

BIOTOPIA
2019 ANNUAL REVIEW

BIOTOPIA

NATURKUNDEMUSEUM BAYERN

EXPLORE LIFE.



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FOREWORD



BIOTOPIA – A NEW MUSEUM FOR THE GLOBAL CHALLENGES WE FACE

According to Article 27 of the UN Declaration of Human Rights, everyone has the right 'to share in scientific advancement and its benefits'. Access to science is therefore a fundamental human right, and one which must be protected with vigilance. In order to exercise this right, it is critical to have institutions like BIOTOPIA - Naturkundemuseum Bayern that not only connect the public with science, but also allow the development of science to be shaped and informed by public concerns.

During the course of 2019, we witnessed many global events that made BIOTOPIA's mission – to reshape the relationship between humans and other species and to engage the public with life sciences and the environment – more pressing than ever. From the IPBES Global Assessment Report in May 2019 which announced that one million species are under threat of extinction, to the tragic burning of the Amazon rainforest, 2019 was a year when the threat to our biodiversity due to human activity has been more apparent than ever.

On the other hand, the success of the *Rettet die Bienen* (Save the bees) referendum in Bavaria, and its subsequent enshrinement in law in July 2019, has led to Bavaria playing a leading role in the protection of biodiversity. And the emergence of the Fridays for Future movement around the world has vividly demonstrated that young people can lead the way in protecting our environment.

In 2019, while working behind the scenes to progress the planning of the new museum, BIOTOPIA focused its public activities on the important topic of food, in form of the EAT Festival and the MEAT THE FUTURE exhibition, inviting people to explore alternative and more sustainable food futures. Food and eating are perhaps the most powerful levers for both personal well-being and the health of our planet and offer a wonderful point of entry into some of the key issues of our time.

While populist governments around the world have rejected scientific knowledge, spread alternative facts, threatened the fabric of the European Union through Brexit and abolished previously existing environmental safeguards in many countries, the mobilisation of people

around the world to protect our environment and combat climate change and biodiversity loss in 2019 has given reason for optimism. Never before have platforms for public engagement with life sciences and the environment been more essential to public life, a healthy democracy and the protection of the environment. Never before has scientific knowledge been under such a threat from the 'weaponised lies' spread by conspiracy theorists and extremist groups through social media.

On 31 December 2019, the WHO first alerted the world to 'a cluster of cases of pneumonia of unknown cause detected in Wuhan City, Hubei Province of China'. The consequences have transformed our world beyond recognition and will echo far into the future. The ensuing public discourse about Covid-19, and the confusion of fact and fiction, have demonstrated the vital importance of institutions like BIOTOPIA in providing a public platform for life sciences communication and an informed discussion with the public.

In spite of the challenges of the present, there is much to look forward to! BIOTOPIA is now in an advanced stage of planning, with the beautiful architectural plans almost finalised, and exhibition planning for the new museum progressing rapidly. What's more, our interim space, the BIOTOPIA Lab, in a beautiful setting in the Munich Botanical Garden, is due to open in autumn 2020.

I hope you will enjoy our BIOTOPIA 2019 Annual Review, and that you will join us on the exciting journey to foster curiosity, empathy and agency in 2020 and beyond!

Professor Michael John Gorman
Founding Director BIOTOPIA

‘Protecting species, responding to climate change and acting responsibly towards nature – these are the greatest challenges of our day. With the plans for BIOTOPIA in Bavaria, the revolutionary museum concept and a national BIOTOPIA network, the makers aim to create a modern, interdisciplinary and participative platform which allows people to access scientific education from a completely new angle.’

Dr Markus Söder
Minister President of Bavaria

BIOTOPIA

Mission and values

MISSION

BIOTOPIA explores, questions and reconfigures the relationships between humans and other living beings.

VALUES

CURIOSITY

We encourage our visitors to indulge their natural curiosity for the world in which they live, and for everything that impacts them.

EMPATHY

We create experiences that offer our visitors different and enlightening perspectives on themselves and other living creatures – and that enable us to see humankind through the mirror of animal nature.



AGENCY

We encourage people to take the initiative by exploring and getting to grips with the environment, and by understanding and changing personal habits. Last but not least, we propose solutions to key ecological challenges.



BIOTOPIA – A MUSEUM IN DEVELOPMENT

‘Transforming the Museum Mensch und Natur (Museum of Humans and Nature) into a 21st century museum for life sciences and nature studies offers a fantastic opportunity to cast a completely new light on some of the most pressing questions of the modern age. This exceptional project invites people to discover the complex interplay between people and nature, and take responsibility for our environment.’

Bernd Sibler

Bavarian State Minister for Science and Art

I. IN THE SPOTLIGHT



The key visual and poster for BIOTOPIA's EAT – TASTE THE FUTURE! Festival visualised how food and diet might look in the future, and how we relate in this context to other living creatures.



For the EAT Festival on 26 May 2019, Dr Nina Möllers, director of the festival, teamed up with star chef Jozef Youssef from Kitchen Theory London, the renowned neuroscientist Professor Ophelia Deroy from the Ludwig Maximilian University of Munich, and the Munich Chamber Orchestra to compose a multi-sensory feast entitled 'A Taste of All Senses?' This unusual experience demonstrated vividly to participants the significant role our senses play when we eat, and how they can be influenced.

SEEING THE BIGGER PICTURE

Food is on everyone's lips. The more we realise just how deeply humankind impacts this planet, the more society and science need to focus on the food we eat – including agricultural practices, processing steps, supply chains and consumption. Our bowl of cereal at breakfast or our mid-morning snack might not seem like a particularly big deal, but if you take a closer look, you'll soon see that the mechanisms behind them are incredibly complex. Where does my food actually come from? Who or what was slaughtered, harvested or processed to make it – and under which conditions? What are the long-term, systemic implications? The responses to the above questions – and a thousand questions besides – are complex, with new insights constantly bringing new answers.

So it's not surprising that BIOTOPIA has assigned the subject an important place. In 2019 the subject of food and eating formed the framework for various conceptual considerations in different areas and for various events. The undisputed highlight here was the second BIOTOPIA Festival entitled 'EAT – TASTE THE FUTURE!' on 26 May. Visitors were invited to look at the bigger picture, engage with the worlds of food, flavour, food production, agriculture and health, and explore revolutionary alternatives.



To complement the EAT Festival, the Museum Mensch und Natur hosted the MEAT THE FUTURE exhibition in which chefs, designers, engineers and artists presented their visions of what lab-grown meat dishes of the future might look like.



The festival focused on the crossroads where life sciences, environmental sciences, art, design, economics and innovation converge, and presented a kaleidoscopic display of subjects and formats. Beginning with the exciting biology of food, it opened up new perspectives by showing the points of intersection with art and design, speculative thinking and practical applications. In line with BIOTOPIA's values – 'curiosity, empathy, agency' – the format chosen for the festival enabled visitors to explore the way in which different organisms source their food. It also opened up perspectives far beyond narrow human perception and invited visitors to proactively explore future food models.

Accompanied by bright May sunshine, each of the more than 3,500 visitors who attended the festival, which was held on a Sunday, was able to follow their own preferences and interests as they explored the site. Many began their tour in the wonderful atmosphere of the Nymphenburg Palace orangery, where the festival's various themes and activities were introduced and presented in the exhibits of the EAT display. From the imposing teeth of the Bavarian tetralophodon (an elephant-like animal that roamed the sub-tropical floodplains of Lower Bavaria some 12 million years ago) to insect boxes containing species of flies and beetles that people eat or that eat people (and that are studied in the context of forensic examinations of corpses) to a docufiction by designer Julia Schwarz (who presents lichen as the food of the future): the inspiring and aesthetically appealing exhibits bridged time to link the past, present and future, and triggered lively discussions amongst onlookers.



More than 3,500 visitors came to enjoy the EAT Festival programme and explore the many facets of food. Scientific lectures and panel discussions investigated the way our eating habits impact other living creatures. They also proposed possible diets which are not only healthy but also sustainable for our planet, and explored innovative approaches to dealing with food waste and fighting global hunger.

‘The thing I liked best about EAT was the fact that so many interesting people from different groups, and with completely different approaches and ideas, handled the subject of food so openly – from artificially produced meat to organic farming methods to “soil life”, the genesis of all our food. Thank you for the fantastic framework and the professional organisation!’

Georg Schweisfurth
Organic entrepreneur

‘With EAT, BIOTOPIA has dared to do the unthinkable: present biotechnologically produced foods as modern-day “natural” products. It was able to take this risk because the technology it showcased was provided by scientists who are associated with its sponsors and supporters. In tomorrow’s world, food producers will need to use new technology if we want to achieve our sustainability goals. BIOTOPIA deserves every respect for acting as a mediator and teacher.’

Stephan Becker-Sonnenschein
Head and Founder Global Food Summit



With more than 30 speculative exhibits, the exhibition questioned our future relationship with lab-grown meat. Dispensing with the physical form of animals, the exhibition took a fresh look at the points where meat intersects with design, ethics and sustainability – an inspiring opportunity to consider the world’s future eating habits and our own personal meat consumption.

Another visually appealing highlight of the EAT Festival was a special exhibition in the Museum Mensch und Natur entitled MEAT THE FUTURE. Curated as a cooperative venture with the Next Nature Network, a group of designers and philosophers from the Netherlands, and the Cube Design Museum in Kerkrade, this was the exhibition’s first trip to Germany. Revolving around thirty speculative dishes of meat, artificially produced from cell cultures in a laboratory, the exhibition provoked discussions about the future of meat consumption.

Alongside the consumption aspect, various features at the festival focused on how our food is produced. Buzzwords included agricultural methods, land usage, soil culture and circular economy. For example, people were able to learn first-hand about alternative farming methods, or visit the exhibition stand of Agrilution, a Munich start-up, and chat to the founders about the potential of vertical farming systems at home. They could also join fab lab designers Jessica Guy and Emily Whyman and admire a futuristic aeroponic set-up where plants are cultivated in a closed-loop system and nourished with a hydroponic solution of nutrients which enables them to grow in tiny spaces, completely without soil. The value of biological waste in the circular economy was demonstrated vividly by various hands-on activities. Visitors of all ages enjoyed the kombucha lab, where they were able to engage in practical experiments with food leftovers and by-products such as SCOBY (symbiotic culture of bacteria and yeasts) and learn about processing steps and new materials that can be made from leftover foods. Many visitors were inspired by this sensory experience to see waste products from our food system in a different light. Their initial hesitation and occasional revulsion slowly changed to fascination with the amazing potential hidden in apparent waste.



See, engage, research, intervene and develop, discover, hear and discuss – visitors of all ages could immerse themselves in the theme of the festival in each of these six categories.

The fully booked fermentation workshops offered by Dr Johnny Drain, a materials scientist and experimental research cook, presented yet another perspective. Dr Drain directed people's attention to tiny organisms such as yeast, bacteria and fungi. Using the lactic acid bacteria found on the peel of the vegetables, participants learned the centuries-old tradition of fermenting in brine – a process which changes the taste, texture and colour of vegetables, but preserves them so that they can still be eaten months later.

Increasingly, food for humans is dominating our planetary system and the lives and deaths of other organisms. But how exactly do these other organisms get their nourishment, and what can we learn from them? One of the core goals of BIOTOPIA is to look at species from different perspectives and focus on the interplay between species. So it was hardly surprising that the EAT Festival included numerous exhibits illustrating the food habits and ingestion methods of other organisms. The scope was impressive: Under the heading 'Eat or be eaten', the Natural Sciences Collections of the State of Bavaria presented research projects and scientific insights using a range of exhibits and activities. Presented with carnivorous plants, insatiable snails, caterpillars and locusts, and sponges as the vacuum cleaners of the oceans, visitors were able to experience the fascinating diversity and creative ingenuity of the world's fauna and flora.

'EAT in 2019 was my first BIOTOPIA Festival. I loved the mix of people! There were all ages from toddlers to grandparents, and people from many different backgrounds. As an exhibitor, the day was very busy for us but in a good way! I ran several workshops and two masterclasses, and it was fantastic that people who had very little background knowledge or previous interest in the topic (fermentation) were so enthusiastic to learn about it. It's so important to communicate scientific ideas to everyone in society, and BIOTOPIA had the perfect approach to doing this effectively: make it fun, make it interactive, make it memorable. And make it for everyone!'

Dr Johnny Drain

Materials scientist / research & development chef



Dr. Anneke van Heteren, Zoologische Staatssammlung, presented various skulls, teeth and jawbones to show the wide variety of ways in which different animals chew their food.



Visitors were able to embark on a tour of discovery, chat with scientists such as Dr Henriette Obermaier (pictured) from the Bavarian State Collection of Anthropology and Palaeoanatomy, or with ornithologist Markus Unsöld from the Bavarian State Collection of Zoology (pictured here in conversation with Richard David Precht), or listen to an inspiring lecture by Professor Gerhard Haszprunar, General Director of the SNSB.

Food and eating habits are dictated not only by the raw materials available to us, but also by the processing techniques at our disposal. How does our relationship with food change, and how far are we prepared to go to make sure we meet climate targets at the same time as safeguarding the world's food supply? The 'Extreme Biopolitical Bistro', operated by an international group of philosophers, art technologists and designers, focused on the points of intersection between technology and food. Designed as an open-kitchen-lab and hacker-space, this was a place where visitors could prepare their own edible prototypes and voice their opinions on machine learning, blockchain technology, nutrigenomics and microbiomes. One lolly, for example, was coated in sugar but had a most interesting inner life: an internal power circuit made it flash and vibrate every time it was licked, allowing visitors to explore the 'taste' of electricity playfully and hypothetically.

The evening event 'A Taste of All Senses?' was somewhat closer to food as we know it, yet still opened up new horizons. This was not only the closing event for the festival, but also its climax. In a multisensory dining experience that combined science with cuisine, British chef Jozef Youssef and his team from Kitchen Theory worked together with Dr Ophelia Deroy, a renowned expert for multisensory perception and professor at Munich University, and the Munich Chamber Orchestra, to create a special event for the festival. A four-stage degustation, organised by Munich caterer Dahlmann, vividly demonstrated the important role our senses play when we eat – from the way flavour and smells work hand in hand on the plate and in our brains, to the surprising influence of music and sound on the eating experience.

Thus 26 May, an eventful and enlightening day, ended delightfully with a banana dessert, pistachio crumble and frothed cardamom – and the realisation that food shapes us and our world on all levels, from the tiny taste buds on our tongues to the world's entire ecosystem. The BIOTOPIA team was delighted by the interest shown not only in the subject itself, but also in the future museum; here, visitors were able to gain a first impression of all that awaits them. Like a magnifying glass, the EAT Festival honed in on BIOTOPIA's interdisciplinary and cross-species approach, showing the wide variety of educational opportunities and concepts that shape our work. By talking face to face with experts, engaging in associative experiences and getting involved hands-on with lots of activities, visitors gained a completely new perspective on food intake – one of our most mundane everyday activities.



The interdisciplinary festival programme was geared towards families and offered plenty of opportunities to gain new insights and engage in hands-on activities – crafting masks and jewellery out of bread dough, for example, or participating in a ‘hackerspace for edible futures’.

The common reaction we received to the EAT Festival was the joking complaint that one day was hardly enough for so many exciting activities. And our visitors were right, of course – food and nutrition are extremely diverse and relevant subjects, and call for lots more research and action. As a result, from autumn 2020 on the BIOTOPIA Lab will be focusing on food. Generously funded by the BayWa Foundation, the Lab is currently being developed in the Botanical Institute in Nymphenburg botanical gardens. It will be a platform that tangibly conveys the concept of the future BIOTOPIA museum during the development phase. It will also serve as an interim format, bridging the gap after the Museum Mensch und Natur closes at the end of 2020 and before the new BIOTOPIA opens. In line with the motto ‘No day without a museum’, the site will feature exhibition areas, event spaces and a laboratory with experimental kitchen – offering a wide range of opportunities to host exhibitions, installations, programmes, (school) workshops and events, and thus give people a foretaste of the content and concept of the future museum. Above all, the BIOTOPIA Lab will give people the opportunity to experiment and actively participate. Visitors can join in spontaneously with shorter activities or sign up for longer workshops, family days or series of events. We’ll also be offering our popular children’s parties again.

