

ANNUAL  
REPORT  
2021

**ISREC**  
Fondation Recherche Cancer

## ACKNOWLEDGMENTS

At the close of this year, we wish to express our sincere gratitude to all our generous donors, without whom none of our projects could have been accomplished.

A very special thank-you to Prof. SUSAN M. GASSER, our director, and AYLIN NIEDERBERGER, our administrative and financial director. Our heartfelt appreciation also goes to our administrative team, including NATHALIE BLANC, LESLIE CARRON and ISABELLE SCHIESS, and to our ambassador, DIDIER GROBET, for his long-standing commitment.

You all have contributed to the development and success of our Foundation.

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# 2021 A PROMISING YEAR

Despite the many difficulties associated with the pandemic, 2021 was the first year in which all research groups were able to take up their work in full force in the AGORA building. Since May 2021, nearly 300 scientists are present in the labs and can focus entirely on their research.

The ISREC Foundation is proud to host oncology scientists from the CHUV, the universities of Lausanne and Geneva, the EPFL and the University Hospitals of Geneva, all of whom are now working at full capacity in the building they share. This unique interinstitutional and intercantonal collaboration positions the Lake of Geneva area as a center of excellency on the world map of research.



## Prof. Pierre-Marie Glauser President

In addition to operating the AGORA cancer research cluster, the ISREC Foundation continued to support oncology research throughout the year. In a partnership with the Biltema Foundation, it notably contributed a total of 25 million Swiss francs to the funding of the «FLASH» project. This amazing undertaking, led by the CHUV in cooperation with the CERN, is described in more detail in our annual report on page 20. This is only one example of the collaborations with other philanthropic institutions that the ISREC Foundation strives to establish in order to enable the funding of large-scale projects.

Furthermore, the ISREC Foundation has initiated an ambitious program to encourage research projects bringing together clinicians and basic scientists. In keeping with the translational approach at the heart of its mission, the Foundation has decided to provide substantial support for this so-called «TANDEM» initiative (see page 23).



During the past year, several members of the Foundation's bodies received prestigious awards. Our former president, Catherine Labouchère, received the University of Geneva award recognizing her commitment to the ISREC Foundation and to the building of bridges between the institutions in the cantons of Vaud and Geneva. Prof. Michael Hall, member of our Scientific Board, received the Prix Mondial Nessim Habif of the University of Geneva, and our director, Prof. Susan Gasser, was named Dr. honoris causa of the University of Fribourg. Moreover, Prof. Anne Müller and Prof. Fabrice André, both of them members of our Scientific Board, received scientific awards in the field of oncology. These distinctions equally honor the ISREC Foundation, as they spotlight the scientific excellency to which it aspires.

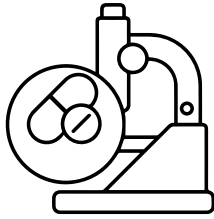
2021 also marks the retirement of Prof. Franco Cavalli, who chaired our Scientific Board for nearly 15 years. The ISREC Foundation is deeply grateful to him for his unwavering commitment and his endless generosity. Prof. Michael Hall has now taken over as chair of the Scientific Board and has thereby also joined the Foundation Council.

In February 2021, I had the pleasure of taking over the presidency of the Foundation Council, which coincided with Professor Susan Gasser becoming the new director. Thanks to her enthusiasm, expertise and scientific network, the ISREC Foundation can play an active part in the activities of the AGORA research center. Owing to the support of its Scientific Board and the entire management team, the ISREC Foundation can guarantee its benefactors the identification of outstanding oncology research projects, and meticulous and efficient supervision of those chosen.

It is indeed thanks to the generosity of those who provide financial support that the ISREC Foundation can commit itself to cancer research, in the hope of enabling new scientific discoveries that will benefit patients in their fight against cancer.

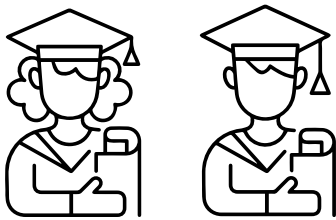


# THE FOUNDATION'S MISSIONS



## **Funding Translational Oncology Projects**

The ISREC Foundation identifies, selects and supports projects that promote knowledge transfer and collaborations between basic research and clinical applications. The aim is to establish novel diagnostic and therapeutic approaches, in order to study cells and their interactions with their environment and to be able to act on the causes of dysfunctions leading to cancer.



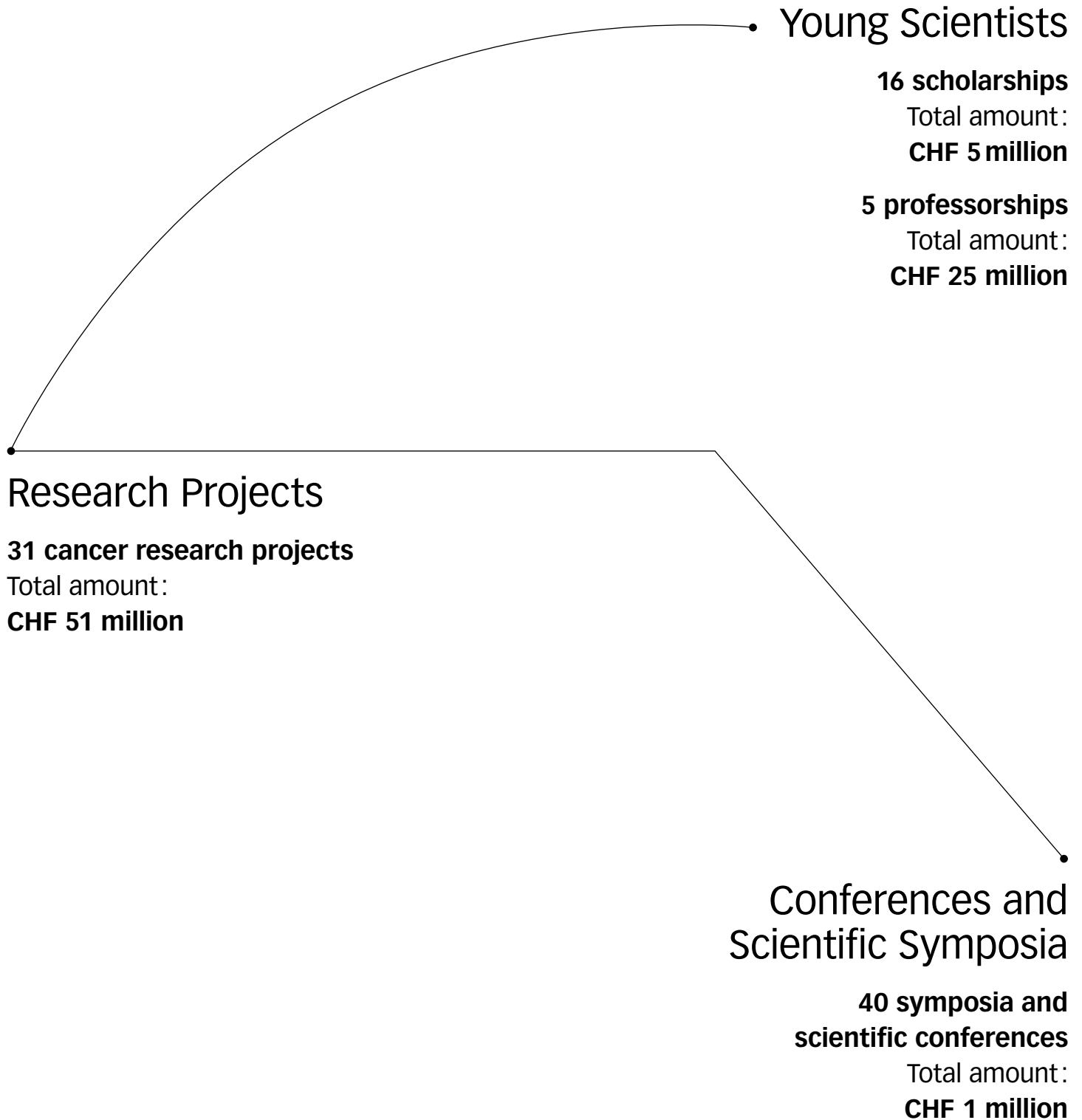
## **Supporting Young Scientists and Clinicians in Switzerland**

The ISREC Foundation grants scholarships to students, PhD candidates and scientists working in the fields of biology, technology or medicine, and whose research is focused on immunology and oncology.

Founded on June 18, 1964, the ISREC Foundation is a private non-profit foundation. In the last 58 years, approximately 150 personalities from Switzerland and abroad, including five Nobel Prize winners, have served on the various boards of the ISREC Foundation. The Foundation has supported significant research projects and discoveries, notably in the areas of mutagenesis, genome instability and repair, immunology, immunotherapy, the cell cycle, cell biology, tumor virology, oncogenes, cell differentiation and bioinformatics. For several decades now, research accomplished by many scientists and supported by the Foundation has contributed to a better understanding of the mechanisms underlying cancer, and to the identification of novel therapeutic targets.

In the face of this second year of the pandemic, the Foundation has proven very flexible in meeting the needs of research. True to its missions, it again granted scholarships to the UNIL and EPFL doctoral programs in 2021. Funds were also allocated to several cancer research projects in various Swiss academic institutions. Some of these projects are directly dedicated to patient well-being. The many successes that have marked the history of cancer research are encouraging results, as are the statistics of recent years. It is in this spirit that our Foundation pursues its missions.

