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The European Code of Conduct for Research Integrity

REVISED EDITION

The European Code of Conduct for Research Intregrity
Revised Edition

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secretariat@allea.org
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Preamble

Research is the quest for knowledge obtained through systematic study and thinking, observation and experimentation. While different disciplines may use different approaches, they share the motivation to increase our understanding of ourselves and the world in which we live. Therefore, "The European Code of Conduct for Research Integrity" applies to research in all scientific and scholarly fields.

Research is a common enterprise, carried out in academic, industry and other settings. Research involves collaboration, direct or indirect, which often transcends social, political and cultural boundaries. It is underpinned by freedom to define research questions and develop theories, gather empirical material and employ appropriate methods. Therefore, research draws on the work of the community of researchers and ideally develops independently of pressure from commissioning parties and from ideological, economic or political interests.

A basic responsibility of the research community is to formulate the principles of research, to define the criteria for proper research behaviour, to maximise the quality and robustness of research, and to respond adequately to threats to, or violations of, research integrity. The primary purpose of this Code of Conduct is to help realise this responsibility and to serve the research community as a framework for self-regulation. It describes professional, legal and ethical responsibilities, and acknowledges the importance of the institutional settings in which research is organised. Therefore, this Code of Conduct is relevant and applicable to publicly funded and private research, whilst acknowledging legitimate constraints in its implementation.

The interpretation of the values and principles that regulate research may be affected by social, political or technological developments and by changes in the research environment. An effective code of conduct for the research community is, therefore, a living document that is updated regularly and that allows for local or national differences in its implementation. Researchers, academies, learned societies, funding agencies, public and private research performing organisations, publishers and other relevant bodies each have specific responsibilities to observe and promote these practices and the principles that underpin them.

1. Principles

Good research practices are based on fundamental principles of research integrity. They guide researchers in their work as well as in their engagement with the practical, ethical and intellectual challenges inherent in research.

These principles are:

- ***Reliability*** in ensuring the quality of research, reflected in the design, the methodology, the analysis and the use of resources.

- ***Honesty*** in developing, undertaking, reviewing, reporting and communicating research in a transparent, fair, full and unbiased way.

- ***Respect*** for colleagues, research participants, society, ecosystems, cultural heritage and the environment.

- ***Accountability*** for the research from idea to publication, for its management and organisation, for training, supervision and mentoring, and for its wider impacts.

2. Good Research Practices

We describe good research practices in the following contexts:

- Research Environment
- Training, Supervision and Mentoring
- Research Procedures
- Safeguards
- Data Practices and Management
- Collaborative Working
- Publication and Dissemination
- Reviewing, Evaluating and Editing

2.1 Research Environment

- Research institutions and organisations promote awareness and ensure a prevailing culture of research integrity.

- Research institutions and organisations demonstrate leadership in providing clear policies and procedures on good research practice and the transparent and proper handling of violations.

- Research institutions and organisations support proper infrastructure for the management and protection of data and research materials in all their forms (encompassing qualitative and quantitative data, protocols, processes, other research artefacts and associated metadata) that are necessary for reproducibility, traceability and accountability.

- Research institutions and organisations reward open and reproducible practices in hiring and promotion of researchers.

2.2 Training, Supervision and Mentoring

- Research institutions and organisations ensure that researchers receive rigorous training in research design, methodology and analysis.

- Research institutions and organisations develop appropriate and adequate training in ethics and research integrity and ensure that all concerned are made aware of the relevant codes and regulations.

- Researchers across the entire career path, from junior to the most senior level, undertake training in ethics and research integrity.

- Senior researchers, research leaders and supervisors mentor their team members and offer specific guidance and training to properly develop, design and structure their research activity and to foster a culture of research integrity.

2.3 Research Procedures

- Researchers take into account the state-of-the-art in developing research ideas.

- Researchers design, carry out, analyse and document research in a careful and well-considered manner.

