To the workers, who rolled up their sleeves
and shaped the history of this museum up until today.
And to the visitors, who drive us to keep moving forward.

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The City Government of Rio de Janeiro and the Municipal Secretary of Culture present

Museum of Life

Science and Art in Manguinhos

Editors
Diego Vaz Bevilaqua
Marina Ramalho
Rita Alcantara
Tereza Costa

Rio de Janeiro
Fiocruz / Oswaldo Cruz House
2017

The Museum of Life will celebrate 18 years in 2017. It is a young but successful enterprise within the Oswaldo Cruz Foundation, an institution that makes all Brazilians proud.

To celebrate this initiative, we have supported the production of this book, which brings together stories, statements, documents, illustrations, and photos related to the history of the Museum of Life, which also covers part of the history of one of the world's most renowned scientists – Dr. Oswaldo Cruz – and its science and health collection.

Supporting cultural projects that strive to be the engine to propel the human and cultural development of a region has been the hallmark of SoEnergy Sistemas Internacionais de Energia S.A. in the regions where it operates.

This path makes us certain that what we are doing is correct, along with the transformation of a society through knowledge about health, research, teaching, and especially citizenship.

With this book, *Museum of Life: science and art in Manguinhos*, we invite everyone to experience the historical heritage of the biomedical sciences in Brazil through a trip to one of the important architectural landmarks in this "wonderful city."

SOENERGY
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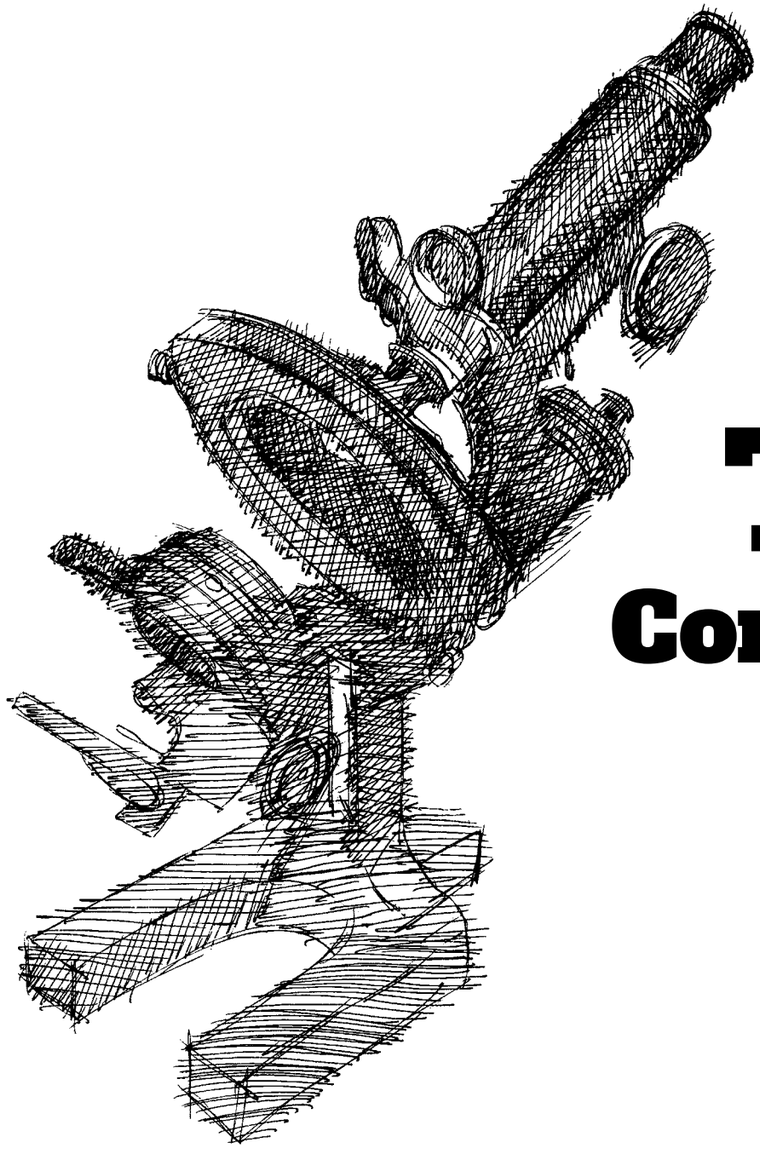
Carlos Alberto Rosero Riascos
CEO, SoEnergy Sistemas Internacionais
de Energia S.A.



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Preface

Boldness and innovation. We could say that those two words have been present throughout the 117 years of the Oswaldo Cruz Foundation (Fiocruz), and to a large extent explain its trajectory in the areas of health and science. The Museum of Life, which was inaugurated in 1999, is without a doubt an example of this inexhaustible institutional vocation to formulate bold and innovative projects that speak to tradition and at the same time are supported by history through a multidisciplinary vision, reflections on the country's social and cultural challenges, and interactions with society. This is not by chance, and from the beginning the museum has been linked to the Oswaldo Cruz House and resulted from the confluence of distinct streams: the museological experience that originated in the Oswaldo Cruz Institute at the beginning of the twentieth century, the renewal of museological thought, and the emergence of social museology over the past four decades, as well as the expansion of science communication, which after World War II inherited growing concerns from scientists, educators, and politicians about the role of science and technology in society as well as the communication and acceptance of scientific culture by citizens.

It was at Fiocruz, under the leadership of the sanitarian Sérgio Arouca during the period of effervescent redemocratization and the 1988 "Citizen Constitution," that the ideas to develop a science museum germinated. Creating a space to address scientific matters with strong societal interactions was daring, and even seen with suspicion by some, but above all this effort was consistent with changes in the institutional profile of the Foundation, which alongside research, production, and education in health and the biomedical sciences started to work and generate knowledge through information, communication, history, and science communication and education.

In this book, readers will find texts that establish a narrative about the history of the Museum of Life, based on testimonies and rich documentary material. The different agents in this process, which is filled with a variety of inspirations and creativity, help us understand the choices, the paths, the tensions, and the results that have been achieved after more than a decade and a half of experience.

By offering readers a text that moves between history and the memory of the unique experience represented by the Museum of Life, the editors and authors reveal the challenges that still remain for this and other museum institutions in Brazil. In this respect, the historian Ulpiano Bezerra de Meneses has an exciting and essential reflection to guide our steps, since he considers that we have not yet conquered the grand challenge, namely to attract and form a loyal audience, while continuing to simultaneously be scientific-documentary, educational, and cultural institutions that operate with material collections.

In addition to the challenges that should incite us, there is the certainty of the significant accomplishments of the Museum of Life, anchored in the country's principal science and health institution but most notably backed by the creative combination of historical knowledge, educational tools, and a broad view of culture.

Paulo Elian
Director, Oswaldo Cruz House/Fiocruz

Introduction

Anyone who passes along Avenida Brasil or the major expressways of the city of Rio de Janeiro (the Red and Yellow Lines) or even arrives at the Galeão-Tom Jobim Airport will encounter the Moorish Castle at the Oswaldo Cruz Foundation; it sits atop a hill, majestic against the surrounding landscape. The Castle is listed among Brazil's cultural heritage sites, and has become an important reference point in the northern area of the city. It was built at the beginning of the twentieth century, long before urbanization arrived to the region. Besides representing Fiocruz, this century-old building is also the symbol of the Museum of Life, the institution's interactive science center.

The Museum of Life opened its doors to the public on May 25, 1999, after nearly six years of study, planning, and construction. It was an innovative initiative, but not unprecedented: housing museums is a tradition at Fiocruz. The initial design of the Moorish Castle envisioned the inclusion of a museum within its walls from the very beginning, and even today the building houses scientific collections that are national references. Originally, the museum spaces at Fiocruz were restricted to distinguished visitors and the scientific community. But even at the end of the 1970s, when the public was allowed to enter some areas, visitation was limited and the idea of a campus open to society at large still was not among the institution's plans.

Since the creation of the Oswaldo Cruz House in 1986, it has become responsible for the preservation of institutional memory, including science communication and educational activities. It was in this context that the Oswaldo Cruz House Museum (located in the former Stables, a building which is part of the Fiocruz historical center) emerged and presented the history of this institution to the public. During the 1980s and early 1990s, the Oswaldo Cruz Foundation organized a number of exhibitions in a variety of locations in Rio de Janeiro, communicating science from a historical and cultural perspective.

In the early 1990s, the Foundation began plans to establish the Museum of Life in order to raise awareness in the population about scientific and technological issues, which are increasingly present in everyday life. The first project of the Museum was an exhibition entitled "Life" [*Vida*], a prototype of the museography, interactivity, and human mediation that were intended to be adopted in the new space. The show went on exhibit at the Brazil Post Cultural Center in 1995 and catalyzed the development of the Museum of Life.

Since that time we can observe significant innovation in the existing museum space at Fiocruz, which follows a global trend of communication in science centers and museums: integrating science and technology into cultural heritage.

Today, the Museum of Life serves residents of the city and state of Rio de Janeiro, as well as visitors from other Brazilian states. In addition to acting as an interactive center for science and culture, the Museum also helps popularize science through games, publications, and virtual products alongside its research efforts.

This is only a summary of the story that we wish to share here: the story of the creation of a museum that has already received more than three million visitors in its spaces and interactive activities, inside and outside its walls. It is a story we want to record and share, following in the tradition of the Oswaldo Cruz House in preserving the institutional memory of the Oswaldo Cruz Foundation.

This book is organized as follows: Chapter 1 - Background presents the various museum experiences of the Oswaldo Cruz Foundation, from its foundation until the creation of the Oswaldo Cruz House; Chapter 2 - Projects addresses the period in which the Museum of Life project was developed; Chapter 3 - Practices describes the main activities conducted at the Museum over its 18 years; finally, Chapter 4 - Prospects reflects on the social role of the Museum of Life and the challenges to be faced.

At the end of each chapter we present excerpts from interviews with administrators who were essential in bringing the Museum of Life to fruition. These allow readers to better understand the historical contexts and institutional framework through the words of the major characters in the Museum's history. We interviewed Paulo Gadelha, the first director of the Oswaldo Cruz House, who helped design the Museum of Life project and served as its general coordinator until its inauguration; Nísia Trindade Lima, director of the Oswaldo Cruz House when the Museum opened its doors; Gilson Antunes, executive coordinator of the project between 1994 and 1997; and José Ribamar Ferreira, executive coordinator of the project from 1998 until the opening of the Museum of Life and the first general coordinator of the Museum after its opening.

We also would have like to have interviewed Virgínia Torres Schall, a researcher at Fiocruz. Virgínia played a key role in the development of the Museum of Life project, and left her mark especially in a variety of art and science activities, particularly in the design of the Science on Stage space and in bringing the Tent of Science project to fruition. Unfortunately, we were not able to interview her, as she died while this book was being written. In 2016, our Tent of Science was renamed the Virgínia Schall Tent of Science. This book is also a tribute to her.

In summary, here we preserve part of the history of a science institution – the Oswaldo Cruz Foundation – which places itself at the service of society, and we recall the ways in which the Museum of Life has collaborated in this mission. This is a story of dedication, generosity, commitment to social inclusion, and reducing inequalities, which are so insidious in our country.

We invite you to read the book, visit the Museum of Life, and experience this history together with us!

Diego Vaz Bevilaqua
Head, Museum of Life (2013-2017)

Pedro Paulo Soares, Inês Nogueira

Background

1900 – 1986

The Museum of Life officially opened to the public in May of 1999, but initiatives by the Oswaldo Cruz Foundation to communicate its activities and scientific knowledge can be traced back to the early twentieth century, when the institution was still known as the Federal Serotherapy Institute. The organization's participation in a number of international exhibitions on topics related to hygiene, health demographics, and medicine was among the strategies adopted by the scientist Oswaldo Cruz to establish the institution he headed. This participation generated sympathy and respect among not only public authorities and the global scientific community, but also in Brazilian society. This activity is exemplified in the institute's participation in the International Congress on Hygiene and Demography in Berlin in 1907 (where Brazil won the gold medal for its exhibit, raising the country's profile on the worldwide scene) and the 1911 International Hygiene Exhibition in Dresden, Germany.

In terms of creating and exhibiting collections, initiatives to create museums had already begun to emerge in 1903, when Oswaldo Cruz and his fellow scientist Henrique da Rocha Lima envisioned the creation of the Museum of Anatomic Pathology. The original heart of this collection was comprised of bacterial cultures, slides, and histopathological blocks Rocha Lima brought from Germany. The museum was not open to public visitation, but rather was meant to support research. Later, after the death of Oswaldo Cruz in 1917, his office in the Moorish Castle was maintained intact and renamed the Oswaldo Cruz Museum, and was only open to special visitors. From that time onward, a historical collection began to be formed, containing personal effects and objects that the founder of the institution used in his work.

During the 1970s, institutional initiatives in the fields of education and the popularization of science led to the emergence of other museums such as the Museum of Science at the Oswaldo Cruz Institute and the Marquis of Barbacena Educational Museum, both of which were short-lived. Unlike the other museums, these were open to school visits. Their collections were incorporated into the Oswaldo Cruz House Museum in 1987, one year after the creation of the Oswaldo Cruz House; this unit of the foundation is dedicated to preserving the historic heritage of Fiocruz and its activities related to research, teaching, documentation, and the history of public health and biomedical science communication in Brazil. The 1990s brought the discussions that led to the development and implementation of the Museum of Life. In addition to its historical collection (which originated in the collections of the Oswaldo Cruz Museum and the Oswaldo Cruz House Museum), the Museum of Life also includes interactivity, a notable concept derived from science centers, as we shall see in the next chapter.

Late nineteenth-century microscope used by the young medical student Oswaldo Gonçalves Cruz.

International Congress on Hygiene and Demography in Berlin

Brazilian science and public health were represented at this exhibition in 1907 by work conducted at the Rio de Janeiro Institute for Experimental Pathology (the temporary name given to the Federal Serotherapy Institute) and the Directorate-General of Public Health, the equivalent of today's Ministry of Health. The country presented in the sections devoted to general bacteriology, contagious diseases and vaccination, construction of hospitals and disinfection, and statistics on hygiene, diseases, and mortality. For the first time, the public was able to see anatomical objects showing the pathologies of unknown diseases, biting insects, prepared microscopic slides, and representations of the complete life cycles of protozoa. The anatomical objects included livers, kidneys and spleens from patients with yellow fever, as well as lungs infected with plague pneumonia.

