Public Engagement with Centre of the Cell

– a guide to Centre of the Cell activities

Queen Mary
University of London

Barts and The London
School of Medicine and Dentistry

Centre of the Cell (www.centreofthecell.org) combines an award-winning interactive science centre plus science shows, workshops, science talks and a youth membership programme for East London and beyond. Since opening in September 2009, over 110,000 people, young and old, have participated in our activities.

The biomedical research of the scientists at Barts and The London School of Medicine and Dentistry and Queen Mary, University of London give Centre of the Cell its unique and cutting-edge content. The Centre of the Cell team of science communication professionals has extensive and successful experience of translating the complex concepts of cell biology and medical research into innovative science communication tools.

- Would you like to engage young people and the general public with your research?
- Do you need to fulfill a public engagement requirement in your research grant?

Over 150 scientists and clinicians have already helped Centre of the Cell achieve its mission. This guide outlines how you can join in as well.

What you need is:

- An exciting research story that relates to our top-level message: '*You are made of millions and millions of cells. The cells of your body work together to keep you well. When you are ill, your cells have gone wrong. People here and all over the world are finding ways to make cells better. You can help keep your cells well'.*
- Funding (see below)
- A modest amount of your time

Centre of the Cell is now a Centre of QMUL and it's Medical School and we wish to expand our unique content by further collaborations with QMUL scientists. This will allow us to offer a variety of interactive Pod shows relevant to different Key Stages, ages and special interest groups. New collaborations will also produce new workshops and science shows for the proposed new Neuron Pod in the Blizard Mews and for performances in schools.

We believe that this new content could be funded by:

- Addition of fully-costed public engagement components to research grant applications – if the grant is successful, the public engagement element will be delivered by Centre of the Cell in collaboration with the grant holder.
- Projects submitted to industry collaborators or learned societies
- Other sources of internal funding e.g. EDAs.

On the next pages we describe number of different options for new Centre of the Cell activities and outline the processes involved in generating the activities. We also detail their approximate cost and development time. This is only a guide – new ideas are most welcome.

Digital interactive game for Centre of the Cell Nucleus

Our state-of-the-art digital interactive games have won international prizes and are extremely popular with visitors of all ages. Based on touch-screen technology they are used in Scenes 2 and 4 of the Pod show.

In Scene 2 the theme is cell biology and the four interactives currently playing in the Pod Nucleus are:

Cell to Baby – human development from single cell to adult
Cell Turnover – do you grow because your cells get bigger or you get more cells?
Cell Trumps – digital interactive version of our famous card game
Lab Bench Chaos – how (not) to grow cells
We also have a floor projection game that counts your cells (below).

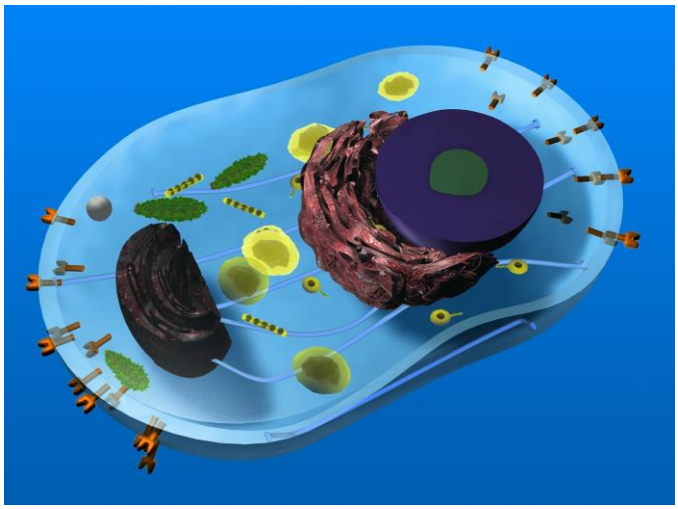
In Scene 4 the current Nucleus interactives are:

Burns Clinic – growing real skin to treat major burns
Gum Disease – what happens if you don't brush
TB – destroy TB with better treatments
Cancer stories – real life stories of hope and research
Deafness – inherited problems with hearing
Gene Quest – find people with gene knockouts
Poo Racer – create a healthy poo to travel down the colon

We have space and scope for **at least 10 new interactives in the Nucleus**. In terms of the diseases, we are especially interested in diabetes and obesity, stem cells and tissue regeneration, cardiovascular research and trauma, but all suggestions are welcome. As regards cell biology we are especially interested in the brain and immune system but once again we are open to all ideas. And, of course, should you wish, there is an opportunity to 'star' in your own interactive.

This resource could be enhanced by adding a new or revised information section on our website, and could be linked to workshops focused on this area. It can also be turned into an App for Apple and Android.

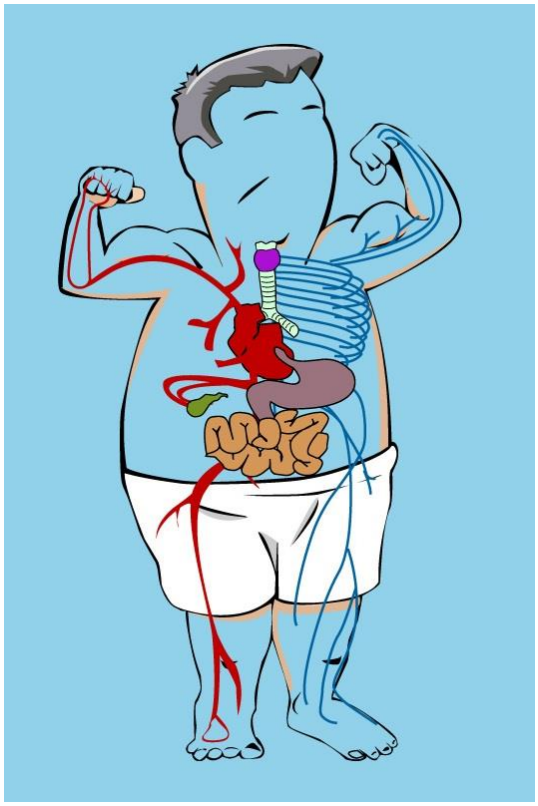
Digital interactive games for website and perimeter screens

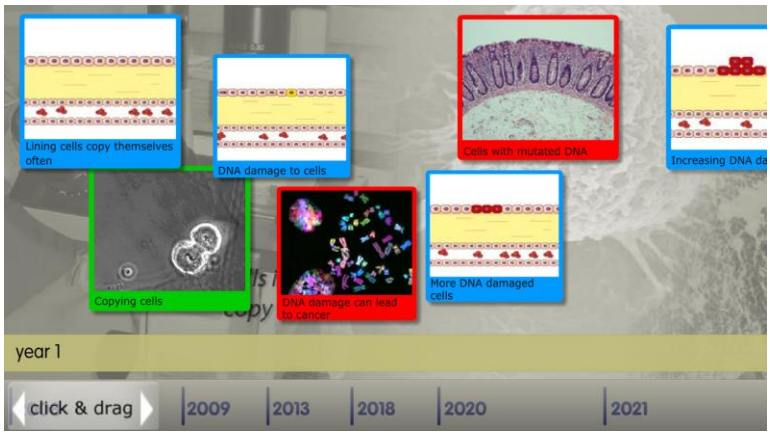


We currently have 15 digital interactive games that are played on our website and re-versioned as touch screen interactives for the perimeter screens of the Pod. The titles range from cell and tissue biology e.g. Explore a cell (see image to the left); Mitosis Movie; Cell Turnover; Organ Surgery to Biomedicine for example Flu Epidemic; Cure Asif's Cancer, Gene Finder and Troublesome Twin.

For an additional cost these games can be turned into an App for Apple and Android (see estimated costings).