• Researchers make proper and conscientious use of research funds.

• Researchers publish results and interpretations of research in an open, honest, transparent and accurate manner, and respect confidentiality of data or findings when legitimately required to do so.

• Researchers report their results in a way that is compatible with the standards of the discipline and, where applicable, can be verified and reproduced.

2.4 Safeguards

• Researchers comply with codes and regulations relevant to their discipline.

• Researchers handle research subjects, be they human, animal, cultural, biological, environmental or physical, with respect and care, and in accordance with legal and ethical provisions.

• Researchers have due regard for the health, safety and welfare of the community, of collaborators and others connected with their research.

• Research protocols take account of, and are sensitive to, relevant differences in age, gender, culture, religion, ethnic origin and social class.

• Researchers recognise and manage potential harms and risks relating to their research.

2.5 Data Practices and Management

• Researchers, research institutions and organisations ensure appropriate stewardship and curation of all data and research materials, including unpublished ones, with secure preservation for a reasonable period.

• Researchers, research institutions and organisations ensure access to data is as open as possible, as closed as necessary, and where appropriate in line with the FAIR Principles (Findable, Accessible, Interoperable and Re-usable) for data management.

• Researchers, research institutions and organisations provide transparency about how to access or make use of their data and research materials.

• Researchers, research institutions and organisations acknowledge data as legitimate and citable products of research.

• Researchers, research institutions and organisations ensure that any contracts or agreements relating to research outputs include equitable and fair provision for the management of their use, ownership, and/or their protection under intellectual property rights.

2.6 Collaborative Working

• All partners in research collaborations take responsibility for the integrity of the research.

• All partners in research collaborations agree at the outset on the goals of the research and on the process for communicating their research as transparently and openly as possible.

• All partners formally agree at the start of their collaboration on expectations and standards concerning research integrity, on the laws and regulations that will apply, on protection of the intellectual property of collaborators, and on procedures for handling conflicts and possible cases of misconduct.

• All partners in research collaborations are properly informed and consulted about submissions for publication of the research results.

2.7 Publication and Dissemination

• All authors are fully responsible for the content of a publication, unless otherwise specified.

• All authors agree on the sequence of authorship, acknowledging that authorship itself is based on a significant contribution to the design of the research, relevant data collection, or the analysis or interpretation of the results.

• Authors ensure that their work is made available to colleagues in a timely, open, transparent, and accurate manner, unless otherwise agreed, and are honest in their communication to the general public and in traditional and social media.

• Authors acknowledge important work and intellectual contributions of others, including collaborators, assistants, and funders, who have influenced the reported research in appropriate form, and cite related work correctly.

• All authors disclose any conflicts of interest and financial or other types of support for the research or for the publication of its results.

• Authors and publishers issue corrections or retract work if necessary, the processes for which are clear, the reasons are stated, and authors are given credit for issuing prompt corrections post publication.

• Authors and publishers consider negative results to be as valid as positive findings for publication and dissemination.

• Researchers adhere to the same criteria as those detailed above whether they publish in a subscription journal, an open access journal or in any other alternative publication form.

2.8 Reviewing, Evaluating and Editing

• Researchers take seriously their commitment to the research community by participating in refereeing, reviewing and evaluation.

• Researchers review and evaluate submissions for publication, funding, appointment, promotion or reward in a transparent and justifiable manner.

• Reviewers or editors with a conflict of interest withdraw from involvement in decisions on publication, funding, appointment, promotion or reward.

• Reviewers maintain confidentiality unless there is prior approval for disclosure.

• Reviewers and editors respect the rights of authors and applicants, and seek permission to make use of the ideas, data or interpretations presented.

3. Violations of Research Integrity

It is of crucial importance that researchers master the knowledge, methodologies and ethical practices associated with their field. Failing to follow good research practices violates professional responsibilities. It damages the research processes, degrades relationships among researchers, undermines trust in and the credibility of research, wastes resources and may expose research subjects, users, society or the environment to unnecessary harm.

