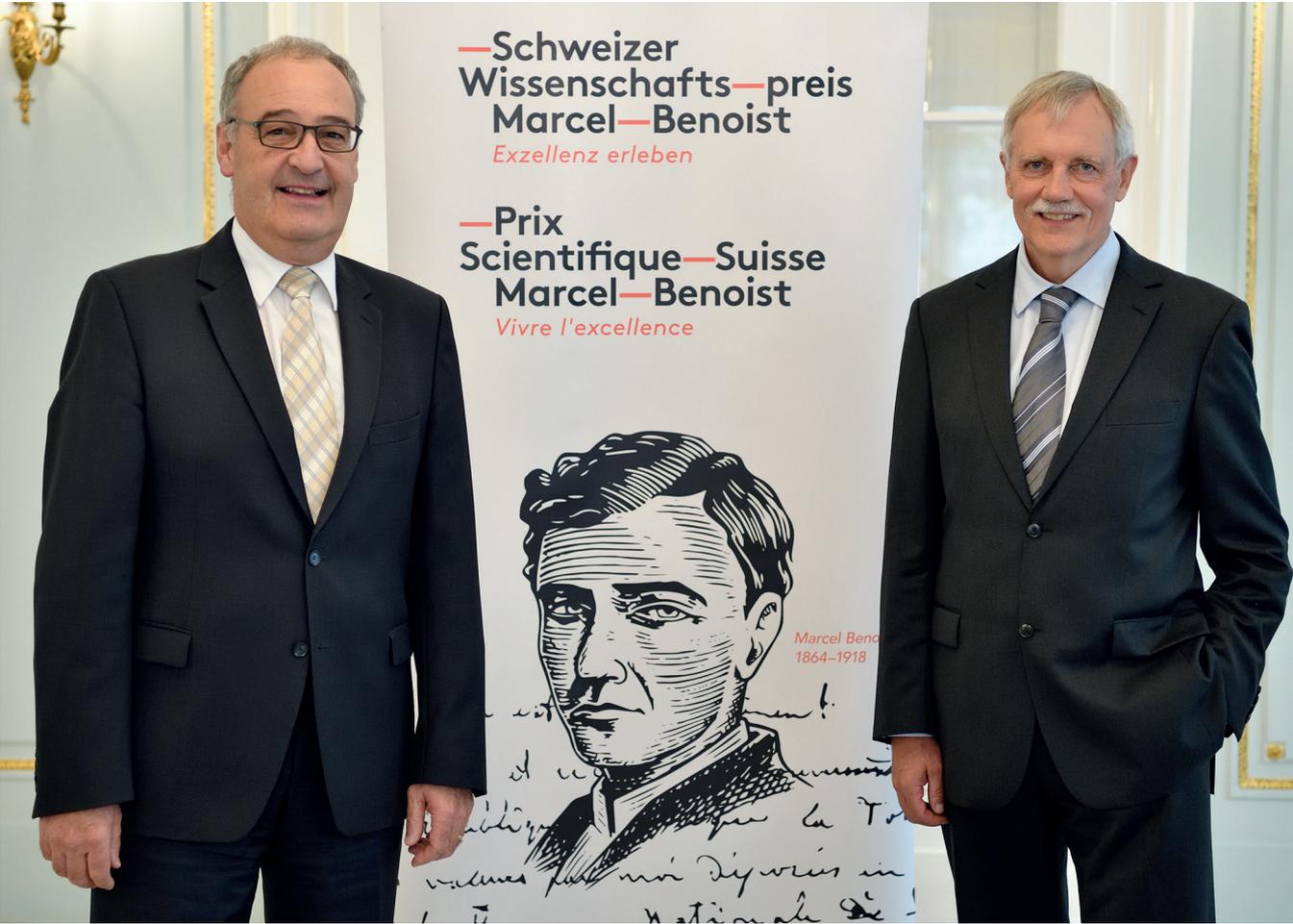


# 2020 Annual Report



This report is a performance report in accordance with Swiss GAAP FER 21.