The workshop programme for the start of the Lab was developed with the support of Dr Julian Chollet, a molecular biologist and the founder of mikroBIOMIK. The workshop categories are ‘Observing & Understanding’, ‘Cooking & Cultivating’ and ‘Researching & Fabricating’, and include a wide range of activities that revolve around diet, food and agriculture. Following a



Two stages were set up at the EAT Festival to host a broad range of lectures which catered to every taste – from subjects such as how food is connected to diabetes, to the heavily discussed EAT-Lancet diet (which promises to be as sustainable as it is healthy), to the importance of CRISPR-CAS for plant genomes, to the ideas of various unorthodox start-ups on combating global hunger. Lecturers and discussion partners included not only renowned experts such as the philosopher Richard David Precht, but also young scientists – for example, a group of students from the LMU Genetics Institute, who presented their scientific insights on subjects such as avoiding food waste in an entertaining and intelligible ‘Sustainability Slam’.

‘BIOTOPIA’s EAT Festival was a true feast of science and joie de vivre. I’ve been passionate about good food ever since I was a child. The festival followed a great recipe, combining a love of food with a sense of responsibility towards animals and our environment. With inspiring lectures about fertile soil as the valuable basis for our life, exciting discussions about sustainable farming methods, and traditional culinary craft demonstrations, this was a festival all about my favourite subject, and it celebrated life!’

Eva-Maria Rönsberg
Visitor at the festival



The food and diet themes will also play a key role in the BIOTOPIA Lab, which is due to open in the autumn of 2020 and will serve as an interim platform to whet people's appetite for the future museum. Fascinating slime moulds, animal 'table manners', cultivating vegetables in a raised bed – these are just some of the themes which will be brought to life in colourful workshops.

basic underlying concept, the workshops can be adapted flexibly to cater to different age groups and target groups, different timeframes and levels of difficulty, and different requirements (educational or recreational).

The 'Teeth on Edge' workshop, for example, turns the spotlight onto animal 'table manners', while 'Humus sapiens' takes a look at the dirt beneath our feet, as seen under a microscope – and examines an important but frequently overlooked element in our food production. Other workshops such as 'Fungi4Future' or 'Kombucha Biodesign' take a more practical approach to the subject. Besides exploring the scientific connections between fungi, yeasts and other microorganisms in hands-on experiments, the focus here is on making your own product which you can take home after the workshop.

The close bond between the BIOTOPIA Lab and the surrounding botanical gardens is reflected not only in some of the chosen themes (fermentation, plant-based meat alternatives, fungi...), but also in the BIOTOPIA plot, currently under development, which is within walking distance of the lab and covers an area of 135 m². This plot was kindly made available to us by the Munich Botanical Garden, with the German postcode lottery helping to fund the landscaping. Alongside a number of circular flowerbeds, the area will include a wheelchair-accessible raised bed and a recreational area, which can be used by the Lab for outdoor activities or by external bodies such as local schools, e.g. for afternoon gardening clubs.

The BIOTOPIA Lab's focus on food will centre around the herbs, vegetables and other plants which are grown and harvested here as a joint effort. The many different aspects of nutrition and food will play a central role not only in school activities, but also in exhibitions and events. Last but not least, BIOTOPIA's strong partnerships with institutes such as the Max Planck Institute and the Helmholtz Diabetes Center in Munich give us fantastic opportunities to create target-group-specific activities which present the health, environment and agricultural science aspects of food.

'The BIOTOPIA Lab offers children a completely new and unique perspective on subjects which will become increasingly important for society in the coming years – nutrition, the environment, agriculture and nature. By supporting this platform, the BayWa Foundation can enable lots of children to enjoy and learn from this educational experience.'

Maria Thon

Director of the BayWa Foundation

'The BIOTOPIA Lab plays a key role in off-site educational activities for the Erzbischöfliche Maria-Ward-Realschule Nymphenburg. It's an appealing project for our school, not only because of our close geographical proximity to the botanical gardens, but also because the workshops (Observing & Understanding, Cooking & Cultivating, Researching & Fabricating) cater to different elements in the curriculum. And the BIOTOPIA plots in the Munich Botanical Garden will play a special role – students from our "Bees and Garden" afternoon club are very excited at the prospect of working in the gardens!'

Melissa Oberauner

Teacher at the Erzbischöfliche Maria-Ward-Realschule Nymphenburg

‘The BIOTOPIA Lab is virtually next door to the Käthe-Kollwitz-Gymnasium and is a highly attractive off-site educational venue for us. It offers fantastic opportunities for hands-on experiments, and these will support and enrich our lessons in a variety of ways. We look forward to being involved in the design of the experimental garden and enjoying inspiring experiences. The BIOTOPIA Lab gives us a foretaste of all that BIOTOPIA will be offering in just a few years’ time. It’s fantastic!’

Leo Klotz

Principal of the Käthe-Kollwitz-Gymnasium München

‘At the end of last year, work began in the Munich Botanical Garden on the new raised beds where children can conduct experiments under the guidance of the BIOTOPIA staff. In the past, we’ve organised an annual butterfly exhibition, but other than that, we’ve not had any plots especially for children. Thanks to the collaboration with Dr Simone Gaab from BIOTOPIA, who has a lot of experience with educational projects on the environment and sustainability, we’ll be able to enjoy this great addition in 2020 – and I’m very much looking forward to it.’

Professor Susanne Renner

Director of the Munich Botanical Garden



The BIOTOPIA Lab in the botanical gardens (interior design: Konstantin Landuris Studio) houses exhibition modules, event areas, a workshop and a kitchen, all of which offer a foretaste of the future museum.



Once they have been tried and tested in the BIOTOPIA Lab, various formats revolving around the food and diet theme will be perpetuated and expanded in the future food lab on the ground floor of the museum building. Formats range from experimental gastronomy, taste experiments, food processing and food analysis to cultivating herbs, fruit and vegetables, to composting leftover food.

EAT AND DRINK IN THE MAIN EXHIBITION

Eating is all about systems. From digestive systems to ecosystems, all living things are part of a complex interdependent network of acquiring, consuming, processing and producing energy. The main aims of the exhibition's 'Eat and Drink' section are firstly to show that we as humans are both dependent on and in control of a system in which all lifeforms find themselves enmeshed, and secondly to connect human eating practices and food culture to the patterns of eating observed in other lifeforms.

'Eat and Drink' will explore the most widely domesticated lifeforms – such as corn, wheat, rice, chickens, pigs and cows – and the role they have played in shaping the global landscape of food production as well as human civilisation, including the role of the first agricultural centres in the spread of languages, genes, colonisation and today's consumer culture. It will also delve into the consequences of agriculture and domestication on the planet, posing the question of the costs of having any food available to fill our shopping trolleys on a daily basis. 'Eat and Drink' will also look at more sustainable solutions and investigate how we can reshape our food system to restore the health of humans, other lifeforms and the environment while providing food for a growing population.

EAT LAB

The Eat Lab on the ground floor serves as an experimental kitchen and demonstration area, with access to an outdoor growing area and connection to the botanical gardens. It offers a teaching kitchen for school groups, a space for a chef-in-residence to carry out food research and experiments, and an opportunity for depth-on-demand experiences connected to the 'Eat and Drink' area of the main exhibition. From experimental gastronomy and tasting experiments through food processing and analysis projects (spinning honey, fermentation, preservation) to hydroponic growing, traditional growing methods and composting food waste, this lab offers an array of opportunities to learn about food, health and sustainability development goals.

Tied to the Eat Lab, the raised-bed garden will serve as a food source for programmes in the lab. Here, participants will learn to plant, tend to and prepare herbs, vegetables and fruit, and to compost the leftover waste. Designed as square raised beds of differing heights, they will be accessible to people with diverse needs.

The exhibition team is engaging with an array of experts and institutions to advise on the development of these areas. Consulted experts include the Munich Botanical Garden; State Collection of Anthropology and Paleoanatomy, Munich; Ludwig Maximilian University, Munich, Department of Genomics; School of Life Sciences Weihenstephan at Technical University of Munich; Office of Life and Art / Center for Genomic Gastronomy.

II. EXHIBITION



The cross-section of the building shows the permanent exhibition area in the basement, on the ground floor and first floor. The various floors are linked by four sculptured staircases which create 'aerial expanses'. These act as architectural bait, enticing visitors up or down to explore the floors they link. The choice of different routes gives visitors the freedom to choose their own path through the museum. Works of art have been commissioned to hang in each of the aerial expanses; their aesthetic appeal will ignite curiosity.

THE PREMISE FOR THE EXHIBITION CONCEPT

BIOTOPIA seeks to explore the links and relationships between humans and other living beings so that visitors can see and experience how they connect. The goal of the exhibition is to ignite visitors' natural curiosity, foster empathy for life, the environment and other people, and inspire people to take active responsibility. The main exhibition will focus on the behaviours, activities and processes that connect humans with animals, plants and other organisms. During 2019, detailed plans were developed for the new themes. The working titles are: 'Eat and Drink', 'Build and Shape', 'Sleep and Dream', 'Seduce and Reproduce', 'Fight, Defend, Cooperate', 'Sense and Communicate', 'Move and Migrate'.

At the same time, BIOTOPIA seeks to spark interest in scientific activities and the important role that science plays in finding solutions to pressing problems. Visitor labs, an auditorium and forums as communication platforms will enable visitors to the museum to immerse themselves in the latest scientific insights in an interactive environment.



Playful, interactive installations which underscore the busy, social character of the ground floor whisk visitors away on a journey of discovery – beginning with the microscopic life inside their bodies and moving on to the local and global ecosystems they form and share with other life forms. By making the invisible visible and bringing biological diversity into the museum on both a microlevel and a macrolevel, visitors can explore their complex relationship with the world and with all life forms, and the role they play in intricate ecosystems.

DEVELOPING THE PLANS

In 2019, the Exhibition Department focused on developing high-level content for the main exhibition, including the detailed development of the 'Building and Shaping' concept, the overarching exhibition design, as well as the interfaces between the exhibition and lab spaces with the building and landscape design. These priorities were driven by the requirements for the submission of the 'PU-Bau', the project planning documents required for ministerial approval of the project.

EXHIBITION DESIGN CONCEPT

The EVENT Communications design vocabulary takes inspiration from the basic building block of life: the cell. It combines these individual organic structures into ever more complex forms (membranes), creating a dynamic biophilic aesthetic that speaks to BIOTOPIA's underlying message of the interconnectedness and interdependence of all life on Earth. What's more, it lends spatial definition to the large scale of the spaces, while at the same time retaining an overall open and light feel. It also offers a variety of dynamic shapes and textures for distinguishing the different thematic areas while remaining aesthetically connected. The organic shapes also work seamlessly with the rectangularity of the inner walls, the circularity of the sculptural staircases and the asymmetrical roof on the upper floor. The design also provides different levels of flexibility to create different atmospheres and uses.



Visitors will be drawn to the impressive termite mound in the 'Building & Shaping' department on the first floor. Armed with a BIOTIOPIA magnifying glass, visitors can take a close-up look at the termite mound and the mushrooms growing there – from the perspective of the termites, the perspective of the mushroom, the perspective of an architect who used the termite mound as inspiration for a sophisticated cooling system, or the perspective of the scientists who explore the inner structure of the mound and the social life of the termites.

BUILDING & SHAPING

The exhibition team completed the detailed concept and design of the 'Building & Shaping' section of the main exhibition as part of the above-mentioned ministerial approval process. The section explores the complex building processes of diverse lifeforms. The 'Building Strategies' subsection looks at an array of methods and materials used to build. 'Shaping Ecosystems' uncovers the interconnectedness of such structures with the larger environment. Finally, the 'Material Library' highlights biological materials used to build and make things. Exhibits range from objects from natural history collections and live animal displays to site-specific installations from life and the environmental sciences, art, architecture and design.

'Nature offers a sheer inexhaustible source of inspiration. Not just for research and development – but also for globally active companies such as Porzellan Manufaktur Nymphenburg (Nymphenburg porcelain manufactory). BIOTIOPIA is a treasure trove of inspiration for artists in the manufactory, as well as for all other renowned artists from around the globe who live and work in Nymphenburg.'

Anders Thomas

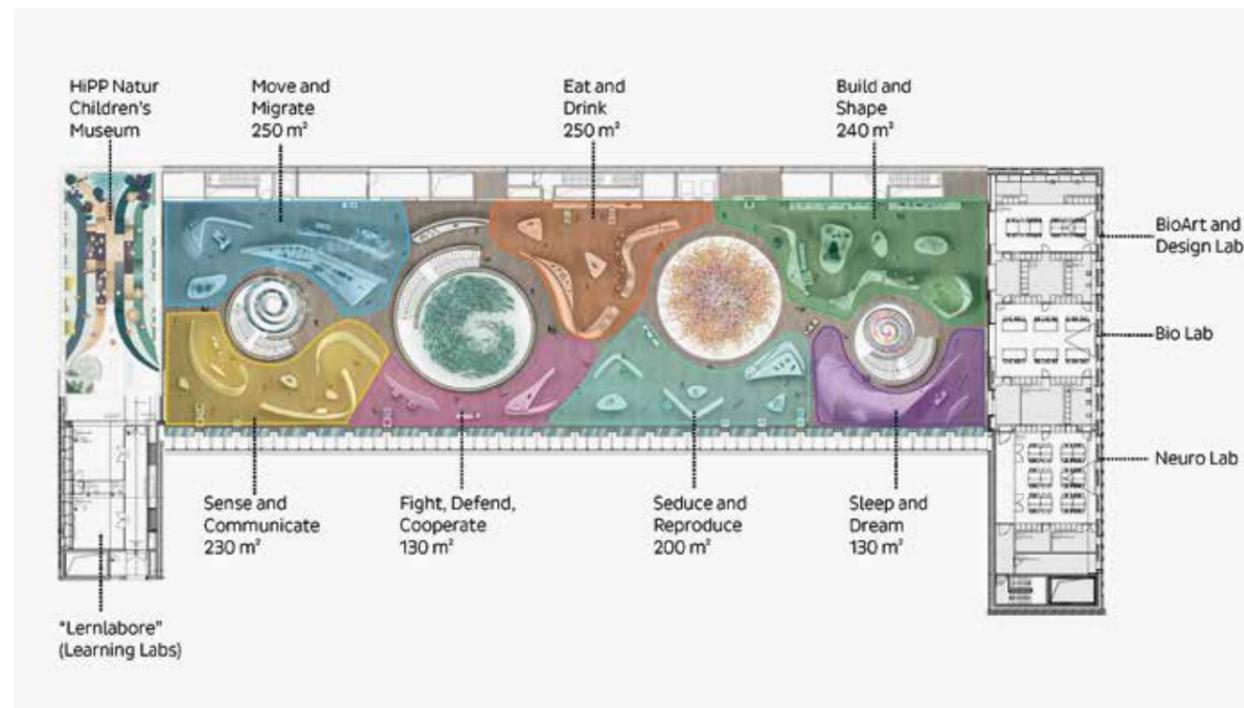
CEO at the Nymphenburg Royal Porcelain Manufactory



A glimpse inside the 'Building & Shaping' department. Countless nature study objects, art and design objects, terrariums with living insects, interactive points and projections invite visitors to journey into the sophisticated structures which various life forms build, the ecosystems surrounding these, and the relationship between human design processes and the world around. The interactive installations in the foreground can be used to study urban ecosystems. By experimenting with various different construction types and landscape designs, visitors can see how these impact biodiversity and the environment.

LABS

BIOTOPIA has been working with Staab Architekten and scientific advisors on the detailed planning and fit-out of four Labs: the BioArt and Design Lab, the Bio Lab (Bio/S2 Lab), the Neuro Lab and the Eat Lab. The Labs are conceived as extensions of the permanent exhibition, offering deeper exploration of its topics. They are designed to attract a range of audiences from scientists and artists exploring BIOTOPIA's themes to local school groups and visitors looking to dive deeper into BIOTOPIA content. The team is actively addressing safety requirements and continues to work with the government of Bavaria.



Three labs are housed on the first floor of the building's east wing: BioArt and Design Lab, the Bio Lab (Bio/S2 Lab) and the Neuro Lab. The Eat Lab is located on the ground floor. The labs are designed to complement the permanent exhibition by providing hands-on opportunities to delve deeper into behaviour patterns, activities and processes connected with life.

‘Every day when we get up in the morning, we unconsciously rely on the excellent quality of the food we eat – starting with breakfast. And during the day, we don’t have to waste any of our time worrying about the availability of health care – even in the corona crisis. Every day, we also come into contact with materials that are far less harmful to our health than they were two or three decades ago. How have we come to enjoy such luxury? It’s because our everyday lives have progressed in leaps and bounds, and this is thanks to research. Research safeguards our prosperity. But it’s becoming increasingly difficult to widen the scope of research. With fewer students enrolling, and cut-backs in the economy, the trend is towards decline. We have to take steps to meet this challenge. The open labs at BIOTOPIA are one solution. Here, people can experience first-hand how research “works”. Research is brought out from its hidden, protected niche and made public. Research needs to be anchored more firmly in society. We need to make research activities (more) visible and show how they impact our everyday lives. In this area, BIOTOPIA plays a key role in society to safeguard our progress in the future.’

