

The World is in You



A science engagement
project curated
by Medical Museion

Documentation
Reflections
Lessons

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EDITED BY
Adam Bencard, Malthe
Kouassi Bjerregaard, and
Jacob Lillemose

GRAPHIC DESIGN
Schønning Jart
(Rasmus Hylgaard Schønning,
and Hans Pelle Jart)

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The World is in You

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DOCUMENTATION, REFLECTIONS, LESSONS
An introduction to the publication

By Adam Bencard, Malthe Kouassi
Bjerregaard, Kristin Hussey,
and Jacob Lillemose, curators of
The World is in You

What we did

In January 2020, just months before the COVID pandemic hit the world, Medical Museion received substantial funding from the Novo Nordic Foundation to realise a large-scale project about how human bodies are affected by the environments that they inhabit. Entitled *The World is in You*, the project aimed to engage a broad audience in four contemporary scientific disciplines that each in turn investigated the complex connections between body and environment.

The project revolved around a science, art and history exhibition at Kunsthall Charlottenborg in Copenhagen that opened in the fall of 2021 but also involved numerous other activities before, during and after the exhibition, including the publication at hand.

What you are about to read

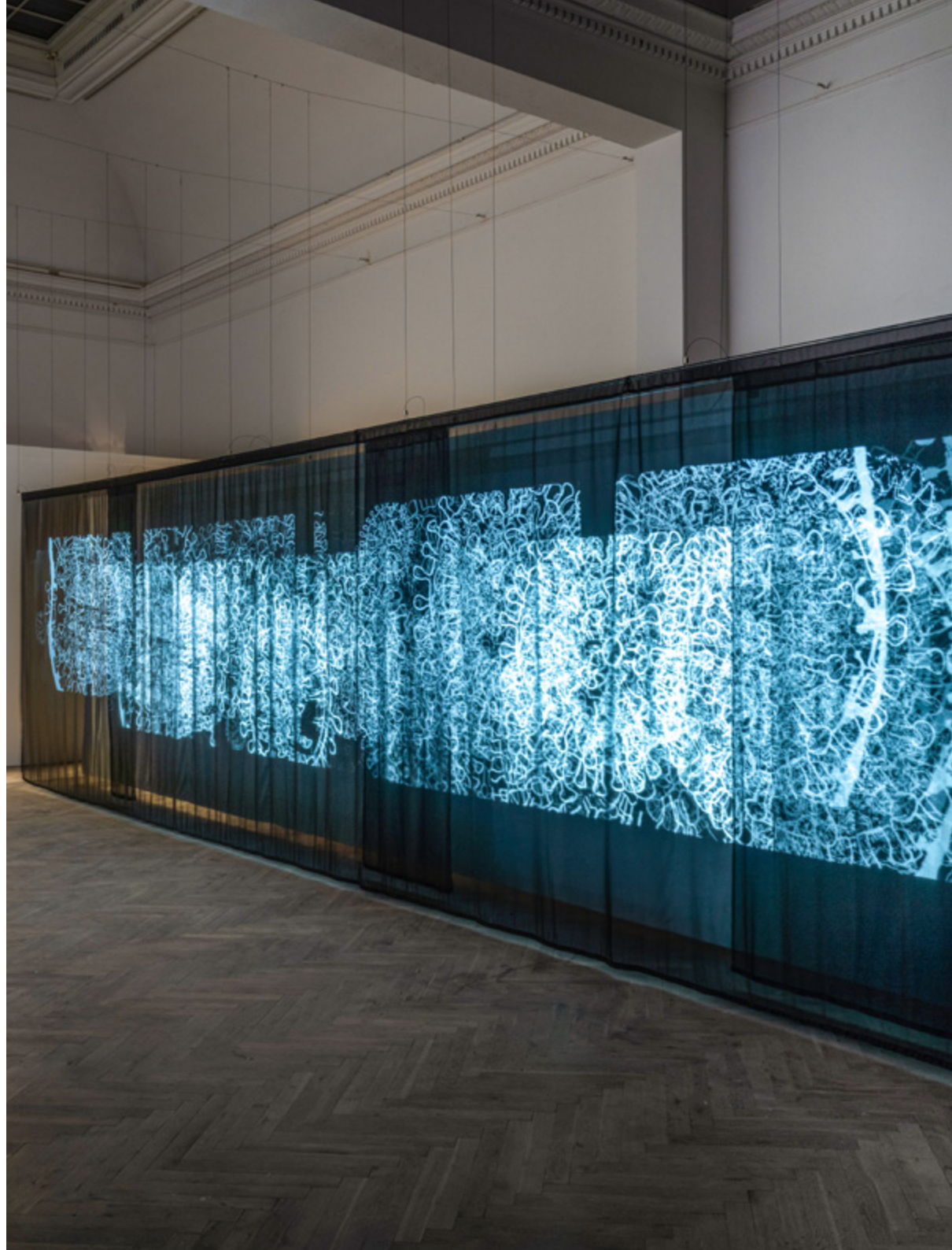
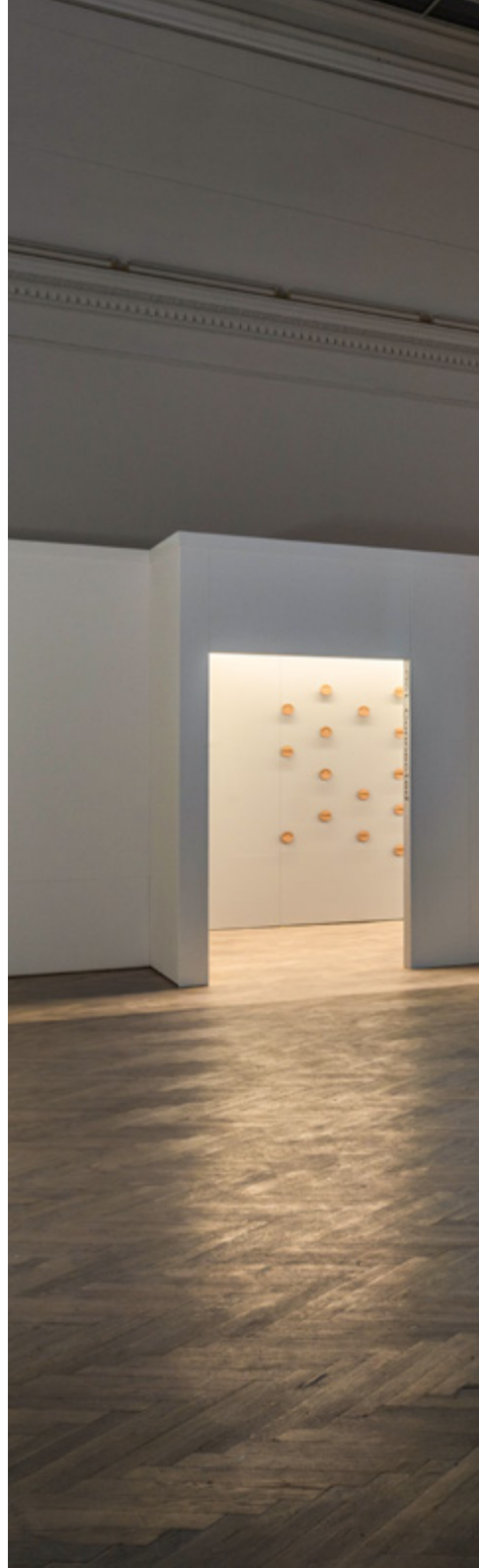
This publication documents the intricate process of realising *The World is in You* through the recollections and reflections of the core people involved in the project. In short pointed texts, the curatorial team, the exhibition architect, the researchers, the artists and the directors of the participating institutions give their views on the project and what made it so special. Obviously, the texts touch upon the thesis of the exhibition – how the human body is deeply entangled in the world – but more so the publication presents the conceptual and practical aspects of the making of the exhibition. As such, it is our hope at Medical Museion that the publication can inspire and facilitate the realisation of future science engagement projects.

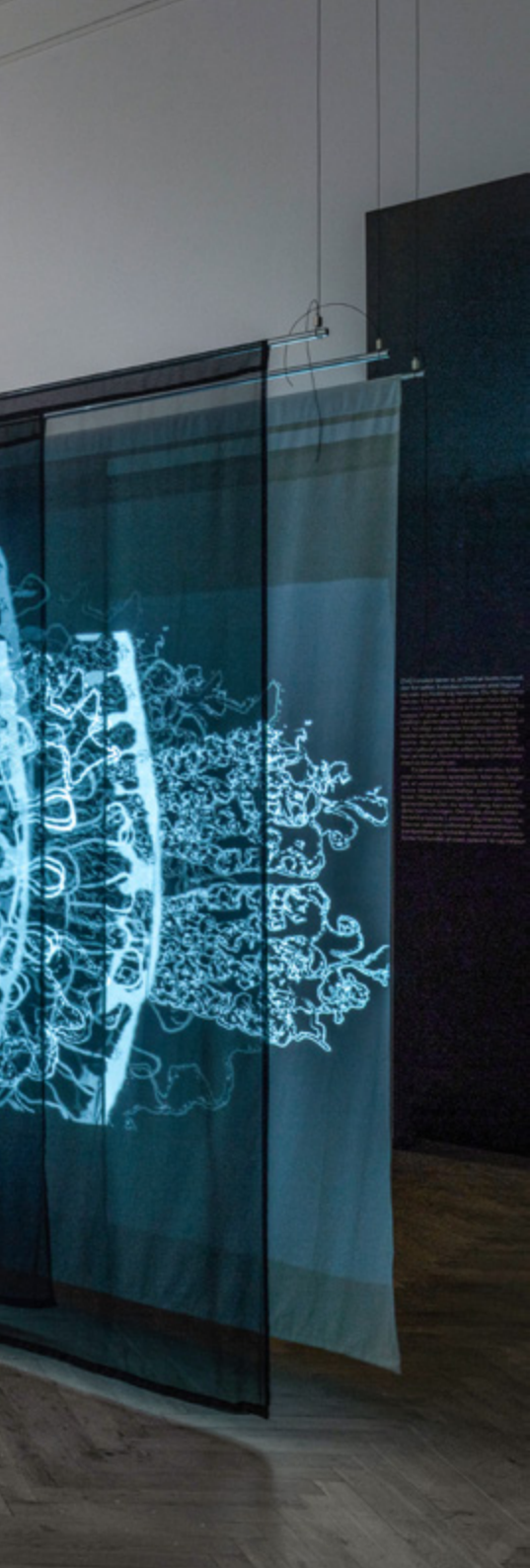
Installation view, *The World is in You*, Medical Museion and Kunsthal Charlottenborg, 2021. Photo by David Stjernholm.





Andrew Carnie, *Blue Matter*, 2019. Courtesy of the artist. Installation view, *The World is in You*, Medical Museion and Kunsthall Charlottenborg, 2021. Photo by David Stjernholm.



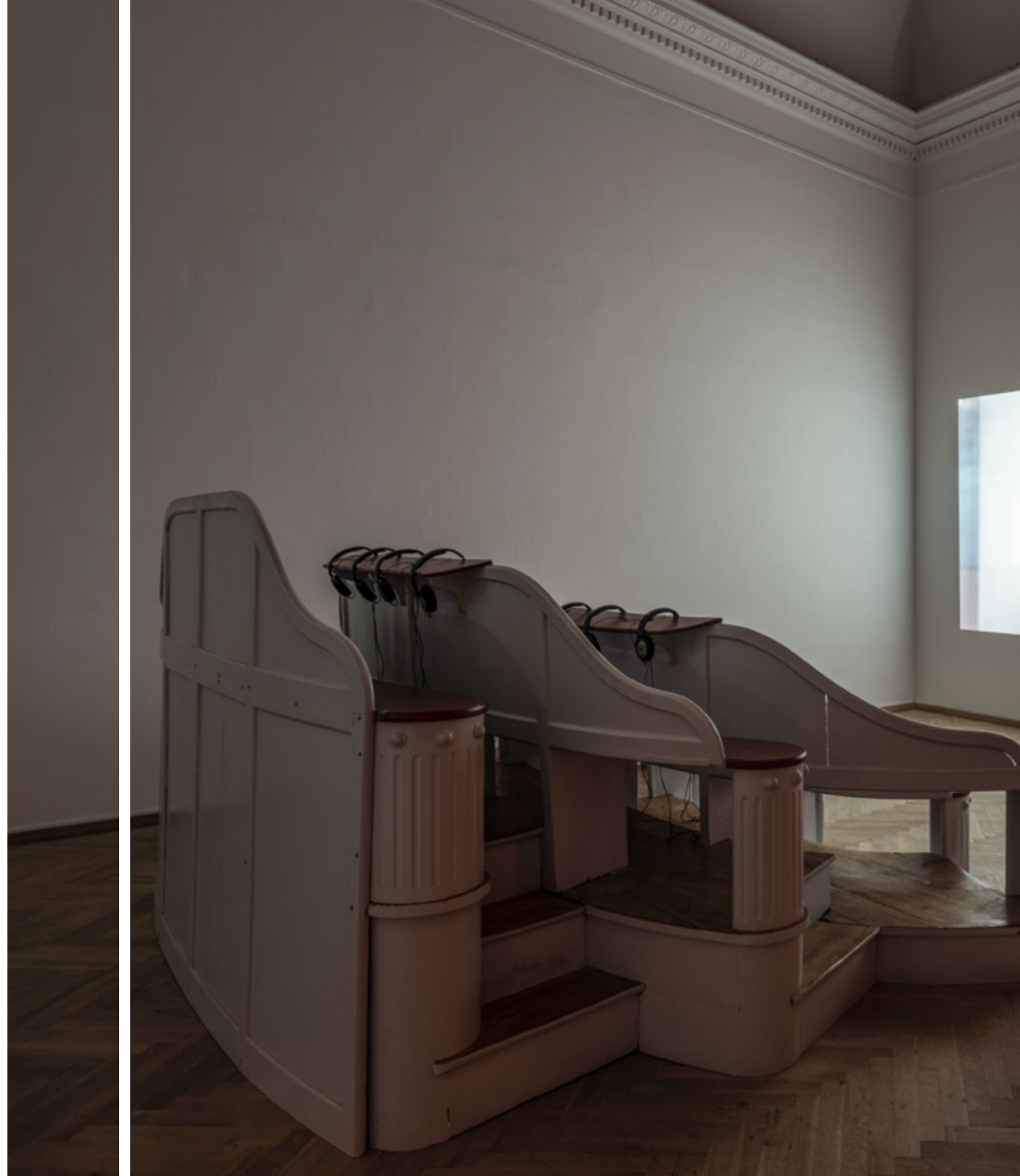


Get Connected, installation view, *The World is in You*, Medical Museion and Kunsthall Charlottenborg, 2021. Photo by David Stjernholm.



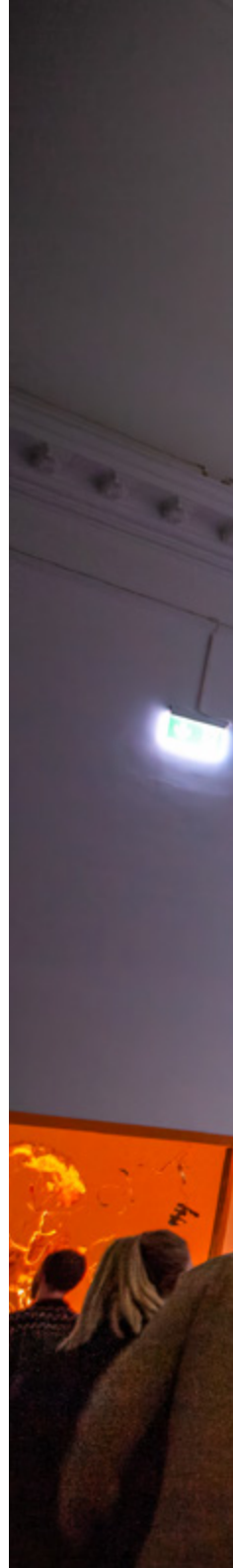


Jenna Sutela, *Holobiont*, 2018. Courtesy of the artist. Installation view, *The World is in You*, Medical Museion and Kunsthall Charlottenborg, 2021. Photo by David Stjernholm.





Luke Jerram, *Gaia*, 2018. Courtesy of the artist. *The World is in You*, Medical Museum and Kunsthal Charlottenborg, 2021. Photo by Vilde Livsdatter.





THE PRODUCT IS IN PROCESS
Foreword

By Ken Arnold, director
at Medical Museion

On one paired screen, sycamore leaves are seen fluttering against a blue sky; on the other, a laboratory door opens at precisely 12:28:49. Elsewhere in the exhibition, two orange boards are laid out in a showcase, each covered with dozens of buttons, keys, small bones and the like, all numbered. Meanwhile, a video monitor in another room shows a man's finger jerkily moving on the hand of a Casio Quartz watch, second by second.

These scenes come from three works presented in *The World is in You*: Isabella Martin's film *Time Animals*; two plates of "foreign bodies" excavated by a surgeon from patients who had swallowed them; and

Marcus Coates's 24-hour digital video *Self Portrait as Time*.

Behind each object – each *product* – lie layers of *process*. The daily lives of circadian scientists investigating chronobiology; people ingesting non-food items, and medical interventions removing them again; an artist laboriously making a long film about the march of time. It was by arranging and describing each of them, along with some hundred other varied and extraordinary things, that the show's curators sought to unfold the exhibition's core theme: how the world operates on us by being entangled within us.

These short essays are about another set of processes – those employed in the making of *The World is in You*. This then is not a standard catalogue, nor a theoretical companion to the ideas and works that were on show. Instead, it addresses aspects of how this project was executed: approaches to communicating unfinished science; to mixing up objects from the worlds of art, science and history; to arranging furniture and applying design; to introducing an interactive corner into the exhibition; and to taking the project beyond the walls of the gallery. It is written by the core

team who made *The World is in You*. The aim of their practice-based reflections is to offer up for inspection experimental processes of knowledge sharing and making, particularly for academics, curators and artists, but also for anyone else who cares.

These ingredients are characteristic of the institution behind the show: Medical Museion. One way to understand this unusual university museum is to similarly turn to *its* processes, many of which seek to make lively connections. Linking and bridging are words we frequently use when introducing our organisation. So for example, we try to make connections between the Public Health Department of Copenhagen University, in which we are embedded, and our work as a public museum. We are also a programme in the Novo Nordisk Foundation Center for Basic Metabolic Research (also part of the university) and use our research and engagement efforts to contextualise CBMR's metabolic investigations. We also keep a static, largely historical collection, which we strive to make relevant in the fast-moving worlds of contemporary medicine and health. And as an organisation keenly focused on science and technology, we simultaneously draw heavily

on the arts, championing adventurous collaborations between the two. Though not the prettiest of made-up words, the idea of co-imagination is nonetheless key for us, a thread between feelings for the past of medicine, understandings of its present and contemplations on its possible futures.

The World is in You presented us with an exciting opportunity to try out such relationship-building processes within an iconic contemporary art institution: on a different stage and for audiences less likely to visit Medical Museion. Finding an architecture that could draw on but not be drowned out by the imposing spaces of Kunsthall Charlottenborg, and that could also slip the black box of science into the white cube of art, presented intriguing challenges. And how might the aesthetic, personal, and processual aspects of science be understood within a highly prestigious arts organisation, far away from science? We were also aware that some visitors might not enjoy finding science and history content in a contemporary art space. Could Medical Museion's habit of actively promoting interpersonal conversation help facilitate that unusual experience within an art gallery? It is a testament to

the generous approach of our colleagues at Kunsthall Charlottenborg that these and other challenges were tackled with openness and curiosity. And it is the core aim of this book to further propel those professional and public conversations.

ACROSS INSTITUTIONS AND DISCIPLINES

Foreword

By Michael Thouber, director
at Kunsthall Charlottenborg

The World is in You – an exhibition presented in collaboration by Medical Museion and Kunsthall Charlottenborg – opened in the midst of the biggest global pandemic in recent times. The title seemed extremely relevant at this time, given our growing awareness of how we as humans are interconnected across the globe, and how a pandemic can spread rapidly from people on one side of the planet to the other.

We could not have predicted this relevance four years earlier when Medical Museion contacted Kunsthall Charlottenborg to discuss the idea of an exhibition, communication and research collaboration. The guiding principle was to turn the biggest questions of

today on their head. Instead of asking what humans are doing to the world around us, the exhibition's curators instead asked: "What are changes in the world doing to us humans?" And that question was to be understood quite literally: How are the major changes in today's world impacting humanity and our bodies?

We all know that our planet is undergoing changes. But we are not talking much about the impact of these global changes on the human body. So when Ken Arnold, Adam Bencard and Jacob Lillemose from Medical Museion presented the idea of a collaboration between our institutions and inviting contemporary artists and scientists to conduct research together on this theme, we did not doubt for a moment that it would be the basis for a fantastic exhibition.

Leading up to the exhibition, Danish daily newspaper Politiken published a series of articles on the latest discoveries. Under the heading "Nature has moved into the body", Adam Bencard and his colleague Louise Whiteley wrote that new research had brought "the enormous and complex ecosystem of microorganisms that live on, and not least in, our bodies into focus ... A flood of fermentation cookbooks

and kombucha soft drinks are washing over us in these years of microbial dietary advice."

They went on to write that "cultivating one's body" is not new. A "yoghurt craze hit most of Europe" more than 100 years ago. Even back then, researchers believed that they could identify a connection between people's intestinal systems and stress, mental illness, etc. In order for us to achieve balance in life, our intestines had to be in balance, much as nature around us.

In another article in the series, Jacob Lillemose wrote about Biosphere 2, a building "that was a hybrid of a gigantic greenhouse and a space station", where eight people were locked inside for two years from 1991 to 1993. "As participants in a kind of planetary reality experiment, the protagonists became pioneers in an unprecedented exploration of the human relationship with nature, which aimed both to develop a new ecological awareness and herald the dawn of the new space age with settlements on other planets."

The subject matter explored by the exhibition and articles is admittedly complicated. I am still far from understanding it all, which is no wonder – even the researchers "cannot understand all of the connections

yet”, explained Adam Bencard and Louise Whiteley in their article. However, the new research holds the potential to revolutionise our view of ourselves and our relationship with the world in and around us. Precisely for this reason, the exhibition made an important contribution to understanding the major changes occurring in the present day.

