

Approved by the general assembly of 12/13/2019.

OeAW Development Plan 2021–2023

Glossary

AI Artificial Intelligence

BMBWF Bundesministerium für Bildung, Wissenschaft und Forschung (Federal Ministry of

Education, Science and Research)

CLARIN Common Language Resources and Technology Infrastructure
DARIAH Digital Research Infrastructure for the Arts and Humanities

DH Digital Humanities

ESQ Erwin Schrödinger Center for Quantum Science & Technology

ESS Earth System Sciences Research Program

FWF Fonds zur Förderung der wissenschaftlichen Forschung (Austrian Science Fund)
 FTI Forschung, Technologie und Innovation (Research, Technology and Innovation)
 GSK Geistes-, Sozial- und Kulturwissenschaften (Humanities, Social Sciences and Cultural

Studies)

GUEP Entwurf des Gesamtösterreichischen Universitätsentwicklungsplans 2022–2027 in der

Fassung vom 01.08.2019 (draft Austrian University Development Plan 2022-2027 as of

08/01/2019)

HI Rom Historisches Institut beim Österreichischen Kulturforum in Rom (Historical Institute

of the Austrian Cultural Forum, Rome)

HPDA High Performance Data Analysis

IP Intellectual Property

IPR Intellectual Property Rights

JESH Joint Excellence in Science and Humanities funding program at the OeAW

NFTE Nationalstiftung für Forschung, Technologie und Entwicklung (National Foundation

for Research, Technology and Development)

PA Performance agreement between the OeAW and the BMBWF

SDG Sustainable Development Goals

STEM Science, Technology, Engineering and Mathematics

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0. Preamble

The Austrian Academy of Sciences ("Österreichische Akademie der Wissenschaften: OeAW") enjoys the special protection of the Republic of Austria in order to fulfil its mission, which is enshrined in the Academy Law: to promote academic research in every respect.

This development plan sets out the Academy's strategic goals and prospects in the years to come. It forms the basis of negotiations for the 2021–2023 performance agreement (PA) between the OeAW and the Federal Ministry of Education, Science and Research ("Bundesministerium für Bildung, Wissenschaft und Forschung: BMBWF").

As Austria's central science and research organization, the main focus of the OeAW is placed on researchers in search of new knowledge. The OeAW is ever-present in science and society with diverse activities based on the following principles:

Expertise and Excellence:

Bring experts together, advance research, discover new things.

Curiosity and Openness:

Open up questions, overcome disciplinary boundaries, brave the unknown.

Attractiveness and Diversity:

Support the extraordinary, enable diversity of opportunity, represent plurality in discourse.

Autonomy and Integrity:

Safeguard academic freedom, ensure transparency, practice responsibility.

Cooperation and Competition:

Work with the best, foster dialog, be ahead of the curve.

Fascination and Vision:

Inspire young people, bolster critical thinking, foster engagement.

Development and Knowledge Transfer:

Impart knowledge, evaluate outcomes, support entrepreneurship.

In 2021 to 2023, In the spirit of advancing basic science, disseminating research results, and promoting science overall, the OeAW will continue to help build a future worth living in. The activities planned continue from existing initiatives and go well beyond the coming performance period.

The OeAW's continuing excellence-based development is in line with the key programmatic objectives and guidelines of the federal government:

The OeAW continues to support the federal government's FTI strategy.¹

¹ Potenziale ausschöpfen, Dynamik steigern, Zukunft schaffen. Der Weg zum Innovation Leader. Federal government research, technology and innovation strategy (2011).

https://www.bmbwf.gv.at/Themen/Forschung/Forschung-in-%C3%96sterreich/Strategische-Ausrichtung-und-beratende-Gremien/Strategien/FTI-Strategie-der-Bundesregierung-.html

- The OeAW has met a key objective of the FTI strategy—acquiring more competitively awarded research funding—by raising a continously increasing amount of third-party funds in the last years. However, this increase cannot continue indefinitely, as there is a correlation with the amount of basic funding.
- The FTI strategy also calls for improved career opportunities for researchers. In this spirit, the OeAW has created its own career model on the basis of international norms. From now on, this model will also be implemented by collective agreement.
- In consideration of the current version of the draft Austrian University Development Plan (GUEP), the OeAW will reach the best possible agreement with the Austrian universities in order to contribute to the overall strengthening of the interconnectedness and culture of cooperation of research groups, across institutions and sites, at the national level.
- The OeAW's Life Sciences Institutes make an important contribution in accordance with the "Zukunftsstrategie Life Sciences und Pharmastandort Österreich" (Life Sciences and Pharma Hub Austria Future Strategy)².
- The OeAW will continue to contribute significantly to strengthening the humanities, social sciences, and cultural studies ("Geistes-, Sozial- und Kulturwissenschaften: GSK") in both the Austrian and European research areas; this also in consideration of the strategic reasoning of the BMBWF³.
- Both the FTI strategy and the Open Innovation strategy⁴ call for greater dialog between science and society. This aim will be strongly supported by an OeAW outreach program, comprising (among other things) public lectures, Young Science activities and prize questions, and widely diversified both in its topics and target groups.
- The OeAW will—so far as this is scientifically meaningful—continue to foster participation as
 defined by Citizen Science and Responsible Science⁵. To this end, it will also expand its diverse
 public outreach program.
- The OeAW is guided by the Digital Roadmap Austria⁶. The OeAW Press repository, and measures undertaken in the digital humanities, merit especial mention in the context of Open Access and Open Data.
- The OeAW welcomes the Austrian Intellectual Property Strategy⁷ passed by the Austrian federal government in 2017. The active valorization of intellectual property is also a key objective of the OeAW in the coming years.
- In accordance with the ministerial council resolution passed in 2016⁸, the OeAW contributes on an interdisciplinary scientific basis to the implementation of the 2030 Agenda for Sustainable Development⁹.

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² Zukunftsstrategie Life Sciences und Pharmastandort Österreich. Federal Ministry of Education, Science and Research, 2015. www.bmbwf.gv.at/Themen/Forschung/Forschung-in-%C3%96sterreich/Strategische-Ausrichtung-und-beratende-Gremien/Strategien/Zukunftsstrategie-Life-Science-und-Pharmastandort.html

³ www.bmbwf.gv.at/Themen/Forschung/Forschung-in-%C3%96sterreich/Strategische-Ausrichtung-und-beratende-Gremien/Strategien/GSK-Strategie-Rahmenbedingungen.html

⁴ Open Innovation Strategie für Österreich. Ziele, Maßnahmen & Methoden. Federal Ministry of Science, Research and Economics & Federal Ministry of Transport, Innovation and Technology, 2016. www.openinnovation.gv.at

⁵ Memorandum of Understanding der Allianz für Responsible Science, 2015. http://www.responsiblescience.at

⁶ Digital Roadmap Austria. Federal Chancellery of Austria & Federal Ministry of Science, Research and Economics, 2016. www.digitalroadmap.gv.at

⁷ Intellectual Property Strategie für Österreich. Strategie der österreichischen Bundesregierung für geistiges Eigentum. Federal Ministry of Science, Research and Economics & Federal Ministry of Transport, Innovation and Technology, 2017. www.bmdw.gv.at/Themen/Innovation/IP-Strategie.html

⁸ Ministerial Council Resolution re. 2030 Agenda for Sustainable Development, January 12 2016. https://www.bmdw.gv.at/Themen/International/Agenda-2030-SDG-Nachhaltigkeit/Umsetzung-Agenda-2030.html
9 Transforming our world: the 2030 Agenda for Sustainable Development. United Nations, 2015.
www.sustainabledevelopment.un.org

- As an active member of the Austrian Research Area, the OeAW participates in, for example, the Alliance of Austrian Science Organizations.
- Outside of Austria, the OeAW will aim to further enhance its profile as a European research institution and to become more attractive. The ERA Dialog¹⁰ of the Austrian Research Promotion Agency ("Forschungsförderungsgesellschaft: FFG"), the Beyond Europe program11, and the EU Strategy for the Danube Region12—among others—all provide impetus towards this goal. The OeAW will make use of all of these accordingly.
- The OeAW regularly feeds information into the BMBWF's research infrastructure database, which facilitates collaboration and synergy with universities and with other research institutions.

1. The Academy as a Whole

Two events will take place in 2022, within the upcoming performance agreement period, which direct a spotlight onto the identity of the Academy as a whole, its interdisciplinary potential, and its dialog with the public: the opening of the Campus Academy and the 175th anniversary of the foundation of the OeAW.

1.1. Research and the Future: Cross-Disciplinary Issus

Academic research directly influences the courses of action both of individuals and of societies.

It is basic research that, to a great extent, provides us with opportunities to effect change in the natural world, in society, and in ourselves, and shows us the factual risks and limitations. As such, the question of our responsibility towards humanity, society, and nature is inseparable from science, research, and innovation.

Focusing on three subjects that will be of decisive significance to science and society in the coming years, both in Austria and in Europe, the OeAW will demonstrate strong commitment and involvement on a scientific basis. The aim is not only to spread awareness of these issues, but, from a research perspective, to take an integrated approach to Responsible Science.

1.1.1. Multilingualism

For the OeAW, the topic of **multilingualism in academia and in Europe** means supporting and showcasing linguistic diversity in Europe. Also, it means emphasizing its value over monolingualism in both academia and society, with a view to recognizing and preserving our cultural heritage.

