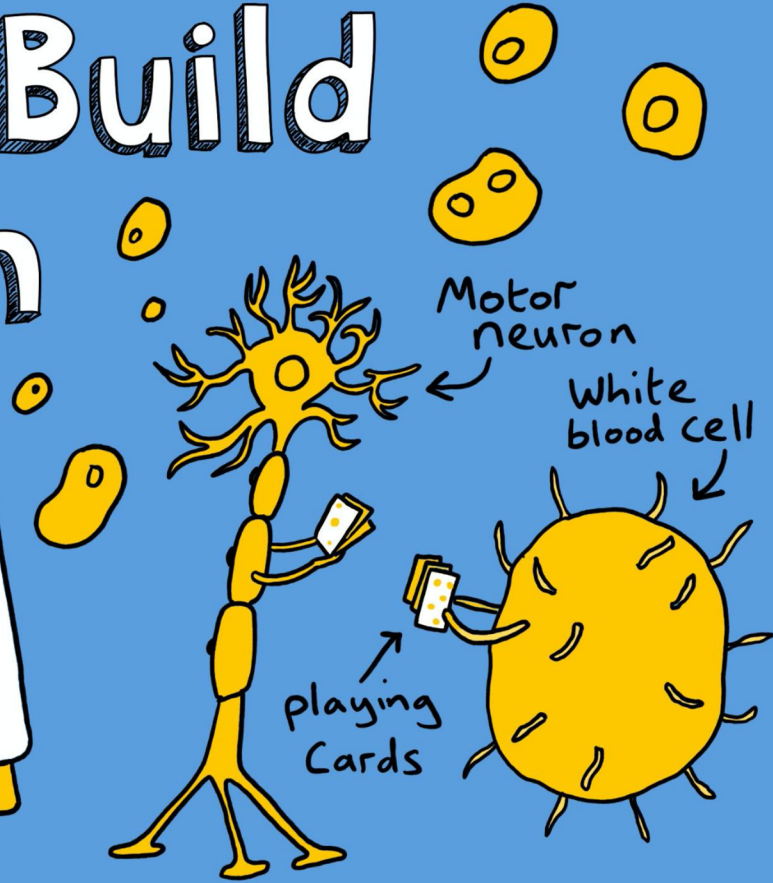


# How to Build a Human



HUMAN CELL ATLAS  
PUBLIC ENGAGEMENT



# Introducing the challenge

The How to Build a Human Card Game Challenge workshop has been designed by Little Inventors in partnership with the Human Cell Atlas and Heayes Design.



**Click on the video** to hear from Dominic, Chief Inventor and founder of Little Inventors tell you about the project.

## The brief



We want you to design a card game inspired by the Human Cell Atlas project and the fascinating world of human cells and tissues.

**We are looking for card game entries that are :**

1. Imaginative and fun!
2. Described in an easy to understand way with clear and engaging visuals/drawings.
3. The game should teach the players something about the Human Cell Atlas or human cells and tissues.

# What happens if you win?

The winning entry will be developed into a **real card game!**

You'll have the chance to work with **expert game designer** Richard Heayes to help perfect your game idea.

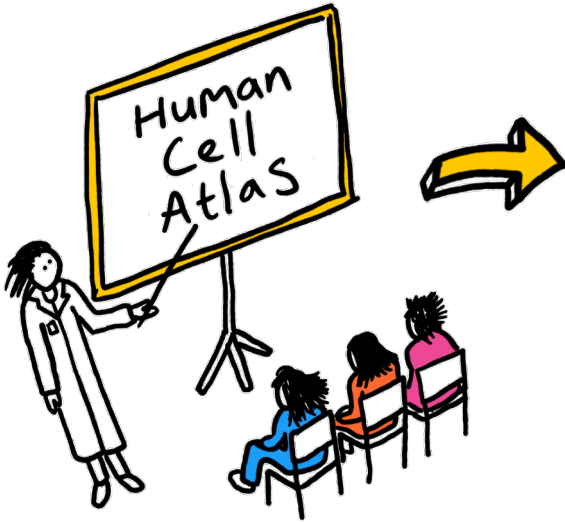
Over **200 copies** of your game will be manufactured and a number of these will be sent out to every school that's entered the challenge!

Your school may use your game as a fun way to teach students about the Human Cell Atlas project in the future.