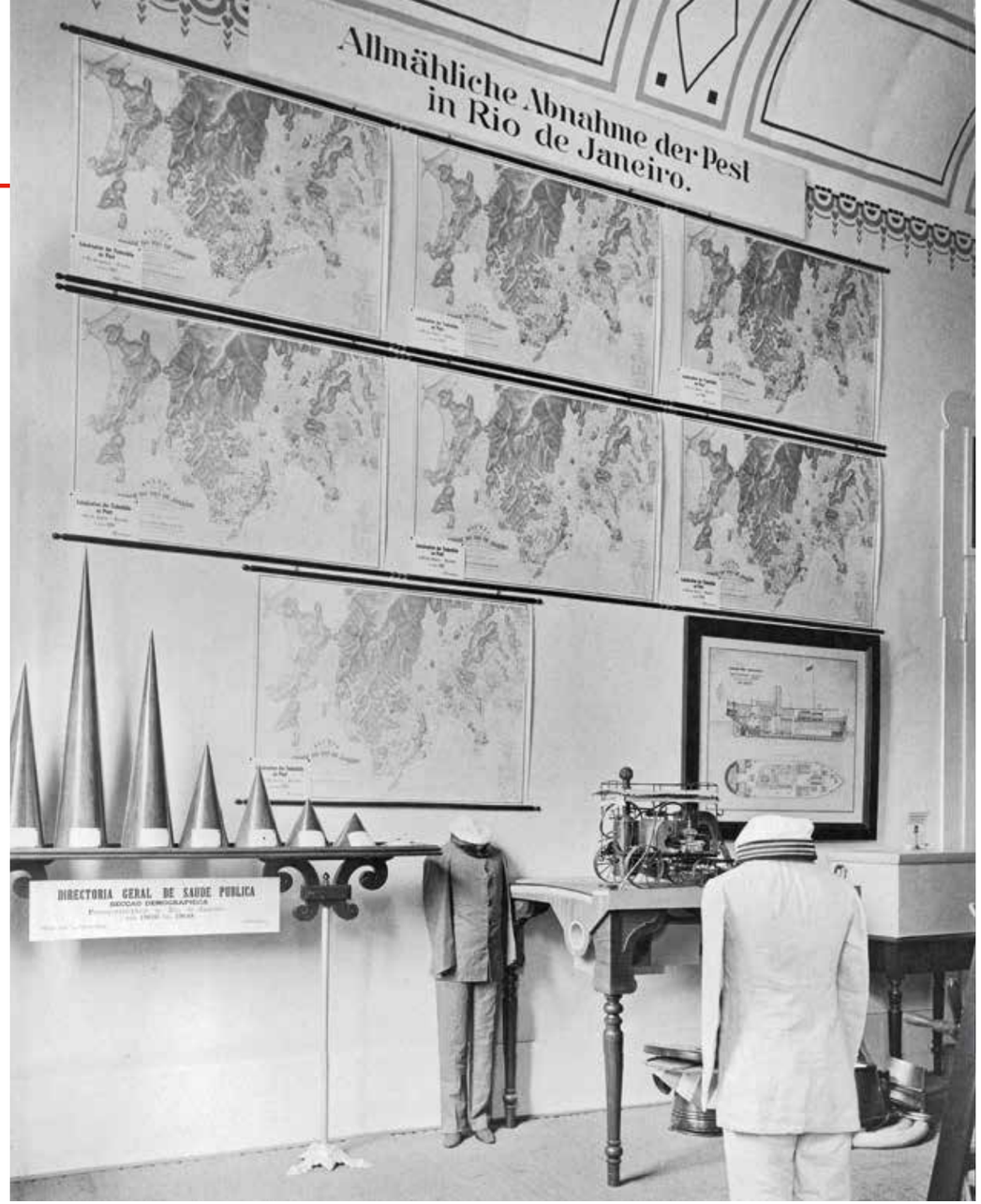
The gold medal awarded at the 14th International Congress on Hygiene and Demography in Berlin in 1907.

At right, exhibit by the Rio de Janeiro Institute for Experimental Pathology, which would later become the Oswaldo Cruz Institute. Berlin, 1907.

International Hygiene Exhibition in Dresden

The national science presentation in the Brazilian pavilion during the 1911 International Hygiene Exhibition in Dresden was comprised of significant and wide-reaching material from the Oswaldo Cruz Institute and other institutions. A major highlight was Chagas disease, which was illustrated with anatomical objects, photos and illustrations, as well as plaster busts showing the head and neck of patients with this disease. A space exclusively dedicated to films was a great success with the visiting public, which exceeded three million people during the five months of the exhibition. Unlike the event in Berlin, the exhibition in Dresden was designed to receive the public at large, with a structure for larger proportions.

Above, bust of patient with a goiter. The other images depict the presentation by the Oswaldo Cruz Institute and the Directorate-General of Public Health at the International Hygiene Exhibition in Dresden in 1911.

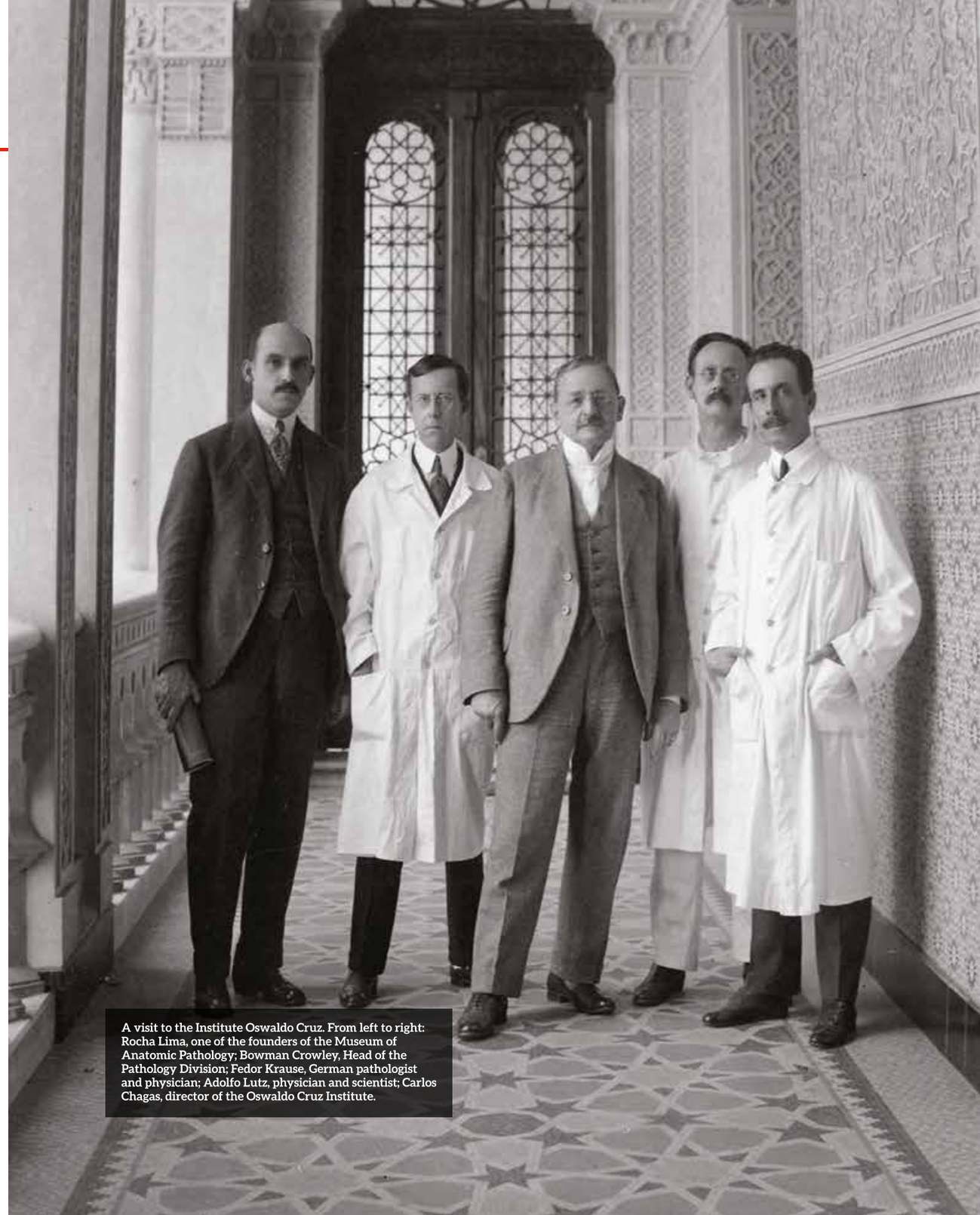


"(...) It is a complete success, from my point of view, (...) as a means of making scientific Brazil better known," wrote Oswaldo Cruz in a letter to João Pedroso, who was responsible for combating yellow fever in Pará, on July 28, 1911.

Museum of Anatomic Pathology

In 1918, after the construction of the Moorish Castle (also called the Moorish Pavilion) was complete, a number of laboratories and rooms were dedicated to producing glassware and holding courses. At the same time, photography and film chambers were installed, in addition to climate-controlled chambers for culturing micro-organisms. The Museum of Anatomic Pathology, which occupied an entire wing on the third floor of the new building, had begun to be established in 1903 and became the guardian of the institution's first collections: samples demonstrating anatomic pathology, parasitology, mycology, and microbiology which were collected by researchers at the institution during their investigations.

Above, view of the interior of the Museum of Anatomic Pathology. At left, histological slides in the collection.



A visit to the Institute Oswaldo Cruz. From left to right: Rocha Lima, one of the founders of the Museum of Anatomic Pathology; Bowman Crowley, Head of the Pathology Division; Fedor Krause, German pathologist and physician; Adolfo Lutz, physician and scientist; Carlos Chagas, director of the Oswaldo Cruz Institute.

Oswaldo Cruz Museum

After the death of Oswaldo Cruz in 1917, his work space in the Moorish Castle was preserved and transformed into the Oswaldo Cruz Museum. During the 1960s, the creation of a documentation division in the Oswaldo Cruz Institute led to the temporary integration of the library and other auxiliary activities such as developing photographs and scientific illustration into the Oswaldo Cruz Museum. After the creation of the Oswaldo Cruz Foundation (1970) and the celebrations marking the hundredth anniversary of Oswaldo Cruz's birth in 1972, the Museum expanded its exhibition space to three rooms in the Moorish Castle dedicated to the memory of its founder and the scientific work performed in Manguinhos.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The Oswaldo Cruz Museum, rearranged for the hundredth anniversary of the scientist's birth in 1972. At left, some early twentieth-century objects on display in this museum: (1) thermostat, (2) torsion scale, and (3) telephone.

The Marquis of Barbacena Educational Museum

The Educational Museum was established in 1970 and occupied the Stables, a historic building constructed in the early twentieth century to house the horses used in research. The goal of this museum was to offer visitors (particularly students) an overview of the work and research conducted at the institution. It was intended to be educational, informative, and motivating. To meet this goal, it included live demonstrations (aquariums and microscopic slide preparations), photographic panels, and texts about the diseases, vaccine production processes, and other aspects of scientific methodology.

At left, bust of Felisberto Caldeira Brant Pontes de Oliveira Horta, the Marquis of Barbacena, who introduced the smallpox vaccine in Brazil. Below, Marquis of Barbacena Educational Museum.

The Museum of Science at the Oswaldo Cruz Institute

The Museum of Science at the Oswaldo Cruz Institute, which was also established in 1970 on the first floor of the Moorish Castle, was intended to present an overview of the history of public health in Brazil through original documents, photographs, and scientific devices. Unlike the Institute's older museums, visits to this area space were directed (although not systematically) at the school-aged audience and university students in biology, medicine, and related areas.

Above and at right: the Museum of Science at the Oswaldo Cruz Institute. The detail shows one object in the collection, an Adnet drying chamber (France, 1890/1910), which was used for drying and incubating cultures of micro-organisms.

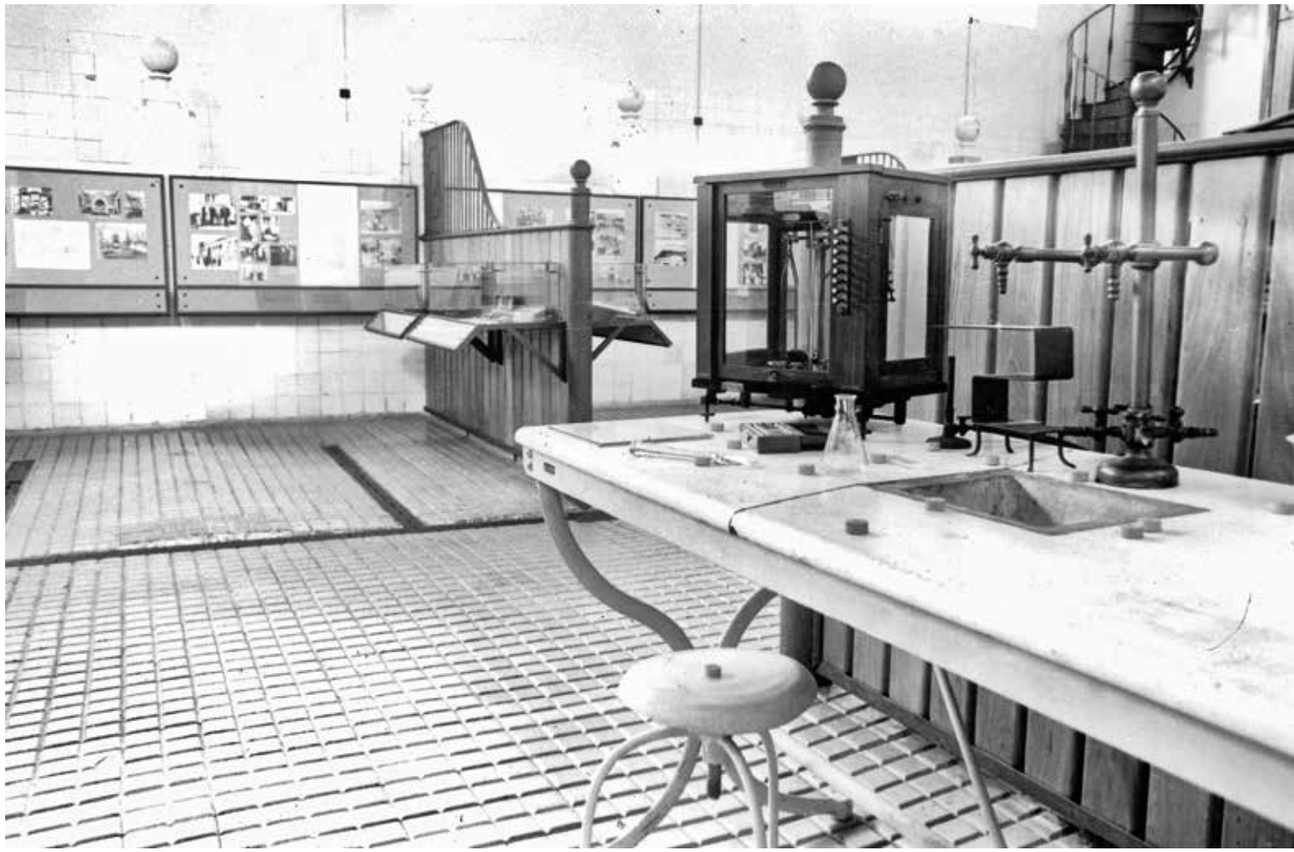
Oswaldo Cruz House Museum

After the creation of the Oswaldo Cruz House in 1986, during the period of democratic and participatory management under Sérgio Arouca as president of Fiocruz, the collections of the Museum of Science at the Oswaldo Cruz Institute and the Marquis of Barbacena Educational Museum were combined in a new space: the Oswaldo Cruz House Museum, which was inaugurated in the Stables the following year.

