

# Spring Newsletter

Issue 12 - April 2017

## Director's Welcome



There is a lot to report since the last newsletter. In a highly competitive process we successfully renewed our Wellcome Trust and MRC core funding, an outcome that reflects the high quality of our research and a tremendous team effort by all involved.

The Senior Advisory Committee or SAC continue to meet every 6 weeks to help steer our development across multiple fronts. In the last couple of months we have recruited three key new members of the administrative team: Steph Hall joins us as Principal Technician; Abi Herrmann as Research Communications Manager; and Becky Jones as our Public Engagement Manager – I am sure you will be hearing more from all three of them over the coming

months.

We have established multiple Working Groups to plan for life in Capella. These cover a broad range of activities including flow cytometry, imaging, animal models/transgenics, bioinformatics and general computing support etc; they are listed together with their membership on the website – please contact them if you have questions or special requirements. Lastly we are in the middle of a Group Leader recruitment round and will be interviewing short-listed candidates on April 27<sup>th</sup> / 28<sup>th</sup>. They will be giving talks on the afternoon of April 27<sup>th</sup> so please note this in your diaries.

In March we saw the return of the Stem Cell Robots to the Cambridge Science Festival. This highly engaging and interactive activity, led by Dr Elisa Laurenti, was well received by those attending the Festival. I look forward to seeing the creative activities that the public engagement team will come up with over the coming months.

## CSCI Annual Retreat 2017

The Cambridge Stem Cell Institute's Retreat is our flagship annual event, providing a forum for scientists from across the Institute to present emerging findings, forge collaborations with peers and explore new tools and technologies on display from our sponsors.



Over two very gusty February days, more than 250 stem cell researchers gathered in Newmarket for a showcase of outstanding stem cell research ongoing in Cambridge, as well as hearing from guest Industry partners Apollo Therapeutics, Glaxo Smith-Kline and AstraZeneca.

We were also very pleased to welcome Professor Stuart Forbes from the University of Edinburgh, who updated us on his outstanding research in the field of liver regeneration. **Read more:** [www.stemcells.cam.ac.uk/events/retreat17](http://www.stemcells.cam.ac.uk/events/retreat17)

## Update from Project Capella

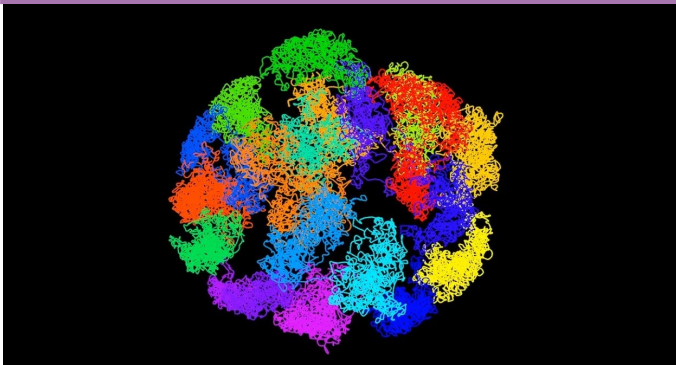
In December 2016 we were delighted to be confirmed as a major research centre by **Wellcome** and the **Medical Research Council**, receiving continued support for a further five years. With building work on our new home progressing, this marks the start of an exciting next phase for the Institute.

Our new neighbours in the building will be the Cambridge Institute of Therapeutic Immunology and Infectious Diseases (CITIID) and the Milner Therapeutics Institute, both of whom have explicitly translational goals.

Completion of the main structure of the building will be marked with a 'topping-out' ceremony on 21<sup>st</sup> April 2017 and plans are continuing for labs to move in to the new building in 2018. **Read more:** [www.stemcells.cam.ac.uk/about-us/location2018](http://www.stemcells.cam.ac.uk/about-us/location2018)



## Visualising the genome



Scientists in **Brian Hendrich's** group, together with colleagues from Biochemistry, Chemistry and the MRC Laboratory for Molecular Biology have determined the first 3D structures of intact mammalian genomes from individual cells. The research shows how the DNA from all the chromosomes intricately folds to fit together inside the cell nuclei.

