



### ANNUAL REPORT

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### THE AUSTRIAN SCIENCE FUND (FWF)

To understand the world, we need to probe deeply. Fundamental research takes time, but it opens up entirely new horizons. This is why we support pioneering researchers on their roads to discovery. The wealth of their insights is the capital of future generations.

### BASIC RESEARCH AS A KEY TO OVERCOMING THE CORONA PANDEMIC

The daily lives of people in many countries throughout the world dramatically changed on 11 March 2020. This was the day when the World Health Organization (WHO) declared the rapidly spreading coronavirus (SARS-CoV-2) outbreak a global pandemic. Its far-reaching impacts are still affecting the lives of billions of people. As if the cases of severe illness and individual blows of fate were not enough, the pandemic has penetrated every aspect of society. What was at first a health crisis quickly turned into an economic and social crisis, the full extent of which is still unclear. The worst pandemic yet of the 21<sup>st</sup> century appears to mark a historic turning point.

One year later, the virus is still running rampant. There are, however, some rays of hope as people began to be vaccinated at the end of 2020. And with each passing day, researchers across the world are gaining new insights into the coronavirus and the effects of the crisis. If the beginning was characterised by uncertainty and speculation, we have now progressed considerably thanks to the national and international scientific community. Science is receiving a lot of attention; it is more in demand than ever and gives great cause for hope. Whereas in the past it usually took more than ten years to develop a vaccine and complete its clinical trials, in the case of corona, this process was completed in a matter of ten months. This is a triumph for science, which is largely attributable to decades of publicly funded basic research. Researchers did not have to start from scratch and the free exchange of information accelerated the process. Never before have researchers and companies from around the world worked together with so much dedication to tackle a medical and social challenge.

In Austria, the Austrian Science Fund (FWF) has been supporting open-topic basic research for over 50 years. Since the beginning of the crisis. FWF-funded researchers have placed their expertise at the disposal of the government and the public. Colleagues from all over Austria have started work on additional, coronarelated research projects and have stepped up their cooperation to help overcome the crisis. And since no aspect of daily life has been left untouched by the pandemic, it is only logical that researchers from entirely different disciplines must work together. Besides the medical challenges, they are investigating its political and economic ramifications and examining the resulting social and psychological issues. As examples of the many outstanding researchers who have received FWF funding this year, we would like to present you with fifteen colleagues who have dedicated themselves specifically to the corona crisis over the last few months

It is during difficult times that we find out what really matters. This includes science and research. One of the most important lessons to be learned from this crisis is that we must continue to strengthen our support for science and, in particular, basic research. Researchers require the best possible conditions at Austrian research institutions to be able to conduct world-class research together with their colleagues from leading scientific nations. For the next crisis will surely come, be it the ongoing problem of climate change or another challenge that we are still unaware of.

Christof Gattringer President

Artemis Vakianis Executive Vice-President Gerlinde Mautner Vice-President, Humanities and Social Sciences

Gregor Weihs Vice-President, Natural Sciences and Engineering

Ellen Zechner Vice-President, Biology and Medical Sciences

### **BASIC PRINCIPLES OF THE FWF**

### **INDEPENDENCE AND DIVERSITY**

The autonomy of the Austrian Science Fund (FWF) is protected by law. Its funding decisions are taken independently. Researchers from all disciplines are given the time and freedom they need to gain new insights.

### **EXCELLENCE AND COMPETITION**

It is the quality of research that matters, which is why researchers compete in the global arena of ideas. The Austrian Science Fund (FWF) invests exclusively in those researchers whose proposals receive excellent reviews from international peers.

### TRANSPARENCY AND FAIRNESS

The Austrian Science Fund (FWF) is committed to allocating funds in a transparent and fair manner. It rigorously avoids conflicts of interest, builds in cross-checks by multiple people at all stages, and clearly communicates its practices and decision-making procedures to researchers and the public.

### GENDER MAINSTREAMING, EQUAL OPPORTUNITIES AND DIVERSITY

The Austrian Science Fund (FWF) promotes gender equality in all areas of cutting-edge research, meaning that all funding applications are assessed exclusively on the basis of their research merit.

### INTERNATIONALISM AND COOPERATION

Successful research is based on discovering facts and data. International cooperation, open access to knowledge, and critical reflection bring together complementary fields of expertise and contribute to making research trustworthy. The Austrian Science Fund (FWF) is committed to facilitating and supporting cooperation in research across national borders.

### **INTEGRITY AND ETHICS**

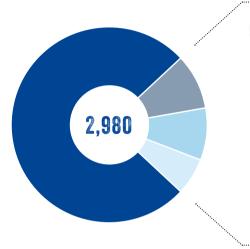
As a founding member of the Austrian Agency for Research Integrity, the Austrian Science Fund (FWF) promotes compliance with the rules of good research practice and internationally established ethical standards. Its own activities and funding effectiveness are also reviewed and evaluated by independent experts on a regular basis.

### **DIALOGUE AND COOPERATION**

The Austrian Science Fund (FWF) sees itself as a facilitator of dialogue and provides an open forum for the exchange of knowledge. It seeks to build bridges of cooperation between the scientific community, research institutions, business, politics, the media, and the public, and encourages critical debate on the role of science in an enlightened society to make it fit for the future.

### **KEY FIGURES AT A GLANCE**

### FUNDING DECISIONS ON PROPOSALS



### **PROJECTS APPROVED: 708**

**Biology and Medical Sciences** 

273 (Approval rate: 21.8%)

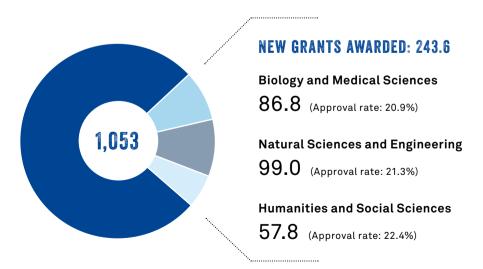
### **Natural Sciences and Engineering**

260 (Approval rate: 24.2%)

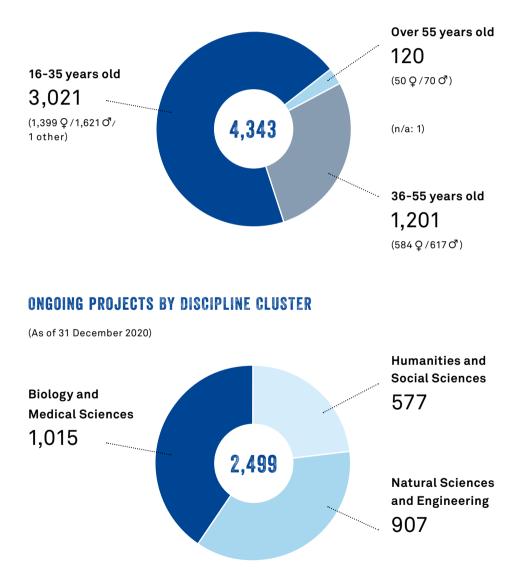
### Humanities and Social Sciences

175 (Approval rate: 23.0%)

FUNDING REQUESTED (M €)



### **RESEARCHERS FUNDED BY THE FWF**





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Austria vaccinates

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# **Christoph Steininger**

Virologist — Medical University of Vienna Department of Internal Medicine I



ACE

ZIB 2

Christoph Steininger is a virologist heart and soul. This enthusiasm can be seen in the many interviews in which the Medical University of Vienna researcher explains his field to the public. Despite the many scientific advances which have been achieved, and to which he has made significant contributions, Steininger makes it clear that "We still do not fully understand the workings of viruses and what mechanisms lead to the outbreak of a disease".

Nonetheless, Steininger wants to put what science does understand into practical use as quickly as possible. Therefore, in addition to his research work — funded, among others, by the FWF — he founded a company at the beginning of 2020 and launched a simple PCR self-test that is now available in pharmacies and other shops in Vienna and is also being widely used by the City of Vienna.



Learn more about Christoph Steininger online.

# Sophie Grünbacher

Mathematician — DatenVorsprung Vienna University of Technology



Sophie Grünbacher combines her personal interests with her professional and academic activities: She plays music, runs the "Absolut Ticket" online ticketing system, and is currently studying on the FWF's "Logical Methods in Computer Science" doctoral programme at Vienna University of Technology. She has now developed a system called "Vereinstix" that provides event organisers or associations with an easy-to-use—and, for visitors, data-secure solution for contact tracing.

With this free software, which is based on a QR code and relies on entering just one method of contact, Sophie Grünbacher hopes to guarantee data protection and, at the same time, provide small event organisers with options for handling the contact tracing necessary because of the corona crisis.

Sophie Grünbacher with her team at DatenVorsprung (from left to right): Philipp Neubauer, Akram Al-Taweel, Sophie Grünbacher, Marvin Kleinlehner, and Max Sbardellati



Learn more about Sophie Grünbacher online.

# **Christian Promitzer**

Historian — University of Graz Institute of History

### EPIDEMICS HAVE ALWAYS HAD SIMILAR IMPACTS

Parlam

Alebertriebene Veft-Zelorgniffe.



There has been no shortage of epidemics throughout history. Relatively early on — in the 14<sup>th</sup> century — it became clear to people that they could contain the spread of diseases by isolating the sick. The use of quarantines today to fight SARS-CoV-2 is, therefore, no recent invention. There are, however, many more historical parallels: In his FWF-funded studies on the spread of the plague in south-eastern Europe, historian Christian Promitzer discovered that fake news and conspiracy theories also flourished during earlier epidemics. The results of this research also served as the basis for a book entitled *Medicalising borders: Selection, containment and quarantine since 1800*, which was recently published by Manchester University Press and co-edited by Promitzer.

In addition, diseases have always changed the way we organise our lives together: for example, improvements made to sewerage systems and groundwater supplies were a direct result of outbreaks of cholera in the 19<sup>th</sup> century.



Learn more about Christian Promitzer online.

# Katrin Ramsauer

Virologist — Themis Bioscience Department of Research and Development

AUSTRIAN RESEARCH FOR A GLOBAL COMPANY

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In Austria, there are many biotech companies which work closely with universities. One example is the Viennese company Themis Bioscience, founded in 2009, which develops vaccines and therapies for infectious diseases and cancers and specialises in the industrial application of academic research. The company's head of research is virologist Katrin Ramsauer, who worked previously at the University of Vienna and the Medical University of Vienna and, at the beginning of her career, received a Firnberg fellowship from the FWF.