# THE ISREC FOUNDATION'S FINANCIAL CONTRIBUTIONS BETWEEN 2008 AND 2021



# TRANSLATIONAL ONCOLOGY RESEARCH: THE HEARTBEAT OF THE AGORA AND THE ISREC FOUNDATION!



**Translational research links fundamental, question-driven research, pursued «*ex-vivo*» or in model organisms, to clinical research which directly concerns the patient.**

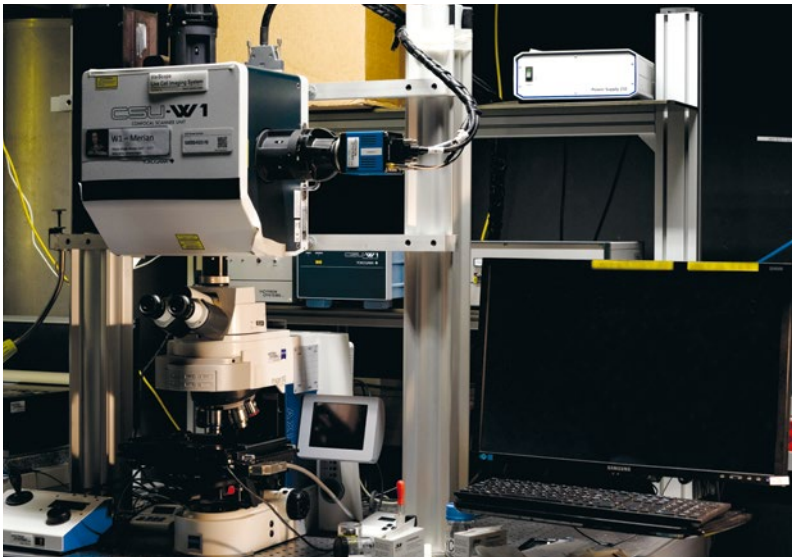
## Prof. Susan M. Gasser

Director

The AGORA Cancer Research Center opened its doors in October 2018, in order to support translational cancer research. In ancient urban planning, the agora was the hub for social, political and economic interactions, and according to Aristotle, civilization is not possible without an agora, where multiplicity intersects, and new ideas are born. The AGORA Cancer Research Center, located at the heart of the hospital campus, was designed to accommodate translational oncology research from a diversity of institutions, embodying the concepts of discussion, exchange, and innovation.

A symbol of multidisciplinary, the AGORA building can host more than 300 researchers and clinicians who bring together the scientific and clinical skills necessary to curtail the evolution of a disease that affects an ever-increasing number of individuals. The creation of the AGORA Research Center is the result of





Time-lapse microscopy of fluorescent proteins in living cells is captured on advanced spinning disk confocal microscopes. The movement of single molecules in cells is analyzed under normal and disease conditions.

«In ancient urban planning, the agora was the hub for social, political, and economic dimensions. According to Aristotle, civilization is not possible without an agora, the site of multiple intersections where new ideas are born.»



The model organism *C. elegans*, a small, transparent, round worm, provides an excellent model for cell differentiation and aging studies. Here, two worms with fluorescent pharynges (red) and cell nuclei (green) are shown.

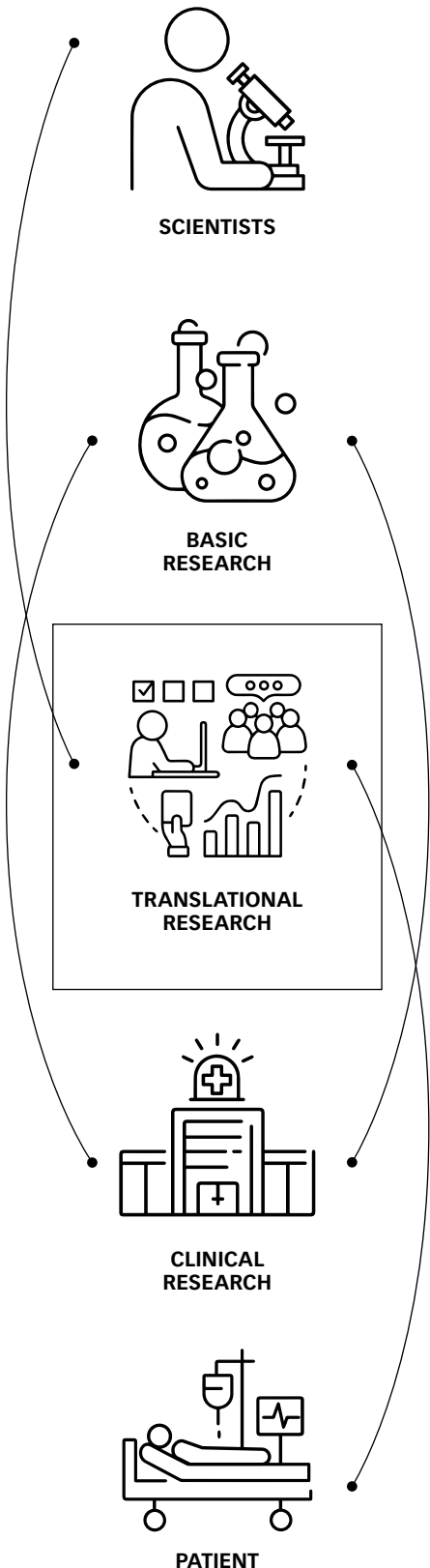
a public-private partnership that will serve as a benchmark in the world of medical research. The ISREC Foundation is proud to support these efforts, which align precisely with its two core missions: the support of cutting-edge research aimed at improving cancer patient care, and the promotion of the careers of young clinicians and research scientists. Exchange, positive perspectives, professionalism, dialogue, and openness are the hallmarks of the work that takes place in AGORA. Without doubt, the impact of its research will reach far beyond the Lake of Geneva.

With the AGORA up and running, the ISREC Foundation's efforts now focus on funding projects that bridge the gap between basic medical science and clinical practice. Translational medicine – or biomedicine – incorporates the latest technologies to address unresolved questions of cancer diagnostics, treatment, and the prevention of recurrence. The goals of precision medicine, which incorporate precise genetic, proteomic, and structural data into diagnostics and care, have a predictive function that will support clinicians in the future with machine learning and artificial intelligence.

Indeed, the emerging discipline of *precision oncology* aims to use digitalization to translate scientific theories and laboratory discoveries into practical medical applications, optimizing the quality of medical and pharmaceutical care for patients. The resources needed to develop this discipline are substantial, as it calls for equipment that cannot be financed by traditional laboratory budgets, and know-how that was previously found only in departments of mathematics or computer science. Such innovations require that we break down walls, and support research at the intersection of a multiplicity of disciplines, in order to deliver improved patient care through scientific research.

## TRANSLATIONAL RESEARCH

Translational research helps accelerate the transfer of basic research findings to clinical research. This discipline aims to enable patients to benefit as much as possible from new therapeutic discoveries by promoting collaborative research between clinicians and basic scientists.



The ISREC Foundation is proud to be able to support these efforts, which coincide with its two fundamental missions:

- Supporting the development of cutting-edge, precise, and targeted research that improves the quality of cancer patient care.
- Promoting young clinicians and scientists at the interface of basic and applied research, driving the incorporation of science into clinical activity.

Since the establishment of the ISREC Foundation in 1964, the merging of a large variety of competences, conducive to exchange and discovery, has been a central theme for this foundation. Whereas the establishment of the AGORA was one aspect of this, the goal now is to support innovative projects co-led by one basic scientist and one clinician, through a program called TANDEM (see page 23). With this new effort, we hope to bring questions of direct clinical relevance to the benches of the basic scientist, enabling discoveries that will generate more effective cancer treatments to benefit patients and their loved ones.

### The ISREC Foundation's great team and its generous donors

To achieve the goals of the ISREC Foundation – promoting translational research and promising young scientists in biomedicine – the members of the Foundation Council and the Scientific Board work together with the ISREC Foundation's management and staff. Aligned with the new President, Prof. Pierre-Marie Glauser, and the Director of Administration and Finance, Aylin Niederberger, we seek to expand our influence by supporting collaborations between exceptional scientists and clinicians to help them address their translational research goals. International outreach across disciplines will be necessary for success. The support conferred by all the major academic and medical institutions of the Lake of Geneva area, which co-fund the AGORA and host the ISREC Foundation-supported professors, allows for an efficient implementation of competitively reviewed projects.

The ISREC Foundation is supported by donors who, year after year, make it possible for it to achieve these missions. Without philanthropic support, promising projects in translational cancer research could not be accomplished. Thus, to the generous donors of the ISREC Foundation, we give thanks!

# EXPLORING THE BRAIN A DELICATE BALANCE BETWEEN HEALTHY AND DAMAGED CELLS



## Prof. Johanna Joyce

Professor at UNIL and at the Ludwig Lausanne Branch, her laboratory is located in the heart of AGORA.

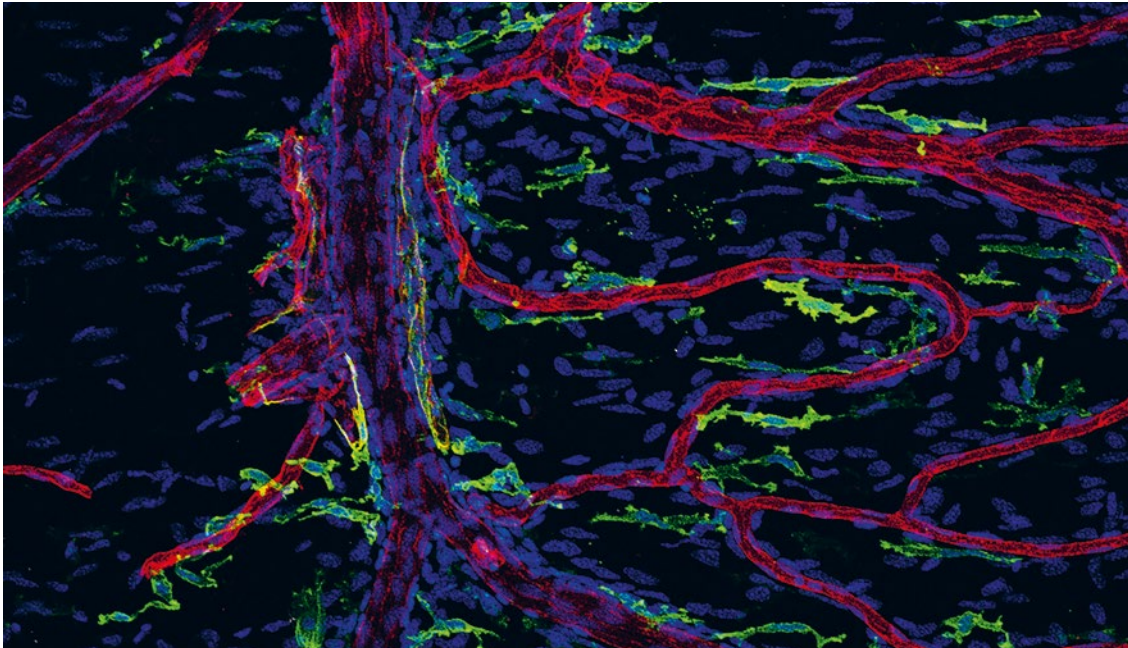
**Trained in Ireland and England, Johanna Joyce pursued her career in the United States before joining the University of Lausanne in 2016. A biologist and geneticist, she is a specialist in the tumor microenvironment and focuses much of her research on brain tumors.**

Prof. Johanna Joyce has been awarded many prizes and honors during her career, including several since moving to Switzerland. She received the Swiss Bridge Award in 2017, and in 2018 the prestigious Cloëtta Prize, which honors outstanding personalities in the domain of medical sciences. In 2020, she was honored with the Robert Bing Award of the Swiss Academies of Sciences for her pioneering research on the role of immune cells in the development of brain tumors.