Dr Manuel Selg
University of Applied Sciences Upper Austria



The coral reef on the first basement level enables visitors to immerse themselves in the rich marine biodiversity found here. Cameras and VR goggles allow visitors to explore this world from the perspective of its inhabitants and enter into areas which otherwise remain hidden to the human eye. Part of the reef has been designed as an 'artificial coral reef'. This alerts visitors to the fact that coral reefs are endangered, but also offers possible answers as to how they can be saved.

CORAL REEF AQUARIUM

BIOTOPIA has been working with Staab Architekten and aquarium experts on the design of a 45,000-litre coral reef aquarium. It is part of the immersive 'Ecosystems through Time' display area that looks at the scale of time and its effect on past, present and future ecosystems. As one of the world's most diverse but endangered ecosystems, the aquarium will serve as the visitor's eye into this complex and fascinating marine world, highlighting not only the rate at which humans are impacting life on Earth but also measures that can be undertaken to help ensure reef survival.

'As a teacher, I'm really excited about the opportunities BIOTOPIA gives me in bringing life sciences and environmental science to life for my students. Here at BIOTOPIA, they can enter into the role of researchers, empathise with different species and forge a personal relationship with nature. These experiences are immensely important for coming generations. In light of the special ecological challenges we face, BIOTOPIA plays an active part in teaching our children to treat our planet mindfully and responsibly.'

Britta Engel (née Minte)
Intern in the BIOTOPIA team

'The interdisciplinary approach which makes BIOTOPIA so relevant on an international scale comes at a time when many natural history museums are trying to reinvent themselves to meet the foremost challenges of our planet. As we implement our own ambitious plans to expand and develop Berlin's Natural History Museum, we look forward to collaborating closely with BIOTOPIA.'

Professor Johannes Vogel
General Director of the Natural History Museum, Berlin

III. ARCHITECTURE

AN INNOVATIVE MUSEUM IN A HISTORIC PALACE COMPLEX

Over the next few years, a modern museum building will be constructed within the historic Nymphenburg Palace complex. This will extend the former Museum Mensch und Natur, located in the north wing of Nymphenburg Palace, and provide an area of around 13,000 m² for the new BIOTOPIA. It's a challenging task for all those involved in the planning; inside, the new building needs to meet the many complex demands for a 21st century science museum, and outside, it needs to be recognisable, appealing and welcoming so that people enjoy their visit. At the same time, the facade needs to harmonise with the unique baroque architecture of the Nymphenburg Palace complex.

To meet this challenge, a public competition was organised, and architects were invited to submit designs. The winning design came from Staab Architekten, a renowned firm of architects in Berlin that has a reputation for handling existing structures and buildings with the required sensitivity, and has already completed several projects of a similar nature in locations across Germany.

The winning design harmonises with the symmetry of the palace complex. The height, colours and simplicity of the historic buildings are assimilated, but – just like its counterpart, the Schwaige building in the south – the new building has consciously been designed without the embellishments, gold appliqué flourishes or adornments of the central palace building. The proposed cubic design follows the original overall plan made by Josef Effner between 1715 and 1726, and foresees a modern museum building in keeping with the times. It will house permanent exhibitions, temporary exhibitions, open labs, a children's museum, classrooms and lecture halls, a museum shop, a café, additional rooms for events and an auditorium. Two arches open up the inner courtyard to the exterior of the palace. The courtyard was considered in the exhibition design and merges with the foyer of the new building to create a sense of spatial unity. Four sculptural staircases guide visitors to the various exhibition areas. The open foyer and exhibition areas are framed by smaller spaces, which also characterise the transition to the historic palace complex.



Nymphenburg Palace and Park, the Munich Botanical Garden and BIOTOPIA combine to form a unique nature and culture district where visitors can connect with nature and culture in a wide variety of ways.

DEVELOPING THE PLANS

Work on the design of the museum is progressing well. In 2019, the main focus was on the facades, outdoor areas and the interior room structure.



‘The idea was to create an open design for the Natural History Museum, but one that is embedded in its historic context. During the draft phase, we liaised closely with the user to flesh out the idea. By moving the lecture hall to the basement, space was created on the ground floor for a flexible foyer, exhibition and workshop area that radiates out towards the museum courtyard. The room structure assimilates the palace environment and can be adapted to future museum concepts without the need for major conversion work. The design is complemented by an open exhibition area and compactly organised lab spaces on the first floor. Down on the basement level, visitors will find spacious function rooms and temporary exhibition areas as well as an ecological observatory with an aquarium. Despite all the adjustments, the total floor area inside the building remains the same.’

Staab Architekten
Berlin



Visualization of the main facade, status of planning: 2017.



The inner courtyard features, plateau seating areas, edging walls which visitors can sit on, and various accessible cobblestone areas which each have their own special flair.

OUTDOOR AREAS

Plans for the outdoor areas were made in close collaboration with the local authorities responsible for monument protection and taking the museum's operational requirements into account. The appearance of the museum blends harmoniously with the palace complex. The museum courtyard and the outdoor areas facing the palace park are of key importance.

Visitors can approach from the Grand Circle in the east and pass through a large, arched gateway to enter the inner courtyard of the museum, or approach in a symmetrically opposite manner from the palace gardens in the west. The main entrance to BIOTOPIA is located in this inner courtyard, and the world of BIOTOPIA begins here with the EXPLORE LIFE experience.

The outdoor area – which includes the museum courtyard as well as the area extending towards the palace gardens – was developed by landscape architects LOIDL. Their design not only takes a host of technical and formal requirements into account, but also succeeds in giving BIOTOPIA the entrance it deserves.

The design is formally based on a cell structure. Each cell has its own typology (different levels of accessibility and growth) and porosity (different levels of permeability). The cells are combined in a gently curved topography. With plateaus, dips, incisions and connecting paths, this compensates for the height differences between the old building and the new building. The resulting landscape of discovery is dynamic, it fulfils a variety of functions and creates areas with a range of different atmospheres. These include group areas, assembly areas and event areas through to more intimate spaces. Some areas confine themselves to plain greenery between paving slabs, others feature veritable thickets. The contrasts of wild and well-ordered, dense and spacious, low and high are captivatingly designed to charm visitors. Introducing colonies of different life forms such as microbes, plants and animals 'in residence' complements the overall concept.

'As the interface between two worlds – the historic world of the palace complex and the new BIOTOPIA – the inner courtyard plays a special role. On the one hand, it is a meeting place and event site with functional requirements. But above all, it is the prelude to the BIOTOPIA world. The courtyard will be a vibrant, interactive display case which picks up on a core theme of the new museum – the symbiotic coexistence of nature with manmade spaces. Based on the shape of a cell, the smallest unit of life, a varied spatial structure has been developed which caters to the different requirements of people, plants and animals. Modern examples of primordial plants and botanical rarities create a special and inviting atmosphere with thickets and canopies which visitors can explore, and which complements the palace grounds perfectly.'

Atelier LOIDL

Landschaftsarchitekten Berlin

The masterplan foresees various distinct areas including a wetland area, Baubotanik elements and interventions that provide homes to as many different animals and insects as possible. There will also be a children's play area and a small kitchen garden, and the plantscaping is designed so that the outdoor area exudes a harmonious, varied and special atmosphere in each and every season of the year.

Hence the outdoor areas will be far more than mere access routes to the museum. They will invite visitors to linger, experience, discover, explore and enjoy – and will form the perfect backdrop for outdoor events.

The design presented by LOIDL is a skilful interpretation of BIOTOPIA's values – curiosity, empathy and agency.

BAUBOTANIK: A REPORT FROM THE BAUBOTANIK EXPERT

'Baubotanik describes a building method in which plants intertwine with architectural structures. As such, it gives expression to BIOTOPIA's core mission: showing how nature, people and culture connect as one entity. The project involves a constructed tree that creates scope for a wide range of experiences in the crown of the tree. It showcases the themes of time, growth and transience, and will take decades to develop fully. Over time, it will change repeatedly – but even by the time the museum opens, it will stand out as a striking, vertical green space.'

Professor Ferdinand Ludwig

TUM Professor for green technologies in landscape architecture and 'ludwig.schönle | Baubotanic Experts – Architects – Urban Planners'



A 'Baubotanik' installation was developed specially for BIOTOPIA by ludwig.schönle. The higher you climb, the faster your perspective changes! This installation is an outdoor continuation of the 'Building & Shaping' theme.

INTERIOR ROOM STRUCTURES

As soon as you enter the inner courtyard, the underlying concept for the building becomes clear: the museum has been designed as an open space. The inner courtyard blends seamlessly into the freely accessible exhibition area on the ground floor, aiming to whet the appetite of passers-by and lure them into the museum. Expansive floor-to-ceiling windows on the ground floor ensure there are no visual breaks between the courtyard, foyer and exhibition hall. The indoor/outdoor divide is as blurred as the divide between the museum and the public sphere.

In the foyer area, four widely curved sculptural staircases draw the onlooker's attention to the neighbouring levels and lead people intuitively to the different attractions in the building. Works of art have been commissioned to hang in each of the empty spaces above the respective staircases. Their aesthetic appeal will ignite curiosity and entice visitors up from the ground floor to the main exhibition area on the first floor.

Inside the building, the museum flow has been significantly improved, both spatially and structurally, by moving the lecture hall to the basement. As a result, an extra ground-floor room with natural daylight has been gained on the east side of the building. This ground level area, which can be used flexibly, extends out from the permanent exhibition area on the east side. It can be used to host seminars, different types of events, or even temporary exhibitions. Depending of the amount of space required, the room can be partitioned with mobile walls. This means it can be used for multiple purposes simultaneously.

The immersive exhibition 'Ecosystems through time' is housed alongside the coral reef aquarium on the basement level. For more information, please see the 'Exhibition' chapter on page 34.

THE LIGHTING CONCEPT: A REPORT FROM THE LIGHT PLANNER

'Over the course of the past few months, we've liaised closely with the planning team to develop a lighting concept that underscores the language of the architecture and gives the shape and materiality of the rooms a tangible quality. As soon as you enter the inner courtyard, the transparent facade of the new building makes you feel that the transition from outside to inside is seamless. During daytime, bright sunlight floods into the main exhibition hall through skylights, lighting up the wall contours and the staircases, and creating a tangible link between the different levels of the building. In the evenings, this is supported by bright artificial light. In the exhibition areas, the lighting blends in with the rooms and creates a balanced environment – the perfect setting for the exhibits to take centre stage.'

Day & Light Lichtplanung

Munich

IV. NETWORK



BIOTOPIA serves all of Bavaria. The concept is not limited to the Nymphenburg location alone, but will help museums, educational facilities and research centres across Bavaria to work together. The aim is to create a network which promotes innovative approaches in life sciences and natural sciences across all regions of Bavaria. This network idea is an integral part of the overall project.

BAVARIA-WIDE NETWORK FOR NATURE STUDIES AND ENVIRONMENTAL EDUCATION

Creating a Bavaria-wide network of educational facilities that teach nature and environmental studies is a key goal of BIOTOPIA. Building on the existing 'Naturkunde Netz Bayern' (Bavarian Nature Studies Network), an additional ten to fifteen hubs will be added to the network to ensure all regions in Bavaria are covered. At present, the network is composed of the Museum Mensch und Natur and BIOTOPIA, the head office of the SNSB (Bavarian Natural History Collections) and the SNSB's four regional museums in Eichstätt, Nördlingen, Bamberg and Bayreuth.

In 2019, members of the 'Naturkunde Netz Bayern' once again communicated with each other on a regular basis. In particular, the network cooperated to organise and transfer special exhibitions. In January, for example, Bamberg Natural History Museum used the 'Colourful and Invisible' exhibition developed by the Museum Mensch und Natur. This was successfully adapted for Bamberg and proved to be extremely popular. Plans have also been made to transfer 'Dragonflies – Living in Two Worlds', another exhibition developed by the Museum

Mensch und Natur. Not to forget the largest joint project, an exhibition entitled 'All the Time in the World – from the Big Bang to the Ticking Clock', which opened in December 2019. It was a joint venture by all the network partners and will tour through all four regional museums in the next few years. In addition, network partners are supported by the General Museum Workshops who provided various workshop services.

At present, BIOTOPIA's main budgetary focus is on the construction and planning of the new museum. Nonetheless, expanding the Bavarian Nature Study Network remains one of BIOTOPIA's key objectives. Various institutions, including the East Bavaria Natural History Museum, have already signalled interest in joining an expanded network. This means that in the near future, we will need to develop the relevant structures and activities.

The intention for partners in the expanded network – so-called 'network hubs' – is to provide regional services for educational facilities in their area as well as teacher training services. They will also act as partners for scientific communication in universities and research centres, and serve as a platform for citizen science projects. Partners will also contribute to a joint internet platform and help to organise competitions and campaigns. All network hubs will remain independent and be responsible for their own funding. BIOTOPIA will be responsible for coordinating the network and supporting the partners in their work. We still need to develop fundraising strategies so that we can provide additional activities. Above all, we still need to clarify whether the network needs an institutional framework, and if so, how this needs to be organised.



One example for successful collaboration in our network: the 'Brightly Coloured and Invisible' temporary exhibition developed by the Museum Mensch und Natur was subsequently displayed in Bamberg.

‘How can people with leadership responsibilities simultaneously be part of a solution to the complex challenges of the global community – a solution that guarantees prosperity for everyone, is mindful of natural resources, and ensures that people in every region can lead sustainable, fulfilling lives? We identify closely with BIOTOPIA’s interdisciplinary approach and agree that alongside responsible leadership, we also need industry, politics, science and civic players to work together more closely. Major crises such as pandemics or climate change reveal the fragility of the bonds that hold our global society and our planet together. BIOTOPIA has the gift of presenting these close interrelationships to a wider public in a clear and comprehensible manner. We look forward to continuing our cooperation with Michael John Gorman and his team.’

Dr Frank Niederländer

CEO of BMW’s Herbert Quandt Foundation

‘The world will be a different place after corona. Already, we can see that people around the globe are realising first-hand, under dramatic conditions, just how fragile life can be on our planet. And the impact that a virus can have on each and every one of us. But despite all the pain and loss which people are suffering on a personal level, an unparalleled crisis like this one also brings opportunities. It calls us to focus on the things that really matter. More than ever, it’s lighthouse projects like BIOTOPIA that bring home to us just how valuable nature is for humankind. We’re realising that all continents and all people are in the same boat. And it’s up to us to keep the boat on the right course. The good news is that we can do it! That’s something we’ve learned from the global lockdown. Without doubt, BIOTOPIA is an important compass and will play a valuable role in helping us to stay on course.’

Yvonne Molek

Co-Founder, Member Advisory Board Wilde & Partner Communications GmbH

Member of the Board for South Bavaria’s VdU branch (Association of German Women Entrepreneurs)

V. EVENTS

Highlights 2019

'In times when the public is becoming increasingly concerned about the breakdown of biological diversity, and we see revolutionary developments in life sciences, BIOTOPIA takes a visionary and demand-led look at the relationships between human beings and other species, and focuses on understanding how they connect in terms of behaviour patterns, activities and processes. One particularly innovative aspect is their interdisciplinary approach which seeks to combine life sciences with art and design. This allows the museum to attract a new target audience and help people bond with science on an emotional level.'

Professor Volker Mosbrugger

General Director of the Senckenberg Society for Nature Research

SEMINAR: THE FUTURE SUPPER – SUSTAINABLE FOOD DESIGN

Through the LMU Faculty of Life Sciences in Society, Michael John Gorman and Samara Rubinstein collaborated with the LMU Institute of Genetics and Munich University of Applied Sciences to offer an interdisciplinary seminar called 'The Future Supper – Sustainable Food Design' in the winter semester. This seminar brought together scientists, designers and museum professionals to tackle current issues around sustainable food and eating behaviour. Throughout the summer semester, teams of Biology and Design students continued to work on projects, which ended up being showcased at the BIOTOPIA EAT Festival.

EAT THE FUTURE – TOPIC AT THE INTERNATIONAL DLD CONFERENCE (DIGITAL, LIFE, DESIGN)

For the DLD conference on 20 January in Munich, BIOTOPIA organised an interdisciplinary panel debate that explored the future of food and its impact on the environment. Dr Nina Möllers, Director of BIOTOPIA Lab and Events, hosted the panel, which was comprised of Hila Cohen from the United Nations World Food Programme, Zack Denfeld from the Centre of Genomic Gastronomy, Professor Ophelia Deroy from LMU Munich and Amit Zoran from the Hebrew University of Jerusalem.



'The Future Supper – Sustainable Food Design' seminar with Dr Samara Rubinstein and Professor Michael John Gorman.