Since the summer of the previous year, Themis has been part of the global U.S. pharmaceutical company Merck & Co./MSD and is currently working at full speed on a vaccine that uses attenuated measles viruses as a Trojan horse for the SARS-CoV-2 gene to immunise people against the coronavirus. The company has also received support from, among others, the FFG Emergency Call and from the AWS Founders Fund.



Learn more about Katrin Ramsauer online.

## **Michael Wagner**

Microbiologist—University of Vienna Department of Microbiology and Ecosystem Science

RESEARCHING THE ROLE OF CHILDREN WITH GARGLE TESTS When it comes to the ecology of micro-organisms, Michael Wagner is one of the leading researchers in the world, which is why he was honoured with the FWF's Wittgenstein Award, Austria's highest research award, in 2019. With the start of the corona pandemic, he has also put his expertise to use in the field of medicine. Together with colleagues and the support of the WWTF, he founded the Vienna COVID-19 Detection Initiative (VCDI). This project converted laboratory equipment to perform corona tests, and a gargle pooling PCR test strategy has been developed which has received widespread use in Austria and abroad.

Wagner is also the initiator and research coordinator of the "gargle study" in *circa* 250 Austrian schools, which is designed to research the role of children and young people in the pandemic. "Children will not be vaccinated in the foreseeable future and will thus serve as a reservoir for the viruses for many months to come", says Wagner.



Learn more about Michael Wagner online.

### Yvonne Völkl

Literary and cultural scholar—University of Graz Department of Romance Languages

HOW WE THINK AND TALK ABOUT CORONA

LA VIDA EN TIEMPOS DEL CORONAVIELIS Antología

TRACTS

n handen es des houndes 16 heard / 1 hear some The corona pandemic has not only changed our lives but also the way we think and speak. Many new words have emerged, as well as new narratives of how we speak about corona. Literary and cultural scholar Yvonne Völkl is investigating different media from Romance-language countries to identify which narratives have spread and how they have changed.

Völkl's team, consisting of Albert Göschl, Elisabeth Hobisch, and Julia Obermayr, are trying to explore the dominant themes and get to the bottom of the narratological function of the virus and the representation of minorities within such a context. This includes questions such as how "corona fictions" control how we perceive lockdowns, social distancing, etc. and how "corona fictions" can contribute to our individual and collective resilience. The FWF is supporting her research through the SARS-CoV-2 Urgent Funding Programme.





Learn more about Yvonne Völkl online.

### Claus Lamm

Biological psychologist—University of Vienna Department of Cognition, Emotion, and Methods in Psychology

DOES STRESS Make People More Social?

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The measures used by the government to try to keep the corona pandemic under control—such as social distancing or curfews—put people under stress. We know from observations and experiments that stress encourages prosocial behaviour: It is precisely in stressful situations that we seek contact with people who support us in order to form alliances and thus cope with the extra strain. However, we are still in the dark about many details of this phenomenon.

Biopsychologist Claus Lamm is currently working together with colleagues from Switzerland on an international FWF project to research which processes are involved in the brain and under which conditions people are more prosocial, for example, sharing more fairly with others.



Learn more about Claus Lamm online.

### Silvia Jordan

Economist—University of Innsbruck Institute of Organisation and Learning

RELIABLE HEALTH DATA ARE IN SHORT SUPPLY

e Dolden Verfahren zum Herniefarkt (Datimitate 2010/2011) fanten Anlang 2010 ise in der folgenden Tabelie enstrutisch kaben sich die Upptenste der zum Krasiech in anfangs, Vasgefähast auflähigt im unterhandlähigt verladent. Des eight eine Opperbessenang von 100% (2 von 2 Kabenbäurung).

An Pheumonie (Distentiasis 2010/2011) worde nur ein Pies Review (restation bei der Pheumonie worde die Kodierung (188 2017) neu strukturet, für z Sass Ergebris-Monitoring ausgestetz. 2018 virhigt einest eine Indenti-Suwertrang und Auslyne des Themenyelbeits.

Im eine Verbindung zum Malinahmen Monitoring herzuhrlich in so ds auch bei der Pneumonie, wurden bereits alle vereinharten Mal-Seview Verfahren umgesetzt. The past months have shown that the quality of the healthcare system is a decisive factor in how a country fares during the corona pandemic. Reliable information is particularly important, as is the transparent communication of data. Austria, however, has some catching up to do here, as economist Silvia Jordan and her colleague Albrecht Becker have discovered through an FWF-funded project.

Although Austria introduced quality indicators for hospitals (known as A-IQIs) a few years ago, these frequently lack context, such as pre-existing conditions in cases of death, or the possibility to track medical histories after an in-patient stay. If there were greater transparency of information, says the researcher, risk groups could be better protected.

Economist Silvia Jordan (right) also knows the healthcare system from the inside.



Learn more about Silvia Jordan online.

## **Bernhard Kittel**

Political scientist and sociologist—University of Vienna Vienna Center for Electoral Research (VieCER)

THE SOCIAL FEVER CURVE OF THE CORONAVIRUS

1

11

At first, most people went along with the measures to contain the corona pandemic. It was a time of fear, but also confidence that it would be over soon. But with each week that the crisis goes on, this optimism is crumbling, a process that sociologist Bernhard Kittel and his colleagues at the University of Vienna have been following closely.

In the "Austrian Corona Panel", which was initiated with the support of the WWTF and can now be continued over the long term thanks to an urgent funding grant from the FWF, every month 1,500 people are surveyed in detail about their views, thus providing a kind of "social fever curve" of the coronavirus. Its interpretation is sobering: "The division of society has become more pronounced, solidarity has declined, and so has people's trust in the government and democracy", says Kittel.

Bernhard Kittel with his multidisciplinary team (from left to right): Sylvia Kritzinger, Hajo Boomgaarden, Barbara Prainsack, Bernhard Kittel



Learn more about Bernhard Kittel online.

### Livia Tomova

Psychologist — Massachusetts Institute of Technology (MIT) Department of Brain and Cognitive Sciences

HOW LONELINESS MANIFESTS IN THE BRAIN Livia Tomova is studying the effects of loneliness: As an FWF Schrödinger Fellow, the Viennese psychologist conducted research at the Massachusetts Institute of Technology (MIT) on brain activity after a short period of isolation to see how the desire for social interaction manifests in the brain.

This basic research suddenly became the focus of attention when the first lockdown began: "It is an irony of fate that we were able to complete our studies at the exact moment when the corona pandemic broke out globally and suddenly thrust our research into the limelight", says Tomova. She is now continuing her work on this topic as a research fellow at the University of Cambridge.



Learn more about Livia Tomova online.

## Robert Elsässer

Computer scientist — University of Salzburg

Department of Computer Science

ARE "TOUGH" CORONAVIRUS MEASURES NECESSARY? Mathematics is important for overcoming the corona pandemic. As part of an FWF-funded project, computer scientist Robert Elsässer and his team have created a simulation which allows predictions to be made on the effectiveness of measures to contain the spread of the virus.

Based on the likelihood of transmitting SARS-CoV-2, a mathematical model has been developed recently which takes into account the age distribution and the movement of people between school, work, and family. The result shows that "soft" lockdown measures (social distancing, masks, the closing of restaurants and hotels) can break the wave of infection only if at least 40 percent of the population has been immunised. Until then tougher measures are necessary, says Elsässer.



Learn more about Robert Elsässer online.

### **Ulrike Zartler**

Family sociologist—University of Vienna Department of Sociology

WHAT FAMILIES NEED IN TIMES OF LOCKDOWN

ZIB 2

The corona crisis demands a lot from families in particular. Working from home, distance learning, juggling multiple roles, and, above all, the uncertainty of how long this situation will last are placing many parents and children under enormous pressure. Family sociologist Ulrike Zartler, herself a mother of two schoolchildren, has gained a profound insight into the impacts of this exceptional situation.

Already during the first week of the lockdown in March 2020, she and her team at the University of Vienna started work on their longitudinal study "Corona and Family Life", in which roughly 100 parents with a total of 181 nursery or school age children are interviewed in detail. "Families need clarity, functioning childcare facilities, appreciation, and support from policy-makers", says Zartler. Her most recent study is funded by the FWF as part of the SARS-CoV-2 Urgent Funding Programme.



Learn more about Ulrike Zartler online.

## **Stefan Thurner**

Physicist and economist — Medical University of Vienna Center for Medical Statistics, Informatics, and Intelligent Systems (CeMSIIS)

THE COMPLEXITY OF THE PANDEMIC AND ITS IMPACTS

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ULS

Complex systems are his life: Stefan Thurner, professor at the Medical University of Vienna, head of the Complexity Science Hub Vienna, and multiple recipient of FWF funding, has been working for many years now on the sometimes surprising behaviour of social, economic, financial, healthcare, and biological systems.

The methods he has developed over the years have attracted wide public interest during the corona pandemic. For instance, the models created under Thurner's direction are being used as the basis for political decisions on measures to contain Covid infections. Thurner's team is also studying the impacts of the corona crisis, for example, on global supply chains or the security of food supply.



Learn more about Stefan Thurner online.

## Ursula Wiedermann-Schmidt

Immunologist — Medical University of Vienna

Center for Pathophysiology, Infectiology, and Immunology; Institute of Specific Prophylaxis and Tropical Medicine



The 27<sup>th</sup> of December 2020 was a historic day for Ursula Wiedermann-Schmidt: She administered the first corona vaccination in Austria. She did this in her role as a scientific member of the National Vaccination Board, whose task it is to decide how the vaccines can best be used. Wiedermann-Schmidt contributes her expertise as a professor of vaccinology, which she has acquired through many years of research and patient care.

The FWF has supported her since the early stages of her research career. She regularly shares her knowledge with the public in well-received media appearances in which she tackles highly controversial topics such as potential mandatory vaccination. Last year she was also a guest on the FWF's "Am Puls" science talk.





Watch her "Am Puls" science talk online (in German).

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### Andreas Bergthaler

Virologist—Austrian Academy of Sciences (ÖAW) Research Center for Molecular Medicine (CeMM)



Identify, detect, and localise mutations: These are the goals that molecular biologist Andreas Bergthaler is pursuing at the Research Center for Molecular Medicine (CeMM) of the Austrian Academy of Sciences (ÖAW). With the knowledge he has acquired through many years of basic research, since the beginning of the pandemic he and his team have been investigating how SARS-CoV-2 mutates, i.e., how it forms variants which in some cases are more contagious and lead to more severe illness.