Brain barrier – this image shows the dura mater, a thick and highly vascularized membrane (blood vessels in red, lymphatic vessels in green) that surrounds and safeguards the brain from tissue injury, and regulates immune cell trafficking from the brain to peripheral lymph nodes.

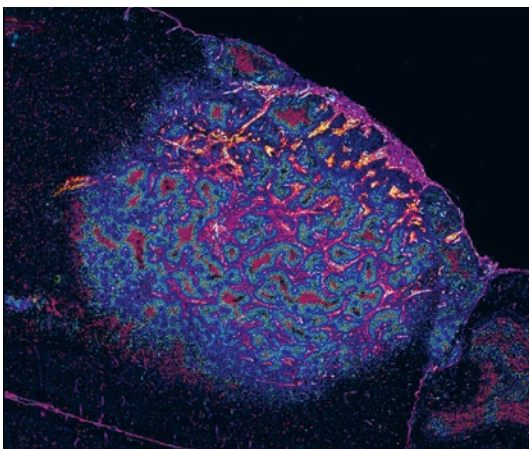


Surveillance – this image highlights the presence of macrophages (in green) in the dura mater. This major immune cell population surrounds the blood vessels (in red) and senses environmental changes that allow it to react and avoid potential aggressions that might negatively impact brain functions.

### Exploring the brain – a delicate balance between healthy and damaged cells

The development of metastases remains a major cause of death in cancer patients. Of all metastatic cancers, those invading the brain represent a particularly difficult therapeutic challenge. Indeed, brain metastases frequently arise from melanoma, lung and breast cancers. Although considerable advances have been made in treating these cancers at their primary site, a steep increase in mortality is observed in patients who develop brain metastases. This is partly due to our limited knowledge of their microenvironment, with the direct consequence of a lack of clinical treatment options.

The aim of the ISREC Foundation-supported project, led by Prof. Johanna Joyce, is to increase the understanding of the interactions between cancerous and healthy cells in order to develop new therapeutic options. The unique properties of the brain create a very different environment from that of other organs. By comprehensively analyzing the microenvironment in diverse brain tumor patient samples, her lab has recently identified neutrophils, the largest circulating white blood cell population in humans, as one of the most abundant abundant immune cell types specifically infiltrating brain metastases. The aim of this research is to understand how these neutrophils may contribute to the colonization and metastatic growth of cancer cells in the brain.



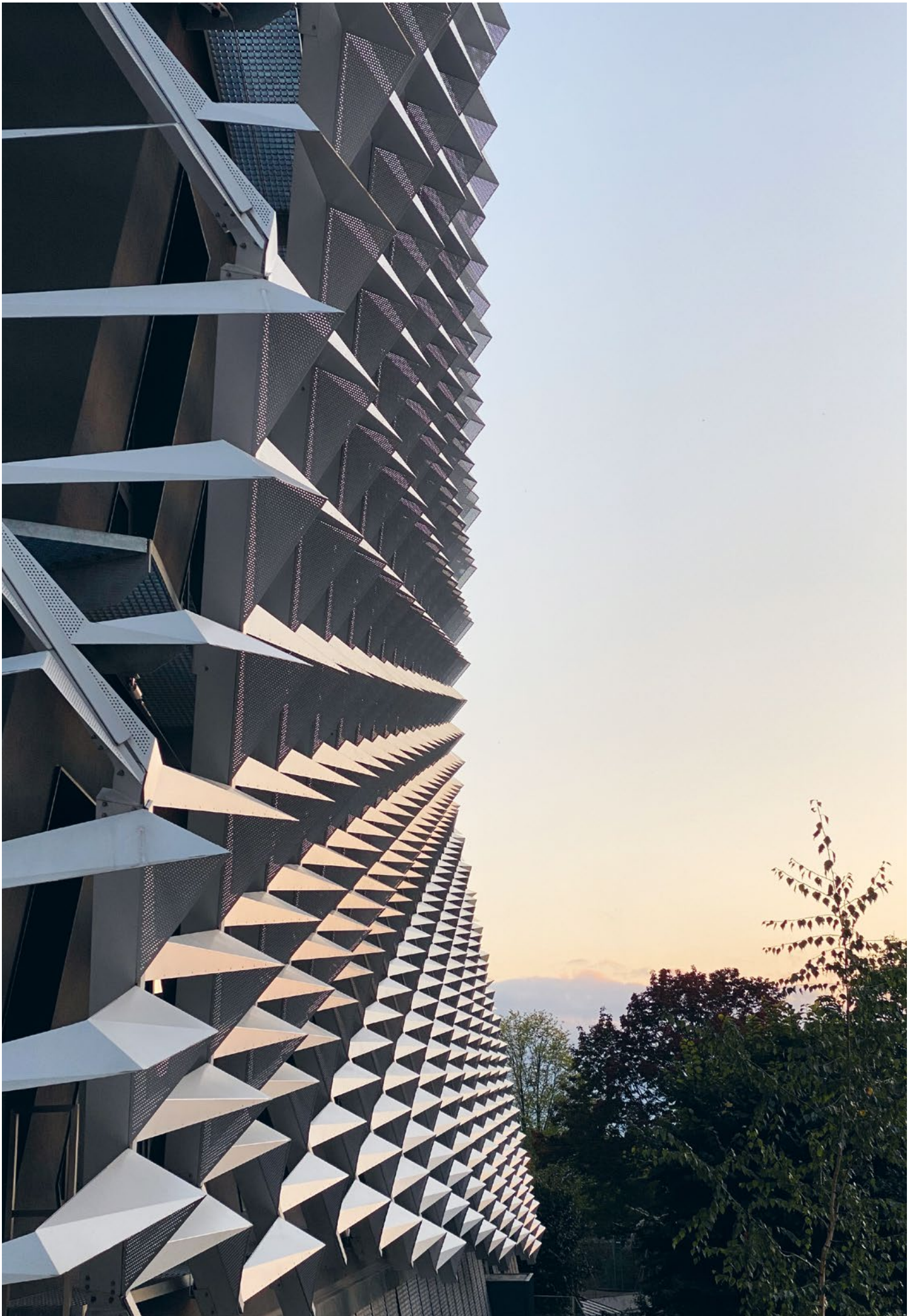
This image of a mouse glioblastoma was created using a new imaging approach, developed in the Joyce lab, along with deep learning and computer vision to color-code cells based on their proximity to blood vessels, revealing patterns and structures that are otherwise invisible.



AGORA  
PÔLE DE RECHERCHE  
SUR LE CANCER











BIOLOGICAL COMPLEXITY IS THE MOST PROFOUND  
ARCHITECTURE OF INFORMATION  
*Aljoscha (2020)*

The elements, consisting of pinkish, bluish and transparent, almost organic clusters, float within the light-flooded atrium of the AGORA building.

Are they living organisms or solidified natural elements?

The installation, amplified by the play of shade and light and quivering in the slightest breeze, awakens our curiosity.

Art at the frontiers of life, as are the scientists working at AGORA, who strive to push back the frontiers of cancer research.

80 elements, individually manufactured by the artist and partially interconnected, evolve *in situ* to form new organisms. Fragile and sensitive, they remind us of the existential questions of life.