Both the Oswaldo Cruz Museum and the Oswaldo Cruz House Museum were incorporated into the Museum of Life in 1999, as part of ongoing improvements in policies and methods for storing and preserving material heritage related to science and health.

The Oswaldo Cruz House Museum.

Below, objects and panels from the Oswaldo Cruz House Museum. At right, detail from an object on display: a Malassez drying device, which was used to dry and fix slides.



Statements

"We must situate the creation of the Museum of Life within an archeology of how museological activities have developed at Fiocruz since Oswaldo Cruz. Initially, the Museum of Pathology was concerned with recording the process by which the institution was constructed and established, and was further marked by the vision of naturalist museums. When we arrived at Fiocruz [in the mid-1980s] at the invitation of Arouca, to develop the Oswaldo Cruz House, we were taken aback by the presence of a museum that occupied the first floor of the Castle and was coordinated by Luis Fernando [Fernandes Ribeiro]. This museum was focused on recovering history, the collection was cared for very competently and with great attention, since the intention was to provide a reading of the history of the institution through these pieces. This was the fruit of intense dedication on the part of Luis Fernando in preserving material that had been threatened in the previous period. The museum was still very traditional and very cloistered, since the entire wing of the first floor of the Castle was only opened when distinguished visitors arrived to visit this reserved space. So one of the first ideas Arouca shared with us was to renovate the museum. How could we make the museum more accessible, with the characteristics of a more open museum? The issue of interactivity had not yet been addressed at that time. And we transferred part of this reading to the Stables [opening the Oswaldo Cruz House Museum], a restored space, which allowed more immediate access to the public. That was an initial move."

Paulo Gadelha,
in a 2016 interview

"Museums have always been present in the history of Fiocruz, since the time of Oswaldo Cruz. Inside the Castle, for example, there used to be the Museum of Anatomic Pathology. During the military dictatorship, under president Vinícius Fonseca [1975-1979] was a period of research modernization in which the microscopes and equipment in several laboratories were replaced completely. So it was popular to throw things away, including scientific collections. But there was a young man who played a fundamental role: Luís Fernando [Fernandes Ribeiro], who gathered and preserved this material. In the design for the Museum of Life, we organized this antiquity. The Stables [then the Oswaldo Cruz House Museum] had the characteristics of a museum full of pieces, without this idea to be a center for the sciences like the Museum of Life, which bears the name 'Museum' but it is much more a science center than a museum, even though it also has an area of technical reserves with its scientific collections."

Gilson Antunes,
in a 2016 interview

"In creating the Oswaldo Cruz House, there was already a viewpoint of science communication. In general, there was this question of the institution's openness to society, and the Museum was a way to strengthen this openness and this feeling of belonging to the population. Because there was a perception that this Castle was immaculate and impenetrable. People did not consider it public or open to society, much less to the surrounding communities. So there was this proposal for the House to become closer to society, and there had also been a tradition of museums at Fiocruz since Oswaldo Cruz."

José Ribamar,
in a 2016 interview

"I joined the institution in 1987 to work on a project on the memory of medical science in Social Security. At that time, there was already the museum [the Oswaldo Cruz Museum], with a very intense efforts of a museologist who unfortunately has already passed away, Luis Fernando [Fernandes Ribeiro], who had a very small team. The museum had a kind of institutional history, with a collection and preservation of iconographic material, but it did not have this relationship with research. It was an important museum, but in a more conventional mold, so to speak. When the Oswaldo Cruz House was created, initially as a project and later as a unit of Fiocruz from 1987, these activities were taken over by the House for the sake of consistency, and then there was the idea of changing the profile of this museum a bit, broadening its scope and audience."

Nísia Trindade,
in a 2015 interview

Carla Gruzman, José Ribamar Ferreira, Marta Fabíola Mayrink
Contributed: Diego Vaz Bevilaqua, Marina Ramalho, Tereza Costa

Projects

With the redemocratization of Brazil after 21 years of military dictatorship, a generation of scientists led by the sanitarian Sérgio Arouca (who became president of the Oswaldo Cruz Foundation in 1985) came to defend new types of relationships between the institution and society. At that time, changes in science education policy were discussed in Brazil as well as abroad, valuing democratic principles and spreading the notion that science should be for everyone and learned throughout life. This scenario also resulted in the creation of programs for public communication of science. In 1986, the Oswaldo Cruz House was founded; the mission of this unit of the Oswaldo Cruz Foundation is to conduct historical research in health, preserve and promote historical memory and heritage, and to communicate science and technology. It is in this unit and in this wider context that a new museum plan arose for Fiocruz: the Museum of Life, which was based on the principles of multidisciplinarity, interactivity, democratization of knowledge, and promotion of health, conditions necessary for citizenship.

The conceptual and organizational plan for the Museum of Life incorporated the knowledge acquired from the variety of activities which had been carried out up to that time by Fiocruz in the areas of preserving heritage, cultural development, and science education and communication. In terms of exhibitions for the public at large, "Images of the White Plague - The Memory of Tuberculosis" [*Imagens da Peste Branca - Memória da Tuberculose*], which was shown at the National Historical Museum in 1993, and "Vaccine Uprising" [*Revolta da Vacina*], presented in 1994 at the Brazil Post Cultural Center, were important experiences for the Oswaldo Cruz House, which encouraged the accumulation of knowledge in the a new museum experience. This process culminated with the organization of the exhibition "Life" [*Vida*], which was opened to the public in 1995 at the Brazil Post Cultural Center and presented elements that would be featured in the still-developing museum, such as interactivity and human mediation.

The Museum of Life, which officially opened to the public in 1999, was conceived to be a space integrating science, culture, and society, intended for reflection on life as an object of knowledge, on health as quality of life, and on human intervention in life. The content was organized around major themes, which connected several knowledge areas in the same visitation space. The intention was to highlight the complexity of the issues addressed, which were approached from different angles and disciplines. The exhibition areas occupied different physical spaces on the Manguinhos campus, using part of the institution's museum collection and exploring a wide variety of language. The choice to use human mediation also gained prominence in order to foster dialog with different audiences and establish the idea of the Museum as an important space for discussions.

Initial deliberations to establish a science museum occurred in 1993, at the Second Fiocruz Internal Congress (see box below). Later, the proposal was consolidated into a broader initiative which involved Fiocruz, the Rio de Janeiro Technology Network, and the city government: the creation of the Rio de Janeiro Museum of Science and Technology. This museum would be comprised of three spaces: The Museum of the Universe (which was connected to the Rio de Janeiro Planetarium), the Museum of the Sea (linked to the Naval Museum), and the Museum of Life, which was located on the campus of the Oswaldo Cruz Foundation. In 1994, the desire to create the Museum of Life materialized through resources obtained from external fundraising projects, particularly through PADCT*/Capes and the Vitae Foundation. These resources, in addition to funds from the budget of Fiocruz itself, made it possible to establish a basic visiting circuit.

At the time, the goal was to establish the entire Cultural and Scientific Diffusion Complex (known as the "Niemeyer project"), which together with the basic circuit would comprise the expanded (or definitive) museum circuit. However, the Niemeyer project was never implemented because of a lack of resources.

The basic circuit included five spaces intended for public visitation: the Reception Center, Past and Present, Biodiscovery, Science on Stage, and the Science Park. "Network areas" were also created for studies, events, and services which interconnected all the spaces in the Museum of Life. This connection was intended to lead to ideas related to education, assessment, the design of products and visual communication, new technologies, conservation and restoration of collections, and administrative management of the Museum.

Specific propositions from the Second Fiocruz Internal Congress:
[...] Creation of the Museum of Science, which is envisioned as connecting Fiocruz's enormous potential in the area of information with an educational dimension, establishing a bridge between specialists and the broader public toward which the results of scientific activity are aimed. [...]
Second Fiocruz Internal Congress. **Final report.** Rio de Janeiro, 1994. p. 16.

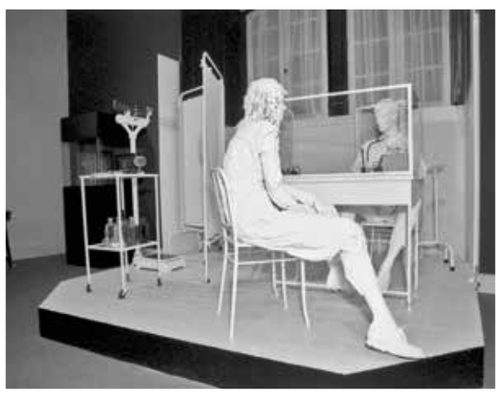
* Support Program for Scientific and Technological Development [*Programa de Apoio ao Desenvolvimento Científico e Tecnológico*].

Pioneering exhibitions

"Images of the White Plague - The Memory of Tuberculosis" [*Imagens da Peste Branca - Memória da Tuberculose*]

With "Images of the White Plague - The Memory of Tuberculosis", which was exhibited in 1993 in the National History Museum, the Oswaldo Cruz House started on the road to a new conception of museums and exhibitions, practices which were already underway in other areas of Fiocruz. The exhibit transported visitors back to the beginning of the twentieth century, when the fight against tuberculosis began to be institutionalized. Posters, photographs, cartoons, documents, videos, and objects presented the history of this disease to the public. Scenes like the medical clinic from the 1930s and 1940s shown in the illustration helped visitors feel immersed. In addition to presenting information about the disease itself, the exhibition addressed the influence of tuberculosis on Brazilian art, with an emphasis on the music of Noel Rosa and texts by nineteenth and twentieth century poets such as Castro Alves, Cruz e Souza, and Manuel Bandeira.

"Images of the White Plague - The Memory of Tuberculosis" exhibition, 1993. The photos to the right depict a model of a medical clinic, which attracted attention from visitors.



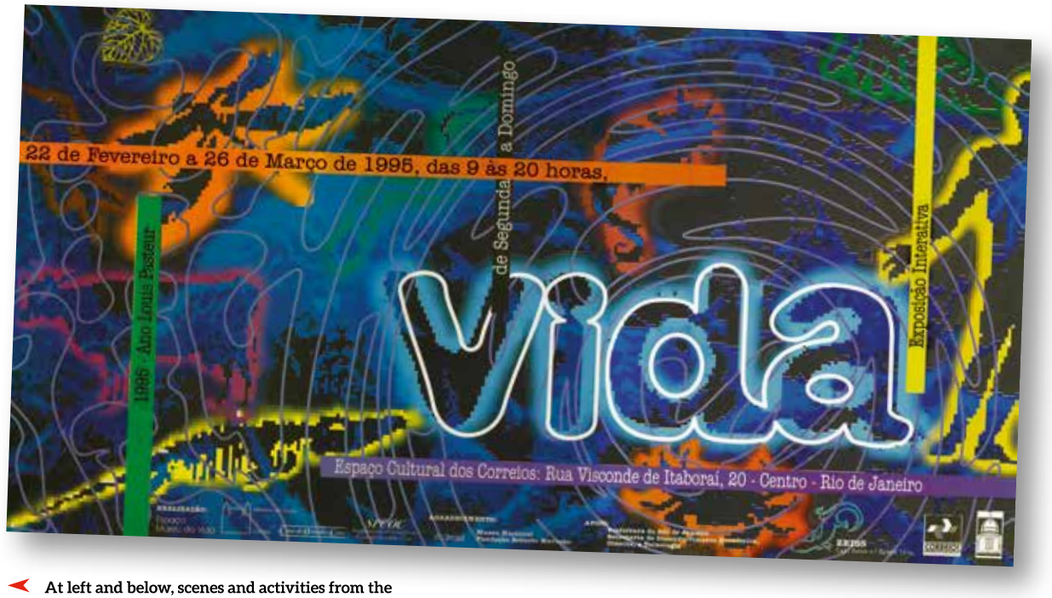
Pioneering exhibitions

Panels, objects, documents, and microscopic images tell the story of the "Vaccine Uprising", an exhibit which was presented again in 2004.

"Vaccine Uprising - from smallpox to immunization campaigns" [*Revolta da Vacina – Da varíola às campanhas de imunização*]

"Vaccine Uprising - from smallpox to immunization campaigns" opened in 1994 at the Brazil Post Cultural Center, and included objects, panels, backdrops, and video to tell the story of how the population of Rio de Janeiro was required to be vaccinated against smallpox in the early twentieth century. The show was divided into six modules; the first set the scene in the city of Rio de Janeiro during the administration of Pereira Passos and his urban reforms, while the following modules addressed the health campaigns and Oswaldo Cruz's participation, the facts which led to the uprising, and its consequences. There was also the 'Smallpox Hall' and an area that described the history of vaccines. An important innovation in this exhibition was the hiring of musicians and professional actors who performed live outdoor theater on the topic of the exhibition. Visitors and artists roamed the streets surrounding the cultural center, an initiative that was a precursor to the art and science activities that would be adopted when the Museum of Life was inaugurated five years later. In 2004, the exhibition was updated and displayed again to mark the hundred years since the Vaccine Uprising.

Pioneering exhibitions



At left and below, scenes and activities from the "Life" exhibition. Above, the exhibition poster.