Sequencing the virus's genome allows us to see how the distribution and the composition of the mutations are constantly changing. This knowledge is an important basis for future measures to contain the pandemic. The FWF was able to support Bergthaler's research through the SARS-CoV-2 Urgent Funding Programme.



Learn more about Andreas Bergthaler online.

### SARS-COV-2 URGENT FUNDING

### 05/2020

COVID-19 and RAS blockade

Manfred Hecking Medical University of Vienna, Department of Internal Medicine III

### 06/2020

Natural products against acute respiratory infections

**Judith Maria Rollinger** University of Vienna, Department of Pharmacognosy

### 07/2020

Austrian Corona Panel

**Bernhard Kittel** University of Vienna, Vienna Center for Electoral Research (VieCER)

### 07/2020

Influence of antihypertensive drugs on ACE2 in the lungs

**Oliver Langer** Medical University of Vienna, Department of Clinical Pharmacology

### 07/2020

SARS-CoV-2 research using a 3D respiratory model

Wilfried Posch Medical University of Innsbruck, Department of Hygiene, Microbiology and Public Health





in grants awarded

(As of 31 March 2021)

### 09/2020

SARS-CoV-2 antibodies in patients and health care workers

**Thomas A. Zelniker** Medical University of Vienna, Department of Internal Medicine II

### 09/2020

Alternative viral receptors enabling SARS-CoV-2 infection

Anna Ohradanova-Repic Medical University of Vienna, Centre for Pathophysiology, Infectiology and Immunology

### 09/2020

Logistics decision support in the pandemic crisis

**Karl Franz Dörner** University of Vienna, Department of Business Administration

### 09/2020

Impact of face masks on speech comprehension

Nathan Weisz University of Salzburg, Centre for Cognitive Neuroscience

### 09/2020

Stopping ACE inhibitor therapy for COVID-19

**Axel Bauer** Medical University of Innsbruck, Department of Internal Medicine III

### 09/2020

A SARS-CoV-2 human protein interaction map

Ulrich Stelzl University of Graz, Institute of Pharmaceutical Sciences

### SARS-COV-2 URGENT FUNDING

### 09/2020

Flexible flow synthesis of critical chiral medication

**Sándor Balázs Ötvös** University of Graz, Institute of Chemistry

### 11/2020

Couples' division of work during Covid lockdown

**Caroline Maria Berghammer** University of Vienna, Department of Sociology

### 10/2020

Performing gender in view of the outbreak

Silke Felber University of Music and Performing Arts Vienna, Department of Cultural Management and Gender Studies

### 10/2020

Ischgl follow-up study (FUPS Ischgl)

### Katherine Bates Medical University of Innsbruck, Department of Medical

Statistics, Informatics, and Health Economics

### 12/2020

Cold atmospheric plasma for viral decontamination

**Thomas Lion** St. Anna Children's Hospital

### 02/2021

Corona Fictions. On viral narratives in times of pandemics

**Yvonne Völkl** University of Graz, Department of Romance Languages

### 02/2021

Translocon-based development of antiviral compounds

Peter Pohl University of Linz, Institute of Biophysics

### 02/2021

Microscopic viscoelasticity of COVID-19 plasma and serum

Kareem Elsayad Vienna Biocenter Core Facilities, Advanced Microscopy Facility

### 03/2021

03/2021

Ulrike Zartler University of Vienna,

Parents and the

COVID-19 pandemic

Department of Sociology

MicroRNAs as predictive markers in COVID-19

Alice Assinger Medical University of Vienna, Center for Physiology and Pharmacology

### 03/2021

SARS-CoV-2 within-host diversity and transmission

Andreas Bergthaler Austrian Academy of Sciences, CeMM – Center for Molecular Medicine

### 03/2021

Cov\_enable: Re-imagining vulnerabilities in times of crises

**Oliver Koenig** Bertha von Suttner Private University St. Pölten, Department of Human Sciences

Learn more about the funded projects online (in German).



### **FWF VIDEOS: SCIENCE IN MOTION**

### A MUSICAL MAP OF VIENNA

An interactive and interdisciplinary project which allows you to experience Vienna, the city of music, in all its dimensions. Through the assistance of the Austrian Science Fund (FWF), a research team led by music historian Susana Zapke has reconstructed Vienna's tapestry of sounds from 1945 to the present day.





### BETTER PROTECTION IN THE CASE OF BEE STING ALLERGIES

For about three percent of the Austrian population, insect venoms can be dangerous or even fatal. With the help of funding from the FWF, molecular biologist Irene Mittermann is searching for a vaccine that can save the lives of people who have allergic reactions to the stings of bees and wasps.





### THE BEST OF ALL WORLDS

Artist, diplomat, or researcher? Alice Vadrot considers her chosen career path—research—to be the "best of all worlds". At the University of Vienna, the research interests of this political scientist and former FWF Schrödinger Fellow include consideration of worldwide policy on the protection of biodiversity, as well as the difficult question, who owns the sea?







### "WE ARE LIVING ON A FRAGILE SURFACE"

According to estimates, the universe contains several 100 billion stars and, thus, many planetary systems. With the support of the FWF, astrophysicist Manuel Güdel is exploring on which of these life would be possible. Güdel's interest in astronomy was first awakened by the mission Apollo 11, the spaceflight that first landed humans on the Moon. Having learned a great deal about the development of planetary systems since then, he has realised just how fragile our home planet Earth is. "We should take good care of it", the researcher warns.





### POST-WAR EUROPE As reflected by the esc

The Croatian-Australian historian Dean Vuletic carries out research at the University of Vienna's Research Center for the History of Transformations (RECET). In recent years, Vuletic has been digging through countless Eurovision Song Contests (ESC), songs, files, papers, and anecdotes in order to assess the importance of the ESC for Europe's postwar history. In his FWF-funded project, he explores the ESC's Eastern European counterpart—the Intervision Song Contest—and addresses the prejudices that surround it.









## Award winners

### WITTGENSTEIN AWARD WINNERS 1996-2019

### 1996

Erwin F. Wagner

Morphogenesis of the vertebrate face

Ruth Wodak Discourse, politics, identity

### 1997

### Georg Gottlob

Information systems and artificial intelligence

### Erich Gornik

Semiconductor nanoelectronics

### Antonius und Marjori Matzke

Epigenetic silencing of plant transgenes

### 1998

Walter Schachermayer

Stochastic processes in finance

### Peter Zoller

Theoretical quantum optics and quantum information

### 1999

Kim Ashley Nasmyth Yeast cell cycle

### 2000

Andre Gingrich Local identities and wider influences

Peter A. Markowich

### 2001

Meinrad Busslinger Molecular mechanisms of lineage commitment in the hematopoietic system

Heribert Hirt Cell division control in plants

### 2002

### Ferenc Krausz

Quantum optics: Ultrafast and high-field processes

### 2003

### Renée Schroeder

RNA folding and catalysis, RNA-binding antibiotics

### 2004

Walter Pohl

Early medieval history and culture

### 2005

### Barry J. Dickson

The development and function of neutral circuits

### Rudolf Grimm

Atomic and molecular quantum gases

### 2006

### Jörg Schmiedmayer

Atomic physics, quantum optics, miniaturising on a chip

### 2007

### Christian Krattenthaler

Classic combinatorics and applications

### Rudolf Zechner

Metabolic lipase in lipid and energy metabolism

### 2008

### Markus Arndt

Quantum interference with clusters and complex molecules

### 2009

Jürgen A. Knoblich

Asymmetric cell division

### **Gerhard Widmer**

Computer science, Al, music

### 2010

Wolfgang Lutz Demography

### 2011

### Gerhard J. Herndl

Microbial oceanography, marine biochemistry

### Jan-Michael Peters

Chromosome segregation during human cell division

### 2012

### Thomas A. Henzinger

Formal methods for the design and analysis of complex systems

Niyazi Serdar Sariçiftçi <sup>Solar energy conversion</sup>

### 2013

Ulrike Diebold Surface science

### 2014

Josef Penninger Functional genetics

### 2015

Claudia Rapp Byzantium, late antiquity, social and cultural history

### 2016

### Peter Jonas

Neurology (synaptic communication in neuronal microcircuits)

### 2017

### Hanns-Christoph Nägerl

Experimental physics: Ultracold quantum matter

### 2018

### Herbert Edelsbrunner

Mathematics, computer science

### Ursula Hemetek

Minority research in ethnomusicology

### 2019

### Philipp Ther

The great transformation: A comparative social history of global upheavals

### Michael Wagner

Microbiology

### WITTGENSTEIN AWARD WINNER 2020



### **ADRIAN CONSTANTIN**

Adrian Constantin has held the position of Professor at the University of Vienna's Department of Mathematics since 2008. The Romanian-born scientist's research fields include non-linear, partial differential equations in the area of fluid motion as well as mathematical descriptions of natural phenomena. Since 2010 Constantin has ranked among the "ISI Highly Cited Researchers", a list of the 250 most cited scientists in the field of mathematics. Adrian Constantin has received numerous awards and honours, such as the Göran Gustafsson Award of the Royal Swedish Academy of Sciences, the Friedrich Wilhelm Bessel Award of the German Humboldt Foundation and an ERC Advanced Grant. Within the context of his research, he is currently investigating vortex distribution in ocean waves, which is relevant for the prediction of tsunamis.

### Understanding the earth's waves and currents

Numerous large-scale movements occur in the atmosphere and oceans that can be described as currents or waves. Previous modelling is greatly simplified and fails to take account of many points of geophysical relevance. With the help of the Wittgenstein Award, Adrian Constantin wants to bridge these gaps and present detailed mathematical descriptions of the physical processes.

### Jury statement: Pioneering contributions to mathematics

"Adrian Constantin has made trailblazing contributions to the mathematics of wave propagation", noted the START-Wittgenstein jury in its statement. His investigations and the methods he has developed have paved the way for new avenues of research and have been applied to a wide range of wave phenomena observed in nature, such as tsunamis. The jury particularly highlighted the numerous outstanding young researchers who have benefited from the training received in his research groups.