On an academic level, this will involve linguistic diversity as a research topic. Comparative regional and historical research into (scientific) languages will be promoted under the leadership of the OeAW Commission for Vanishing Languages and Cultural Heritage, which has been active since 2016. The establishment of a topic platform¹³ with a synchronic perspective on multilingualism in Europe is

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¹⁰ ERA Dialog: Strategic oriented service for research organisations. FFG, 2019. www.ffg.at/europa/beratung

Beyond Europe. Die Internationalisierung Österreichs in Forschung, Technologie und Innovation über Europa hinaus.
 Empfehlungen der AG 7a an die FTI-Task-Force der Bundesregierung, 2013. www.ffg.at/programm/beyond-europe
 www.danube-region.eu

¹³ **Topic platforms** are a tool to facilitate cooperation, mostly internal, between staff and members of the institutes. In contrast to the OeAW commissions, research and cooperation here are driven primarily from within the institutes of the OeAW. This format is intended to encourage connections between complementary approaches and so support the development of multi- and interdisciplinary research fields and the identification of new research questions. Cf. *ÖAW*-

planned, with the involvement of—among others—the OeAW Commissions for Migration and Integration Research and the OeAW Institute of Culture Studies and Theater History.

In terms of the politics and culture of science, the OeAW will engage in an organized fashion in intensive discussion with academies and academy networks at the European level. It is necessary to recognize and emphasize the importance of lived scholarly multilingualism as a central pillar of the humanities, social science, and cultural studies. In this way, the OeAW aims to help build a strong, European, science-based multilingual network.

The dissemination of knowledge about the developments, impacts, and opportunities of multilingualism in scholarship and society will be promoted via lectures as well as a Multilingualism Day hosted at the OeAW.

1.1.2. Sustainability

The 2030 Agenda, which Austria co-signed in 2015, challenges the world to achieve 17 sustainable development goals¹⁴ (SDGs). Climate change, in particular, in its political, social and scientific aspects has long since reached public consciousness as an urgent and worrying question. The enormous complexity of this challenge, which affects every individual, and the resulting balancing act between rationality and irrationality, makes establishing facts and putting together prospects—and therefore also finding solutions—an extremely ambitious undertaking.

For years, research at the OeAW's institutes and commissions has been making important contributions to all sustainable development goals—well before these were laid out as SDGs. For example, the OeAW's Climate and Air Quality Commission and its predecessor organizations have been working on the topic of our climate for decades. These key contributions will be carried on and expanded into the area of **climate and social change**. Both the challenge presented by climate change and the achievement of the SDGs require multi- and interdisciplinary collaboration in order to identify systemic connections even better. Therefore, **sustainability** will be embedded as a cross-disciplinary issue for the entire OeAW in the coming performance agreement period, in conjunction with issues around **resilience**: the ability of a society to deal constructively with change or disruptions such as climate change.

Discussion with different stakeholders will play an important role in confronting potential dystopian situations in a scholarly, science-based, and open-ended way: communicating and discussing results and maintaining an ongoing dialog with decision-makers.

Internal administrative measures constitute a further step in ensuring sustainable handling of resources and, in this way, helping to achieve the SDGs on an organizational level. If appropriate, the OeAW's ecological footprint could be measured and reduced as far as possible using suitable measures.

1.1.3. Digitization

In 2018–2020, the OeAW advanced the scientific discussion around progressing digitization. In the coming performance agreement period, the topic of **digitization**, **people**, **and society** will be systematically embedded as a cross-disciplinary issue in every field of activity at the OeAW.

Digitization with a particular focus on Artificial Intelligence (AI) offers enormous potential for a multidisciplinary research institution such as the OeAW. Both for research at the institutes—including the necessary research infrastructure—and for the science-based discussion of its societal effects. The

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Themenplattformen – Ein neues Format der wissenschaftlichen Zusammenarbeit und Weiterentwicklung (2018).

Research platforms are a flexible extension of the topic platform format. They differ from topic platforms because they usually do not have to be run by people affiliated with the OeAW, even if the impetus for founding the platform came from the OeAW. Ideally, basic research on the interdisciplinary topic of the research platform is carried out within it; if necessary, by research staff employed specially for this purpose.

¹⁴ https://www.bundeskanzleramt.gv.at/themen/nachhaltige-entwicklung-agenda-2030/entwicklungsziele-agenda-2030.html

OeAW will make use of the potential that arises through digitization and critically investigate the developments associated with it.

Basic Research on Digitization and Artificial Intelligence (AI) (cf. also Section 4)

There is a general lack of curiosity-driven basic research on the mathematical foundations of Artificial Intelligence and on the interdisciplinary opportunities that arise as digitization progresses. Therefore, the OeAW will significantly intensify its research in these areas.

An Artificial Intelligence research platform will be implemented, spanning the whole of the OeAW. Many OeAW institutes are currently conducting research related to Artificial Intelligence. The research platform is intended to bring these approaches together and to boost cooperation between the institutes as well as with Academy members. In the multi- and interdisciplinary field of Artificial Intelligence, new research questions will be identified and approaches that previously existed alongside one another will be networked together. In concrete terms, work will be carried out on the topic of machine-based learning and Artificial Intelligence in archaeology, at the intersection of material science, medicine, biology, and information technology. The Institute of Technology Assessment will accompany the work of the platform with associated sub-projects. The research undertaken will also address the societal challenges in Europe as identified by the EU commission—such as health and welfare, liberty and security, climate change, and energy—through the lens of digital innovation.

Digitization for Research (cf. also Section 4)

To create the best possible conditions for research projects in the fields of Big Data and Artificial Intelligence, the OeAW, in cooperation with Austrian universities, continues gradually to advance the extension of the **High Performance Computing Infrastructure** (by HPDA) (cf. also Section 4.4.).

Managing immense data volumes using a powerful IT infrastructure is a tremendous and cost-intensive challenge, which will change the shape of research. For example, molecular biology—which the three OeAW research companies pursue as basic science, so to speak—is evidently developing towards computational biology. That is why the OeAW believes that the phased formation of an expressly interdisciplinary **Computational Sciences Hub** (cf. also Section 4.6) is indispensable.

The OeAW attaches great importance to the development and implementation of an **OeAW-wide research and administration digitization strategy**. The aim of the strategy is to provide targeted support to digital competencies and potentials wherever these give rise to innovative opportunities and/or contribute to increasing efficiency. Infrastructures—both hardware and software—will be aligned across the OeAW so that they can be deployed as synergistically as possible. Implementation of the digitization strategy will be centralized as far as possible if this allows synergies to be achieved. But it will also be dealt with locally within the institutes as far as necessary; for example, to enable adequate continuation of monodisciplinary projects. In any case, duplication will be avoided.

The development and implementation of a **research data management strategy** (OeAW Research Data Policy) on the basis of the FAIR Data Principles (Findable, Accessible, Interoperable, Reusable) is deemed necessary. This strategy will set the framework conditions for research data management and its handling at the OeAW.

Digitization in a Societal Context

This subject area will be coordinated under the leadership of the **OeAW digitization working group**. The focus is digitization and Artificial Intelligence: their potentials and their effects on individuals and societies.

The OeAW will also address legal and ethical questions connected to the evaluation and storage of data, the implementation of standards in technology (Values by Design, AI ethics), data protection, and the effect of digitization and AI on the liberty and autonomy of human beings. The Academy will further engage in the debate around binding legal framework conditions, creating a broad debate about the

tension between permissiveness versus restrictiveness and control, engendered by increasing digitization. The focus will be on social media and (anti-)democratic tendencies with an aim to involve the public in addition to well-known stakeholders.

The Academics for Global Innovation and Digital Ethics project (AGIDE) will deal with questions of **digital ethics** such as formulating ethical guidelines for handling new digital technologies. AGIDE is envisioned as a collaboration between Academies of Sciences from every continent. The project aims for a high degree of concretization, based on real-life conflict situations and formulated in rules rather than principles. The focus of AGIDE—which will be gradually expanded—is not on achieving consensus: rather, the final result may be a number of different blueprints.

The extensive digital acquisition and dissemination of knowledge means that information technology is developing from basic science into a societal "operating system". Neither transmission of basic IT skills nor awareness of the associated responsibilities are adequately covered in school or university curricula. A basic knowledge of algorithmic thinking belongs in schools and in undergraduate courses just as much as historical awareness, ethics, and critical thought. In this respect, the OeAW will help to raise awareness through lectures and workshops, among other things. In particular, a **colloquium digitale** will be designed and implemented. Over the period of one to two years, the topics outlined above will be discussed on a science-based footing in the context of a diverse and innovative range of event formats, with a particular focus on younger target groups and on non-scientists who can function as disseminators.

Scientific **position papers** on key topics within digitization will also be published, with the aim of communicating complex information to the general public in an understandable way.

1.2. Research and Society

1.2.1. Science Based Advice for Policy and Society

With the key objective of further bolstering dialog between science and society, the OeAW continues to **engage in societal and policy advice**, both at the institute level and the academy as a whole. The OeAW offers valuable, independent, scientific expertise on numerous themes. Furthermore, its broad range of existing event and publication formats enable evidence based scientific knowledge and approaches to be brought into politics, economics, and civil society. These formats do not simply communicate knowledge but also feed back into the scientific system.