"Life" [*Vida*]

The "Life" exhibition was motivated by the hundredth anniversary of the death of Louis Pasteur; it opened in 1995 at the Brazil Post Cultural Center, and received 45,000 visitors between February and April of that year. The exhibition addressed the issue of life from many angles. For example, in the module 'Cosmogonies: the Universality of Myths of Life' visitors were treated to a light and sound show against a backdrop representing different origin myths that circulate in Brazilian society. And in 'The Origin of Life: Scientific Controversies,' the focus was on the main scientific theories and hypotheses about the beginning of life. This exhibition began to explore the concept of human mediation as it would later be developed in the Museum of Life. Approximately 30 educators were trained and worked in the exhibition, encouraging dialog between the public and the content. Interactivity was also part of the exhibition. In the midst of the panels and environments there were "islands of interactivity" containing activities such as 'Life in a drop of water,' in which visitors could use microscopes to observe aquatic micro-organisms, and 'Biological Identity,' which allowed visitors to create a biological portfolio based on their physical characteristics. The "Life" exhibition was the main inspiration for Biodiscovery, one of the spaces comprising the basic visitation circuit for the Museum of Life.

Reception Center

The plan for the Museum of Life considered a reception center essential for extending a warm welcome to visitors, with the facilities and conditions necessary to begin an enjoyable and worthwhile visit. Another objective of the Reception Center was to organize public access, to avoid negative impacts to the work routine at a research institution like Fiocruz. Today, an important element of the Reception Center is the large panel by the artist Glauco Rodrigues representing important names in the history of health, which gives visitors their first contact with important moments in the history of the institution as well as Brazilian science.

Artist studies for the mosaic panel, by Glauco Rodrigues.

At left, night view of the Reception Center showing its architecture inspired by old train stations. In 1999, the building was recognized by Abcem, the Brazilian Association of Metal Construction.

The Science Train

The Science Train was envisioned to organize visits to the Museum, which is comprised of a group of buildings scattered around the campus. This train takes visitors on a fanciful trip, introducing them to the history of Fiocruz and of science and health in Brazil.

The train has a capacity of 42 passengers and carries visitors between exhibit spaces of the Museum of Life.

Several spaces in the Museum of Life were initially represented in watercolors, such as this one showing the Reception Center in operation.

Watercolor representing the Reception Center: the train, which was still in the planning stages, appears at the right.

Stables

Biodiscovery

Until 2013, the Biodiscovery space occupied the Stables building, which was built in 1904 and is part of the historical Fiocruz architectural complex. The central theme running through this long-term exhibit was biodiversity associated with the fields of history and health, with an emphasis on interconnecting relationships between these areas. The intention in developing this exhibition was to unite aspects present in the different types of museum institutions: the vibrant dynamics of science centers, the instigating observation of museum collections, the fascination of dioramas, and special spaces to hold workshops with the guidance of mediators. After a successful display period, the building underwent restoration to provide space for a new exhibit.

At left and above, exhibit and interactive activities in the Biodiscovery space.

The Past and Present Space

According to the plan for the Museum of Life, the Stables would be occupied by the Past and Present space, which was intended to explore the relationship between science and society, in addition to the history of the institution, science, and techniques. Objects, pictures, films, and simulated experiments were planned to encourage the public to interact with the content and the collections in the exhibits.

However, the original plan for the Past and Present space was abandoned and replaced by a long-term exhibit in the Moorish Castle, as we shall see in the next chapter, Practices.

The initial design for Biodiscovery was illustrated with watercolors like this one.

Watercolor, 'Atlantic Forest' module in the Biodiscovery space.

Science on Stage

The relationship between science and art has been a central theme at the Museum of Life since its conception. Initially, the integration between these two fields occurred in a multimedia space installed inside a tent (see opposite page) in order to create and implement activities combining different artistic languages. This space was dubbed Science on Stage and was further consolidated with the addition of what is now the Virgínia Schall Science Tent and an attached building, the Little Epidaurus (*Epidaurinho*, a name that pays homage to Greek amphitheaters), which contains a stage as well as the Laboratory of Perception.

Science Tent during its installation (below) and after completion (above).

Interior of the Little Epidaurus.

The projects designed by Virgínia Schall (at right) contained the idea of circus that would house drama for children and young people.

Virgínia Schall Science Tent

A book about the Museum of Life would not be complete without the story of the Science Tent, which since 2016 has borne the name of the person behind its presence, the researcher and educator Virgínia Schall (1954–2015).

Originally, several tents were assembled to house the Global Forum, an event parallel to Eco-92 (the United Nations Conference on the Environment and Development) which took place in Rio de Janeiro in 1992 at Flamengo Park.

After the event, an agreement between Fiocruz and the city of Rio de Janeiro transferred one of the tents to the campus in Manguinhos. The other tents from the Eco-92 summit remain active under municipal management in the neighborhoods of Anchieta, Campo Grande, Guadalupe, Jacarepaguá, Maré, Vista Alegre, and Santa Cruz.

Our tent was assembled in the space in front of Virgínia's working space and underwent several interventions and adjustments between 1994 and 1996 such as the installation of bathrooms, dressing rooms, and a lighting system. Since that time, the tent has become one of the permanent elements of the Museum of Life space, and includes Science on Stage. In 1996 the play "The Diary of a Teenage Hypochondriac" [*O Diário de um Adolescente Hipocondríaco*] opened in a partnership between the Oswaldo Cruz Institute and the Museum of Life; this was the first play open to the public at this space.

> *"Virgínia was a very special person, because she was able to combine several dimensions: she had creativity, restlessness, and a very fertile imagination, and this also made her a top-notch scientist and thinker. (...) She also had a vast capacity for systematization, production, and fitting ideas into projects. (...) For example, this resulted in the arrival of what we called the Science Tent to the campus, which was a suggestion and connection made by Virgínia. (...) That was a very significant center for experimentation well before the museum had the structure and the capacity for permanence that it came to acquire. (...) On this path, Virgínia played a central role. First in planning, second in direct operations."*, Paulo Gadelha, in a 2016 interview.

A variety of activities, though not implemented, were planned for the area surrounding the Science Tent, as illustrated in this watercolor.

Artist's conception of the Science Tent in use, watercolor.

The Science Park

The Science Park was planned for a large, high-visibility outdoor area on the Manguinhos campus and in a neighboring structure, the Pyramid. It was designed with the mission to instill an interest in science through the topic of communication, understood to be the result of processes in which energy interacts and transforms, which are responsible for organizing life.

A park attraction, the Giant Cell, under construction (above) and completed (at right). Over time, the Giant Cell underwent renovations to keep pace with new scientific discoveries in the field of cytology.

On this page and opposing page: overview of the Science Park and its various activities.

Artist's conception of the Science Park, highlighting the acoustic mirrors which would be installed. These mirrors were later retrofitted to guarantee accessibility for visitors in wheelchairs.

As early as the design phase, the Museum of Life already included open-air trails, as illustrated in this watercolor.

Central Building, Library, Auditorium, Foyer, and Temporary Exhibition Hall

Initially, the administrative departments and Museum of Life management worked out of a leased container which was installed near the Science Park. In June 2005, the complex was opened after dramatic interventions in the former metalworking and mechanics workshops and the Fiocruz carpentry warehouse. The central building provided adequate facilities for the staff and space for a specialized library on the popularization of science, which is currently known as the Iloni Siebel Education and Science Communication Library in honor of the researcher and educator Maria Iloni Seibel Machado (1941–2013). The new complex, which along with work spaces was comprised of an auditorium, foyer, and temporary exhibition space, provided a new dynamic in the Museum by permitting short-term events and exhibitions. It became a space for integrating all the Fiocruz units, which were able to hold their events there comfortably and with the required technical resources.

The former metalworking, mechanics, and carpentry workshop spaces (above) were renovated to house the Museum's Central Building and Temporary Exhibition Hall (below).

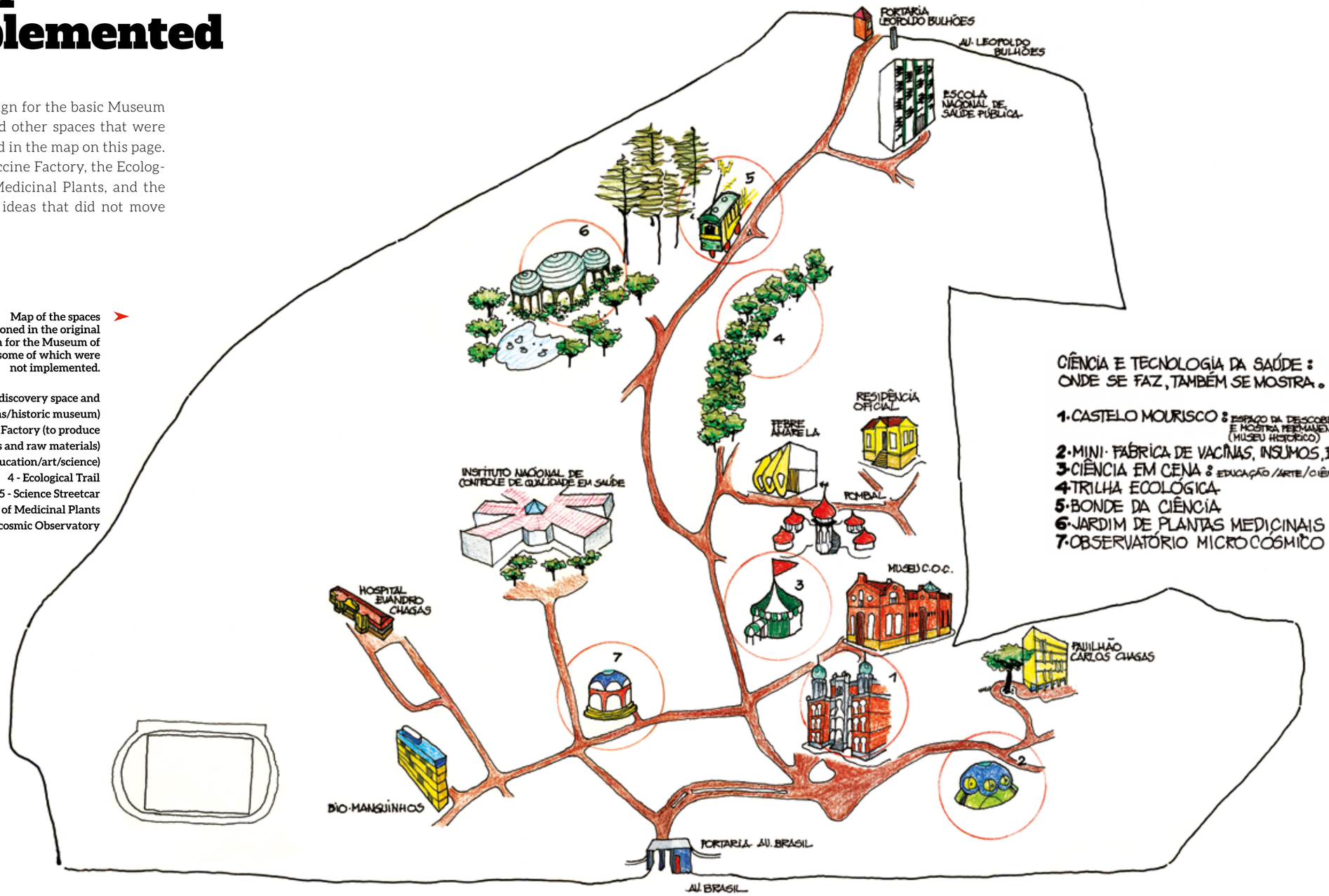
Events in the Foyer (at left) and in the Auditorium (at top). Above, the Iloni Seibel Education and Science Communication Library.

Spaces planned but not implemented

The original ambitious design for the basic Museum of Life circuit also included other spaces that were not constructed, as depicted in the map on this page. These include the Mini Vaccine Factory, the Ecological Trail, the Garden of Medicinal Plants, and the Microcosmic Observatory, ideas that did not move past the planning stages.

Map of the spaces envisioned in the original design for the Museum of Life, some of which were not implemented.

1 - Moorish Castle (discovery space and permanent exhibitions/historic museum)
2 - Mini-Vaccine Factory (to produce vaccines and raw materials)
3 - Science on Stage (education/art/science)
4 - Ecological Trail
5 - Science Streetcar
6 - Garden of Medicinal Plants
7 - Microcosmic Observatory



Pombal

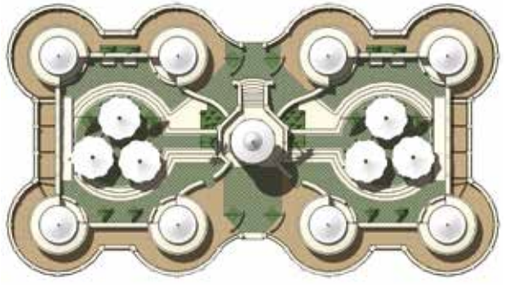
During Arouca's administration (1985–1989), even before the Museum of Life was opened to the public, the Pombal [dovecote] was used frequently as a space for cultural activities like *Pombal Gira* and other celebrations. Later, the space was renovated for restoration and to adapt it to future museum plans, which did not come to pass.

The initial design of the museum already envisioned the use of the Pombal for workshops, exhibitions, concerts, lectures, and other activities promoting science and culture. Later other plans were created for its use and revitalization, transforming the Pombal into a space for exhibitions, leisure, and support for Fiocruz's scientific and cultural events.

These plans involved discreet interventions with little visual impact, respecting the original architectural features without causing damage to the building. To keep temperatures low and visitors comfortable in summer, trees would be planted and artificial shade structures would be installed.

"Health and environment" was the theme for the activities to be carried out there, and would include large outdoor game boards and exhibitions on various topics. In order to preserve and share the history of the Pombal, one of the kiosks would represent its history as housing for laboratory animals (see box).

Although these projects were not carried out, the renovation of the Pombal was not forgotten. The space is part of the Renovation Plan for the Manguinhos Historical Architectural Nucleus [*Núcleo Arquitetônico Histórico de Manguinhos, NAHM*], as we shall see in Chapter 4 - Prospects which includes a plan to integrate it with the trails of the campus and transform it into a space for interaction, leisure, and educational activities on the topic of "Health, Environment and Sustainability."



Study for the revitalization of the Pombal, produced in 2007. The digital representations emphasize planting trees and deploying shade structures (at top) and the symmetry of the complex (above).

The Pombal is located at the base of the hill where the Moorish Castle and Stables stand; it was built in 1904 to house small animals, a function it maintained until the 1960s.