3.1 Research Misconduct and other Unacceptable Practices

Research misconduct is traditionally defined as fabrication, falsification, or plagiarism (the so-called FFP categorisation) in proposing, performing, or reviewing research, or in reporting research results:

- ***Fabrication*** is making up results and recording them as if they were real.
- ***Falsification*** is manipulating research materials, equipment or processes or changing, omitting or suppressing data or results without justification.
- ***Plagiarism*** is using other people's work and ideas without giving proper credit to the original source, thus violating the rights of the original author(s) to their intellectual outputs.

These three forms of violation are considered particularly serious since they distort the research record. There are further violations of good research practice that damage the integrity of the research process or of researchers. In addition to direct violations of the good research practices set out in this Code of Conduct, examples of other unacceptable practices include, but are not confined to:

- Manipulating authorship or denigrating the role of other researchers in publications.
- Re-publishing substantive parts of one's own earlier publications, including translations, without duly acknowledging or citing the original ('self-plagiarism').
- Citing selectively to enhance own findings or to please editors, reviewers or colleagues.
- Withholding research results.
- Allowing funders/sponsors to jeopardise independence in the research process or reporting of results so as to introduce or promulgate bias.
- Expanding unnecessarily the bibliography of a study.
- Accusing a researcher of misconduct or other violations in a malicious way.
- Misrepresenting research achievements.
- Exaggerating the importance and practical applicability of findings.
- Delaying or inappropriately hampering the work of other researchers.
- Misusing seniority to encourage violations of research integrity.
- Ignoring putative violations of research integrity by others or covering up inappropriate responses to misconduct or other violations by institutions.
- Establishing or supporting journals that undermine the quality control of research ('predatory journals').

In their most serious forms, unacceptable practices are sanctionable, but at the very least every effort must be made to prevent, discourage and stop them through training, supervision and mentoring and through the development of a positive and supportive research environment.

3.2 Dealing with Violations and Allegations of Misconduct

National or institutional guidelines differ as to how violations of good research practice or allegations of misconduct are handled in different countries. However, it always is in the interest of society and the research community that violations are handled in a consistent and transparent fashion. The following principles need to be incorporated into any investigation process.

Integrity

- Investigations are fair, comprehensive and conducted expediently, without compromising accuracy, objectivity or thoroughness.
- The parties involved in the procedure declare any conflict of interest that may arise during the investigation.
- Measures are taken to ensure that investigations are carried through to a conclusion.
- Procedures are conducted confidentially in order to protect those involved in the investigation.
- Institutions protect the rights of 'whistle-blowers' during investigations and ensure that their career prospects are not endangered.
- General procedures for dealing with violations of good research practice are publicly available and accessible to ensure their transparency and uniformity.

Fairness

- Investigations are carried out with due process and in fairness to all parties.
- Persons accused of research misconduct are given full details of the allegation(s) and allowed a fair process for responding to allegations and presenting evidence.
- Action is taken against persons for whom an allegation of misconduct is upheld, which is proportionate to the severity of the violation.
- Appropriate restorative action is taken when researchers are exonerated of an allegation of misconduct.
- Anyone accused of research misconduct is presumed innocent until proven otherwise.

Annex 1: Key Resources

All European Academies (2013). "Ethics Education in Science". Statement by the Permanent Working Group on Science and Ethics. www.allea.org/wp-content/uploads/2015/07/Statement_Ethics_Edu_web_final_2013_10_10.pdf [Accessed 15/01/2017]

AllTrials: Trials Registration and Reporting Platform. http://www.alltrials.net/find -out-more/ [Accessed 14/03/2017]

American Association for the Advancement of Science (2017). The Brussels Declaration: Ethics and Principles for Science & Society Policy-Making. http://www.sci-com.eu/main/docs/Brussels-Declaration.pdf?58b6e4b4 [Accessed 14/03/2017]