### START AWARD WINNERS 1996-2019

### 1996

Christian Köberl Ferenc Krausz Ulrich Schmid Peter Szmolyan Karl Unterrainer Harald Weinfurter Gerhard Woeginger Jakob Woisetschläger

### 1997

Gerhard Holzapfel Bernhard Palme Michael Schmid

### 1998

Peter Grabner Gottfried Kirchengast Rudolf Valenta Gerhard Widmer

### 1999

Christoph Marschner Norbert J. Mauser Otmar Scherzer Thomas Schrefl Christoph Spötl Joseph Strauss

### 2000

Thomas Brabec Susanne Kalss Dietrich Leibfried Herbert Strobl Bernhard Tilg

### 2001

Markus Arndt Michael Buchmeiser Wolfgang Drexler Wilfried Ellmeier Clemens Sedmak

### 2002

Wolfgang Heiss Michael Jursa Georg Schett Dieter Schmalstieg Joachim Schöberl

### 2003

Georg Kresse Hanns-Christoph Nägerl Andreas Villunger

### 2004

Thomas Bachner Michael Kunzinger Vassil Palankovski Thomas Prohaska Gerhard Schütz

### 2005

Michael Hintermüller Matthias Horn Alexandra Lusser Michael Moser Norbert Zimmermann

### 2006

Hartmut Häffner Norbert Polacek Piet Oliver Schmidt Josef Teichmann Gerald Teschl

### 2007

Kathrin Breuker Thomas Bugnyar Otfried Gühne Bernhard Lamel Thomas Lörting Paul Mayrhofer Sigrid Wadauer Thomas Wallnig

### 2008

Markus Aspelmeyer Tom Battin Massimo Fornasier Daniel Grumiller Alexander Kendl Karel Riha Kristin Tessmar-Raible Christina Waldsich

### 2009

Francesca Ferlaino Ilse Fischer Arthur Kaser Manuel Kauers Thorsten Schumm David Teis

### 2010

Julius Brennecke Barbara Horejs Barbara Kraus Melanie Malzahn Florian Schreck Bojan Zagrovic

### 2011

Peter Balazs Agata Ciabattoni Sebastian Diehl Alwin Köhler Thomas Müller Peter Rabl Michael Sixt Philip Walther

### 2012

Kaan Boztug Julia Budka Alexander Dammermann Jürgen Hauer Sofia Kantorovich Michael Kirchler Franz Schuster

### 2013

Stefan L. Ameres Notburga Gierlinger Clemens Heitzinger Georgios Katsaros David A. Keays Ovidiu Paun Thomas Pock Paolo Sartori Stefan Woltran

### 2014

Markus Aichhorn Bettina Bader Mathias Beiglböck Alexander Grüneis Sigrid Neuhauser Manuel Schabus Karin Schnass Rene Thiemann

### 2015

Christoph Aistleitner Ivona Brandic Marcus Huber Ben Lanyon Gareth Parkinson Rupert Seidl Kristina Stöckl Caroline Uhler

### 2016

Christopher Campbell Michael Eichmair Harald Grobner Felix Höflmayer Nikolai Kiesel Tracy Northup

### 2017

Hannes A. Fellner Vera Fischer Claudine Kraft Wolfgang Lechner Andrea Pauli Miriam Unterlass

### 2018

Emanuela Bianchi Josef Norbert Füssl Philipp Haslinger Oliver Hofmann Robert R. Junker Gina Elaine Moseley

### 2019

Moritz Brehm Christa Cuchiero Bruno De Nicola Christoph Gammer José Luis Romero Richard Wilhelm

### **START AWARD WINNERS 2020**



### **ALICE AUERSPERG**

University of Veterinary Medicine Vienna Messerli Research Institute

### Innovative use of tools in a parrot

How did we come to start using objects as tools? In order to gain a better understanding of our own technical evolution, it is important to explore the reasons for tool use in animals. Comparisons with distantly related animal species that have similar abilities can supply very useful information. Although more than 300 million years of evolution separate us from the Goffin's cockatoo, this bird can use and even craft specific tools on a level similar to higher primates. This project will use a comparative study to investigate what triggers tool use in a non-primate from several different perspectives. The aim is to develop a new model for the conditions that trigger the emergence of tool use.



### **ELISA DAVOLI**

Vienna University of Technology Institute for Analysis and Scientific Computing

### Smart materials: Geometry, nonlocality, chirality

Tunable (or smart) materials are a special class of metamaterials that are responsive to changes in the external environment. Because of this property, they are considered to be the future of optical data processing, quantum information, and next-generation technologies. The project aims to explore three fundamental questions: In what way is the effective material response of an intelligent material influenced by the geometric distribution of its components? How do non-local effects interact with time-evolving phase transitions and with the possible onset of microstructures? How do the chiral properties of an active metamaterial interact with its macroscopic tunability?





University of Innsbruck Institute of Theoretical Physics

Universal spin models, Turing machines, and neural networks

The main goal of this project is to discover the relationship between universal spin models and universal Turing machines, as well as between universal spin models and universality in neural networks, and to explore the implications of this. The project will put classical spin models, machines, and neural networks on the same level by establishing strict links between them and their concepts of universality. In this way, the underlying ideas, evidence, efficiency, and limitations of these previously unconnected disciplines will cross-fertilise each other.



### **ROBERT GANIAN**

Vienna University of Technology Institute of Logic and Computation

Parameterised analysis in artificial intelligence

A well-established paradigm for the fine-grained analysis of computational problems, parameterised complexity theory, has been used very successfully in many areas of computer science, but it has clear shortcomings in basic research into artificial intelligence (AI) and machine learning (ML). The goal of this project is to remedy this situation and develop a parameterised toolkit for AI and ML problems, and to establish a theory of parameterised sample complexity. In this way, the project will drastically improve our understanding of which AI and ML problems can be solved efficiently.

### **START AWARD WINNERS 2020**



### **JULIA LAJTA-NOVAK**

University of Vienna Department of English and American Studies

Poetry off the page: British poetry performance, 1965–2015

The project investigates the significance of poetry performance in recent British literary history, taking into account the aesthetic and semantic potential of oral performance, alternative institutional structures, publication channels, career paths, presentation formats, styles, and poetic genres that have emerged from the performance scene. The project will provide a prototype and toolbox for a new branch of historical-literary research beyond the British context. It will provide the essential groundwork to establish poetry performance studies as an interdisciplinary field of research on an international level.



### **ALEKSANDAR MATKOVIC**

University of Leoben Department of Physics

The invincible iron talc: 2D magnetic layers

After the discovery of graphene, the first two-dimensional (2D) material to be isolated, it took more than a decade to detect ferromagnetism in 2D materials, but only at low temperatures and with a lack of stability in air. In order to overcome these deficits, the project aims to study iron-rich talc crystals and layered hydroxides, rare minerals that were previously overlooked in the search for magnetic layered silica. Using the insights gained from this, the researcher plans to synthesise magnetic silicate monolayers. The results are expected to lead to a breakthrough in the field of 2D magnetism and new applications ranging from data storage to biotechnology.



### **BIRGITTA SCHULTZE-BERNHARDT**

Graz University of Technology Department of Experimental Physics

ELFIS: Electronic fingerprint spectroscopy

Photochemical processes in which atoms and molecules form new compounds under the influence of light are of the utmost importance for life. Although UV radiation is particularly significant in the excitation of electrons at the beginning of a reaction, there is often a lack of spectroscopic information in this spectral range. Based on the latest developments in laser technology, ELFIS will improve absorption spectroscopy in this frequency range and provide a new perspective on light-induced dynamics in molecules, which is of immediate relevance for both basic research and environmental sensing.



### decision-making bodies Organisation and

### Supervisory Board



Appointed by Assembly of Delegates (4), FWF Works Council (1), BMK (1), BMBWF (3) and elected member (1)

### **Executive Board**



President, Executive Vice-President, 3 Vice-Presidents of Research

### Assembly of Delegates



32 voting members of the universities, non-university research institutions, and stakeholders, as well as (non-voting) BMK (1), BMBWF (1), FWF Executive Board (5)

### FWF Board



32 reporters from all disciplines (and 32 alternates) as well as the FWF Executive Board

### **EXECUTIVE BOARD**

6<sup>th</sup> term (since September 2020)

### President

Christof Gattringer (since 8 April 2021) Gregor Weihs (1 January 2021–7 April 2021) Klement Tockner (until 31 December 2020)

### **Executive Vice-President**

Artemis Vakianis (until 31 May 2021) Ursula Jakubek (from 1 June 2021)

### Vice-President

Humanities and Social Sciences

### Gerlinde Mautner

Vienna University of Economics and Business Institute for English Business Communication

### Vice-President

Natural Sciences and Engineering

### **Gregor Weihs**

University of Innsbruck Department of Experimental Physics

### Vice-President

**Biology and Medical Sciences** 

### Ellen Zechner

University of Graz Institute of Molecular Biosciences





Klement Tockner

Christof Gattringer



Artemis Vakianis

Ursula Jakubek



Gerlinde Mautner



**Gregor Weihs** 



Ellen Zechner

### SUPERVISORY BOARD

6<sup>th</sup> term (2019-2023)

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### Sonja Puntscher Riekmann

University of Salzburg, Salzburg Centre of European Union Studies

### **Deputy Chair**

Eva Liebmann-Pesendorfer Institute for Advanced Studies (IHS)

### Members

Gabriele Ambros Forschung Austria, Verlag Holzhausen GmbH

### Martha Brinek

BMBWF– Federal Ministry of Education, Science and Research

### Iris Fortmann

Works Council FWF

### Martin Grötschel

Berlin Brandenburg Academy of Sciences and Humanities, Germany

### Renate E. Meyer

Vienna University of Economics and Business, Institute for Organization Studies

### Johanna Rachinger

Austrian National Library

### Barbara Sporn

Vienna University of Economics and Business, Institute for Higher Education Management

### Hans Sünkel

Austrian Academy of Sciences, Institute for Space Research

### **Consultant Members**

Martin Gerzabek Christian Doppler Research Association

### Gertrude Tumpel-Gugerell

### **ASSEMBLY OF DELEGATES**

6<sup>th</sup> term (2019–2023)