The space is composed of eight kiosks divided into housing for birds, rats, rabbits, and healthy guinea pigs (inoculated animals were kept in a vivarium). Adjacent ponds were used to raise turtles and frogs. Winding paths and two circular plazas are interspersed among the kiosks, and a tower stands at the center, the Pombal itself. The construction forms a symmetrical rectangular complex with few ornaments, surrounded by a wall.

Entrance to the Pombal, with emphasis on the central tower. In background, part of the Moorish Castle.

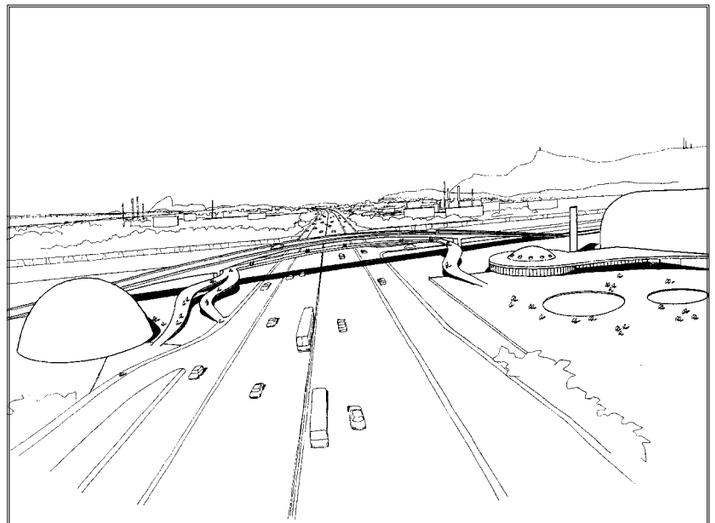
In this watercolor, visitors stroll by the renovated Pombal.

The Niemeyer Project

In addition to the spaces mentioned, the Museum of Life plan included the Cultural and Scientific Diffusion Complex, which was dubbed the "Niemeyer project" in reference to the architect who designed it.

Although it never left the planning stages, the complexity of the project (see box at right) expresses the effervescent ideas and expectations surrounding the creation of the Museum.

Watercolor depiction of the Cultural and Scientific Diffusion Complex, planned by Niemeyer but never executed.



"The Niemeyer Complex had an enormous pavilion that we called the 'jelly roll,' where there would be long-term and temporary exhibits and the Museum headquarters. The plan also included a convention center, with one 1,200 seat auditorium and another with space for 300, and rooms. The convention center had an Italian-style stage and a gigantic opening to the square, for holding events. This stage was reversible: you could present to the larger auditorium or to the square. There was another building that would be a restaurant, a bookstore, certain types of services, and an overpass crossing Avenida Brasil for cars and pedestrians. On the other side [of Avenida Brasil], there would have been a Museum of Microscopy and a 180° theater.", José Ribamar Ferreira, in a 2016 interview.

Statements

"[In the 1980s], there was an political context of redemocratization both inside and outside of Fiocruz. Within Fiocruz, this core was led by Sérgio Arouca, with a very strong group of researchers and managers that included Paulo Silva to establish the Oswaldo Cruz House. Along with this context within the institution and the country's political scenario, there was an external context of appreciating scientific education, and bringing science closer to society. Prior to this, the United States was already noting that, in comparison with the western countries, it was at a bit of a disadvantage in terms of knowledge of the relationships between science and society. (...) UNESCO also made great efforts, with international meetings in Brazil, Argentina, Mexico, in several countries, showing the need to modernize science teaching and to bring science nearer to citizens. In Brazil, there was also the arrival of what we can call the interactive revolution, with a new interactivity proposed by [Frank] Oppenheimer in the Exploratorium in San Francisco in 1969. In Brazil, the Museum of Life was not exactly a pioneer, because it actually came in the wake of a generation of museums in the late 1970s: for example, the Museum of Science and Technology of Bahia opened in 1979, and was already tuned into the prospects for the Exploratorium's activities, intellectual immersion, involving emotion, and the concept of hands-on. Throughout the 1980s, some museums and science centers also opened like the Ciência Viva Space in 1982, the Museum of Astronomy and Related Sciences [both in the city of Rio de Janeiro], the Center for Scientific and Cultural Communication in São Carlos [SP], and Estação Ciência in São Paulo [in the capital]. So there was this fervor of interactivity taking over the world's museums."

José Ribamar Ferreira,
in a 2016 interview

"We obtained support from the British Council to make a technical visit to look for benchmarks in the most important museums of England and France. And this trip was extremely significant, because it was really like a bullfight. At that time, we had already created a concept. I joked that everyone was the sorcerer's apprentice because nobody came from any kind of museum activity or had solid training in science museums. None of us had worked very intensely or was a professional in this area. But the ability to draw up and ask questions, formulate problems related to a general context in the fields of the epistemology of history of science and the sociology of science, as well as the ability to contextualize national and institutional situations, meant that we were able to, during this quick tour – which could have been just a formal visit from an institution that is going to visit museums – put together issues and questions that I considered so important that people who were receiving us as a courtesy spent hours in discussions with us. So this helped us a lot because the concerns that they had were concerns that also generated novelty, that spoke to what was on the horizon. And they began to see that here a potentially new experience was developing, in a new context."

Paulo Gadelha,
in a 2016 interview

"The idea was always to create the Museum of Life in a decentralized way at Fiocruz, taking advantage of the institution's units. To formulate a proposal like this would be chaos. I brought up this issue with Gadelha and Nísia and said: 'Look, it's practically impossible to deal with a project like this in terms of budget and cost. We need to have a strategy, a division between a basic circuit, that we can make it to on foot, and a proposal more for the future that would be the definitive sector. But not in a decentralized way, because that would continue the problem of the movement of people within the campus. There are even safety situations, in biological terms, you can't have children running loose on campus, you have to have an orderly circuit'. (...) So we submitted a proposal divided into two circuits, the first circuit is what would be funded [by the call for proposals]. The definitive circuit project was designed by Oscar Niemeyer. (...) It was evident that there were costs associated with the Niemeyer project, we could not raise the resources and it ended up not going ahead. But it met expectations and allowed for the creation of a basic circuit without major interference."

Gilson Antunes,
in a 2016 interview

"There was also an important contribution by some exhibitions linked to international celebrations: the 'Life' exhibition held in the year of Pasteur [shown in 1995 at the Brazil Post Cultural Center] was very important. It represented an attempt to unite researchers in biomedicine who worked on biodiversity with the team that was already designing the Museum of Life. I was one of the curators of the exhibition, along with Luis Antonio Teixeira, Luiz Otavio Ferreira, and Gilson Antunes. We had several discussions on how to deal with the issue of life for the event in a different way. There were some really crazy discussions. We imagined how to represent the timeline, in terms of a geological scale, in a non-linear fashion. Then we talked about Stephen Jay Gould, and how to represent the image of origin: would it be a spiral? A bucket? I don't even remember if the solution was useful in demonstrating what we wanted, but the discussion was very good. And the exhibit was very interesting, because it reflected this dialog and also presented aspects of various cosmogonies, different theories. The 'Life' exhibit was very interesting, as a space for considering science communication not as mere propaganda for science that is already done with, but showing these tensions of science."

Nísia Trindade,
in a 2015 interview

"In 1994 the Museum of Life project began to develop more intensely, greatly stimulated by the call for proposals by the Vitae Foundation in association with Capes to create science museums in Brazil. So this encouraged not only individual science communication activities but more formal structures, such as museums, in a more contemporary version involving interactivity. This made scientific communication initiatives more substantial, which previously had been more the product of effort and volunteer work by the people that work in this area. So there was an institutional incentive, which is very important. [Paulo] Gadelha and the president of Fiocruz at the time – Carlos Morel, also a supporter of scientific communication – saw it as an opportunity."

Nísia Trindade,
in a 2015 interview

Carla Gruzman, Maria Paula Bonatto

Contributed: Ana Carolina Gonzalez, Carla Almeida, Diego Vaz Bevilaqua, Héliton Barros, Marcus Soares, Marina Ramalho, Miliana Fernandes, Pedro Paulo Soares, Sonia Mano, Tereza Costa

Practices

What is the social role of museums and science centers? What can be done to awaken interest in science among the public, and to create new opportunities to access culture? How can we help people perceive the tangible and intangible assets present in these spaces? This chapter describes the main practices developed at the Museum of Life to expand and strengthen its relationship with society.

The educational dimension which is emphasized at the Museum is a response to social demands for democratized knowledge and broad access to cultural spaces. In this context, the Museum of Life aims to build practices which are committed to inclusive and emancipatory education, engaged in efforts toward full health and establishment of a critical vision of the world in which we live and which we want to transform. Notable guidelines for the educational work also include the historic approach, multidisciplinarity, and interactivity.

A hallmark of our educational practice is training students to act as mediators in different areas of the Museum to motivate and instigate the public. The mediators ask visitors questions, promote listening and creative dialog, and open a space for reformulating ideas and constructing new knowledge.

In order to offer a wide variety of activities geared to its diverse public, the Museum of Life has made efforts to better understand its visitors, an activity it considers essential. On the other hand, there is still a challenge to create strategies that provide full museum access to portions of the population that do not habitually visit these spaces, are not aware of them, or do not identify with or feel motivated by activities offered by these institutions. In this sense, the Museum of Life has been aware of the cultural diversity that exists in the surrounding communities. Since its inauguration, it has undertaken regional activities to increase interactions with local residents. This directive is even more relevant when one notes that the Museum of Life is one of the few cultural institutions located in Manguinhos, one of Rio de Janeiro's several socially vulnerable areas.

We view the museum as a meeting place where exchanges of experiences and construction of knowledge occur. Consequently, training and research have been present since its inception. The training programs are geared toward students and various levels of professionals, from high school through postgraduate studies. The research conducted at the Museum of Life spans studies of the public and assessment, informal science and health education, and studies on science communication in different formats, platforms, and historical aspects.

The Museum of Life is also responsible for maintaining and preserving Fiocruz's heritage assets. The collection is comprised of approximately two thousand pieces representing the history of science and technology in the fields of health and life sciences. The objects in the collection are sources of information which are available for public consultation and exploration in educational activities and exhibits on scientific history.

Finally, we seek to expand our activities beyond our walls. Through partnerships with universities, city government, and other institutions, the Museum of Life takes traveling exhibitions to cities around Brazil. Our mobile truck-based unit has traveled close to 67,000 kilometers to cities in the southeast region of the country.

As of 2017, which marked the Museum's eighteenth anniversary, approximately 3.4 million people had participated in free activities open to the public, helping to popularize issues related to science, technology and health.

In 2015 Fiocruz was awarded CNPq's José Reis Science Communication Award (in the category Institution or Communication Vehicle) as a recognition of its science communication activities in order to promote health and citizenship. In 1997, the Museum of Life received an Honorable Mention for the same award.

Institutional mission

To stimulate interest and promote public engagement in science, technology and health, and their historical processes, in order to promote citizenship and improve quality of life.

Exhibits

Exhibits are among the most typical characteristics of museums, and are often their primary interface with the public. Things are no different at the Museum of Life: the exhibits mobilize an important part of our team and attract a significant number of visitors. Since its inauguration, more than two million people have the visited temporary and long-term exhibits at the Museum.

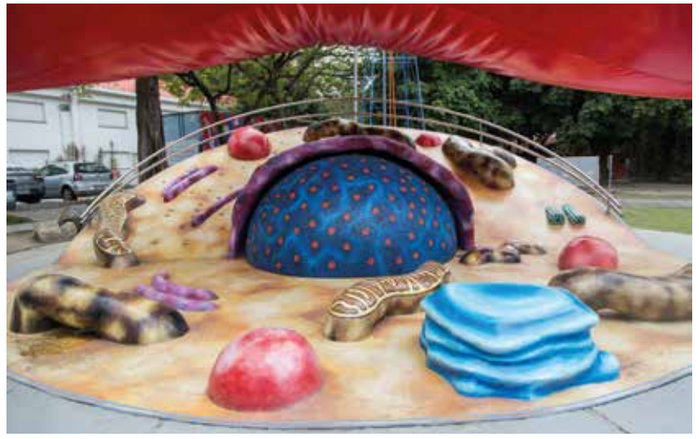
Long-term exhibitions

The long-term exhibitions can be found in the grand spaces of the Museum of Life, and address issues related to life, energy, communication, perception, health, and the history of the institution.

Visitors can pedal to create waves of different lengths, decipher codes, and take selfies with scientists from times past.

The Science Park

Transform your own energy into light, learn how the wind can draw water from a well, and climb on a giant cell: these are just some of the options for visitors in the outdoor areas of the Science Park, which explores the topics of energy, communication, and organization of life through approximately 15 interactive installations. These topics are also addressed within the Pyramid, where the main focus is games and experiments. Visitors can build models of cells using homemade materials, discover how lenses work, and view protozoa, insects, and human body tissues in microscopes, among other activities, in a playful and attractive environment.



The Giant Cell represents a human cell magnified 300,000 times, and stands out among the landscape of the Science Park.

Butterfly House

The Illoneus giant owl (*Caligo illioneus*), orange-tipped angled-sulphur (*Anteos menippe*), great southern white (*Ascia monuste*), and Julia (Dryas iulia) are butterfly species that inhabit the Butterfly House at Fiocruz; this space opened in 2015 and was the fruit of a partnership between the museum and the Oswaldo Cruz Institute. Here visitors can follow butterflies through their life cycle, from the larval stage until adulthood. They can also learn about butterfly feeding habits, the secret behind wing colors, and the tactics and strategies they use to survive, as well as the difference between butterflies and moths.

At the Butterfly House, butterflies like this Illoneus giant owl feed mainly on fruit.

The office that was used by Oswaldo Cruz currently houses an exhibition in his honor.

Past and Present

The Past and Present space was established in the Moorish Castle in 2008 as a long-term exhibit. Using objects from the museum and documents from the Museum of Life such as photos, historical documents, laboratory instruments, and personal objects and letters, the exhibition focuses on the lives and careers of Oswaldo Cruz and Carlos Chagas, the scientist who founded the institution.

The Moorish Castle enchants all who visit the Past and Present space.