‘BIOTOPIA is one of the most watched experiments in the field right now, but calling it an experiment implies that there is more risk than I think is really there. This is the way of the future and I only hope it won’t take the rest of us too long to catch up.’

Tom Rockwell

Creative Director Exploratorium, San Francisco

MUNICH CLUB – THE FUTURE OF FOOD

On 8 February, Maximilian Schoeberl, Executive Vice President of BMW Group, and Dr Thomas Girst, Director of Cultural Activities at BMW, asked Professor Michael John Gorman to deliver a lunchtime lecture on ‘The future of food’. Amongst those invited to attend the lecture were Bernd Sibler, Minister of State, and prominent representatives from culture, politics and industry in Munich.

WHAT DOES THE FUTURE OF FOOD LOOK LIKE?

On 12 March, BIOTOPIA was invited by Steffi Czerny, co-founder and CEO of Digital Life Design (an international conference and innovation platform), to a lunchtime talk in Burda Bar.

In an informative and entertaining lecture, Professor Michael John Gorman began by talking about the loss of biodiversity. He progressed to talk about food production for a growing global population, discussed the diet proposed by the EAT-Lancet Commission – a diet which protects people and the planet in equal measure – and ended by talking about the technology of the future, vertical farming and food innovations such as artificial meat. Locally produced dried crickets were passed round as a snack. Dr Nina Möllers, who is responsible for BIOTOPIA events and is director of the BIOTOPIA Festival, shared exclusive insights into the programme for the 2019 festival ‘EAT – TASTE THE FUTURE!’

During the lunch that followed, a lively discussion ensued on how food could and must be instrumentalised to optimise human health and ecological sustainability. Many thanks to Steffi Czerny for taking the initiative and sharing this subject with her excellent network at the DLD lunch!

A PLACE TO PLAY?

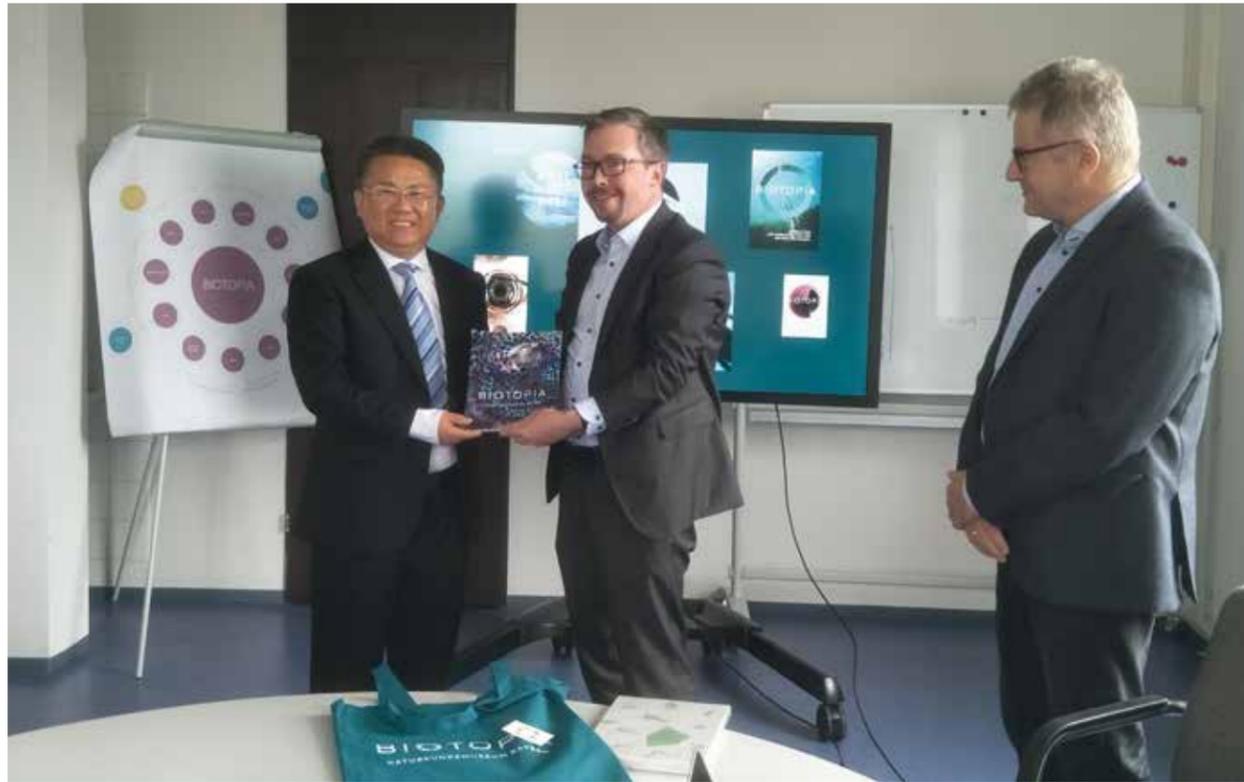
What is the role of ‘play’ in a modern museum? How can we capture the public’s interest, and how can we use technology to help them experience content in a new and playful manner? These were the questions which Professor Michael John Gorman explored in his opening lecture at the international ‘MuseumNext’ conference in Sydney on 1 April.

NATURE – COOPER HEWITT DESIGN TRIENNIAL

The exhibition, which was curated jointly by Cooper Hewitt, Smithsonian Design Museum, New York, and the Cube Museum in Kerkrade, Netherlands, opened in New York on 10 May. Contributions from 62 international design teams showed how people connect with nature at the points of intersection with technology, politics and science. Professor Michael John Gorman was involved here as curatorial advisor and helped select the designers. For the accompanying ‘Nature’ book, he also contributed an interview: ‘Collaboration in design’. An adapted version of the exhibition was also shown at the World Economic Forum in Davos from 21 to 24 January 2020.



‘Nature – Cooper Hewitt Design Triennial’: Professor Michael John Gorman as curatorial adviser for the exhibition. Installation, right: TerraformONE, ‘Monarch Sanctuary’ integrates biodiversity into the facade.



The Shanghai Science and Technology Museum visits BIOTOPIA and the Museum Mensch und Natur.

THE SHANGHAI SCIENCE AND TECHNOLOGY MUSEUM VISITS BIOTOPIA

On 16 May, BIOTOPIA and the Museum Mensch und Natur welcomed a delegation from the Shanghai Science and Technology Museum. The delegation was comprised of Wang Lianhua, Deputy Director-General of SSTM, Wan Hong, Director of the Administration Office, SSTM, Gu Liya, Director of Human Resources and Cadre Management Dept. SSTM, and Shen Yan, Science Communicator.

SOUNDSCAPE MASTERCLASS

From 11 to 18 May 2019, the American musician, sound ecologist and artist Bernie Krause, the father of soundscaping, held a soundscaping masterclass for selected scientists and artists. One of the goals of this collaborative project between BIOTOPIA and the Nantesbuch Foundation was to record sounds on the site of Nantesbuch, analyse them and use them to create a sci-art work called 'The Sounds of Nantesbuch' that will be installed in the future museum. Another goal was to pass Bernie's treasure trove of experience on to young scientists and artists.

Participants: Andreas Baumüller, Head of Natural Resources, WWF Brussels; Dr Henrik Brumm of the Max Planck Institute for Ornithology, Seewiesen; English researcher and musician Tom Hull; Clare Langan, Irish film and video artist; visual designer Rico Reitz; Professor Michael Scherer-Lorenzen, biologist and sound ecologist; and the Croatian multimedia conceptual artist Dora Tomic.



Joint project between BIOTOPIA and the Nantesbuch Foundation: soundscaping master class with the American musician, soundscape ecologist and artist Bernie Krause.

“The best way to recognise a healthy habitat is to use your ears” (Bernie Krause). The “Soundscaping master class”, which was organised jointly by BIOTOPIA and the Nantesbuch Foundation and held in the Long House in May 2019, introduced Bernie Krause (pioneer of soundscape ecology) to scientists, artists, designers and networkers for a week of inspiration and dialogue. Together they recorded sounds of nature on the Nantesbuch estate, connecting with nature and art in a wonderfully sensual and spiritual yet hands-on manner.’

Börries von Notz, Dr Konstantin Reetz
Nantesbuch Foundation Art & Nature



Professor Michael John Gorman and Professor Bill Hansson, Vice-President of the Max Planck Society, sign a joint declaration of intent to collaborate.

GETTING PEOPLE EXCITED ABOUT BASIC RESEARCH: BIOTOPIA AND THE MAX PLANCK SOCIETY

On 21 May, Professor Bill Hansson, Vice-President of the Max Planck Society, and Michael John Gorman, founding director of BIOTOPIA, met in Munich to sign a joint declaration of intent to collaborate.

CURIOSITY IN THE MUSEUM

On 22 May, the Bavarian Academy of Science organised a podcast debate between Dr Frank Kammel, Director of the Bavarian National Museum, and Professor Michael John Gorman. The two discussed curiosity in the museum context, the House of Wittelsbach in 3D, and why it's sometimes good to introduce chaos into an orderly collection.

ECSITE WORKSHOP: FACING THE SIXTH EXTINCTION: WHAT CAN WE DO?

In June 2019, Michael John Gorman and Samara Rubinstein participated in the 30th annual Ecsite Conference (European Network of Science Centres and Museums), hosted by Experimentarium in Copenhagen, Denmark. The 2019 event was the largest Ecsite Conference ever, with 1,190 participants from 59 different countries. Michael John Gorman convened a workshop called 'Facing the Sixth Extinction: what can we do?' and, along with Maria Isabel Garcia from The Mind Museum in the Philippines, inspired participants to share programme ideas and stimulate new collaborations to address urgent issues regarding biodiversity and the current extinction problem.



Participants of the workshop 'Facing the Sixth Extinction: What can we do?'



BIOTOPIA's EAT – TASTE THE FUTURE! Festival.

BIOTOPIA FESTIVAL: EAT – TASTE THE FUTURE!

What sort of foods will we eat in the future? How do our eating habits impact the planet? In the long term, how can we produce food without destroying ecosystems? Is lab-grown meat a viable alternative – or will we have to make do with seaweed burgers?

These exciting questions – and many more – were on the agenda at the second BIOTOPIA Festival, held on 26 May 2019. With an international line-up of scientists, designers and artists, the festival offered a colourful and highly diverse programme.

Dr Nina Möllers, director of the festival, attached great importance to ensuring that the exhibitions, hands-on activities, degustations, lectures and discussions were all as interdisciplinary and family-friendly as possible. Amongst other things, visitors were able to taste ice-cream cones made from apple pulp, visit the aeroponics stand and see how plants grow without soil, use algorithms to generate a personalised sauce recipe, test the ancient preserving technique of fermentation, find out about the links between diet and adiposity, and chat with experts and the founders of start-ups.

Nor did the organisers forget to provide plenty of sensory delights: in the multi-sensory 'A Taste of All Senses?' experience, Professor Ophelia Deroy, expert for multi-sensory perception at LMU University, teamed up with Jozef Youssef, star chef and founder of the 'Kitchen Theory' think tank, to show visitors the role which all of our senses play when we're confronted with food. Or how our senses affect our enjoyment of food. With accompanying music played by musicians from the Munich Chamber Orchestra, the audience was able to experience how we are affected by the taste, smell, colour, shape and feel of food when we eat – and surprisingly, also by music and sound.

'BIOTOPIA Festival is an interdisciplinary, interactive environment with exhibitions, workshops and talks. The most inspiring aspect was the opportunity to meet a range of people coming from research, design and education concerning food systems. We would recommend participating in BIOTOPIA Festival to anyone who is interested in experiencing a welcoming atmosphere and an immersive learning event.'

Emily Whyman & Jessica Guy
Action researcher & designer

'Only an intact environment can produce healthy foods. If we destroy it, we destroy our basis for survival. We cannot take more from nature than can grow back. And we need to learn to work hand in hand with nature – not against it. The BIOTOPIA concept fosters a better understanding and appreciation of nature, biodiversity and ecosystems, and helps visitors to develop a sense of responsibility towards their environment. This is the only way to keep the world enjoyable and worth living in for future generations.'

Stefan Hipp
Shareholder of HiPP



Impressions from the BIOTOPIA EAT – TASTE THE FUTURE! Festival.



Impressions from the BIOTOPIA EAT – TASTE THE FUTURE! Festival.



Press interview for the opening of the MEAT THE FUTURE exhibition with (from left to right): James Arbib, Dr Auguste von Bayern, Dr Michael Apel, Professor Michael John Gorman, Dr Rolf-Dieter Jungk, Dr Nina Möllers.



MEAT THE FUTURE

The festival and the accompanying MEAT THE FUTURE exhibition were ceremonially opened on 24 May in the presence of Dr Rolf-Dieter Jungk, departmental head of the Bavarian State Ministry for Science and Art, and with a lecture given by James Arbib, co-founder of the RethinkX think tank, in which he talked about radical changes in meat production.

The BIOTOPIA Festival was accompanied by the MEAT THE FUTURE exhibition. This was on display in the Museum Mensch und Natur from 25 May to 23 June.

As we grapple with the future of our food, our relationship to meat requires special attention. In light of intensive animal farming, a growing global population and climate change, the way we currently produce and eat meat is highly questionable. But how could it be managed in the future? Is lab-grown meat a viable alternative?

The MEAT THE FUTURE exhibition included an inspiring debate which triggered lively discussions amongst visitors on meat consumption in the future. Thirty speculative lab-grown meat dishes were presented, challenging us to re-think our eating habits, question our routines and think about the consequences of our diet. Sometimes tongue in cheek, sometimes provocative and sometimes contemplative, they opened up completely new perspectives on the way we might eat in the future.

Developed by the CUBE design museum Kerkrade in the Netherlands together with the Next Nature Network, the exhibition included contributions from designers, engineers and scientists who explored lab meat from the perspective of design, ethics and sustainability. Hosted in the Museum Mensch und Natur, the exhibition was also a fruitful contribution to the cooperation between the Museum Mensch und Natur and BIOTOPIA.

In the spotlight topic on page 10, we took a closer look at the key BIOTOPIA themes of food and diet, and how they are linked with our environment and our health.



The MEAT THE FUTURE exhibition in the Museum Mensch und Natur.

SPACES, TREES AND BIODIVERSITY

The 'denkraum' (room for thought) platform operated by the BMW Herbert Quandt Foundation is an open platform for bold ideas, offering international decision-makers a place where they can share their thoughts across borders. On 23 June 2019, the theme of the 'denkraum' was 'Good Life and Sustainable Cities in 2030'. Here, Professor Michael John Gorman hosted the 'Spaces, Trees and Biodiversity' workshop. Amongst other things, this workshop looked at the advantages which cities can enjoy by attracting more insects and birds, how green roofs can lower energy consumption, and how green oases in the city can improve health.

STRENGTHENING ENVIRONMENTAL RESEARCH IN THE HUMANITIES

On 3 July, BIOTOPIA was involved in a successful application for funding submitted by the Rachel Carson Center, LMU Munich, to the Volkswagen Foundation. As part of a programme entitled 'University of the Future', the foundation will be channelling a million euros over a seven-year period into a project which aims to help the humanities and social sciences at the LMU University in Munich to engage in more environmental research.

SUSTAINABILITY AND WOMEN TODAY 2019

On 3 July, MSTARs, a women's network at Munich Airport, organised a panel discussion in the new Mühlendorf area of Munich's Hellabrunn Zoo. The subject: 'Women in motion – sustainability and women in the modern age'. The event was presented by Vanessa Haumberger, Director of Political Affairs at Munich Airport. She was joined on the stage by Dr Auguste von Bayern, Chair Förderkreis BIOTOPIA e.V., Christine Gerner, Head of Technical Engineering at Hellabrunn Zoo, Marina Bylinsky, Head of Sustainability for ACI Europe, Dr Patricia Parlevliet, Senior Research Project Leader for Airbus Blue Sky, and Adriane Schua, President of the Unser Land e.V. Society.

THE MUSEUM JOINS THE MASSACHUSETTS INSTITUTE OF TECHNOLOGY

On 24 September, Professor Michael John Gorman took part in a meeting of an art/science committee which has been newly founded by the MIT Museum in Cambridge, Massachusetts. He is a member of the committee, which seeks to support the work of the MIT Museum in the broad fields of art, science and technology.

COLOURFUL AUTUMN LEAVES IN NANTESBUCH

As part of the Nantesbuch Foundation's autumn festival on 3 October, Dr Thassilo Franke, research associate on the BIOTOPIA team, gave a lecture entitled 'Colourful autumn leaves – the meaning of colours in nature'. Every last seat in the fireplace lounge of the 'Long House' was taken. In his mobile 'lab' – a converted pram – Dr Franke isolated plant pigments from leaves. He then used ultraviolet light to make the chlorophyll fluorescent and referred to the purple glow as the 'fuel of life' – the energy that is stored as carbohydrates during photosynthesis. The audience thoroughly enjoyed his interactive presentation.