Institution	Member	Deputy
Academy of Fine Arts Vienna	Michaela Glanz	—
Austrian Institute of Technology GmbH	Wolfgang Knoll	Katja Lamprecht
BMK – Federal Ministry for Climate Action, Environment, Energy, Mobility, Innovation, and Technology (non-university research)	Iris Filzwieser	Elke Guenther
Danube University Krems	Viktoria Weber	Friedrich Faulhammer
Institute of Science and Technology Austria	Thomas A. Henzinger	Carl-Philipp Heisenberg
Ludwig Boltzmann Association	Sylvia Knapp	Martina Mara
Medical University of Graz	Caroline Schober-Trummler	Michael Speicher
Medical University of Innsbruck	Christine Bandtlow	Günter Weiss
Medical University of Vienna	Michaela Fritz	Michael Freissmuth
Montanuniversität Leoben	Wilfried Eichlseder	Oskar Paris
Austrian Academy of Sciences	Oliver Jens Schmitt	Georg Brasseur
Austrian Conference of Universities of Applied Sciences	Johann Kastner	Andreas Altmann
Austrian National Union of Students	Desmond Grossmann	—
Austrian Conference of Private Universities	Rudolf Mallinger	Stefan Hampl
Graz University of Technology	Horst Bischof	Gernot Müller-Putz
Vienna University of Technology	Johannes Fröhlich	Ulrike Diebold
University of Applied Arts Vienna	Alexander Damianisch	Barbara Putz-Plecko
University of Natural Resources and Life Sciences, Vienna	Christian Obinger	Hubert Hasenauer
University of Art and Design Linz	Karin Harrasser	Thomas Macho

### Chair

### Michaela Fritz

Medical University of Vienna

### Deputy Chair

### Horst Bischof

Graz University of Technology

University of Music and Performing Arts Graz	Gerd Grupe	Roland Reiter
University of Music and Performing Arts Vienna	Therese Kaufmann	Nikolaus Urbanek
University of Graz	Christof Gattringer (until 7 April 2021)	Petra Schaper-Rinkel
University of Innsbruck	Ulrike Tanzer	Bernhard Fügenschuh
University of Klagenfurt	Martina Merz	Friederike Wall
Johannes Kepler University Linz	Alberta Bonanni	Peter Paule
Mozarteum University Salzburg	Eugen Banauch	Elisabeth Gutjahr
University of Salzburg	Nicola Hüsing	Hendrik Lehnert
University of Vienna	Jean-Robert Tyran	Heinz Engl
University of Veterinary Medicine Vienna	Otto Doblhoff-Dier	Veronika Sexl
Vienna University of Economics and Business	Michael Lang	Reinhard Sefelin

### Non-voting members

FWF Executive Board	Christof Gattringer	(since 8 April 2021)
	Artemis Vakianis	(until 31 May 2021)
	Ursula Jakubek	(since 1 June 2021)
	Gerlinde Mautner	
	Gregor Weihs	
	Ellen Zechner	
Federal Ministry of Education,	Eva Gottmann	Wolfgang Neurath
Science, and Research		
BMK	Silvia Neumann	Margit Harjung

FWF Executive Board

### **BIOLOGY AND MEDICAL SCIENCES**

Discipline	Reporter	Deputy
Biology I	Ilse Kranner University of Innsbruck	Kristina Sefc University of Graz
Biology II	Elisabeth Haring Natural History Museum Vienna	Jillian Petersen University of Vienna
Genetics/Microbiology, Biotechnology/ System Biology	Joachim Reidl University of Graz	Alexander Stark IMP
Cell Biology	Ludger Hengst Medical University of Innsbruck	Eva Stöger University of Natural Resources and Life Sciences, Vienna
Biochemistry and Structural Biology	Fatima Ferreira-Briza University of Salzburg	Ruth Prassl Medical University of Graz
Neurosciences I	Bernhard E. Flucher Medical University of Innsbruck	Claus Lamm University of Vienna
Neurosciences II	Georg Widhalm Medical University of Vienna	Gaia Novarino IST Austria
Biomedical Research I	Akos Heinemann Medical University of Graz	Wilfried Ellmeier Medical University of Vienna
Biomedical Research II	Barbara Kofler Paracelsus Medical University	Florian Grebien Univ. of Veterinary Medicine, Vienna
Biomedical Research III	Marcus Hacker Medical University of Vienna	Till Rümenapf Univ. of Veterinary Medicine, Vienna
Clinical Research I	Thomas Bauernhofer Medical University of Graz	Eva Schernhammer Medical University of Vienna
Clinical Research II	Christoph J. Binder ÖAW/Medical Univ. of Vienna	Kathrin Eller Medical University of Graz

### HUMANITIES AND SOCIAL SCIENCES

.....

Business and Economics	Paul Schweinzer University of Klagenfurt	Michaela Trippl University of Vienna
Political Science, Law, and	Jessica Fortin-Rittberger	Susanne Kalss
Administrative Sciences	University of Salzburg	Vienna Univ. of Economics and Business

Sociology and Inter-	Libora Oates-Indruchová	Daniel Barben
disciplinary Social Sciences	University of Graz	University of Klagenfurt
Psychology and	Tobias Greitemeyer	Helga Fasching
Educational Sciences	University of Innsbruck	University of Vienna
Philosophy, Theology,	Max Kölbel	Ruth Sonderegger
and Cultural Studies	University of Vienna	Academy of Fine Arts Vienna
Historical Studies	Claudia Kraft University of Vienna	Christina Antenhofer University of Salzburg
Classical Studies	Erich Kistler University of Innsbruck	Reinhard Wolters University of Vienna
Literary Studies	Christopher F. Laferl	Ulrike Jessner-Schmid
and Linguistics	University of Salzburg	University of Innsbruck
Art and Art History	Eva Kernbauer University of Applied Arts Vienna	Federico Celestini University of Innsbruck

### NATURAL SCIENCES AND ENGINEERING

Mathematics I	Michael Drmota Vienna University of Technology	Verena Bögelein University of Salzburg
Mathematics II	Erika Hausenblas Montanuniversität Leoben	Laszlo Erdös IST Austria
Informatics I	Silvia Miksch Vienna University of Technology	Ana Sokolova University of Salzburg
Informatics II	Thomas Pock Graz University of Technology	Bernhard Rinner University of Klagenfurt
Experimental Physics	Andreas Ney University of Linz	Hartmut Abele Vienna University of Technology
Theoretical Physics and Astrophysics	Josef Pradler ÖAW	Markus Aichhorn Graz University of Technology
Inorganic Chemistry	Erik Reimhult Univ. of Natural Resources & Life Sciences, Vienna	Julia Kunze-Liebhäuser University of Innsbruck
Organic Chemistry	Nuno Maulide University of Vienna	Rolf Breinbauer Graz University of Technology
Geosciences	Rainer Abart University of Vienna	Georg Kaser University of Innsbruck
Engineering Sciences	Tibor Grasser Vienna University of Technology	Martin Horn Graz University of Technology
Material Sciences	Andreas Ludwig Montanuniversität Leoben	Paul Heinz Mayrhofer Vienna University of Technology

### INTERNATIONAL START/ WITTGENSTEIN JURY

### **Biology and Medical Sciences**

Bruce Beutler University of Texas, USA

Adrian Bird University of Edinburgh, UK

Carlo Croce Ohio State University, USA

Christine Foyer University of Leeds, UK

### **Humanities and Social Sciences**

Robin Mansell London School of Economics and Political Science, UK

Peter van Dommelen Brown University, USA

Janet Wolff (Chair) University of Manchester, UK

### **Natural Sciences and Engineering**

Christoph Beckermann The University of Iowa, USA

Carlo W. J. Beenakker Leiden University, Netherlands

Stefan Hell Max Planck Institute for Biophysical Chemistry, Germany

Gitta Kutyniok Technical University Berlin, Germany

Mira Mezini Technical University Darmstadt, Germany

### **EQUAL OPPORTUNITIES**

Executive Board
Supervisory Board
Assembly of Delegates <sup>1</sup>
Strategic Advisory Board
FWF Board BIOMED
FWF Board HUMSOC
FWF Board NATTEC
PEEK Board
WKP Jury
International START/Wittgenstein Jury
Staff <sup>2</sup>

### PEEK BOARD

Darla Crispin Norwegian Academy of Music, Norway

Lynn Hughes Concordia University, Canada

Sandra Kemp Imperial College, UK

Michael Punt University of Plymouth, UK

Anton Rey (Chair) Zurich University of the Arts, Switzerland

Marc Aurel Schnabel Victoria University of Wellington, NZ

### FWF gender data (female/male)

5	3/2
10	8/2
58	22/36
8	4/4
24	11/13
18	9/9
22	5/17
6	3/3
6	3/3
12	5/7
125	90/35

 voting members
 incl. part-time staff and freelancers; excl. staff on parental leave and Executive Board members
 (as of 31 December 2020)

### WKP JURY

Gian-Andri Casutt Beate Langholf Oliver Lehmann Christian Müller Jutta Rateike Barbara Streicher

### INTERNATIONAL Strategic Advisory Board

### Jutta Allmendinger

Professor of Educational Sociology and Labour Market Research, Humboldt University, Berlin; President of the Berlin Social Science Centre (WZB)

### Dymph van den Boom

Professor of Education, University of Amsterdam; former Rector of the University of Amsterdam and the Amsterdam University of Applied Sciences

### Stephen Curry

Professor of Structural Biology, Imperial College London; Panel member of the European Research Council (ERC)

### Lino Guzzella

Professor of Thermotronics, ETH Zurich; former President of ETH Zurich

### Hermann Parzinger

Professor of Prehistoric Archaeology, Free University of Berlin; President of the Prussian Cultural Heritage Foundation, Berlin

### Sarah de Rijcke

Professor of Science, Technology, and Innovation Studies, Scientific Director of the Centre for Science and Technology Studies, Leiden University; Co-chair of the Research on Research Institute (RoRI)

### Sverker Sörlin

Professor of the History of Science, Technology, and the Environment, KTH Royal Institute of Technology Stockholm; Member of the Swedish Climate Policy Council

### Ulrike Tillmann

Professor of Mathematics, Oxford University; Council Member of the Royal Society, UK



# FWF programmes

### EXPLORING NEW FRONTIERS: FUNDING OF TOP-QUALITY RESEARCH

### SUPPORT FOR Stand-Alone Projects

### **Stand-Alone Projects**

### Objective:

> To enable scholars to carry out projects in basic research

### 1000 Ideas Programme

### Objectives:

- > To encourage risk-taking, foster creativity, and facilitate the development of novel, innovative research domains
- > To focus on high-risk, original, or transformative research at an early stage
- > To address visionary research ideas that cross disciplinary boundaries and/or are not yet the subject of debate in academic research and/or in society

### **INTERNATIONAL PROGRAMMES**

### Transnational Funding Activities

### Objective:

 To enable scholars to carry out closely integrated bilateral or multilateral projects in basic research

### Funding programmes:

- Joint projects: Bi- and trilateral research projects, sometimes with a specific focus
- > ERA NET calls: Multilateral (European) research cooperation with a specific focus
- Joint seminars: Seminar events to initiate cooperative projects