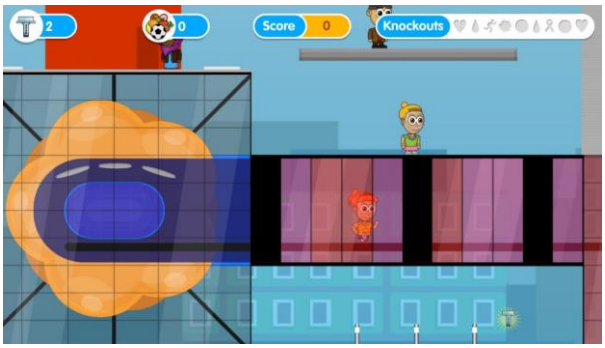
There is capacity for **at least 30 more of these interactives**. It is also possible to convert them to 'Apps' for iPhone, iPad or Android platforms. Games can be developed so that they are accessible for all ages, for younger children or for teenagers depending on content and complexity.

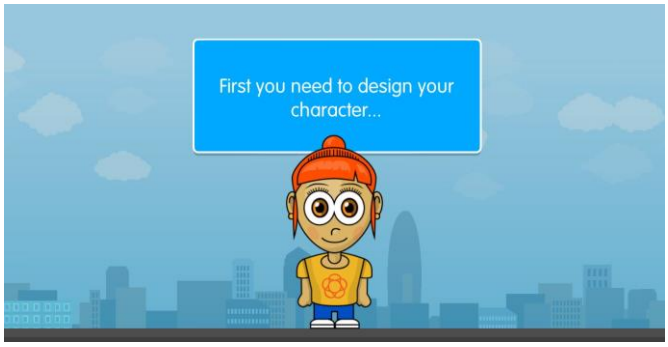




Digital interactive games: Case Studies

Case study 1: Gene Quest





Gene Quest was developed by Centre of the Cell for East London Genes & Health, one of the largest community-based genetic research studies in the world, led by Professor David van Heel. This interactive game puts the player in the shoes of a scientist exploring East London, looking for people with genetic knockouts. It aims to raise awareness of the East London Genes & Health study and its aims, as well as the exciting potential of gene knockouts in finding new medicines and increasing our knowledge of human diseases.

Gene Quest was launched as a nucleus interactive in November 2015. It will be also be converted into an 'App' for iPhone, iPad and Android platforms.

Case study 2: Poo Racer

Poo Racer was developed by Centre of the Cell for the National Centre for Bowel Research and Surgical Innovation (NCBRSI). **Poo Racer** challenges players to guide their poo vehicle out of the bowel in a healthy time while collecting bacteria points, making prudent food pit stops and avoiding obstacles. The game has been developed to tackle the stigma around poo which can result in bowel patients avoiding doctors appointments and hiding their bowel related symptoms.

Poo Racer was launched as a nucleus interactive in November 2015. It will be also be converted into an 'App' for iPhone, iPad and Android platforms.

Science Shows, Workshops and Lectures

Science Shows and Workshops

We currently have ten successful and popular shows and workshops devised and written by our Learning Team, including **Snot, Sick and Scabs**, **Teethtastic** and **Sensational**. These are performed on campus for both school and family groups, and they are also taken out to schools. Three more shows or workshops are currently under development.

Each show lasts 50 - 60 minutes and is a presenter-led performance involving interactive demonstrations and props. Our science shows are very interactive and we get volunteers up to help us with demonstrations. We have capacity **for two new original shows per year.**

Big Question Lecture

This is a limited option as we only run **four per year** at the moment. These lectures, which are developed by a scientist in consultation with our Youth Forum require much more work on the part of the lecturer but we do provide marketing and bring in the audience for you. The bonus is that you have a public lecture that you can recycle and update for other audiences. The Big Question audiences are mainly AS+ level students and their teachers, Centre of the Cell Youth members and some members of the general public (as well as your colleagues, friends and family!). Example lecture titles are:

- **Will there ever be a cure for cancer?** Fran Balkwill
- **Should you be allowed to design your own baby?** Dave Kelsell
- **Was the First World War good for medicine?** Tilli Tansey