**Title page**

In 2020, Prof. Rudolf Aebersold, Professor of Systems Biology at ETH Zurich and the University of Zurich, received the Marcel Benoist Swiss Science Prize. The prizewinner was announced to the public on 21 September 2020 by the President of the Foundation, Federal Councillor Guy Parmelin.

**Publication details**

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Dear reader



As you may know from the 2019 annual report, 2020 was always going to be a special year for the Marcel Benoist Foundation. Nonetheless, things turned out rather different to how we had envisaged. We had planned a series of events to mark the Foundation's centenary. Since 1920, the Foundation has awarded the Marcel Benoist Swiss Science Prize annually to distinguished scientists whose work is 'of particular relevance to human life'. Marcel Benoist, who died in 1918, expressed this wish in his will. We had intended to do things a bit differently so as to attract interest among a broader public for the awarding of the 'Swiss Nobel Prize'. For example, we wanted to involve the younger generation in the celebrations, not just the researchers receiving awards. The aim was both to provide a platform for younger scientists and to arouse young people's interest in science. This was to be the first time that Switzerland's two most important science prizes – the Marcel Benoist Prize for established researchers and the Latsis Prize for young scientific talent up to the age of 40 – were presented in a joint award ceremony. We had also planned to hold a workshop before the ceremony for young scientists, which would be attended by the two prizewinners.

'Wanted to', 'planned to' and 'would be' are the operative words; like so many things last year, the award ceremony had to be cancelled at short notice because of the pandemic. 2020 being the Foundation's anniversary year, it would have been a special pleasure for me to present the Marcel Benoist Prize to Prof. Rudolf Aebersold. Of course, we will make up for it this year, circumstances permitting.

At this point I would also like to mention the commemorative publication that the Foundation issued to mark its centenary, which can be found on our website. I invite you to take a stroll through the history of the Foundation. You will learn exciting facts about the founder and about previous award ceremonies and prizewinners.

A hundred years on, the work of the Marcel Benoist Foundation is still of great importance. Thanks to the support of the donors, outstanding scientists can continue to be awarded the Marcel Benoist Prize in the years to come. I would like to take this opportunity to thank all those who have contributed to the success of the Foundation. This success story would not have been possible without the great commitment of the members of the Foundation Board and the donors. Many thanks!

A handwritten signature in blue ink, consisting of several overlapping loops and a long horizontal stroke extending to the right.

Guy Parmelin, President of the Swiss Confederation  
Chairman of the Foundation Board

2020 prizewinner: Professor Rudolf Aebersold

## The Protein Pioneer

In 2020, the Marcel Benoist Swiss Science Prize went to Prof. Rudolf Aebersold, Professor of Systems Biology at ETH Zurich and the University of Zurich. Prof. Aebersold has devoted the whole of his career to the study of proteins, and has been involved in establishing two areas of research, proteomics and systems biology. His research findings are now applied in the early detection of cancer and in personalised medicine.



Professor Rudolf Aebersold, Marcel Benoist prizewinner 2020, researches proteins in his lab.



Proteins are present everywhere in the human body, forming the main component of nails and hair, regulating metabolic processes as hormones, warding off infections as antibodies or used in the transport of substances. Each human cell contains eight to nine billion protein molecules, about the same number as there are humans on earth.

**‘Without proteins, there is no life.’**

‘No proteins, no life’, explains Rudolf Aebersold in a nutshell. The Marcel Benoist prizewinner has been studying proteins for 40 years and describes them as ‘the craftsmen of the cell’. They carry out and control the tens of thousands of biochemical reactions that take place in a cell, and thus determine its properties and functions.

### **A laborious and monotonous job**

Although there are thousands of different types of protein, they are all made up of no more than 20 types of amino acids. These are arranged in different numbers and sequences depending on the protein type. It is necessary to know this arrangement in order to understand the properties and functioning of the given protein. This was precisely Rudolf Aebersold’s objective at the start of his career in science.