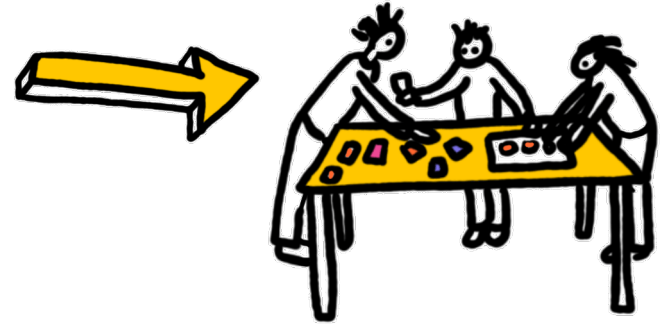
# Workshop structure



Learn about the Human Cell Atlas

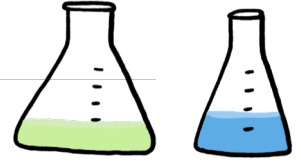


Get some tips on game design



Design your card game

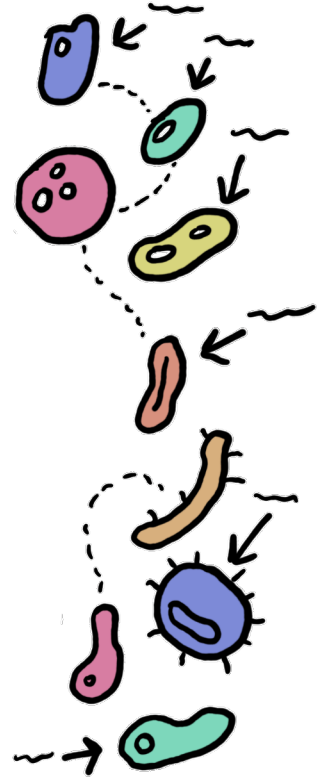
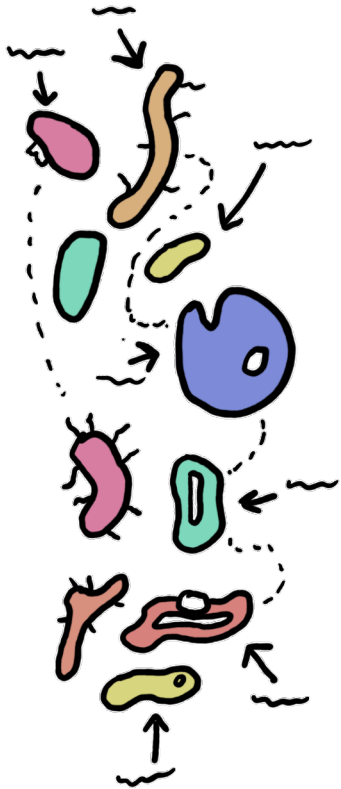
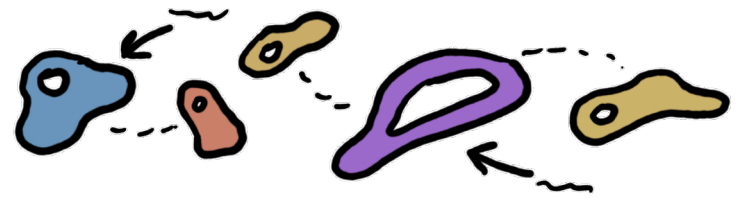
Part 1



# Learn about the Human Cell Atlas!

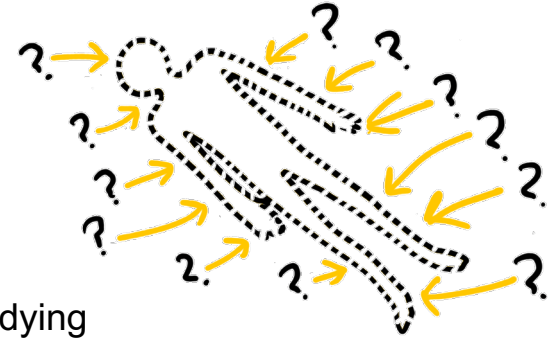


# What is the Human Cell Atlas?



Click on the video to hear from Sarah, scientist and co-founder of the Human Cell Atlas.