Before the opening of the exhibition, many asked how a scientific exhibition fits into an art gallery for contemporary art. The short answer was that we did not know – because this was the first exhibition of its kind. We also sought to explore a new format and a new collaboration, which fit perfectly with the main theme of the exhibition, where curators, artists and scientists also sought to explore things they did not quite understand or were not able to describe fully.

Perhaps a key difference between science and art is that scientists seek to find the answers to unsolved questions, whereas artists often seek to ask such thought-provoking questions that the audience is encouraged to find the answers themselves – and with the belief that there can be more than one answer to some questions.

I am convinced that the combination of disciplines and methods in this exhibition is how we will unlock some of the answers to the challenges and opportunities of the future. Some answers are absolute, while others require a movement that includes all of us to find the answers. And this type of movement typically starts best with an open question: a why?

Thanks to Ken Arnold, Adam Bencard and Jacob Lillemose for envisioning this important exhibition concept, and for asking questions that are still looking for answers. Thanks to all of the artists, scientists and partners, and to the foundations who provided financial support for the exhibition. Thanks to the other curators Kristin Hussey and Malthe Kouassi Bjerregaard, exhibition architect Anne Schnettler, and the entire team from Medical Museion and Kunsthall Charlottenborg. It has been a pleasure working with all of you and a joy to be able to share the many years of research and exhibition planning with our audience.

THE SCIENTIST AS ATHLETE

Foreword

By Juleen Zierath, Executive Director
at Novo Nordisk Foundation Center
for Basic Metabolic Research (CBMR)

Most people see me as a scientist, but I've always seen myself as an athlete, first and foremost. As a young woman at the University of Wisconsin–River Falls, I competed in a number of different sports and I started out training to become a physical education teacher. When I discovered exercise science, I poured myself into understanding how exercise relates to disease – a field I am still committed to 30 years later.

Over the years it has become abundantly clear that exercise can stave off diseases like type 2 diabetes and obesity, which affect hundreds of millions around the world. We now know that the risk of developing these diseases arises from the complex interaction of

genetics, the environment and lifestyle. But despite our growing knowledge, we still lack adequate diagnosis and treatment options for the millions of people around the world who suffer from these diseases.

This is our burning platform at the Novo Nordisk Foundation Center for Basic Metabolic Research at the University of Copenhagen, where I am Executive Director. Our 22 research groups investigate metabolic health disease from a variety of approaches, from genetics and genomics, to whole-body physiology. Some of their discoveries have led to spin-out companies and patents, which might hopefully lead to new and better drugs.

While innovation is central to our mission, most of our discoveries will not lead to new drugs or therapies – and nor should they. Our job is to carry out curiosity-led fundamental research to better understand the complex interplay of factors that leads to disease in some people and not others. If anything, our discoveries have helped illustrate just how complicated diseases such as obesity and diabetes are.

On a human level, this knowledge can be a great comfort. It is well established that the vast majority of

people who lose weight fail to sustain the weight loss over a longer period of time. The fact is that we are poorly evolved for modern societies, with abundant and palatable food, which our species suddenly finds itself in. Willpower alone is often no match for the strong environmental and genetic forces that shape our appetite and activity levels.

Whether we do science for curiosity or to produce new drugs, all new knowledge helps us to better understand our place in the universe. This is especially the case when scientists connect their narrow and deep academic fields to produce new perspectives that challenge dogmas and question paradigms. But we need help to do this – and that is where Medical Museion comes in.

Since the start in 2010, CBMR has had a special relationship with the University of Copenhagen's museum of medical history, Medical Museion. Located in the former Royal Academy of Surgeons on Bredgade in central Copenhagen, Medical Museion collects artefacts of medical history and puts on exhibitions that draw on the collections, while also hosting researchers.

Since 2018, these researchers have worked in CBMR's fourth research program, Metabolic Science in Culture. This unique research program situates metabolic science in cultural, historical, and philosophical contexts through humanities and science communication research, which in turn informs innovative public engagement practices. And there is no better example than *The World is in You*.

Over the course of a year, Medical Museion curators and researchers worked together with our bright scientists to bring the science of epigenetics, circadian rhythms and the microbiome to the public. They put on display the artificial gut created by Associate Professor Mani Arumugam. They followed scientists working around the clock in rodent facilities for a video about living out of sync with planetary time. And they drew on our epigenetic research to explain how traumas experienced today could be passed on to future generations.

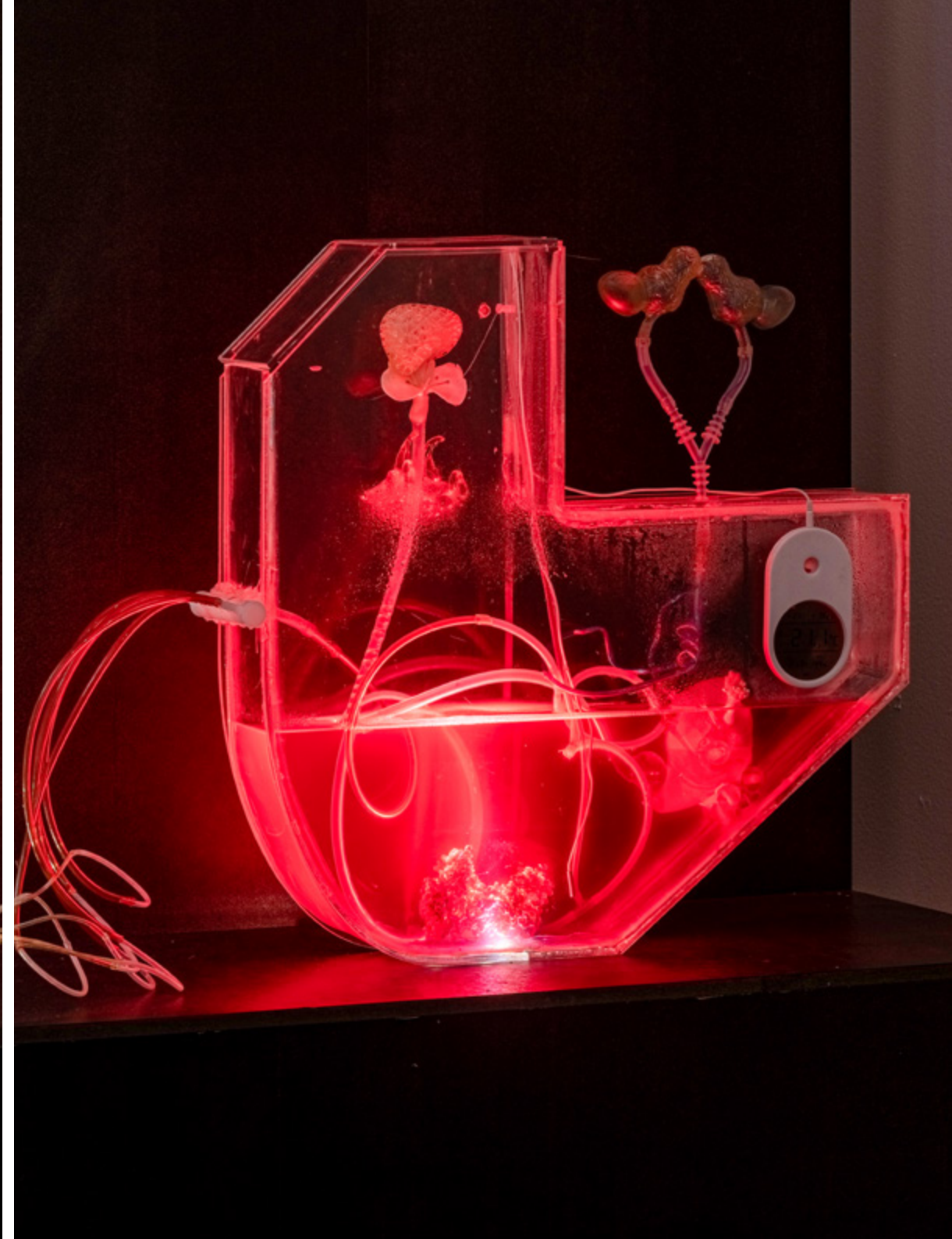
Humanity often senses itself apart from the natural world, but *The World is in You* shatters this myth. It compels us to see ourselves intrinsically linked to the rhythm of the planet, a single organism made up

of millions more, and bound both to the past and future. If we accept this to be true, it may change how we choose to organise society, draw on the natural world's resources, or even define concepts such as "health".

By every available metric, the exhibition was an enormous success. *The World is in You* is outreach, but it reaches in every direction – scientists see how their niche research fits in a greater context, while the public is presented with a new, richer paradigm for their place in the universe.

This is what is possible when humanities researchers are embedded within a biomedical research centre. Some might wonder if it is worth the investment, but I believe we cannot afford not to. We must continue to keep scientists and the public in dialogue, and our colleagues in the humanities have the skills, insight and perspective that is needed to foster the deep conversations that add value on many levels. I am enormously proud of *The World is in You*, and hope its success inspires others to take the leap and forge new rich and productive public outreach collaborations.

Pinar Yoldas, *Copulation-Free Reproductive Organ for Pollution Affected Humans*, 2021.
Courtesy of the artist. Installation view, *The World is in You*, Medical Museion and
Kunsthall Charlottenborg, 2021. Photo by David Stjernholm.



Absolut DDT-spray, 1950s. Private collection. Installation view, *The World is in You*, Medical Museion and Kunsthal Charlottenborg, 2021. Photo by David Stjernholm.





Maya Sialuk Jacobsen, *Inumineq*, 2021. Courtesy of the artist. Installation view, *The World is in You*, Medical Museion and Kunsthall Charlottenborg, 2021. Photo by David Stjernholm.



Menno Huizinga and unknown photographer, photographs from the Dutch hunger winter. Rudi Hornecker, documentary film "honger", 1944-45. Courtesy of NIOD Institute for War, Holocaust and Genocide Studies and the Nederlands Instituut voor Beeld en Geluid. Installation view, *The World is in You*, Medical Museion and Kunsthall Charlottenborg, 2021. Photo by David Stjernholm.



"Hunger" by the artist's friend, a young woman, was the first of many works that depicted the suffering of the "hunger" stricken people.

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During the winter of 1846-47, half of the population of Ireland died of starvation. The artist's friend, a young woman, was the first of many works that depicted the suffering of the "hunger" stricken people. The artist's friend, a young woman, was the first of many works that depicted the suffering of the "hunger" stricken people.

Christian Aigens, *Giv os i dag vort daglige brød*, 1929. Courtesy of The Workers Museum. Installation view, *The World is in You*, Medical Museion and Kunsthal Charlottenborg, 2021. Photo by David Stjernholm.





EMBRACING THE COMPLEX AND THE UNFINISHED
Reflections on the vision of the projects

By Adam Bencard and Jacob Lillemose

The World is in You originated in discussions within the curatorial group about the curious parallels between how the human body is both affected by the trillions of bacteria living in its gut and by the nature of planet Earth as a celestial body in the universe. In other words, how encounters and relationships between the very large and the very small shape the human body. Hence, the working title of the project for quite some time was *Microcosmos/Macrocosmos*. The title thus took its point of departure in the ancient notion of the human body as a “little world”, both literally and metaphorically connected to and mirroring the macrocosmos, the wider world around it. The interest in the cosmos expressed by the conceptual pair of this inaugural title reflected a deeper interest in rediscovering the human body as part of systems and environments beyond the human, be it microorganisms or alien environments on other planets. Perceiving the world and its “parts” as a whole of systems had obvious connections to philosophical, ecological and social movements of the 1960s. We wanted to update the ideas within these movements, in dialogue with contemporary science and art working with bacteria and outer space, and in the context of an exhibition in an art gallery. The notion that body and world are connected has gained a new

significance at the beginning of the 21st century. We see and experience how we are changing the planet around us, and there is an increased interest in how those changes are affecting our bodies in return. We are experiencing a connectedness both “downwards” to the microcosmic world of bacteria, fungi, viruses and other microorganisms living on and in our bodies, as well as “upwards” to the macrocosmic planetary structures that support our very existence.

However, as the discussions within the curatorial group matured we realised that we had the potential to turn our ideas about the human body into a much larger project about the various entanglements that influence the human body and that are being explored by cutting-edge scientific research within a number of disciplines as well as in artistic practices responding directly or implicitly to those entanglements. Furthermore, and drawing on the institutional context of Medical Museion within the Faculty of Health and Medicine at the University of Copenhagen, the connection of body and environment has become increasingly prominent theme in post-genomic biomedicine in the past two decades. Systems biology and integrative life science have prompted a move from what sociologist Hannah Landecker has called a biology of the entity to a biology of relations, and health is increasingly being explored at the intersection of body and environment. We had originally imagined that the project would be an art and science exhibition, but the discussions led us to develop it essentially as a science communication project, including but not limited to an exhibition. That did not mean we excluded art from the equation, it simply meant that the starting point would be the scientific disciplines and the research affiliated with the museum.

The World is in You was thus, at heart, a science communication and engagement project with a particular agenda: the project was built around an engagement with open, “unfinished” science and the methodological questions raised by engaging people with this type of research. How to best engage an audience in complex science that is still “in process” rather than engaging them in specific, fixed results? How could we simplify without dumbing down, and how could we bring out hidden assumptions for debate? Such questions are a focus within contemporary science communication literature, and this project aimed to contribute new examples and analyses to the field.

We found it important to work with this type of science for several reasons: first and foremost, it was a way of giving a more realistic portrait of the scientific process. Most science is dynamic, with new knowledge developing in often uncertain processes – rarely linear or predictable. If the general public is not also allowed into this process and given an idea of it, warts and all, then science communication risks reproducing a glorified story about science, which produces unrealistic expectations about discoveries and new treatments. This mismatch can lead to scepticism about science, which has been a key point of anxiety around the relationship between science and society in recent years.

Another important aspect of engaging the public in complex, unfinished science is to develop a shared understanding of complexity and indeterminacy – to understand that answers are not always black and white, and that complex systems do not readily respond to simple solutions. Sustained encounters with complexity are a pathway to strengthen the debate against the many forces clamouring for the rejection of well-founded, nuanced science in favour of quick fixes.

In an age of fake news, fast fads, scientific scepticism, climate change denial and much more, there is a growing need for creating spaces where a broad audience can meet and discuss science as it unfolds. *The World is in You* focused on creating such spaces and such encounters.

The World is in You certainly had complex science on its hands, but the project did not set out to simplify the complexity of its material. On the contrary, *The World is in You* made it its mission to embrace this complexity and communicate it in ways that make audiences curious rather than steer away. While the complexity of the entangled body might make it difficult to understand the human body, it also offers an opportunity to ask all sorts of new questions that expand established notions of the human body – and such questions became the guiding principle of the project. Or put in a catchphrase we regularly used: the project was exploratory rather than explanatory.

The scientific disciplines we eventually decided to involve in the project – microbiome research, epigenetics, chronobiology and bioastronautics – all share the trait of being so-called unfinished science. Unfinished in the sense that their research is based on knowledge that is still evolving. As such, these disciplines challenge the common preconception of science as a type of research that is all about answers and facts (whereas art is about questions and fiction). Science is as much about questions and venturing into the unknown as anything.

Unfinished science perfectly fits the bill for a project that wanted to show how both science and art engage with the relation between the human body and the world in a twilight zone between what we know and what we do not know. It is a zone where things get murky and messy, complex in other

words, and only by dealing with this complexity can we – science and art – navigate it.

The World is in You can be seen as a staging – in many parts – of this twilight zone, offering audiences an opportunity to encounter its intrinsic complexity and facilitating their curious and critical navigation through it.

MEET YOUR ENTANGLED BODY
Reflections on the thematic
thesis of the project

By Adam Bencard and Jacob Lillemose

The World is in You originated in an interest in and an increasing urgency about the relationship between human bodies and their environments. Historically, these two entities have often been both conceptualised and studied at a certain distance from one another. However, this distance is increasingly crumbling in our Anthropocene moment, where the realisation that we are changing the world is doubled onto itself: the world is also changing us.

This realisation has been slowly evolving both within and outside the biomedical sciences. In an essay from 1997 with the telling title “The ‘Environment’ Is Us”, literary historian Harold Fromm surveyed the then budding body of literature trying to reimagine the relationship between our bodies and their environments and made the following observation:

“The ‘environment,’ as we now apprehend it, runs right through us in endless waves, and if we were to watch ourselves via some ideal microscopic time-lapse video, we would see water, air, food, microbes, toxins entering our bodies as we shed, excrete, and exhale our processed materials back out.”

This observation of a body that is porous and endlessly permeated by what surrounds it has only increased in urgency in the past decades; figuring out exactly what it means to

have such a body and how best to treat it could be said to be one of the primary public health challenges today. This raises new and profound questions about everything from medical treatments, social organisation and environmental politics to everyday life.

The World is in You was thought up as a response to the practical and conceptual challenge of understanding what it means to be profoundly embedded in and entangled with the world around you. How do we avoid getting stuck in automatically thinking of humans as active foreground and environments as passive background, and instead shift into a more realistic appreciation of the complex matter of the world including ourselves? How do we get beyond endless attempts to separate nature and nurture, the social and the biological, language and body?

Looking up, looking down,
looking in

The engagement with the entangled body continued many years of working at Medical Museion with biomedical researchers at the University of Copenhagen's Faculty of Health and Medicine generally and the Novo Nordisk Foundation Center for Basic Metabolic Research in particular. Through this longstanding interest, we developed an interest in how biomedical fields are currently articulating and examining this entangled body – while such questions have always been a part of biomedical science, these fields are pushing new ground in examining the extensive consequences and foundational character of these entanglements. Biomedical research is probing at and rearranging

fundamental distinctions between nature and nurture, inside and outside, body and environment.

The project examined this connectedness through four themes – TIME, MICROBES, SPACE and GENERATIONS – each drawing from contemporary scientific research, with the aim of engaging the public in the major questions this research raises about our way of life and bodily existence.

TIME // Our bodies have internal molecular clocks, tying us to the temporal rhythms of the planet. This is examined in a research area known as circadian biology or “chronobiology”, which studies the role of temporal rhythms in physiology. Chronobiology raises profound questions about our individual lives and societal structures – e.g. how electrical lighting, shift work, and changing eating patterns are interacting with the temporal rhythms of our bodies.

MICROBES // During the previous decade, we have seen a tidal wave of research exploring the complex microbial ecosystems in our bodies – that is, the trillions of microorganisms that live on and in us. The microbiome is turning out to play a much larger role in our physiology, metabolism, and even mood and cognitive functions than previously anticipated. This research ties our bodies to the vast microbial biosphere, which covers the entire planet. It raises a number of significant questions: what should we eat to maintain a healthy gut microbiome? And what might it mean if we have to understand ourselves as a “we” rather than an “I”?

SPACE // Taking its point of departure in astrobiology and space research, this part of the project examines the limits and possibilities of the human body in a time where Earth might not be our sole planetary habitat for much longer.

What happens with our bodies if we want to travel to and even colonise Mars? The content for the theme was developed in collaboration with researchers at the Niels Bohr Institute and ESA/NASA, as well as the group of researchers and artists that created Biosphere 2 (1991-1994), which still remains the most expansive and longest experiment with human habitation in closed, artificial environments.

GENERATIONS // Epigenetics is concerned with how the environment might change what the genes we inherit from our parents actually do. Genes act by being “expressed”, and this expression can be altered by changes in nutrition, environmental exposure, and possibly even trauma and other life experiences. The nature and scope of these mechanisms are still very much up for scientific debate, and raise a number of vital questions about the relationship between nature and nurture, and the molecular openness and entanglements of our bodies.

Entanglement, practically and conceptually

In essence, the four fields concretised the trajectory of the exhibition. They provided it with hooks, opening onto wider cultural and aesthetic fields. They were also in different ways suggestive of larger challenges for the health sciences. They spoke directly to the ways in which we are sick in post-industrial societies. Obesity, diabetes, auto-immune diseases, anxiety, depression, autism, ADHD, heart disease, cancer, chronic fatigue, irritable bowel syndrome, and so on – all diseases which are long-term, lifestyle related, multifactorial and situated at the intersections of genetics, epigenetics,

microbial, societal factors, cultural patterns, urban life styles, environmental factors and so on. All of these disease states cannot easily, if at all, be reduced to single explanations, to single factors. Understanding them better means understanding the deep entanglement of our physiologies with our individual and shared environments; with the food we eat and how the food we eat is produced; with the state and movements of the planet we are on; and with the entanglement of biologies and societies.

As feminist science studies scholar Stacy Alaimo, one of the theoretical inspirations for our project, writes, we have to learn to think of ourselves as what she calls transcorporeal, that is, always intermeshed with the more-than-human world. This process of imagining ourselves as more intimately connected to the world holds, she argues, a potential for new forms of actions and activism:

“Emphasizing the material interconnections of human corporeality with the more-than-human world—and, at the same time, acknowledging that material agency necessitates more capacious epistemologies—allows us to forge ethical and political positions that can contend with numerous late twentieth- and early twenty-first-century realities in which ‘human’ and ‘environment’ can by no means be considered as separate.”

The World is in You explored a wide variety of transcorporeal realities like the ones that Alaimo refers to. It did so through an exhibition that included both actual and imaginary examples, scientific examples as well as cultural and artistic – for the very reason that these realities operate across not only bodies but also fields of knowledge and experience.

AN EXHIBITION IN THREE PHASES
Reflections on the exhibition format

By Adam Bencard and Jacob Lillemose

We conceived and structured *The World is in You* as a project in three interconnected phases, roughly divided into a phase before, during and after the exhibition itself. We designated this process as an extended exhibition. This three-phased idea was our way of emphasising and embracing exhibition making as an ongoing process involving the public. Moreover, with the different phases we sought to expand both the intellectual and physical space of the exhibition to include media and contexts outside Kunsthall Charlottenborg and Medical Museion, taking the project on the road to other audiences (due to COVID restrictions some of the planned initiatives unfortunately had to be cancelled).

The three phases

Phase 1 (fall 2019–summer 2021): Public Research – introducing the theme of “the entangled body” through a number of public events at Medical Museion and partner institutions, and using events as an occasion to explore the theme in preparation for the exhibition.

Phase 2 (fall 2021–winter 2022): Presentation – realising and working with the exhibition and its audience at Kunsthall Charlottenborg.

Phase 3 (2022): Reflection and Visions – crunching the visitor data collected at the exhibition, producing a “retrospective script” for the project (this publication) and organising a workshop at Medical Museion to develop ideas for the future of science and art exhibitions.