At the Academy level, the format "Wissenschaft und Politik im Gespräch" (Science and Policy in Conversation) established in cooperation with Wolfgang Sobotka, President of the Austrian National Council, will continue. These conversations enrich knowledge on both sides and are in line with the idea of an "open cultural exchange" between science and politics. Feedback from policy makers and scientists alike shows that this approach has earned its rightful place along the spectrum of evidence-based policy advice.

Consequently, the OeAW plans to extend the reach its experts to, for example, parliamentary committees. A joint project between the OeAW and the National Council could establish topics that are of interest to the National Council, with the OeAW identifying relevant experts.

Participation-based formats will be further developed in order to heighten the OeAW's profile and increase its impact as a provider of socially and politically relevant knowledge. Question-and-answer sessions both in real and in virtual space (e.g. science chats) are under consideration, as is the permanent adoption of a yearly prize question competition on an urgent and socially relevant scientific issue.

The OeAW will explore the idea of establishing a **Citizen Science** topic platform, combining skills from OeAW institutes and academy members to design interactive formats involving non-scientists. The guiding principles to be developed will be used as points of departure for discussion meetings about how science can help to realize a future worth living for all. These meetings should particularly include

young people as well as stakeholders from politics, economics, art, administration, and so on. In this context, relevant outcomes from, for instance, workshops and Summer and Winter Schools will also be published in **social-media-friendly formats** (podcast, video, etc.) **under the motto: "Science Austria – Shaping the Future"**.

In terms of subject matter, the OeAW plans to address in detail questions of **the freedom of research and teaching and, in particular, this freedom as a public good**. To this end, the OeAW will seek collaboration with other academies of sciences across the world. Special attention will be paid to supporting the purely curiosity-driven search for knowledge, as opposed mission-driven research often desired by politics and society.

Ultimately, what is at stake here is **trust in science**. Experience shows that this trust cannot only be achieved through the trustworthiness of scientists or institutions, or the "socialization" of science that is frequently enacted in the context of Citizen Science/Open Science. What is crucial—especially in the context of (digital) information overload—is transmitting scholarly ways of thinking which, beyond their application in the search for scientific knowledge, can be made accessible as tools for life and developing perspectives on the world.

Both academic freedom and trust in science are inseparable from a **culture of plurality of opinion**, which itself should be subject to intensive discussion. That is what the OeAW stands for.

1.2.2. Research and the Public

To bolster the knowledge society in Austria, the OeAW will further expand both its role as the **voice of science** in the public domain and its **ongoing dialog with the public**. Public communication around scientific issues, developments, achievements, and skills as well as a dialog with the public about all these things will be structured with even greater agility.

The physical space of the **Campus Academy** will enable a more direct conversation between science and the public than ever before.

For decades now, the OeAW has garnered excellent experience of **personal encounters between scientists and interested members of the public** in the context of panel debates or lectures followed by discussion. For this reason, the flagship format Academy Lectures will, in particular, be further developed. The OeAW aims for the greatest possible diversity of subject matter in its **lecture portfolio**. Named Lectures, in the sense of memorial lectures—currently 17—can function as a way of embedding famous scientists in the collective memory. At the same time, they also point towards the future, as top-class international scientists from the honoree's own field communicate the latest findings.

The goal of transmitting scientific knowledge to the public at the most accessible level possible is an extremely socially relevant one. **Science journalism** makes an important contribution in this regard. In 2019, the OeAW advertised science journalism scholarships for the first time. This form of support is set to continue.

Overall, the OeAW will continue to intensify its **public relations activities**, reliably conveying a diverse range of new scientific findings to the media and the public through various channels of communication.

1.2.3. Research in Generational Dialog

A more vibrant online appearance and more extensive use of **social media** are important to the OeAW, especially with young people in mind. Accordingly, the Academy's social media portfolio will be expanded with increased multimediality and content prepared for specific target groups.

Consequently, the OeAW will indirectly help to develop **media skills**. Content that polarizes the audience is precisely that which attracts attention, especially on social media. The benchmark of a digital

post's success is not its truthfulness but the number of reactions it provokes. Due to the complex reality of the digital world, it is necessary to think above and beyond tried-and-tested opportunities. The desire to discover what lies behind what we already know is one of science's inherent motivations. The question is how to derive factual knowledge from the enormous range of available information and how to interpret that information. Basic scientific skills such as (source) critique, analysis, and interpretation should be carefully imparted at every educational stage. Over the course of their education, students should apprehend that science is a curiosity-driven, fact-based approach to the world and how their own lives can benefit from such an approach. This requires a broad spectrum of formats in educational institutions and elsewhere. In the coming performance agreement period, the OeAW will more intensively seek dialog with stakeholders in politics, education, and civil society to help to create the appropriate framework conditions.

The concrete aim of **Young Science** activities at the OeAW is to get children and young people across different age groups excited about science and research. Researchers from different OeAW institutes have been active in this area—often for years—whether by participating in project days/weeks at elementary schools, helping to develop ideas for pre-university work, or participating in the Vienna Schools Council's Junior Science Club. Both, this individual engagement and successful OeAW-wide measures such as the "Kinderuni an der OeAW" (Kids' College at the OeAW) format—in cooperation with the University of Vienna—, the Long Night of Research, and the OeAW Science Comics will be continued and systematically expanded.

In cooperation with the educational authorities, the school presentations "Akademie im Klassenzimmer" (Academy in the Classroom) will be expanded to reach even more high-school students all over Austria, bringing them into interactive discussion with scientists and giving them insights into different scientific disciplines. In the process, the students will be motivated to recognize the complexity of many scientific questions and to develop their science-based critical thinking. This initiative is connected with the OeAW's federal state initiatives. In addition, the OeAW will explore the idea of extending the Academy in the Classroom initiative to Austrian schools abroad¹⁵ in order to introduce Austria as an innovative and promising to study to their students. The "Studienstiftung" (Austrian Scholarship Fund) will be opened to this constituency in the coming years.

1.2.4. Research in Kowledge Transfer

The OeAW offers a wide variety of **knowledge transfer services** whether in dialog with different sectors of society (cf. Sections 1.2.1. and 1.2.2.) or by supporting early-career scholars, many of whom will go on to pursue career paths outside the OeAW and even outside basic research.

Open Science and **Open Data** focus on improving access to science and creating a more accessible conversation between academia and other sectors of society. The OeAW will continue to pursue these endeavors closely. In concrete terms, the Academy will continue its Open Access fund and endow it in accordance with its needs and with budgetary considerations.

In accordance with the European Commission's recommendations to public research institutions on dealing with intellectual property in knowledge transfer, the intellectual property strategy adopted by the Austrian Federal Government in February 2017, and the national IP strategy, the Academy's Knowledge Transfer Office will further implement and develop the **OeAW's IP strategy**. Research and innovation programs—such as the EU Horizon Europe program beginning in 2021—and cooperation with commercial enterprises in the context of publicly subsidized projects require an even higher degree of professionalism when dealing with intellectual property at the OeAW. Macrosocial progress can effectively be supported by the targeted transfer into the economic sector of technologies acquired at the OeAW: for example, by assigning user licenses or supporting spin-offs.

The transition from basic research to applied research, and the connection between the two, is of great significance. It is precisely here that striking funding gaps exist. Researchers working in Austria must

¹⁵ www.weltweitunterrichten.at/site/auslandsschulen/standorte

have the opportunity to develop their outstanding scientific outcomes to application maturity. The OeAW will conceptualize an innovative **translational funding pool** and submit a corresponding application to the National Foundation for Research, Technology and Development ("National stiftung für Forschung, Technologie und Entwicklung: NFTE"). The aim is to implement a competition-based funding program that gives teams of early-career researchers the opportunity to develop the technological maturity of their inventions over a three-year period.

1.2.5. Research and Diversity of Opportunity

At the OeAW, gender equality, equal opportunities, and diversity are all understood and practiced as a holistic, life-cycle-oriented concept in dealing with personal, cultural, and social diversity. Embedding diversity of opportunity is central in this regard.

The aim is to create and maintain a working environment in which every colleague feels respected, regardless of their national and ethnic origin, gender and sexual identity, religion and ideology, (dis)ability, and age. The relevant measures range from, for example, increasing provision of (at least) bilingual forms and websites to ensuring barrier-free accessibility, also during construction work.

Among the many facets of diversity, the OeAW attaches particular importance to **gender equality** (women's advancement plan/equal opportunities plan).

The OeAW regards **diversity** as embedded in the context of macrosocial change, such as demographic change, individualization of lifestyles, and flexibilization of work. Enabling diversity of opportunity for all OeAW employees and for (young) people interested in research—for example, through interweaving Young Science activities with those relating to the Scholarship Fund—supports social, cultural and gender diversity.

1.3. Research Worldwide

Internationally successful research requires partnerships between individual scholars and groups of scientists, institutional partnerships, and collaboration in international large-scale research projects and infrastructures. The OeAW will further expand its internationalization activities, placing an emphasis on *brain circulation*.