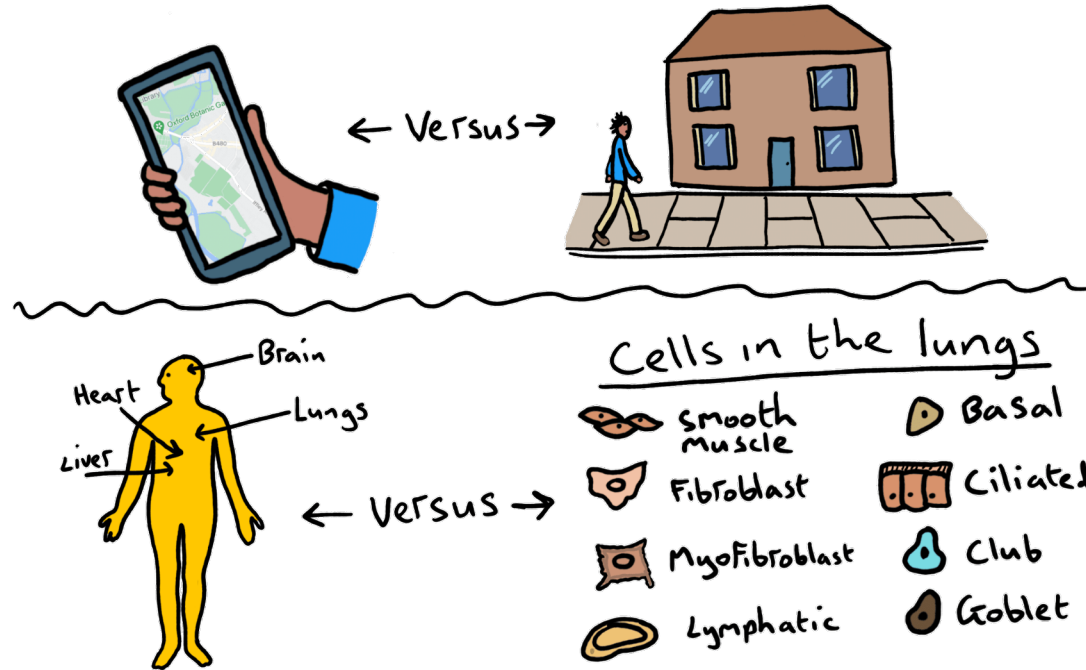
# Human Cell Atlas: Mission



- To make a map of the human body
- The map can 'zoom in' right down to individual cells
- To understand what makes cells different. We do this by studying which genes each cell has turned on (expressed).
- To understand how these cells fit together in space i.e. which cells are next to each other, which work together?
- What does each cell do?  
(It might make mucous [snot] in your nose; it might be a brain cell that sends electrical signals; it might help you to see/hear).
- Right now, we're mainly working on normal, healthy cells. This will give us a 'reference map' to compare unhealthy cells to and help us understand how to treat disease.



# Making a 'Google Map' of your body

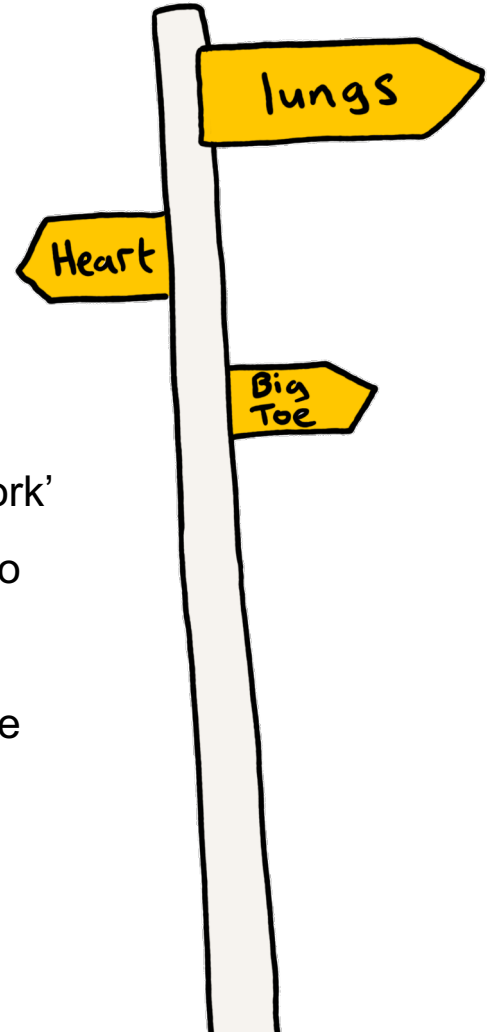


We aim to produce a web-based resource where anyone can click on a part of the body and zoom in right down to the individual cells, and scientists can access the data.

# Location, location, location

## Understanding how cells fit together in space

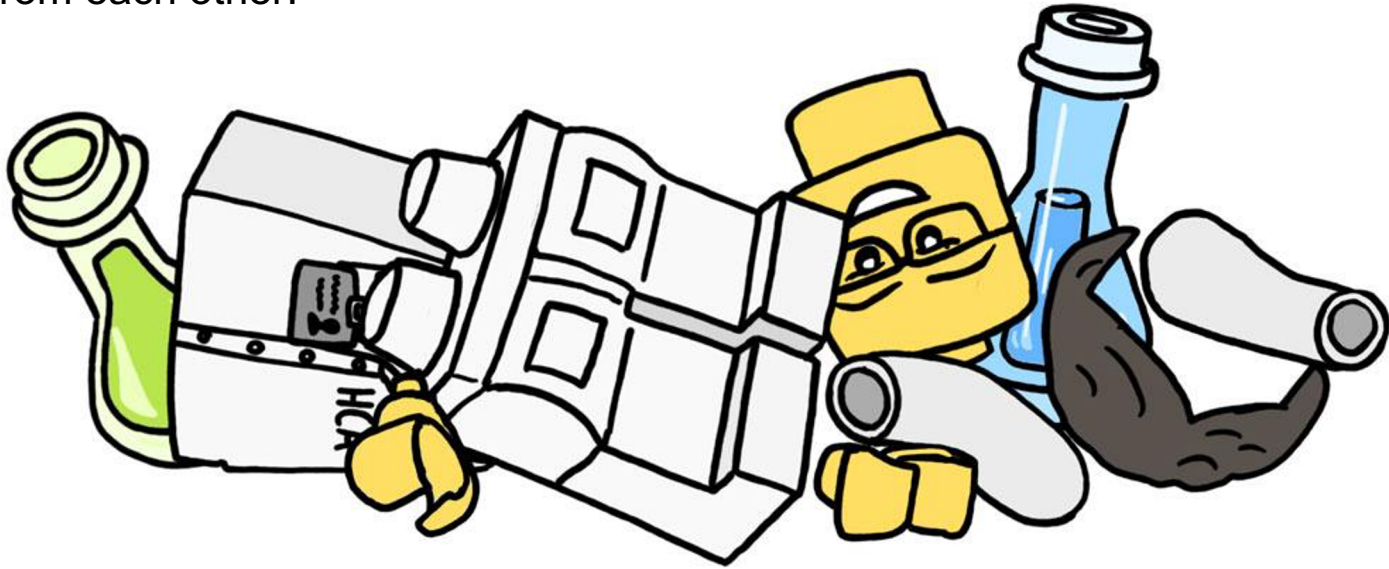
- It's not just about making a list of cell types, or counting cells
- Cells are living things
- Each cell type has its own job, important for your organs to 'work'
- Some cell types work together and need to be close together to do their job
- Your organs are not bags of cells - each has a special structure that helps it do its job