He began sequencing individual proteins using chemical methods back in the early 1980s, as a doctoral student at the Biozentrum of the University of Basel and at the company CibaGeigy. His curiosity drove him on, but the work was tedious, slow and monotonous. It took him six months to decipher the composition of just one protein. He was sure that it must be possible to do this faster! So in 1984, after completing his doctorate in cell biology, he went to the renowned California Institute of Technology in Pasadena on a grant from the Swiss National Science Foundation. His aim was to improve and speed up protein sequencing by making the process automatic. In the creative chaos of an interdisciplinary research group, Aebersold succeeded in considerably improving his analysis technique and even discovered some unknown proteins along the way.

### **The proteomic revolution**

His successes aroused the interest of several universities, and he was offered positions as assistant professor. Aebersold chose the University of British Columbia, which is comparatively little regarded academically, because he felt Vancouver would be a pleasant city in which to raise his three young children. The decision was to prove a stroke of luck in professional terms as well, for it was in the Canadian West that he made his first scientific breakthrough. He abandoned his earlier sequencing techniques and began working with a mass spectrometer and quantitative methods. This was a novel approach to studying proteins, and enabled him to determine their quantity and composition. It was a scientific revolution which laid the foundation for the research discipline known today as modern proteomics.

**'It's like language: only when the words are in the right order and the relationship between them has been properly understood does a text really make sense.'**

In the mid-1990s he moved back to the USA and became an associate professor at the University of Washington in Seattle. At that time, the idea predominated that, in order to understand the processes taking place in a cell, you simply had to know all the genes and proteins it contained. Aebersold's methods, which he further developed in Seattle, were used to create comprehensive catalogues of existing proteins – an approach that he himself was critical of. He was convinced that a cell cannot be understood if it is regarded as a mere collection of individual molecules. 'It's like language,' he explains; 'You can collect all the existing words in a book and memorise them, but that doesn't mean you can read or write texts with them. For that, you need a syntax. Only when the words are in the right order and the relationship between them has been properly understood does a text really make sense.'

### **Against all odds**

Aebersold had a clear aim: to understand cells as systems whose properties are determined by networks of proteins that are connected by a kind of 'syntax of life'. To do this, he had to systematically investigate how protein groups form, how they interact and how they change in response to influences. Because he was unable to make any headway at the university, with colleagues Leroy Hood and Alan Aderem he founded the Institute of Systems Biology in Seattle, the first of its kind in the world. However, Aebersold's approach did not meet only with enthusiasm in the scientific community: systems biology, of which he is now considered a cofounder, was at times discredited as a mere fashionable trend. For years, Aebersold and his colleagues faced considerable resistance, and had to fight for the new research discipline to be accepted.

Over time, however, systems biology became established – also in Switzerland. In 2001, Aebersold joined the University of Zurich as part-time professor and in 2004 he received an additional professorship at the ETH Zurich, where he established and built up the Institute of Molecular Systems Biology (IMSB) from 2005. In Zurich, Aebersold and his research group discovered how to precisely identify and measure every protein in a human cell. The group was also able to show that the expression of a gene is usually not determined by a single protein, but by hundreds of proteins that are arranged in a certain way and interact with each other, whereby the arrangement and interactions change depending on the conditions.



Although now retired, Prof. Rudolf Aebersold is still driven by curiosity and wants to contribute actively to practical science.

## From basic research to practice

With his pioneering work in proteomics and systems biology, Rudolf Aebersold has fundamentally changed the understanding of organisms and biology. For this he was awarded the Swiss Science Prize Marcel Benoist, just a few months after his retirement from the IMSB. But Aebersold has no desire for a quiet retirement. 'If anything, my fascination with proteins has grown over the years,' he says. 'The more we found out, the more exciting the questions became.'