Phase 1

Phase 1 consisted of what we referred to as “live research”. Through a multi-stranded program of events organised in collaboration with relevant institutions, organisations and individuals, we – including the researchers involved in the project – introduced and discussed the theme of the entangled body in several different contexts with a broad public audience. The events were based on a strong and serious professionalism, while aimed at making a non-professional audience curious about the theme and providing them with knowledge and discourse for critical reflection and further engagement. The programme of events was thus a key way for us to practice the narratives and curatorial ideas in front of live audiences, and to build closer relationships with our scientific collaborators.

Activities

- Four informal conversations at Medical Museion between one of the four curators of the exhibition and a researcher from one of the four disciplines represented in the exhibition: “You are all of the world” (curator Adam Bencard and associate professor Mani Arumugam on the

micro-organisms in the human body); “Leaving the world” (curator Jacob Lillemose and astrophysicist Michael Lindholm on the physical challenges of space travel); “Body time” (curator Kristian Hussey and associate professor Zachary Gerhart-Hines on the health dimensions of circadian rhythms); and “Environmental inheritance” (curator Malthe Kouassi Bjerregaard and professor Romain Barrès on what our bodies inherit from the environments that our grandparents and parents inhabited).

- A series of live digital talks between curators and researchers: “The science of light” (curator Kristin Hussey and Dr. Anders Sode West); “The dance between environment and heritage” (curator Malthe Kouassi Bjerregaard and Dr. Stine Ulrik Mikkelsen); and “The challenges of outer space” (curator Jacob Lillemose and Dr. Nadja Albertsen). All of these talks were recorded and shared afterwards on the project homepage.
- Programme at Cinemateket (June-July 2021). The programme consisted of the screening of four movies that related to each of the four research disciplines featured in the exhibition. A selection of invited researchers introduced the individual screenings. The programme built a bridge between popular culture and scientific research, showing that the entangled body exists in the public imagination as well as in the labs. The programme included: *Invisible Sensibility/The World is in You#1: Safe* (1995) by Todd Haynes; (introduction by professor Hanne Frøkiær); *Planetary Sleep/The World is in You#2: Insomnia* (2007) by Christopher Nolan (introduction by biomedical researcher Louise Piilgaard Petersen); *Born on an Alien Planet/The World is in You#3: Gravity* (2013) by Alfonso Cuarón (introduction by professor Uffe Gråe Jørgensen

- cancelled); *Epigenetics/The World is in You#4: Hereditary* (2018) by Ari Aster (introduction by associate professor Matthew Todd and Ph.D. student Massimo Carraro).
- Three articles in the national daily newspaper Politiken. The first article, “The nature inside us: Should we treat it like a rose garden or make it wild on purpose?” (curator Adam Bencard and associate professor Louise Whiteley, 19 June 2020) looked at the history and culture of the microbiome. The second article, “The message they came back with from a future in outer space: Never take your oxygen for granted. Engage yourself. Fall in love with Earth,” (curator Jacob Lillemose, 9 August 2020) recounted the history and vision of Biosphere 2. The third article, “Are you trying to keep the world at a distance? Forget it!” (curator Adam Bencard and curator Jacob Lillemose, 27 September 2021) introduced the theme of the entangled body through examples from art and science.
- Four-part podcast series produced in collaboration with Anne Neimann Clement, Nanna Hauge Kristensen, Astrid Hald and the online media platform at the national daily Politiken. The four parts each introduced the four themes of the exhibition – Time, Space, Generations and Microbes – through interviews with curators, researchers and artists involved in the exhibition. The titles of the individual episodes were: “Does your body know what time it is?”, “Are you affected by what your grandparents ate?”, “How’s your bacteria today?”, and “What should you wear on your first trip to outer space?” Besides serving as an introduction to the many voices involved in the exhibition, the podcast series also extended the life of the exhibition and the discourse around the entangled body beyond the exhibition period.

- Two separate collaborations with student groups from design studies at the University of Southern Denmark (SDU) and museology at Aalborg University (AAU), where students worked with and followed the exhibition process. These collaborations were organised together with associate professor Morten Søndergaard (AAU) and associate professor Trine Friis Sørensen (SDU).

Phase 2

Phase 2 was centred around the exhibition at Kunsthall Charlottenborg and its presentation of scientific material, historical artefacts, and artworks related to the theme of the entangled body. The exhibition continued the communication strategy of Phase 1 but explored a more “dramatised” format in order to give the audience a more sensual and experiential access to the theme. Furthermore, the exhibition functioned as a working platform in the sense that the curatorial team, as well as the communication team, continued their work in the actual exhibition. As such, we used the exhibition to engage ourselves further in the theme, rather than seeing it as the culmination of our research. This use of the exhibition was evident in the many activities that we organised in the exhibition.

Activities

- Walk'n'talks: Every week during the exhibition, one of the curators would invite a researcher or an artist to join in on a selected tour of the exhibition and discuss the theme and the exhibits as we went along.
- Tours: We conducted more than 50 tours for stakeholders and our professional peers as well as the general public and school classes during the 2½-month opening period. The extensive use of guided tours was a key strategy for peer networks in particular, and we had visits from curatorial teams from museums such as the Nobel Museum, the National Museum of Denmark, the Natural History Museum of Denmark, The Technical Museum, Bror-felde, The National Gallery, Enigma, Heerup Museum, and research groups from ITU, RUC, SDU, and Aarhus University, as well as art history, museology and science studies at KU.
- Culture Night: On the annual Culture Night in Copenhagen we conducted continuous tours of the exhibition for both kids and adults (from 6 pm to 12 am). An illustration workshop for children, where children and their parents could make their own microbe mask, was facilitated by illustrator Sofie Louise Dams. An artist talk was held with artist duo Baum & Leahy and curator Adam Bencard. And in parallel, we hosted a number of short talks at Medical Museion to introduce the exhibition to visitors and encourage them to walk down the street and see it for themselves at Kunsthal Charlottenborg.
- Charlottenborg Live: The exhibition team curated two evenings of Charlottenborg Live, a weekly event at Kunsthal Charlottenborg with free entrance from 5 pm

and the opportunity to participate in a collective dinner. Besides a tour of the exhibition, we presented a talk with authors Helene Johanne Christensen and Siri Ravna Hjelm Jakobsen on the connections between body and nature, and a talk by Medical Museion's director Ken Arnold on art, science and the public.

- Artist talks: The poetics of anatomy with poet Adam Dickinson. Visualizing the Rhythm – Body Time between art and science in conversation with curator Kristian Hussey, associate professor Zachary Gerhart-Hines and artist Susan Morris.
- Film programme: During the last month of the exhibition, the curatorial team presented a short film programme in Kunsthal Charlottenborg's cinema. The programme consisted of two documentaries, *The Merry Microbes* and *Bacterial Worlds*, which supplemented the exhibition by presenting further material on the relationship between the human body and microbes. Live-streamed guided tours of the exhibition.

Phase 3

Phase 3 is meant to be a period of both looking back at what we did in the first two phases and looking forward to a further extension of the project. The end of the exhibition is thus not the end of the project – far from it. From the very beginning, we knew that after having realised the exhibition we would be excited to continue working with the theme and perspectives opened by the exhibition. Just like the science and art in the exhibition did not provide definite answers to the many questions that the entangled body raises, the

exhibition was never meant as a definite answer but rather as an inspiring occasion for asking further questions.

Activities

- The production of the book you are reading, a volume meant to store and transmit some of the ideas that went into the project and document the way in which they unfolded.
- Organising an international workshop to discuss problems and perspectives on how art and science have been exhibited across institutional contexts, in order to probe future directions and best practices in this rapidly growing field.
- An online version of the exhibition to both share and save the abundant resources for posterity.
- A forthcoming academic article by Kristin Hussey, Isabella Martin and Louise Whiteley, 'Playing seriously: Making 'Time Animals' between Art, Science and STS'.

EXPERIMENTS ARE WHAT WE DO
Reflections on the curatorial strategies

By Adam Bencard,
Malthe Kouassi Bjerregaard,
Kristin Hussey
and Jacob Lillemose

Challenging ourselves

We knew from the beginning that this exhibition would be an experiment. We were curating across disciplinary traditions of art, science and history, in an external space at Kunsthall Charlottenborg, and with a team of four curators with connected but different backgrounds and approaches. But at Medical Museion, experiments are what we do. Whether *The World is in You* thrived or failed, we saw it as an exciting experiment in transdisciplinary curatorial practice.

Thematic structure

The exhibition's core theme of the entangled body does not belong to any one discipline. How our bodies are connected to and affected by the various environments they inhabit is such a complex and vast question that we need to include a wide range of knowledge and experience to begin to answer it. On top of that, it is a question that science, art and

societies have been occupied with for centuries. In other words, it was obvious to us that an exhibition about the entangled body would be an exhibition that in itself entangled perspectives from different disciplines. In order to facilitate this degree of inter- and cross-disciplinarity, we drew first and foremost from our personal research interest and fields, as well as scientific and artistic networks. We already had working knowledge of and contacts within the thematic areas, a precondition for curating across disciplines without losing depth and quality. Given the complexity of the themes, it would have been almost impossible to execute the project within its time frame if we had to start with limited or no knowledge of the field. Similarly, experience from other interdisciplinary exhibition projects like *Mind the Gut* – an award-winning exhibition at Medical Museion – and *X and Beyond* – an Copenhagen-based transdisciplinary exhibition space dedicated to disaster research – served us well.

To provide curatorial order to the entangled chaos, each main theme was split into three sub-themes. For instance, we divided the theme Microbes into *Dreams of hygiene*, *Life with microbes* and *Shitty medicine*: sub-themes that span from waging war on all types of bacteria to seeing ourselves as part of an ecosystem, and our relationship to treatment with “human” faeces. Each sub-theme thereby strived to represent a different point of entry to the human entanglement with the subject matter.

Design and flow

As the darkened space and large number of exhibits indicated, early modern natural historical collections and the

so-called Wunderkammer was in implicit inspiration for our curatorial approach. The Wunderkammer is a complex historical phenomenon in its own right, but as historians have argued it was built on two distinct ideas: on the one hand, an epistemological commitment to the value of the particular thing in its singularity, and on the other, an attention to wonder as a quality and a potent stimulant of curiosity. By bringing together different types of materials and artefacts without narrow concerns related to disciplinary knowledge, the Wunderkammer was both a tool for thinking about the world and a place to explore connections. Similarly, *The World is in You* juxtaposed exhibits from different fields – art, science and (cultural) history – pointing to familiar and new connections between them and expanding the horizon of the individual exhibits beyond categorical distinctions.

The curation also reflected a high degree of trust in the visitor, as the exhibition provided very little hand-holding in terms of explaining how the different objects and artwork related to each other. For example, in the Generations sub-theme *Food as environment*, you would encounter photographs from the Dutch Hunger Winter, an adjustable gastric band below a video of swimming sperm cells, and an interactive artwork that allowed visitors to influence a digital “environment” with their phone. None of the object texts referenced one another or even shared the same wall space. Instead, we hoped that the visitors would make their own connections and associations by selecting objects and stories that were intuitively related to the overall theme, even if not in a linear fashion – sperm, parents and environments all resonate with each other by occupying a shared space.

Foregrounding bodily experience

The connections were thus embedded in the qualities and types of stories we selected, which were focused on a continuous return to the body and how it is influenced by its environments. This return to the body was also a way to retain a sense of immediacy for the visitor, by invoking their own bodies and seeing ways in which their own lived experience reflected or perhaps contrasted with the wide range of artworks and objects. There is much about the exhibition that visitors might have found overly intellectual, inaccessible, or irrelevant to their lives. However, as our title indicates, we were interested in talking directly to *you*, the viewer, and challenging visitors to think about the entanglements between their bodies and the world. To do this, we came up with a rule that in every individual exhibition there would be a body in some sense. This might be quite literal representations of the body through different media – but it could also be individual stories of researchers, scientists, patients, and artists themselves. We hoped that foregrounding personal stories about being and having a body would help to make a bridge between the visitors and the subject of the exhibition.

Take for example the subject of time. Time is ephemeral, fleeting, hard to grasp. But speaking about time in terms of bodily rhythms – of the body clocks that we all have inside of us – makes it immediately more grounding. In this portion of the exhibition, we focused on exploring universal themes that relate rhythmicity to bodily experience – including sleep, work and electricity. A nurse's uniform from Medical Museion's collections helped to tell the story of the 38 Danish nurses who in 2008 were awarded compensation after developing breast cancer from night shift work.

Practical challenges

Some “curatorial strategies” are not developed in advance but out of necessity. We were actively planning the show from about June 2020 until its opening on 30 September 2021. Thus it was made in a pandemic world that touched every part of the project. Rather than working together in group meetings as we would have liked, curatorial meetings were conducted over Zoom – with curators pitching content ideas and artworks in the now ubiquitous “share screen” format. Our forecast materials and shipping budgets skyrocketed – and it became increasingly uncertain whether we would be able to feature the large number of international artists we had hoped. We were not even able to promise artists that they could come and install works themselves given the uncertainty around border closures. Our much-anticipated event programme ended up being mostly online. In fact, almost until opening day we were not sure that the exhibition would ever open to the public.

These restrictions contributed to the final form of the exhibition. Visitors may have noticed a strong emphasis on video work – which was of course partly because we were interested in the work of artists using this medium, but also because it made it possible for us to show the practice of artists in a digital format, given that transporting the works and artists had become more difficult. We partnered with nearby museums like the Copenhagen Museum and Workers' Museum to bring a sense of local-situatedness, which in turn made COVID working arrangements more feasible. We are forever thankful to the many artists who agreed to display their works in unusual ways under these strange and challenging circumstances. For example, Sonja Bäuml, who made an

incredible printed edition of her bioart work *Expanded Self*, which we were able to bring to Copenhagen despite the delays and disruptions in international shipping. And as much as we would have loved to be able to “strategise” our approach, the final result was born from the willingness of so many different collaborators to help us make the exhibition a reality.

For us, the pandemic context only made the topic of *The World is in You* more pressing to address. Through COVID-19, the world was getting in us in new and frightening ways. The borders between self and environment were once again carefully guarded and thus visible in a different way. When door handles and handshakes suddenly become a matter of concern and anxiety, the fact that we are in continuous exchange with the world around us becomes glaringly obvious. Entanglement is the natural state of being alive, and made visible by how much work it requires to maintain a degree of separation from the world around us. It is no surprise we ended up featuring a bottle of hand sanitizer in the “Microbes” theme. This bottle, along with a 19th century vaccination kit, were deliberately the only objects directly related to the pandemic in the show, as we felt that visitors themselves would bring that context into the show. But at the same time, we felt it was important to think about the body-world connection beyond the experience of fear, sickness and death – and to show the many different, sometimes wonderful, sometimes scary ways we are entangled with our environment.

Bioscience in the art gallery

The World is in You is best described metaphorically as a Trojan horse. At least that is how we in the curatorial teams

referred to it. Of course, *The World is in You* was not a matter of warfare; if anything, it was about building bridges. But by making an exhibition that was an art exhibition, a science exhibition and a historical exhibition, we wanted to “trick” visitors who came to see an art exhibition into also seeing a science exhibition and a historical exhibition – and vice versa. Besides the trickery itself, we believed that seeing an exhibition combining something familiar – be it art, science or history – and something unfamiliar would encourage visitors to be more receptive to the unfamiliar and hopefully realise that it was not that esoteric, but in fact related quite directly to the familiar. And further, the addition of something unexpected might heighten attention towards and appreciation of the familiar.

The hybrid exhibition we put on also served as a model for a physical public space where art, science and history meet and exchange knowledge and ideas. Such a place does not exist in Denmark, let alone does it have an exhibition building at its disposal in the centre of Copenhagen. But it did for the three months the exhibition ran at Kunsthal Charlottenborg. In an ideal world, the exhibition would never close but continue to be a meeting point for artists, scientists, historians and the public, and an ongoing collective discussion of how our bodies are shaped by the world we live in – a topic that will most certainly become more and more relevant, and one which will require specific forms of curatorial knowledge and practice to sustain. It would be such a dynamic space and the discussions taking place there would flow over and through the walls of the actual exhibition space into the public sphere of media and politics. Such dream scenarios of course stand in stark contrast to the institutional walls that too often limit the scope or rather impact of the important topics being dealt with in exhibitions.

GET CONNECTED

Reflections on the interactive approaches
to science communication in the project

By Kristin Hussey and Louise Whiteley,
associate professor at Medical Museion

“Where do you fit in? This is a space for making connections and asking questions. What ideas have the displays sparked in you? How connected do you feel to your world? Is there anything you would like to find out more about?”

This is the text that welcomed visitors into Get Connected – an interactive space built in the heart of *The World is in You*. The exhibition was intended to raise more questions than it offered answers – the science on display was not presented as settled or instructive. Rather, we hoped that visitors would bring their own experience to meet the curiosities of scientists, artists, and historians, and feel free to ask “undisciplined” questions. Get connected was designed to support this questioning. It put the visitor at the centre – asking them to draw connections and providing resources where they could find out more. The result was a bright, colourful, and busy space full of graphic art, books, podcasts, a survey station, and an enormous network of concepts that visitors could connect with giant elastic bands.

Each element of Get Connected reinforced the message that science exists in culture, and in history; that science

is aesthetic, personal, and processual as well as a source of knowledge and innovation. A questioning practice that delivers detailed mechanistic knowledge, shaped by and shaping its context. This was science communication, but with science seen from a multidisciplinary perspective – where *how* we know and *why* we want to know is as important as *what* we know. In this short essay, we will introduce you to some of the main features of Get Connected and how they were informed by the project’s wider commitment to exploring rather than explaining.



B



C

Re-imagined scientific posters

A core aim of Get Connected was to give visitors routes to finding out more about the science behind the four core themes of the exhibition: Epigenetics, Chronobiology, Microbiome Research and Space Medicine. But how could we do this in a way that reflected the ethos of *The World is in You*? How could we balance the vastness of these four scientific fields with our wish to give visitors a taste of the specifics? We came up with the idea to take the poster format scientists use to present their results at conferences and flip it on its head. We were not interested in creating something overly didactic, focused on equipment, or showing a “final answer”. But at the same time, we wanted to communicate something of the complex mechanisms that our scientific fields reveal.



A

A Installation view of Get Connected, *The World is in You*, Medical Museion and Kunsthall Charlottenborg, 2021. Photo by David Stjernholm.

B Chronobiology poster by Sofie Louise Dam, 2021.

C Microbiome poster by Sofie Louise Dam, 2021.

To carry out this ambitious project, we collaborated with illustrator and comic book artist Sofie Louise Dam. Creating the posters involved Sofie first delving into one mechanism studied by each scientific field – for example, histone modification or the transcription-translation feedback loop. For each theme, Sofie worked closely with the curator and a scientist collaborator to experiment with new ways of visually communicating these complex subjects. This took the form of visual metaphors, storytelling, and collage – wrapping a biological mechanism in the history of its discovery, its personal meaning, and unknown future. The four posters produced are both visually stunning and conceptually deep, communicating scientific concepts at a level far more complex and nuanced than is normally achieved in science comics. It was important to us that scientists weren't restricted to checking facts and curators to verifying content – both were involved with the artist in considering the “total medium” of the poster. Every element of the posters was informed by unexpected encounters between artist, scientist and curator.

The Entangled Library

Below each of the posters, visitors were presented with a shelf of books related to that scientific area: the “Entangled Library”. These books were chosen by curators, project staff and CBMR scientists. Our aim was to give visitors the tools to answer their own emerging questions and to share openly what had helped us to grapple with the science. The books proved very popular – although something of a theft risk if a visitor was a little bit too excited about the content! For us this was a risk worth taking – and if anything, a mark of

engagement. Some of the titles visitors could browse included: Adam Dickinson's *Anatomic*, 2018; Mark Nelson's *Insight from Biosphere 2*, 2017; Linda Gedde's *Chasing the Sun*, 2019; and Jan Baedke's *Above the Gene, Beyond Biology*, 2018.

We were also really excited to include headphones playing the podcast series “Verden er i dig”, produced for the exhibition by Anne Neimann Clement, Nanna Hauge Kristensen and Astrid Hald in collaboration with Medical Museion and Politiken. In four 40-minute episodes, the podcast hosts explore the entangled world of the body between art and science – interviewing curators, scientists and artists involved in the exhibition. Many listeners to Politiken podcasts may have listened to these episodes outside of the exhibition context, so it was great to bring them into the space for visitors to hear.

Connectedness Interactive

On the large back wall of the space was an interactive network spanning 16 square metres which we called Connectedness. This interactive came with very simple instructions: Use the rubber bands to create connections between yourself and the ideas, objects and things from the exhibition. Are there any connections that surprise you?

Visitors were offered rubber bands in different sizes and colours and invited to stretch them between round wooden “pegs” with words printed on them, making links that reflected the exhibition content. This simple concept masks many months of development and discussion, as is often the case with interactives. The aim of the interactive was to manifest the idea of connections across realms – to bring

all four themes of the exhibition together, and help visitors make sense of a vast span of concepts and ideas. In particular, we wanted visitors to do this in a way that engaged their bodies as well as their minds. After all, *The World is in You* was about the body entangled in the world – and perhaps it would help visitors relate to this idea by making their bodies emulate this entanglement.

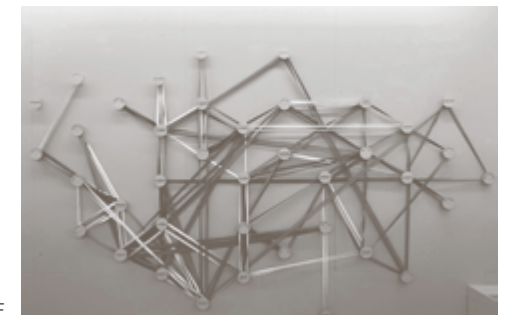
We came up with the idea of a large-scale network with nodes guided by the exhibition themes, and somehow connected by strings or bands. We wanted this to be a striking visual design feature – taking up almost an entire wall, even if this meant some nodes could only be reached by our taller visitors. In collaboration with the exhibition architect, Anne Schnettler, we explored the problems and potentials of this idea. We had two key problems: one practical and one conceptual. How could we create a design big enough to look beautiful yet scaled to be usable? And which words should we use and how should they be arranged in order for visitors to be able to connect what they found meaningfully related? To help us understand something about how people make connections in their minds, we collaborated with CBMR bioinformatician Leonidas Lundell. The curators each wrote a list of keywords from their respective sections of the exhibition, including everything from expected terms (like biology or reproduction) to the unexpected (like Superman or identity). Leo then used the terms to create an interactive 3D network reflecting the structure of Wikipedia. This process not only re-arranged the words into groupings that reflect the kind of network connections embedded in this popular online resource, but also generated new and unexpected related terms like “cancer” and “amphibian”. Working with Leo and Anne, this interactive network was then “pruned” down to a

scope and size that could be mapped onto the 2D space and according to the sizes of the available rubber bands (40 cm, 80 cm, and 120 cm folded width).