## Getting a closer look

Until recently technology only allowed us to see the cells in the body but not to see **where they were located**. It was hard to spot **rare cells** and to understand how the cells actually **differed** from each other.

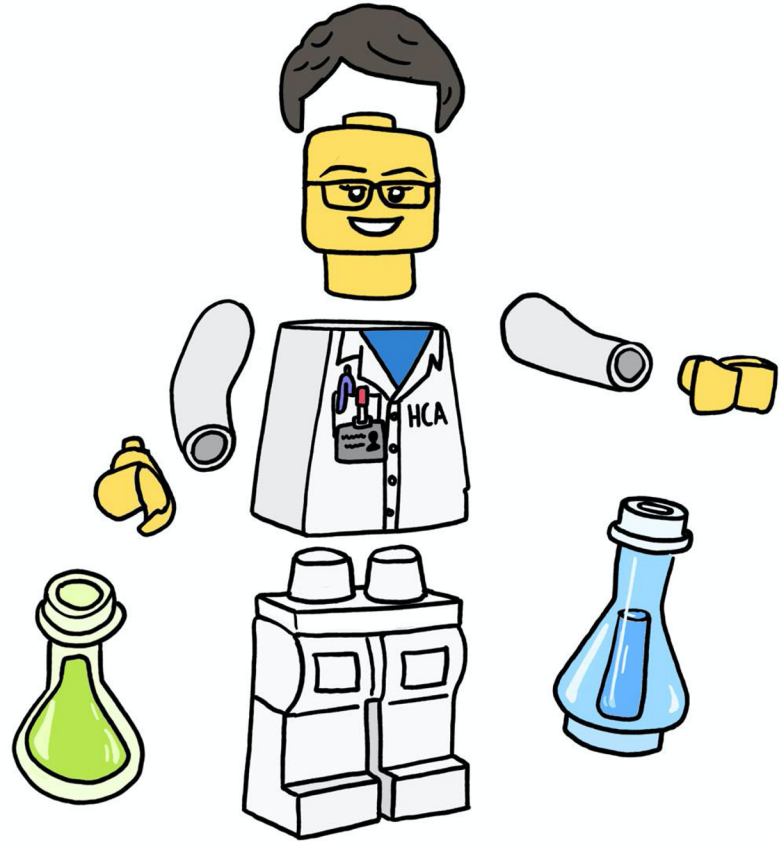


# How we're made

The Human Cell Atlas will be able to list all of the cells in your body.

But we don't just want a list of cells, we want to know how a human is built!

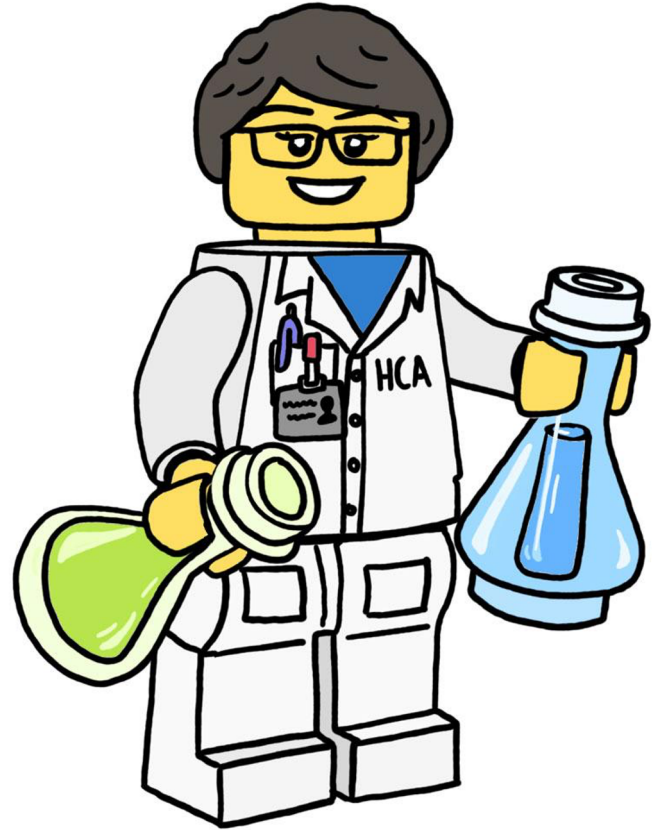
The Human Cell Atlas project will tell us where each cell is located and how it connects with other cells to build tissues.