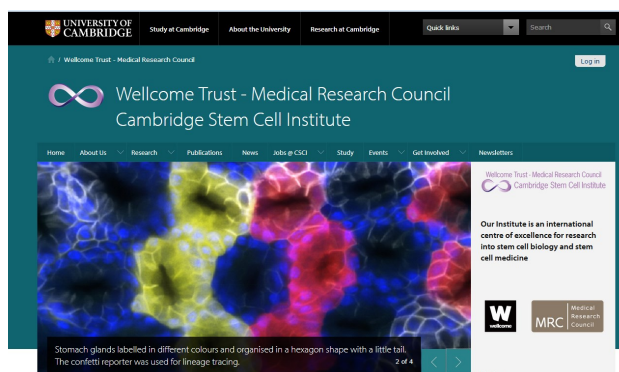
**Dr Tom Collins** from the Wellcome's Genetics and Molecular Sciences team said:

*"Visualising a genome in 3D at such an unprecedented level of detail is an exciting step forward in research and one that has been many years in the making. If we can apply this method to cells with abnormal genomes, such as cancer cells, we may be able to better understand what exactly goes wrong to cause disease, and how we could develop solutions to correct this"*

Read more: [www.stemcells.cam.ac.uk/news/visualising-the-genome-researchers-create-first-3d-structures-of-active-dna](http://www.stemcells.cam.ac.uk/news/visualising-the-genome-researchers-create-first-3d-structures-of-active-dna)

## Discover the New CSCI Website

In January we launched our new look website aligning ourselves with the University of Cambridge format. As well as helping us become more identifiable as a University Institute, there is also new content available, such as the new Events page, a list of current publications and staff information pages for internal use.



The 'Study' section is currently still held on the old system, and will be moved across once all student applications are closed later in April.

Read more: [www.stemcells.cam.ac.uk](http://www.stemcells.cam.ac.uk)

## Mass platelet production a step closer to reality

In January 2017, mass production of platelets took a step closer to being clinically available. Intellectual property from Cambridge Stem Cell Institute group leader **Cédric Ghevaert** and his collaborators from Brigham and Women's Hospital and Harvard Medical School, were sold in licenses to Platelet Biogenesis.

Platelets are a critical first-line treatment for cancer and are used widely in surgery, however their growing demand is severely limited by short platelet shelf life. The licenses, one acquired from Cambridge Enterprise and the other with Partners Healthcare, will provide a scalable process to produce human platelets from pluripotent stem cells using a serum-free and feeder-cell-free process.

Platelet BioGenesis, a biotech start-up developing a method for producing life-saving platelets without the need for human donations, has acquired exclusive worldwide licenses to intellectual property governing the entire differentiation process from stem cell to platelet.

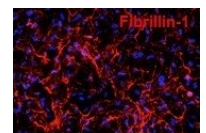


Cédric Ghevaert

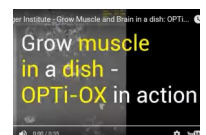
*"Translating basic scientific discoveries into tangible medical progress is always a real challenge. Joining forces with Platelet Biogenesis gives us a real and exciting opportunity to one day provide hospitals with platelets for transfusion without having to rely entirely on blood donations"*

## Scientific Highlights

Granata A *et al.* An iPSC-derived vascular model of Marfan syndrome identifies key mediators of smooth muscle cell death. *Nature Genetics* 2017 Jan;49(1):97-109



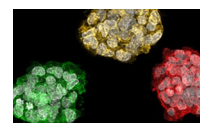
Pawlowski M *et al.* Inducible and Deterministic Forward Programming of Human Pluripotent Stem Cells into Neurons, Skeletal Myocytes, and Oligodendrocytes. *Stem Cell Reports* doi: 10.1016/j.stemcr.2017.02.016



Kiselev VY *et al.* SC3: consensus clustering of single-cell RNA-seq data. *Nature Methods*. doi: 10.1038/nmeth.4236



Collier and Panula *et al.* Comprehensive Cell Surface Protein Profiling Identifies Specific Markers of Human Naive and Primed Pluripotent States. *Cell Stem Cell* doi:10.1016/j.stem.2017.02.014



Read more: [www.stemcells.cam.ac.uk/news](http://www.stemcells.cam.ac.uk/news)



## Public Engagement



Rebecca Jones

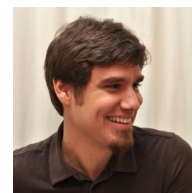
Dr **Rebecca Jones** joined the Institute in March as the new Public Engagement Manager. Rebecca will be working closely with the Institute's academic champion for public engagement, Dr **David Kent**, to deliver a dynamic public engagement programme for the Institute.

We also have two new representatives on our Public Engagement Steering Committee, Dr **Thorsten Klampfl** (Green Lab) and **Julia Spindel** (Reik Lab).

It is important to us that we hear views and ideas for engagement from across the Institute, as well as spreading the word about our approach to encourage staff involvement.

Our Postdoc and PhD representatives are a central to the success of our committee. Please get in touch if you would like to find out more about public engagement at the Institute or to get involved!