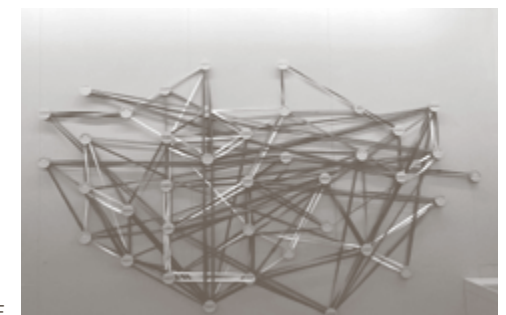
The result was an enormous network divided into zones vaguely corresponding to the four themes but including extra words suggested by the curators or by Wikipedia’s



D



E



F

D Visitor connections –
photographed
October 20, 2021.

E Visitor connections –
photographed
November 21, 2021.

F Visitor connections –
photographed
November 20, 2021.

user-generated network. Our worries about whether people would know what to do with the interactive wall were unfounded. Almost immediately after opening, the wall was full of rubber bands. Some were connections that reflected the exhibition themes, some were unexpected, and others seemed to just be beautiful shapes made with rubber bands. Our main challenge became keeping the network empty enough that each day's visitors would have enough space to make their own connections. Our exhibition hosts removed the rubber bands almost every day, taking a photograph first to create a daily archive of visitor connections. For us, this emphasised the importance of remembering the power of movement in making exhibitions (and in science communication more widely).

Design features

Get Connected was a multifunctional space that had to be many things to many people. Despite only occupying 19.6 square metres of space, it was a central hub both for visitors and for the exhibition hosts. The space was as carefully planned as a Tokyo micro-apartment, with custom furniture designed by architect Anne Schnettler and built by the carpenters of Kunsthall Charlottenborg. Seating areas doubled up as storage for the hosts' personal belongings and for extra surveys, leaflets, and pencils. The table for filling in surveys also stored the completed questionnaires. Custom chairs were built to nestle around the table, allowing for maximum circulation in the room. Headphones wired directly into the wall left space for bookshelves. The room also needed to be bright and comfortable, for both visitors to engage with the

interactives and as this was the main working space for the hosts – especially as the rest of the exhibition had low light levels. This welcoming space proved so appealing that a whopping 67% of visitors made it their first stop in the exhibition, rather than the last as we had planned. However, this serendipitously introduced visitors to the exhibition hosts, who were able to answer questions and provide guidance before starting their visit. We were reminded of the difficulty of predicting how people will move around an unusual exhibition layout.

Concluding thoughts

The Get Connected space, though small, served many important purposes in the exhibition. It was a space to learn more, to play, to speak to an exhibition host, to listen to a podcast, or to complete a survey. We also wanted to manifest the connectedness at the heart of the exhibition concept to bring all its themes materially together. The design echoed



G Installation view of Get Connected, *The World is in You*, Medical Museion and Kunsthall Charlottenborg, 2021. Photo by David Stjernholm.

the invitation to engage. In particular, the seating and bright lighting were conducive to increased interactive exploration and conversation. Although simple in design, the Connectedness interactive proved incredibly popular, with visitors enjoying making strange connections – especially when it meant stretching the rubber bands as far as they could go!

Get Connected originated partly in our wish to provide visitors with routes to learning more about science – but science as itself entangled with the bodies and worlds whose entanglements it studies. The space contained a collage of communication approaches showing mechanisms as well as stories; sharing technical terms as well as existential contexts; using the stretch of the body to echo the stretching of the mind; and holding both recorded and live conversations that connect science to personal experience. As such, it is hard to specify and measure fixed learning outcomes, but our survey results gave the resounding impression that visitors left with their curiosity piqued about the meanings of scientific research.

COLLABORATORS

DESIGN

Anne Schnettler –
<http://schnettler.dk/>

RE-IMAGINED SCIENTIFIC POSTERS

Sofie Louise Dam – <http://www.sofielouisedam.com/>

PODCAST

Anne Neimann Clement,
Nanna Hauge Kristensen
and Astrid Hald –
https://politiken.dk/podcast/Verden_er_i_dig/

NOTHING ON THE WALLS
Reflections on the exhibition design

By Adam Bencard and Jacob Lillemose

In terms of display strategies, the historic 900-square-metre exhibition area at Kunsthall Charlottenborg presented both a unique opportunity and a special challenge. Previously at Medical Museion, we have primarily produced exhibitions in smaller spaces. Therefore, working in such massive, open and high-ceilinged spaces was very different. Moreover, the spaces at Kunsthall Charlottenborg hold a special position in the Danish art and museum world, and are heavily laden with history – both because of the building itself and because of the many prior exhibitions held there. The opportunity to become part of that history was alluring, but we also wanted to give the exhibition a distinctively different look and feel. To this end, we took advantage of – perhaps even honoured – the physical properties of the spaces while also rendering them less immediately recognisable as Kunsthall Charlottenborg. This, we hoped, would also suggest to the visitors, even those very familiar with the spaces, that they were entering an unusual exhibition.

To achieve this balance between working with and against the spaces, one of the very first design principles we adopted was to refrain from hanging anything directly on the walls. The huge walls in these spaces tend to make most things hanging on them appear somewhat small and insignificant,

which we wanted to avoid. It was also important to us that the different materials in the exhibition – artworks, historical and scientific objects – were experienced as part of a shared conversation, rather than as separate entities. We wanted to avoid the atomisation that large spaces can induce. The solution was to build an exhibition structure that could hold all the artworks and objects more or less detached from the walls: a shared, materially uniform structure that could hold all the diverse materials, thus embodying the idea that all of them, no matter their disciplinary origins, were part of a shared conversation.

As for the character of the exhibition structure, we decided that we wanted a design inspired by the black box of the science museum world rather than the white cube of the art world. We wanted a dimly lit space in which the objects and artworks shone as islands of light, guiding the visitors through the spaces. This was also a way to embody the curiosity that we see as a key part scientific and artistic inquiry: an exploration in the dark with only occasional sources of illumination to go by. Secondly, we wanted the design to emphasise entanglement in a reflection of the exhibition theme. We discussed a number of ways this could be done. One obvious design was to connect everything in the exhibition quite literally, either through wires or some other structure. While such a design certainly would give the audience a spectacular interface to the exhibition, in the end we decided not to follow that route simply because we felt it would be too performative or too chaotic and get in the way of the exhibits by drawing too much attention to itself. Instead, we decided on a more minimalistic and uniform structure that would signal connectedness and commonality across spaces and themes. Finally, we wanted the design to

make the visitors curious and slow down their pace as they explored the more than 100 exhibits in the exhibition. The historical case of the curiosity cabinet with its juxtaposition of objects was certainly an inspiration but we knew we wanted to go with a less chaotic design.

ON A SILVER PLATTER
Documentation and reflections
on the exhibition design

By Anne Schnettler, exhibition architect

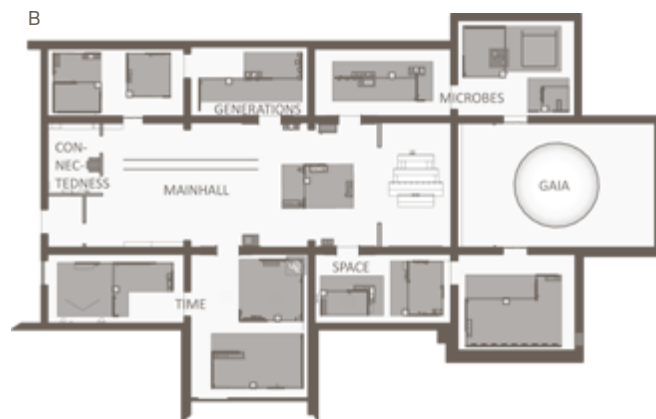
I will admit that it was a special kind of challenge to create an exhibition architecture that gave the 100 different objects and artworks in the exhibition the same amount of necessary attention – especially since the objects were so diverse in terms of media, formats/techniques, and origin. But given this framework, we employed the metaphor of “serving delicate and uniquely chosen dishes on a silver plate” as a guideline for the early stage of the design process.

A 'Silver-plate' vision for the exhibition design. Concept sketch by Anne Schnettler.



Through dialogue with the curatorial team, the “silver platter” vision evolved into a uniform, almost democratic framework consisting of elaborate, free-standing dark walls and surfaces. Furthermore, the objects were presented together in smaller groups on several “islands” in the galleries. Each island was designed to encourage an ongoing curiosity around these “free-floating containers of meaning”, where three to eight exhibition objects/artworks were presented in a theme.

The layout of the gallery spaces at Kunsthall Charlottenborg dictated a structure where the large central gallery would serve as a kind of hub that led to the side galleries (combined into app 4 m x 2 m spaces) and indirectly to the other central gallery in the back, where the artwork *Gaia* by UK-based



B “Island-like” structure.
Plan diagram by Anne Schnettler.

C *The World is in You*,
Medical Museion and
Kunsthall Charlottenborg,
2021. Photo by David
Stjernholm.

D *The World is in You*,
Medical Museion and
Kunsthall Charlottenborg,
2021. Photo by David
Stjernholm.

artist Luke Jerram was placed. I designed four “hallways” leading from the central gallery into the side galleries that hosted the exhibition’s four themes (TIME, SPACE, MICROBES and GENERATIONS). The hallways were designed as distinct transition spaces to emphasise the change of focus and matter.

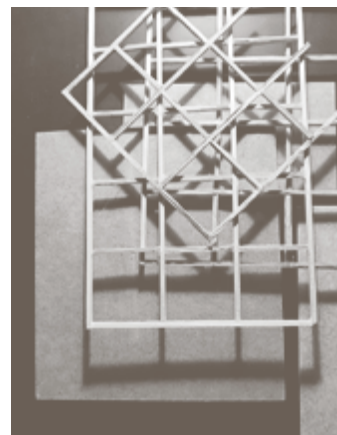
To establish a dynamic and natural flow through the exhibition structure, and to encourage the visitor to slow down in front of each object, I introduced a “totem pole” on each island. These five-metre-high, upward-pointing totem poles functioned as an eye-catching anchor point with introductory texts to the “island theme”, and as spatial elements that activated the characteristics of the high-ceilinged galleries.

Since wayfinding and the different textual layers were essential for understanding how the 100 objects were organised and feeding the curiosity of the visitor, both the graphic designers and I paid a lot of attention into the expression, size and placement of all text levels. For instance, to accompany the 100 objects and artworks I introduced a text panel concept where all panels would have the exact same size, font size and expression. Moreover, the panels were tilted on a horizontal or vertical surface to improve legibility. Furthermore, they were all spotlighted separately in a significant way to draw attention to each text and thus to each object.



The idea was to stress the importance of the textual dimension of the exhibition by making it both obvious and easy to access, and thereby truly inviting for the visitors to read – and also to suggest a basic principle in the exhibition: the more you engage, the more you get back.

The exhibition design also included several significant details. In terms of materials, the curatorial team and I wanted to create a dark yet warm and intimate space around the exhibits. To do so, we conducted several tests with different hues of brown to achieve the right wooden texture for the wall and floor surfaces. To make a silent yet important distinction between the different sections/themes of the exhibition, a pale light colour scale was introduced for the totem poles and the texts in each of the four theme sections. The



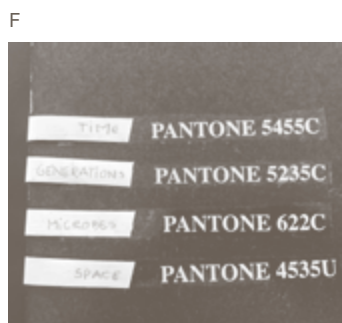
G



H



E



F

E Half size totem poles during preparation. Process photo: Anne Schnettler.

F Colours and surfaces – a dark glowing wooden surface and a light colour palette for each of the 4 themes. Process photo: Anne Schnettler.

G Materials and simple wooden structure. Process photo: Anne Schnettler.

H Installing the architectural structure. Process photo: Anne Schnettler.

idea was that this colour scheme would be a subtle contrast to the dark mainframe structure.

Lighting also played a significant part in setting the tone and feel of the space itself and for how the visitors encountered the works on display. To achieve the intended ‘curiosity cabinet feel’ and to give both large scale and tiny objects and artworks the right “light of attention”, much effort was put into creating a differentiated spotlight setting, including strong, large spotlights placed in the ceiling, as well as local small spotlights. The solution was the result of a close collaboration between the technicians at Kunsthal Charlottenborg, the technical wizard of Gadget Group and me.

Building process: since the time for building the exhibition was very limited and turned out to be more time consuming than the building team had expected, some of the elaborated design details for the wooden structure were left

out to secure enough time for building, installing and lighting the exhibition properly.

The exhibition included the learning room called Get Connected, which demanded a different kind of feel to stand out in a suitable way. Several solutions for this separate room were tested during the development process. We ended up choosing a brightly lit design for this separate room, employing a diffuse overall light setting that contrasted with the dark spaces and spotlighted “curiosity cabinet atmosphere” of all the other galleries. To emphasise the contrasting atmosphere in this room, we also placed all exhibits in the Get Connected section directly on the walls, including a large interactive installation where the visitors could connect different concept words related to the exhibition theme using coloured rubber bands. In this way, visitors had the opportunity to engage and contribute to



I Connectedness – a rubber band interactive where visitors could connect different words and aspects that were introduced in other parts of the exhibition. Photo: Anne Schnettler.

J Installation photo. *The World is in You*, Medical Museion and Kunsthall Charlottenborg, 2021. Photo by David Stjernholm.



J

creating a collective, dynamic, and abstract interpretation of the exhibition theme.

Taking part in a project as complex as *The World is in You*, I sometimes felt a bit like being in the middle of a classical orchestra rehearsal before the concert starts. It was truly challenging and truly fascinating to create a meaningful physical and multi-layered design where specific and quite different demands for artworks, museum objects and scientific objects were aligned in the most suitable way – as well as finding design solutions that could accommodate the overall intentions and visions within the budget limits, while realising a uniquely ambitious and unusual exhibition.

I think we all learned that the workflow, planning and demands for exhibition installation a gallery like Kunsthall Charlottenborg is quite different from a museum like Medical Museion. And since Kunsthall Charlottenborg is not

used to working with exhibition architects, my role sometimes felt a bit blurry. But because the ambitious complexity of the exhibition required an elaborated wooden structure, the large and precise drawing material became an essential tool in the process of translating the intentions of the curatorial team into a physical exhibition by the building team at Kunsthall Charlottenborg. Realising and building the exhibition required an intense and rapid process. Luckily, a huge portion of flexibility and good collaboration skills were an important part of the team spirit throughout the process – especially in the final phase.

For me, it was interesting to transform the design vision ‘On a silver platter’ together with other visions from the curatorial group and shape these ideas into an architectural framework in the form of a contemporary ‘chamber of curiosities’. In doing so my aim was to find the right balance between giving the exhibition design a strong but not too expressive character and thereby underpinning the complexity of the project as a whole by providing equal attention to the 100 richly varied objects and artworks at stake. During the process we learned that a simple, straightforward design including an elaborated rectangular wall system placed on island-like grounds around totem poles was helpful in creating a the right slow pace and atmosphere in the exhibition. Moreover an insistent attention to the structure of wayfinding, a special design in the lightning system, and precise distinctions colours and surface materials was a good strategy in this project.



K

K Hallway leading to the Microbe zone, *The World is in You*, Medical Museion and Kunsthall Charlottenborg, 2021. Photo by David Stjernholm.

A LOT OF TEXT
Lessons and reflections on the textual
concept and strategies of the exhibition

By Adam Bencard and Jacob Lillemose

We realised early in the production process that *The World is in You* would need to involve a substantial amount of text to facilitate the audience's access to and engagement with the expansive and diverse types of materials as well as complex scientific ideas that the exhibition would present.

All the while, the curatorial group shared a scepticism towards overly text-reliant exhibitions and exhibitions with unnecessarily difficult or technical texts. This scepticism was equally fuelled by experiences with art and science exhibitions, each type having its version of too much text, too complicated texts, or too exclusionary texts. In these cases, the texts often get in the way of the exhibits and even stop the visitors from having a meaningful experience with them.

Therefore, we were stuck with an important challenge: we wanted a lot of text, but we also wanted the texts to be read. As academic studies of text reading in exhibitions have amply documented, visitors cannot be expected to read for extended periods of time or texts of significant length. This also echoed our own experiences: even as curators, we often find ourselves ignoring or skipping texts in exhibitions if they do not add significantly to the experience through narrative additions or meaningful context for the works or objects on display. We

knew we had a challenge on our hands, but a constructive challenge in the sense that it meant we knew from the outset that we needed to pay extra attention to the textual layer.

This challenge was further complicated by the interdisciplinary nature of the exhibition itself. Any single visitor could not be expected to have significant background knowledge of all of the varied material on display. While some visitors might be knowledgeable in contemporary art and others familiar with aspects of the scientific themes, we could not write specifically for either audience. Catering too heavily to one context risked alienating other visitors, limiting the potential of their experience in the gallery. Even further, a significant number of visitors would have had very little exposure to either the artistic or scientific elements, so there had to be a level of generality and approachability in the textual layer of the exhibition.

The last initial concern regarding the textual layer was how to tackle the relative complexity of the scientific objects and research areas at the heart of the exhibition. One of the central challenges of curating encounters with contemporary biomedical research is the difficulty, if not impossibility, of meaningfully bridging the technical gap between the nuances and complexity of the science and a more general, public understanding of the broader themes. It was a given that most of the technical details had to be left out, i.e. a broad interdisciplinary exhibition such as *The World is in You* felt like the wrong place to attempt to explain the mechanisms behind microbiome analysis or DNA methylation. Audiences would have to encounter the questions and stories in the science, rather than the details of scientific inquiry. In other words, the texts had to be written with an *exploratory* rather than *explanatory* approach.

Writing together

The first step we took was to conceive of the writing of the texts as a collective process. There would be individual authors but we would circulate the texts among the members of the curatorial group and also other members of the Medical Museion staff. Writing collaboratively in this manner is something we have practised previously at Medical Museion, in projects such as *Mind the Gut* (2017). We have found it to be an important and valuable part of creating a curatorial process that is continually open to a range of viewpoints and expertise, as well as a way to mirror the interdisciplinary nature of the larger themes we have engaged with.

Through this process, we very explicitly wanted to avoid esoteric concepts and wording, and we asked our “collaborative readers” to point out such tendencies throughout the process. Of course, we wanted the texts to be informed by our extensive knowledge of the theme and the exhibits but we wanted them to speak to people without that knowledge. Put another way, we wanted the text to be a generous gesture towards the visitors, a meeting point or an interface between our knowledge and their interest. Perhaps that is the ambition of all exhibition texts, but we nevertheless took this point very seriously because we knew that failing on a textual level would translate to failure on an exhibition level.

We also knew that an exhibition of this nature entailed multiple layers of texts. We had four layers of text in the exhibition: introductory text, theme texts, sub-theme texts and exhibit texts. The layers had a kind of onion logic to them, moving from the general to the specific and drawing visitors deeper and deeper into the exhibition and the theme. We counted that we needed to write close to one hundred texts

for the exhibition – and if we had any realistic ambition of the visitors taking the time to read them without becoming too exhausted, we knew that the texts had to be short. So we set ourselves some rather strict limits. The theme text had a maximum length of 1000 characters, the sub-theme texts 750 characters and the exhibit texts 500 characters. This limitation was both challenging and liberating, particularly in relation to the exhibit texts. It meant that we had to be very selective as to the information we communicated and the perspective of the texts. We could by no means write “everything” about the exhibits, which ironically allowed us to be freer in our approach.

Balancing descriptions and questions

The approach to the textual layer of the exhibition took its inspiration from science communication rather than art mediation. What does that mean and what difference did it make? For one, we wanted the texts to be informative rather than didactic and exclude academic lingo and intertextual references – in other words, keeping them as jargon-free as possible. Also, we deliberately did not distinguish between the way we wrote about artworks and scientific objects. We wrote the same way, in the same type of language, about each exhibit. Apart from the formal information about the exhibits, the text did not treat them differently. By that, we wanted to emphasise that the exhibits belonged to a common discourse or related to a common theme.

We ended up with a textual approach that attempted as much as possible to balance the descriptive – enough

straight details to give the visitors a sense of what they were seeing, why it was in the exhibition and how it related to the theme it was in – with a more open-ended, question-led approach. Questions thus became a recurrent principle in the text writing. This rhetorical strategy served two purposes. First, it put the question in the mind of the visitors as an encouragement to reflect. Second, it emphasised that the theme, despite its scientific origin, did not simply provide answers but raised further questions.

Each text had to find its balance, but it had to perform at both levels; it must satisfy some curiosity about the specifics of the display, as well as point outwards to the themes of the exhibition. We had to strike this balance within the very limited number of characters we allowed ourselves. As we had begun thinking about the textual layer before the list of objects and artworks was settled, this balance also came to influence what we chose to display. We found ourselves leaning towards objects that could meaningfully be captured in very short form, while still keeping a sense of open-ended under-determination – a nugget of information along with a disturbing or rich question. We half-jokingly referred to this approach as the dinner table conversation guideline: each text, as a minimum, should have a piece of bonus information, a pay-off for reading the text that could be shared and discussed at the dinner table with family and friends. “Did you know that faecal matter can be used as medicine? A Korean artist produced a work about how the microbes on our hands influence the food we make and even move between generations!” We hope that the texts supported these kinds of meaningful encounters and exchanges, both in the exhibition space and beyond.

Totem text example

We often think of our bodies as machines guided by thought, or as complex automata. But what might change if we were to reimagine humans as living ecosystems made up of both human and microbial parts? Perhaps if we could see ourselves as constantly interacting with the countless microscopic worlds we inhabit, and that also inhabit us, it would enrich the images and stories we show and tell of ourselves. We might think creatively and differently about how we relate to each other and our environments.