Individual mobility (incoming or outgoing) is very often the starting point of sustainable international collaboration. The OeAW's career model (cf. also Section 4.1.) offers attractive work conditions to academics from Austria and abroad and offers particularly young researchers working at the OeAW measures for **international mobility and networking**. Thus, the institute budgets should provide sufficient means to fund short periods abroad; these can be used to participate in conferences, meetings, workshops, and other networking activities. Junior researchers may also take a sabbatical abroad (up to a maximum of two years) if agreed with the institute management.

Austria's prosperity, its high standard of education, and its wealth of cultural offerings make it a fundamentally attractive destination for **foreign researchers**. However, other academic factors frequently play a key role in career decisions. For early-career researchers in particular, the following factors are usually decisive for the attractiveness of a given research location:

- the option of pursuing independent work as early as possible,
- working with inspiring colleagues,
- clear career paths (tenure track),
- the availability of attractive, competitive grants.

The **Academy Fellows** program will be a new funding pool for established, internationally known researchers working abroad. Fellows will be able to spend a sabbatical period of up to 18 months at an OeAW institution (the period can be spread over several years). During this time, they are released from

teaching and administrative duties at their home institution and can concentrate on research in cooperation with their colleagues at the OeAW. Personal contact and collaboration with an outstanding academic figure is both stimulating and enriching for the Austrian research community. The funding concept will be open to all research fields.

The **JESH program** (both incoming and outgoing) will be continued and expanded, subject to budgetary considerations. Regular reviews and (if required) adjustments to the application requirements are planned for JESH, as well as changes to the focus countries.

The OeAW's portfolio of **bilateral agreements with international partner organizations** maintains over 60 international partnerships in more than 50 countries. These offer points of contact for **academic exchange**. The partnership portfolio will be strategically developed and adapted in the context of an ongoing monitoring of activities.

During topic-based **Joint Academy Days**, academies of sciences from two or more countries come together at the OeAW to discuss pressing questions, for example those concerning the limits and opportunities of knowledge transfer between academia and society, and to develop ideas across national borders.

In addition, the OeAW will work together with other academies to address questions of **multilingualism** in Europe both from an academic and a cultural-political perspective. As one of the cross-disciplinary issues, multilingualism will influence various OeAW activities in the coming years.

Contributions to international position papers, to statements issued by associations of academies (ALLEA, EASAC, etc.), and to the European Commission's Science Advice Mechanism and any follow-up solutions will be continued on an ad-hoc basis depending on available expertise. Opportunities to delegate OeAW members, employees, and other experts working in Austria to **international academy associations, institutions, and bodies** should be used extensively.

In the context of **science diplomacy**, the OeAW will continue to champion strong international academic relationships, particularly with people and institutions in authoritarian systems.

In certain disciplines, groundbreaking outcomes can only be achieved in close collaboration within international research initiatives and infrastructures. With both commissioned and autonomous memberships, the OeAW plays an important role at the interface of Austrian science and key international initiatives.

The OeAW will continue its commitment to **international large-scale research** with the aim of increasing the involvement of the OeAW and other Austrian institutions in international large-scale research facilities. In view of the necessity of increased joint use of international infrastructures, which is addressed in the current draft of the GUEP, closer **coordination across the entire Austrian research sector** is required. The OeAW is committed to this coordination across Austria under the guidance of relevant academic experts. Working together with the responsible federal department, an international working group with representatives of all key stakeholders could be formed. This working group would advise on existing and future participations and on infrastructure financing, thus contributing to a more efficient interconnectedness between international large-scale research projects and/or infrastructures.

Particular consideration should be given to infrastructures in the humanities, social sciences, and cultural studies, such as the CLARIN and DARIAH infrastructure consortia, where long-term investments and planning reliability are needed. The conclusion of the CLARIAH-AT consortium agreement in 2019 represents a first key step towards a stable institutional solution. In the last years, CLARIAH-AT has developed into the central Digital Humanities hub in Austria through targeted inclusion of all relevant players and by building an active DH community (Digital Humanities Austria) with numerous networking activities. All institutions participating in the CLARIAH-AT consortium should be enabled to implement and develop CLARIAH-AT agendas at a local level. Over the next years, the OeAW's Austrian Center for Digital Humanities and Cultural Heritage (ACDH-CH) will also be available to act as a coordinating body. In any case, the successful path to joint operation of CLARIN

and DARIAH should, in particular, also be pursued with an eye to the fact that other countries (Netherlands, Germany) will follow the example of Austria.

2. The Learned Society

The Learned Society consists of around 770 members in Austria and abroad. It is divided into the **Division of Humanities and the Social Sciences**, the **Division of Mathematics and the Natural Sciences**, and the **Young Academy**. As a broadly diversified, multidisciplinary discussion forum, the Learned Society brings together cross-disciplinary skills and shapes and positions the OeAW as a **recognized**, **forward-looking center of scholarship that is open to the public**.

There are currently twelve academic commissions:

Commissions of the Division of Mathematics and the Natural Sciences:

- Commission for Astronomy
- Commission for Geosciences
- Commission for Climate and Air Quality

Commissions of the Division of Humanities and the Social Sciences:

- Commission for Migration and Integration Research
- Commission for the Legal History of Austria
- The North Atlantic Triangle: Social and Cultural Exchange between Europe, the USA and Canada
- Commission for Vanishing Languages and Cultural Heritage

Commissions of the Academy as a Whole:

- Commission for Cooperation with Large-Scale Research Facilities
- Commission for Cooperation with the Austrian Ministry of Defence
- Commission for Geographic Information Science
- Commission for History and Philosophy of Sciences and Humanities
- Commission for Interdisciplinary Ecological Studies

New proposals for academic commissions submitted by members are welcome and are examined according to the guidelines.

The OeAW will present a detailed history of the institution, both digitally and in print, for the 175th **anniversary of its foundation**, which will be celebrated at the ceremonial session in May 2022. The publication will be supplemented by a publicly accessible online database.

On the basis of this work on the 175-year-long history of the OeAW, a historical and cultural studies topic platform—working title: Austrian History of Science in the Global Context—will be set up, combining the resources of the Commission for History and Philosophy of Science and Humanities, the relevant OeAW institutions, and other members. The OeAW is especially suitable for this undertaking because reports and other documentation of scholarly debates, developments, and successes in the Habsburg Monarchy, in Austria and beyond have been stored continuously in its archives since 1847.

The OeAW will continue its involvement in the areas of **research integrity** and **research ethics** in tried-and-tested fashion, through its **Commission for Science Ethics** and its participation in the Austrian Agency for Research Integrity. The Commission for Science Ethics reviews and evaluates questions of scientific ethics that might arise both within and outside of the OeAW and comments on these.

The three commissions at the Austrian Academy of Sciences will continue:

- Austrian IIASA Commission
- Commission for the Coordination of Nuclear Fusion Research in Austria
- Österreichisches Fusionsforschungsprogramm Fusion@ÖAW.

The **international research programs** commissioned by the BMBWF are carried out by three **national committees** located at the OeAW in the Earth System Sciences program (ESS): Global Change, Geo/Hydro Sciences, and Man and the Biosphere. These committees are mostly staffed by OeAW members. The national committees coordinate research activities in their subject areas and work together to shape the scientific focus of calls for proposals within the international ESS research program. The programs will be continued as established in the previous performance agreement period.

OeAW members will continue to design and implement **dialog-based public events** to boost enthusiasm for science and research in the general public and, above all, among young people. The diverse range of event and publication formats realized by Academy members includes lectures and debates, opinion pieces, contributions to international position papers by academy associations, and more. These activities will continue without restriction. The OeAW will further enhance its **presence throughout Austria** with events in the federal states. The extension of the federal state initiatives and the involvement of Academy members in Young Science, especially in school presentations, was already mentioned in Section 1.2.2.

The members of the **Young Academy**—up to 70 established early-career researchers—continue to work for the creation of research and working conditions that enable career progression at a high international standard. The work of the Young Academy takes place through regular jour fixe meetings. The Young Academy hosts workshops and organizes other, largely interdisciplinary, events.

Interplay between all OeAW members—and therefore also between the Young Academy and the other member categories—will be intensified.

3. Promoting Early-Career Researchers

Promoting the next generation of researchers is a key task of the OeAW, which it fulfils in a number of ways:

- by providing a large number of different event formats and activities for young people, often before their entry into tertiary education (cf. Section 1.2.3.),
- as sponsor of the Scholarship Fund,
- as a key employer of early-career academics in basic research,
- by awarding scholarships and prizes,
- through other excellence-based funding pools and networking opportunities.

The Austrian Scholarship Fund

The Austrian Scholarship Fund, which was created in the 2018–2020 performance agreement period and successfully tested during an initial pilot phase, will be expanded. Thus, the range of funding, training, and networking opportunities for exceptionally motivated and committed school and university students will also expand. Among other things, further Winter and Summer Schools are planned to allow candidates for the university entrance qualification ("Matura") to explore selected scientific subjects in greater depth than everyday school life allows.

A new prize will be established at the interface of Young Science (cf. Section 1.2.3.), spotlighting young people of outstanding talent before they enter university. Among prizes currently awarded for pre-university projects, there is no prize specifically for girls in STEM (German: MINT). That is why the OeAW plans to introduce the MINT-VwA prize for the three best pre-university projects by female school students. Prizewinners will also be accepted into the Austrian Scholarship Fund program. The OeAW will try to obtain financial support for these prizes from L'ORÉAL Austria.