The Laboratory of Perception

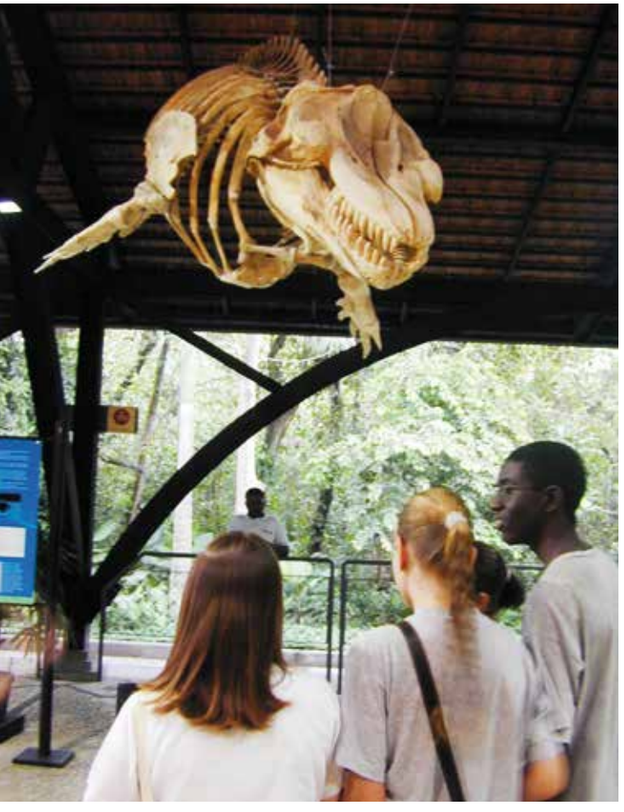
How does projection work in the movie theater? How does vision deceive us and make us see movement where nothing is moving? How can we see colors where there is only black and white? Light-related phenomena are explored in the Laboratory of Perception, an exhibition space that combines physics and biology with culture, emotions, and the learning process. Located in the Little Epidaurus (part of the Science on Stage theme space), the Laboratory of Perception has interactive models and panels as well as videos that are shown to the visitors.

A visit to the Laboratory of Perception is guaranteed fun for young people.

Temporary exhibitions

As of 2016, the Museum of Life had presented approximately 70 temporary exhibitions on topics related to science, health, society, and the history of the Oswaldo Cruz Foundation. Most of these were designed and developed by the Museum's own staff, while others were the result of partnerships with various institutions.

At Fiocruz's campus-headquarters in Manguinhos, temporary exhibitions are displayed in two dedicated halls. And through traveling shows, many have traversed Brazil's five regions (see box on opposite page).



An orca skeleton from the "Whale in sight" [*Baleia à vista*] exhibition, which received about 200,000 visitors in 2003.

In 2000, five centuries of explorations across Brazilian territory were portrayed in the exhibition "The Science of the Travelers" [*A Ciência dos Viajantes*].

Promotion of health and self-care were the subject of the "The Way to the Heart" [*Vias do coração*] exhibit, which was first shown in 2008.

Featuring playful and interactive activities, "Adventure in the Human Body" [*Aventura pelo corpo humano*] was a success with children in 2010.

Traveling exhibitions

Over its 18 years of operation, the Museum of Life has held roughly 65 traveling exhibitions which were shown more than 240 times in 22 Brazilian states (and one exhibition in Portugal), receiving nearly 1.7 million people. Some exhibitions were visited by more than 200,000 people, while others received international awards. Throughout its history, the traveling exhibitions accounted for just over half of the public which has directly benefited from the scientific communication activities from the Museum of Life.

"Elementary - the chemicals that make the world" [*Elementar – a química que faz o mundo*]

This exhibition opened in 2011, the year defined by Unesco as the International Year of Chemistry, and used workshops and interactive devices to share the development of chemistry and its impact in our lives. Highlights of the exhibit included a large-scale, interactive periodic table which was recognized in the Interaction Awards for interactive design in 2012.

Visitors to "Elementary - the chemicals that make the world," featured at the Museum of Life in 2011, were invited to learn about the elements that compose the world around us and even us ourselves.

The objective of the 2012 exhibition "We of the World" [*Nós do mundo*] was to discuss the impact human activities have on the environment and society.

Designed for children, the 2013 exhibition "Forest of the Senses" [*Floresta do Sentidos*] provided an immersion experience within a forest scene.

The 2015 exhibition "The Paths of SUS" [*Pelos caminhos do SUS*] discussed the construction of the public health system in Brazil.

With its simulation of a home, "Interactive Dengue" [*Dengue interativa*] (2015) presented videos, animations, models, microscopes, and practical activities to educate visitors about the disease and how to prevent it.

A large model of the *Aedes aegypti* mosquito impressed visitors at the entrance to the exhibition.

Science and Art

Science and art have always gone hand in hand during the history of the Museum of Life. This relationship goes far beyond using art solely as an instrument to discuss science, or vice versa. At the Museum, this link connection considers the facets that science and art share, and their presence in our lives as part of culture and human expression. Together, science and art accompany us through life, expanding our understanding of the world and ourselves.

Since its creation, the Museum of Life has stood out for its initiatives interlacing science and art, especially in the fields of theater and literature. .

Theater in the Museum of Life

The Museum of Life stands out among spaces for scientific and cultural communication because of the plays and skits it includes in its programming. It has a team of actors and performing arts students, sound engineers, lighting technicians, and other professionals who develop and execute the steps involved in each project, from selecting and adapting scripts to directing and performing the shows. Some of the repertoire has even been conceived and written by the theater team, which works within the Science on Stage theme space.

The Museum of Life has special spaces to receive audiences for its activities. The Virgínia Schall Science Tent is the main venue, with capacity for 120 spectators. There is also the Little Epidaurus, a small and cozy amphitheater which occupies an underground space near the Tent. The Moorish Castle, Stables, and other spaces inside and outside the Museum can and have also served as the setting for our incursions into the performing arts.

So far the Museum of Life has produced and staged 16 pieces, reaching more than 60,000 spectators. This number becomes even more significant when we consider that most of the audiences are students, residents of the North and West zones of Rio de Janeiro and oth-

The Museum of Life presents...

1996 Diary of a Teenage Hypochondriac* [*O Diário de um Adolescente Hipocondríaco*]
1997 Sidereal Message [*Mensageiro das Estrelas*]
2001 The Mystery of the Kissing bug [*O Mistério do Barbeiro*]
2003 Botany Lesson [*Lição de Botânica*]
2008 In the Times of the Vaccine Uprising [*Nos Tempos da Revolta da Vacina*]
2009 In the Time of Oswaldo Cruz [*No Tempo de Oswaldo Cruz*]
2010 You Should Ask Wallace [*Pergunte a Wallace*]
2010 What does he have, Doctor? [*O Que é Que Ele Tem, Doutor?*]
2011 Bad Blood Blues [*Sangue Ruim*]
2011 Sinister Conference [*Conferência Sinistra*]
2012 Adventures in the Castle [*Aventuras no Castelo*]
2012 Philosophy of a Pair of Boots [*Filosofia de um Par de Botas*]
2013 The Sorcerer's Apprentice [*Aprendiz de Feiticeiro*]
2014 Curumim Wants Music [*Curumim quer Música*]
2015 The Boy with the Fiddle and Miss Rebeca [*O Rapaz da Rabeca e a Moça Rebeca*]
2016 The Life of Galileo [*A Vida de Galileu*]**

+ Events and shows:
2003–2009 Downstage Arts and Science Seminar [*Seminário Arte e Ciência na Boca de Cena*] (5 editions)
2006–2008 Theater, Science, and Citizenship [*Mostra de Teatro, Ciência e Cidadania*] (3 editions)
2010–2011 Scientific Soirée [*Sarau Científico*] (5 editions)

** Produced by the Science Education Center at the Museum of Life in partnership with LEAS (Environmental Education and Health Laboratory)/IOC/Fiocruz. All the other pieces were produced within the Science on Stage theme space at the Museum of Life.*
*** Original title: Leben des Galilei.*

er cities in the greater Rio de Janeiro area. For many of them, the visit to the Museum of Life provided their first exposure to theater.

By developing audiences and including publics with little access to the performing arts, the theater is one of the activities at the Museum of Life that extend beyond our mission as a museum and institute of science communication.

When we see the joy on the faces of the audiences we are thrilled, but at the same time we ask ourselves: How many of these spectators will have the opportunity to visit a theater again? What influence will this contact with drama have on their lives? We are conducting studies to find these answers, but even without these results we trust in the power of art and science to expand the horizons of our world vision and our ability to discuss them.

Storytellers

When the subject is science and literature, the Museum of Life has many stories to tell. Since 1999, the Storytellers group has worked to encourage reading and science communication through reading stories, poems, and children's books to audiences. A different topic is chosen every month; some focus on children, others on adults. Music, projections, and props help set the stage for the stories. After the presentation, a guest researcher discusses the topic with the audience. Besides stirring public interest in literature and science through fantasy and fiction, this activity brings visitors and researchers closer, demystifying science and promoting dialog and exchanges of ideas.

In celebration of the Day of Black Consciousness, tales about African culture are brought to life by the Storytellers in November 2014.

Mediation

Educational materials used by mediators of the "Body in African Art" [*Corpo na arte Africana*] exhibit (2012).

Mediators at the Museum of Life are educators and students who undergo ongoing training. Instead of offering closed content to visitors, the mediators attempt to foster dialog and questioning, encouraging interpretations that multiply the meaning of the visit and create connections between scientific, technical, social, historical, and artistic aspects present in the topics addressed.

At The Museum of Life, human mediation is an essential element for creating dialog with visitors.

The mediators welcome the public, contextualize their visit and the topics, pique curiosity, pose questions, and learn from the experiences of visitors. In this way, mediation creates a place to construct knowledge from audience perception and the visiting experience.

Mediation activities at the Museum of Life are constantly being developed and reviewed, and are guided by a historical focus, multidisciplinarity, and interactivity.

The historic and ecological Oswaldo Cruz Trail: visitors follow the same path the scientist used to walk.

Excavation Workshop, an activity that combines fun with concepts of archeology for children.

Training

Training is at the heart of the educational program at the Museum of Life. The programs developed in this context are organized into four lines: activities for young people, activities for educators, academic training, and events for professionals.

Activities for young people

At the Museum of Life, young people can be part of mediation, in direct contact with the visiting public, and also participate behind the scenes of the museum in producing artistic and cultural activities. The Training Program for Science Center and Museum Explainers [*Programa de Qualificação de Monitores para Museus e Centros de Ciências*] is a pioneer in Brazil, training high school students from public institutions in the area surrounding Fiocruz's Manguinhos campus to act as mediators. In 2013, the program was restructured, producing the Cultural Production Initial Training Program [*Programa de Iniciação à Produção Cultural, Pró-Cultural*].

The Science Communication and Popularization Initial Training Program [*Programa de Iniciação à Divulgação e Popularização da Ciência, Propop*] is directed at training college students, who mediate and work with the public in the Museum. The training for program fellows consists of an initial course that stimulates theoretical and practical reflections on museums and science centers, followed by courses targeting each area of activity within the Museum.

Young people from the Cultural Production Initial Training Program

Propop fellows who act in the visiting areas within the Museum of Life.

Activities for educators

The Museum of Life holds seminars and workshops for teachers in order to create a space for exchanging cultural experiences in museums and encouraging the planning of future visits by school groups. In order to increase the educational potential of these encounters, the Museum develops educational activities that consider participant characteristics and expectations.

Teachers learn about the activities at the Science Park in one of the teacher events at the Museum of Life.

Academic Training

Training activities at the Museum of Life have become stronger over recent years with the creation of post-graduate courses in the field of science communication at the specialization level (postgraduate certificate course) and a master's degree program.

The Specialization Course in Science Communication and Popularization was created in 2009, and has already graduated nine classes and more than one hundred and twenty students from a wide array of backgrounds who are now qualified to work in science communication.

Flyer for the Specialization Course in Science Communication and Popularization promoted by the Museum of Life, in partnership with other institutions. At left, opening class of 2016.

In 2016, the first group of incoming students was selected for the master's degree in Science, Technology, and Health Communication; this was an important milestone establishing the Museum of Life as a space producing knowledge in an area where training opportunities are still scarce.

Both courses are linked to the Oswaldo Cruz House and are organized and administered with the following partner institutions: Rio de Janeiro Botanical Garden Research Institute [*Instituto de Pesquisas do Jardim Botânico do Rio de Janeiro*], Museum of Astronomy and Related Sciences [*Museu de Astronomia e Ciências Afins*], Cecierj Foundation [*Fundação Cecierj*] and the House of Science at the Federal University of Rio de Janeiro [*Casa da Ciência da Universidade federal do Rio de Janeiro*].

Events for professionals

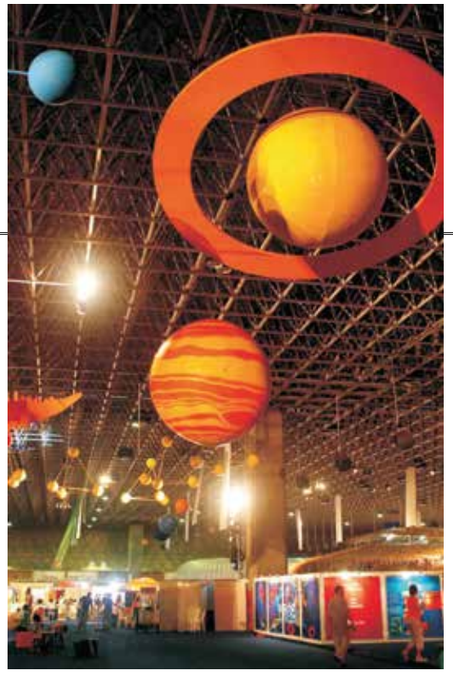
Through study groups, visits by experts, thematic workshops, lectures and seminars, the Museum of Life encourages continuing education among researchers and professionals who work in scientific communication and people who are interested in the area.

4th Science Center World Congress and EXPOinterativa

In April 2005, the Museum of Life organized the fourth edition of the Science Center World Congress (4SCWC), one of the most important events in this area. Because of the scale of this event, the Congress was held in the Rio de Janeiro Convention and Exhibition Center [*Riocentro*].

Under the primary theme of "Science Centers: breaking barriers, engaging citizens," 4SCWC gathered more than 1000 people from close to 50 countries.

During the same period, more than 100,000 people visited EXPOinterativa: Science for All [*EXPOinterativa: Ciência para Todos*], one of the events held in parallel to the Congress.



Concerts, theater and circus performances, workshops, films, exhibitions, science fairs, and many other activities provided a wide range of opportunities for visitors to EXPOinterativa: Science for All in Riocentro.