### **PRIORITY RESEARCH PROGRAMMES**

### Special Research Programmes (SFB)

### **Objectives:**

- > To create areas of focus for research at one or more locations
- > To develop extremely productive, tightly interconnected research units for long-term and interdisciplinary work on complex research topics

### **Research Groups**

### **Objectives:**

- > To fund cooperative projects between researchers at research institutions with more limited infrastructure or in certain disciplines that cooperate on smaller scales
- > To cooperate on medium-term projects on a complex, current topic in mixed teams of 3 to 5 researchers
- > To promote inter- or multidisciplinary, innovative research collaboration that explores a topic in more depth or breadth
- To integrate young researchers into a leadership role
- To define an internationalisation strategy to connect with the international scientific community

### **AWARDS AND PRIZES**

### **START Programme**

### **Objectives:**

- To provide outstanding young scholars with long-term support to carry out basic research
- > To help researchers gain the qualifications necessary for leadership positions in research by developing, growing, and managing their own working groups

### Wittgenstein Award

### **Objectives:**

- To provide outstanding established scholars with long-term support to carry out basic research
- To give those researchers maximum freedom and flexibility in pursuing their research

### **Weiss Prize**

(funded by the Dr Gottfried and Dr Vera Weiss Science Foundation)

### Objective:

 To enable (young) scholars to carry out basic research in the fields of meteorology or anaesthesiology

### netidee SCIENCE

(funded by the Internet Foundation Austria)

### **Objectives:**

- > To make a sustainable contribution to expanding, strengthening, and preserving the benefits of the internet for all members of society
- > To support researchers from all disciplines who can help to achieve the foundation's objectives in the fields of technology, the natural sciences, business and economics, and the social sciences

### **ASMET Research Award**

(on behalf of the Austrian Society of Metallurgy and Materials)

### Objective:

> To support researchers in the fields of metallurgy and materials development with a focus on the use of AI methods

### Projects Herzfelder-Stiftung

.....

(on behalf of the Herzfelder'sche Familienstiftung)

### Objectives:

- To enable scholars to carry out basic research in the field of biochemical/ medical cell research
- > To support research into cell changes and ageing as well as the search for new means of influencing these processes

### Alternative Methods to Animal Testing

### Objectives:

- To support scholars in the research and development of alternative methods to animal testing
- > To develop research and testing methods that completely replace animal testing (replacement), reduce the number of animals used (reduction), or minimise the animals' pain and distress (refinement)

### CULTIVATING TALENTS: HUMAN RESOURCES DEVELOPMENT

### **DOCTORAL PROGRAMMES**

### doc.funds\*

### Objectives:

- > To promote outstanding education and training for doctoral students on existing internationally oriented doctoral programmes with clearly defined structures and quality standards
- > To reinforce the research orientation and sustained consolidation of existing education and training structures for highly qualified junior researchers

### doc.funds.connect

### Objectives:

- > To establish and facilitate doctoral programmes developed and organised by a university and a university of applied sciences based on international standards
- > To ensure an excellent education and training for PhD candidates through the creation of sustainable cooperative education and research structures between universities of applied sciences and universities
- To strengthen the cooperation between universities of applied sciences and universities

- To promote the career development of research staff at universities of applied sciences
- > To integrate basic research and applied research in the domain of doctoral education and to establish application-oriented basic research

### **POSTDOC PROGRAMMES**

### ESPRIT

### **Objectives:**

- > To promote excellent, innovative research
- To retain, attract, and win back outstanding researchers and thus strengthen Austrian research institutes
- To support outstanding female researchers
- > To promote career and skills development (develop/establish a researcher's profile based on an independent research project)
- To enhance career prospects (boost competitiveness through publications, collaboration, and increased visibility)

## Young Independent Researcher Groups\*

#### Objectives:

- > To promote cooperation and networking among internationally outstanding young researchers through interdisciplinary research cooperation (for up to four years) in teams of at least three but no more than five researchers
- > To promote advanced interdisciplinary research into complex issues at a minimum of two research institutions or two organisational units of a single institution

## **INTERNATIONAL MOBILITY**

## Schrödinger Fellowship

#### **Objectives:**

- > To help (young) scholars work on basic research at leading research institutions outside Austria
- To help post-doc researchers gain experience abroad
- > To facilitate access to new fields of research, methods, procedures, and techniques, so that researchers can contribute to the development of their fields

## CAREER DEVELOPMENT FOR FEMALE RESEARCHERS

#### **Richter Programme**

#### **Objectives:**

- To enable female scholars to carry out basic research
- > To support the development of women's academic careers and help them obtain the qualifications necessary for a professorship in Austria or abroad

## **Richter PEEK**

#### **Objectives:**

- > To enable female scholars to carry out innovative arts-based research projects
- > To support the development of women's academic careers and help them obtain the qualifications necessary for a professorship in Austria or abroad

 Made possible by a special endowment of the National Foundation. The continuation of the programmes is uncertain and depends on what form the Fonds Zukunft Österreich will take.

# REALISING IDEAS: INTERACTIVE EFFECTS SCIENCE - SOCIETY

# APPLICATION-ORIENTED BASIC RESEARCH

## Programme Clinical Research (KLIF)

#### Objectives:

.....

- > To enable scholars to carry out clinical research projects
- To generate new knowledge and insights in order to improve clinical practice
- To optimise diagnostic and therapeutic procedures

# SUPPORT FOR TRANSDISCIPLINARY RESEARCH

## #ConnectingMinds\*

#### Objectives:

- > To support teams that combine scientific and societal knowledge to meet looming social, technological, ecological, and economic challenges
- > To strengthen the dialogue between science and society as well as increase the transfer of research results into practice
- To improve the ability of researchers to build capacity in terms of transdisciplinary research

## SUPPORT FOR ARTISTIC RESEARCH

## Programme for Arts-based Research (PEEK)

#### Objectives:

- > To enable scholars to carry out innovative arts-based research projects
- > To increase awareness of arts-based research and its potential applications among a broader audience and within the research and arts communities

## SUPPORT FOR SCIENTIFIC Publications and for science communication

## **Stand-Alone Publications**

#### Objective:

> To support the publication of standalone scholarly works in an appropriate and economical manner using conventional or digital publication formats

## **Peer-Reviewed Publications**

#### Objective:

> To support the publication of peer-reviewed works

## Science Communication Programme (WissKomm)

#### Objective:

 To support outstanding sciencecommunication measures related to a research project funded by the FWF

## EXPANSION PROJECTS TO FWF-FUNDED PROJECTS

## Top Citizen Science Funding Initiative

#### **Objectives:**

- > To support research activities that promote the active involvement of citizens
- To incorporate the skills, expertise, curiosity, and willingness of citizens to participate in science projects

 Made possible by a special endowment of the National Foundation. The continuation of the programmes is uncertain and depends on what form the Fonds Zukunft Österreich will take.



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Key information on the annual accounts for 2020 will be published on the FWF website in mid-June 2021.



# **RESEARCH FUNDING OVERVIEW**

NUMBER OF GRANTS	Assess applicatio		Projects approved			Approval rate (%)	
Programmes	2019	2020	2019	2020	2019	2020	
Stand-Alone Projects (incl.clinical research)	1,169	1,201	331	303	28.3	25.2	
1000 Ideas Programme	-	401	-	24	-	6.0	
#ConnectingMinds Workshop	-	56	-	11	-	19.6	
Doctoral Programmes (DK): Extensions	3	4	2	3	66.7	75.0	
doc.funds	28	30	6	4	21.4	13.3	
Schrödinger Programme	129	123	50	53	38.8	43.1	
Meitner Programme	221	207	64	52	29.0	25.1	
Career Development for Female Researchers	159	163	45	42	28.3	25.8	
START Programme and Wittgenstein Award	109	139	8	8	7.3	5.8	
Young Independent Researcher Groups	-	23	-	4	-	17.4	
Research Groups <sup>1, 2, 3</sup>	5	31	3	15	7.7	12.0	
Special Research Programmes (SFB): New applications <sup>1, 2</sup>	56	38	45	18	25.0	11.8	
Special Research Programmes (SFB): Extensions <sup>1, 2</sup>	9	29	8	29	88.9	100.0	
International Programmes	491	495	124	130	25.3	26.3	
Top Citizen Science	21	14	4	3	19.0	21.4	
Science Communication Programme	29	22	6	7	20.7	31.8	
Quantum Research and Technology (QFTE)	-	4	-	2	-	50.0	
Total	2,489	2,980	707	708	26.8	23.0	
Female Male	857 1,631	1,031 1,949	247 459	232 476	27.0 26.7	21.6 23.8	
Other	1	-	1	-	100.0	-	
SFB: Draft proposals and approved full application	ons 16	17	4	2			
Research Groups: Draft proposals and approved full applications	39	25	3	3			

	Approval rate (%)		pproved total		Assessed total	
	2020	2019	2020	2019	2020	2019
1	25.9	28.2	113.0	119.5	436.4	423.4
ti	6.0	-	3.4	-	56.5	-
3 b	20.7	-	0.1	-	0.5	-
r	71.7	66.5	8.4	6.0	11.7	9.0
tl 4	14.9	23.7	7.7	10.7	51.8	44.9
	43.2	39.6	7.0	6.8	16.2	17.1
	25.3	29.0	8.9	10.6	35.1	36.4
	25.5	27.6	11.6	11.8	45.4	42.9
	5.6	7.4	9.5	10.0	169.8	135.7
	23.6	-	8.6	-	36.5	-
	11.7	7.7	4.3	4.2	8.7	6.7
	10.8	24.9	7.9	17.3	16.9	22.1
	97.1	81.2	12.9	3.2	13.3	3.9
2	25.9	23.0	39.2	32.7	151.2	141.8
(	21.4	19.8	0.2	0.2	0.7	1.0
6	32.7	19.1	0.3	0.3	1.0	1.4
4	54.2	-	0.6	-	1.1	-
Т	21.4	23.6	243.6	237.4	1,052.7	908.7
	21.3	22.6	80.5	78.7	348.0	292.2
	21.5	24.1 100.0	163.2 _	158.5 0.2	704.7	616.3 0.2
S		100.0	7.6	9.1		0.2
T			251.2	246.5		
			7.9	17.3	73.4	
			4.3	4.2	36.6	55.1
					50.0	50.1

# GRANT TOTALS (€ MILLION)

1) Relates to sub-projects

2) The approval rate is calculated using the relation of approved full applications to draft proposals.