Committee on Publication Ethics COPE. Guidelines. http://publicationethics.org/resources/guidelines [Accessed 15/01/2017]

Data Citation Synthesis Group, Martone M. (ed.) (2014). Joint Declaration of Data Citation Principles. San Diego, CA: FORCE11. https://www.force11.org/group/joint-declaration-data-citation-principles-final [Accessed 15/01/2017]

EQUATOR Network: Reporting Guidelines to enhance the quality and transparency of health research. https://www.equator-network.org/ [Accessed 13/03/2017]

EURODAT. Collaborative Data Infrastructure: Guidelines on data management. https://eudat.eu/data-management [Accessed 15/01/2017]

InterAcademy Partnership (2016). "Doing Global Science: A Guide to Responsible Conduct in the Global Research Enterprise". Princeton University Press. http://interacademycouncil.net/24026/29429.aspx [Accessed 15/01/2017]

International Committee of Medical Journal Editors. Defining the Role of Authors and Contributors. http://www.icmje.org/recommendations/browse/roles-and-responsibilities/defining-the-role-of-authors-and-contributors.html [Accessed 15/01/2017]

Organisation for Economic Cooperation and Development (OECD) and Global Science Forum (2007). Best Practices for Ensuring Scientific Integrity and Preventing Misconduct. https://www.oecd.org/sti/sci-tech/40188303.pdf [Accessed 15/01/2017]

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Wilkinson MD et al. (2016). The FAIR Guiding Principles for scientific data management and stewardship, Scientific Data 3:160018 doi: 10.1038/sdata.2016.18 http://www.nature.com/articles/sdata201618 [Accessed 15/01/2017]

World Conference on Research Integrity WCRI (2013). Montreal Statement on Research Integrity in Cross-Boundary Research Collaborations. http://www.researchintegrity.org/Statements/Montreal%20Statement%20English.pdf [Accessed 05/01/2017]

World Conference on Research Integrity WCRI (2010). Singapore Statement on Research Integrity. www.singaporestatement.org/statement.html [Accessed 15/01/2017]

Annex 2: Revision Process and List of Stakeholders

Revision Process

This document is based on "The European Code of Conduct for Research Integrity" developed in 2011 by All European Academies (ALLEA) and the European Science Foundation (ESF). It is a living document that will be reviewed every three to five years and revised as necessary to take account of evolving concerns, so that it can continue to serve the research community as a framework for good research practice.

The current revision is motivated by developments in, among others: the European research funding and regulatory landscapes; institutional responsibilities; scientific communication; review procedures; open access publishing; the use of repositories; and the use of social media and citizen involvement in research. Initiated by the ALLEA Permanent Working Group on Science and Ethics, the revision included extensive consultation among major stakeholders in European research, both public and private, to ensure a sense of shared ownership.

List of stakeholders

Multilateral stakeholders organisations that provided written feedback* and/or participated at the stakeholder consultation meeting in Brussels in November 2016+:

- BusinessEurope*+
- Centre for European Policy Studies (CEPS)*
- Committee on Publication Ethics (COPE)*+
- Conference on European Schools for Advanced Engineering Education and Research (CESAER)*+
- DIGITALEUROPE*+
- EU-LIFE*+
- European Association of the Molecular and Chemical Sciences (EUCHEMS)*+
- European Association of Research and Technology Organisations (EARTO)*+
- European Citizen Science Association (ECSA)*
- European Commission*+
- European Group on Ethics in Science and Technologies (EGE)*
- European Network of Research Integrity Offices (ENRIO)*+
- European University Association (EUA)*+
- Euroscience*+
- FoodDrinkEurope*+
- Global Young Academy (GYA)*+
- League of European Research Universities (LERU)*+
- Open Access Infrastructure for Research in Europe (OpenAIRE)*+
- Open Access Scholarly Publishers Association (OASPA)+
- Sense about Science*
- Science Europe*+
- Young European Associated Researchers (YEAR)*+
- Young European Research Universities Network (YERUN)*+