Fellowship Programs

The OeAW's fellowships benefit the entire Austrian research area since they are awarded independently of employment location and institution. With its **fellowship programs**, the OeAW continues to follow a strictly person-based approach to funding: The academic achievement, potential, and research ideas of each applicant are evaluated regardless of institutional affiliation. The fellowship applications are submitted by the early-career researchers themselves.

Pre-doc funding of PhD students through the **DOC and DOC-team** programs will continue: in the DOC program in particular, a 30 percent approval rate is a clear objective. The programs will continue to invite applications from all research fields with a focus on students from non-traditional backgrounds and those whose research topics are not funded as part of an organized program (such as IST Austria).

Emphasis will also be retained on supporting students in the transition to post-doc status. **The Post-Doc Track program** will continue to be offered across Austria if possible. The focus on humanities, social sciences, and cultural studies will remain. This program aims for a 30 percent approval rate.

The Academy will continue its cooperation with L'ORÉAL Austria and the Austrian Commission for UNESCO on the **L'ORÉAL Austria program**. The objective of the program, which will be open to female applicants with and without doctoral degrees (pre- and post-doc), is to support women in STEM.

The relaunch of the APART program focusing on humanities, social sciences, and cultural studies was successfully carried out with funding from the NFTE. However, in the end, NFTE grants were not allocated in the requested (and required) amount. In order to ensure continuity in the funding offered, the OeAW plans—subject to global budgetary considerations—to make **APART-GSK** a permanent part of the portfolio and to launch another, new post-doc grant, **APART-MINT**, focusing on STEM subjects.

Mobility grants are a key form of support, especially for early-career researchers (cf. also Section 1.3.). The **MAX KADE fellowship** for periods spent in the United States, which is funded by the Max Kade Foundation (New York), will continue to be offered. As another way to develop the portfolio, it should be investigated whether fellowships such as **ATHEN** and **ROM**, which are currently location-dependent, can be transformed into location-independent travel and archival research fellowships.

ESO

The Erwin Schrödinger Center for Quantum Science & Technology (ESQ), which is active across Austria, is planned to continue with a focus on the post-doc program—subject to global budgetary considerations.

Prizes

The OeAW currently awards 23 prizes for early-career researchers. These include two prizes awarded to OeAW employees as part of the anniversary fund granted to the OeAW by the City of Vienna, as well as two additional prizes for lifetime achievement. The total amount awarded is up to 200,000 EUR per year. Most prizes are awarded annually. In some cases, the OeAW plans to advertise and award the prizes every two years in order to increase their attractiveness and make them more visible. We also plan to develop and put into practice a **foundations strategy** at the OeAW, including real estate management and investment of funds, with the aim of implementing these as efficiently as possible.

Graduate Training — Together in a Top Class Network

The OeAW intends to enter into discussion with **Austrian universities** in order to develop a graduate qualifying track, along the lines of the Max Planck Schools in Germany, which will both demand and create academic excellence on a highly competitive international scale. The OeAW is substantially involved in a number of outstanding areas within the Austrian basic research landscape, including joint PhD programs with universities. Network-based, discipline-specific **Austria Research Schools** (working title) will structurally facilitate and intensify collaboration between the best minds in a given subject area from the grassroots up, making it easier to train and qualify the most promising academic talents. The OeAW is ready to take a leading role in conceptualizing this process.

The **Summer Schools** of numerous OeAW institutes have become an integral part of the activities offered to junior researchers. These will continue to be supported by the OeAW.

4. Research Performing Organisation

With regard to basic research, the 2015 Frascati Manual differentiates between "pure basic research" and "oriented basic research" ¹⁶. This distinction enables a differentiation of roles within the academic system, creating a recognized space for pure basic research in the original meaning of the OECD definition: "Basic research is experimental or theoretical work undertaken primarily to acquire new knowledge of the underlying foundations of phenomena and observable facts, without any particular application or use in view" ¹⁷. Achieving this aim is a key task of the OeAW research institutes, although approaches or advisory functions relating to a specific mission may be desirable elements of the profile of a given institute.

As an institution, the OeAW is responsible for curiosity driven, non-application-specific basic research at an internationally competitive level. As of January 1, 2020, it operates 27 research institutes:

Mathematics, Science and Technology

Life Sciences

- CeMM Research Center for Molecular Medicine
- GMI Gregor Mendel Institute of Molecular Plant Biology
- IMBA Institute of Molecular Biology

Mathematics, Physics, Space Research and Materials Sciences

- Erich Schmid Institute of Materials Science (ESI)
- Institute of High Energy Physics (HEPHY)
- Institute for Quantum Optics and Quantum Information, Innsbruck (IQOQI Innsbruck)
- Institute for Quantum Optics and Quantum Information, Vienna (IQOQI Vienna)
- Acoustics Research Institute (ARI)
- Space Research Institute (SRI)
- Johann Radon Institute for Computational and Applied Mathematics (RICAM)
- Stefan Meyer Institute for Subatomic Physics (SMI)

Humanities, Social Sciences and Cultural Studies

- Austrian Centre for Digital Humanities & Cultural Heritage (ACDH-CH)
- Institute of Culture Studies and Theater History (IKT)

Archaeology and Classical Studies

- Institute for the Study of Ancient Culture (IKAnt)
- Institute for Oriental and European Archaeology (OREA)
- Austrian Archaeological Institute (OeAI)

Frascati Manual der OECD 2015, S. 50 f.

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¹⁶ "Oriented basic research" may be distinguished from "pure basic research" as follows:

Pure basic research is carried out for the advancement of knowledge, without seeking economic or social benefits
or making active effort to apply the results to practical problems or to transfer the results to sectors responsible
for their application.

Oriented basic research is carried out with the expectation that it will produce a broad base of knowledge likely
to form the basis of the solution to recognized or expected current or future problems or possibilities."

¹⁷ Frascati Manual der OECD 2015, S. 50.

Asian Studies and Social Anthropology

- Institute of Iranian Studies (IFI)
- Institute for the Cultural and Intellectual History of Asia (IKGA)
- Institute for Social Anthropology (ISA)

Historical Sciences

- Institute for Medieval Research (IMAFO)
- Institute for Habsburg and Balkan Studies (IHB)

Social Sciences

- Vienna Institute of Demography (VID)
- Institute for European Tort Law (ETL)
- Institute for Interdisciplinary Mountain Research (IMR)
- Institute for Urban and Regional Research (ISR)
- Institute for Comparative Media and Communication Studies (CMC)

Other Research Units

- Institute of Technology Assessment (ITA)

In the coming performance agreement period, the OeAW institutes will continue to engage in knowledge-oriented, non-application-specific **research**, following a **risk-positive excellence strategy**. The following principles, agreed with the OeAW's Research Board, apply to and for the Academy's activity as a research institute:

- It's all about people.
- Take the risk of daring science.
- Try to avoid upper mediocrity.

Selective initiatives in existing OeAW institutes:

IMBA - Center for In Vitro Disease Modeling

Research on human stem cells has the potential to revolutionize biomedical research and is thus of great importance for the Austrian research landscape. In the last years, groundbreaking progress has been achieved in haploid stem cell and organoid technology at the Stem Cell Center embedded in the IMBA – Institute of Molecular Biology. The latter development makes it possible to use stem cells to produce various tissues and early-stage organs, which can be used to study specific human development processes. Alongside the successful research groups, a scientific infrastructure unit was created to offer stem-cell-related services, such as the manufacture of pluripotent iPS cells. The current users constitute eight groups at the IMBA and nine from outside the institute, with many more to follow.

Within the span of a few years, the Stem Cell Center has developed expertise in in vitro disease modeling and distinguished itself with its technological progress. Subject to budgetary considerations, an ongoing focused development is planned for the Stem Cell Center, which will continue at the IMBA as the Center for In Vitro Disease Modeling.

Working Group on Mathematical Foundations of Artificial Intelligence

Developing the next generation of machine learning requires a marked increase in provision of research services. Empirical approaches can be used to optimize AI algorithms and make them even more powerful. Moreover, targeted development of innovative AI methods is required to meet the ever-growing demand for computing power and data volumes to run modern AI algorithms. This means that it is essential to reach a theoretical understanding of Deep Learning. Rigorously applying mathematical approaches to AI results in a promising field of enquiry that has, until now, not been the focus of academic research. Subject to budgetary considerations, a new internationally competitive Working Group on Mathematical Foundations of Artificial Intelligence will be created at the Johann Radon Institute for Computational and Applied Mathematics (RICAM).

Cultural Heritage & Data Science

Heritage science is a multi- and interdisciplinary research field comprising multidimensional research on cultural and natural heritage. This umbrella term includes all academic aspects relating to preserving and handing down, transforming, (re)interpreting, and contextualizing natural and cultural assets and aims to explore the materiality of cultural heritage. As a field of research, heritage science is highly dynamic and rapidly growing. The extraordinary collections held in museums, libraries, and archives, not to mention monuments, archaeological sites, and paleontological excavations, all contain countless objects that are unique in their form and/or history. The task of heritage science is to document, preserve, and interpret these objects using a multi- and interdisciplinary inventory of methods. Moreover, heritage science is playing an ever greater role in socially relevant issues. For example, it contributes to working out solutions for handling cultural monuments responsibly and disseminating the significance of cultural and natural heritage as widely as possible.