3) In 2020, the FWF changed to a structure based on subprojects and thus the figures reflect the number of subprojects and not the number of overall projects (as in 2019). 4) Increases, completion funding, etc.

# 2020 243.6

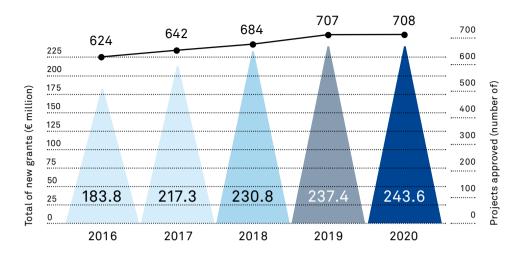
€ million

Total new grants Supplementary grants<sup>4</sup>

#### Total grants ~

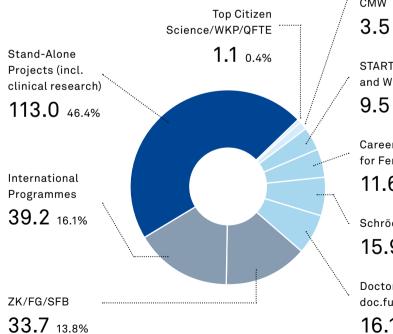
#### 77

# FUNDING DEVELOPMENT



# SHARE OF FUNDED PROGRAMMES

Total of new grants (in € million)



1000 Ideas Programme/ CMW

3.5 1.4%

START Programme and Wittgenstein Award

9.5 3.9%

Career Development for Female Researchers

11.6 4.7%

Schrödinger/Meitner

15.9 6.5%

Doctoral Programmes doc.funds

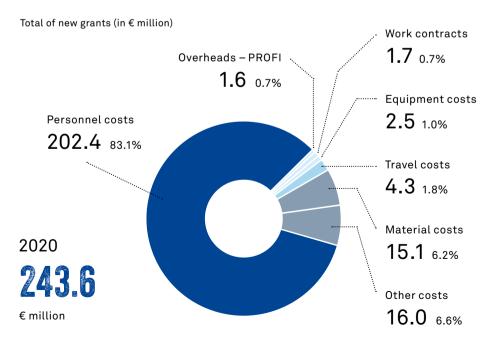
16.1 6.6%

# **RESEARCH STAFF FUNDED BY THE FWF**

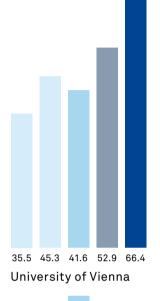
In 2020, 4,343 people
working in research
were funded by the FWF.
Roughly 70 percent of
these are young research-
ers under the age of 36.
The figures underline the
importance of the FWF
as a supporter of young
talent and reflect its com-
mitment to the develop-
ment of scientific human
capital in Austria.
As of 31 December 2020

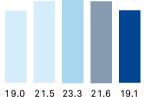
2019	Female	Other	Male	Total
Other staff	414		287	701
Doctoral students	893		1,128	2,021
Postdocs	628		826	1,454
Total	1,935		2,241	4,176
2020	Female	Other	Male	Total
Other staff	437		287	724
Doctoral students	921		1,127	2,048
Postdocs	676	1	894	1,571
Total	2,034	1	2,308	4,343

# **GRANTS BY COST CATEGORY**

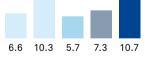


# TOTAL NEW GRANTS: UNIVERSITY RESEARCH INSTITUTES

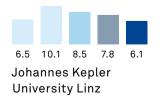




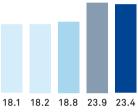
Medical University of Vienna



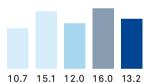
Medical University of Innsbruck



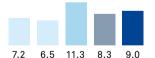
2016 2017 2018 2019 2020



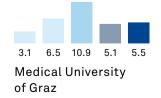
University of Innsbruck

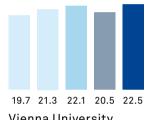


University of Graz



University of Natural Resources, and Life Sciences, Vienna



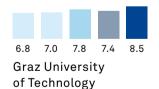


according to Section 6 para. 1 UG 2002 (in € million)

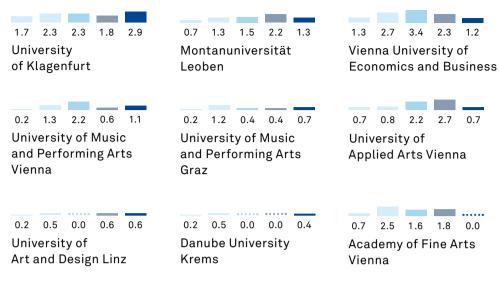
Vienna University of Technology



University of Veterinary Medicine, Vienna







0.1 0.0 0.0 0.0 0.0 Mozarteum University Salzburg

2.3

27 07

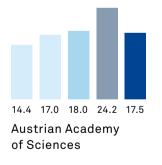
1.8

1.2

0.0

# **TOTAL NEW GRANTS:** NON-IINIVERSITY AND **OTHER RESEARCH INSTITUTES**

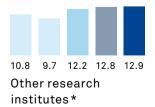
(in € million)



2016 2017 2018 2019 2020

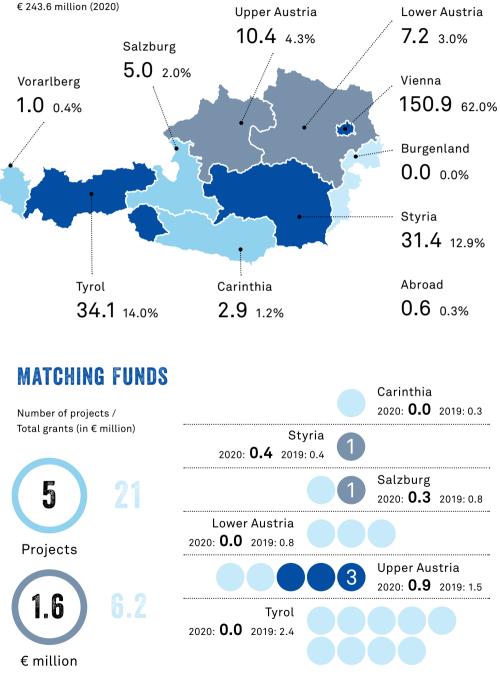
4.0 4.4 5.8 4.0 3.9 Institute of Science and Technology Austria – ISTA

1.2 2.6 3.1 2.1 0.7 Private universities



# **GRANTS BY PROVINCE**

Total new grants:



# PEER-REVIEWED PUBLICATIONS

The FWF has for many years pursued one of the most effective open-access strategies among funding organisations worldwide. In 2020, 84% of all qualityassured publications listed in final FWF project reports were openly accessible.

#### 2020\*

4,028 = 84%	Open-access
780 = 16%	No open-access
4,808	Total

#### 2019

6,525 = 89%	Open-access
801 = 11%	No open-access
7,326	Total

#### 2018

7,094 = 92%	Open-access
608 = 8%	No open-access
7,702	Total

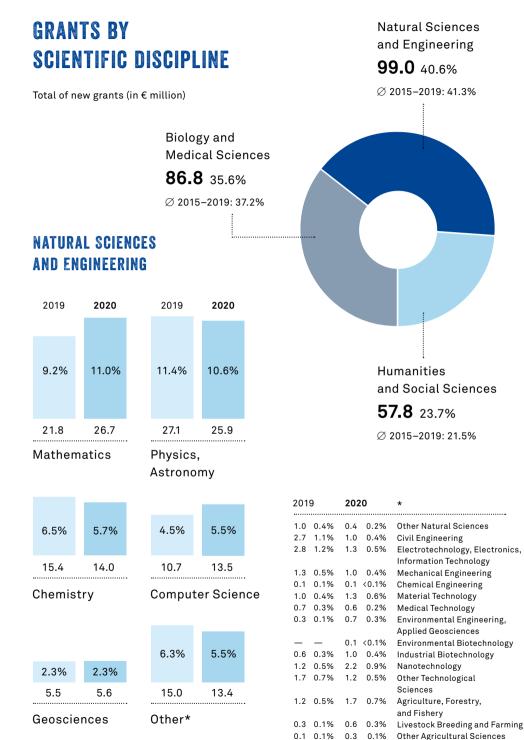
\* Owing to the automation of the monitoring processes and the introduction of Plan S of cOAlition S, the category of "other open-access" (self-archiving in an unmaintained repository, the website, or archiving of preprints), which in the past was determined manually, is no longer taken into account. As a result, the percentage of open-access peer-reviewed publications has decreased compared to previous years.

# PUBLICATION FUNDING<sup>1</sup>

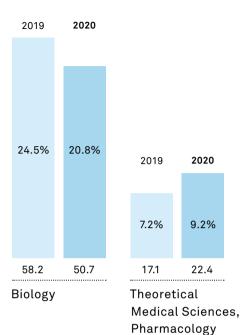
2020	€ million
Stand-Alone Publications	0.9
Peer-Reviewed Publications <sup>2</sup>	3.3
> Hybrid Open-Access	2.0
> Gold Open-Access	1.3
> Other publication costs	<0.1
Total	4.2
of which open-access <sup>3</sup>	4.2

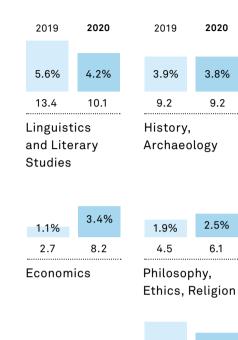
 The publications funding was published on the FWF website and in the Zenodo repository in spring 2021.
 Consists of:

 a) direct billing to publishers and
 b) payment through projects.
 Total of Stand-Alone Publications,
 Hybrid Open-Access, and Gold Open-Access and their percentage of the total amount



## **BIOLOGY AND MEDICINE**





HUMANITIES

**AND SOCIAL SCIENCES** 

3.2%	4.1%	1.6	
7.6	9.9	3.	
Clinical		Othe	
Medicine			

1.6%	1.5%
3.8	3.7
)ther*	

		9.1%	7.6%
1.7%	2.3%		
4.1	5.6	21.5	18.6
Sociolog	gy	Other*	

201	2019		0	*
2.1	0.9%	2.0	0.8%	Health Sciences
0.5	0.2%	0.8	0,3%	Medical Biotechnology
0.5	0.2%	0.3	0.1%	Other Human Medicine,
				Health Sciences
0.7	0.3%	0.6	0.2%	Veterinary Medicine

2020



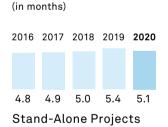
2019		2020		*		
3.2	1.3%	5.3	2.2%	Psychology		
1.2	0.5%	0.8	0.3%	Educational Sciences		
1.2	0.5%	1.3	0.5%	Law		
1.2	0.5%	1.3	0.5%	Political Sciences		
1.0	0.4%	1.1	0.4%	Human Geography, Regional Geography, Spatial Planning		
0.7	0.3%	1.5	0.6%	Media and Communication History		
0.7	0.3%	0.4	0.2%	Other Social Sciences		
7.7	3.2%	4.1	1.7%	Art and Art History		
4.7	2.0%	2.8	1.1%	Other Humanities		

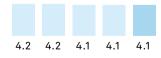
# **REVIEWS RECEIVED BY COUNTRY**

In 2020 the FWF assessed 2,980 applications amounting to a total of 1.1 billion euros. 16,520 review applications led to a total of 4,884 reviews on which funding decisions were made from 73 countries and regions.