# The human body is amazing!

We can also look at where each of our cells are located in 3D space.

So we can look at how the structure of a tissue determines its function.



# What are we looking at?

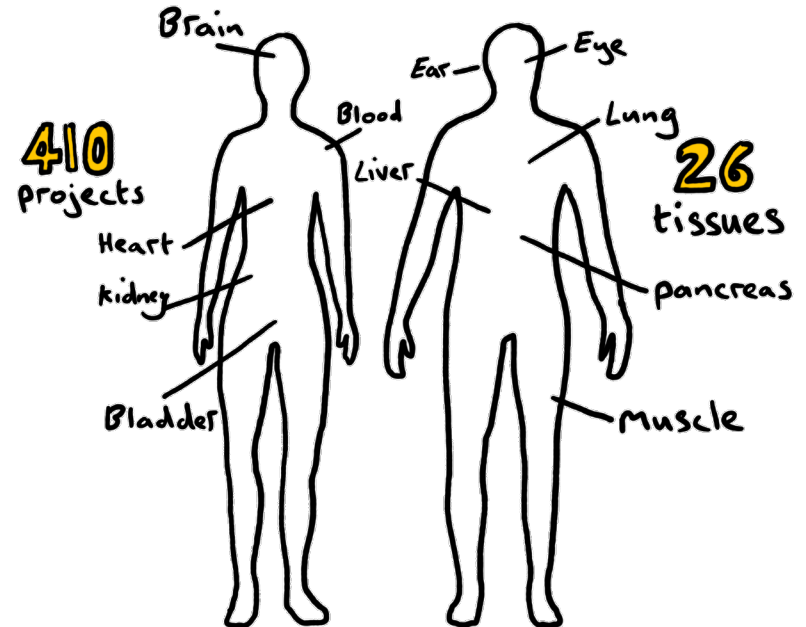
We are studying almost every tissue in your body to understand what cells they contain,

and how they change over your life,

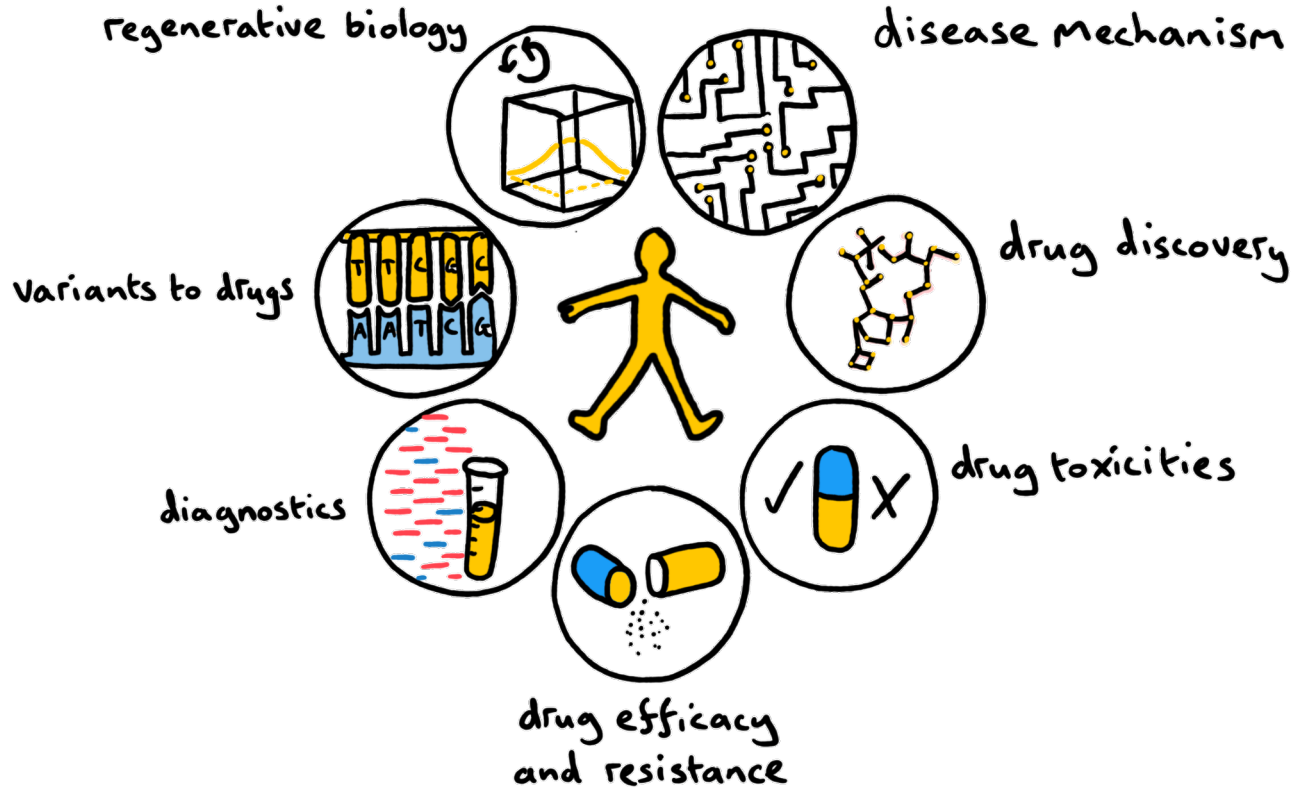
And to build a 'reference map' to compare diseased cells against cancer, for example.