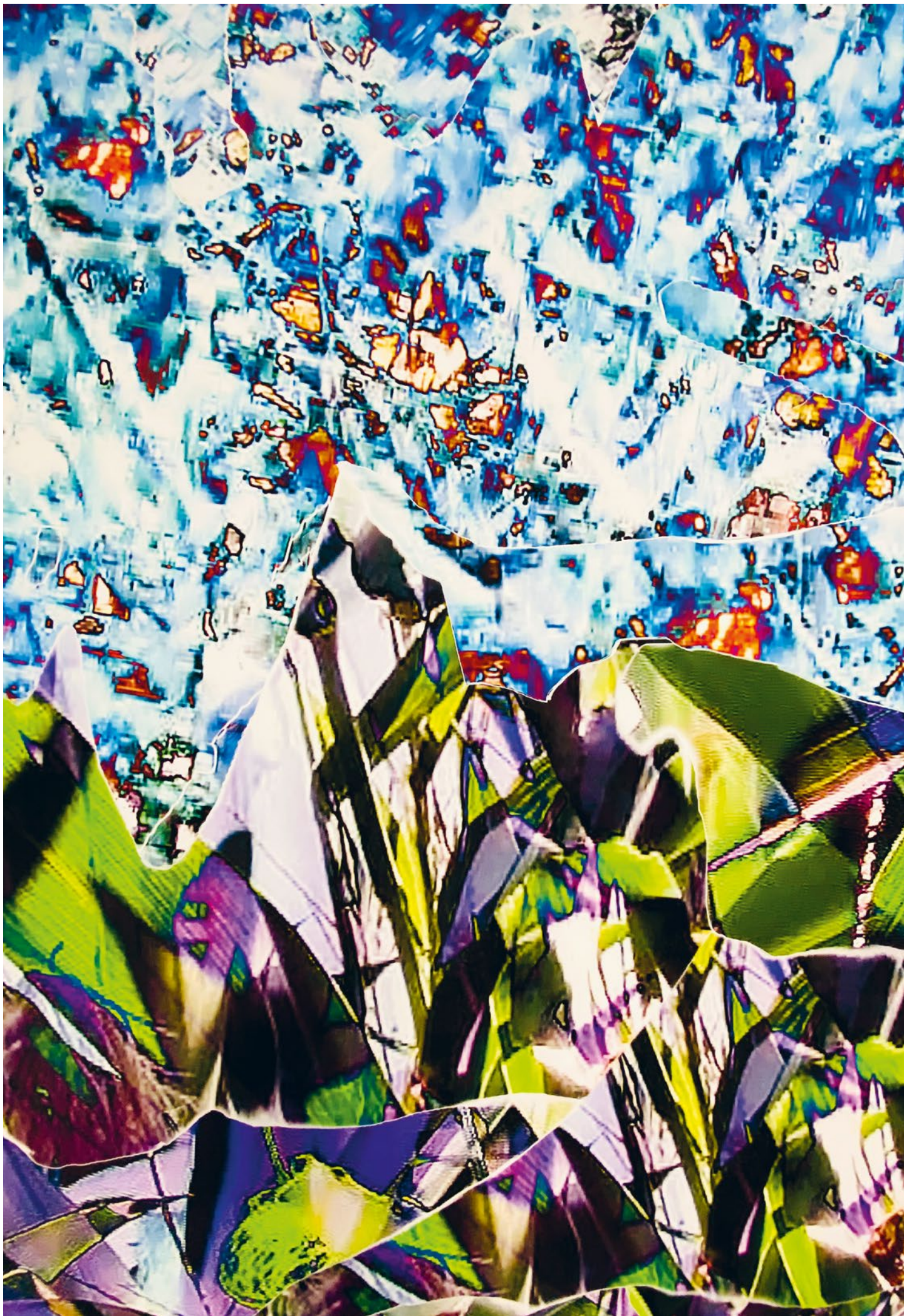


THE WEST-WIND  
*Lalie S. Pascual (2020)*

Inspired by Longfellow's poem «The Song of Hiawatha», this work of art suggests an alternative world in which a dream catcher (symbol of purity, earth, air and the circle of life) twirls in the wind, capturing images of our natural environment and transforming them into new realities and models of representation.

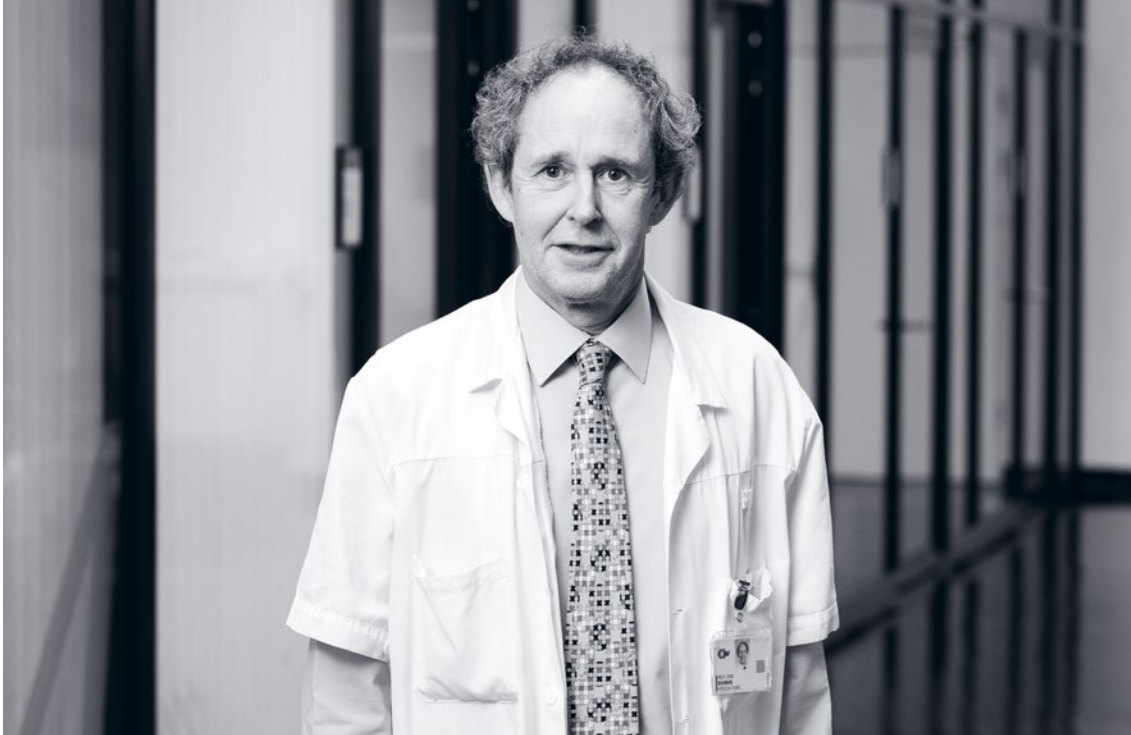
Leaves, shades of brown, plants, water and snow enter and leave the pictorial landscape. They enter and leave our vision, creating recurrent images in a world of endless possibilities. They suggest a universe in which the past encounters the present and the future, and where random encounters foster new ways of looking and seeing.







# FLASH RADIOTHERAPY TREATMENTS



## Prof. Jean Bourhis

Full professor at UNIL

Oncologist, tumor radiotherapy specialist and head of the department of radiation oncology at the CHUV.

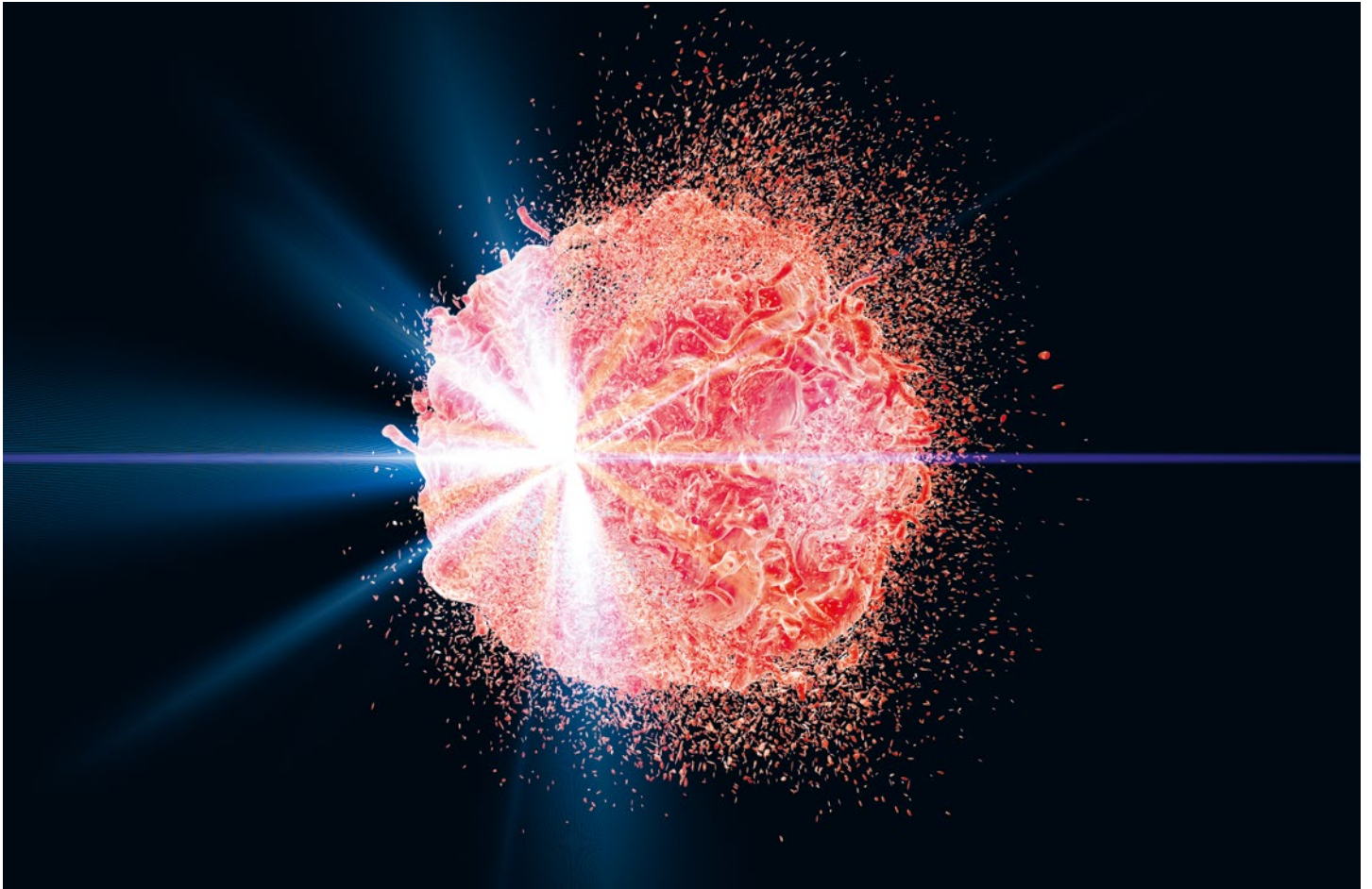
**In June 2021, the ISREC Foundation allocated 25.8 million Swiss francs for the development of FLASH radiotherapy treatments for all types of cancer.**

**This project, led by Prof. Jean Bourhis at the CHUV, is made possible by the exclusive financial support of the Biltema Foundation, whose generous donation provides the impulse needed to move from the experimental stage of cutting-edge radiation therapy technology to its clinical application.**

This innovative procedure is designed to treat highly resistant cancer types by selectively destroying tumor cells, while sparing the surrounding healthy tissues. Ultimately, the goal is to be able to treat many different types of cancer. The clinical application of this technology would be a first worldwide.