Board members of the Verband Deutscher Unternehmerinnen e.V. (VdU) (Association of German Women Entrepreneurs) and Dr Auguste von Bayern at an event entitled 'Women in Motion – Sustainability and Women Today'.

'In times of great ecological breakdowns, BIOTOPIA has the potential to become a global leading voice that will inspire whole generations to forge a more balanced relationship and tuning in with our living planet. Its vision is the most beautiful vision of any museum that I have ever seen.'

Alexandre Fernandes

Co-founder at Museum of Tomorrow, Rio de Janeiro
Founding Director at MOTI, Amsterdam



BIOTOPIA at the Long Night of Museums. Right: Conference to found FORMS (Futures-Oriented Museum Synergies).

THE LONG NIGHT OF MUSEUMS

'Everything in motion' – this was the theme of the highly varied programme presented by the Museum Mensch und Natur and BIOTOPIA on 19 October. Attracting a record number of nearly 2,700 visitors, the event included activities such as the 'Birdly' flight simulator, which showed the world from a bird's eye perspective, as well as an earthquake simulator where visitors could feel the earth tremble beneath their feet.

MEETING TO LAUNCH 'FORMS'

From 27 to 29 October, a two-day event was held in Amsterdam to launch FORMS (Futures-Oriented Museum Synergies). More than twenty directors from forward-looking museums around the globe met to discuss new ways of sharing ideas and moving forward successfully into uncharted territory. Members include Miraikan Tokyo, the Science Museum in London, the Museum of the Future in Dubai, the Museum of Tomorrow in Rio de Janeiro, and BIOTOPIA.

THE #BEEBETTER AWARDS

The first ever #beebetter awards were conferred on 5 November in Berlin. The brainchild of Hubert Burda Media, this initiative confers awards in five categories for projects which help to protect wild bees. Dr Nina Möllers, Director of BIOTOPIA's Lab and Events, was a member of the jury and helped to choose the winning projects.

BACK TO THE FUTURE!

'Back to the future!' was the theme of an event hosted by TEDxMünchen on 10 November. Visionaries from the fields of science, art, industry and design took to the stage in Munich's Kammerspiele theatre. Professor Michael John Gorman was also present and gave a TEDx talk entitled 'From Extinction to Empathy'.



Nina Ruge, prize-winners Armelle Mai-Thesing and Marion Mahnke ('Bees in kindergartens' / Youth & Education category), Uschi Glas and presenter Dr Nina Möllers (BIOTOPIA) at the 2019 #beebetter Awards on 5th November 2019 in Berlin.



TEDxMünchen Talk 'Back to the Future!'.

OPPORTUNITIES AND SIDE EFFECTS – MUSEUM 4.0

As part of their annual conference from 14 to 16 November, the ICOM Germany (International Council Of Museums) invited museum experts to explain how and why digitalisation is important in museums, and to discuss the consequences and benefits of current projects in this field. On 14 November, Professor Michael John Gorman gave a talk entitled 'Beyond the Digital Museum: Reinventing the Natural History Museum for the Biological Century'. During the course of the general meeting, Professor Gorman was voted onto the board of directors for ICOM Germany.

ANTHROPOCENE THEME DAYS AT THE NANTESBUCH FOUNDATION

In November, the Nantesbuch Foundation dedicated three whole days to an interdisciplinary exploration of the Anthropocene. Dr Nina Möllers presided over the round table which opened the event. Here, participants discussed the theme from the perspectives of geology, politics, science journalism and literary studies.



Holger Sengewald and Sonja Graven, Museum Mensch und Natur, setting up the exhibition 'All the Time in the World – from the Big Bang to the Ticking Clock'.

ALL THE TIME IN THE WORLD – FROM THE BIG BANG TO THE TICKING CLOCK

On 5 December, the opulent and elaborate exhibition 'All the Time in the World – from the Big Bang to the Ticking Clock' opened in the Museum Mensch und Natur. As the last major temporary exhibition before the closure of the museum, it aims to build a bridge between the successful and popular exhibition projects in the Museum Mensch und Natur and those in the future BIOTOPIA museum.

Accordingly, the extensive and interdisciplinary exhibition was developed by a team that included not only staff from the Museum Mensch und Natur, but also members of the BIOTOPIA planning team and staff from other regional museums and collections in the SNSB. Caroline Illinger, Dr Gilla Simon and Dr Michael Apel from the Museum Mensch und Natur developed the core content of the exhibition, supported by Dr Thassilo Franke and Dr Moritz Hertel on behalf of BIOTOPIA, who helped the team of curators to select and organise content. Thanks to Moritz Hertel, the planning team was also able to connect with several Max Planck Institutes which made exhibits and information available to the exhibition. In addition, colleagues from a wide range of institutions around the world supported the project. Monika Waigand and Alfred Küng from Munich helped to design the exhibition and oversaw the assembly work, which was completed by the General Museum Workshops team together with staff from the Museum Mensch und Natur.

In terms of content, the exhibition explores a phenomenon which is as strange as it is normal: time. Throughout our lives, we take time almost for granted. Every day, we submit to its demands – and are always aware that we only have a limited lifespan. Yet even though time is so 'normal', it is very hard to understand or explain.

The 'All the Time in the World' exhibition encompasses all aspects of time – from the big bang and the cosmic dimensions of time to the history of our planet, and from the chronological development of life to body clocks and 'social jetlag'. We're particularly pleased to have welcomed the well-known astrophysicist and scientific journalist Harald Lesch on board to steer our visitors through their journey through time and space. Countless exhibits, spectacular pictures and presentations are complemented by hands-on activities and special workstations for children, making this an exhibition for old and young alike.

The exhibition is scheduled to run until the end of 2020 in the Museum Mensch und Natur before touring round the other regional museums.

WHERE NEXT FOR ART AND SCIENCE?

The 'Forum Wissenschaftskommunikation' is the largest conference for science communication in the German-speaking area. In 2019, it was held from 10 to 12 December in Essen. Around 500 participants enjoyed keynote speeches, sessions and workshops that revolved around the theme of 'Science meets Art' and explored questions such as: What are the points of intersection between the two areas? How do artists and entertainers incorporate science in their work – and how could more collaboration with artists benefit research? On the opening day, Professor Michael John Gorman gave a lecture entitled 'Where next for art and science?'

JURY SESSION – BIOTOPIA SENSE FESTIVAL OPEN CALL

In preparation for SENSE, the third BIOTOPIA Festival, BIOTOPIA invited professionals from the fields of science, art, performance and design to submit ideas for installation art, workshops, public experiments, immersive experiences, performances and hands-on activities. An interdisciplinary jury of curators evaluated the submissions on 13 December.



The jury, from left to right: Professor Michael John Gorman, Professor Ophelia Deroy (Chair of Philosophy of Mind, LMU), Professor Ilona Grunwald Kadow (Neuronal Control of the Metabolism, TUM), Professor Gordon Cheng (Director of the Institute for Cognitive Systems, TUM), Professor Andreas Heinecke (Founder and CEO of Dialogue Social Enterprise GmbH), Dr Jens Hauser (Art Curator and Media Scientist, Paris), Dr Nina Möllers (Festival Director) and Dr Dora Dzvonyar (Creative Producer BIOTOPIA SENSE Festival).

PREVIEW

THE BIOTOPIA SENSE FESTIVAL

Hard as it might be to imagine – the way we perceive the world is not always the full story. For example, bats can hear sounds that we can't hear or process. A mantis shrimp can see ten times the number of colours that we can see. Migratory birds can 'sense' the earth's magnetic field, giving them impressive orientation skills. And when it comes to smell, the polyphemus moth is in a class of its own. As humans, we only experience a tiny portion of the stimuli that are perceived by other creatures. Hundreds of sensations remain a closed book to us. Not only that – but our senses can easily be manipulated and tricked by internal and external factors. So if we want to be more conscious and sensitive to the world around us, we need to understand how our brains process and interpret sensory information. Today, technological progress means that we can improve or expand our senses with innovations such as subcutaneous sensors or virtual worlds. How will these developments change the way we act and the way we live together in the future?

With the third BIOTOPIA Festival we'll be exploring the whole spectrum of sensory perceptions in different living creatures, and seeing how they interconnect with life sciences, neurosciences, art and design. The highly varied programme will revolve around the themes: How do different species perceive the world? How do our brains interpret sensory input and our environment? How can we influence or expand our senses? And how can we develop mindfulness and empathy towards other living creatures and towards our environment?

Join us in looking forward to more than 45 workshops, hands-on activities, installation artwork and exhibits – along with various lectures, panel discussions, multisensory experiences and performances. The event will be supported by various organisations and individuals, including the SNSB (Bavarian Natural History Collections), the Munich Botanical Garden, the Max Planck Society, scientists from the Munich Centre for Neurosciences at LMU University, the Hirnkastl Science Collective, Sissel Tolaas (artist and smell researcher), neuroscientist Beau Lotto, the Iwanson International School of Dance, and British drummer and composer Evelyn Glennie.

Regrettably, in June 2020 we had to make the decision to postpone the SENSE Festival to 2021. Measures taken by the federal and state governments due to the corona pandemic prohibiting major events from taking place until the end of October, as well as concern for the safety of all those involved – participants, organisers and visitors – made this step necessary.

VI. COMMUNICATION

MEDIA RESPONSES

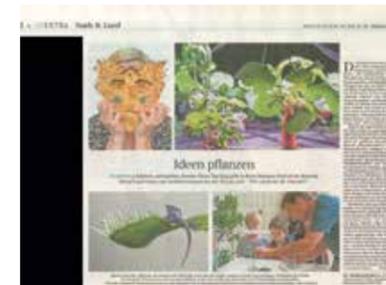
Articles in various newspapers – ‘Planting ideas’ (Süddeutsche Zeitung, 23/5/2019), ‘The taste of the future’ (tz, 24/5/2019) and ‘Will we soon be eating mammoth meat?’ (Abendzeitung, 25/5/2019) – reflect the great media interest in BIOTOPIA’s festivals. This is hardly surprising when one considers how deeply the subjects – which will also feature in the permanent exhibition of the future museum – affect all of us. In 2019, the EAT – TASTE THE FUTURE! Festival and the MEAT THE FUTURE exhibition, which opened simultaneously in the Museum Mensch und Natur, not only provided plenty of food for thought, but also a myriad of interesting, colourful pictures – some of which even bordered on the revolting. Impressed by the way BIOTOPIA and the Museum Mensch und Natur combined futuristic visions with an honest and critical look at the status quo, Bavarian television included a report on the event in their evening news on 27/5/2019.

In 2019, the attention of the media was also attracted by further activities organised by the BIOTOPIA development team together with partners.

For example, the Nantesbuch Foundation and BIOTOPIA invited Bernie Krause, an American performer and soundscape ecologist, to visit upper Bavaria in May 2019 and join with artists and scientists of international renown in creating an acoustic record of the landscape around the Nantesbuch estate. Reports on the week-long ‘Soundscaping master class’ appeared in the local sections of the Süddeutsche newspaper (25/5/2019) and the Münchner Merkur (31/5/2019). In an article entitled ‘Human traces’ published on 14/11/2019, the local section (for the Bad Tölz-Wolfratshausen district) of the Süddeutsche newspaper also reported on the Anthropocene panel discussion organised by the Nantesbuch Foundation and hosted by Dr Nina Möllers, Director of BIOTOPIA Lab and Events.

Mention has also been made in the press of the commitment shown by other members of the BIOTOPIA team. For example, SZ.de reported on Dr Thassilo Franke’s biology lectures for children, in an article which appeared in the Wissenstipp section on 17/11/2019.

Nor does Professor Michael John Gorman, founding director of BIOTOPIA, require a special occasion or particular cause to enthuse people the whole world over with his vision; his quote ‘A museum is a bit like an onion’ promptly served as the headline for an interview he gave the Bavarian Academy of Science, which was published in the October 2019 edition of their magazine. The innovative reputation of our upcoming Natural History Museum has even reached the distant shores of Australia; during his trip to the MuseumNext conference in Sydney in April 2019, Michael John Gorman was asked to give several interviews. German listeners can even download one of these interviews as a podcast via the Special Broadcasting Service’s dedicated channel for German listeners (SBS Deutsch, ‘BIOTOPIA – Leben und Umwelt neu entdecken’).



BIOTOPIA featured regularly in the media in 2019. In particular, the media responded enthusiastically to the BIOTOPIA EAT Festival and the ‘Soundscaping master class’ with the internationally renowned soundscape ecologist Bernie Krause. Excerpts from newspaper reports on BIOTOPIA.

BIOTOPIA ONLINE

In order to firmly embed BIOTOPIA in the national and international museum landscape, work continued in 2019 on its online presence. This not only included further developing the www.biotope.net website, but also ensuring newsletters were sent out regularly and profiles created on social media channels such as Facebook, Twitter and Instagram.

BIOTOPIA continues to attract interest on social media. In 2019, the Facebook page proved to be particularly successful. It reached out to a wide audience and now has more than 5,800 followers (31/12/2019). The BIOTOPIA Facebook page proved particularly popular during the EAT Festival. Another popular post was the video of a young axolotl, uploaded in honour of the 250th anniversary of Alexander von Humboldt's birth. Humboldt was responsible for bringing this salamander to Europe, and the video received more than 150 likes.

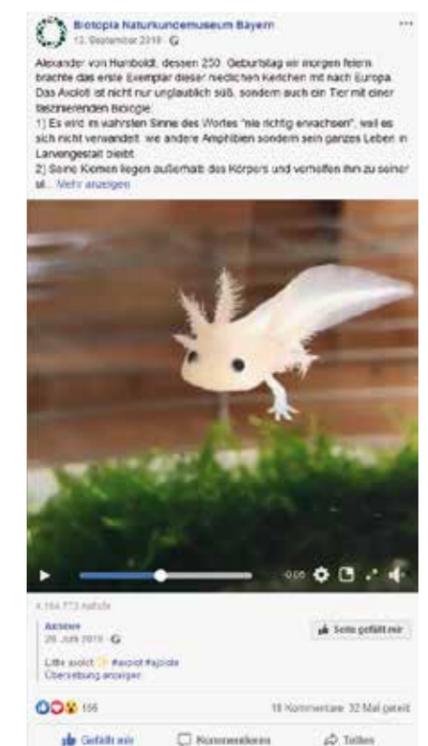
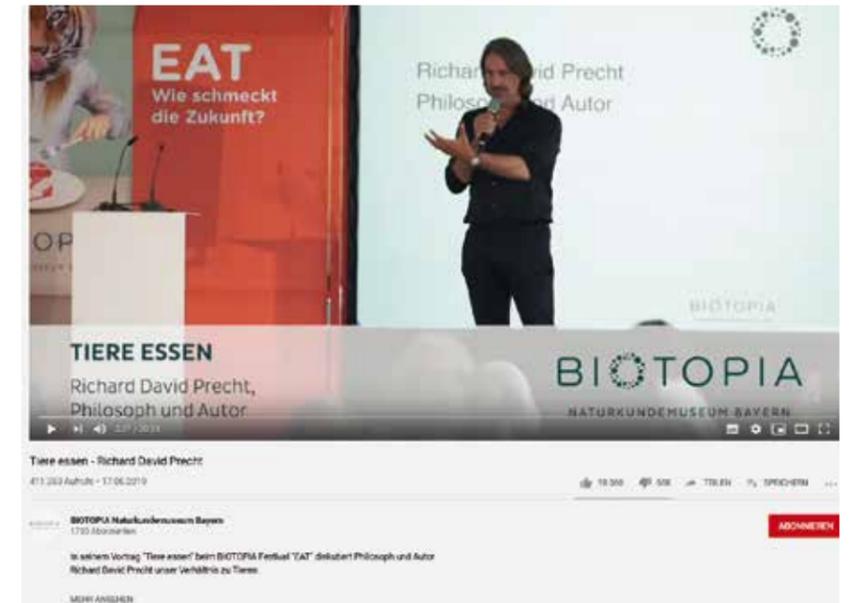
Created in 2018, BIOTOPIA's Instagram channel features exciting posts and high-quality images, and has now succeeded in breaking the 1,000-follower barrier. The number of followers on Twitter also grew considerably in 2019, increasing by nearly 48%.