13th International Conference on Public Communication of Science and Technology

The Museum of Life coordinated the 13th International Conference on Public Communication of Science and Technology (PCST 2014), one of the most important international events in the area of science communication.

The conference, which received 507 entries from 49 countries, took place in May 2014 in the city of Salvador (BA), which was its first edition in Latin America.

Events

Events are an important element of the dialog between the Museum of Life and society. In addition to promoting commemorations and specific themes, the events organized by the Museum offer visitors specific programming with workshops and special activities.

Several Fiocruz units and other research institutions share their work with visitors during the National Week of Science and Technology in 2016.

National Week of Science and Technology

Fiocruz has been participating in the National Week of Science and Technology (SNCT), an annual event coordinated by the Ministry of Science, Technology, Innovation and Communications (MCTIC) simultaneously in nearly all Brazilian states, since the event's first edition in 2004.

During the Week of Science and Technology, the Museum of Life offers special programming for its visitors comprised of exhibits, scientific demonstrations, discussions with researchers and writers, film screenings, workshops, trail hikes, and theatrical performances on the week's central theme.

Activities related to the Week of Science and Technology at the Museum of Life in 2016.

Activities during Fiocruz For You in 2016. Below, the Stables building transformed into a vaccination clinic during the event.

Fiocruz for You

Vaccination takes an amusing turn with Fiocruz for You, an event that is part of the national polio vaccination campaign. Each year the Museum of Life participates with workshops, theater skits, and other cultural activities promoting health and citizenship.

Science Communication Products

Publications produced by the Museum of Life.

In addition to the exhibitions, events, and training mentioned above, the Museum of Life develops a series of science communication products in a variety of formats. These range from publications reflecting on the field and memory of events to history books and virtual games, geared to a wide range of audiences.

The books *What is Nina Getting Ready For? [O que Nina vai aprontar?]*, *Oswaldo and his Castle [Oswaldo e seu castelo]*, and *So What's Happening to my Body? [Afinal, o que houve com meu corpo?]* and the *Young Explorer's Club [Clube do explorador mirim]* blog are examples of products for young audiences.

For adolescents and students in general, there is even more; some examples are the texts *Not-so-secret files on health in Brazil [Arquivos nada secretos da saúde no Brasil]* and *Science in Tune: a guide to start a radio program about science [Ciência em Sintonia – Guia para montar um programa de rádio sobre ciências]*, the InVivo site, the *What does it smell like? [Cheiro de quê?]* game, and the multimedia resource *Love and sex: myths, truths, and fantasies [Amor e Sexo: mitos, verdades e fantasias]*.

Several products, however, are intended for the more general public, either to help awaken interest in science in general or to inform them about some specific topic related to science. Deserving of special mention here are the guides *Science Centers and Museums in Brazil 2015 [Centros e Museus de Ciências do Brasil 2015]* (now in its third version), and *Science Centers and Museums in Latin America and the Caribbean [Centros e Museus de Ciência da América Latina e do Caribe]*: both are intended to map the presence of these institutions in the country and in the region, respectively.

The *Brasiliana* portal takes a historical look at science communication initiatives in Brazil, based on field studies conducted in this country.

Sites and blogs bring a bit of the Museum of Life to people throughout Brazil and in other countries.

www.museudavida.fiocruz.br/brasiliana

www.museudavida.fiocruz.br

www.exploradormirim.blogspot.com.br

www.invivo.fiocruz.br

Booklets on specific topics related to science have also been produced: *Carlos Chagas - the science to combat tropical diseases [Carlos Chagas – A ciência para combater doenças tropicais]*, *Carlos Chagas Filho - The "scientist-electrician" [Carlos Chagas Filho – O "cientista elétrico"]*, and *Flying over Fiocruz [Voo pela Fiocruz]*, a guide to birds on the campus.

These are just a few examples of the various scientific communication products that have been developed by the Museum of Life. Most can be accessed from the Museum website: http://www.museudavida.fiocruz.br

Research

Although science communication in Brazil has a history spanning more at least two centuries, theoretical reflections in this field are still recent. With an awareness of the importance of contributions to academic development in this area, the Museum of Life has given increasing attention and space to research in science education and communication, studies of its public, and assessment and reception of the activities it promotes.

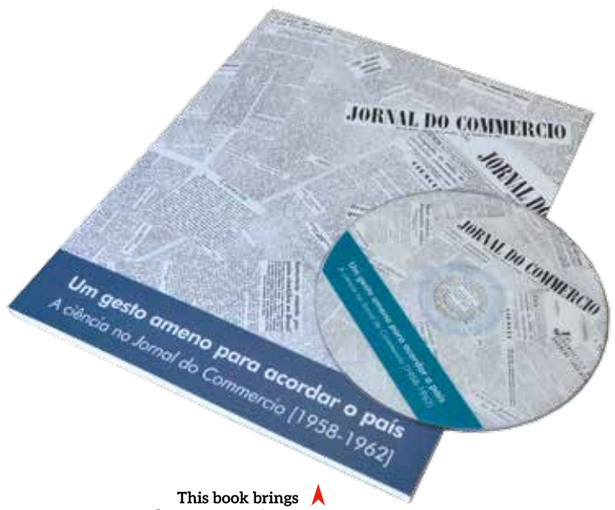
Who visits the Museum of Life? What do these visitors expect to find in the museum? What do they think of our work? What would they like to see in our exhibitions and activities? To answer questions like these, since its opening the Museum of Life has maintained records of its walk-in and scheduled visitors, activities on the Manguinhos campus, and traveling exhibitions, in addition to analyzing metrics from its internet-based initiatives. These data have been published in the Museum of Life Notebooks [*Cadernos do Museu da Vida*] and have guided the planning of the Museum's various initiatives.

The *Museum of Life Notebooks* collect data about the Museum's public.

The Museum of Life participates in the Science and Technology Center and Museum Observation Network [*Rede Observatório de Museus e Centros de Ciência & Tecnologia, OMCC&T*], which is responsible for "Science Museums and their audiences," a longitudinal study involving museums and centers in Rio de Janeiro.

The Museum of Life also evaluates and studies how the activities it develops and offers visitors are received, especially with respect to exhibitions and events. These are fundamental for improving programming.

Besides focusing on its own initiatives, the Museum has been investing in broader and more diversified studies in the field of science communication. Among the main research topics in the area are historical and contemporary aspects of science communication, media and society, and public perception of science and technology.



This book brings together texts on science communication published in the *Jornal do Commercio* commercial newspaper between 1958 and 1962.

Publications from the Network for Monitoring and Capacity Building in Science Journalism [*Rede de Monitoramento e Capacitação em Jornalismo Científico*], which brought together researchers from 10 Latin American countries and produced training courses and academic articles. The network won the 2014 Mercosur Prize for Science and Technology.

Because of its recognized activities and significant production in studies on science communication, the Museum of Life has received awards, organized important academic events, and leads the National Institute for Public Communication in Science and Technology, which is composed of researchers from a range of major Brazilian and international institutions in the area.

In the context of education, the Museum of Life conducts studies to understand the relationship different social groups have with the Museum, aspects related to learning in non-formal education spaces, training of mediators and educators, analysis of educational process design, as well as research on the materials and educational strategies that are part of the daily visiting routine.

Educational material designed to guide visitors to the Museum of Life.

With regard to the preservation of heritage assets (which is also an object of research at the Museum of Life), studies are conducted along with two main lines: the history of objects and collections related to science and technology in health, and the history of museums of health and medicine.

Preservation of the museum's collections

The formation of Fiocruz's collection via the Museum of Life began after the death of Oswaldo Cruz in 1917, when his workspace and laboratory were transformed into a memorial space. Over time, antique and obsolete objects related to the work undertaken at Manguinhos and under the care of the Oswaldo Cruz House Museum were added to this collection. Today, the collection contains roughly two thousand pieces and continues to grow, through the selection and incorporation of new items with historical potential. Gathered together in the museum's collection and given new meaning, these objects have gained the status of witnesses to history.

Objects from the Museum of Life collection.

The routines for preserving this heritage include identification and selection of new objects with historic potential in units of Fiocruz, transfer and incorporation of these objects into the Museum of Life, and the different phases of processing, with an emphasis on the processes of classification and cataloging, hygiene and preventive conservation, research, and documentation.

Under the responsibility of the museum, the collection is maintained in the institution's own facilities, which were constructed and adapted to provide adequate conditions and technical treatment.

Measuring and cleaning pieces from the Museum of Life collection.

The Mobile Science [*Ciência Móvel*]

The Mobile Science brings the Museum of Life from its headquarters in Rio de Janeiro to other cities in the Southeast region. Games, multimedia resources, videos, exhibitions, an inflatable planetarium, three-dimensional models, and interactive devices are transported in a truck. Each trip is accompanied by mediators from the Museum of Life who interact with the public.

After the exhibits are set up, the empty trailer is used as a space for lectures, videos, and activities.

Mobile Science: the 13.5 meter trailer carries the interactive exhibit. When assembled, the exhibition occupies 500 m².

Activities conducted from the Mobile Science. Volta Redonda, 2015.

The activities conducted from the Mobile Science broaden knowledge and engage the population in an interactive and attractive manner on issues relating to health, technology, and science. By visiting different cities, it disseminates information about scientific production and contributes to the social and cultural inclusion of different audiences.

During each session, the inflatable planetarium takes visitors on a journey through the sky from different places and times.

Statements

"The museum is a space for reflection, enrichment, and bringing people closer to references for theories of knowledge, epistemological references, and pedagogical references, which enriches the area as a whole and creates a critical mass which we can say perpetuates lines of funding; there are more and more spaces in CNPq and Capes for this group. For the Museum, the master's course is essential. Gadelha spoke about this idea from the beginning. But there was no critical mass at that time. This mass accumulated and accumulated until we arrived at the idea for a master's course that Luisa Massarani and other colleagues presented. This legitimizes the Museum within the institutional context; it is not an operational group, is a group of people with doctorates and post-doctorates and reflections on this area. This provides legitimacy."

Gilson Antunes,
in a 2016 interview

"The fact that an institution the size of Fiocruz began to house a new concept of science museums had enormous repercussions throughout Brazil as well as internationally. When an institution with such massive national prominence in the field of health reform says, especially in the 1980s: 'I am including our vocation as a science museum as a central issue,' it resonates across all dimensions. Across the dimensions of visibility, replicating experiences in other areas, in the possibility of political support."

Paulo Gadelha,
in a 2016 interview

"The various courses at the Museum – specialization, the master's degree, training – contribute to the advancement of the field, both for reflection as well as practice. This is within the central perspectives of the institution, in line with Fiocruz's historic stance, to be an institution that creates frameworks, that forms opinions that will contribute to advancing the field."

José Ribamar,
in a 2016 interview

"In addition to the contributions to schools, the museum certainly made very important contributions to the entire network of science museums. And we can't restrict ourselves to just the spaces that exist here; the Mobile Science has brought exhibitions and the museum's purpose to various cities in the state of Rio de Janeiro. These traveling activities are fundamental to bringing life science and health content to a broad public."

Nísia Trindade,
in a 2016 interview

Young people from the Cultural Production Initial Training Program.

Diego Vaz Bevilaqua, Marcos José Pinheiro

Prospects

What does the future hold for museums? Where is the Museum of Life headed? What are its prospects for the coming years? The recent history of Brazil has taught us that the country's democracy is still fragile, with institutions that are very vulnerable to political instability and a society that is not particularly connected to or participative with respect to governance in various sectors, including culture. In this sense, the Museum of Life has a special position, because its institutional affiliation with the Oswaldo Cruz Foundation has allowed it to build and foster an environment of reflection on the relationship between health and science, history, culture, and socio-political and everyday life in the country, thereby creating a space that is less susceptible to these instabilities.

In the international context, particularly in the United States and Europe, the age of exploding numbers of museums has passed, and now we are beginning to see the numbers of these institutions stabilize and even diminish. Many museums, large and small, have experienced a drop in the number of visitors. Those that have made stronger connections with their audiences have been able to reverse this scenario. Museum funding has also suffered drastic cuts in recent years because of the international financial crisis, which affects countries as a whole.

Meanwhile, many urban centers in emerging countries have similar numbers of museums as large cities in developed countries. But in these cases, socioeconomic inequalities appear in their distribution (at the national, regional, and local levels) and can be seen in access statistics when income, age, level of education, and human development indicators for visitors are considered. For example, the unequal distribution of museums in Brazil follows geographical concentration (at all levels) and the concentration of income of the Brazilian population. In other words, these institutions are notably present in the south and southeast of the country, where they cluster in the large cities and capitals; within these cities, the museums are located in areas with higher levels and increased quality of urban, social, and economic development.

Financial crises, social inequalities, and all the constant changes undergone by societies around the world require museums to rethink themselves and their roles in relation to various aspects: their relationship with the public, practices of cooperation and social participation, establishment as democratic and inclusive spaces, with interactive and dynamic exhibitions, education and maintenance of collections, interdisciplinarity, the ability to generate affective connections and to expand beyond institutional walls, competence to be critical and politically-engaged institutions, and especially to be part of the community, especially communities in which they museums physically located, transforming them into their main area for action.

The Museum of Life has a special dialog with its environment, which is populated by socially vulnerable communities. Since its opening, its educational program has involved activities in the surrounding territory, which brings activities to the people around it and also invites them to participate in specific activities at the Museum.

Recovering history and reflecting on the present context is also a light for the future. Among the new prospects for museums, it is essential that the Museum of Life strengthen itself as a place for encounters and dialog, and as a cultural site for the territory it occupies. The Museum needs to fortify itself as an actor that can influence the human development of a region which has historically been excluded from the cultural map of Rio de Janeiro. Today, valuing the participation and knowledge of this population, as well as the local habits, languages, and artistic manifestation is just as important as bringing this population the scientific knowledge produced within and beyond Fiocruz.

In this sense, the renovation of the Manguinhos Historical Architectural Nucleus [*Núcleo Arquitetônico Histórico de Manguinhos, NAHM*], a set of historic buildings that comprise the area where the institution has been located for more than 100 years, implies a repositioning of the Museum of Life's role, in terms of the space it occupies in the city and its own very of being. The project, which will expand the exhibit spaces of the Museum, proposes new uses for the urban area and for the historical buildings listed in the original complex of the Fiocruz campus in Manguinhos. This proposal is based on principles and guidelines that reflect the values and identity of this institution, preserving and enhancing its cultural heritage and deepening its relationship with the city of Rio de Janeiro. The interventions contained in this rehabilitation plan involve a "campus-park," with social and cultural activities targeting the population and considering Fiocruz's vocations for research, education, preservation of heritage and the environment, and science communication.