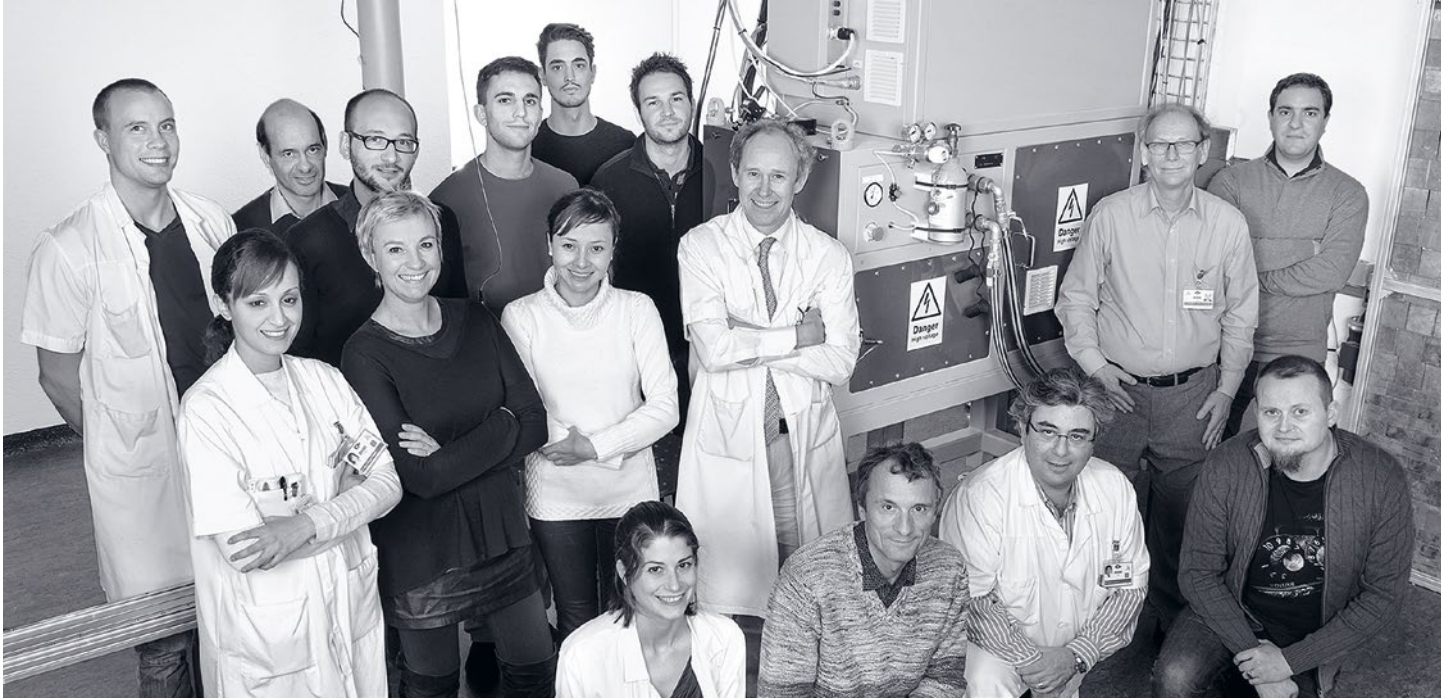
These past ten years, technological advances have turned radiation therapy into a precise and powerful treatment for cancer patients. It has long been used to treat cancer, but innovations have been slow in coming. Almost 40 years ago, scientists discovered that a high dose of radiation applied for a very brief period of time (i.e., a radiation «FLASH») can selectively damage tumor cells without harming the surrounding healthy tissues. These findings remained untapped for many years, until several radiation oncologists decided to reproduce these results. Prof. Jean Bourhis and his team are among these pioneers.



The irradiation of cells with high energy beams triggers irreversible damage and leads to cell death. This forms the basis for the radiotherapy of cancer, as pursued within the FLASH project.

Recently, in a pilot project also funded by the ISREC Foundation with the generous support of the Biltema Foundation, the CHUV set up two clinical FLASH prototypes that will eventually be used to treat tumors located to a depth of 3 cm within tissues. A clinical trial for FLASH treatment of superficial skin cancers is currently underway at the CHUV. FLASH radiotherapy thus opens significant prospects for substantial improvement of the standard of care and the quality of life of cancer patients.

# PROF. JEAN BOURHIS



The team of physicists, physicians and biologists, led by Prof. Jean Bourhis, next to the first prototype of the FLASH therapy apparatus.

Very few institutions worldwide are able to master the technological difficulties associated with the high-energy radiation required for FLASH treatments of deep-seated tumors. Particle acceleration experts at CERN are therefore working with the CHUV specialists to design the equipment needed for FLASH therapies requiring high-energy electrons. The platform will be set up and operated at the CHUV. **In this interdisciplinary configuration of biologists, physicists and physicians who will collaborate to take the FLASH program to an unprecedented level of efficiency and implementation options, hopes are high for significant advances.**

Over the next four and a half years, the components and technology of the FLASH equipment will be developed, manufactured, calibrated and assembled, and a facility to accommodate the device will be built in the CHUV.

Once the entire platform has been clinically validated, the team hopes to start treating first patients in 2025, as part of a clinical trial. The equipment will make it possible to deliver FLASH beams to all types of tumors to a depth of up to 20 centimeters. «The remarkable preservation of the healthy tissues achieved with this FLASH technology will enable us to increase the radiation dose, and thus to better control tumors that are resistant to treatment, such as glioblastomas. This cancer type will be one of our first targets», Prof. Bourhis explains.



# «TANDEM», A FUNDING PROGRAM FOR TRANSFORMATIVE CANCER RESEARCH PROJECTS CO-LED BY A CLINICIAN AND A BASIC SCIENTIST

It is widely recognized that creativity and innovation arise at the interface of disciplines in which two ways of thinking are combined together to solve a common problem.



## TANDEM

Interdisciplinary or multidisciplinary teams are motivated by the challenge of the aim they share and by the different ways they approach the subject. This leads to a cooperative, rather than a competitive collaboration. The AGORA – Pôle de Recherche sur le Cancer was created to bring together scientists from different institutions with a common objective: the development of innovative therapies and diagnostic methods for cancer patients. In this environment, engineers and university scientists from very different backgrounds join forces on a daily basis.

In 2021, the ISREC Foundation launched a call for projects involving research pairs consisting of a clinician and a researcher who have jointly designed a translational project that they will lead together. The TANDEM program will provide funds for the work of postdocs or research assistants, equally supervised by a clinician and a scientist/engineer. Accordingly, scientists and clinicians are asked to apply by pairs for a jointly defined topic that addresses problems of immediate need related to cancer therapy and diagnostics.

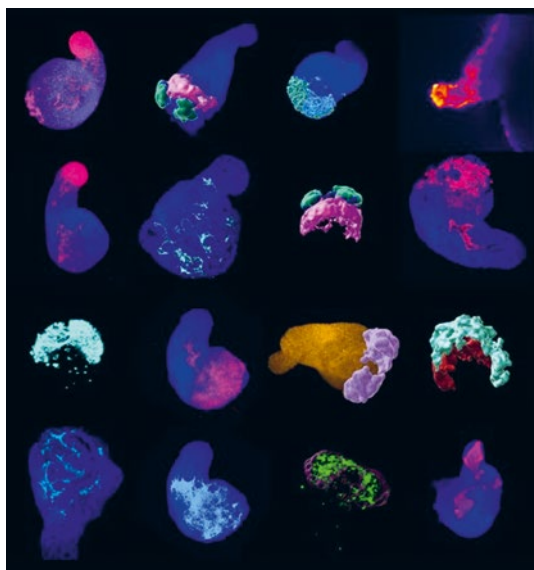
## An important complement to the promotion of young, multidisciplinary biomedical scientists

Translating knowledge on disease mechanisms (gained from cell or molecular biology, genetics, genomics, bioinformatics or proteomics) into a clinical application calls for a stable and qualified team of translational scientists who have mastered the most advanced scientific techniques. However, in translational research it is equally important to understand the medical challenges faced by physicians and patients in their fight against cancer.

In the TANDEM program, young scientists will be mentored by a clinician and a specialized scientist who endeavor to speak the same language. Postdocs and research assistants trained in this program will thus master both worlds. Breaking down the «communication barrier» between basic research and the clinic is often half the battle when striving to build an efficient translational research team.

Throughout the history of the ISREC Foundation, the goal has been to apply basic research discoveries to the development of novel therapeutic approaches. Supporting young scientists is part of the Foundation's DNA. The «TANDEM» projects will not only lead to the transfer of scientific knowledge to the clinic, but will also fund the training of promising young scientists so that they are well equipped to link cutting-edge scientific discoveries to actual clinical applications. The biomedical field urgently needs scientists who can complement the molecular understanding of cancer with medical knowledge.

The ISREC Foundation's Scientific Board will be responsible for the evaluation of the project proposals in this first TANDEM round. We strive to fund as many projects at the crossroads between basic and clinical research as possible, for two or three years.



The capacity of cells to self-organize as they proliferate, forming organ-like structures *in vitro*, has led to a breakthrough for studying human tissues. Here, organoids show fluorescence indicative of different cell types found in normal intestines.

Caterina, a young scientist: «*At the beginning of my molecular biology studies in Italy, I worked with patient samples, and when I entered graduate school, my main project was based on a unique mutation found in a single patient. Hence, I soon came to realize that collaborations with physicians were crucial for the research I wanted to pursue. Later, during my first postdoc in France as well as during my second one in the United States, I consolidated the notion that collaborations with clinicians are necessary to give basic research a stronger and more translational impact.*»

# IN MEMORY OF PROF. GEORGES MULLER

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Georges Muller, who passed away in August 2021, will be greatly missed. President of the Foundation Council from 1994 to 2005, Prof. Muller contributed in an exceptional way to the repute of the ISREC Foundation. His generous and boundless commitment enabled the Epalinges site to gain recognition, both in Switzerland and abroad. In 2001, under his chairmanship, the Foundation was appointed «Leading House» of the National Center of Competence in Research in the field of molecular oncology. This project created an opportunity to bridge the existing gap between basic and clinical research.

Today, the Foundation continues to support translational cancer research with the same passion. Hence, ISREC's history is for ever linked to Prof. Muller's commitment, and for this we will be eternally grateful to him.

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# HIGHLIGHTS IN 2021

## February

The new management team takes office. **Prof. Pierre-Marie Glauser** takes over from Catherine Labouchère and Prof. Susan M. Gasser becomes the director of the Foundation following **Prof. Francis-Luc Perret**.

The ISREC Foundation Council appoints **Catherine Labouchère** as Honorary President. This honorary title is granted in recognition of her exceptional commitment to the Foundation.



Prof. Susan Gasser and Prof. Pierre-Marie Glauser.