**'The more we found out, the more exciting  
the questions became.'**

This is partly because findings from basic research are increasingly being applied in practice. Personalised medicine, for example, is based on Aebersold's work; this field aims to use protein analyses to establish before the start of a treatment whether it is suitable for a patient or not. Another field of application is the early detection of diseases. Aebersold, who is regarded by his colleagues as a great talentspotter, supervised the doctoral student Ralph Schiess, who succeeded in developing a simple blood test which reliably detects prostate cancer in its early stages. Rudolf Aebersold himself is keen to continue actively applying his knowledge. This is one of the reasons why he is leading, until the end of 2023, the Tumour Profiling Project, a joint undertaking between ETH Zurich, the University of Zurich and the university hospitals of Basel and Zurich. His motivation: 'There is still much to discover!'

NB: This article also appeared in a similar form in SERI News 6/20.

### **Contact**

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aebersold@imsb.biol.ethz.ch

### **Further information**

<https://imsb.ethz.ch/research/aebersold.html>

## Foundation activities in 2020

**The Marcel Benoist Foundation's activities focused on the awarding of the Marcel Benoist Swiss Science Prize and the Foundation's centenary. There were also planned changes to the award ceremony, although this had to be cancelled at short notice owing to the pandemic.**

### **Selection of the prizewinner and award ceremony**

In 2020, the selection of the prizewinner was again organised by the Swiss National Science Foundation (SNSF) on behalf of the Board of Trustees. The research community in Switzerland was invited to submit nominations in an open procedure held at the beginning of 2020. In a process committed to scientific excellence and involving an international panel of experts, the SNSF proposed Prof. Rudolf Aebersold as the 2020 prizewinner from a total of 24 valid nominations. The prizewinner was confirmed by the Board of Trustees at its plenary meeting on 2 September 2020.

The selection of the prizewinner was again based on the principle of rotation, which ensures that all scientific disciplines are taken into account. Last year, nominations were accepted from the fields of biology and medicine.

Rudolf Aebersold was announced to the public as prizewinner on 21 September 2020. For the first time, the winners of the two Swiss science prizes, Marcel Benoist and Latsis, were announced at the same time. At least 90 different media outlets – including the Neue Zürcher Zeitung, the Tamedia newspapers, Swiss Radio and Television SRF and Le Temps – reported on the winner of the Marcel Benoist Swiss Science Prize, Prof. Rudolf Aebersold, and the winner of the Latsis Prize, Prof. Maryna Viazovska. The prizewinners were announced at a socially distanced ceremony in the Bernerhof attended by the prizewinners, the chair of each of the foundations Federal Councillor Guy Parmelin and Prof. Denis Duboule, and other invited guests. Congratulations were expressed verbally only; the usual handshake was dispensed with for hygiene reasons. The lunch that followed provided an opportunity for discussion among the foundation representatives, donors of the Marcel Benoist Foundation and the two prizewinners.

The actual award ceremony scheduled for 4 November 2020 had to be cancelled at short notice. Because of the unfavourable epidemiological situation, neither could the ceremony be held in camera and livestreamed as planned. We will pay tribute to the 2020 Latsis prizewinner and the Marcel Benoist prizewinner at the award ceremony in 2021.

Several new things had been planned for the award ceremony in the centenary year. Not only were the winners of the two most important Swiss science prizes, the Marcel Benoist and the Latsis, to be announced at the same time, a dual award ceremony was also to take place. There was excellent cooperation between the two foundations; in particular, an event at which different generations should participate was planned. Indeed, the prizes themselves go to prizewinners in different age groups: the Marcel Benoist Prize is awarded to an established academic, the Latsis Prize goes to young researchers under the age of 40. The idea

had also been for the general public to take part in the celebrations. For example, before the award ceremony a workshop for young people was planned at which the prizewinners would provide an insight into their research. The workshop was prepared in collaboration with the Swiss Youth Research Foundation and the Science Olympiads. The idea was to give young people the opportunity to discuss and develop the potential of the research presented in a professionally moderated setting. Their results would then be presented as part of the award ceremony. The premiere of the Swiss Science Awards Ceremony is now expected to take place on 4 November 2021 at Bern City Hall.