By the end of 2019, BIOTOPIA's YouTube channel had gained more than 1,600 subscribers and well over 390,000 views. Across all social media channels, it was posts and videos on the EAT Festival that proved particularly popular. For example, the YouTube video of Richard David Precht's lecture on 'Eating animals' has been called up more than 420,000 times. 'Why are we getting fat? It's all in the brain' and 'Is lab-grown meat the answer?' also number amongst the most frequently viewed YouTube videos on our channel in 2019.

Counting 93,500 impressions, August was by far our most responsive month on Twitter.

In terms of the website, work focused on creating a page for festivals, developing a form for donors, and providing information on the metamorphosis from the Museum Mensch und Natur to BIOTOPIA.

In the field of digital communication, BIOTOPIA has set itself new goals for 2020. On social media channels, the focus will be on producing content of our own. Given the current exceptional situation in the world and all the public restrictions caused by Covid-19, a museum's online presence plays a decisive role. BIOTOPIA and the Museum Mensch und Natur are currently working on a strategy to enable internet users to access the museum experience from the comfort of their own home. In addition, BIOTOPIA has teamed up with the Nantesbuch Foundation and the Max Planck Society to plan a major international citizen science & art project. Entitled 'Dawn Chorus', the project will enable people the whole world over to enjoy, record and share early morning birdsong on www.dawn-chorus.org. The recordings will then be made available to science and art for further projects.



#Lifesciences: From the Birdly flight simulator to Richard David Precht's lecture at EAT to a cute little axolotl – BIOTOPIA gained lots of new fans and followers on social media in 2019 thanks to fascinating pictures and great stories. A selection of online reports on BIOTOPIA.



BIOTOPIA – CONTRIBUTORS

‘BIOTOPIA inspires people to see the world with different eyes. BIOTOPIA reveals the beauty and fascinating appeal of nature and awakens people’s curiosity to find out more about nature. Understanding complex natural correlations is the first step towards acting responsibly and mindfully towards nature. As such, BIOTOPIA plays an important role in preserving biodiversity. So I’m delighted to be a part of BIOTOPIA.’

Professor Christian Laforsch

Chair for Animal Ecology, University of Bayreuth

FÖRDERKREIS

FÖRDERKREIS BIOTOPIA E.V. (FRIENDS SOCIETY)

In order to turn a utopia into a reality, you need good ideas – and money. BIOTOPIA can only develop into a new, world-class life science museum and platform if lots of people and groups join forces. The Förderkreis BIOTOPIA e.V. has taken this task upon itself. Founded in 2012, its goal is clear and simple: to get citizens, businesses, foundations and research institutes interested in and excited about the BIOTOPIA vision, and to win their active support.



Dr Auguste von Bayern goes out into nature to record birdsong for the Dawn Chorus project and enjoy listening to this recurring yet remarkable phenomenon.

‘Motivating people to take action is the greatest modern-day challenge’

Dr Auguste von Bayern

Chair Förderkreis BIOTOPIA e.V.

Susanne Hermanski, Director of Culture & SZ Extra for the newspaper Süddeutsche Zeitung, talked to Dr Auguste Prinzessin von Bayern, Chair Förderkreis BIOTOPIA e.V. As a zoologist, she conducts research into the intelligence of parrots and ravens. She also has three young sons who can be sure of one thing – their parents don’t just dedicate their Fridays to the future...

Greta Thunberg and ‘Fridays for Future’ rocked the world in 2019. Do these issues play a role for BIOTOPIA?

Of course. Thunberg is an amazing trailblazer for fundamental change that was long overdue but is now finally starting. ‘Climate protection’ has suddenly become the new buzzword and is infiltrating the zeitgeist. Deep down, the thoughts are similar to those which prompted us to found the BIOTOPIA Förderkreis e.V. in 2012. ‘Catching’ climate change before it’s too late and fighting to preserve biodiversity are pressing global challenges that we need to face. Life sciences – bioscience and environmental sciences, in other words – will play a key role in finding answers, alongside broad-based communication in society. Everything depends on the action we take in the next fifteen years, and whether or not we manage to change many of our habits.

BIOTOPIA will provide a forum for teaching and discussing life sciences, meaning the broad spectrum of biosciences and environmental sciences. How can one keep pace with the huge leaps forward in these fields? Wouldn’t it have been easier to develop a classic, 19th-century-style natural history museum?

It’s impossible to explore every single subject in depth at the same time. But BIOTOPIA aims to provide a forum for the most important questions and developments of the present age. It aims to provide highly varied programmes, activities and science festivals, and will exploit the advantages of temporary exhibitions and laboratories to keep pace with the times. BIOTOPIA will be a place where the general public, science, industry and politics converge and interact. Unless there is a professional, neutral environment in which information and ideas can be shared, real progress can never be made.

What role do you think art plays in connection with science?

Artists play a very important intermediary role in presenting the issues that move the world – which makes them very important for BIOTOPIA too. Nature is the greatest source of inspiration for people. You can even see it in cave paintings – people painted the animals in their environment. One example is the ‘Dawn Chorus’ project that BIOTOPIA has developed in collaboration with the Nantesbuch Foundation and Bernie Krause, a musician and soundscape ecologist.

What’s that about?

Basically, Bernie Krause has spent the last fifty years collecting ‘soundscapes’ and using them to create wonderful works of art such as the ‘Great Animal Orchestra’, which has a deeply moving effect on listeners. He uses special recording technology to record the sounds of nature in a particular place – from croaking frogs to bubbling brooks to buzzing

insects. And just imagine – by comparing recordings over the years, you could enable listeners to ‘experience’ the loss of biodiversity through the simple medium of hearing. This has inspired BIOTOPIA to call on people around the world, during the corona shutdown, to open a window at home and record the dawn chorus of birdsong on their mobile phones. With less traffic on the roads and in the air, the world has suddenly become a quieter place, and the dawn chorus can be heard much more clearly. The public response was overwhelming.

What will happen with the recordings?

The collection will be used for scientific research and will ultimately help species protection. Scientists will analyse the data in cooperation with the Max Planck Institute for Ornithology. This will give them a picture of the current status on ornithological diversity and means they can track future changes in certain locations over the long term, and work out the reasons for any changes. The data will also be used for basic research – for example, scientists hope to gain new insights into how flexibly birdsong adapts to noise in the environment.

What role does BIOTOPIA play for science?

BIOTOPIA aims to involve all Bavarian and many national and international universities and scientific institutions in its work. Last year, for example, it signed an official agreement to collaborate with the Max Planck Society. The BIOTOPIA team also seeks to forge links with important scientists and experts around the world and offer them a platform here in Bavaria where they can present their work to a wider public. BIOTOPIA will be offering a select number of scientists – and artists and designers too, incidentally – the opportunity to work for a period of months ‘in residence’, meaning they are given temporary living quarters and a workplace in the museum. Above all, though, BIOTOPIA gives them an opportunity to connect effectively with the public and help the public engage with science – an opportunity which they otherwise rarely have. During this time, they will interact with kindergarten children, school children and inquisitive adults.

What role does BIOTOPIA play for industry?

An independent platform like BIOTOPIA can be used to bring decision-makers from the community, business and politics together so that they can discuss the economic implications of sustainability and climate protection and possibly even establish strong and lasting start-ups in this field. It can also be used for congresses, press conferences or simple workshops.

Has industry developed a more ‘honest’ interest in sustainability over the last year?

I think the journey towards a ‘sustainable world’ has finally begun. It is becoming increasingly clear that consumers won’t tolerate lots of things for much longer. Plastic waste, for example. Nowadays, we’re confronted on all sides with the subject of avoiding plastic waste, microplastics and marine debris. On billboards, in supermarkets and on the internet. People finally feel ‘guilty’ if they forget to take their own bags and have to buy a plastic bag – which are often no longer available in any case. Where they are available, they are often (ostensibly) made from recycled materials. At long last, people are making a concerted effort to avoid plastic.



Dr Auguste von Bayern meets Bernd Sibler, Bavarian Minister of Science, to deliver the positive report on the donations she has been able to solicit for BIOTOPIA. The innovative concept developed by Irish-born Professor Michael John Gorman, the museum’s founding director, met with enthusiastic international approval even in the development phase.

And people think twice before flying ...

Yes, ‘carbon neutrality’ is becoming increasingly important. Many businesses – even major companies – have set themselves the goal of radically reducing their carbon emissions and becoming carbon neutral. Future generations will settle for nothing less, we can already see that.

Will BIOTOPIA manage to remain independent in its work and mission, even though it is financially supported by industry?

Of course. BIOTOPIA’s core mission is to help people deal mindfully with nature. For this reason, we only want partners who share our values. In any case, BIOTOPIA is a state institution and as such has a duty to remain neutral. So before we accept financial support, we consider carefully which partners we are willing to take on board. Merck, for example, is a globally renowned science and technology company which has been owned and managed by the same family for thirteen generations. It is involved in battling serious illnesses such as cancer, MS and even corona, and supports academic and industrial researchers in their lab work. At the same time, the company is working on issues like basic, energy-efficient IT structures. Merck is driven by scientific curiosity, and the same is true of BIOTOPIA. The people who run the foundations and companies that fund us must be genuinely interested in BIOTOPIA content and must share our values. We attach great importance to this.



Professor Michael John Gorman gives members of the Förderkreis BIOTOPIA e.V. an exclusive guided tour before the official opening of the EAT Festival.

Was 2019 a successful year in terms of fundraising?

Yes, very much so. Not least because Merck pledged us a generous seven-figure donation. We were also able to welcome new patrons and foundations. So we're proud to report that our Förderkreis BIOTOPIA e.V. has now managed to raise around ten million euros in donations since it was founded. Nonetheless, much work remains to be done in order to meet our goal of establishing BIOTOPIA as a Bavarian lighthouse project with international charisma – showcasing Bavaria to the global community.

So what figure are you aiming for?

We're aiming for double the amount. So that we can bring BIOTOPIA more and more to life, even before the actual opening of the building. In 2020, we'll be focusing on gradually building up the BIOTOPIA community – a circle of supporters, in other words. This is nearly as important as the construction work itself.

You're chairwoman of the Förderkreis BIOTOPIA e.V. Looking back over the last year, what do you personally see as BIOTOPIA's biggest step forward?

The BIOTOPIA science festival EAT. Last summer, this attracted lots of children and adults to Nymphenburg Palace in Munich – all hungry and eager to learn. Events like this convey the spirit of BIOTOPIA beautifully. They enable us to show the whole spectrum of life science themes we cover – from brain research to biotechnology to environmental sciences. This helps us to establish a community for BIOTOPIA before the building itself has even opened. And here and there it wins the hearts of supporters – that definitely happened at the last festival. Because even though BIOTOPIA is supported by the state, a huge venture like this also needs commitment and support from the general public.

Around the globe, are there any other institutions comparable to BIOTOPIA?

No, the BIOTOPIA concept and mission are unique. Whenever Professor Michael John Gorman, the founding director of BIOTOPIA, attends international conferences for the major museums around the world – the 'Future-Oriented Museums' network, for example – the concept is met with excitement and praise. Alongside state-of-the-art institutions such as the Museum of Tomorrow in Rio de Janeiro, the Natural History Museum in New York and the Naturkundemuseum Berlin are also part of this network. The latter two are classic natural history museums in 19th-century style. Many of them have built up their collections over the course of centuries. That's an amazing heritage, of course. But the other side of the coin is that Michael John Gorman is totally free with BIOTOPIA to think outside the box and develop something completely new. He doesn't have to cater to any in-house demands, so he's not tied to a particular framework. At the same time, the collaboration with the Bavarian Natural History Collections will allow him to draw on their treasures right from the start; for them, this is the 'shop window' they so urgently need.



Opening of the BIOTOPIA EAT Festival.

On a personal level, where do you find the inner resources to espouse a project like BIOTOPIA?

I see huge potential in BIOTOPIA to trigger positive change. BIOTOPIA's declared aim is to motivate people to take action, and that is the greatest modern-day challenge that we need to meet! Nowadays, many people believe there are only two options: lose your mind, or bury your head in the sand like the proverbial ostrich. BIOTOPIA will show lots of possible courses of action and encourage people to pull their heads back up out of the sand and look at things from a different perspective. And persist until we see solutions and are courageous enough to steer towards them.

An enticing vision!

I'm firmly convinced that humankind is potentially able to restore the balance on our planet. That we can preserve biodiversity and the last natural habitats, and that we can deal with climate change. We are the deciding generation here. We have no option but to think positively!

In 2020, what is the most important step for BIOTOPIA?

Alongside the successful global citizen science & art project 'Dawn Chorus', it's the start of the small BIOTOPIA satellite, the BIOTOPIA Lab. This exhibition space in the Munich Botanical Garden is like a shop window for BIOTOPIA and its future programme. It's ready and waiting. This lab would have opened in the spring of 2020 had it not been for the corona pandemic. At present, however, I'm confident that the BIOTOPIA team will soon be able to showcase more of its plans there – embedded in nature and the gardens, and close to the greenhouses where plants from around the world grow and thrive, and where the butterflies dance for a few weeks every year. Right from the start, it will reflect BIOTOPIA's core values – to ignite curiosity, encourage empathy and a change of perspective, and motivate people to take action. Which is all summed up in the three little words curiosity, empathy and agency.

Make a greater impact: Become a member or make a donation. For further information visit our website at biotopia.net/en/support.

'As one of their first supporters, I had the privilege of helping BIOTOPIA – still known as "NaMu" at the time – to find founding patrons and lots of other supporters. Many family-managed companies immediately shared my enthusiasm for this mammoth project of creating a place where people could learn more about how their own species is not only a part of nature, but also explores, impacts and shapes nature. I'm particularly grateful to André and Rosalie Hoffmann and to Christoph von Braun and his children who set up the MAVA/Hoffmann Foundation and the Andrea von Braun Foundation to support BIOTOPIA long term. BIOTOPIA will inspire us, our children and our grandchildren to explore, understand and thus protect the complex balance of nature.'

Julia von Poschinger-Bray

Member of the board of trustees for the Förderkreis BIOTOPIA e.V.

INTERNATIONAL ADVISORY BOARD

‘It’s a pleasure to see the ideas at BIOTOPIA begin to mature, while not losing their fizz! More enticing flesh on the impressive skeleton; (or for the vegetarians) wonderful growth on the vine!’

Dr Ken Arnold

Creative Director, Wellcome Trust
Director, Medical Museion Copenhagen

‘It’s wonderful to see how a new idea for a science museum develops and blossoms. As the exhibition slowly takes shape in the minds of the curators, we see the strong concept emerging on which BIOTOPIA is built, revealing a new taxonomy that – for all its innovative spirit – feels more familiar, accessible and “natural” to everyone. The fluidity of the architecture reminds us of how all species are interdependent and connected, and invites humans to embrace biodiversity.’

Paola Antonelli

Senior Curator in the Department for Architecture and Design, Museum of Modern Art, New York

‘During a pandemic, mass education in natural history and medicine, and in the biology of the human body, is more important than ever before.’

Professor Gerhard Haszprunar

General Director of the Bavarian Natural History Collections, Munich

The BIOTOPIA advisory board was appointed in March 2017 by the Bavarian State Ministry of Education and Culture, Science and Art (renamed in March 2018; now the Bavarian State Ministry of Science and Art). The constitution was drawn up in April 2017 in the presence of Bernd Sibler, who was Secretary of State at the time, and the chair of the Förderkreis BIOTOPIA e.V., Dr Auguste von Bayern.

The board meets at least once a year with the BIOTOPIA development team to support the scientific and technical work and development of the project with recommendations and ideas. At the same time, members of the board act as BIOTOPIA ambassadors in their respective fields.

Ten experts of international renown from the fields of education, science, industry, culture, architecture, art and design were appointed. Each of them can draw on many years of experience and expertise with international museums and universities and related areas.

Paola Antonelli – Senior Curator for Architecture and Design, Museum of Modern Art, New York

Professor Ken Arnold – Creative Director of the Wellcome Trust, London, and Director of the Medical Museion, Copenhagen

Oron Catts – Director of SymbioticA, Centre of Excellence in Biological Arts, School of Anatomy and Human Biology at the University of Western Australia, and Professor in Contestable Design, Royal College of Art, London

Stephanie Czerny – Founder and CEO of DLD Media, Munich

Professor Horst Domdey – Managing Director of BioM Biotech Cluster Development GmbH, Martinsried

Professor Benedikt Grothe – Faculty of Neurobiology, Ludwig Maximilian University, Munich

Professor Gerhard Haszprunar – General Director of the Bavarian Natural History Collections, Munich

Professor Herbert Jäckle – Director of the Max Planck Institute for Biophysical Chemistry, Göttingen

Professor Christian Laforsch – Faculty of Animal Ecology, University of Bayreuth

Professor Birgit Neuhaus – Didactics of Biology Faculty, Ludwig Maximilian University, Munich

The Board convened in Munich on 4 and 5 April 2019 to hear a report on the overall development and discuss the architecture, curatorial strategy, planned exhibitions, network activities, BIOTOPIA Lab and BIOTOPIA Festival. We would like to say a big thank you to all involved for the lively, constructive discussion, and for the valuable ideas they contributed to creating a modern and innovative museum.