## June

Announcement of the allocation of **25.8 million Swiss francs** for the expansion of **FLASH therapy** technology to all cancer types (see page 20).

## October

**Catherine Labouchère** is awarded the **2021 Medal of the University of Geneva** during the Dies academicus 2021. This well-deserved recognition underscores her extraordinary contribution to the defense of the Swiss scientific community, her unfailing support for the academic institutions between Geneva and Lausanne, as well as her commitment to the building of the AGORA cancer research cluster, which benefits the entire scientific community in the Lake of Geneva area.



Catherine Labouchère during the presentation of the Medal of the University of Geneva, surrounded by Prof. Yves Flückiger, rector of UNIGE (left), and Prof. Jean-Marc Triscone, vice-rector of UNIGE (right).

**Prof. Michael Hall** – member of the Scientific Board of the ISREC Foundation – is awarded the **Prix Mondial Nessim Habif** in recognition of his exceptional scientific career and his commitment to Geneva and its university. His discoveries have profoundly changed our understanding of cell proliferation, a key process in cancer development and other affections such as metabolic disorders and Alzheimer's disease. His research has led to the discovery of entirely new and revolutionary drugs.



Prof. Michael Hall during the presentation of the Prix Mondial Nessim Habif.



## November

**Prof. Susan M. Gasser** – director of the ISREC Foundation – is awarded an honorary doctorate title by the **University of Fribourg**. This honor underlines the excellence of her research and recognizes her commitment to the promotion of women in science in Switzerland.

On November 24, the ISREC Foundation is presented a most generous check amounting to **100 000 Swiss francs** by the **Association Josy Marti – Echec au cancer de la Broye**. This association, founded in 1991 in memory of Josy Marti, who sadly died of cancer, has been supporting the ISREC Foundation for close to 25 years. Many thanks for this loyal patronage offered by so many people in the Broye region – an invaluable gesture in support of cancer research.

## December

Prof. Anne Müller – member of the Scientific Board of the ISREC Foundation – is awarded the **Cloëtta Prize 2021**, together with Prof. Bart Deplancke (EPFL). The «Professor Dr. Max Cloëtta» Foundation honors these two outstanding scientists for their exceptional scientific accomplishments.

During the 2021 Breast Cancer Symposium organized by the AACR (American Association for Cancer Research), Prof. Fabrice André – member of the Scientific Board of the ISREC Foundation – receives the **Outstanding Investigator Award for Breast Cancer Research 2021**, together with Prof. Helen M. Piwnica-Worms. This award honors their research, which greatly contributes to the understanding of mechanisms of breast cancer progression, as well as to translational research, clinical trials, and new drug approvals.

## December

### Scientific conferences, symposia and workshops

Despite the many hurdles associated with the pandemic, researchers were able to maintain interactions and exchanges in 2021, first virtually and, as soon as permitted, in face-to-face meetings. Thus, nearly 100 events, **symposia** and **scientific lectures** were held in the Paternot auditorium and the lecture rooms of the AGORA research center, most of them directly related to research and oncology.



November 24 – «Organoids in Cancer Research» workshop.

One such event was a **workshop on organoids in cancer research** organized in November 2021 by the ISREC Foundation in cooperation with Dr. Gaspard Pardon, Prof. Michele de Palma and Prof. Matthias Lutolf. 140 participants spent a day discussing this promising topic. Organoids are organ-like cell structures, produced in the lab from stem cells, that are revolutionizing research prospects. They can be used to simulate and better understand diseases such as cancer. In addition, organoids are promising tools for the development of personalized medicine.

Oncology continues to be the ISREC Foundation's utmost priority, so as to reflect, in the activities of the AGORA center, its two main missions: the advancement of experimental, translational and clinical research, and the support of young scientists and clinicians in this field.

# SUPPORTED PROJECTS

## YOUNG SCIENTISTS

The ISREC Foundation supports PhD students working in the fields of biology and medicine. In 2021, the ISREC Foundation supported the PhD work of five students:

### **Daniela Cropp**

Lab of Dr. Grégory Verdeil, Department of Fundamental Oncology, UNIL.

*Study of the Role of NFAT5 in Tumor-Specific T Cells.*

This «ISREC grant», amounting to CHF 80 000.– per year, was awarded in April 2019 for 4 years.

### **Silvia Podavini**

Lab of Prof. Margot Thome Miazza, Biochemistry Department, UNIL.

*Biochemical Identification and Characterization of PD1 Signaling Components.*

This «ISREC grant», amounting to CHF 80 000.– per year, was awarded in August 2019 for 4 years.

### **Andrea Agnoletto**

Lab of Prof. Cathrin Brisken, EPFL/SV/ISREC.

*Androgen Receptor Signaling in the Normal Breast Epithelium and in Estrogen Receptor Alpha-Positive Breast Cancer.*

This «ISREC grant», amounting to CHF 80 000.– per year, was awarded in September 2019 for 4 years.



### **Simge Yücel**

Labs of Prof. Douglas Hanahan and Prof. Michele De Palma, EPFL/SV/ISREC.

*Mechanisms and Therapeutic Targeting of the Neuronal NMDAR Signaling Pathway Promoting Breast Cancer Pathogenesis.*

This «ISREC grant», amounting to CHF 80 000.– per year, was awarded in November 2020 for 4 years.

### **Benoît Duc**

Lab of Prof. Johanna Joyce at the Ludwig Institute for Cancer Research, University of Lausanne.

*Modeling and Investigating the Tumor Microenvironment of Non-Small Cell Lung Cancer Brain Metastasis.*

This «ISREC grant for translational oncology», amounting to CHF 60 000.– per year, was awarded in November 2021 for 3 years.



## TRANSLATIONAL RESEARCH

Translational research projects encourage collaborations between basic and clinical research. Their goal is to study cells and their interactions with the environment, and to provide impulses for novel therapies and clinical approaches designed to act on the causes of cellular malfunction.

Two different types of subsidies are granted:

### «ISREC Chairs»

The purpose of these professorships is to offer young professors affiliated to the EPFL (School of Life Sciences – ISREC) or to a Swiss university (faculty of biology or medicine) the opportunity to launch their research careers. They are financed through the fortune of the Foundation.

### «Allocated Funds»

These funds from private donations are specifically created for each project and must solely be used for their predetermined purpose. The Foundation guarantees that the donations are used in full to finance the project to which they have been assigned.

IN 2021, THE FOLLOWING **CHAIRS**  
WERE FINANCED BY THE ISREC FOUNDATION:

**Prof. Ping-Chih Ho** (UNIL/LUDWIG)

*Molecular Cancer Immunotherapy and Immune Engineering.*

This translational oncology chair, endowed with CHF 500 000.– per year, was awarded in June 2015 for a period of 6 years.

**Prof. Mikaël Pittet** (UNIGE/AGORA)

*Cancer Immunity in Context.*

This immuno-oncology chair, endowed with CHF 1 000 000.– per year, was awarded in July 2019 for a period of 10 years.

**Prof. Denis Migliorini** (Laboratoire d'immunologie des tumeurs/UNIGE/AGORA)

*Brain Tumor Immunology Program.*

This immuno-oncology chair, endowed with CHF 400 000.– per year, was awarded in December 2019 for a period of 6 years.