At the OeAW, the aim was set to bolster cross-institutional collaboration within Austrian heritage science and contribute to the improved networking of various stakeholders thus enabling them to increase their participation in international programs and projects, especially at the European level (such as E-RIHS: European Research Infrastructure for Heritage Science). To this end, the OeAW plans to set up an Austria-wide **Heritage Science Research Platform**.

Long-term research in cultural heritage requires particular framework conditions and particular support. The targeted continuation of existing long-term projects and the competitive awarding of opportunities to start new projects on a long-term basis are essential duties of an academy of science and, as such, are key concerns of the OeAW. Ultimately, what is also at stake is raising awareness about the importance of the humanities, social sciences, and cultural studies, especially with regard to cultural identities.

The OeAW attributes particular importance to the expansion of its **Austrian Center for Digital Humanities and Cultural Heritage** (ACDH-CH), beginning 01/01/2020. The ACDH-CH unites two of the OeAW's main priorities in a single institute: Firstly, basic research in the humanities, with long-term projects relating to the discovery and preservation of cultural heritage; and, secondly, methodological and theoretical paradigms of digital documentation, processing, research, and visualization in Digital Humanities. Within the ACDH-CH, these two pillars will support one another more strongly than ever before, also helping in the development of collaborative work on the wealth of resources within cultural memory. In close collaboration with the institutes, the ACDH-CH also aims increasingly to pool and optimize the infrastructural needs of other OeAW institutes with regard to digital research projects, data collection and processing, and digital publications. In this context, the visibility of data sets in the humanities, social sciences, and cultural studies, and their research will play a significant role. The close connection of long-term humanities research on cultural heritage, on one hand, and the highly dynamic research approaches of Digital Humanities, on the other, open up innovative paths in

the humanities, social sciences, and cultural studies of the twenty-first century—all this, of course, subject to budgetary considerations.

4.1. Careers in Research

The coming performance agreement period will be characterized by the **practical experience of implementing the OeAW career model, in combination with the collective agreement**. Numerous requirements contained in the draft Austrian University Development Plan (GUEP) 2022–2027—such as improved transparency, increased mobility, and the incorporation of doctoral students as "first-stage researchers"—are included in the career model. This means a continued **high degree of compatibility** between the OeAW and the universities in terms of research career paths. The OeAW's employment offer to its academic staff—of whom it employed an average of around 1,200 in 2019—is both transparent and internationally comparable; it follows the career stages of the EU model in *Towards a European Framework for Research Careers*¹⁸.

- Early-career stage: Achievement of clearly defined development goals for the appropriate career level, with the active support of the relevant institute.
- Junior group leader or tenure-track research associate positions have the defined possibility of a continuous career at the OeAW.
- Senior Academy Scientists constitute a specific employment category for those working on long-term projects, subject to requirements.

The main objective of the career model is to offer the best conditions for continuous scientific development to all academic staff at the OeAW, regardless of their contractual situation and career stage. In this way, the OeAW increasingly takes on responsibility for the development of those researchers who will not remain at the Academy in the long term. Ultimately, the OeAW can only offer a long-term career at its institutes to the best of its early-career researchers on an international scale.

Sustainable tenure options can be offered both to advanced early-career researchers who successfully pass the OeAW's quality-assured admissions process, and to holders of top-level personal grants (domestic or foreign, such as the Austrian START prize or the ERC Starting Grant) who approach the OeAW with a request to carry out their project within an OeAW institute. This results in a flexible mix of possibilities both to provide outstanding staff with an attractive career development path at the OeAW and to recruit excellent external candidates (opportunity hiring).

Analysis and development of the staff evaluation process—especially with regard to tenure—require particular attention during implementation of the career model.

4.2. Competition and Innovation

The exemplary, successfully established **Innovation Fund** "Research, Science and Society", which supports exceptionally original research projects from all areas of the Academy regardless of topic, will continue subject to budgetary considerations. The research projects and initiatives that receive funding are distinguished by both the potential for academic excellence and a high degree of risk. These might include, for example, work on research areas that have not previously been pursued, which lie between established research fields and are more than usually open-ended in terms of outcome; or the development of innovative collaboration methods; or the creation of new concepts in the advancement of early-career researchers, female researchers, or mobility support. The key criterion is and remains the innovative potential of the project. The competition between novel, promising ideas, supported by evaluation in line with internationally accepted standards, will contribute on an ongoing basis to the dynamic development of the OeAW as an organization, and beyond.

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¹⁸ https://era.gv.at/object/document/1509

Highly sought-after, competitively awarded third-party funding is a key innovation driver in the OeAW's portfolio. Therefore, the OeAW will continue its **active third-party funding strategy** in the coming performance agreement period. It will further optimize its framework conditions in order to ensure a consistently high success rate in acquiring both national and European third-party funding. A focal point will be the transition to the 9th EU framework program (Horizon Europe), expected at the start of 2021. The OeAW will continue to participate in stakeholder processes around the implementation of Horizon Europe as well as the national roadmap and strategic processes concerning research funding. Researchers must receive the best possible support during the transition to Horizon Europe. Thus, OeAW's Grant Service will provide comprehensive, focused advisory services to researchers.

Backup and loss-free storage of research results and data have always been a key concern of the OeAW. Free access to research data (as far as is reasonable) ensures that research is as transparent and as sustainable as possible. Increasingly, both national and international funding bodies are making their funding conditional on the transparency and long-term reuse possibilities of research data. This means that **research data management** is becoming increasingly important. The OeAW will develop rule-compliant solutions¹⁹ in order to safeguard its future as a funding recipient. The future research data management strategy (cf. also Section 1.1.3.) will aim to make the OeAW's many data pools as easy as possible to organize and to access.

4.3. Quality Assurance

Research-adequate quality assurance is conducted at the OeAW

- individually (in the everyday activity of the institutes, in particular through academic management) and institutionally (for example, through periodic or ad-hoc institute evaluations);
- ex ante (before implementing a new academic unit) and ex post (as part of a tenure evaluation after several years of employment at the OeAW);
- and centrally and locally (through a mixture of feedback measures at a given institute or within a working group).

All quality assurance processes at the OeAW consider the developments and characteristics of the relevant field of research as well as the special mission of the institute, such as preserving cultural heritage or fulfilling political consultancy contracts. Tools, procedures, and key performance indicators used in the quality assurance process are adjusted accordingly. This is done in order to attain the greatest possible informative value with regard to the issues under examination and therefore to create the optimal basis for all subsequent decision-making.

The goal of assuring consistently high research quality can only be achieved if that research is conducted by the "best minds". This is why the career model for OeAW academic staff includes standards that bear directly on research quality and therefore also research quality assurance. For example:

- Positions from "doctoral student" and up are advertised internationally to ensure that the post is filled on a competitive basis by the best possible candidate.
- Quality-assured procedures involving both internal and external experts ensure that internationally outstanding researchers are appointed to leadership positions.
- A structured feedback culture, adapted to the relevant career stage and research field, helps to
 ensure optimal career development for academic staff during their employment at the OeAW.

 $^{^{\}scriptscriptstyle{19}}$ Cf. e.g. the FWF guidelines:

https://www.fwf.ac.at/de/forschungsfoerderung/open-access-policy/forschungsdatenmanagement/

 Employment contracts are only made permanent—this is always conditional on organizational requirements—if supported by outstanding academic achievement, proven in employee evaluations conducted according to international norms.

The conclusion of **target agreements** between the Presiding Committee and the institutes serves as the working basis for research activities during a given performance agreement period. These target agreements are supported by regular, internal **target agreement monitoring meetings**, as well as by international **Scientific Advisory Boards**.

The **evaluation of institutes** in accordance with international norms has been standard practice at the OeAW for a long time. Key questions concern the development and progress of individual research groups within the institutes, with an eye to the OeAW's research portfolio as a whole, focusing on excellence on an internationally comparable basis.

4.4. Research Infrastructure

Research infrastructures form the basis of excellent research. The requirements for infrastructure to be competitive are high and rising; the costs involved must be secured by the OeAW's global budget.

Connections between institutions will be more strongly encouraged when setting up and running research infrastructures. This generates synergy, while interdisciplinary forms of use create added value.

In the coming performance agreement period, the OeAW anticipates a high degree of dynamism in the area of infrastructure. The following measures will be undertaken independently by the OeAW:

Due to the effects and possibilities created by digitization in almost all academic fields—handling extremely large data volumes and networked access to digital data—joint investment in e-research infrastructures is required. These investments lay the foundations for using AI in a network of digital research infrastructures. Both High Performance Data Analysis (HPDA) and fast computing (e.g. the Vienna Scientific Cluster) must be further developed and networked, ideally supported by AI. The OeAW is committed to make innovative digital technology widely available — for example, High Performance Computing for all OeAW institutes to which it is scientifically useful—and, at the same time, to intensify its cooperation with universities in this field. Any subject-specific requirements (such as in archaeology or computational biology) should be considered.