Theme intro text example

When you go into space, you leave behind the environment that the human body has become accustomed to over hundreds of thousands of years. You can no longer breathe in oxygen. You are no longer protected from cosmic rays by the Earth's magnetic shield. Gravity—the fundamental force that holds your body (parts) together—is drastically reduced, allowing your body to fly as if weightless. This new environment also makes all the liquids in your body float out of shape and place. In other words, going into space is a radical change and comes with a number of challenges for the health of your body.

This section explores how scientists and artists have researched and imagined the human body in space from the early 20th century on. They have aimed to better understand the effects of going into space, the risks they entail, and the questions they might contain. Lift-off!

Object text example

Nursing has always been a 24-hour occupation. In the Victorian period, specialized night nurses oversaw the wards after dark. In the twentieth century, nursing moved towards a shift system. In 2007, the International Agency for Research on Cancer classified shift work as “probably carcinogenic to humans” by disrupting the body's clock. Two years later, 38 Danish nurses were the first in the world to receive compensation after developing breast cancer potentially brought on by night shifts.

Object text example 2

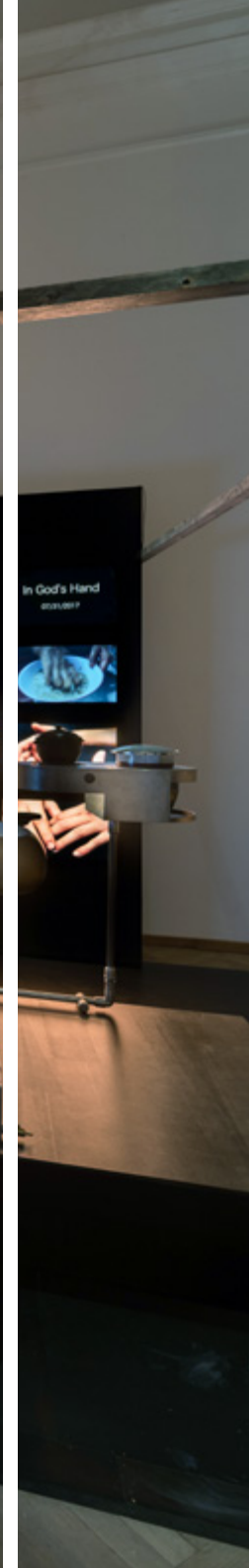
The Danish painter Christian Aigens painted this scene of bookbinder Aksel Karlsen and his family in 1929. The family struggled financially and often lived in poverty. In the light of the single oil lamp, they are gathered around the dinner table, next to the bed, sharing a humble meal in an environment of scarcity. Aigens gave the family some money for posing for the painting, providing them with a small source of income. The painting seems to be equal parts artistic expression and social commentary.

Object text example 3

What should your medicine cabinet contain in the future? Perhaps a vial of “Psychobiotics”, containing serotonin-producing plasmids that could live inside your gut and make you happy? This strange medicine cabinet builds on artist

Anna Dumitriu's extensive work at the intersection of art and science, and considers the promises and pitfalls of new biotechnologies. How should we navigate contradictory health headlines, and separate hope from hype, and effective treatments from snake oil?

Jiwon Woo, *Mother's hand-taste (Son-Mat)*, 2017. Courtesy of the artist. Installation view, *The World is in You*, Medical Museion and Kunsthall Charlottenborg, 2021. Photo by David Stjernholm.

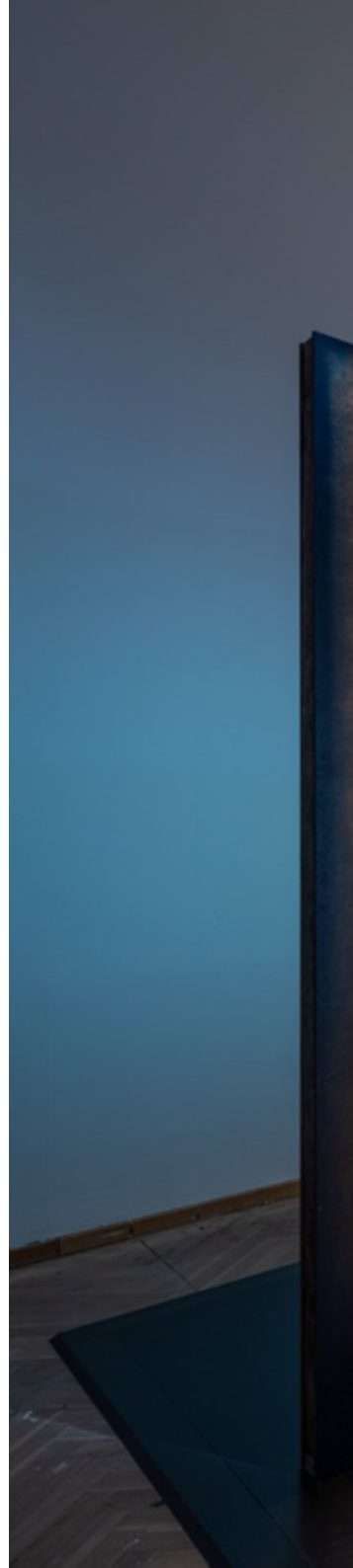


Jars, Simulator of Human Intestinal Microbial Ecosystem (SHIME®), 2020. Courtesy of Manimozhiyan Arumugam, Installation view, *The World is in You*, Medical Museion and Kunsthall Charlottenborg, 2021. Photo by David Stjernholm.





Enamelled posters. Courtesy of Henrik Møller Kastrup. Water supply pipe. Courtesy of Medical Museion. Kathy High, *Landscape of Lost Microbes*, 2017. Courtesy of the artist, Installation view, *The World is in You*, Medical Museion and Kunsthal Charlottenborg, 2021. Photo by David Stjernholm.





Baum & Leahy, *Cometabolise: A Holobiont Dinner*, 2021. Courtesy of the artists.
Installation view, *The World is in You*, Medical Museion and Kunsthall Charlottenborg, 2021. Photo by David Stjernholm.





WHO CARES?

Reflections on visitor research in
an interdisciplinary exhibition

By Kristin Hussey and Louise Whiteley

We make exhibitions for our visitors. But what do our visitors think of them? How do visitors experience exhibitions, and what makes them meaningful (or not)?

It can be surprisingly difficult to answer such questions – capturing insights from exhibition visitors requires careful preparation, mixed research methods, and reflective analysis. *The World is in You* was conceived of as an experiment in science communication, and from its early stages we decided that visitor research would be one of the ways that we assessed the outcomes of that experiment. We also used feedback from visitors and other stakeholders to inform the development of the exhibition and events, and provide critical insights into how people experience interdisciplinary exhibitions that we hope will have wider relevance. Our findings have been (and will be) shared in a variety of formats, from internal reports and staff meetings to peer-reviewed papers and, of course, via this publication. We want to emphasise that the purpose of carrying out this research was not to determine whether we did a “good” or “bad” job of making an exhibition. Instead, we were more interested in whether we had succeeded in engaging people’s curiosity about the interconnections between science, the world and themselves.

As with all research, being clear about why you are doing it and what you want to know is crucial. Carrying out evaluation requires both exhibition staff and visitors to spend time thinking about and answering questions – so it’s important to make sure they are the “right” questions to meet the project’s objectives. We therefore developed the following list of questions to guide the production of the various visitor research methods:

Who was visiting the exhibition? By this we meant standard demographic data like age, gender and nationality, as



A Visitors complete a survey during Culture Night, Medical Museion and Kunsthall Charlottenborg, 2021, Photo by Vilde Livsdatter.

well as the audience’s interests and professional backgrounds. We were especially keen to find out whether the visitors identified themselves as interested in “art” and/or “science”.

Did the exhibition introduce visitors to Medical Museion? One of the most exciting elements of the project was bringing the Medical Museion approach and some of our collections into an iconic contemporary art institution. We wanted to find out whether the people who visited were those who already knew about Medical Museion or if (as we hoped!) it might spread the word about the museum more widely.

How did the visitors engage with the exhibition? Which sections or objects were the most impactful, and which did visitors find less interesting? We were also intrigued to know how visitors moved through the space, since we had not provided a standardised route, but instead encouraged guests to explore.

How did the exhibition impact our visitors? Which elements did visitors find thought-provoking? Did they like or dislike our approach of asking questions rather than providing answers? And most importantly, did visitors leave asking new questions about themselves and the world?

How did the host programme support questioning? Finally, we wanted to assess how our “exhibition hosts” programme had worked for both our visitors and the hosts themselves. Did having the hosts deepen the visitor experience as we had intended? Did it manage to support curious conversations? Had the hosts felt supported in carrying out their work?

With these questions agreed, we designed a methodology to answer. This included an initial workshop with scientific stakeholders, a public, online formative (pre-exhibition) questionnaire, an on-gallery printed questionnaire, event

questionnaires, visitor tracking maps, in-depth participant interviews, and a post-exhibition workshop with exhibition hosts. This ambitious visitor research programme was carried out by Medical Museion researchers Louise Whiteley, Kristin Hussey, and Cecilie Glerup, with support from consultant Ben Gammon and exhibition assistant Josefine Stromark, and with invaluable assistance from our exhibition hosts. In total, we received 150 responses to our pre-exhibition questionnaire and almost 800 exhibition questionnaires, the hosts completed 82 tracking maps, and we carried out 15 in-depth interviews with visitors.

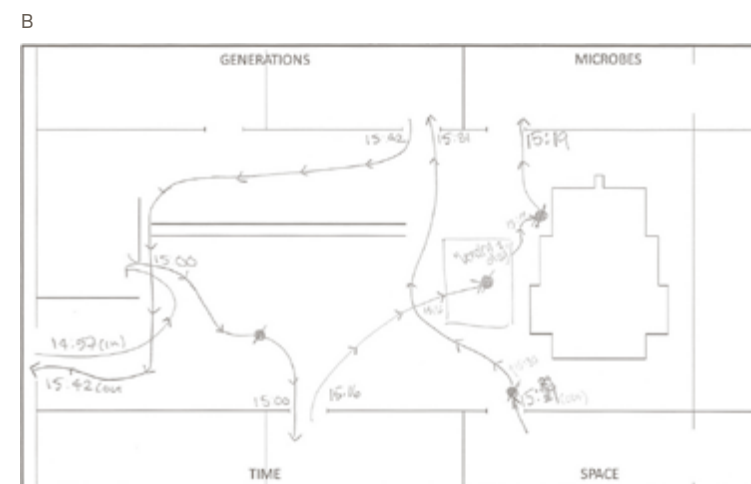
Overall findings

The wealth of material we collected will be analysed and published in a variety of forms – including in a chapter of this booklet containing key statistics. Here, we will highlight some findings we found particularly intriguing in relation to visitor experience, and which demonstrate some of what can be gained by conducting this kind of visitor research.

The World is in You was a content-rich exhibition, containing over 100 exhibits of artworks and objects, as well as podcasts, books, texts, poetry, and more. We were initially concerned that visitors might find the amount of material overwhelming or confusing – but our data suggests that most engaged deeply with the complex world presented to them. 68% described the exhibition as informative; 67% as thought-provoking; and 53% as intriguing. We were especially happy to learn that the tracked visitors spent an average of about 40 minutes in the exhibition – a considerable length of time for an exhibition (Serrell, 2010). The hosts noticed

that visitors spent a considerable amount of time reading text labels, and curators and other gallery staff were regularly told by visitors that they had returned more than once to take in the full breadth of the show.

We had also posed a considerable challenge to visitors by not providing a set route through the exhibition. We built walls that prevented visitors walking from each “theme” to the next – instead they had to continually return to the



B Example of a tracking map showing visitor dwell time in different sections of the exhibition.

central connecting space. The purpose of this approach was to encourage a sense of exploration and discovery – which also ran the risk that visitors would become frustrated or accidentally miss parts of the exhibition. Visitor tracking found that this was not the case – visitors took a wide variety of routes through the exhibition, and 68% of them saw every room, with a further 17% missing only one of the rooms. We also know from the hosts that they were very frequently asked about the best way to see the exhibition. This suggests that while visitors might want to have guidance, or at least check that they are not missing important instructions, they are nonetheless very capable of making their own way through a challenging space.

“That was a question that came up all the time. People would walk into the room where we were [Get Connected] and they would ask us – first question – which way do I have to go?”

– Host



C Visitors interact with Luke Jerram's *Gaia* during Culture Night, Medical Museion and Kunsthall Charlottenborg, 2021, Photo by Vilde Livsdatter.

When asked which artwork, object or theme visitors found the most interesting or intriguing, there were a wide variety of answers, but some of the most frequently mentioned were Luke Jerram's *Gaia*, Medical Museion's 1960s nurses uniform, photographs from the Dutch Hunger Winter, and Jiwon Woo's *Son-Mat*. According to dwell time data and insights from the hosts, the room containing *Gaia* was one of the most popular in the exhibition. This was both because of the monumental scale and beauty of the artwork, but also because it was a calm, open and relatively brightly lit space where visitors felt comfortable sitting, resting, and chatting.

Putting an exhibition grounded in scientific research and curated by Medical Museion in Kunsthall Charlottenborg was undoubtedly a challenging and potentially contentious idea. We were well aware that some visitors might not like to find science and history content in a contemporary arts space. Answers indicated that this was only an issue for a very small number of visitors. A couple of respondents indicated that they felt the exhibition “didn't belong” in Kunsthall Charlottenborg because of its focus on science. Others didn't like the approach to the text labels, which was distinctly different to most art exhibitions in that they provided a lot of information and interpretation. Others had specific qualms with the content, for example that the space theme didn't “fit” with the others. However, critical responses related to texts and the overall theme represented less than 10% of respondents. In fact, 80% of people felt the amount of science presented in the exhibition was “about right”, and several visitors wrote extra comments about how much they enjoyed the conversation between art and science present in *The World is in You*.



D

D Visitors enter Get Connected during Culture Night, Medical Museion and Kunsthall Charlottenborg, 2021, Photo by Vilde Livsdatter.

We were especially hopeful that the exhibition would provide an impactful experience for our visitors – and from feedback, this seems to have been the case. Visitors often expressed a feeling of being inspired but also overwhelmed:

“Overwhelming in a good way. My mind feels activated and full of inspiration.”

“Walking around here is like feeding the brain’s petri dish with existential crisis bacteria! It was a beautiful exhibition. Thank you for the thoughts it sets in motion.”

“My perception of the world about / in me has changed forever.”

Ultimately, we can conclude that visitors were able to leave the exhibition asking new questions about themselves and their world – a core aim of the project. One visitor reported that they finished their visit wondering:

“How much does our environment influence our well-being, and how much is predetermined by our ancestors/grandparents and their way of life? Would we be happier if we divided our days into eight hours of work, eight hours of free time and eight hours of sleep? Will we ever be able to live in space or anywhere else other than Earth?”

Of course the feedback also indicated ways that we could have provided a better experience – and which the teams will take forward into future projects. In particular, visitors and hosts commented that they found the darkness of the space

difficult. The low light levels were meant to give a sense of curiosity and exploration, and were often necessary because of light-sensitive historical objects and film-based artworks. However, the darkness also made the space tricky to navigate and texts harder to read. The hosts also thought that it was harder to engage people in conversations because of the darkness. We are not quite sure why this might be – perhaps because it was more disconcerting to be approached in the dark, or because the darkness made the space feel like it should remain quiet. However, we were able to overcome some of this challenge in the brightly connected interactive zone called “Get Connected”, where visitors felt more comfortable having conversations and meeting the hosts.

Concluding thoughts

We have tried in this short essay to be open about the findings from our visitor research. Some of what we heard was critical, but the overwhelming majority of visitors had a positive experience of visiting *The World is in You*. We made an exhibition that was purposefully interdisciplinary, challenging, and open-ended – and visitors were able to bring their own perspectives and experiences to the encounter. Our findings indicate that visitors to art galleries are comfortable and typically even excited to encounter science content, and that for the most part, our guests were happy with the balance of art, science, and history. This could be overwhelming, confusing, or even scary – but these emotions seemed to be positive rather than negative within the framework of the exhibition. We were aware that what we were making might be challenging to the audiences of both

Kunsthall Charlottenborg and Medical Museion. But what we have found is that visitors seem ready to be challenged by interdisciplinary exhibitions. As one visitor put it, “I would like to know more about everything!”

WHO CAME AND WHAT DID THEY THINK?
Summary of the exhibition's visitor profile

By Louise Whiteley

Visitor origins and interests

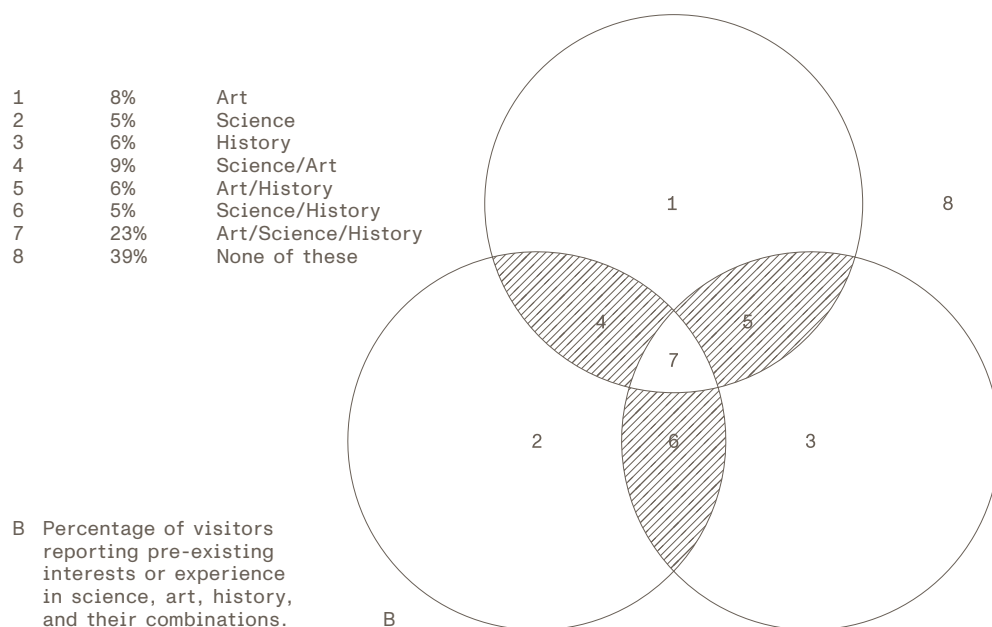
More than 20,000 people visited *The World Is In You*. Three quarters came from Denmark; the remainder came from all over the world.

Visitor tracking estimated that 85% of visitors not on tours came with one or more other people. Three quarters were estimated to be between 20 and 50 years old, with 23%



over 50. According to our visitor questionnaire (with 769 responses), 71% of visitors had never been to Medical Museion, and 59% had not visited Kunsthall Charlottenborg before. 60% of visitors reported coming to Charlottenborg specifically to see *The World Is In You*, and 70% realised that the exhibition was the result of a collaboration between Medical Museion and Charlottenborg. In sum, we seemed to be fulfilling our goal of expanding our adult audience and awareness of both institutions. We also hosted nine schools tours, testing out new methods that will feed back into Medical Museion practice.

The exhibition blended art, science, and history, and we hoped it would appeal to people with interests in any of these fields. Our visitor questionnaire (769 responses) found that only 30% of visitors had a university degree or a job in science or medicine and, as shown in Figure B, when asked to



rate their level of interest in art, science and history, approximately equal proportions picked each. 23% reported interest in all three areas and 39% selected none. This suggests that we reached outside of a traditional “art audience” and engaged people without expertise in any of the disciplines included.

Duration and routes

The World is in You had a central space relating to the core concept, four theme rooms entered from the central space, and a Get Connected zone focused on interaction and conversation. There was no obvious route – our goal was that visitors should explore freely, drawing their own connections, but we were unsure whether this would prove frustrating or lead to rooms being missed.

Our tracking data found that visitors spent on average 39 minutes in the exhibition, with a quarter visiting for 50 minutes or more. Each of the five main sections had an average dwell time of 6-8 minutes, and the tracking data showed that most visitors explored all sections of the exhibition, albeit to differing degrees. 68% entered all four of the side rooms that led off the central space; 17% entered three of the rooms, 12% two rooms, and 2% just one of the rooms. Roughly a third each followed a predominantly clockwise route, a predominantly anticlockwise route, or a zigzag route.

Get Connected was intended as an outro experience, but 67% of visitors entered the space immediately upon arriving at the exhibition. This may have been due to the much higher light levels in this section, as well as its location next to the entrance and the evident interactive elements.

Responses to the exhibition

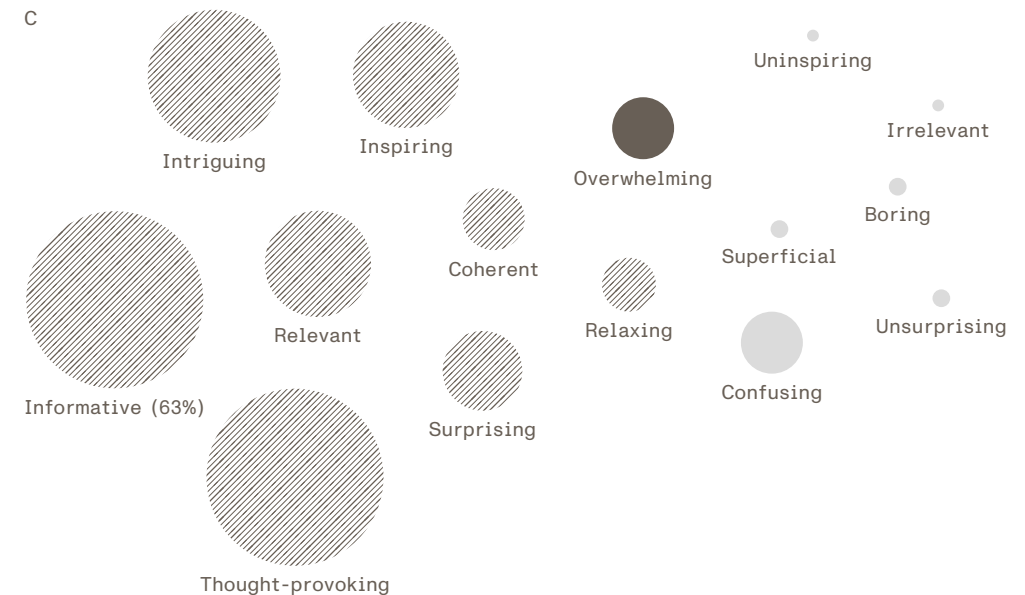
According to the questionnaire data, 95% of visitors enjoyed the exhibition; 89% felt that it raised interesting questions; and 92% liked the mixture of artworks and objects. We were also curious about how visitors would respond to having science prominently engaged in an arts venue. 80% felt that the amount of science content was “about right”. The remaining visitors were evenly divided between those who felt there was too much, and those who felt there was too little science content.

