.
- Metastasis - cancer spreads to a different body part from where it started. When this happens, doctors say the cancer has "metastasized."
- Nanoparticle - A small particle with dimensions measured in billionths of a meter.
- Side effects - Unintended problems or harm caused by a procedure or treatment.
- Technology - The application of scientific knowledge for practical purposes, especially in industry – or the devices, processes and systems that result from those efforts.
- Therapy - (adj. therapeutic) Treatment intended to relieve or heal a disorder.
- Toxic - Poisonous or able to harm or kill cells, tissues or whole organisms. The measure of risk posed by such a poison is its toxicity.
- Tumour - A mass of cells characterized by atypical and often uncontrolled growth. Benign tumours will not spread; they just grow and cause problems if they press against or tighten around healthy tissue. Malignant tumours will ultimately shed cells that can seed the body with new tumours. Malignant tumours are also known as cancers.