### **Commemorative publication ‘100 years of the Marcel Benoist Swiss Science Prize’**

To mark its centenary, the Foundation has produced a two-part commemorative publication consisting of an anniversary brochure and a detailed history of the Marcel Benoist Foundation. The brochure provides a concise overview of the Foundation’s origins and its way of functioning, and presents previous prizewinners, while the review takes a closer look at the Foundation’s history and evolution. Both publications can be found on the Foundation’s website.

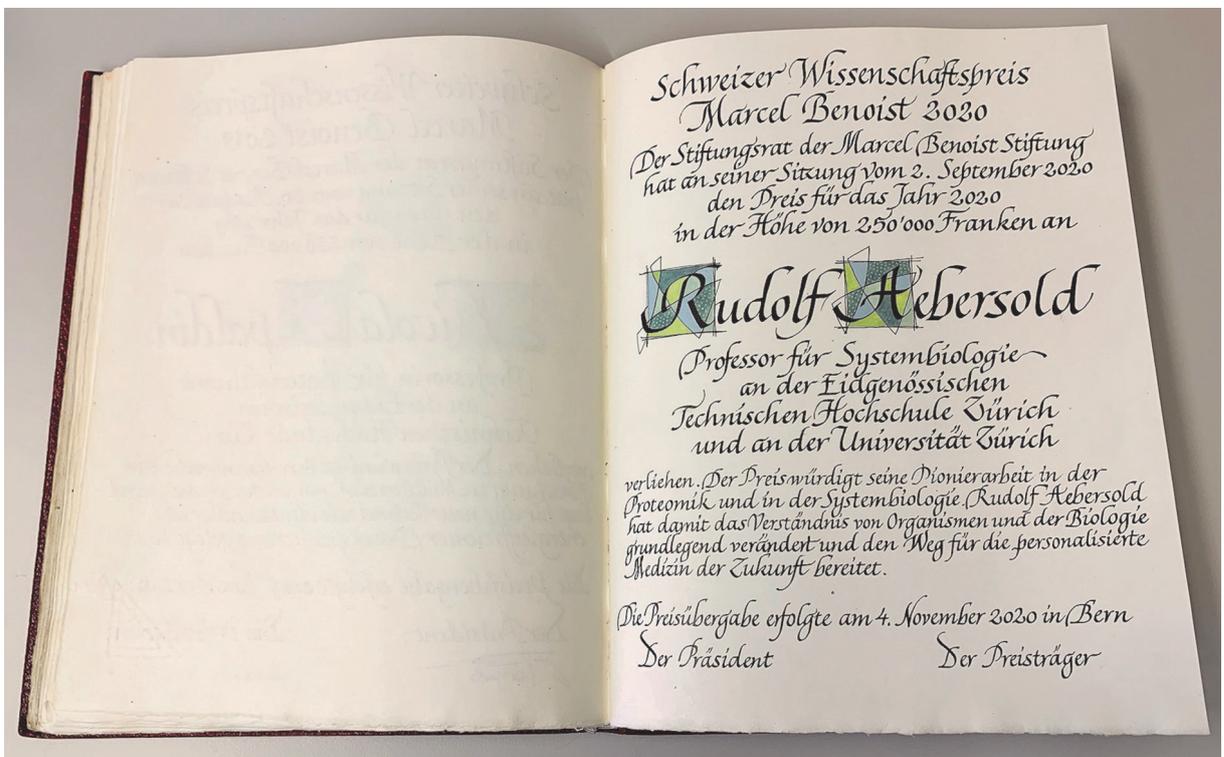
### **Members of the Board of Trustees**

At the end of 2020, Prof. Jean-Pierre Montani, representative of the University of Fribourg, reached the maximum term of office of 12 years on the Board of Trustees. The Federal Council appointed Prof. Katharina Fromm as his successor, as proposed by the Foundation chair. The Foundation would like to take this opportunity to thank Prof. Montani for his great commitment and looks forward to working with the newly elected representative of the University of Fribourg. At its plenary meeting on 2 September 2020, the Board of Trustees also elected a third member to the Investment Committee, which only had two remaining members following the departure of Prof. Paul Richli from the Board of Trustees at the end of 2020. Prof. Dominique Arlettaz now supports the two current members of the Investment Committee, Prof. Joël Mesot and Prof. Martin Brown.