To provide deeper insights into visitor opinions, the questionnaire asked them to select one or more of 15 words that best described how they felt about the exhibition. Figure C shows the proportions of questionnaire respondents that selected each word, with far higher numbers selecting the words in shaded assumed to be complimentary.

As discussed elsewhere in the publication, we suggest that “overwhelming” can be either positive or negative. We aimed to impact visitors and provoke new questions and connections, which can be a (positively) discomfoting experience. Surprisingly, 41% of questionnaire respondents filled in the open-response box inviting them to share questions they would take away from the exhibition. These questions reflected the topics that visitors had found to be especially thought-provoking, such as: inheritance and epigenetics; our relationship with micro-organisms; perceptions of time; sleep and health; and the impact of pollution and climate change on our health.

The individual works most often mentioned in the questionnaires appeared to be those that connected scientific or historical themes to personal experience, including

photographs of starving children from the Dutch famine of 1944-1945, a nurse’s uniform from the 1960s, and the work *Son Mat* by Jiwon Woo, which centres the story of her family passing on “hand taste” through the making of kimchi. Luke Jerram’s spectacular globe *Gaia* was installed in the back room by itself, and was one of the most popular, remarked, and photographed elements of the exhibition. We learned from our research that it provided not only an impactful photo opportunity, but also a point to sit, rest and reflect on our place in the world, and a better lit room for taking breaks.



C Proportions of surveys respondent selection complimentary (shaded), critical (faded), and ambiguous (dark) words.

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HOSTING IS KEY

Lessons and reflections on moderation
and tours in the exhibition

By Adam Bencard, Jacob Lillemose,
and Josefine Rahbek Stromark,
head of host programme and tours

“I think for most visitors I talked to, it wasn’t necessarily so much about anything I said, it was more giving people a chance to share what they experienced. I think once people got to put into words what they had seen, I think it helped them make sense of the experience and the exhibition. Not because I connected the dots for them, but because I gave them an opportunity to reflect on what they thought about the exhibition and that made the whole experience clearer to them. It kind of tied a nice bow on their visit. I think that was mostly what I actually did for people.”

This quote is from a debrief workshop we conducted with one of our hosts after the exhibition at Kunsthall Charlottenborg had closed down. The hosts were a team of students that we specially recruited and trained to work in the exhibition; we developed this part of the project early in the exhibition process and received additional funding for this aim from the Bikuben Foundation. The host programme was built on the idea of having someone present in the gallery to

engage visitors in a dialogue about the exhibition themes and exhibits, either one-on-one or through guided tours. We strategically used conversation as an interpretive tool to help visitors connect and interact with the exhibition – and also as a way to suggest to the audience that the project was fundamentally about *conversation*, whether between disciplines or people.

Having hosts present in the exhibition also served another dual purpose.

On the one hand, we hoped it might help people who had genuine questions about the ideas and objects on display, in particular the scientific and historical ones as they stood out the most within the confines of the gallery space. Visitors encountering scientific objects and ideas often want more concrete answers about the knowledge they hold – something that more classical forms of science communication, whether in museums or elsewhere, often revolve around. However, as described earlier, *The World is in You* was less concerned with science's conclusiveness than with its questions. So we hoped the presence of the hosts might help to alleviate the potential frustrations of those expecting a more classical narrative. They had someone to whom they could direct their questions, and who could then better contextualise what the exhibition was trying to do, even if they might not be able to answer all of the questions.

On the other hand, we also wanted to play on the symbolic value of the very presence of the hosts themselves, even for those visitors who did not engage with them directly. We hoped that the fact they were in the exhibition space would give visitors a sense that something slightly different was going on; such guides or moderators are much less common in spaces of contemporary art than in science museums.

The idea of using conversation and liveliness in the exhibition space as a mediation tool didn't come out of nowhere. We took significant inspiration from Science Gallery's Mediator Programme, in particular its focus on having a less didactic and more conversational approach to interactions with visitors. Further inspiration was found in The Departure Lounge, a pop-up installation created by The Academy of Medical Sciences. In this staffed installation, the hosts and guides were there to engage in conversations about death with the visitors. We wanted *The World is in You* to have this conversational and interpersonal approach, so we settled on staffing and guided tours as an active engagement strategy. As mentioned by one of the hosts in the quote above, helping the visitors interpret the content of the exhibition through conversation was the primary task of the hosts. However, it was more than that. They conducted regular guided tours and assisted in collecting data for evaluation by tracking visitors and encouraging them to complete the questionnaires.

Recruitment

Our aim was to recruit a team of students from a variety of educational backgrounds: history, biomedicine, biology, public health and so on. We thought this diversity would create a productive dynamic within the group, where they would learn from each other. Four months before the exhibition opened, we advertised the positions widely through Medical Museion's and Kunsthall Charlottenborg's websites and social media, a number of Facebook groups for students of various sciences, mailing lists, and other networks. We were fortunate to receive a significant number of

applications from a wide variety of backgrounds. Since the hosts' primary task was to talk with the visitors, we felt that it was necessary to meet them in person, so we conducted coffee interviews in the backyard of Medical Museion. In the end, we chose a team of five students in their twenties studying health technology, health promotion and strategies, medicine, geography and biology. The hosts were not expected to be experts. However, it was essential to us in the recruiting process that they were passionate about the subject and sharing that passion with others.

Training

A cross-disciplinary team also made training more complex, because it had to speak to many different backgrounds. The hosts were invited to a welcome meeting and they were given reference material consisting of relevant articles, podcasts, an artist list and materials for the guided tour. We conducted two full days of training with sessions about the content of the exhibition, science communication, oral communication, the evaluation of the project and how to talk about art. We also invited the hosts to a workshop where they could meet some of the scientists who contributed to the four science communication posters made for the exhibition and the artists who created the posters. This training prepared the hosts so that they would feel comfortable speaking to different people who were uninformed, informed or specialists on the topic of the exhibition. We wanted to make sure that the hosts were ready to engage in conversation with different perspectives according to the individual guests.

Working hours and tasks

Kunsthal Charlottenborg was open 44 hours a week during the exhibition run. In an ideal world, the hosts would be available during all opening hours. However, we knew that we couldn't staff the exhibition around the clock if we also wanted them to have some hours in the exhibition together. We ended up having hosts present for 24 of the 44 hours a week and we tried to make sure that they were mainly present during peak hours. The hosts worked on Wednesdays and Fridays from 12:00 to 18:00 and in the weekends from 11:00 to 17:00. Exhibition hosts were also expected to attend a monthly team meeting during the exhibition period, where they could discuss their concerns and questions, and share tips and insights with each other. We were well aware that this was an experiment and we had to take some time to evaluate, so we could make adjustments and modifications along the way.

How did it go?

After the exhibition closed, the hosts were invited to complete a debrief questionnaire and participate in a workshop. This was done in collaboration with the UK-based consultant Ben Gammon, who also prepared the evaluation report for us. Half of the questions were about their interpretation of the visitors' experience and the other set of questions were about how they experienced being exhibition hosts. From his report, we learned that:

- The inclusion of hosts in the exhibition proved to be a valuable addition to the interpretive approach – both

through the guided tours and the informal conversations with visitors.

- However, engaging visitors in conversation proved to be quite challenging, mostly because of a lack of awareness of the host's role and people's reluctance to engage in conversation in the dimly lit environment of the exhibition.
- Overall, hosts found the experience of working in the exhibition to be enriching, rewarding and fun, although sometimes challenging.

Lowered lights and a black t-shirt

“So, I think I was surprised by how challenging it was to actually strike up conversations with people and kind of steer them in the direction that we wanted so it wasn't just superficial.”

Interacting with visitors proved sometimes difficult and especially having conversations beyond telling visitors what route to take or where a certain art piece was located. There seemed to be an uncertainty among the visitors about the role of the hosts. Many of the visitors presumed that hosts were security guards making sure that objects and art pieces would not get touched. This made it difficult for the hosts to approach people and start up conversations.

Making the role of the hosts easier for the visitors to understand was on the top of things that the hosts would advise us to do if we were to have hosts again in future exhibitions. As one of the hosts put it:

“Definitely the sort of the presentation or the branding of the hosts, so it is more clear to people. I don't think there is an easy solution for it and I think along the way we kind of attempted.”

Another thing that made it difficult for the hosts to engage in conversations with visitors was the lowered lights in the exhibition. One of the hosts compared it with trying to start a conversation with someone in a cinema. All the hosts found it easier to talk to the visitors in the Get Connected room. It was brightly lit and was a place where it felt more natural for the hosts to hang out. A dim and calm environment is perhaps not as conducive to conversations with strangers – and in retrospect, it did not help that the hosts were wearing a black shirt which said *The World is in You* on the front and *Verden er i dig* on the back written in white.

To accommodate some of the struggles that the hosts experienced, we tried to make the role of the hosts and the hosts themselves more visible. We renamed the hosts to guides, and they got their own sign to place outside the exhibition and a fluorescent yellow badge that they could put on their shirts. The signs had a picture of the hosts on duty that day and a headline saying “Your guide in the exhibition” with a smaller text underneath saying for instance “I study Health Technology at DTU, and am here to answer questions about the science in the exhibition. I collect feedback and would like to know what you think about the exhibition. Come and say hi!” in both Danish and English.

Despite the difficulties, the hosts created different techniques for initiating and sustaining conversations. In general, the hosts found direct questions to be the best way to start conversations. As one of the hosts expressed it:

“I think people were like ‘oh a person that works at this museum is asking me if I like the exhibition, that makes sense’, but if you were just like ‘oh what do you think about this piece or have you heard about this thing’ then people got very confused about why we were asking them.”

According to the hosts, being up-front and direct meant that the visitors would know what to answer and what was expected of them in the interaction with the hosts. The direct approach, with easy-to-answer questions, created a launching pad for richer, more engaging conversations.

What did they
get out of it?

Following the closing of the exhibition, we asked the hosts about the overall experience and what they would take with them from the experience of being an exhibition host. All of them agreed that they had enjoyed diving into the material of the exhibition and expanding their understanding of science, history and art. They felt that it had improved their communication skills and gave them tools to overcome barriers to talking to other people. A recurrent theme in their feedback regarded genuine or meaningful conversations with visitors. One host said:

“(…) the best thing was when I actually had one of those successful conversations with people, when people either came up to me and were like ‘this is really interesting’ or I started a conversation with someone. That was definitely the best part for me – when that actually succeeded

– also because you could see that having someone to talk to about it improved their experience of the exhibition.”

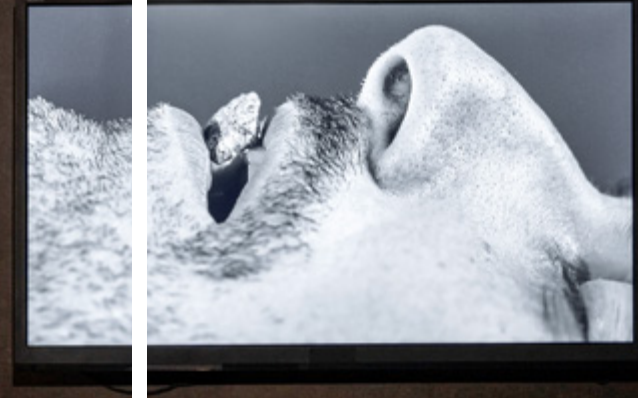
The above quote shows that the hosts had the impression that the conversation wasn’t only meaningful to them, but to the visitors as well. One host said that she thought that, “people really felt that their opinion mattered”. The presence of live hosts in the exhibition space proved to be a positive addition to the experience for both parties.

Katie Paterson, *Time Pieces (Solar System)*, 2014. Courtesy of the artist. Installation view, *The World is in You*, Medical Museion and Kunsthall Charlottenborg, 2021. Photo by David Stjernholm.





Ralo Mayer, *Un-Earthing (pharmakon)*, 2021. Courtesy of the artist. Installation view, *The World is in You*, Medical Museion and Kunsthall Charlottenborg, 2021. Photo by David Stjernholm.



Luke Jerram, *Gaia*, 2018. Courtesy of the artist. Ralo Mayer, *Un-Earthing (play-suit for Mars)*, 2021. Courtesy of the artist. Installation view, *The World is in You*, Medical Museion and Kunsthall Charlottenborg, 2021. Photo by David Stjernholm.



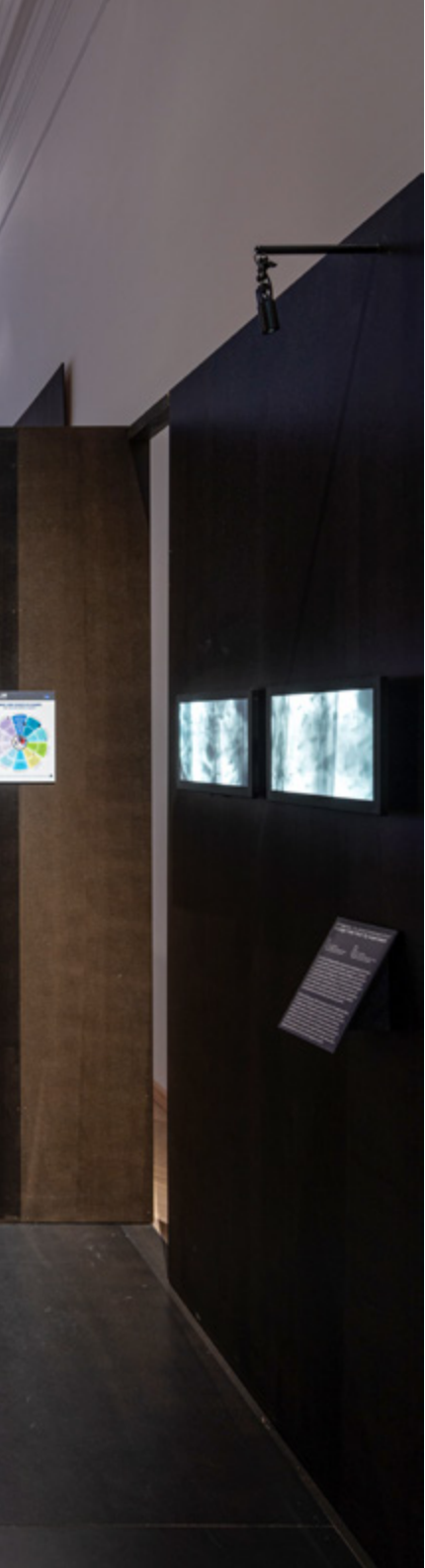


Skinsuit from European Space Agency, 2015. Courtesy of Brorfelde Observatory.
Measuring device from Danish Aerospace Company A/S, 2015-19. Courtesy of Danish Aerospace Company A/S. Konstantin E. Tsiolovsky, Album of Cosmic Journeys, 1932. Courtesy of The Russian Academic of the Sciences. Ralo Mayer, *Un-Earthing* (pharmakon), 2021. Courtesy of the artist. Installation view, *The World is in You*, Medical Museion and Kunsthall Charlottenborg, 2021. Photo by David Stjernholm.



Material from Biosphere 2, boilersuit, photos, log book, medal, 1991-1994. Courtesy of the Institute of Ecotechnics. Material from NASA Twin Study. Courtesy of NASA. Material Fruit Fly Lab. Courtesy of NASA. Installation view, *The World is in You*, Medical Museion and Kunsthall Charlottenborg, 2021. Photo by David Stjernholm.





INSIGHTS INTO A COLLABORATION
Reflections on an art commission

By Eduardo Abrantes, artist, and
Tine Friis, researcher at Medical Museion

Remembering gut and psyche

When Tine Friis was invited to transform her research into an exhibit for *The World is in You* (TWiiY), a series of questions quickly emerged: How can we articulate the voices of research participants in the public space of an exhibition? And how can we do so in a way that the audience can engage with the presented voices as a form of knowledge, inviting them to ponder and question what the voices are saying?

These questions and their implications have been discussed elsewhere (Friis & Whiteley, accepted for publication), but they are relevant to mention here as they were key in the development of our sound installation *Gut and psyche – a close listening*. The installation explored the voices of two groups of research participants comprising 15 women aged 22 to 62 who participated in Friis' research practice at Medical Museion, a university museum and research department at the University of Copenhagen. Some of the women were living with autoimmune diseases of their gut or metabolism, while others had personal and professional interests in the gut and psyche. These participants came together to share experiences of when their gut and psyche

communicated and to better understand this connection. The notions of “gut” and “psyche” were the topic of investigation because Friis’ research investigated how people make sense of their body, psyche and health in light of recent advances in microbiome research – a field that suggests the brain and the microorganisms in the human digestive system communicate to an extent that has implications for cognition, emotions and health. The groups were framed in terms of “gut” and “psyche” rather than microbiome and brain because this provided a more open vocabulary, which seemed important to allow the participants to describe their experiences as freely as possible.

Collaborating with the 15 women, Friis explored personal experiences of how the gut and psyche connected through the method *collective memory-work* (Haug et al., 1999). Memory-work is a group-based and participatory method that uses written memories to facilitate analytic group discussions. This meant that each participant, including Friis as the researcher and group facilitator, wrote down a memory on the topic: *One time my gut and psyche talked to each other...* The groups read each memory aloud and then discussed it to analyse how notions of “gut” and “psyche” were depicted and seemed to make a difference in the remembered experience.

The conceptual content of “gut” and “psyche” varied considerably across the written memories, as did the stylistic features of the memories, which ranged from factual reports to poetic diary entries and almost thriller-like experiences. Moreover, sharing memories about gut and psyche proved to be affectively intense – in the groups, we were surprised by how we were touched and moved by our own and each other’s experiences. This prompted one of the groups, in particular, to keep returning to the question of *how to care* for each other while we investigated our memories of gut and

psyche (Friis, 2021). Such discussions were important for us as a group because they enabled us to respond to each other’s memories and actions while remaining attentive to the emotional intensity. While transforming our memories and conversations into an exhibit, it seemed important to keep cultivating this question about *how to care*.

Using sound as a medium for the exhibit seemed like a good way to explore and work with this question of care; the memories had all been read aloud and discussed verbally, so working with sonification seemed “true” to our method, just as it seemed to provide opportunities for creating encounters that could invite museum visitors to ponder, linger and potentially question what was being said. Friis therefore reached out to Eduardo Abrantes, who is a Copenhagen-based sound artist and artistic researcher.

A sound artist walks into a project ...

Abrantes had already been immersed in a series of collaborations at Medical Museion, having been guest artistic researcher and resident sound artist at the institution since late 2020. Though diverse –ranging from a sound installation dealing with museum objects undergoing metabolic processes (*The Living Room*, 2021-ongoing), to sound design for a podcast on microbial perspectives (*Microbes on the Mind*, 2021) – these were all part of the same constellation of themes and perspectives that brought TWiiY to life. Thus, even at this later stage, both Friis and Abrantes felt there was space for a balanced exchange in approaching this collaboration together. At their first meeting, their main focus was to discuss how to develop *Gut and psyche*, the body of

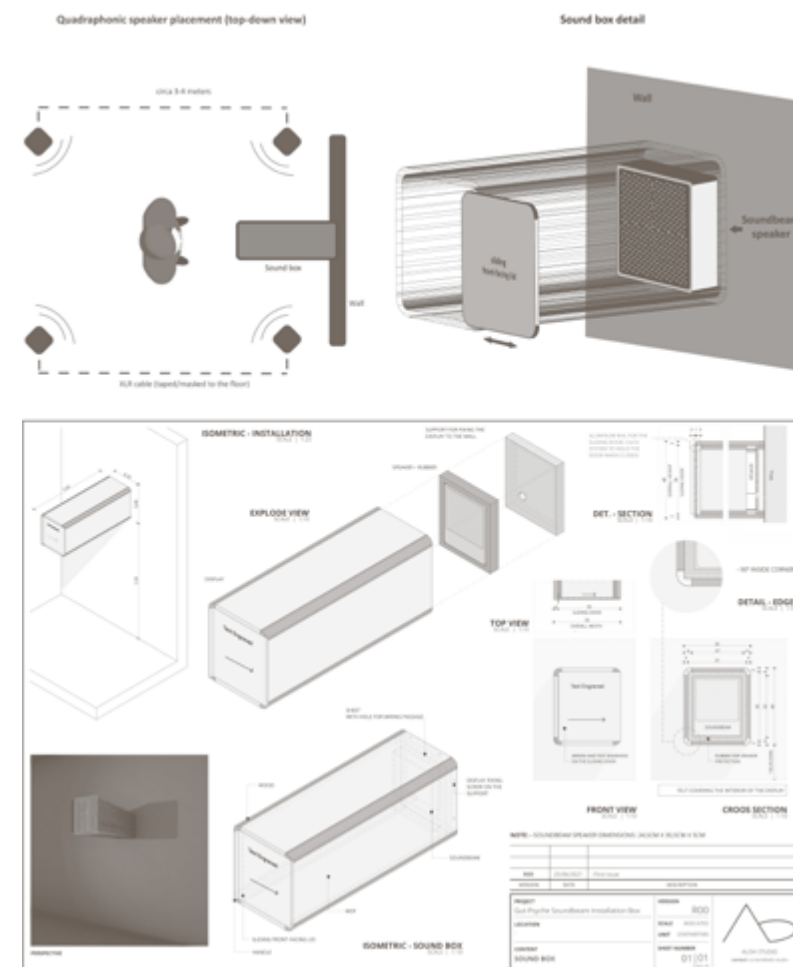
research, into an artistic experience, and how to do it through sonic strategies in such a way that it would be inviting and engaging for a wider audience.

As a sound artist and artistic researcher with an academic practice in the fields of philosophy, art and technology, and performance design, this was actually the ideal creative situation for Abrantes: to have a pre-established conceptual grid, well anchored in empirical research, and to be in a position to use the world-building, scenographic narrative and embodied potential of sound to co-create an immersive experience – one that dealt with raising awareness about the constant negotiation between the internal and external landscapes of forces affecting the body that plays out in our everyday lives.