MEMBERS OF THE ADVISORY BOARD



PAOLA ANTONELLI

Paola Antonelli began working for the Museum of Modern Art in New York in 1994. She is senior curator in the department for architecture and design, and a founding director of the research & development area. She has curated numerous exhibitions, given lectures around the world and served on international juries for architecture and design. She currently collaborates with the British design critic and author Alice Rawsthorn on 'Design Emergency', a series of lectures and books on Instagram Live, and on an 'interspecies design' exhibition which will include non-human participants / life forms.



KEN ARNOLD

Professor Ken Arnold was appointed director of Copenhagen's Medical Museum in 2016. He is also a professor at Copenhagen University. Alongside the above, he continues to act as creative director for the Wellcome Trust in London – for which he established the Wellcome Collection in 2007 – so that he can keep abreast of international art projects. His book 'Cabinets for the Curious' (Ashgate 2006) explores England's earliest museums and asks what we can learn from them today. He is currently working on a book about the increasing importance of the cultural role which museums play.



ORON CATTS

Oron Catts is an artist, researcher, designer and curator whose pioneering 'Tissue Culture & Art Project' is regarded as a leading example of BioArt. Catts has curated nine exhibitions, developed numerous artistic projects and performances, and is the co-founder and director of SymbioticA, a centre of excellence for BioArt at the University of Western Australia. His work revolves around the changing relationships with and perspectives on life in the light of new scientific insights and their practical applications.



STEPHANIE CZERNY

Stephanie Czerny is CEO of DLD Media GmbH and co-founded the DLD Conference, including global spin-offs. Czerny has been tracking developments in the digital world ever since she began working for Hubert Burda Media in 1995, and has held a variety of senior positions in the field of new media. In 2015, she ranked 30th on the 'Wired 100' list. She is the proud owner of an Order of Merit for services to the Bavarian economy (2014) and a 'Europe medal' for services to Bavaria in a united Europe (2015).



HORST DOMDEY

Professor Horst Domdey is managing director of BioM Biotech Cluster Development GmbH and spokesman for Bavaria's biotechnology cluster. He is also academic director of Bay-Gene, Bavaria's genome research network, which is the coordination office for BioSysNet (the Bavarian research network for molecular biosystems research). After completing his doctorate in biochemistry in 1979, Horst Domdey began his professional career by working as a scientist at various German, Swiss and American institutes such as the Max Planck Institute of Biochemistry, the ISREC, the UCSD and the California Institute of Technology.



BENEDIKT GROTHE / CHAIRMAN OF THE ADVISORY BOARD

Professor Benedikt Grothe is a professor for neurobiology at Ludwig Maximilian University, Munich. His research focus is on systemic neurosciences, neuronal networks and audio perception. He is a 'Max Planck fellow' at the Max Planck Institute of Neurobiology. Amongst other things, he is spokesman for the DFG 'Assembly and Function of Neuronal Circuits' cluster. He was heavily involved in founding the Bernstein Center for Computational Neuroscience in 2005. A year later, he founded the Munich Graduate School of Systemic Neurosciences (GSNLMU), of which he remains principal to this day. In 2007, Grothe was appointed to the Bavarian Academy of Sciences and Humanities, and in 2010 he was awarded the Order of Merit of the Federal Republic of Germany.



GERHARD HASZPRUNAR

Professor Gerhard Haszprunar is general director of the Bavarian Natural History Collections and director of the Bavarian State Collection of Zoology in Munich. He holds the chair for systematic zoology at Ludwig Maximilian University in Munich, one focus of his research being on mollusca systems. Professor Haszprunar was awarded the Austrian Decoration for Science and Art and has published more than 200 articles and books.



HERBERT JÄCKLE

Professor Herbert Jäckle is the retired director of the Max Planck Institute for Biophysical Chemistry in Göttingen and former Vice-President of the Max Planck Society. He is a member of the EMBO, the Academia Europaea, the German National Academy of Natural Sciences Leopoldina and the Göttingen Academy of Sciences and Humanities. During the course of his lifetime he has received numerous scientific awards and has written more than 200 scientific articles. Dr Jäckle's research revolves around the common fruit fly, exploring the molecular mechanisms that are involved in forming body parts during the embryo stage of the 'drosophila melanogaster'.



CHRISTIAN LAFORSCH

Professor Christian Laforsch is Vice-President for Research and Junior Researchers at the University of Bayreuth. He is also a professor for animal ecology in the biology, chemistry and geoscience department of the University of Bayreuth, and spokesman for the special research area (SFB) 1357 microplastics. His research focuses on phenotypical plasticity and how animals adapt to changing biotic and abiotic environmental factors. He also researches how multiple stressors impact cohabitation, food webs and ecosystem functions, with a central research focus on the contamination of the environment with plastic waste and microplastics.



BIRGIT NEUHAUS

Professor Birgit Neuhaus holds the chair for Didactics of Biology at the Ludwig Maximilian University, Munich, which is the largest training centre for biology teachers in Bavaria. Her empirical research centres around the question of how to inspire young people for biological phenomena, and how learning processes can and must be designed in future in order to establish a sustainable network of life science teaching in nurseries and schools. Amongst other things, she is Deputy Director of the Munich Centre for Teacher Training at the LMU (mzl) and a member of the 'Munich Center of the Learning Science' (MCLS). She has also authored more than 100 articles and books.

‘We all know that the environment is in danger, locally and globally. The goal of BIOTOPIA is to present information in a fascinating and clearly intelligible style so that people understand natural phenomena, the way organisms interconnect and the mechanisms which life forms use to adapt to the environment. BIOTOPIA also needs to provide possible answers so that humankind does not suffer the same fate as the dinosaurs.’

Professor Herbert Jäckle

Director Emeritus, Max Planck Institute for Biophysical Chemistry
Former Vice-President of the Max Planck Society

‘COVID-19 has shown us the importance of life sciences, and how important it is that the general public understand basic concepts of life sciences so that we can handle global crises responsibly. BIOTOPIA can play an important mediatory role here.

And COVID-19 is not the only global challenge we need to face – other issues such as limited resources, climate change and endangered species can also only be tackled on an international level. However, it is becoming increasingly difficult to distinguish between reliable scientific facts and fake news.

BIOTOPIA’s job is to get young people excited about science, show them the systemic connections, and teach them to use the evidence in decision-making processes. Alongside teaching basic life science concepts, it must also convey the beauty of our earth so that people know what we’re fighting to preserve. I’m excited about all that is being developed here and look forward to it!’

Professor Birgit Neuhaus

Chair for Didactics of Biology, Ludwig Maximilian University, Munich

PARTNERS

‘Nature is a given. Culture is what we make it. In this context, a natural history museum will always explore cultural issues as well. Even now, in the founding phase, BIOTOPIA demonstrates how this can be done in an exciting and contemporary manner. It shows the ways in which life sciences and environmental sciences relate to the reality of life, to the ecological challenges of our time and to current events. At present, we’re experiencing just how vulnerable we are as humans. Lots of discussions centre around getting to grips with life itself. I hope we are able to gain insights which can guide our actions, locally and globally.’

Anton Biebl

Cultural Advisor of the City of Munich

We would like to extend our warmest, heartfelt thanks to our partners, supporters and sponsors for their valuable support. During the current development phase, they all play a significant role in making the pioneering and innovative BIOTOPIA dream come true – also by helping us to stage the BIOTOPIA Festival and open the BIOTOPIA Lab.

On behalf of the generous civic support we would like to thank the BIOTOPIA e.V. support base and its founding patrons, the Club of Thousand donors, numerous bronze, silver and gold members, and chairwoman Dr Auguste von Bayern.

We would also like to say a special thank you to the Bavarian government.

SCIENCE PARTNERS

Bionicum

Munich Botanical Garden

Munich University of Applied Sciences

Ludwig Maximilian University of Munich

Max Planck Society

Rachel Carson Center

Bavarian Natural History Collections

Technical University of Munich

SUPPORTERS

BayWa Foundation

Bavarian Administration of Palaces, Gardens and Lakes

Bavarian State Office for Monument Protection

Neuhausen-Nymphenburg District Committee

Andrea von Braun Foundation

Munich 1 State Building Department

DLD – Digital Life Design

Förderkreis BIOTOPIA e.V. (Friends Society)

The City of Munich

State Office for Independent Museums in Bavaria

Hans Sauer Foundation

Museum Mensch und Natur

Nantesbuch Foundation

WWF – World Wildlife Fund

And all partners and supporters of BIOTOPIA's EAT – TASTE THE FUTURE! Festival.



BIOTOPIA – FACTS & FIGURES

‘BIOTOPIA is an expansive new vision aimed at attracting the kind of engagement from visitors and constituents of all ages and backgrounds that is critically needed if we are to understand our natural world better and provide the stewardship needed for our current and future generations.

The ideas that embrace synthetic exhibition and programmatic themes and the melding of art and science are fresh, bold and beautiful! BIOTOPIA promises to be a new, powerful, and internationally acclaimed centre for nature, science, and art.’

Michael J. Novacek, PhD

Curator and Provost of Science, American Museum of Natural History New York, USA

TEAM

The BIOTOPIA team consists of international professionals from the fields of culture management, architecture, exhibition design, mediation, communication, administration, event management and fundraising, who all work hand in hand with each other.

The team currently (31/12/2019) consists of:

Professor Michael John Gorman – founding director of BIOTOPIA, professor for 'Life Sciences in Society' at the LMU (appointed 1/11/2015)

Dr Michael Apel – director of the Museum Mensch und Natur and deputy director of BIOTOPIA (appointed 2006/2017 respectively)

Dr Anna-Lisa Dieter – curator (appointed 1/11/2019)

Dr Thassilo Franke – research associate (appointed 1/12/2016)

Dr Simone Gaab – programme development for the BIOTOPIA LAB (appointed 1/11/2019; part-time position)

Melina Gessner – HR (appointed 1/12/2019; part-time position)

Dr Moritz Hertel – research coordinator for the Max Planck Society/BIOTOPIA (appointed 15/1/2019)

Esther Krumbholz – assistant to the development team (appointed 1/6/2017 as a part-time position, now full time as of 1/8/2017)

Jasmin Manhardt – event coordination (appointed 1/3/2019, part-time position)

Anahita Martirosjan – tendering (appointed 1/12/2019, part-time position)

Dr Nina Möllers – director of BIOTOPIA Lab and Events (appointed 1/5/2018 as a part-time position, now full time as of 1/10/2018)

Dr Ulrike Rehwagen – head of the development team (appointed 1/6/2016)

Dr Samara Rubinstein – academic councillor (appointed 1/1/2017; temporary position)

Colleen M. Schmitz – head of exhibitions, research, public programmes (appointed 1/5/2018 as a part-time position; full-time as of 1/6/2018)

Alexandra von Uckermann – construction work officer (appointed 1/5/2017 as a part-time position; full-time as of 1/7/2017)

Annabarbara White – assistant to the founding director (appointed 1/11/2018, part-time position)

Anette Dittel – exhibition manager (until 31/7/2019)

Christian Plauert – financial manager/office manager (temporary, part-time position until 31/12/2019)

Förderkreis BIOTOPIA e. V.:

Anette Meister – CEO (appointed 1/11/2017)

Verena Braun – digital communication (appointed 1/7/2018)

THE BIOTOPIA TEAM



MICHAEL JOHN GORMAN

Born in Ireland, Professor Michael John Gorman was appointed founding director of BIOTOPIA in October 2015. Gorman is also a professor for life sciences in society at the Ludwig Maximilian University of Munich. He studied physics and philosophy at Oxford University, completed his doctorate in science history in Florence, and has worked for the Massachusetts Institute of Technology, for Harvard and for Stanford. Prior to his appointment in Munich, Professor Gorman was founding director of the Science Gallery at Trinity College, Dublin, which focuses on showcasing creative innovations at the points of intersection between science and art. In 2012, he founded the Science Gallery International in order to make the Science Gallery accessible to a global audience.



MICHAEL APEL

After completing his biology studies at Johann Wolfgang Goethe University in Frankfurt am Main, zoologist and marine biologist Dr Michael Apel worked as a scientist at Senckenberg Research Institute and Natural History Museum. In 2003, he moved to the Hessische Landesmuseum in Wiesbaden where he headed the natural history department. In November 2006, he was appointed director of the Museum Mensch und Natur in Munich; in 2017, he was also appointed deputy director of BIOTOPIA.



ANNA-LISA DIETER

After completing a doctorate in literary and cultural studies, Dr Anna-Lisa Dieter taught and researched for nearly ten years at the Universities of Munich, Eichstätt and Konstanz. She also worked as a translator from French to German, and she has written articles for various media on a freelance basis. Before joining the BIOTOPIA team, she worked as a research associate for the German Hygiene Museum in Dresden. As curator, she is responsible for the content and format of the new permanent exhibition in BIOTOPIA.



ANETTE DITTEL

Back in 2016, while working for Ralph Appelbaum, Anette Dittel (M.A. and diploma) was involved in developing the masterplan for BIOTOPIA. In 2018, she joined the BIOTOPIA team as exhibition manager. After obtaining a diploma in design in Cologne, Ms Dittel completed an M.A. in Oldenburg, during which she made museums and exhibitions her special focus. She has since been involved in developing temporary exhibitions for the Humboldt Lab Berlin, in restructuring the Museum of Ethnology, Vienna, and founding the Józef Pilsudski Museum in Sulejówek (PL).



THASSILO FRANKE

In 2005, Dr Thassilo Franke – a biologist – obtained a postgraduate diploma in nature films and science communication and won the coveted BBC Newcomer Award for his graduation film. From 2008 to 2014, he worked as a screenwriter, scientific adviser and researcher for Nautilusfilm GmbH. In the two years leading up to BIOTOPIA, he worked as a freelance author in the field of nature and science documentaries. He now acts as research associate for BIOTOPIA.

**SIMONE GAAB**

A geologist and certified environment teacher, Simone Gaab joined the team in the summer of 2019 to help develop the BIOTOPIA Lab. Her special focus is on the educational programme and developing the BIOTOPIA plot. Before joining the BIOTOPIA team, Ms Gaab worked for the consumer advice centre in Munich as a consultant for their environmental projects. She was also involved in educational, sustainable development projects in various schools, and worked as a freelance nature and environment teacher for BUND Naturschutz Bayern, the Bavarian Nature Conservation Agency. She has been working for the Museum Mensch und Natur in the field of museum education since 2015, acting as a guide for school classes and families.

**MELINA GESSNER**

Melina Gessner has a B.A. in business management, with focus on human resources. She graduated from Munich University of Applied Sciences. Prior to studying, she completed vocational training as a social security case manager and gained experience in human resources and accounting. Ms Gessner joined the team at the end of 2019 to support the work in the HR department.

**MORITZ HERTEL**

Dr Moritz Hertel studied biology in Basel and Würzburg. After completing his diploma at the MPI of Neurobiology, he completed his doctorate at the ETH Zurich, focusing on the proteins that support tissue repair in the brain. He then accepted a fellowship at Rockefeller University in New York to conduct research on bird brains, exploring how newly formed nerve cells can be integrated into an adult brain. Since his return to Germany, he has been employed in the Max Planck Institute for Ornithology in Seewiesen, where he continues to research the plasticity of adult brains and associated behaviour patterns. In January 2019, Moritz Hertel was deployed by the Max Planck Society to support the development of BIOTOPIA.

**ESTHER KRUMBHOLZ**

After completing an M.A. in ethnology, Esther Krumbholz worked for various environmental agencies, human rights organisations (including World Uranium Hearing 1992) and media companies before moving on to the Ludwig Maximilian University of Munich, where she worked in administration in the International Office for twelve years. She has wide experience in organising events and in public administration and PR work. She acts as an assistant to the team, in particular supporting the directors of the development team.

**JASMIN MANHARDT**

After graduating with a diploma in biology from Ludwig Maximilian University of Munich, Jasmin Manhardt, who also has a diploma in event management (ebam academy, Munich), moved to the event industry. Over the last thirteen years, she has worked as an event manager for various employers and also on a freelance basis, organising and supporting many different types of events. She joined the BIOTOPIA event team in March 2019.

**ANAHITA MARTIROSIAN**

Anahita Martirosjan worked for ten years as head of the accounting team in Lenbachhaus art museum, Munich. She is now responsible for BIOTOPIA's tendering processes and finance management. In the past, she has worked for various companies including Vispiron Systems GmbH, where her project management skills equipped her to manage a project for BMW AG.