Cells have a different shapes and colours depending on what their job is.

There are  
**37 trillion cells**  
In the human body



# What's the point?



## Who's involved...



Aviv Regev  
Broad Institute  
HCA co-chair

**1059**  
Scientists

**584**  
Institutes

**55**  
Countries

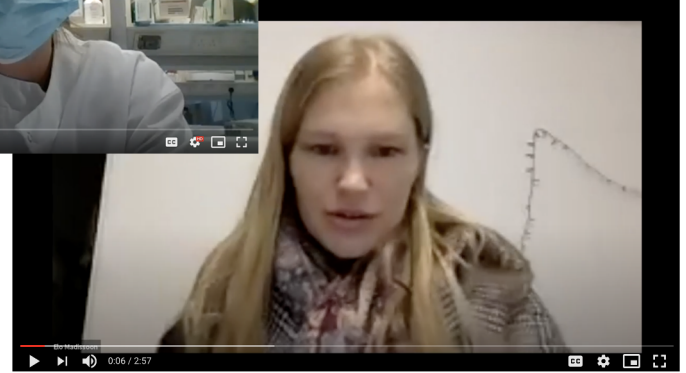
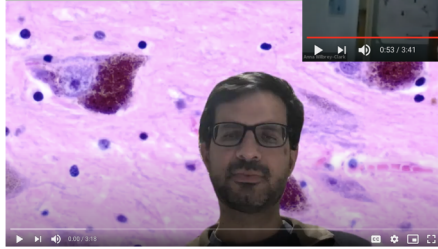
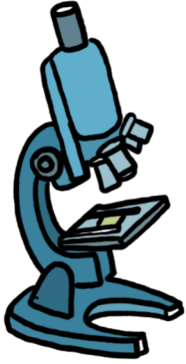


Sarah  
Teichmann,  
Wellcome Trust  
Sanger Institute  
HCA Chair

...and YOU!



# Want to learn more?

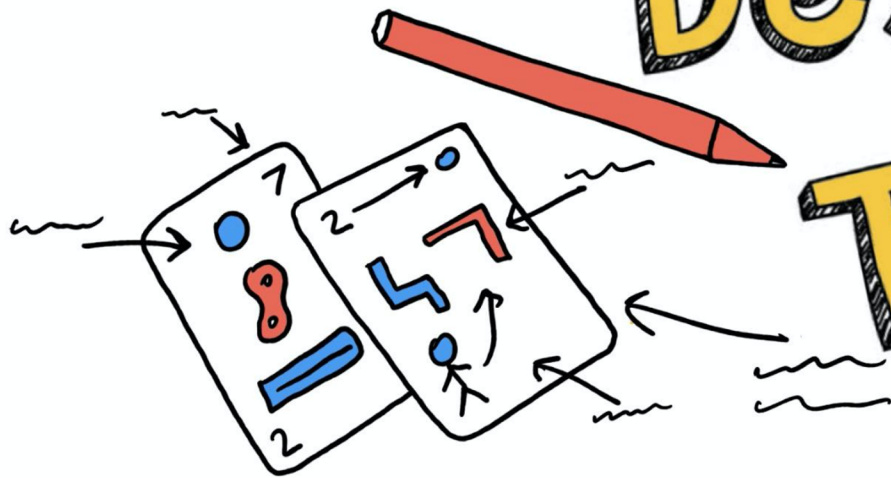


Visit the Little Inventors Youtube channel and check out the dedicated **How to Build a Human Card Game Challenge** playlist to find videos from Human Cell Atlas researchers telling you all about their research.

<https://www.youtube.com/playlist?list=PLUnDzMRpMbldt8WP2PQo2kuRfsLj4YnW8>

Part 2

# Card Game Design Time!



with  
Richard  
Heaves!