## Impressions from the 2020 prize announcement



The winner of the 2020 Swiss Latsis Science Prize, Prof. Maryna Viazovska, and of the 2020 Marcel Benoist Swiss Science Prize, Prof. Rudolf Aebersold, at the prize announcement ceremony.



The 2020 prizewinner is entered in the Marcel Benoist Foundation's Golden Book.



The two winners of the Swiss Science Prize Marcel Benoist (Prof. Rudolf Aebersold, 2nd from right) and Latsis Prize (Prof. Maryna Viazovska, 2nd from left) with the chairmen of the Marcel Benoist Foundation (Federal Councillor Guy Parmelin, centre) and of the Latsis Foundation (Prof. Denis Duboule, left) and the president of the SNSF National Research Council (Prof. Matthias Egger, right).

## Many thanks!

**100 years ago, Marcel Benoist laid the foundation of the Marcel Benoist Foundation. Since 2017, new donations have helped to secure the future of the Swiss Science Prize and significantly increase the Foundation's assets.**

The donors of the Marcel Benoist Foundation are united in the Patronage Committee and Friends of the Foundation.

The members of the Patronage Committee act as ambassadors for the Marcel Benoist Swiss Science Prize, helping to increase its visibility and to raise public awareness about the importance of top-level research for Switzerland. They also encourage further partners to commit to supporting the prize.

The solid basis upon which the Foundation now rests is thanks not only to its donors but also to the valuable support of former federal councillor Johann N. Schneider-Ammann. The Foundation is delighted that Mr Schneider-Amman will continue to promote the objectives of the Marcel Benoist Foundation as honorary chairman of the Foundation.

The Friends of the Foundation include further sponsors of the Marcel Benoist Swiss Science Prize, reflecting the broader support for the award, which is of such importance to research in Switzerland.

**Patronage Committee and Friends: Donors**

Christoph Ammann

Ulrich Andreas Ammann

Daniel Gutenberg

Martin Haefner

Ruurd Heerema

Babette Herbert

André Hoffmann

Walter Inäbnit

Dr Max Rössler

Dr Stephan Schmidheiny

Former federal councillor Johann N. Schneider-Ammann

Katharina Schneider-Ammann

Dr Ernst Thomke

Dr Hansjörg Wyss

Accenture Foundation

Zurich Airport AG

KIBAG Holding AG

Perspectives Foundation (SwissLife)

QIAGEN N.V., Peer Schatz, in memoriam Gottfried Schatz, 1992 Benoist prizewinner

Schindler Group

Vontobel Foundation

We would like to thank all our donors for their valuable support.

Our thanks also go to those who do not wish to be named here.

Further information on the Patronage Committee and Friends can be found  
at [www.marcel-benoist.ch](http://www.marcel-benoist.ch).

# The Marcel Benoist Foundation

## Foundation purpose

The Marcel Benoist Foundation was established on 19 November 1920. By accepting Marcel Benoist's legacy, the Confederation committed itself to respecting the founder's wish – to fund an annual prize to promote scientific research which is awarded to a Swiss scholar or a scholar resident in Switzerland with the most useful invention, discovery or study in the sciences that is of particular relevance to human life. The prize is awarded in different disciplines on a rotating basis.

