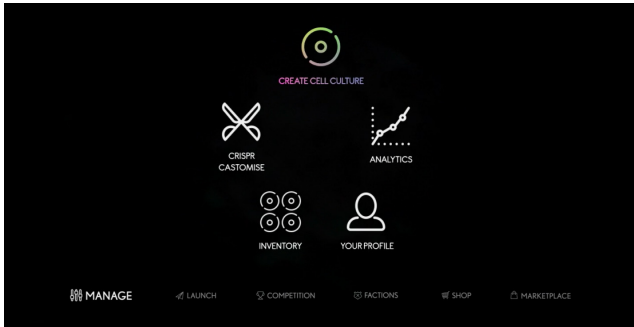


# IMMUNECRAFT

# BEHIND THE SIGNAL

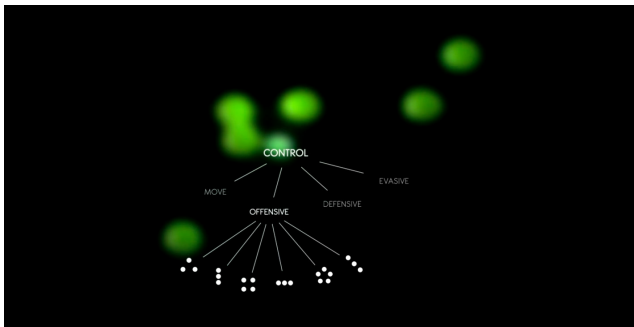
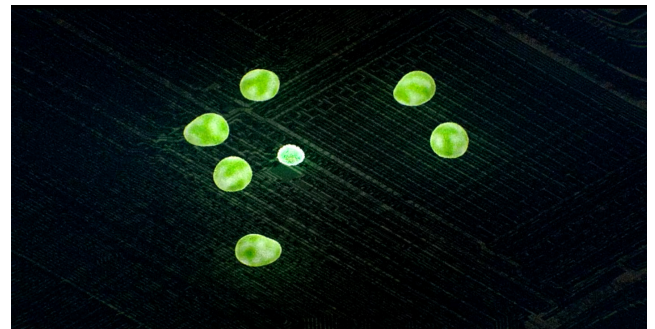


## MARKET PLACE

New gene editing technologies, like CRISPR-Cas9, have made it much easier to customise cells and even whole organisms. Some of these might only be useful to research one specific disease, whilst others could be used to study many. Researchers often share their biological materials, resources and sample cells, sometimes placing them in repositories so that other people can make use of them.

## CHEMOTAXIS

Cells use chemical signals to navigate around the body. Some cells are fixed in place and use chemical signals to call on other cells to come and help them. This is how inflammation works - swelling is caused by many new cells arriving and gathering together after following a chemical distress call. Cells can switch these signals off and on, and can follow different signals to get to other parts of the body.

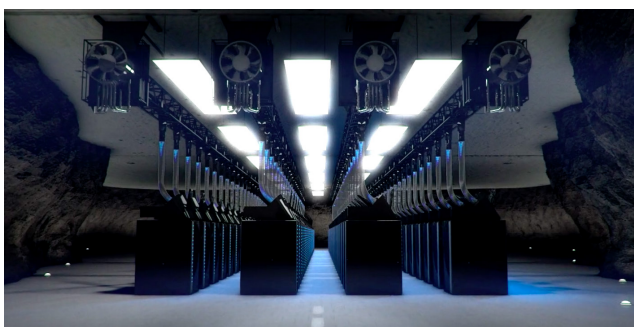
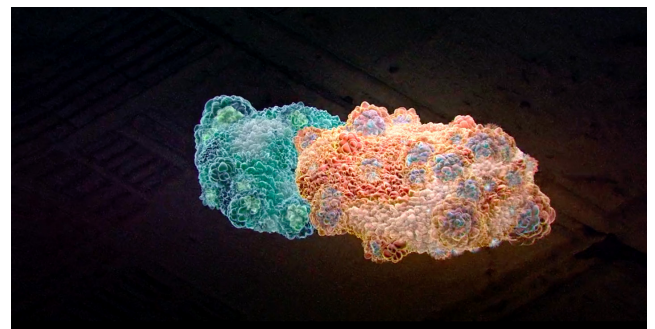


## REAL LIFE GAMING

- Fight** – attacks or swallows enemy cells (phagocytosis)
- Recon** – scanning enemy cells to gathering information about their nature (dendritic cell)
- Upgrade** – Receive new intel via dendritic cells or complete lymph node learning process (T cells)
- Zombified** – attacks all surrounding cells indiscriminately, enemies and friends alike (autoimmune disease)

## MEMBRANES

A cell's surface membrane is both its container and armour but signals still need to cross it. The membrane is covered in proteins (receptors) that act as doors, channels and antenna to allow cells to communicate with each other and their environment. In some cases cells exchange bits of their membrane with other cells to share information.



## SERVER FARM

Once a genome has been decoded it can be stored digitally and the information shared around the world. Recently this process has been reversed and digital information has been converted into DNA. One drop of DNA can store as much information as 14,000 50GB Blu-ray discs. In the future information might actually be kept alive and farmed!