Co-creating gut and psyche

After a short but intensive brainstorming period, Friis and Abrantes (henceforth “we”) co-designed *Gut and psyche* – a close listening as an immersive sound installation with a participatory emphasis, in which the audience is invited to take an active role in co-creating the experience by physical interaction, with their bodily position actively defining the level of *closeness* of their listening. To achieve this, the piece operates on two levels: as a sound field and a sound box (fig. 1, top). These two levels intersect in the situation in which the audience finds themselves.

It is a tenet of sound art that sound is situated, meaning that every sonic experience occurs in a given context. This context, the above-mentioned “situation”, encompasses a plethora of elements: spatial and temporal, material, narrative, choreographic, etc. If we were to use a metaphorical



A

A First and second prototype iterations, by Eduardo Abrantes (above) and by ALOH Studio (below).

grammar, the situation is the adverbial, the when, where, how, why, under what conditions, or to what degree. The situation of our audience is that, while wandering through the TWiiY exhibition, they find themselves standing inside of a sound field generated by four loudspeakers, and they are looking at an elongated closed wooden box jutting from the wall and from which a muffled voice can be heard. The surrounding sound field is composed of low frequency rumbles and slowly fluctuating waves of syncopated rhythms, gurglings and drones. If the audience member chooses to reach out and slide open the door of the box, the muffled voice becomes a directional sound beam bouncing off their bodies and reverberating in their skulls and thorax – a sonic beam that does not fill the room but instead reflects off surfaces, like a searchlight in the darkness. While physically in range of this beam, the recorded voices can be heard in Danish, reciting in various tones, rhythms and moods: the personal experiences collected by Friis under her memory-work inquiry, re-created by professional voice actress Mathilde Eusebius.

The sound field and the shape of the box were directly inspired by the digestive system, particularly the darkly tubular gut, animated by the gurglings of peristaltic contractions. The specific quality of the custom-built sound beam – an ultrasonic parametric speaker – means that the voices can only be heard if a body intercepts the sound path and physically presents an obstacle for it to bounce off of. The voices are therefore not only discussing their diverse experiences of how gut and psyche talk to each other, they literally only become audible upon participatory embodiment.

A stereo mix of *Gut and psyche – a close listening* can be heard at: <https://soundcloud.com/eduardoabrantes/tarme-og-psyke-en-naerlytning-stereo-mix>

Hindsight and foresight

Meditating on what we have learned from this collaborative experience, we turn to considerations of the different collaborative levels and how they played out. Between us, the challenge was not so much that we were approaching the project from different perspectives, since we both have artistic research as a common ground, but that often our methodologies did not overlap. Between Friis' text-based materials and Abrantes' sonic strategies, there were often instances when we simply had to step back and let one another conclude one's thoughts within the specificity of their expertise. In short, knowing when to collaborate and when to delegate, or, in sonic terms, allowing co-creation to be both synchronous and asynchronous.

To achieve this, it is not enough to focus on distinct disciplinary approaches and methodologies between collaborators, but also to consider our distinct positions in relation to the institutional frame of the project. For Friis, *Gut and psyche* was part of her PhD research at Medical Museion,

B Final installation of *Gut and psyche – a close listening* at Kunsthall Charlottenborg *The World is in You*, Medical Museion and Kunsthall Charlottenborg, 2021. Photo by David Stjernholm.



while Abrantes, though a guest researcher, was in practice a freelance artist hired for a specific collaboration. Often in academic and artistic contexts, unexamined asymmetries between stakeholders generate frictions and problems in communication, collaboration and the management of outcome expectations. That this unevenness was not at all a hindrance in this particular collaboration should be credited to transparency – not only between us but also between us and the joint commissioning institutions, Medical Museion and Kunsthall Charlottenborg.

If transparency between stakeholders was one of the most positive aspects of the collaboration, then the most challenging one was that, having arrived late in the TWiiY process, we were not able to secure the most optimal placement in the exhibition space for our piece. Sound art installations are especially tricky in the context of large-scale exhibitions, especially when they have to share the same acoustic space as other artistic interventions. Headphone-based installations, though not particularly exciting from an embodied perspective, are thus understandable solutions. Sonic experiences are hard to frame: sound bleeds, interferes with its environment, it overflows. If one wants to create an immersive participatory experience, one needs the right space – an environment that is inviting or challenging, or whatever it needs to be, but which is intentionally designed to be what it needs to be. The practical circumstances of the placement of our piece interfered with the desired audience experience, precisely by not providing appropriate room to invite lingering, to take the time to become familiar with the terms of the experience, to explore and to let oneself be affected by it. In a sense, we felt the audience was forced into a rushed browsing, where most,

being uninitiated into the specific “rules of engagement” with immersive sound art, might have looked around, read the plaque and tried to guess the point of the piece, but not really experienced it.

Reflecting on this project and in contemplating moving forward, these are the two aspects we choose to underline – that for the outcome to live up to the process, custom-building the site of audience experience with the specificities of a particular installation in mind is just as important as the installation itself, and that successful collaboration should extend this far, in particular for commissioned artworks.

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COMETABOLISING AND COMATERIALISING
Reflections on an art commission

By Baum & Leahy, artists

Cometabolise: A Holobiont Dinner is a performative installation which invites guests to metabolise together with the microbial communities in a sourdough starter at the centre of a communal table. The project was developed between September 2020 and September 2021 as the result of an expansive cross-disciplinary collaboration based on conversations between us – artist duo Baum & Leahy (Amanda Baum and Rose Leahy) – and PhD researcher at Medical Museion, Joana Formosinho. As artists, we are fascinated with symbiosis of all kinds: across species, disciplines and between practitioners. We create spaces and interventions that engage people in discussions about the scientific research that is continuously redefining knowledge of our bodies and the world.

The following text is a reflection on the making of *Cometabolise*, from the interdisciplinary conception, to creating the material installation, and animating the research through performative events situated within the work. The project was thoroughly collaborative, and so this text will be a storytelling of how this unfolded, and how it kept growing until it had sprawled out of the gallery and all the way to zoom calls to North Carolina and kitchen tables in Northern Jutland. In this communion of art, science, humanities and public engagement, we aim to incubate new possible

trajectories within the field of holobiont research and the mapping of our bodies as dynamic ecosystems.

Holobiont (mixing and kneading)

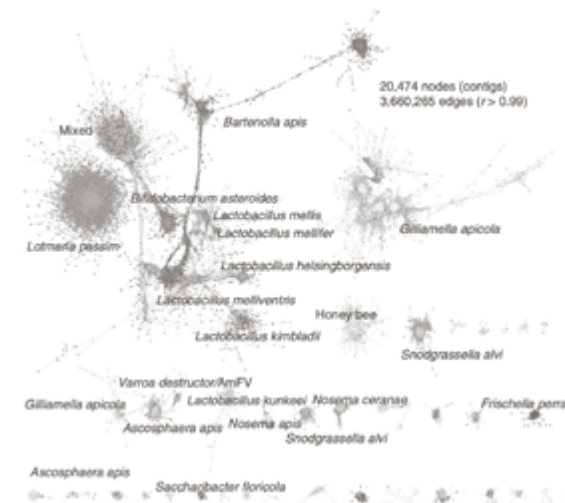
In autumn 2020 we were invited by Adam Bencard and Louise Whiteley to collaborate with Joana Formosinho in creating a new piece for the exhibition project *The World is in You*. Joana researches the concept of the holobiont – the assemblage of host and microbiota – particularly focusing on representations of the holobiont. Joana’s vast collection of articles, diagrams and theory references stimulated discussions in the initial phase of the project. These began to metabolise into questions and provocations: How might we visually, spatially and experientially represent ‘the human as holobiont’? And how might the holobiont perspective open up for re-imagining systems of health, both personal and planetary?

A



A Baum and Leahy, *Cometabolise: A Holobiont Dinner*, 2021. Courtesy of the artists. Installation view, *The World is in You*, Medical Museion and Kunsthall Charlottenborg, 2021. Photo by David Stjernholm.

B Regan, T., Barnett, M.W., Laetsch, D.R. et al. Characterisation of the British honey bee metagenome. *Nat Commun* 9, 4995 (2018).



B

Within these larger discussions, there were specific moments of research sharing that shaped the direction of the artwork, such as a network figure of the Honey Bee Holobiont from the study “*Characterisation of the British honey bee metagenome*” (Regan et al., 2018). Each node is coloured according to the species genes it maps to, revealing how much more than a honey bee a honey bee really is – they are big, furry, folding hotels hosting dynamic ecosystems of microbes.

Representing the holobiont as a dynamic entity beyond the static 2D network thus became a key aim of the collaboration from the outset. The holobiont as entity-in-process, a societal and cultural entity as well as a biological one, is a core aspect of Joana’s research. The challenge of translating this dynamicity into an aesthetic and performative experience for the public was a topic we kept returning to in discussions. One entryway to conveying this idea of an entity that is a being and is also a doing was to engage with cultural practices that influence microbiome composition, such as eating.

Cometabolism (fermenting)

Joana introduced us to the act of ‘cometabolism’, which refers to the simultaneous digestion and metabolism happening in both our human and microbial cells when we eat. This gave us associations to the very physical and emotional act of ‘eating together’ pointing to the collective, multispecies aspect of this everyday action. Where ‘coevolve’ might allude to a longer time perspective, ‘cometabolise’ inspired us, because it felt like a real and accessible method for enacting the relationships that make a holobiont – the holobiont ‘glue’. Through further discussions about ‘agential food’ and eating as a form of community building, we began to articulate the concept of cometabolism through the framework of a communal dining ceremony for both humans and microbes. This meal would take place within a sculptural installation depicting a spatial network representation of the holobiont and involve a sourdough starter – a microbial community which could be both fed, and (when baked) fed to visitors.



D

C Baum and Leahy, *Cometabolise: A Holobiont Dinner*, 2021. Courtesy of the artists. Installation view, *The World is in You*, Medical Museion and Kunsthall Charlottenborg, 2021. Photo by David Stjernholm.



C

D Baum and Leahy, *Cometabolise: A Holobiont Dinner*, 2021. Courtesy of the artists. Installation view, *The World is in You*, Medical Museion and Kunsthall Charlottenborg, 2021. Photo by David Stjernholm.

Collaboration (bubbling)

Following the initial period of research and conceptualisation with Joana, and advised by Adam and Louise, the knowledge sharing ecosystem of *Cometabolise* continued to grow. We were connected with François-Joseph Lapointe, a scientist and artist based at University of Montreal, who has worked extensively with performative interventions about and data-driven visual representations of the human

microbiome. To realise the collective multispecies dining element of the work, we contacted a previous collaborator, Rob Dunn, Professor of Human Biodiversity at North Carolina State University, whose lab ran a study called The Global Sourdough Project. Over the following months, leading up to the materialisation of the piece, myriad email threads grew with discussions about representations of hologenome data, definitions of the holobiont concept and how this would be translated into a spatial installation.

When we had a conversation with Rob about mapping this relationship, he described the sourdough as a kind of “extended holobiont” – a living substrate hosting a symbiotic fermentation between bacteria and fungi, much akin to our own bodily ecosystems. This ‘externalisation’ or extension of the cometabolism process opened up new perspectives in how we could think about the fluid boundaries between holobiont and environment.

Throughout the conversations between us, Joana, Rob and François-Joseph, our wish was to combine different studies on relative quantities of bacterial, fungal, archaeal, viral and human genes in and on the human body, and combine this with the sourdough hologenome data informed by the idea of the extended holobiont. François-Joseph generated network figures of bacterial and fungal families found in the human gut from his own studies, as well as within the sourdough hologenome.

Comaterialising (baking)

We worked with architect Charlotte Toro to design the gut cell atlas-shaped table and 3D-printing companies to recreate

elements from the network figures. Glass blower Adam Aaronson created custom made glass pieces for the artwork and we gathered hundreds of offcuts from his studio to integrate into the work. In Copenhagen in the lead up to the exhibition, we worked at BetaLab, where the wooden pieces that would make up the table and chairs were CNC-cut and treated with pigmented linseed oil. Artist Ella Yolande helped us with the final assembly, with technical support from the exhibition crew at Kunsthal Charlottenborg.

When moving between research and making, we work with an ecosystemic approach to information, materiality and interaction. We are interested in the malleability of language and thinking of it as a ‘material’. Within the web-like structure of the installation, using hemp fibres, sugar and cornstarch, we incorporated some names of the sourdough and gut microbes present, and created links between species found in the different clusters. Present in the piece were *Proteus mirabilis* – “Wonderous primordial swimmer”, and *Lactobacillus brevis* – “short milk-derived rodlet”. The etymology of microbial names was one of the shared joys in our collaboration with Joana. In a playful way, the revelation of these names as descriptive and poetic emphasises the storytelling aspects of scientific research. For *Cometabolise*, we are not scaling up actual microbial forms, but rather materialising the idea of and the data describing the holobiont. Still, the artwork is very tactile, organic, and figurative in some elements, and perhaps gives associations to both micro and macro ecology – we like how this dynamic between data and form, between metaphor and matter, seems to oscillate in a field of opportunity, where ‘worlds world’.



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E Baum and Leahy, *Cometabolise: A Holobiont Dinner*, 2021. Courtesy of the artists. Installation view, *The World is in You*, Medical Museion and Kunsthall Charlottenborg, 2021. Photo by Marlene Anne Lough.

F Baum and Leahy, *Cometabolise: A Holobiont Dinner*, 2021. Courtesy of the artists. Installation view, *The World is in You*, Medical Museion and Kunsthall Charlottenborg, 2021. Photo by David Stjernholm.

G Baum and Leahy, *Cometabolise: A Holobiont Dinner*, 2021. Courtesy of the artists. Installation view, *The World is in You*, Medical Museion and Kunsthall Charlottenborg, 2021. Photo by Marlene Anne Lough.

Care within the gallery and live events (eating)

The facilitation of a living sourdough starter in the exhibition was a challenge that involved a system of care extending both into the exhibition moderation infrastructure and out of the gallery. Hart Bakery, which supplies bread to Apollo Bar restaurant located within Kunsthall Charlottenborg, sent an extra loaf for visitors of *The World is in You*, and fresh sourdough starter top-ups; the exhibition hosts learned to care for the starter, feeding it twice a week, and offered bread to the visitors while telling them about the work. We were grateful that the exhibition hosts became an important part of the work in this way, embodying the care and attention needed when exhibiting with live cultures in a gallery setting.

Throughout the exhibition we activated the work through performative ceremonies centred around the communal, multispecies act of digestion. Both during the opening of *The World is in You* and for KulturNatten, we hosted a series of short ceremonies, adapting them to the different groups by alternating between our mother tongues. Visitors were invited to sit around the table and get close to the elements of the installation. They ran their fingers over the engravings of the surface, followed the lines of microbial names along the suspended hemp fibres, saw each other's faces fluidly refracted through the glass objects, and smelt the acidic sourdough starter as the lid was opened to begin the cometabolising ceremony.

We introduced the piece and invited participants to eat a piece of sourdough bread, while the starter at the centre was simultaneously being fed a flour and water mixture. A ceremonial atmosphere was set as we welcomed everyone:

“In the sourdough we have Acetobacter malorum in symbiosis with yeasty Wickerhamomyces anomalous. Collectively in this ceremony today, we are trillions.” Upon eating, participants were guided to close their eyes and mentally move into their own bodies through a meditative journey across their inner multispecies landscapes.

“You’ve landed in the vast undergrowth of the holobiont, Every single one of the cells that make up your body, tens of trillions of human cells and even more microbial. A landscape of molecular transformations. Human and microbe interdependent of one another, A walking, talking, chemically reacting, cometabolising collaboration.”

After the ceremonies, we handed out the sourdough starter taken from the installation to people who had attended, to be taken home and continued to be grown and baked into bread. In this way, we aimed to extend the experiential encounter with our holobiont selves beyond the gallery.

Cometabolising the world (digesting)

Cometabolise: A Holobiont Dinner physically and sensorially explores the concept of the holobiont. The project aims to give visitors a memorable experience of seeing their bodies mapped as multispecies ecosystems, and reflect on the intimacy of becoming through cometabolising with each other, our microbial cohabitants and all planetary systems.

The World is in You enabled us to work in a way where message and methodology were recursive. It created the conditions and allowed time to cultivate symbiotic cultures

across disciplines, species and institutions, which we see as imperative to tackling the largest, most complex issues of our time. By curating sufficient fermenting and digesting time into our collaboration, the curatorial framework of *The World is in You* enabled our research direction to be more thoroughly influenced by humanities and science research.

Longer term, the aim of the project is to set out the possibility of creating dynamic maps of the interconnected hologenomes and cometabolisms of all living entities. As artists, we hope to be part of expanding the boundaries for how we understand, map and treat ourselves and other living entities as interdependent holobionts.

Focusing on the sensorial and aesthetic experience of this idea is at the heart of *Cometabolise: A Holobiont Dinner*. The process of creating the work became an enactment of the symbiotic nature of the cometabolising holobiont in itself, and in this shared space we felt the messy, enigmatic and ecophilic joy of a collective and multidisciplinary search for mapping out, momentarily materialising and animating new ecosystemic worldviews.

DATA SOURCES
Human gut microbiome
data provided by
Francois-Joseph LaPointe.
Sourdough hologenome data
provided by Rob Dunn and
Lauren Nichols.
Human gut cell data taken
from gutcellatlas.org
(part of Human Cell Atlas).

Cometabolise: A Holobiont
Dinner was commissioned
by Medical Museion and
Kunsthall Charlottenborg,
with additional support
from Statens Kunstfond.

TIME ANIMALS
Reflections on an art commission

By Isabella Martin, artist, and
Kristin Hussey

Introduction

The scene opens on a shot of the sun – clear and round, against a blue sky. This classic image is contrasted with that of a sunny, modern laboratory, which comes slowly into focus. Against the gentle tones of a clarinet, we meet a woman – a scientist, we understand. Her daily comings and goings are set against strange images of a laboratory lit by red lights, as a voiceover tells us we are made of time. At the lab bench, a team of scientists dissects tissue from mice, which will help them understand the body clock at a molecular level. Work in this darkened laboratory is never ceasing – day and night in the outside world means nothing to scientists in this timeless space – where time itself is the subject. In order to study circadian rhythms, chronobiologists work around the clock – disrupting their own daily rhythms of wake and rest, feast and fast. In these extremes of temporal stress, the bodies of the scientists demonstrate the inherently time-bound nature of living beings – we are, Time Animals.

Time Animals (2021) is an artwork created through a collaboration between artist Isabella Martin and researcher Kristin Hussey, and commissioned for *The World is in You*.

The film emerges from a long term collaboration between the researcher and artist called “Z-Time”, which explores the practices of chronobiology, or the science of circadian rhythms. *Time Animals* is just one product of this collaboration, alongside a pop-up exhibition at Medical Museion in the winter of 2020, a short residency at the Copenhagen music venue ALICE, numerous conference presentations, and academic papers. As with most sustained collaborations, Z-Time draws on a network of collaborators ranging from scientists to laboratory technicians, curators, sound artists, and architects – but centres on Kristin’s STS research and Isabella’s artistic practice. In this paper, we want to reflect on the common interests that drive our ongoing work, then delve into the content of the piece, and finally examine *Time Animals* within the wider context of the exhibition.

Making chronobiology

Time Animals emerges from our fascination with the working practices of laboratory scientists – in this case, the scientists who study circadian rhythms at the Novo Nordisk



A Isabella Martin, *Time Animals*, 2021. Still.

Foundation Center for Basic Metabolic Research (CBMR). In her practice, Isabella has previously collaborated with scientists to explore the friction between scientific knowledge and the world it describes. In a previous project at DTU (Technical University of Denmark), Isabella collaborated with researchers generating and measuring waves in laboratory conditions. In the Hydraulic Laboratory, time is compressed: processes that take days can occur in seconds. An interest in the manipulation of spatial and temporal scales in science informs her work, with a focus on the tensions and relations between different temporalities such as the meteorological, geological, and biological.

Kristin is a historian of science and medicine whose work is interested in the production of scientific knowledge and the spaces of biomedical research. Her postdoctoral project *Body Time* is held collaboratively across Medical Museion and CBMR, and explores circadian rhythms in their cultural, historical and philosophical contexts. Since 2019, she has worked closely with the circadian scientists at CBMR and carried out ethnographic research related to modifying time environments. In the lab, scientists carefully plan experiments that change their (mouse) subjects’ perception of time by modifying the light/dark cycles they are exposed to. Using circadian cabinets, or “scantainers”, it is possible to completely reverse the subjective light/dark cycle for the mice – making them think it is actually night when it is day, or even inducing jet lag. However, these experiments often require the scientists to work around the clock – disrupting their own circadian rhythms.

Our collaboration emerged somewhat serendipitously after Isabella was invited to give a seminar at Medical Museion in 2019. It quickly became apparent that we both had



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an interest in temporality, as well as the working practices of science, and we were interested in how the two intersect. At first, it was not clear what our collaboration would look like and what we would make together. However, given Kristin was also a curator of *The World is in You*, we hoped an outcome of the collaboration would be a commission for the exhibition's "Time" theme. We began by sharing writings we both found inspiring and discussing Kristin's research notes from her ethnographic work. This was followed by meetings with scientists and visits to the laboratory to take sound recordings and images. Over an extended period of time, Kristin mediated Isabella's introduction to the laboratory, attending live experiments and presenting in internal lab meetings. In the fall/winter of 2020, we held a pop-up exhibition at Medical Museion called "Z-Time", where we shared early images, film, and sound from our initial research, and opened

up the process for feedback and reactions from the public. While the exhibition ultimately closed early due to a COVID lockdown, the process of transforming our early research into a visual format sparked the development of the final film. *Time Animals* was filmed in the labs at CBMR between December 2020 and July 2021, in an open iterative process between Kristin, Isabella, and scientific collaborators.

Time Animals

Time Animals (2021) is a 12-minute looped two-channel film with sound. Filmed entirely within the laboratories of CBMR at the Maersk Tower and Panum in Nørrebro, Copenhagen, the central subject of the film is an imaginary 24-hour circadian experiment. Informed by extensive ethnographic research, the film blurs the line between documentary and fiction. The film's "actors" are the scientists who study circadian rhythms at CBMR – but here they re-create a "circadian harvest" for the camera. A "harvest" describes the activity of killing and taking tissue samples from mice at regular 3-4 hour intervals over the course of 24 straight hours. Such events are

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B Isabella Martin, *Time Animals*, 2021. Still.

C Isabella Martin, *Time Animals*, 2021. Still.

necessary to acquire research material to study molecular and biochemical changes that occur in the body over the course of a day. Everyday scenes of work in the lab are interrupted with surreal moments: a dissection cuts to a spinning chair, the sun outside, a sprint down a corridor, and hands brushing leaves aside to reveal the sky seen through a window.