## Board of Trustees (Last update: end of 2020)

Federal Councillor Guy Parmelin  
Head of the Federal Department of Economic Affairs, Education and Research  
EAER, Chairman of the Board of Trustees

Prof. Christian Leumann  
Representative of the University of Bern, first vice chair

Prof. Joël Mesot  
Representative of the Confederation, second vice chair

Prof. Martine Rahier  
Representative of the University of Neuchâtel, assessor

Prof. Dominique Arlettaz  
Representative of the University of Lausanne

Prof. Martin Baumann  
Representative of the University of Lucerne

Prof. Martin Brown  
Representative of the University of St Gallen

Prof. Christa Dürscheid  
Representative of the University of Zurich

Prof. Brigitte Galliot  
Representative of the University of Geneva

Prof. Michael N. Hall  
Representative of the University of Basel

Renaud Lallement  
Representative of the French Ambassador to Switzerland

Prof. Jean-Pierre Montani  
Representative of the University of Fribourg

Prof. Federica Sallusto  
Representative of the Università della Svizzera italiana

Prof. Michaël Unser  
Representative of the Federal Institute of Technology Lausanne (EPFL)

Prof. Wendelin Werner  
Representative of the Federal Institute of Technology Zurich (ETH)

The trustees are appointed by the Federal Council. Any interests of individual members are publicly listed (federal extra-parliamentary commissions).

#### **Foundation Committee**

Federal Councillor Guy Parmelin, Chair  
Prof. Christian Leumann  
Prof. Joël Mesot  
Prof. Martine Rahier

#### **Investment Committee**

Prof. Martin Brown, Chair  
Prof. Joël Mesot  
Prof. Dominique Arlettaz

#### **Foundation Secretariat**

The Foundation Secretariat is part of the State Secretariat for Education, Research and Innovation SERI. The Foundation Secretary is a SERI employee. Dr Aurélia Robert-Tissot, designated Foundation Secretary

#### **Finance Secretariat**

Since November 2017, the Marcel Benoist Foundation has outsourced the management of its finances and its annual report, which is drawn up in accordance with Swiss GAAP FER 21.

Von Graffenried AG Treuhand, Bern  
Patrick Rüttimann, Swiss certified accountant, member of the management team

#### **Auditors**

Following the reorganisation of the Marcel Benoist Foundation, the Board of Trustees appointed Unico Thun AG in Thun as its new auditors. The company audited the financial accounts for the first time in 2017.

#### **Oversight**

Federal Supervisory Board for Foundations, Bern

#### **Bank details**

Donations in Swiss francs:  
PostFinance account  
89-32730-0  
IBAN CH73 0900 0000 8903 2730 0

## Annual financial statement

This annual financial statement is a draft version which has not yet been approved by the Foundation Board.

<b>BALANCE SHEET as of 31 DECEMBER</b>	<b>2020</b>	<b>2019</b>
<b>ASSETS</b>	<b>CHF</b>	<b>CHF</b>
PostFinance AG, current account	1'207'187.46	207'929.66
Zürcher Kantonalbank, current account	22'678.74	1'001'128.49
Zürcher Kantonalbank, asset management account	50'437.46	297.81
<b>Cash and cash equivalents</b>	<b>1'280'303.66</b>	<b>1'209'355.96</b>
Federal Tax Administration, withholding tax	30'640.83	20'521.61
<b>Other short-term receivables</b>	<b>30'640.83</b>	<b>20'521.61</b>
Prepaid expenses	6'101.20	0.00
<b>Prepaid expenses</b>	<b>6'101.20</b>	<b>0.00</b>
<b>CURRENT ASSETS</b>	<b>1'317'045.69</b>	<b>1'229'877.57</b>
Securities	19'491'669.41	14'423'123.21
<b>Financial investments</b>	<b>19'491'669.41</b>	<b>14'423'123.21</b>
<b>FIXED ASSETS</b>	<b>19'491'669.41</b>	<b>14'423'123.21</b>
<b>TOTAL ASSETS</b>	<b>20'808'715.10</b>	<b>15'653'000.78</b>