Science Shows and Workshops: Case Studies

Case study 1: Something in the Air

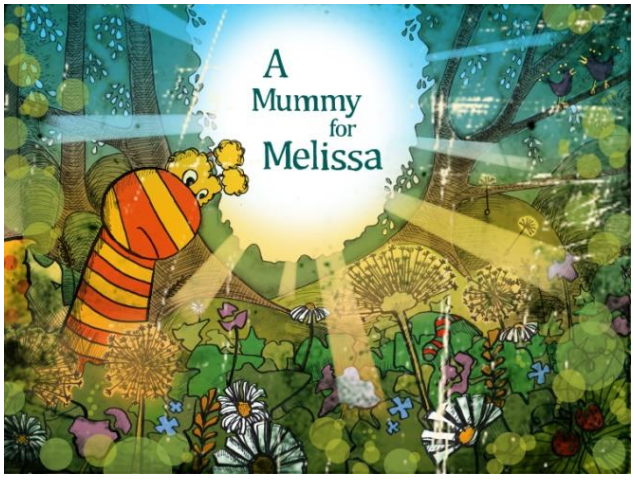
Something in the Air was developed by Centre of the Cell for the Centre for Genomics and Child Health for their study on the impact of air pollution on London's children. The first section of the workshop has four learning aims: What is air pollution? How does air pollution affect people? How can we measure air pollution? What can I do to avoid air pollution? The second section has six workstations where school pupils can explore the science behind the research.

However, this is more than just a public engagement or science communication exercise. Those children whose parents have given informed consent are recruited into the research study during the workshop. The research team obtain sputum, urine, and DNA samples from them and conduct lung function and skin-prick allergy tests. Recruitment was completed in Summer 2015. The next step is for the team to return to the schools to update them on the findings of the research and evaluate the impact of the project on their understanding of air pollution and the work of scientists.

Case study 2: A Mummy for Melissa

A Mummy for Melissa was developed by Centre of the Cell for East London Genes & Health and the Born in Bradford project. The brief was to develop a science show and stand-alone activities about genetics for children aged 5 – 7 years old and their families.

A Mummy for Melissa is a puppet show that follows the story of a monster called Melissa who is trying to find her mummy. Along the way she meets lots of new friends who teach her about the world of living things, cells and DNA. This show is a child-friendly introduction to the concepts of cells and genetic inheritance.

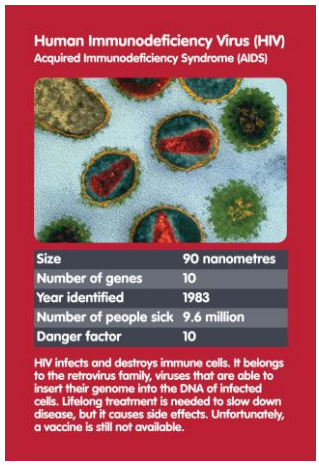


Trumps Card Game

Based on the highly collectable 'Top Trumps' card game, and with permission from *Winning Moves Ltd*, (who make Top Trumps) scientists in the Blizard, William Harvey and Barts Cancer Institute have worked with Centre of the Cell to create two card games. The first was **Cell Trumps**, launched in 2007.

Virus Trumps were launched in 2011 and **Bacteria Trumps** were launched in 2013. This science communication tool is very popular and effective but may require a team effort amongst your friends and colleagues to generate 30 high quality images, and five facts to go with each card. For Cell Trumps categories see above, for Virus Trumps this is:

- Size (nm)
- Number of genes
- Year discovered
- Number of people sick per year
- Danger Factor



Gene Trumps are currently under development and we are also working with Winning Moves Ltd to develop a new 'Legends of London' card game. Other 'Trumps' we would like to produce are **Parasite Trumps** and maybe **Toxin Trumps** (suggestion from son of Blizard scientist) but all ideas linked to human biology and disease are welcome. We have capacity to launch **one new set of Trumps cards per year**.