Email: Becky Jones, CSCI Public Engagement Manager [scipe@stemcells.cam.ac.uk](mailto:scipe@stemcells.cam.ac.uk)

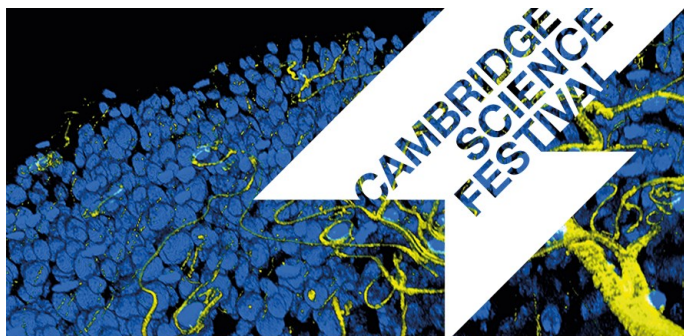


Thorsten Klampfl



Julia Spindel

## Cambridge Science Festival



CSCI researchers returned to the Festival again this year with a variety of events and hands-on activities. Our headline act was the return of *Stem Cell Robots*, developed by Dr **Elisa Laurenti** in 2016. The activity presents the robot as a pluripotent stem cell, which requires programming to become a specific cell lineage. We had 21 volunteers from across the Institute running the activity, and discussing their research with the 7,800 children, families and adult audiences which attended the two interactive weekends.

In addition, we collaborated again with colleagues at the Babraham Institute, Wellcome Trust Sanger Institute and Gurdon Institute on a series of panel discussion events. Dr **Joo-Hyeon Lee** took part in *Mini-me: How 3D organoids are revolutionizing research* and Dr **Brian Hendrich** discussed his Epigenetics research in *DNA: Does Not Account for everything*. Both events featured a panel discussion and Q&A, followed by a networking session to allow members of the public to speak directly to the researchers and members of their labs.



Our resident comedians were also out in force, with PhD students **Stanley Strawbridge** (Smith Lab) and **Alisa Molotova** (Franklin Lab) performing at comedy showcases *The Variables Present...an evening of science variety* and *Bright Club*. Both did an incredible job at educating and entertaining the captivated public.

**The Festival in Numbers:** CSCI representation at the Festival increased this year, with the number of our researchers taking part up by **25%** compared to last year, and the number of lab groups represented up by **60%**. It was great to see almost half of the core labs in the Institute getting involved and being represented at the Festival. Thank you to everyone who took part and made this year's event a brilliant success.

Read more: [www.stemcells.cam.ac.uk/public](http://www.stemcells.cam.ac.uk/public)



## Success stories: CSCI on Screen

The last six months have seen a series of CSCI public engagement projects receive notable accolades. Our Cambridge Shorts film 'Dish Life', a collaboration between **Dr Lorian Vitillo** (former CSCI researcher) and Karen Jent, Department of Sociology, has won Bronze Award at the Raw Science Film Festival, California.



Our patient-led film 'Stem Cells and Brain Repair', featuring **Professor Roger Barker** was shortlisted for the Bristol Science Film Festival. Additionally, our Game Lab 2015 game 'Cell Bound', produced in collaboration with **Dr Tuzer Kalkan** (Smith Lab), is now available for download in the app store.



## View from the Scientists

*'Taking part in the Cambridge Science Festival was an amazing experience. There was a real appetite from the public to understand more about the applications of stem cell research in the clinic, and what the potential is for the future. I was surprised by the number of people that I spoke to who still had misconceptions about the need for human embryos in our research. This has made me more aware that we, as scientists,*

*must continue to provide clear and honest answers to the public's questions through creative engagement activities.'*

**Dr Pedro Madrigal**

Stem Cell Robots volunteer

Vallier Lab



## Seed Fund projects

The Public Engagement Steering Committee has agreed to support two new projects for 2017, following the success of Stem Cell Robots in 2016.

PhD students **Daniel Bode** and **Tim Lohoff** (1st year Wellcome programme) are working with Moonshine Brewery to develop a Stem Cell themed beer for Cambridge Beer Festival in June; striving to engage new adult audiences with the research of the Institute.



Meanwhile **Katie Tremble** and **Mariana Alves** (Silva Lab) are developing a series of podcast interviews with CSCI PIs.

Participating scientists will subsequently be paired with Cambridge-based artists over a six-week period, with the resulting artworks showcased at a public exhibition in June, in partnership with Pint of Science.

## Future Public Engagement Projects

To wrap up 4DCellFate, a five-year European collaboration, **Dr Brian Hendrich** will be working alongside colleagues from Barcelona to producing a short film. The production will discuss the role of Polycomb and NuRD proteins in cell fate decisions, and summarise the outcomes of this pioneering piece of collaborative research.



**BRAINfest:** CSCI researchers will also be taking part in Cambridge BRAINFest, 23 – 25 June 2017, an extraordinary 3 day engagement event organised by our colleagues in Cambridge Neuroscience.



The event will include hands on activities, panel discussions and neuroscience themed evening entertainment.

Read more: <http://www.neuroscience.cam.ac.uk/brainfest>