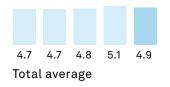
1,421	USA
601	Germany
553	UK

## AVERAGE PROCESSING TIME





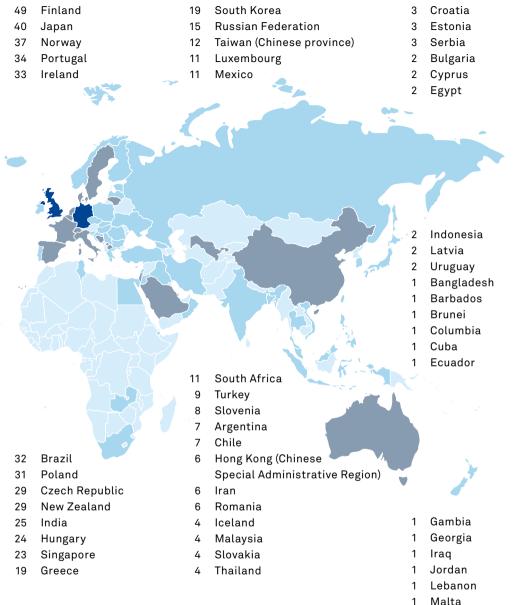
International mobility Schrödinger and Meitner Programmes



	× *	
252	France	
242	Italy	
202	Australia	
201	Canada	
180	Netherlands	
167	Switzerland	
132	Spain	
96	Sweden	
68	China	
64	Belgium	
61	Israel	
55	Denmark	

## **REVIEWS BY REGION** (in %)

2016	2017	2018	2019	2020	
36.1	37.8	36.4	36.0	37.6	Rest of EU
34.7		33.9	34.4	33.2	USA/Canada
15.9	17.1	16.4	15.6	15.7	Germany/ Switzerland
13.4	11.0	13.3	14.0	13.5	Rest of world



## **REVIEWS APPLIED FOR AND RECEIVED**

2016	2017	2018	2019	2020	
15,203	15,221	15,845	15,669	16,520	Applied for
4,723	4,701	4,726	4,632	4,884	Received
31.1	30.9	29.8	29.6	29.6	Response rate (%)

The FWF's activities in figures

87

1

1 1

1 1

1

1

Oman Philippines

Qatar Tunisia

Ukraine Vietnam

Zambia

# **INTERNATIONAL PROGRAMMES**

Invested FWF funds 2020 (in € million)

ERA NETs

4.3 OOOO Bilateral/outside Europe

# 

2.0

ERA	NET	PART	<b>ICIPATION</b>	BY	THE	FWF
-----	-----	------	------------------	----	-----	-----

BiodivERsA3	– Biodiversity
CHISTERA 3	<ul> <li>Information Technology</li> </ul>
EJP Rare Diseases	– Rare Diseases
ERA CoSysMed	<ul> <li>Systems Medicine</li> </ul>
ERA-CVD	– Cardiovascular Illnesses
ERA PerMed	<ul> <li>Personalised Medicine</li> </ul>
FLAGERA II	<ul> <li>Future Emerging Technologies</li> </ul>
Gendernet	– Gender Dimension in Research
HERA	– Humanities
NEURON III	- Neurosciences
NORFACE	– Social Sciences
QuantERA	– Quantum Technology
TRANSCAN-2	– Cancer Research



Participation in calls 2004–2020



Active participation 2020



Funded projects 2004-2020

# **INTERNATIONAL MOBILITY 2020**

The FWF supports successful young researchers on their way to scientific independence with the Schrödinger and Meitner mobility programmes. In 2020, 53 young postdocs from Austria carried out research in 16 countries worldwide. In return, 52 international young researchers worked at Austrian research institutes.

# Lise Meitner awards

**Countries of origin/nationalities**: Italy (9), Germany (7), France (3), Hungary (3), Iran (3), UK (3), Australia (2), Austria (2), Czech Republic (2), Greece (2), Russian Federation (2), Ukraine (2), Brazil (1), China (1), Croatia (1), Finland (1), India (1), Netherlands (1), New Zealand (1), Portugal (1), Romania (1), Spain (1), Turkey (1), USA (1)



# Erwin Schrödinger awards

**Destination countries**: USA (13.2), Germany (9.5), Netherlands (5), UK (5), Canada (4), Switzerland (3), France (2), Israel (2), Italy (2), Japan (2), Brazil (1), China (1), Czech Republic (1), Spain (1), India (0.8), Denmark (0.5)



# **ERC GRANTS SINCE 2007**

Top 20 countries, listed by grants per million residents\*

\* (a) Without Advanced Grants 2017; *host country* means the country of the host institution who supplied the recommendation at the time of application. (b) With regard to Synergy Grants, only the host country of the project coordinator is taken into account. Sources: (1) Grants: European Research Council (ERC),

https://erc.europa.eu/projects-figures/erc-funded-projects

(2) Residents: CIA World Factbook February 2020,

https://www.cia.gov/library/publications/the-world-factbook/

Country		Residents Proj		jects approved Grants		(per million res.)	
1	Switzerland	8,403,994		813		96.7	
2	Israel	8,675,475		669		77.1	
3	Netherlands	17,280,397		1,035		59.9	
4	Denmark	5,869,410		239		40.7	
5	Sweden	10,202,491		399		39.1	
6	Finland	5,571,665		205		36.8	
7	Belgium	11,720,716		422		36.0	
8	Austria	8,859,449		315		35.6	
9	UK	65,761,117		2,301		35.0	
10	Ireland	5,176,569		138		26.7	
11	Luxembourg	628,381		16		25.5	
12	Norway	5,467,439		133		24.3	
13	Germany	80,159,662		1,754		21.9	
14	France	67,848,156		1,358		20.0	
15	Cyprus	1,266,676		20		15.8	
16	Iceland	350,734		5		14.3	
17	Spain	50,015,792		687		13.7	
18	Portugal	10,302,674		116		11.3	
19	Italy	62,402,659		659		10.6	
20	Estonia	1,228,624		12		9.8	

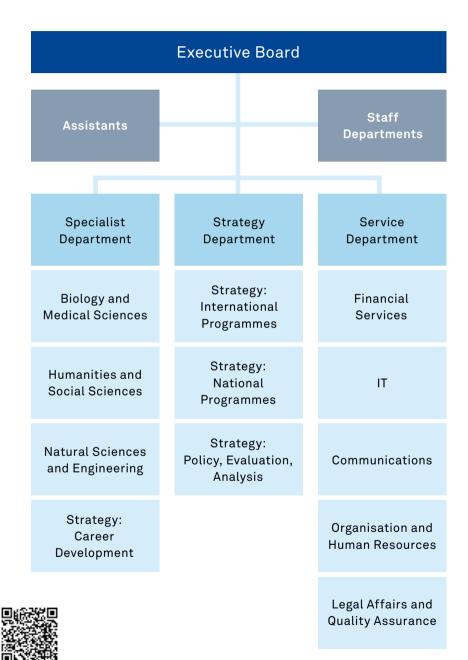
# **BIBLIOMETRIC DATA 2010-2019**

Top 20 countries, ranked by citations per 1,000 residents\*

\* Sources: Population data: United Nations Statistics Division. Publications and citations: Scimago Journal & Country Rank; 2010-2019; generally only includes countries with at least 10,000 publications; Taiwan is not included because the United Nations Statistics Division does not list it as a country. \*\* Special Administrative Region of the People's Republic of China.

Со	untry	Publications	Citations	Residents (in thousands)	Publications (per 1,000 res.)	Citations (per 1,000 res.)
1	Iceland	15,681	274,861	357	43.9	769.9
2	Switzerland	440,528	6,561,194	8,545	51.6	767.8
3	Denmark	256,102	3,551,396	5,781	44.3	614.3
4	Sweden	388,928	5,020,653	10,230	38.0	490.8
5	Netherlands	584,559	8,383,527	17,282	33.8	485.1
6	Singapore	200,637	2,692,487	5,704	35.2	472.0
7	Norway	209,523	2,362.416	5,328	39.3	443.4
8	Finland	196,791	2,352,159	5,513	35.7	426.7
9	Australia	921,540	10,120,214	25,366	36.3	399.0
10	Belgium	324,188	4,215,140	11,456	28.3	367.9
11	UK	1,973,206	22,372,102	66,274	29.8	337.6
12	Ireland	140,161	1,651,718	4,904	28.6	336.8
13	New Zealand	152,178	1,593,450	4,917	30.9	324.1
14	Austria	243,524	2,843,387	8,859	27.5	321.0
15	Canada	1,038,524	12,029,353	37,589	27.6	320.0
16	Luxembourg	18,254	191,528	614	29.7	311.9
17	Hong Kong**	179,098	2,061,583	7,507	23.9	274.6
18	Estonia	29,712	357,334	1,329	22.4	268.9
19	Israel	205,608	2,415,269	9,053	22.7	266.8
20	Cyprus	22,858	219,160	876	26.1	250.2

# **ORGANISATIONAL CHART**



## **PUBLISHING INFORMATION**

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Note: Figures cited in this report may display slight differences due to rounding errors.

Vienna, April 2021



















Cover photo: The picture shows virologist Katrin Ramsauer in the lab of the Viennese biotech company Themis, the rooms of which are decorated with colourful illustrations of viruses. Read more on page 16.

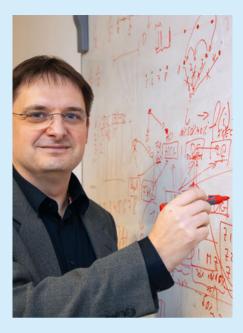
















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