**NINA MÖLLERS**

In the summer of 2018, Dr Nina Möllers, a historian, assumed responsibility for the area of Programme and Events at BIOTOPIA. Nina Möllers studied modern history and American studies in Tübingen, Trier, Palo Alto and Nashville. She then worked for the Technoseum in Mannheim, where she was responsible for exhibitions and collections. In 2009, she moved to the Deutsches Museum, where she conducted research, developed exhibitions and published articles on subjects connected with the cultural history of technology and museum work. As a curator for the Rachel Carson Center and project leader, she was responsible for developing the 'Welcome to the Anthropocene' temporary exhibition in 2014. Since autumn 2019 she has also been the director of BIOTOPIA Lab.

**ULRIKE REHWAGEN**

With a doctorate in art history and a diploma in business administration, Dr Ulrike Rehwagen heads the development team for BIOTOPIA. She previously worked in a range of positions, including scientific consultant for the general director of the Dresden State Art Collections, scientific consultant for the president of the TU Munich, commercial director of the Kunstverein München art association, and for the Bavarian State Painting Collections. Ulrike Rehwagen not only has a wide range of experience and expertise, but also a valuable network of contacts in the museum world and science management. She studied at various universities including Freiburg im Breisgau, Munich, Madison Wisconsin (USA) and Bologna.

**SAMARA RUBINSTEIN**

Dr Samara Rubinstein is an anthropologist with extensive museum experience. She has worked as senior manager in the department of education of the American Museum of Natural History, and as an assistant curator at the Museum for African Art in New York. As temporary academic councillor and content curator, she is responsible for developing the content of the new permanent exhibition in BIOTOPIA.

**COLLEEN M. SCHMITZ**

For nearly twenty years, Colleen M. Schmitz worked as senior curator and head of the exhibition and registrar's office for the German Hygiene Museum in Dresden. Past jobs include working as a consultant for the interim presentation of the Emscher Park International Building Exhibition in the Ruhr region of Germany, and working in exhibition management for the German contribution to the 6th Venice Biennale of Architecture. She was also involved in curating 'Prometheus: People. Images. Visions!' for the German Historical Museum in Berlin. In May 2018, she was appointed team leader for exhibitions, research and public programmes at BIOTOPIA.

**ALEXANDRA VON UCKERMANN**

Alexandra von Uckermann is an architect and graduate engineer. She completed her studies at the Bauhaus University in Weimar, and has more than 15 years of professional experience with various employers and also as a self-employed architect in Germany and abroad. In May 2017, she was appointed construction work officer. In this role, she acts as an interface between the building authorities in Munich, the architects and BIOTOPIA, supporting the architectural planning process from the user perspective.

**ANNABARBARA WHITE**

Born in Munich, Annabarbara White (B.Sc.) spent many years living in London. Here she also completed her bachelor of science in archaeology at University College London. After returning to Munich, Ms White spent several years working as an assistant for a major construction company before returning to university. Two years ago she graduated from LMU University with an M.A. in American studies. She then worked for Freshfields, a law office in Munich, as an assistant to the partner. She accepted a part-time position on the BIOTOPIA team in November 2018, acting as assistant to the founding director.

**VERENA BRAUN**

Verena Braun (M.Phil.) has a degree in media, communication and film studies, part of which she completed at Trinity College Dublin. She has been involved in various aspects of the BIOTOPIA project since 2014. Up until June 2018, 50% of her working hours were dedicated to assisting the founding director, with the remaining 50% dedicated to digital communication at BIOTOPIA. In July 2018, she scaled back to a part-time position and now focuses exclusively on digital communication. Her position is funded by the Förderkreis BIOTOPIA e.V..

**ANETTE MEISTER**

Anette Meister (M.A. and diploma) joined the team of the Förderkreis BIOTOPIA e.V. in the autumn of 2017, where she is also involved in fundraising. She gained an M.A. in literary studies at Hamburg University and a diploma in culture management at the University of Music in Hamburg. Anette Meister has gained extensive experience in culture management in general and fundraising in particular. She also has considerable experience in project development and project management.

Particularly, we would like to thank our colleagues from the Museum Mensch und Natur for their dedicated and friendly support, in many large and small matters, that contributes to the realization of BIOTOPIA! Big thank yous go to Adriana Becker, Britta Engel, Michelle Franka and Sandra Kollmansperger, who supported us with great commitment, to more than 70 volunteers, who contributed significantly to the success of the EAT festival, as well as to all guest researchers and external contractors.



The teams from Museum Mensch und Natur and BIOTOPIA are growing together.

BOARDS

Professor Michael John Gorman

Member of the board for ICOM Germany
 Member of the art/science advisory board of MIT Museum, Cambridge, MA (USA)
 Member of the advisory board of the Rachel Carson Center for Environment and Society, LMU Munich
 Member of the advisory board of the Max Planck Institute for Ornithology, Seewiesen
 Member of the advisory board of the STATE Studio, Berlin
 Member of the advisory board of DigiCult, Milan (Italy)
 Expert consultant for the European Commission – Joint Research Centre, Ispra (Italy)
 Member of the Munich Center for Neurosciences – Brain & Mind, LMU Munich

Dr Michael Apel

Member of the board in the Association of Friends and Supporters for the Museum Mensch und Natur, member of the board for the Werner and Inge Grüter Foundation
 Honorary colleague of the Senckenberg Society for Nature Research in Frankfurt a.M.

Dr Thassilo Franke

President of the board for the Friends Society of the Bavarian State Collection of Zoology

Dr Nina Möllers

Member of the jury for Burda Media's #beebetter awards

Anette Meister

Member of the jury for the 'Start Social e.V.', a registered association which conducts the annual 'start social' nationwide competition to promote social, voluntary organisations, projects and ideas.

CHRONICLE

2019 was an intensive year for BIOTOPIA. Planning and developing the new museum involved countless work steps in all areas – from the architecture to the exhibition concept, the BIOTOPIA Lab and BIOTOPIA Festival, to communication and administration.

Alongside appointments with the building authorities, architects, planners and exhibition designers, various workshops were organised for special subjects (labs, aquarium, light planning), technical issues (fire protection, air conditioning, catering, shop) and meetings to discuss occupational safety, sustainability, wheelchair accessibility, etc. The two main areas of focus this year were the BIOTOPIA Lab and the BIOTOPIA Festival. Both required intensive work in planning the exhibitions, developing the programme, planning operations and organising the event. On top of the above, business meetings were held regularly with the Ministry, the Steering Group, the SNSB, the Bavarian Administration of Palaces, Gardens and Lakes, and the staff council. Safety and security aspects were also discussed with the state police, the Upper Bavarian government and the trade supervisory board.

The following dates show a selection of BIOTOPIA's activities last year:

14 January Interdisciplinary seminar entitled 'The Future Supper' is hosted by Professor Michael John Gorman and Dr Samara Rubinstein together with the LMU Institute for Genetics and Munich University of Applied Sciences

19–21 January Dr Nina Möllers presents the interdisciplinary panel discussion 'Eat the Future' at the DLD conference in Munich

8 February Professor Michael John Gorman, Dr Auguste von Bayern and Anette Meister participate in the 'Beyond Knowledge' education conference

8 February Professor Michael John Gorman is invited by the BMW Group to give a lunchtime lecture on the 'Future of food' in the Munich Club; this is attended by Minister of State Bernd Sibler and other decision-makers from the world of politics, culture and industry.

8 February Dr Thassilo Franke takes part in the first panel discussion of a new series in Werksviertel on the subject of 'Bees. Farmers. Species protection.'

12 February Professor Michael John Gorman, Dieter Reiter (Lord Mayor of Munich) and Professor Andrew Hamilton (President of New York University) are amongst those involved in assessing the application submitted by the LMU University for the Excellence Strategy competition

12 February Alexandra von Uckermann meets with the SNSB representative to discuss how to cater to the needs of severely disabled persons

25 February The BIOTOPIA guide to 'Gender-friendly language' is approved

27 February Colleen M. Schmitz takes part in the Fondation Cartier's evening event to mark the opening of the Great Animal Orchestra by Bernie Krause at the 'Broken Nature' Triennial in Milan

28 February Dr Samara Rubinstein and Colleen M. Schmitz attend the VIP opening of the 'Broken Nature' Triennial in Milan

12 March Professor Michael John Gorman and Dr Nina Möllers are invited by Steffi Czerny, DLD, to give a lecture on 'What does the future of food look like?'

12 March Professor Michael John Gorman, Dr Michael Apel, Dr Nina Möllers and Dr Thassilo Franke meet with the principals of schools in Neuhausen-Nymphenburg

12 March The communication department of Karlsruhe Natural History Museum visits BIOTOPIA

19 March Dr Nina Möllers takes part in the Global Food Summit in Munich

1 April Professor Michael John Gorman delivers the opening lecture, entitled 'The playful museum?' at the 'Next' museum conference in Sydney

4/5 April The international BIOTOPIA advisory board convenes

8/9 April Professor Michael John Gorman hosts a workshop as part of the LMU biology faculty meeting at the Evangelic Academy Tutzing

11 April Professor Michael John Gorman hosts the panel discussion 'What can WE do?' during the Sustainable World conference in the LMU Biomedical Center

18 April Colleen M. Schmitz attends the opening of 'OF PLANTS AND ANIMALS. A foray over the green planet' in the German Hygiene Museum, Dresden

8 May Colleen M. Schmitz and Alexandra von Uckermann attend the workshop report at the opening exhibition of the Humboldt Forum in Berlin

9/10 May Professor Michael John Gorman attends the opening ceremony of the Cooper Hewitt Design Triennial 'Nature' in New York; he supported the exhibition as a curatorial consultant and also contributed an article to the exhibition catalogue

10 May Professor Michael John Gorman and Alexandra von Uckermann give a BIOTOPIA presentation to the Bavarian government's disability officer

11–17 May The cooperation between the Nantesbuch Foundation and BIOTOPIA is launched; Professor Michael John Gorman, Dr Thassilo Franke and Colleen M. Schmitz join artists and scientists at a soundscaping master class with soundscape ecologist Bernie Krause on the Nantesbuch estate

16 May BIOTOPIA and the Museum Mensch und Natur welcome a delegation from the Shanghai Science and Technology Museum

21 May Professor Bill Hansson, Vice-President of the Max Planck Society, and Michael John Gorman sign a joint declaration of intent to collaborate

22 May The BIOTOPIA sub-brands by Studio Umlaut are approved

22 May Professor Michael John Gorman and Dr Frank Kammel, Director of the Bavarian National Museum, are invited by the Bavarian Academy of Science to make a podcast

24 May James Arbib from RethinkX delivers the opening speech for the BIOTOPIA 'EAT – TASTE THE FUTURE!' Festival and for the opening of the MEAT THE FUTURE exhibition in the Museum Mensch und Natur; Dr Rolf-Dieter Jungk, head of the StMWK (Bavarian State Ministry for Science and Art) was present

26 May BIOTOPIA's 'EAT – TASTE THE FUTURE!' Festival attracts more than 3,500 visitors

4 June Professor Michael John Gorman gives a BIOTOPIA presentation in the species protection centre in Hellabrunn Zoo

5–8 June Professor Michael John Gorman and Dr Samara Rubinstein host the 'The Sixth Extinction' workshop during the Ecsite Conference in Copenhagen

3 July The Volkswagen Foundation agrees to fund a project organised by the Rachel Carson Center to support environmental research in the humanities and social sciences at LMU University; BIOTOPIA is involved in this project

3 July Anette Meister attends a network meeting at Munich airport entitled 'Women in Motion – Sustainability and Women Today'; Dr Auguste von Bayern is on the panel

10 July Professor Michael John Gorman and Colleen M. Schmitz visit the anatomical collections in the Anatomical Institute at LMU University

23 July Professor Michael John Gorman hosts the 'Spaces, Trees and Biodiversity' workshop during the 'denkraum. Good Life and Sustainable Cities in 2030' event organised by BMW's Herbert Quandt Foundation

30 July Alexandra von Uckermann meets with the 'Planning, Construction and Management' department at LMU University

4 September Professor Michael John Gorman and Colleen M. Schmitz attend the opening ceremony for the SENSEFACTORY exhibition in Muffatwerk, Munich

5 September Professor Michael John Gorman attends the opening of the FUTURIUM in Berlin

5 September Colleen M. Schmitz attends the DLD Arts & Humanities Salon with Tomás Saraceno and the Aerocene Foundation in Munich

13 September Professor Michael John Gorman and Colleen M. Schmitz attend the 58th Biennale di Venezia

19 September Professor Michael John Gorman takes part in the meeting of the advisory board for the Rachel Carson Center for Environment and Society

22 September BIOTOPIA joins the parade vehicle of the 'super+' artist's collective for the traditional costume parade at the Oktoberfest

24 September As a member of the advisory board, Professor Michael John Gorman takes part in an 'Art and Science Committee' meeting held at MIT Museum Art and Science, Cambridge, Massachusetts, USA

3 October Lecture entitled 'Colourful autumn leaves – the meaning of colours in nature' during Nantesbuch Foundation's autumn festival

4/5 October Professor Michael John Gorman delivers a lecture as part of the symposium for the 'Research Nature|Life' exhibition in the Schafhof museum in Upper Bavaria

11 October Alexandra von Uckermann, Colleen M. Schmitz and Dr Samara Rubinstein take part in the 'Bunker Talk' organised by the ArchitekturkulturStiftung; other participants include Professor Ferdinand Ludwig, TUM, and Professor Mitchell Joachim, Terreform ONE, New York City. The subject: the challenge of designing in symbiosis with nature

14 October Professor Michael John Gorman meets with the Bavarian Nature Studies Network

16 October Professor Michael John Gorman attends an event to celebrate LMU's successful Excellence Strategy application

17/18 October Professor Michael John Gorman and Colleen M. Schmitz visit the 'FOOD: Bigger than the Plate' exhibition in the Victoria & Albert Museum, London, 'Being Human' in the Wellcome Collection, London, and 'OLAFUR ELIASSON. IN REAL LIFE' in the TATE Modern, London

19 October BIOTOPIA takes part in the Long Night of Museums, presenting the new Berchtesgaden VR app for the Birdly flight simulator in the Museum Mensch und Natur

27–29 October Professor Michael John Gorman attends the founding meeting for the FORMS network (Futures-Oriented Museum Synergies) in Amsterdam

4 November Professor Michael John Gorman delivers the opening speech at the ICOM's International Museum Day in Helsinki

5 November Dr Nina Möllers sits on the jury for the #beebetter awards organised by Hubert Burda Media in Berlin

6 November Professor Michael John Gorman, Dr Anna-Lisa Dieter and Anette Meister attend the Beisheim Impact Day in Berlin

6 November Dr Gorch Pieken gives Professor Michael John Gorman and Dr Nina Möllers a guided tour of the Humboldt Forum construction site in Berlin

6 November Professor Michael John Gorman and Dr Nina Möllers meet artist Tomás Saraceno in his studio

10 November Professor Michael John Gorman gives a lecture at the TEDxMünchen conference in Munich's Kammerspiele Theatre

11 November Dr Michael Apel, Dr Thassilo Franke and Alexandra von Uckermann meet with Frank Müller from Hellabrunn Zoo to plan the coral reef aquarium

14 November Professor Michael John Gorman gives a lecture at the ICOM Germany conference in Munich. Professor Gorman is voted onto ICOM Germany's board of directors

15 November Dr Nina Möllers hosts the opening event for the 'Anthropocene – Human Traces' theme days organised by the Nantesbuch Foundation

21/22 November Professor Michael John Gorman gives a lecture at the 'Reimagining' museum conference in Oaxaca, Mexico

27 November Professor Michael John Gorman, Dr Moritz Hertel and Alexandra von Uckermann present the advanced lab plans to the government of Upper Bavaria and the trade supervisory board

5 December Opening of the 'All the Time in the World – from the Big Bang to the Ticking Clock' exhibition in the Museum Mensch und Natur

10 December Professor Michael John Gorman gives a lecture at the 12th Forum for Science Communication in Essen

12 December Professor Michael John Gorman delivers a BIOTOPIA presentation to Minister of State Dr Florian Herrmann and Minister of State Bernd Sibler in the Bavarian State Chancellery

13 December The jury meets to select the open-call projects for the BIOTOPIA SENSE Festival

13 December Curator Dr Jens Hauser gives a lecture entitled 'Green' for the BIOTOPIA team

Abbreviations:

ICOM = International Council of Museums

LMU = Ludwig Maximilian University of Munich

SNSB = Bavarian Natural History Collections

StMWK = Bavarian State Minister for Science and Art

TUM = Technical University of Munich

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