The scale of this project locates us squarely in front of a series of challenges to be faced in the course of its development and execution. We must unveil our physical space and the various historical layers of its occupation. And we must create new connections between the scientific community itself, between those who produce science and society, between the institution and the territories in which it operates, between the places where it is present and the city that surrounds it, between the place where it is and the world around it. Despite these challenges – or, rather, precisely because of them – we face a promising as well as provocative scenario of developing a science museum that incorporates into its actions the museological prospects introduced decades ago by community museums and ecomuseums, a museum that intensely debates science in the same place where it has been performed for over a century, and which is able to interconnect processes of engaging the public with science with processes that value historical and cultural heritage.

The Museum of Life in its territory

One of the Museum of Life's hallmarks is conducting cultural and science communication activities in communities of the region; this tendency is part of Fiocruz's own mission as an agent that contributes to the improvement of public health in Brazil.

With an eye to the social determinants of health, the Museum of Life promotes specific activities for historically excluded audiences, reversing a past with sparse access to culture, education, and science. The variety of activities designed with this purpose create connections not only between the museum and youth in the area, but also between the museum and partner organizations that operate in the area and in the city.

From these activities, the Museum of Life seeks not only to pay attention to the region where it is located, but also to deconstruct the idea of a divided city, promoting meetings and dialogs between those who are not equal. The Training Program for Explainers, which took place between 1999 and 2011, was one of the first initiatives undertaken in this area. Over the years, other activities took place such as the "Weaving Networks" [*Tecendo Redes*] project, the "Territory in a trance" [*Território em Transe*] exhibition, the Science Express, the Territorial Activities Group, and the Cultural Production Initial Training Program.

Students from the Center for Teaching Young People and Adults [*Centro de Ensino de Jovens e Adultos, Ceja*] in Maré participate in a workshop on dengue, zika, and chikungunya.

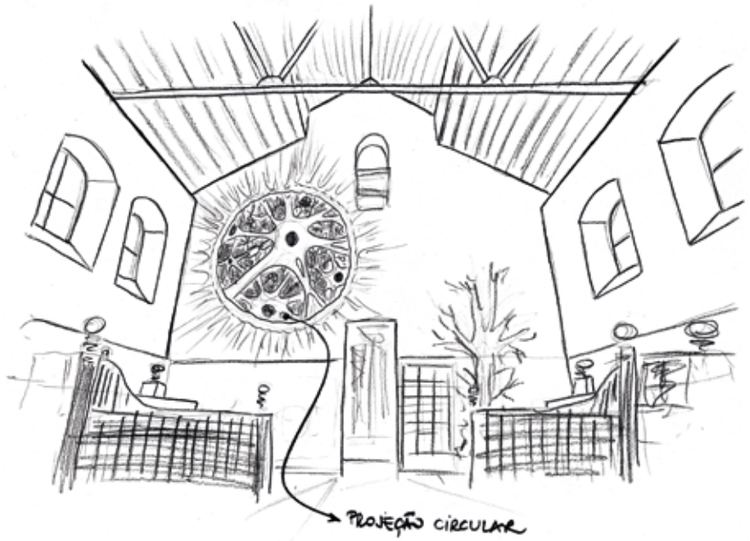
The public visits the "Territory in a trance" exhibit on a street within Parque João Goulart in Manguinhos.

The Manguinhos Historical Architectural Nucleus (NAHM)

The renovation plan for the Manguinhos Historical Architectural Nucleus is an intervention in the original complex that comprises what we today call the Oswaldo Cruz Foundation. This space is characterized by distinct marks of an extremely important occupation, from historical, cultural, and social perspectives.

This area has witnessed the Tupinambá indigenous people and two agricultural land-grant areas [*sesmarias*] that became Inhaúma Parish in 1743; the land participated in a number of several economic cycles. It developed as a rural area until it became the home to the Federal Serotherapy Institute, where Fiocruz began, starting a new chapter in the history of Brazilian health. Since that time, it has experienced cycles of growth and urban and socioeconomic decay, in the region and the city.

Consequently, when renovating an architectural complex of this type it is important that the project pay value its historic occupation, which includes issues related to health, science, history, architecture and urbanism, cultural heritage, respecting the social and cultural ethos of the institution and its location; finally it is important that it consider the continuity of activities which attribute meaning to the place.



Ready for the future: sketch of a new exhibit planned for the Stables, one of the spaces within NAHM.

Manguinhos architectural nucleus, 1930s. Some buildings, like the old stables next to the Castle and the aquarium (building at far left), have been demolished.

In addition to enhancing the memory of Fiocruz and the areas in which it works, renovation of the NAHM will also permit expansion of the exhibit spaces within the Museum of Life. This expansion includes adding new display spaces, renovating current exhibit areas, and new uses of the institution's campus for science communication activities, all based on five subject areas: public health in Brazil; science and technology in health; health, the environment, and sustainability; cultural collections in health; and Fiocruz and the cities.

Friends of the Museum of Life: a network of health, science and culture

Since the beginning of its activities, the Museum of Life has been working to diversify its sources of income in order to ensure greater financial sustainability. From this concern arose The Mobile Science - Life and Health for All, and along with this project, a differentiated model of fundraising. This experience led to the establishment of the Fundraising Office within the Oswaldo Cruz House; today it is linked to the presidency of Fiocruz and is responsible for formalizing the Museum's relationship with partners and sponsors.

In 2015, the Museum of Life and the Fundraising Office created the Friends of the Museum of Life: a network of health, science and culture. The goal of this program is to create closer, lasting relationships with partners and sponsors, and to concentrate and boost fundraising activities directed at the Museum of Life.

By bringing together diverse areas in its initiatives (science, health, culture, education, and the environment), the Museum of Life has great potential to gather sources of funding from different fields and modalities. The tax-exemption law for culture has been a particularly important ally, and is the main source of resources and partners for this program.

Students from the Cultural Production Initial Training Program accept the Science Express's invitation to take a selfie with the bus.

Scene from Bertolt Brecht's "Life of Galileo", staged at the Museum of Life. 2016 season.

The Science Express, a free bus provided to facilitate access to the Museum of Life for public school students.

In 2017, the Friends of the Museum of Life program reached its third year, and as of this writing has boosted total direct revenue for the Museum of Life by approximately 25%. Its flagship is the Science Express bus, which has been working to address urban mobility problems in the city of Rio de Janeiro by bringing public school students (particularly those from *favela* communities) to the Museum. The program has also already enabled the renovation of exhibit areas and museum equipment, as well as the presentation of new plays within the context of Science on Stage, in particular Bertolt Brecht's "Life of Galileo" in 2016, a great success with audiences and critics.

Statements

"A science museum with certain characteristics can be anywhere. But a museum has totally different advantages if it has a territory with all dimensions of a culture, of an institution, of scientific and architectural heritage. Expansion of the Museum [in the context of the renovating the Manguinhos Historical Architectural Nucleus] will not only update the spaces, but also be a qualitative expansion. (...) The references among the heritage and the field of communication and mediation in the area of education and science must be utilized as much as possible."

Paulo Gadelha,
in a 2016 interview

"This positioning with regard to a discussion space is something that could be further advanced and strengthened [at the Museum of Life] – increasingly affirming this dialog between science and society, if you [install this space], without the fear of discussing the issues that still generate contrary opinions, disagreements and lack of consensus. It can occur through exhibitions, round tables, because it is a way of discussing modernity and people's positions with regard to science. This is an important issue in terms of public policies: help citizens be able to express their opinions, vote, share their thoughts on social media, etc., against or in favor of certain issues."

José Ribamar Ferreira,
in a 2016 interview

"The Museum is at a crossroads. It will need to stand up and show off what arose from renewing its ways of interacting with social issues, the capacity to empower society about where it is headed (which is not an easy topic), the correct choice of the most relevant issues and topics, the creativity to keep up in its specific task of mediation, what are the innovations within the global scenario."

Paulo Gadelha,
in a 2016 interview

"The Museum is emerging out of adolescence and reaching maturity. I think the major role of the museum is to include the Oswaldo Cruz House more, starting from the proposed redevelopment of the Manguinhos Historical Architectural Nucleus [NAHM]. This is a great center for convergence, for integrating the House and the Museum. And the Museum is important in the process of defining the NAHM as well as being part of the contents of the NAHM."

Gilson Antunes,
in a 2016 interview

"The restoration of Manguinhos Historical Architectural Nucleus [NAHM] is a significant challenge. Like the Niemeyer project, which did not come to pass, the NAHM could be an opportunity for the Museum of Life take a leap of quality within and beyond Fiocruz, in terms of changing the physical, political, and symbolic scope. It would be very good if this project moved forward in the proportions we imagine, which is an enormous challenge."

José Ribamar Ferreira,
in a 2016 interview

"[The Museum faces] the challenge of promoting citizenship, with a special focus on these areas that share the territory with the institution and other socially and geographically excluded areas. We need to invest more in this, creating and deepening mechanisms for health as well as quality of life. In other words, addressing the health issue from this perspective involves promoting citizenship, involves dialog with these communities, in addition to Fiocruz's work with the general population, production of pharmaceuticals, vaccines, etc."

José Ribamar Ferreira,
in a 2016 interview

"In the coming years, I see a major challenge for activities that the Museum already carries out, and it is connected to the public dimension of science, to consensus conferences – or public consultations, as we would prefer to call them. It will be increasingly necessary for controversial topics and burning issues that pass through the legislature and through an agenda that is often conservative to contribute to museum spaces in order to encourage this dialog with the public. This is not only dissemination, but also dialog. This is a fundamental function."

Nísia Trindade,
in a 2015 interview

Digital representation of the renovated Pombal, according to the NAHM project.

Documents that tell this story

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Chapter 1

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Chapter 2

Photos: p. 30 Flávio Souza/Oswaldo Cruz House Collection; **p. 31** (both) Jorge de Carvalho/Oswaldo Cruz House Collection; **p. 32 and 33** (all) Peter Ilicciev/Oswaldo Cruz House Collection; **p. 34 and 35** (all) Oswaldo Cruz House Collection; **p. 36** Roberto Jesus Oscar and Jeferson Mendonça/Oswaldo Cruz House Collection; **p. 37** Vinícius Pequeno/Oswaldo Cruz House Collection, Peter Ilicciev/Oswaldo Cruz House Collection; **p. 42** (all) Peter Ilicciev/Oswaldo Cruz House Collection; **p. 48** Oswaldo Cruz House Collection, Guto Costa/Oswaldo Cruz House Collection, Oswaldo Cruz House Collection; **p. 49** Museum of Life Collection; **p. 54** Museum of Life Collection, Maria Buzanovsky/Museum of Life Collection, (other) Oswaldo Cruz House Collection; **p. 55** (all) Maria Buzanovsky/Museum of Life Collection; **p. 60** Museum of Life Collection; **p. 61** Janaína Maximiano/Museum of Life Collection, Museum of Life Collection, Beatriz Schwenck/Museum of Life Collection; **p. 65** Peter Ilicciev/Oswaldo Cruz House Collection.
Illustrations: (watercolors) Gilson Domingues; **p. 62 and 63** (map) Renato Gama-Rosa.

Chapter 3

Photos: p. 74 Museum of Life Collection, (other images) Maria Buzanovsky/Museum of Life Collection; **p. 75** Museum of Life Collection, Museum of Life Collection, Maria Buzanovsky/Museum of Life Collection; **p. 76** Maria Buzanovsky/Museum of Life Collection, Renata Fontanetto/Museum of Life Collection; **p. 77** (photos at top) Maria Buzanovsky/Museum of Life Collection, Renata Fontanetto/Museum of Life Collection; **p. 78** Oswaldo Cruz House Collection, (other images) Peter Ilicciev/Oswaldo Cruz House Collection; **p. 79** (all) Oswaldo Cruz House Collection; **p. 80** Museum of Life Collection, Roberto Jesus Oscar/Oswaldo Cruz House Collection; **p. 81** Miguel Oliveira/Museum of Life Collection; (others) Museum of Life Collection; **p. 82** Lucas Brazil (courtesy), (others) Peter Ilicciev/Oswaldo Cruz House Collection; **p. 83** Museum of Life Collection; (others) Peter Ilicciev/Oswaldo Cruz House Collection; **p. 84** (all) Peter Ilicciev/Oswaldo Cruz House Collection; **p. 85** Peter Ilicciev/Oswaldo Cruz Collection; Waldir Riberio/Museum of Life Collection, Peter Ilicciev/Oswaldo Cruz House Collection; **p. 86 and 87** (all) Peter Ilicciev/Oswaldo Cruz House Collection; **p. 88** Renata Fontanetto/Museum of Life Collection; **p. 89** Rodney Wilbert/Museum of Life Collection; **p. 90** Peter Ilicciev/Oswaldo Cruz House Collection, Roberto Jesus Oscar/Oswaldo Cruz House Collection; **p. 91** Waldir Ribeiro/Museum of Life Collection; **p. 92** Janaína Maximiano/Museum of Life Collection, Rita Alcantara/Museum of Life Collection; **p. 93** Museum of Life Collection; **p. 94** Luis Amorim/Museum of Life Collection; **p. 95** MBA Cultural (courtesy); **p. 96** (all) Héliton Barros/Museum of Life Collection; **p. 97** (all) Letícia Rumjanek/Museum of Life Collection; **p. 100 and 101** (all) Rita Alcantara/Museum of Life Collection; **p. 102** (microscope) Pedro Paulo Soares/Museum of Life Collection, (glasses and pen, capillary tubes) Bruno Veiga/Oswaldo Cruz House Collection, (other images) Roberto Jesus Oscar and Vinícius Pequeno/Oswaldo Cruz House Collection; **p. 103** (all) Pedro Paulo Soares/Museum of Life Collection; **p. 104** Museum of Life Collection, Raquel Nobrega de Souza/Museum of Life Collection; **p. 105** Museum of Life Collection/Maria Buzanovsky/Museum of Life Collection; **p. 106 and 107** Janaína Maximiano/Museum of Life Collection.
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Chapter 4

Photos: p. 110 Maria Buzanovsky/Museum of Life Collection; **p. 111** Museum of Life Collection; **p. 113** Oswaldo Cruz House Collection; **p. 114** Roberto Jesus Oscar/Oswaldo Cruz House Collection; **p. 115** Renato Mangolin/Museum of Life Collection, Geraldo Casadei/Museum of Life Collection;
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