Lay Summary

SWARM – **S**mall robots **W**ith collective behaviour as **A**I-driven cancer therapies; building **R**egulations for future nano**M**edicines

Cancer nanomedicine

Cancer occurs when abnormal cells divide in an uncontrolled way. Many cancers can be cured. But in some people cancer can return. Cancer drugs, such as chemotherapy, need to be able to kill all the cancer cells, but this means they can also kill healthy cells.

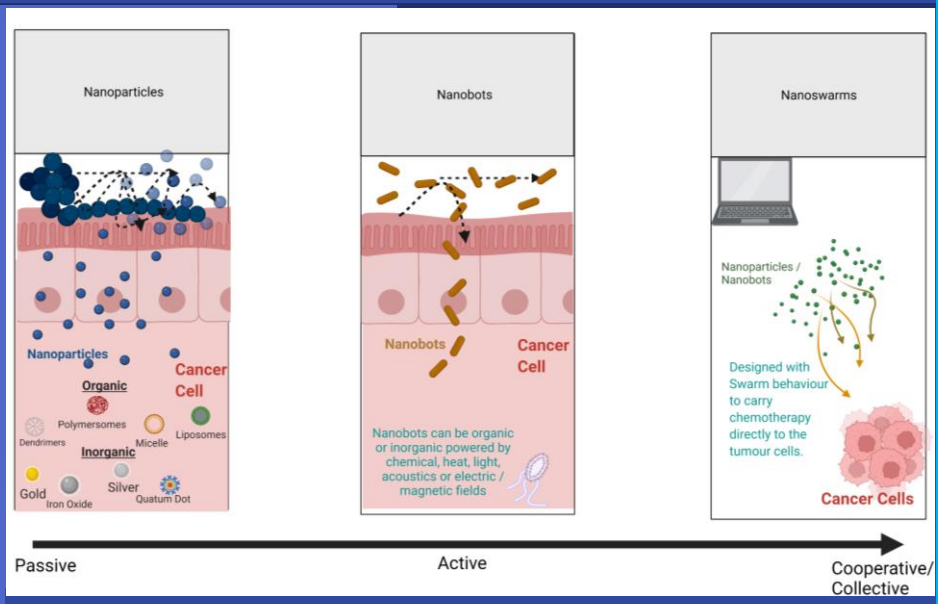
Nanomedicine is the medical application of nanotechnology which works on tiny scales called 'nanometres' (one-billionth of a metre). Nanoparticles are nanosized particles that can assist the delivery of chemotherapy drugs to cancer cells.

Scientists and Engineers can use simulations for selecting nanoparticles so drugs can more effectively reach the tumour while avoiding side effects

Nanoswarms

Using simulations, scientists and engineers can add swarm behaviour (present in social animals such as birds, ants, fish and termites) to nanoparticles and tiny robots (nanobots).

Nanoswarms are multiple nanoparticles or nanobots that can interact with each other or their environment to achieve a task, exhibiting collective behaviour inspired by swarm behaviour.



SWARM study

This project is investigating the ethics and regulations of the first in-human clinical trial of nanoswarms. The aim is to explore how nanoswarm medicine should be regulated in clinical trials and the clinic as well as the attitudes of stakeholders towards this new technology.

Team

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