# How to design a card game



**Click on the video** to hear from Richard, head games designer at Heaves Design!

## Game design starts here!

We want you to come up with an idea for a cell-tactular CARD game, using the 'story' of the Human Cell Atlas for inspiration.

So what are the key ingredients for a good game?

**FUN**  
to play

+

**Simple**  
to understand

+

**Great theme**  
(the game story)

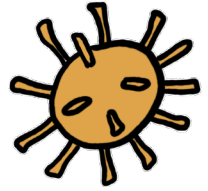
## Game some ideas

**Spend time thinking about different ways cells could be used in a card game. Here are some things to get you thinking...**

- What did you find most interesting about cells or HCA? Would it make a good game theme?
- Think about the story of your body being made up of many different cells and what they do.
- What could you teach players about the Human Cell Atlas through your game?
- Could the shapes and colours of cells be used, or maybe the names?



# Inspiration - Stories in Games



A lot of successful games have a great story. This can also be called the 'narrative' or 'story'. Here are some examples:

**PANDEMIC** - Each player has a different role, and together you are working as a team to try to stop the spread of a global pandemic. This is called a collaborative game as you win or lose together.

**MONOPOLY** - The game is set in London, the aim is to buy as many properties as you can and make the most money. The Card game Monopoly Deal uses the same goals.

**SETTLERS of CATAN** - is set on the mythical island of Catan hundreds of years ago. The aim is to build settlements and gain resources. There is also a card game version.

Your game is based on the human body and the Human Cell Atlas, this is the setting of the game but the narrative still needs to be decided. You can get really creative here. Think about the aim of the game and what the players are trying to do. Are the players acting as cells or tissues, is the aim to try to collect as many cells as possible, is it to battle or is it to team up with other players?



# The Rules

Every game needs rules to tell someone else how to play. They are the heart of your game, without them no one can play your game.

Is there a single winner  
or do you win or lose  
together?

What do you do on  
your turn. Make sets,  
create patterns, trade  
cards, battle or  
something else?

Do players shout out,  
describe things, all  
play at the same time  
or one at a time?

# The basic steps to design your game

1. Decide on a theme/story for your game that is inspired by human cells or anything about the Human Cell Atlas.
1. Discuss, write down and draw your game ideas in small groups to come up with card game that is a fun to play and that also help teach players something about human cells or Human Cell Atlas.
1. Make a prototype and test it by playing it with others. (If you have time)
1. Design how the cards will look and finally design how the box will look and the name of the game.
1. Upload your game concept to [www.hca.littleinventors.org](http://www.hca.littleinventors.org) Including your box design, examples of the cards in your game and a description of how to play the game.

# Time to get started!

1. Use the **Idea generation sheets** to help guide you through designing your game.



**Team Roles**  
Discuss with your team your strengths and weaknesses and assign a role to each person. You can make up additional roles if there are more people, or assign more than one role to a person if there are less than four on your team.


**Experience Designer** \_\_\_\_\_  
You are in charge of coming up with the story of the game, using what you learned from Richard Healey the games designer to help you.

**Copywriter** \_\_\_\_\_  
Your role is to think of the name of the game and way of explaining what the game involves that will make people want to play it.

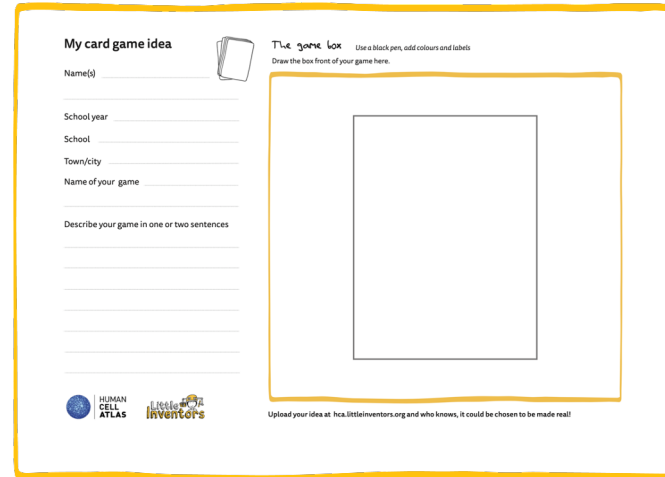
**Lead Scientist** \_\_\_\_\_  
You will need to have a good understanding of the Human Cell Atlas project and how your game can teach people about human cells and tissues.


**Lead Artist** \_\_\_\_\_  
Your role is to come up with the look and feel of the game. A good game needs to be eye catching to make people want to play it but also clear so everyone can quickly understand the information they need.