**PROJECTS** SUPPORTED IN 2021

**Dr. Anne-Claire Mamez** (HUG)

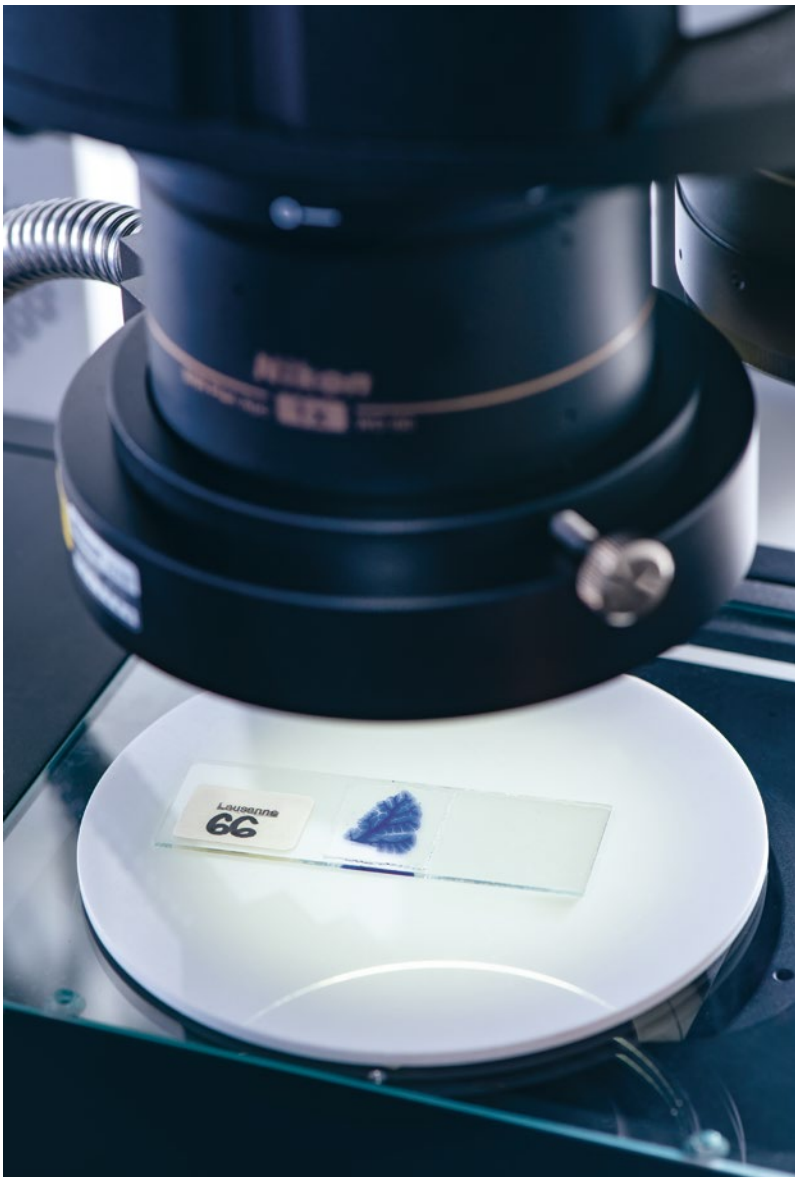
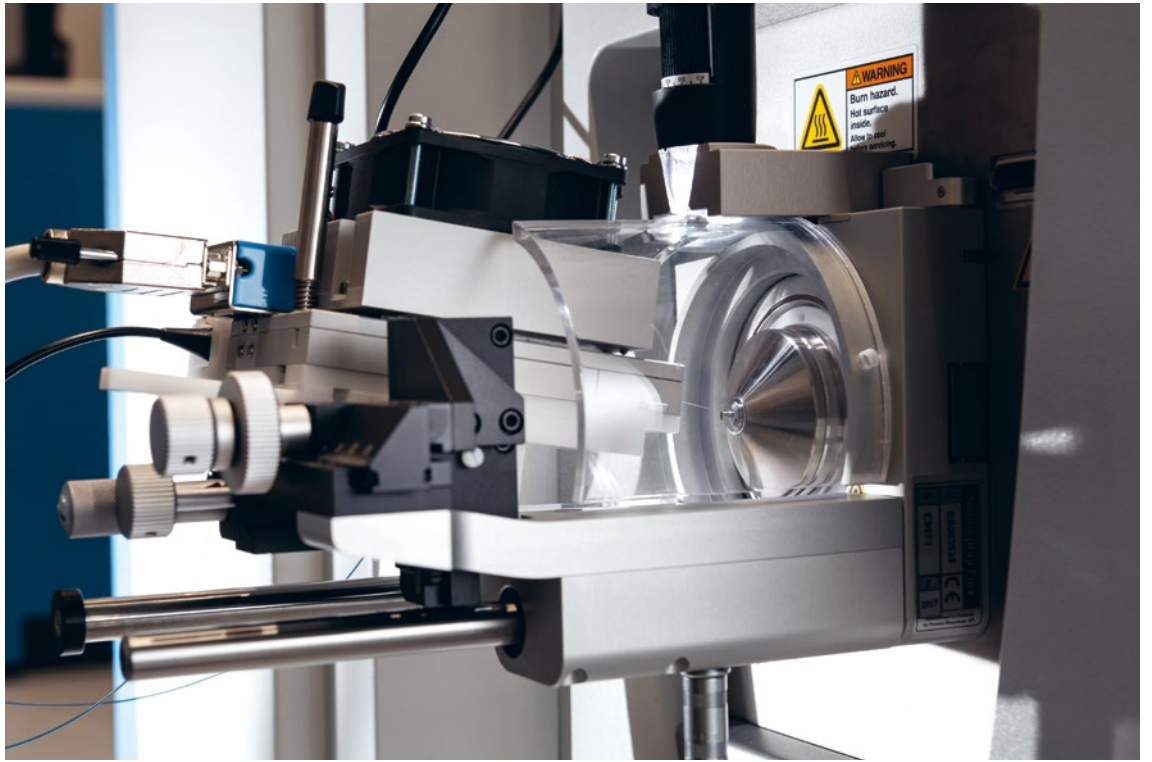
*A Phase I Clinical Trial Assessing Prophylactic Infusion of Donor CD45RA-Negative Memory/Effector T Cells into Patients Transplanted with Hematopoietic Stem Cells from Haploidentical Donors After Reduced Intensity Conditioning.*

This «allocated fund» provided by the Symphysis charitable umbrella foundation, amounting to CHF 77 000.–, was awarded for 4 years.

**Prof. Dr. rer. med. Manuela Eicher  
and Prof. Olivier Michielin** (IUFERS/UNIL/CHUV)

*A Model of Care Based on Electronic Patient-Reported Outcomes for the Early Detection and Management of Immune-Related Adverse Events in Patients Under Immunotherapy: A Multicentric Phase II Randomized Controlled Trial (IePRO).*

This «allocated fund» for nursing research, derived from a private donation and amounting to CHF 1 000 000.–, was awarded for 3 years.



**Dr. Francesco Ceppi** (CHUV)

*Immunotherapy for Relapsed-Refractory Pediatric and Young Adult B-Cell Precursor Acute Lymphoblastic Leukemia: CAR-T Cell Clinical Trial Development.*  
This «allocated fund» in pediatric oncology, amounting to CHF 856 740.–, was awarded for 3 years.

**Prof. Jean Bourhis** (CHUV)

*Clinical Translation of FLASH Radiotherapy – Phase 1.*  
This «allocated fund», derived from a donation of the Biltema Foundation and amounting to CHF 1 150 000.–, was awarded for 2.5 years.

*Clinical Translation of FLASH Radiotherapy – Phase 3.*  
This «allocated fund», derived from a donation of the Biltema Foundation and amounting to CHF 25 840 000.–, was awarded for 4 years (see page 20).

**Prof. Dr. rer. med. Manuela Eicher** (IUFERS/UNIL)

*Development of a Framework and Toolkit for Patient and Public Involvement in Cancer Research Focusing on Patient-Reported Outcome/Experience Measures.*  
This «allocated fund» in nursing research, amounting to CHF 76 400.–, was awarded for 1 year.

**Prof. Lana Kandalajt** (UNIL/CHUV)

*Development of a Novel B Cell-Based Vaccine for Metastatic Solid Cancers.*  
This «allocated fund» for immunotherapies, amounting to CHF 395 000.–, was awarded for 3 years.

**Prof. Dr. rer. med. Manuela Eicher** (IUFERS/UNIL)

*Distress Management.*  
This «allocated fund» in nursing research, amounting to CHF 15 000.–, was awarded for 1 year.

**Prof. Andreas Alimonti** (Institute of Oncology Research)

*Targeting Tumor-Infiltrating Myeloid Cells for Prostate Cancer Therapy.*  
This «allocated fund» in clinical research, amounting to CHF 300 000.–, was awarded for 2 years.

**Prof. Curzio Rüegg** (University of Fribourg)

*Transcriptomic and Phenotypic Profiling of the White Blood Cells in Breast Cancer.*  
This «allocated fund», amounting to CHF 314 520.–, was awarded for 2 years.

**BET – Bio-Engineering and Technology.**

This «allocated fund», amounting to CHF 800 000.–, was awarded for the establishment of the BET lab at the heart of the AGORA – Pôle de recherche sur le cancer.

**Dr. Sacha Rothschild** (University Hospital Basel)

*SAKK 16/18: Immune-Modulatory Radiotherapy to Enhance the Effects of Neo-Adjuvant PD-L1 Blockade after Neo-Adjuvant Chemotherapy in Patients with Resectable Stage III (N2) Non-Small Cell Lung Cancer (NSCLC). A Multicenter Phase II Trial.*  
This «allocated fund» in clinical research, amounting to CHF 310 000.–, was awarded for 3 years.

**Dr. Eva Brack** (Pediatric Oncology Department, Inselspital, Bern)

*Methylation Profiling in Rhabdomyosarcoma.*  
This «allocated fund» in pediatric cancer research, amounting to CHF 120 000.–, was awarded for 2 years.

**Prof. Johanna Joyce** (UNIL/LUDWIG)

*Exploring the Role of Neutrophils in Brain Metastasis.*  
This «allocated fund», amounting to CHF 830 000.–, was awarded for 3 years (see page 11).

**Prof. Dr. rer. med. Manuela Eicher** (IUFERS/UNIL)

*Patient and Healthcare Provider Experience in Adoptive Cell Therapies: An Experience-Based Co-Design Study.*  
This «allocated fund for nursing research», amounting to CHF 237 640.–, was awarded for 2 years.



More information  
on the supported projects:  
[www.isrec.ch/en/home](http://www.isrec.ch/en/home)



# SCIENTIFIC EVENTS



In 2021, the ISREC Foundation supported 5 students participating in the SUR/SRP «Summer Research» program, a collaboration between the UNIL and the EPFL. This summer scientific internship took place between July 5 and August 27 in labs of both institutions. For the students, this is a memorable and rewarding experience, which, for some, will have an impact on their future study plans. As for the host labs, they are offered the opportunity to dis-

cover brilliant students who might return for a Master's or a PhD degree. This year, the participants also had the opportunity to visit the AGORA Center.

Congratulations to these promising students!



Excerpts from the **thank-you** letters of the three supported participants

*«Thank you for being my sponsor for this program. I am grateful for the opportunity to have spent an amazing summer in Lausanne doing research that could potentially help to advance cancer research. I learnt many laboratory technics and skills that I believe will be helpful in my future career in research. This program has encouraged me to pursue research in cancer therapies and treatment, with the hope that I will be able to make a difference to someone's life eventually.»*

**Rachel Jun Rou Tan**

University of Cambridge/UK

*«Thanks for believing in this program supporting international students in science. During my stay in Prof. Hanahan's lab, I was able to learn a lot about novel approaches. I was fascinated about working at AGORA. This place is amazing for research. This experience is going to be unforgettable for me. After this adventure, I have confirmed my passion for science and cancer research. I hope to be back soon for a Master's degree or a PhD.»*

**Rayadan Reyes Mercado**

National Autonomous University of Mexico





Discovering the technological platforms during a visit of the Pôle AGORA – Recherche sur le Cancer.

*«I am infinitely grateful for having been granted by the ISREC Foundation. It was an amazing experience. I have experienced Switzerland as a remarkably international scientific environment and am looking forward to potential collaboration with the ISREC in the future.»*

**Asja Puncuh**  
King's College London



# THE FOUNDATION BODIES

**The Foundation consists of the following bodies:**

## **THE FOUNDATION COUNCIL**

The Foundation Council is the highest managing authority of the Foundation. It allocates resources, appoints its own members, those of the Scientific Board and the Management, as well as the Financial Auditors. It approves the annual budget and the Foundation's accounts.