Provision of a **High Performance Data Analysis Center** is an integral element of the current performance agreement. HDPA is a pilot project for cross-institutional shared use of a High Performance Computer Infrastructure. A concept is currently under discussion involving partner universities in Vienna. This will increase both the diversity and the visibility of the project. The experience and expertise will be pooled with all partners involved in order to successfully continue and expand HPDA. Future issues around location, technology, and user concepts will be jointly addressed. The vision of the project is to develop HPDA gradually from a local, to a regional, to a national, and finally to a European solution. This means that, during expansion of HPDA, consolidation will be achieved with the Vienna Scientific Cluster in the medium-term; with the Austrian Science Cloud in the long-term; and, finally, with the European Science Cloud.

The consolidation of the Austrian Center for Digital Humanities & Cultural Heritage (ACDH-CH), aimed at the handling, interpretation, and preservation of cultural heritage, brings with it an increased need for **humanities-relevant infrastructure**. To enable interdisciplinary, cross-institutional collection, handling, and use of long-term-available digital data sets, digital infrastructures for text collections and publications will be created on the basis of TEI/SML and a shared technical platform for EPUB.OEAW 6 ARCHE, developed in cooperation between ACDH-CH and the OeAW Press.

Alongside the directly research-related infrastructures, the OeAW's **communications equipment** should also be brought up to date. Investing in multimedia spaces, video conference infrastructures, and Smart Whiteboards will improve both collaboration within the OeAW and communication with external research partners.

New paths in the **visualization of primary and research data** are also envisaged: for example, displaying map material using a digital globe (Hyperglobe). The spherical display allows geographical information to be experienced three-dimensionally, whether this is data from digitized historical maps or geographical data extracted from project results (climate research, migration studies, geographical networks, etc.).

4.5. Research Collaboration

The OeAW views its collaborations—internal and external, national, European, and global—as a key tool to consolidate **Austria as a place of innovation in cooperative, excellence-driven basic research**: by building key alliances at the personal level and between working groups and institutions, by making use of synergies, and by generating added scientific value. In the coming performance period, the OeAW intends to pursue and expand its varied and successful range of collaborations.

The **Historical Institute at the Austrian Cultural Forumin Rome** ("Historisches Institut beim Österreichischen Kulturforum in Rom: HI Rom") performs a crucial function at the interface of Italian studies in Austria. For several years, the OeAW has been in dialogue with the relevant federal ministries about integrating HI Rom into the OeAW. If these talks do not reach a positive outcome by the end of 2019, the OeAW will nonetheless continue its academic support of HI Rom and will also award travel and research fellowships, subject to budgetary conditions.

The research institutes assembled in the **Historical and Political Archives Platform** ("Plattform zeithistorischer politischer Archive")—"Verein für die Geschichte der Arbeiter/innenbewegung", "Stiftung Bruno Kreisky Archiv", "Dr. Wilfried Haslauer Bibliothek", "Karl von Vogelsang-Institut"— are currently under scientific assessment. The OeAW will continue its existing academic support of the synergistic work of these institutions; further networking with relevant research conducted at the OeAW is desired.

4.6. New Research Initiatives

The OeAW is **open to new research projects** at an internationally competitive level: personnel-wise, organizationally, and thematically. A **substantial increase in the OeAW global budget** is required in order to carry out the novel initiatives outlined below. This increase will be the object of the upcoming performance agreement negotiations.

For appropriate subject areas—such as computational sciences or quantum physics—we propose founding a **hub**. This **new**, **flexible organizational model** functions like a node connecting activities from different disciplines, from a number of research institutes, or even across regions, and developing these in collaboration. It will be decided on a case-by-case basis whether a loose or more institutional organizational connection/structure is suitable.

Research on Anti-Semitism

Building on the Interdisciplinary Studies in Anti-Semitism Research Platform to be implemented in 2020, the OeAW plans to found a Center for **Interdisciplinary Studies in Anti-Semitism** in 2021. This center, which will gradually be expanded, will fill a research gap in Austria. Its focus will be interdisciplinary basic research on anti-Semitism, anti-Judaism, and anti-Zionism past and present: roots, manifestations, and effects. The research projects will be broadly diverse both thematically and conceptually, and will expressly consider current developments such as questions of digital ethics, which are becoming urgent in an ever more digital world.

Caucasus Studies

Caucasus Studies is a highly relevant field in Austria, both academically and strategically. In Vienna, it is embedded in an outstanding Eurasian Studies environment (Iranian studies, Ottoman studies, Byzantine studies, and Modern Greek studies). A Caucasus Studies Working Group is already up and running jointly with the University of Vienna.

A **Department of Caucasus Studies** will be set up at a suitable OeAW institute in order to establish international visibility in this research area. In this context, it is vital to engage in talks with the University of Vienna about participation in relevant language and subject teaching.

Economic Research: Asia, Africa, and Europe

The phased establishment of an **Institute for Basic Economic Research: Asia, Africa, and Europe** would address highly relevant issues around the economic relationships between these three regions and shed light on future-oriented questions of economic strategy. The OeAW will endeavor to secure a significant share of the funding from the Austrian National Bank.

The first step will consist in setting up an Adjunct Fellowship Program. Outstanding researchers who are established at another research or teaching institution will be affiliated with the institute. Each will be provided with a doctoral student post. The institute will act as a new, internationally competitive nexus between university and non-university institutes in Asian, African, and international economic studies in Austria. At the same time, it will gradually add an economic focus to the OeAW's research portfolio.

Cooperation between the future institute and existent research in Asian studies at the OeAW (Institute of Iranian Studies - IFI; Institute for the Cultural and Intellectual History of Asia - IKGA; Institute for Social Anthropology - ISA) should be considered if helpful and practical. Increasing collaboration between the relevant working groups and institutes within the **complex research field of Asian studies** allows innovative research questions to be developed, interdisciplinarity to be fostered, synergies to be productively utilized, and even greater international visibility to be attained.

Sustainable Human Wellbeing

Building on previous work relating to sustainability and to the Sustainable Development Goals of the Agenda 2030, the OeAW will go a step further in this performance period and combine its activities around sustainable development and climate change. Many OeAW institutes and commissions already have expert knowledge in this area: the Vienna Institute of Demography (VID), the Institute for Comparative Media and Communication Studies (CMC), the Institute for Urban and Regional Research (ISR), the Institute for Interdisciplinary Mountain Research (IMR), the Commission for Interdisciplinary Ecological Studies, the Commission for Climate and Air Quality, and the Commission for Migration and Integration Research, to name just a few.

In a pilot phase, academic staff at various OeAW establishments will pursue research in the spirit of sustainability sciences²⁰, coordinating relevant activities across the OeAW within a **Sustainable Human Wellbeing Research Platform**. This platform will focus on research on sustainable human wellbeing and the following three aspects of sustainability studies:

- Demography and Adaptive Capacity to Climate Change
- Media and Communication Science
- Environmental History

The aim is to achieve a better understanding of interactions between natural and societal systems, and to discern which development paths might be preferable options for the future.

²⁰ Cf. Global Sustainable Development Report "The Future is Now". https://sustainabledevelopment.un.org/content/documents/24797GSDR_report_2019.pdf

Subsequently, the OeAW will explore whether it is useful to found a Sustainable Human Wellbeing Hub.

Cori Institute of Molecular and Computational Metabolism

The social and medical impact of **metabolic disorders** requires new approaches to both prevention and treatment.

Therefore, the OeAW plans to work closely with the University of Graz, the Medical University of Graz, and the Graz University of Technology to set up the Cori²¹ Institute in Graz: a site with a long, successful history of academic research in metabolism, gerontology, infection biology, oncology, applied mathematics, biomedical modeling, and medical engineering, which can serve as a foundation for further work. The Cori Institute will reinforce the combination of diverse subject expertise present at Graz and enhance its visibility on the international scale.

The objective of the Cori Institute is to research, in an interdisciplinary environment, metabolic processes and their role in pathogenesis. The rapid development of efficient analytical and visual methods for examining biological systems, the discovery of groundbreaking new genetic engineering procedures, and the tremendous progress in data management, modeling, and simulation all enable an entirely new approach to understanding biological processes and the emergence, diagnosis, and treatment of human diseases. To make use of this opportunity, traditional models, in which research is carried out in individual research groups, should be broken down and replaced by new, interdisciplinary teams that are able to collect and connect experimental and clinical data and transform these into rational models. The Cori Institute will follow this innovative new path: researching highly complex metabolic processes by transforming experimental and clinical research outcomes into rational, mathematical models. Highly qualified early-career researchers from information technology, mathematics, biology, chemistry, medicine, and engineering will pursue creative, interactive, risk-positive biomedical research and thus enable the development of new medicines and new medical technologies.

Computational Sciences Hub

Modern methods in molecular biology subsist on the complex analysis and interpretation of massive volumes of data. The Life Sciences institutes of the OeAW (CeMM, GMI, IMBA) work on biological problems using the most innovative experimental methods. This potential could be exploited to the fullest if basic-research-oriented computational biology, and computer sciences overall, were developed further at the OeAW. This is why the Academy intends to found **its own computational sciences unit**: theoretical research that advances the development of models, algorithms, software, and computer simulations, which will also be used to answer interdisciplinary questions in the natural sciences. An appropriate supercomputing infrastructure (HPDA cluster) is already in place and could be expanded in good time to meet new requirements. The leader of the working group based at the Computational Sciences Hub should unite a methodological unique selling point with an interdisciplinary focus and a keen bent for collaborative working, so that optimal synergy can be created.