\_\_\_\_\_

Space for another role 

2. Fill out the **Entry sheets** to communicate your final idea and upload to the website.



**My card game idea** 

Name(s) \_\_\_\_\_

School year \_\_\_\_\_

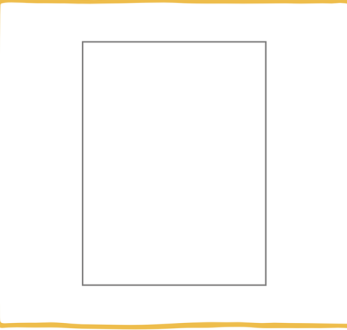
School \_\_\_\_\_



Town/city \_\_\_\_\_

Name of your game \_\_\_\_\_

Describe your game in one or two sentences  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**The game box** Use a black pen, add colours and labels  
Draw the box front of your game here.



Upload your idea at: [hca.littleinventors.org](https://hca.littleinventors.org) and who knows, it could be chosen to be made real!

3. Complete a short questionnaire to tell us how you found the card game challenge -

<https://forms.gle/JhDhTShgTP84PYPH8>

Good Luck!



Extra reference stuff...

## FAQ's

### **What parts can we use?**

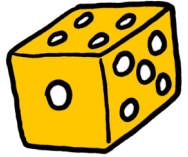
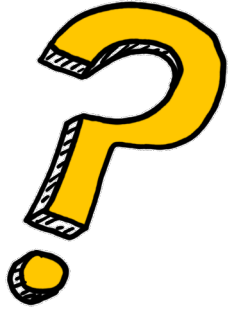
Try to just use cards, these cards can be rectangular, square or round.

### **What ages is it for?**

Create your game for ages 10+

### **What if our game idea wins?**

Your game idea will be developed by an expert game designer and tested so don't worry it doesn't have to be perfect. The more information you can share the better the chances of winning!



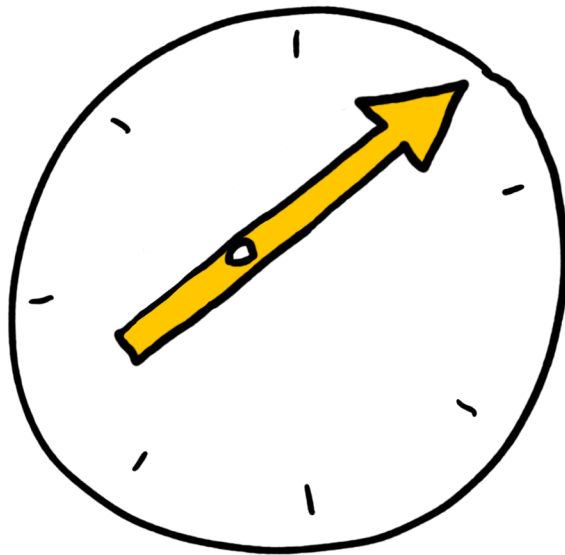


## Extra Help

Don't panic, designing a good game can take a bit of time. Try to think what games you have played before. What parts of those games did you like, could that inspire you.

Just get ideas down on paper, drawing an idea even if it's really rough often helps to start the ball rolling for other ideas.

Games are best created in teams as they are mostly multiplayer experiences. Have a look at the **Team Working Guide** included in the game design log to help you here.



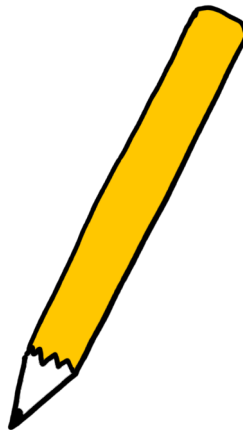
## Extra Help

Try to focus around a simple idea and build from there.

Players like **choices** but don't give them too many, that just slows the game down.

Even if the game isn't complete, try to write down some basic rules, it often helps to see what is missing.

Remember, try to make it fun to play, simple to understand and teach something about the Human Cell Atlas.



# Team working guide

To invent a really well designed card game we recommend dividing into teams of 3-4.

Everyone has different strengths and different experiences, so by working together as a team it means you can design something really amazing. It also means you can try out your game in a real life situation and talk through any issues you have.

If you get stuck someone else in your team may have a solution, or by sharing your thoughts your idea may develop into something extraordinary!

**But don't worry if you aren't able to make a team, you can be a multi-skilled inventor and take on all the roles yourself!**

By wearing different hats during the invention process you will make sure you don't miss out any important parts when designing your card game.



# What are the roles?

Assign each of these roles to a member of your team. This will help you get started and it means that no element of your card game invention will be forgotten. If there are less than 4 people in your team you can take on more than one role, if there are more than 4 you may want to make up additional roles. How about Rules Master or a Tactics Specialist?

**Experience Designer** - This person should make sure that the game has a good story and concept.

**Games Writer** - This person's job is to make sure that people playing the game know what it's about and are excited to play!

**Lead Scientist** - This person is in charge of making sure that when you play the game you learn something about the Human Cell Atlas or the human body.

**Lead Artist** - This person needs to make sure the game looks good and is easy to understand.

Don't forget to work together, even though you are assigned your roles you all need to work together on every element to make a winning game design!