Public Engagement Case Study: Kalostasis

By external evaluator Dr Hilary Jackson

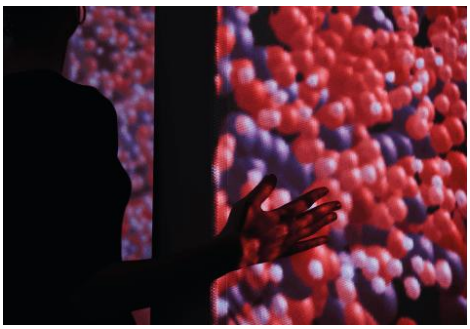
Kalostasis is…

a large-scale interactive installation using 3D data from Magnetic Resonance Imaging (MRI) of the human heart.

The project brings together researchers from the Centre for Medical Engineering, led by Professor Pablo Lamata, and designer Salomé Bazin of Cellule Studio. Together with artist Lucy Hardcastle, they have used Wellcome Research Enrichment Funding to create a large-scale immersive experience, allowing a visitor to step inside a human blood vessel, see blood cells moving around them, and hear the sounds of the heart. Once inside, the visitor disrupts the flow: the cells move differently, the sounds of the heart change.

Shown at the 2019 London Design Festival and invited to the 2021 Venice Biennale, Kalostasis has been a disruptor in the world of design, showcasing the possibilities of designers and academics working together. For Pablo and his team, it has brought new perspectives and ideas to research. Moreover, patients and their families have been at the centre of the project, informing the project with their experiences of living with blood flow anomalies, advising the team about the developing exhibit, and becoming an integral part of Pablo's research advisory group.

The Kalostasis installation



Big Heart Data: the proving ground for Kalostasis

Professor Pablo Lamata, Wellcome Trust Senior Fellow in the Centre for Medical Engineering at King's College London, began his collaboration with designer Salomé Bazin of Cellule Studio with the Big Heart Data project. Exhibited in Science Gallery London in spring 2019, the project explored individualised medicine and the ability to use 3D modelling to recreate a replica of an individual's heart. The project was a great success, capturing the imaginations of 14,000 gallery visitors, stimulating new ideas for researchers, and getting picked up in design magazines.

Pablo and Salome knew their journey did not end with Big Heart Data.

"As a researcher, we are here to make an impact. Try to understand better what are the needs we are trying to cover, and that's what you get out of public engagement."

– Pablo Lamata, Centre for Medical Engineering

An image from Big Heart Data, spring 2019, at Science Gallery London.

At the heart of Kalostasis: patients, their families, and the charities that support them

With support from the Centre for Medical Engineering public engagement staff, the project team has worked with two charities – the British Heart Foundation, and the Evelina Children's Heart Organisation – to draw on the experiences, knowledge, and expertise of patients who live with heart conditions, and their families.

> *"The team at King's have been really good about making sure we were there in the public engagement meetings, right when they were talking about their initial strategy. …for us, it is a lot about confidence-building with young people, and I know that that was really considered and added into the overall strategy of the public engagement group."*
>
> – Sinéad Houlihan, Evelina Children's Heart Organisation (ECHO)

As well as engaging with young patients and their families in small informal workshops, the project team has worked with adults to explore the experience of living with a heart condition. These patients have informed the project leaders' work through workshops and by participating in Pablo's research advisory group. Pablo is now working on a funding proposal with a patient who has been applying his own expertise and experience to some of the lab's research problems.

ECHO teens meet members of the Kalostasis team.

> *"The most beautiful inspiration comes from patients' statements."*
>
> – Salomé Bazin, Cellule Studio

Meaningful partnerships between researchers, designers and artists

The partnership between Pablo's team and Cellule Studio has not simply involved designers making a demonstration explaining a researcher's work, or just an artistic interpretation of it. Researcher and designer have worked together to create something that is more than the sum of its parts, and they have done it in a way that has influenced both of their work.

"What's so fascinating when we work across science and art is we realise how close actually we think… together we can really create new ways to showcase, to visualise, or actually experience the human body"

- Salomé Bazin, Cellule Studio

Once you identify that common vision, things sparkle really, really easily.

- Pablo Lamata,
Centre for Medical Engineering

Recognition

As well as showing at the 2019 London Design Festival in the Victoria and Albert Museum, Kalostasis has been invited to the Venice Biennale 2021. The project has been nominated for several prestigious awards and prizes in both science and design: the Falling Walls conference, and selected in the 2020 Lumen Prize longlist.

Visitors to the Kalostasis exhibition at the London Design Festival at the V&A Museum

I have been surprised by how motivating, insightful, and valuable it is to engage with patients. They raise issues that would otherwise take researchers years to recognise"

– Pablo Lamata, Centre for Medical Engineering

Support from the Centre for Medical Engineering

Support for the project from Centre staff has been key: Alice Taylor-Gee and the rest of the public engagement team have been with Kalostasis from the start, making sure that all participants in the project are supported, that the project stays on track, and the activities are supported via funding, networks, training and partnerships.

What's next?

Together, Salome, Pablo, and his team, and researchers from the University of Maastricht, have continued working with patients to develop the ECHOES app. This app, to be launched in May 2021, explores the possibility of using smartphones to listen to heart sounds at home.