The structure of the film is shaped by the language and rhythms of circadian science. There are moments of synchronicity and repetition between the two screens, feedback loops and cycles of movement and stillness, work and sleep, as the scenes oscillate between day and night. A sense of linear time becomes increasingly blurred as the experiment progresses over the course of the film. The scientists grow tired, playful, hungry. The manipulation of time in the film is reflected in the edit, gradually distorted through the course of the night, as laboratory time becomes increasingly disconnected from the time outside, until the morning, where the time of the laboratory meets that of the outside, the world seen through a window, illuminated from within.

The soundtrack of the film, composed by musician Jim Slade, reflects these structures, by turns melodic and discordant, sparse and layered. The film is narrated by two voices, oscillating between an external narrator and the embedded perspective of a scientist. Written by Isabella, the script draws extensively from project research and Kristin's fieldwork interviews with chronobiologists at CBMR. Scientific facts converse with the experience of doing the science; a description of how the body's circadian rhythms function is interrupted with the scientist asking if it is time to sleep. The film plays with the tension between internal and external temporalities, as the scientists' control of experimental time in the laboratory is challenged by the needs of their biological bodies.

The role science plays in the film is multifaceted: reality and fiction are deployed as narrative strategies to approach the subject of time from both an embodied and chronobiological perspective. "Real" science (insofar as this exists) is profoundly present in the film – and yet we choose to approach "reality" in a highly playful and mediated way. The figures are "real" scientists doing experiments informed by months of ethnographic research. Many of the words in the script are their own and their concerns about time, work-life balance, and the implications of the science are true to our discussions. At the same time, we, as artist and researcher, intervene in this "real" science – bringing together science and the world in a way that creates generative friction. We introduce poetry into fact, dance into an experiment, and absurdism into the documentary. One particular example of this is the presence, or rather absence, of laboratory mice. In a "real" experiment – the sacrifice (or dissection) of mice at particular times (or time points) forms the basis of the scientific work. However, here the mice are absent – with the scientists miming, using their highly accurate muscle memory. And yet the eye easily substitutes the missing mice. Are we watching "real" science or aren't we? Is it the mice that make the science real – or the embodied knowledge of the scientist?

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D Isabella Martin, *Time Animals*, 2021. Still.

Time in the body

Time Animals was commissioned for the Time theme of *The World is in You*, and was developed in conversation with the wider ethos and themes of the exhibition. In keeping with the exhibition's aim of provoking questions rather than providing answers, the film does not seek to explain what circadian science is or how it's done. Instead, we focused on trying to communicate what it feels like to be a scientist doing this work: a sense of rushing and urgency, punctuated by boredom and repetition, the feeling of tiredness after a long night at the lab bench, the need to constantly optimise one's time. This overall context of exploratory over explanatory provided a freedom to diverge from the pattern of many art-science collaborations, which seek to use art as a way of communicating science, or making it more accessible to a public audience. We were given space to explore the questions that were of interest to us – about the tension between body time and societal time, and the role of science in mediating these boundaries.

The film was shown in a minimalist, semi-enclosed cinema space, within a sub-theme of the Time section of the exhibition called Scientific Time. All of the artworks and objects in this space related to the long history of scientific attempts to understand and dissect biological time. Circadian rhythms are both endogenous (internal) to us and tuned to the environment, making an objective, detached view of them difficult, if not possible. For example, the room also included an archival film showing an iconic early circadian experiment from 1938, where two American scientists lived in a cave for a month to observe the sleep/wake cycle away from the solar day. The room also included contemporary



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E Isabella Martin, *Time Animals*, 2021. Courtesy of the artist. Installation view *The World is in You*, Medical Museion and Kunsthall Charlottenborg, 2021. Photo by David Stjernholm.

scientific equipment like a rectal probe used to track core body temperature. *Time Animals* was shown alongside a textual intervention by sociologist of time Barbara Adam, whose writings deeply influenced our approach. In her almost sculptural poem “Rhythmicity of the World in Us”, inspired by the exhibition, Adam reflects:

“body & diurnal cycles, life & death & the seasons/ each of our organs and body processes swings and oscillates to/their unique rhythm forming an exquisitely orchestrated symphony that/constitutes who we are and how we live in our society...”

Time Animals leaves viewers with a similar provocation: we are living organisms, both of time and in time, operating in a world where the needs of our biological bodies to eat, rest and sleep are often in friction with the temporal demands of our environment. Our biological clocks evolved in a world where the rotation of the Earth determined our sleep and wake cycles; as our rhythms move further out of orbit, what does that mean for our bodies, desynchronised from the world around us?

Future development

For us, *Time Animals* was just one product of a much larger collaborative project across STS and artistic research. We plan to continue working together to think about the ways the scientist’s body can be seen as an interface between internal and external times. In 2023, we are planning an installation at CBMR called *Body Clocks*, which will develop this

research through the production of new works that we hope will bring art into conversation with science in practice.

Acknowledgements

We would like to thank the Novo Nordisk Foundation for their support in producing this work, both through the science communication grant that made *The World is in You* possible, and through the CBMR International Postdoc Programme that funds Kristin Hussey’s research. Production and dissemination of this piece was also supported by Statens Kunstfond (the Danish Arts Foundation) and through a residency at the Copenhagen experimental music venue ALICE. We would also like to acknowledge Jim Slade, who worked collaboratively with us to produce the sound composition for the piece, as well as the scientists who feature in the film: Stephen Ashcroft, Amy Ehrlich, Fabian Finger, Sophia Metz, and Lewin Small. We are grateful for the staff and technical teams of CBMR who made filming in a working scientific centre possible, especially Kirsten Bayer Andersen and Rebecca Jeberg. For more on the work of Isabella Martin, visit www.isabellarosemartin.com.

SOUND COMPOSITION
Jim Slade

ARCHITECTURE
Anne Schnettler

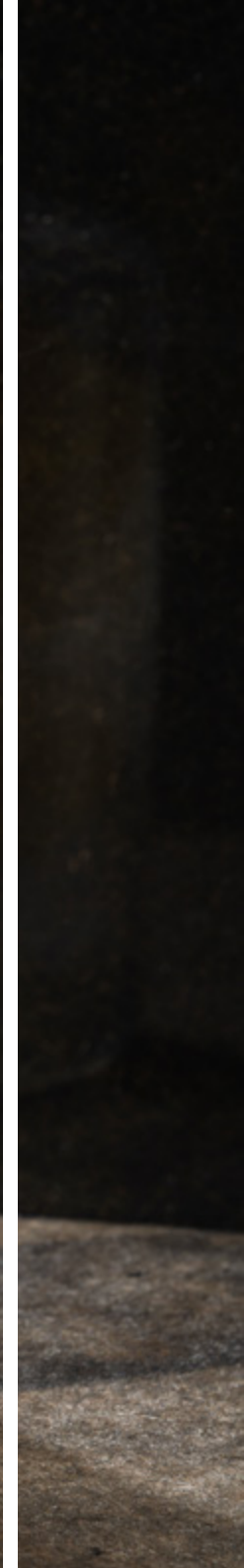
A/V EQUIPMENT
Eidotech

VOICE
Astrid Hald

Revital Cohen, Tuur Van Balen, 75 Watt, 2013. Courtesy of the artists. Banner with the text "8 Timers Arbeide! 8 Timers Fritid! 8 Timers Hvile!", ca. 1914. Courtesy of The Workers Museum. Marcus Coates, *Self Portrait as Time*, 2016. Courtesy of the artist and Kate MacGarry, London. Installation view, *The World is in You*, Medical Museion and Kunsthall Charlottenborg, 2021. Photo by David Stjernholm.



Glass bottle for oil of lavender, late eighteenth century. Courtesy of Medical Museion. Detail, *The World is in You*, Medical Museion and Kunsthall Charlottenborg, 2021. Photo by David Stjernholm.



Heath Bunting, *Twin Charts*, 2015-2016. Courtesy of the artist. Commercials for sleep remedies, Baldwin's Patent Herbal Medicine, ca. 1900, Eviapan, 1930. Courtesy of Wellcome Collection and Bayer Archive Leverkusen. Installation view, *The World is in You*, Medical Museion and Kunsthall Charlottenborg, 2021. Photo by David Stjernholm.



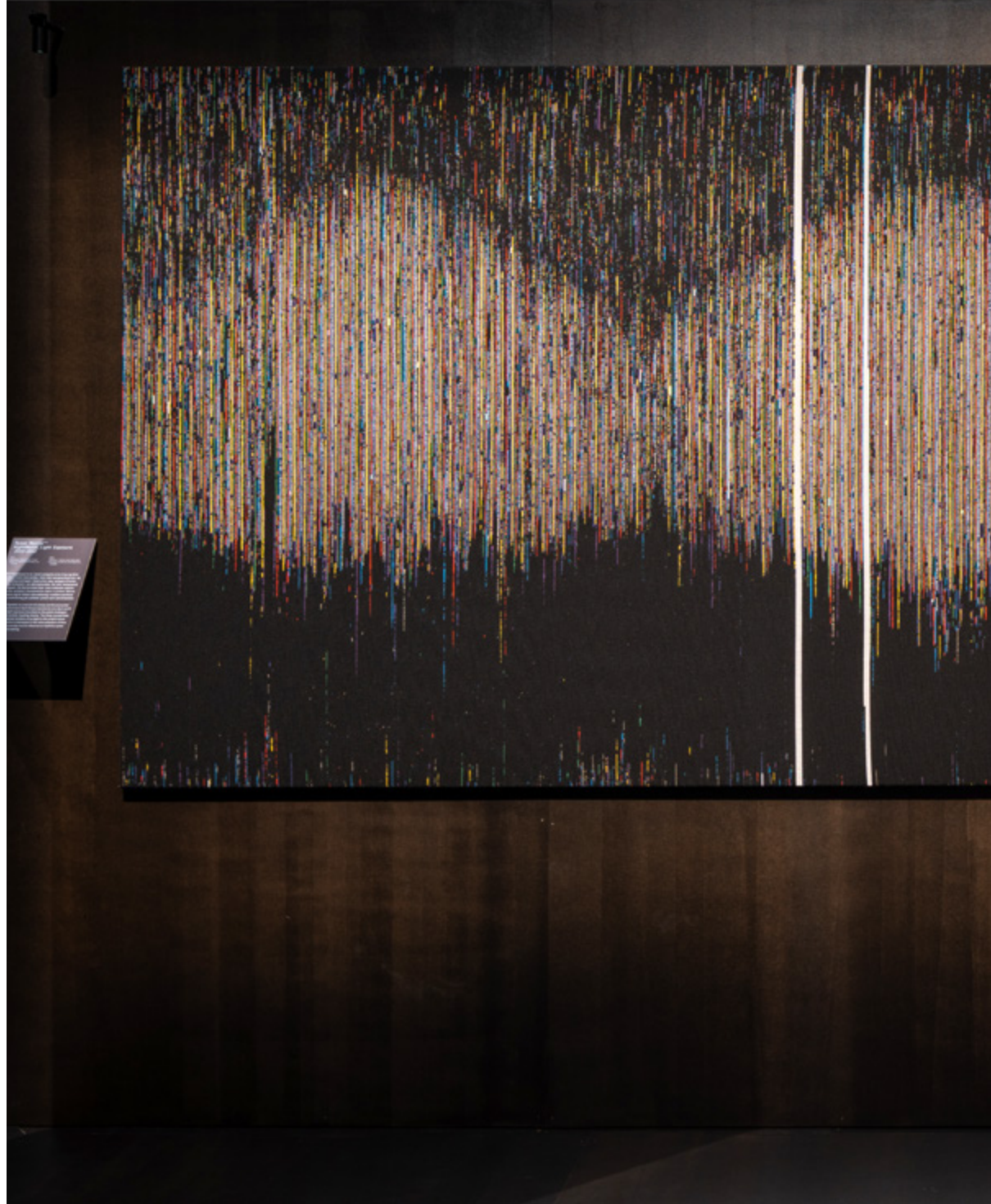


Barbara Adam, *Rhythmicity of the World in Us*, 2021. Courtesy of the author.
Till Rabus, *Automate à fleurs*, 2009. Courtesy of Aeroplastics, Bruxelles. Installation view, *The World is in You*, Medical Museion and Kunsthall Charlottenborg, 2021.
Photo by David Stjernholm.





Susan Morris, *SunDial: NightWatch_Light Exposure 2010-2012 (Tilburg Version)*, 2014.
Courtesy of the artist. Installation view, *The World is in You*, Medical Museion and
Kunsthall Charlottenborg, 2021. Photo by David Stjernholm.





AFTERWORDS AND ONWARDS

By Adam Bencard, Malthe Kouassi Bjerregaard,
Kristin Hussey, and Jacob Lillemose

A transdisciplinary proof-of-concept

Working across art, science and history has been a recurrent feature of exhibitions at Medical Museion, most notably *Mind the Gut*, which won the UMAC Award in 2019. With *The World is in You*, we wanted to see what would happen when taking that model out of the medical museum and into a venue for contemporary art. In this sense, *The World is in You* was an experiment, a proof-of-concept, if you will, of how an audience would respond to the bringing together of science, art and history in a transdisciplinary and trans-institutional framework. In particular, we wanted to experiment with a framework that did not lean clearly into one of its constituent parts, but tried as much as possible to keep all of them on a level plane in a shared space. As the data from our visitor studies shows, this aspect of the experiment was successful. Our initial concerns over whether the blending of genres, spaces and disciplines would turn off the audience or prove too disconcerting were countered both qualitatively and quantitatively by the data we collected. In fact, this aspect of the exhibition turned out to be one of the highlights for many visitors. Speaking across and between ways of

knowing and questioning the world resonated extensively with visitors, the various media that the exhibition attracted and the prismatic range of peer groups that we gave tours to or that visited on their own. This certainly demonstrates the place and even need for projects such as *The World is in You*, projects which take for granted that different forms of knowledge are part of a shared conversation, even when they exist in different domains. In short, we found that actively shaping spaces in which art, science, culture and politics intermingle resonates widely with audiences.

This, we feel, is at least in part because we find ourselves in a historical moment where the increasingly urgent problems we face globally are complex and eschew containment within clearly defined knowledge domains – a moment which demands that we practice ways of moving between disciplinary perspectives and forms of knowledge. The future seems not to belong to any one discipline, let alone to any one institution. Understanding how our bodies are entangled with their environments is deeply complex, and any attempt to try to grasp and deal with this entanglement must incorporate multiple areas of knowledge and perspectives. One way to mirror and respect this complexity is for institutions to collaborate across disciplines in making exhibitions, just as Medical Museion – a museum of the cultural history of medical science – collaborated with Kunsthall Charlottenborg – a gallery space dedicated to contemporary art – to realize *The World is in You*. It was a case of $1+1=3$ in the sense that collaboration produced a space of knowledge and of possibilities that did not exist prior to the exhibition. These very spaces are needed to develop the kind of multilayered thinking that can critically engage with the complex matters of our futures. Ideally, we would have been able to work in a

more sustained way within the finished exhibition; the quick turnover of contemporary art exhibition spaces such as Kunsthall Charlottenborg limits what is possible in terms of refining and optimising use of the spaces once established. This challenge made the extended visitor studies efforts even more important for further research and knowledge-sharing, and for securing an afterlife for the project.

Communicating complexity

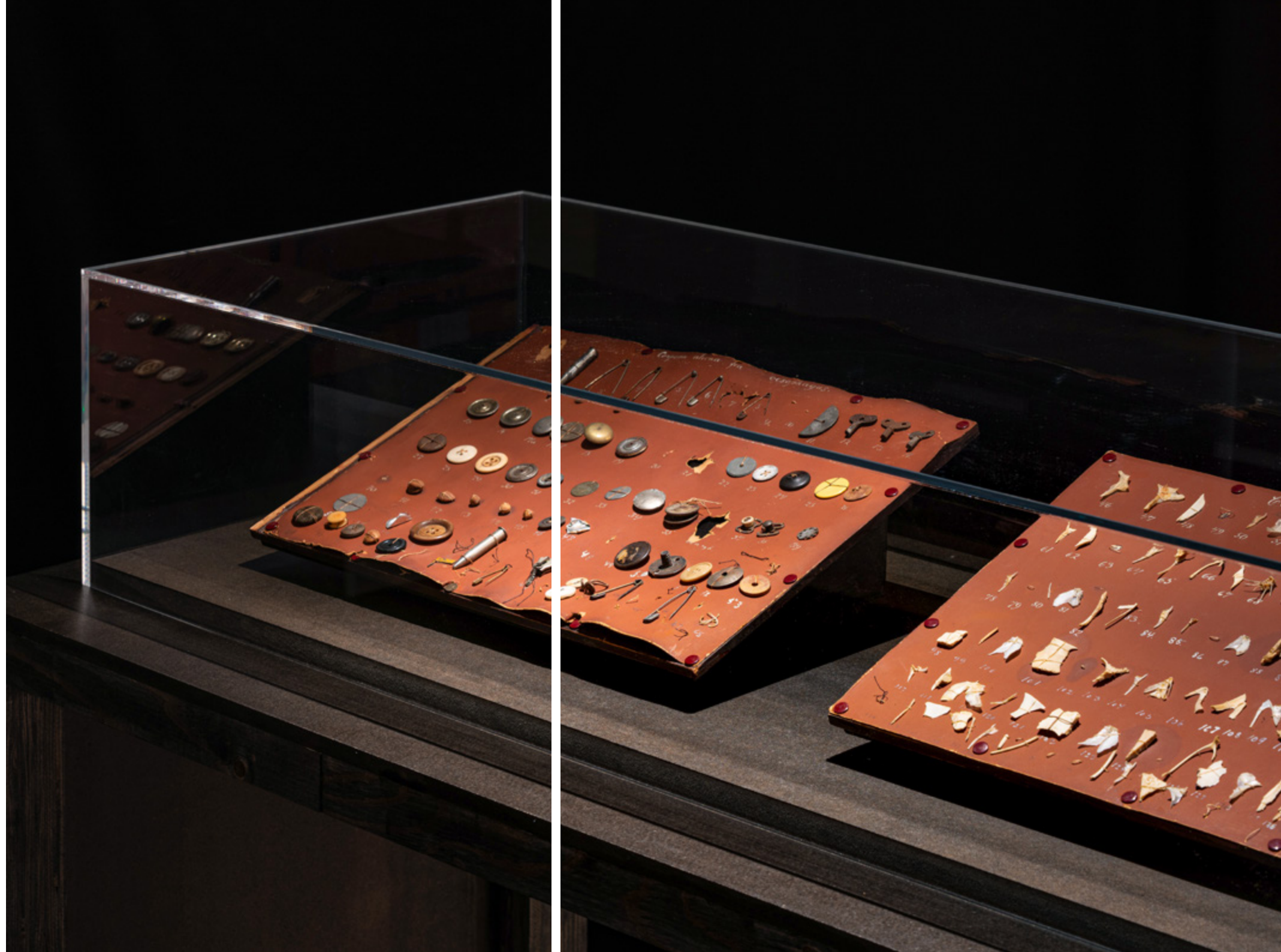
Exhibitions are made for the public but they also make the public and frame how the public engages with the material on display. The public – or rather the audience – that visited *The World is in You* was an atypical mix of people, comprising those who usually visit Medical Museion to see exhibitions about science and those who usually visit Kunsthall Charlottenborg to see contemporary art exhibitions. In some sense, neither group got what they expected. Or rather, they got what they expected and something more, something unexpected, something unfamiliar. This, we felt, was at the heart of the project and in particular at the heart of its science communication strategy. We wanted to make an exhibition where audiences from the scientific, cultural and artistic fields could have a shared experience and ideally engage in a dialogue across these fields, either in the exhibition itself or outside of it in private and public contexts. This type of dialogue is still only in its infancy, but we believe in exhibition-making as a powerful means to create the public that will eventually engage in this dialogue and contribute to the making of a more critically informed public sphere. The point was, as we wrote in the initial application, to focus on the *exploratory* rather

than the *explanatory*; not to create an exhibition which tried to disentangle and create a fictitious overview of how our bodies are shaped by their environments. The project sought to stay with the entangled body, knowing that there is no exhibition – or science or art for that matter – that can separate the human body from its environment. This is a fact of our physical existence. If anything, the exhibition only made it clearer to us that the human body is even more entangled than we often imagine it to be. While this can be an anxiety-inducing proposition, it is also an opening towards new discussions and new forms of world-making.

Our science communication strategy and ethos were carried by this attention to the unexpected and the open-ended, and to the core belief that discussions carried out under these less-than-certain premises hold potential beyond the particular questions at hand. They engage us in a curiosity-driven and critical process of exploration, rather than a more closed attempt to reaffirm what we believe we already know. The willingness to allow other, unexpected questions to co-exist within one's normal explanatory frameworks seems crucial for any inquiry into the complex, even wicked, problems that characterise our current moment. We firmly believe that the exhibition is a powerful medium for precisely such processes. Its communicative potential lies in its multifaceted ability to be a resonant, physical space for affective encounters; and a space in which different worldviews can be brought together and juxtaposed. The exhibition can be a literal shared space for conversations between visitors, staff, curators, collaborators and stakeholders, and a generator of curiosity and exploration, both in the actual space but also beyond it. In important ways, *The World is in You* was an attempt to embody these qualities and values: a shared space for probing

meaningful questions. We hope that many more such spaces will be cultivated and emerge in the years to come.

Plates of foreign bodies, mid-20th century, detail, Courtesy of the Medical Museion.
The World is in You, Medical Museion and Kunsthall Charlottenborg, 2021. Photo by
David Stjernholm.



Kathy High, *The Landscape of Lost Microbes*, 2017. Courtesy of the artists.
The World is in You, Medical Museion and Kunsthall Charlottenborg, 2021. Photo
by Marlene Anne Lough Large.

MICROBES:

...ury discovery that many
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...health challenges.

MIKROBER:



Anna Dumitriu, *Hypersymbiotics: Post Pandemic Edition*, 2021. Courtesy of the artists.
The World is in You, Medical Museion and Kunsthall Charlottenborg, 2021. Photo by
David Stjernholm.





Banner "8 Timers Arbeide! 8 Timers Fritid! 8 Timers Hvile!", 1914. Courtesy of The Workers Museum. Installation view, *The World is in You*, Medical Museion and Kunsthall Charlottenborg, 2021. Photo by David Stjernholm.