<b>LIABILITIES</b>	<b>CHF</b>	<b>CHF</b>
Deferred income	105'565.35	134'489.38
<b>SHORT-TERM LIABILITIES</b>	<b>105'565.35</b>	<b>134'489.38</b>
Restricted funds	651'000.00	784'000.00
<b>FUND EQUITY</b>	<b>651'000.00</b>	<b>784'000.00</b>
Unrestricted funds	20'052'149.75	14'734'511.40
<b>ORGANISATION EQUITY</b>	<b>20'052'149.75</b>	<b>14'734'511.40</b>
<b>TOTAL LIABILITIES</b>	<b>20'808'715.10</b>	<b>15'653'000.78</b>

OPERATING STATEMENT	2020	2019
	CHF	CHF
Unrestricted donations	4'050'000.00	3'910'000.00
Restricted donations	10'000.00	10'000.00
<b>Total donations</b>	<b>4'060'000.00</b>	<b>3'920'000.00</b>
Prize money	-250'000.00	-250'000.00
Prizewinner selection and award ceremony	-55'816.65	-104'330.23
Anniversary publication	-13'500.00	0.00
<b>Project-related expenses</b>	<b>-319'316.65</b>	<b>-354'330.23</b>
Fundraising	-193.50	-3'267.15
<b>Fundraising/general marketing expenses</b>	<b>-193.50</b>	<b>-3'267.15</b>
Board of Trustees fees	-2'394.70	-138.00
Finance secretariat	-22'746.25	-22'466.25
Auditors	-2'692.50	-2'692.50
Oversight	-7'700.00	0.00
Other administrative expenses	-5'564.60	-8'028.35
<b>Administrative expenses</b>	<b>-41'098.05</b>	<b>-33'325.10</b>
<b>Operating result</b>	<b>3'699'391.80</b>	<b>3'529'077.52</b>
Price gain on securities	1'513'346.62	1'707'043.53
Other financial income	26'449.00	0.00
Portfolio management costs	-39'734.55	-32'337.82
Investment controlling/consulting costs	-14'647.20	-10'770.00
Bank interest and fees	-167.32	-335.72
<b>Financial result</b>	<b>1'485'246.55</b>	<b>1'663'599.99</b>
<b>Result before change in fund equity</b>	<b>5'184'638.35</b>	<b>5'192'677.51</b>

<b>OPERATING STATEMENT</b>	<b>2020</b>	<b>2019</b>
	<b>CHF</b>	<b>CHF</b>
<b>Result before change in fund equity (carried over)</b>	<b>5'184'638.35</b>	<b>5'192'677.51</b>
Allocations to restricted funds	-10'000.00	-10'000.00
Withdrawals from restricted funds	143'000.00	143'000.00
<b>Change in fund equity</b>	<b>133'000.00</b>	<b>133'000.00</b>
<b>Result for the year (before allocations to or withdrawals from organisational capital)</b>	<b>5'317'638.35</b>	<b>5'325'677.51</b>

The consolidated statement of accounts was drawn up in accordance with the Swiss GAAP FER 21 accounting standards and audited by Unico Thun AG.

### **Governance and working methods**

The Marcel Benoist Foundation to promote scientific research, based in Bern, is exempt from federal and cantonal taxes due to its non-profit status.

The Foundation's Articles of Association are drawn up by the Board of Trustees. The Board makes strategic decisions regarding the Foundation and ensures that the purpose of the Foundation is met. The Board of Trustees works on a voluntary basis.

Asset management is governed by the Foundation's investment regulations. The financial assets are invested in the medium to long term by an investment committee with a view to achieving security and a sustainable return.

The accounting records and financial statements are audited by Unico Thun AG. The Foundation is supervised by the Swiss Federal Supervisory Authority for Foundations.

Further information on governance and working methods can be found at [www.marcel-benoist.ch](http://www.marcel-benoist.ch) > Pledge Excellence > Tax-related and legal issues.

**Contact**

Marcel Benoist Foundation  
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Research and Innovation SERI

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We look forward to hearing from you.