## **PRESIDENT**

### **Prof. Pierre-Marie Glauser**

Lawyer and professor of tax law at UNIL (University of Lausanne), associate at Oberson Abels SA

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### **Claudine Amstein**

Director CVCi  
(Chambre Vaudoise du Commerce et de l'Industrie)

### **Yves Henri Bonzon**

Head Investment Management, CIO and member of the Executive Board, Julius Bär

### **Prof. Franco Cavalli**

Representative of the Scientific Board, Scientific Director, IOSI (Istituto Oncologico della Svizzera Italiana, Bellinzona)

### **Prof. Philippe Eckert**

General Director, CHUV  
(Centre Hospitalier Universitaire Vaudois)

### **Bertrand Levrat**

General Director, HUG  
(Hôpitaux Universitaires de Genève)

### **Prof. Philippe Moreillon**

Former Vice-Rector, UNIL  
(University of Lausanne), professor emeritus

### **Dr. Thomas W. Paulsen**

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### **Prof. Béatrice Schaad**

Director of the Communications Department, CHUV  
(Centre Hospitalier Universitaire Vaudois)

### **Prof. Andreas Tobler**

Former medical director of the Inselspital in Bern and the Insel Gruppe AG, member of the board of the University Hospital Zurich

### **Prof. Didier Trono**

Full Professor, GHI (Global Health Institute), EPFL  
(École Polytechnique Fédérale de Lausanne)

## THE SCIENTIFIC BOARD

The Scientific Board is composed of experts of international renown in various fields of cancer research, who cannot be members of the Foundation Council, with the exception of the president of the Scientific Board, by virtue of his position. Assisted by the Scientific Board, the Management selects the research projects to be funded, and presents its recommendations to the Foundation Council.



**PRESIDENT** (until December 31, 2021)

**Prof. Franco Cavalli**

Director, IOSI  
(Istituto Oncologico della Svizzera Italiana)

## MEMBERS

**Prof. Fabrice André**

Research director, in charge of the U981 unit of the INSERM, Medical Oncology Department, Institut Gustave Roussy, Villejuif, France

**Prof. Michael Hall** (President as of January 1, 2022)  
Professor at the Biozentrum, University of Basel

**Prof. Peter Johnson**

Professor of medical oncology, Faculty of Medicine, University of Southampton, UK

**Prof. Anne Müller**

Associate professor in experimental medicine, Institute for Molecular Cancer Research, University of Zurich

## THE MANAGEMENT

Assisted by the Scientific Board, the Management selects the research projects to be funded. It develops and recommends a fundraising strategy and carries out the tasks defined by the Foundation Council.

**Prof. Susan M. Gasser**

Director

**Aylin Niederberger**

Administrative and Financial Director

—

## THE FINANCIAL AUDITORS

The financial auditors, whose duties are determined by law, are nominated by the Foundation Council. They are elected for one year. The 2021 mandate was entrusted to Ernst & Young SA in Lausanne, a fiduciary company recognized by the Swiss Institute of Certified Accountants and Tax Consultants.

## A NOTE OF THANKS

# Prof. Franco Cavalli

Director, IOSI

(Istituto Oncologico della Svizzera Italiana)

**The ISREC Foundation extends its deepest thanks to Prof. Franco Cavalli, MD, FRCP, an internationally recognized lymphoma and breast cancer expert, who has selflessly shared his boundless energy and insight with both the Council and the Scientific Board of the ISREC Foundation for over 20 years. Franco Cavalli has served and shaped the mission of the Foundation with a profound dedication to innovative cancer treatment and patient care.**

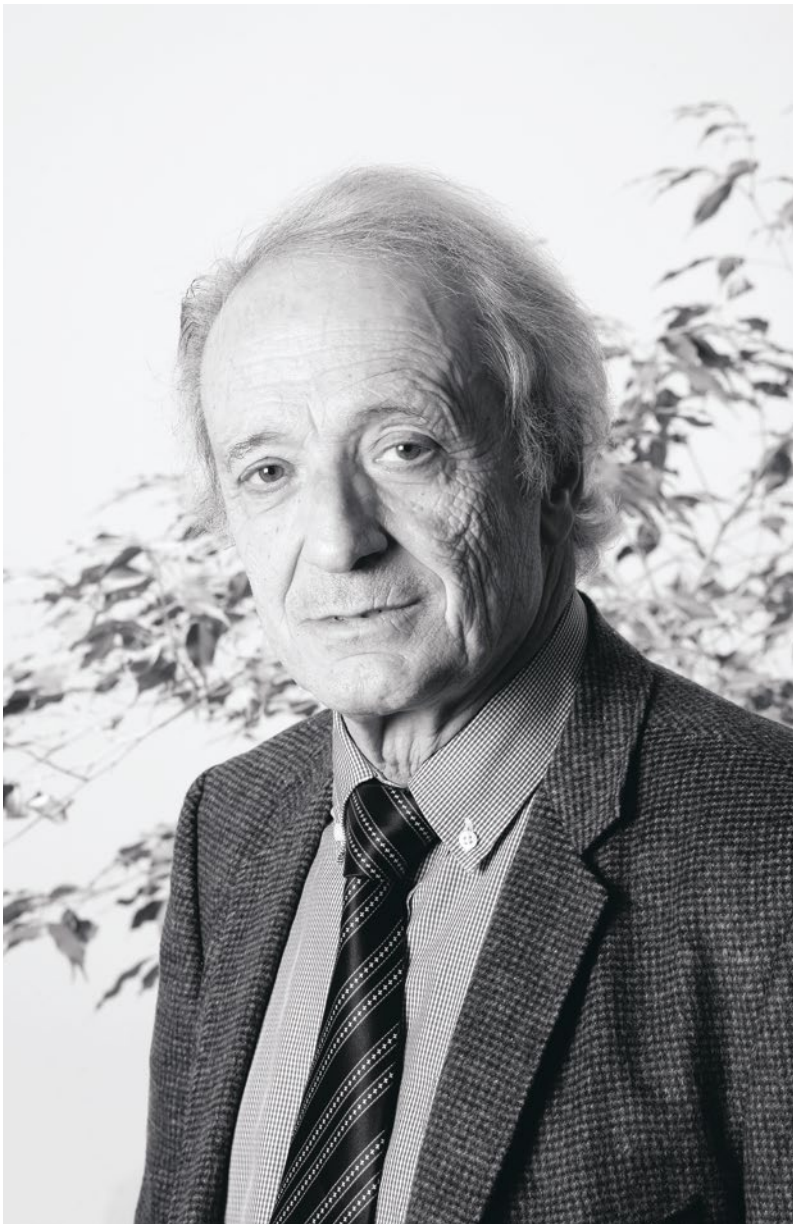
Born and raised in Locarno, Franco moved north of the Alps to the German-speaking part of Switzerland for his medical degree at the University of Bern, which he finished in 1968. He then pursued training in internal medicine in Milano, Brussels, and London, and returned to Bellinzona as head of oncology at the Hospital San Giovanni. Working there for over 20 years, he has since served as medical director and then as the founding scientific director of IOSI, the Oncology Institute of Southern Switzerland. For the last ten years, Franco Cavalli has been the president of the Foundation of the Institute of Oncology Research (IOR), again in Bellinzona, overseeing a multidisciplinary cancer center with over 250 collaborators.

At the same time, Dr. Cavalli's interests and influence extended far beyond Italian-speaking Switzerland. Serving as president of the Swiss Group for Clinical Cancer Research (SAKK) and later, of the Swiss Cancer League (Ligue suisse contre le cancer), Dr. Cavalli has shaped the landscape of Swiss clinical research in oncology. He contributed on the European level as president of the scientific committee of the European School of Oncology (ESO) and on the boards of important international medical organizations (ESMO, ASCO, EORTC, AARC). This international outreach makes Dr. Cavalli's steadfast dedication to the ISREC Foundation all the more remarkable. Both as president of the Scientific Board and as member of the Foundation Council, Dr. Cavalli has ensured that ISREC embraces forefront cancer research and patient care since 2001.

We are grateful for his focus on both health care and public health policy, interests that extend beyond Switzerland to an association for medical aid to Central America, where Dr. Cavalli has coordinated projects in Nicaragua, El Salvador, Gua-

temala, and Mexico. In 2006, he was voted Switzerland's «Person of the Year» for his contributions to society, largely due to his work in cancer and palliative care in the developing world.

For ten years past his mandatory retirement as director of the Oncology Institute of Southern Switzerland, Prof. Cavalli remained active, further developing translational research. His focus on malignant lymphomas launched the International Conference on Malignant Lymphoma in Lugano, Switzerland, a leading international forum for basic and clinical research in lymphomas. The ISREC Foundation thanks Prof. Cavalli for his tireless support of translational cancer research, and wishes him the best in his future pursuits, which perhaps will leave him a bit more time for his seven children and many grandchildren. On second thought, one wonders if someone so talented will actually retire!





# BOOK OF DONORS



Since 1964, numerous donors have supported through their gifts, subsidies or legacies our cause and contributed to the progress of cancer research.

**We are very grateful and thank each one of them most warmly.**

Among these donors, more than six hundred appear in our Book of Donors.

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Two anonymous gifts / One anonymous legacy, Lausanne / Lady Elisabeth Amptihill, in Lausanne / Legacy Mrs. Anne B., Lausanne / Mrs. Annette B., Vevey / Mrs. Anne-Laurence B., Prévèrenge / Legacy Mrs. Wilhelmine B., Lausanne / Biltema Foundation, Amsterdam / Ceres Foundation, Carouge / Mr. Dimitri D., Pully / Mrs. Hilda D., Colombier / Mrs. Johannette G., Lausanne / Göhner Foundation, Zug / Mrs. Jeanne H., Neuchâtel / Mr. Jean-Pierre H., St-Imier / Mrs. Henriette H.-C., Lausanne / Legacy Mr. Hans H., Vuflens-le-Château / Helmut Horten Foundation, Lugano / Istanjac Foundation, Triesen / Lardeco Foundation, Vaduz / Lartek Limited, Bermuda / Le Laurier Rose Foundation, Lausanne / Leenaards Foundation, Lausanne / Swiss Cancer League, Bern / Loterie Romande, Lausanne / Legacy Mr. Emile M., Bursins / Legacy Mrs. Marie M., Marin / Nouvelle Cassius Foundation, Vaduz / Mrs. Judith P., Lausanne / Mr. Yves J. P., Verbier / Pestalozzi Foundation, Road Town / Porthos Foundation, Triesen / Mrs. Martine Monique R., Geneva / Mr. Eric S., Neuchâtel / Sevastopoulo Fund, Lausanne / Mr. Marc V., Lausanne / Canton Vaud

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