Quantum Physics Hub: Austria - China

In the last years, there has been a uniquely successful collaboration between Austrian and Chinese research groups in basic research in quantum physics. This collaboration should be significantly bolstered, particularly so that quantum physicists working in Austria can spend periods—even longer ones—in China, and vice versa, with only a minimum of bureaucracy.

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²¹ Named after Carl Ferdinand Cori (1896–1984) and Gerty Theresa Cori (1896–1957). In 1947, Gerty and Carl Cori, together with Bernardo Alberto Houssay, received the Nobel Prize for Physiology or Medicine for their work on glycogen metabolism.

Consequently, the OeAW proposes to found the Quantum Physics Hub: Austria—China (working title), co-sponsored by the Chinese Academy of Sciences and the OeAW.

5. Research-Oriented Units

The **Audiovisual Research Archive** is a nationally and internationally prominent competence center for audiovisual documentation at the interface of science and public outreach, research, and technology.

The archive cooperates with institutions both within and outside of the OeAW. The focus of this cooperation is indexing existing collections, taking into account the history of the subject and institution, and restoring and re-recording historical sound recordings. In connection with Responsible Science and Open Science, the archive works together with source communities to catalogue their collections. It is in the process of improving its digital infrastructures with the aim of achieving greater visibility and better accessibility. The archive's technical, methodological, and research data management services are worked out and formalized in coordination with related institutions and service providers at a national and international level.

The work of **BAS:IS** (Library, Archive, Collections: Information & Service; in German, "Bibliothek, Archiv & Sammlungen") fits organically into the list of the Academy's tasks in the scholarly indexing, safeguarding, and interpretation of cultural heritage. BAS:IS is a research-related service unit which provides its technical skills to others in the form of library/archival consulting. In all three areas—libraries, archives, and collections—in-house research continues. The presentation of unique scholarly collections using digital advances merits particular mention.

6. Austrian Academy of Sciences Press

The OeAW Press intends to raise its profile as an academic high-quality publisher both nationally and internationally. The sales platform (web shop) will be fundamentally redesigned for modern electronic sales (e-commerce).

Publishers are widely urged to adopt the Open Access (OA) Strategy in the course of national and European initiatives. The OeAW Press offers its authors the choice of all academically recognized OA publication forms using state-of-the-art open access publication and dissemination tools, thus fostering an open research and publication culture (Open Science).

The OeAW Press runs the largest institutional repository currently operating in Austria and aims to retain its position as the leading OA publisher in the country. The OeAW Press plans to develop a state-of-the-art platform to store and disseminate OA publications: either exclusively on behalf of the Press or as a joint project with the Austrian Center for Digital Humanities & Cultural Heritage (ACDH-CH).

The planned expansion of the product portfolio concerns active acquisition of projects from outside of the humanities, social sciences, and cultural studies, and/or domestic and foreign authors across all disciplines who have no direct connection with the OeAW. In addition, a commercial division will be established for upmarket non-fiction on academic themes.

7. Administration

The OeAW's central administrative staff support the research institutes, agencies and bodies, members, and fellowship holders, among others, in all non-academic matters. Under the supervision of the Presiding Committee, the central administration deals with day-to-day business, ensures that the necessary framework conditions are in place, and coordinates the fulfilment of the requirements issued by the public authorities.



Building on the measures undertaken in the two previous performance agreement periods and in the spirit of **good governance**, further steps will be taken to optimize management processes in a research-adequate way and to make them more efficient using electronic workflows.

Increased attention will be paid to the following issues:

- In the course of the ongoing organizational development process, risk and compliance management will be pursued in accordance with the guidelines: for example, by means of a Code of Conduct for all OeAW organizational units.
- The OeAW digitization strategy will include management measures to optimize and streamline service provision processes and further increase service orientation in a research-adequate manner. OeAW-wide management streamlining using **digital workflows** is planned. One aspect of this is standardization of the human resources management process by means of electronic personnel files.
- Human resources management will focus on supporting the institutes and early-career researchers with academic career planning. Individual consulting will be offered and the training

available for targeted talent development purposes will be expanded. An excellence-based Employee Life Cycle monitoring process will be established. The OeAW will also work to achieve the Human Resources Excellence in Research Award (HRS4R). Support and mentoring services for international staff will be further expanded, both through the Welcome Center and in connection with the focus on multilingualism.

- In financial management, the OeAW-wide implementation of a unified ERP system will be finalized by 2022. The financial management of the OeAW group will be further centralized via the ongoing harmonization of systems and processes.
- Centralized procurement will be implemented by the establishment of a central procurement coordination office, independent application of federal procurement laws and resulting processes, operative development of tendering processes, and further development of SAPsupported purchasing processes.
- IT at the OeAW aims at ongoing improvement of processes relating to data and IT security. The OeAW digital collaboration and communication infrastructure, based on a delocalized online server within the Academy's professionally structured Cloud and eGroupware tools, will be expanded. The process of centralizing the server housing will also continue.

8. Site Development

In the coming performance period, the OeAW will concentrate on consolidating its site in Vienna. A key element here is the opening of the **Campus Academy** in the heart of the city: a modern center of knowledge that will be both the site of outstanding basic research and a living space of discussion and debate between the academy and the general public. The potential use of the Campus site will be significantly optimized by means of a renovation process, using the latest technology and in accordance with the regulations. This will create over 200 additional individual and project workspaces across the existing area and the new extension. Renovation work on the OeAW main building will finish in the first four months of 2021; on the Postgasse site, at the end of 2021.

The "Postsparkasse" building, designed by Otto Wagner, is another option created by the consolidation and restructuring process around the Campus Academy. Not only humanities but also natural sciences institutes can be moved into the building: for example, the Institute of High Energy Physics (HEPHY), the Stefan Meyer Institute for Subatomic Physics (SMI) and the Acoustics Research Institute (ISF). The site's close proximity to the Campus Academy increases potential synergy effects.

9. Budgetary Requirements

Status Quo 2018-2020:

In accordance with the **2018–2020 performance agreement**, the federal government's expenditure for the OeAW (including the Erwin Schrödinger Center for Quantum Science and Technology [ESQ] and IMBA Center for Stem Cell Research) amounts to 363.6 million EUR for those three years, excluding services in kind amounting to approximately 12.6 million EUR.

The volume of **commissionings** amounts to 25.1 million EUR. Therefore, the global budget received by the OeAW between 2018 and 2020 amounts to 338.5 million EUR, of which 24.4 million EUR are for funding activities within fellowship programs.

The OeAW bases its expectation to **continue** its activities at an internationally competitive level in the coming years and to maintain its self-financed staffing levels on these numbers.

This does not include one-off investments for site development purposes. **Separate financing** for the Campus Academy has been secured **outside of the performance agreement**.

Pro Futuro 2021-2023:

The OeAW's portfolio stands within the Academy's legally guaranteed sphere of autonomy. Completing these tasks in 2012–2023 requires a **global** target **budget** of 398.8 million EUR. This includes funds amounting to 3 million EUR for the Erwin Schrödinger Center for Quantum Science and Technology (ESQ) and 9 million EUR for the IMBA Center for Stem Cell Research/In-Vitro Disease Modeling.

The required global budget increase of 61.6 million EUR is broken down as follows:

- In the 2021–2023 performance period, general inflation will generate costs of 28.1 million EUR, of which 16 million alone are for index adjustments in human resources. This figure also includes the (re)investments required, for example, in the course of advancing digitization.
- The further consolidation of human resources in the context of fellowship funding of early-career researchers (pre-doc, post-doc and mobility support) will create an additional need of 14 million EUR.
- A minimum of 20.5 million EUR of new funding is required for the dynamic development of existing OeAW institutes and the implementation of new research initiatives.
- In order to strongly encourage high-risk/high-gain ideas and innovative dynamics, the Innovation Fund must be increased and applications invited at least twice during the coming performance period. This will require a further 5 million EUR.
- Efficiency measures, such as the streamlining and further digitization of management processes and the centralization of procurement, have a total expected savings potential of around two percent of the current global budget (excluding fellowships): this amounts to around 6 million EUR over three years. The OeAW intends to use this saving to finance, for example, the move from interim accommodation (including storage) into the Campus Academy, interdisciplinary topic platforms, early-career support via the Summer/Winter Schools and the Austrian Scholarship Fund.

The OeAW assumes that all commissionings in accordance with the 2018–2020 performance agreement will continue, where appropriate, outside of the OeAW global budget in 2021–2023, and that they will be additionally financed in the case of increased costs. In order to continue the current **commissionings portfolio in 2021–2023**, a further 1.2 million EUR is required due to a rise in the cost of member contributions. This means a total budgetary need of 26.3 million EUR for commissionings in 2021–2023.

Therefore, the OeAW foresees a need for federal government expenses amounting to 426.4 million EUR over three years in the context of the **2021–2023 performance agreement** between the OeAW and the BMBWF (excluding in kind services and investments for the purpose of site development). This constitutes an increase of approximately 17 percent compared to the current performance agreement period.

This figure does not include one-off investments for the purposes of large-scale site development measures: for example, the financial requirements for consolidation in the "Otto Wagner Postsparkasse" building are yet to be clarified and negotiated separately.