Annex 3: ALLEA Permanent Working Group on Science and Ethics

The ALLEA Permanent Working Group on Science and Ethics (PWGSE) is concerned with a wide range of issues, both 'internal' (within the scientific community) and 'external' (relations between science and society). Since ethical considerations have been an essential component in the consolidation of a united Europe, and also in the creation of ALLEA, the PWGSE was established to bring together experts from academies across Europe and provide them with a platform for continuous debate on research ethics and research integrity.

The PWGSE has been extending its capacities and activities during recent years, in order to adequately fulfil its mission of collective deliberation on topics such as research integrity, ethics education in science and research training, ethics of scientific policy advice, trust in science, scientific misconduct, and plagiarism, among others.

Further issues recently addressed include dual use of research outcomes, ethical aspects of risks, science and human rights, support for higher education and research in Palestine, research on human embryos, synthetic biology, nanotechnologies etc. Additionally, the group provides expertise for the Horizon 2020 funded ENERI project (European Network of Research Ethics and Research Integrity), which aims to train experts in ethics related issues and to harmonise research integrity infrastructures across Europe.

The PWGSE meets regularly and has also convened thematic meetings in wider settings, typically in partnerships with other relevant organisations such as the European Commission, the European Science Foundation (ESF), the International Council for Science (ICSU), and UNESCO, among many others. The members of the PWGSE drew on its extensive network of experts and institutions for the successful execution of the revision process of "The European Code of Conduct for Research Integrity".

Members of the ALLEA Permanent Working Group on Science and Ethics

Göran Hermerén *(Chair)* – Royal Swedish Academy of Letters, History and Antiquities
Maura Hiney – Royal Irish Academy, *Chair of Drafting Group*
László Fésüs – Hungarian Academy of Sciences, *Drafting Group*
Roger Pfister – Swiss Academies of Arts and Sciences, *Drafting Group*
Els Van Damme – Royal Academy of Sciences, Letters and Arts of Belgium, *Drafting Group*
Martin van Hees – Royal Netherlands Academy of Arts and Sciences, *Drafting Group*
Krista Varantola – Council of Finnish Academies, *Drafting Group*
Anna Benaki – Academy of Athens (Greece)
Anne Fagot-Largeault – Académie des Sciences (France)
Ludger Honnefelder – Union of the German Academies of Sciences and Humanities
Bertil Emrah Oder – Bilim Akademisi (The Science Academy, Turkey)
Martyn Pickersgill – Royal Society of Edinburgh (United Kingdom)
Pere Puigdomenech – Royal Academy of Sciences and Arts of Barcelona / Institute for Catalan Studies (Spain)
Kirsti Strøm Bull – Norwegian Academy of Science and Letters
Zbigniew Szawarski – Polish Academy of Sciences
Raivo Uibo – Estonian Academy of Sciences

Support to PWGSE and Drafting Group: Robert Vogt (ALLEA secretariat)

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ALLEA, the European Federation of Academies of Sciences and Humanities, was founded in 1994 and currently brings together 59 Academies in more than 40 countries from the Council of Europe region. Member Academies operate as learned societies, think tanks and research performing organisations. They are self-governing communities of leaders of scholarly enquiry across all fields of the natural sciences, the social sciences and the humanities. ALLEA therefore provides access to an unparalleled human resource of intellectual excellence, experience and expertise.

Independent from political, commercial and ideological interests, ALLEA's policy work seeks to contribute to improving the framework conditions under which science and scholarship can excel. Jointly with its Member Academies, ALLEA is in a position to address the full range of structural and policy issues facing Europe in science, research and innovation. In doing so, it is guided by a common understanding of Europe bound together by historical, social and political factors as well as for scientific and economic reasons.

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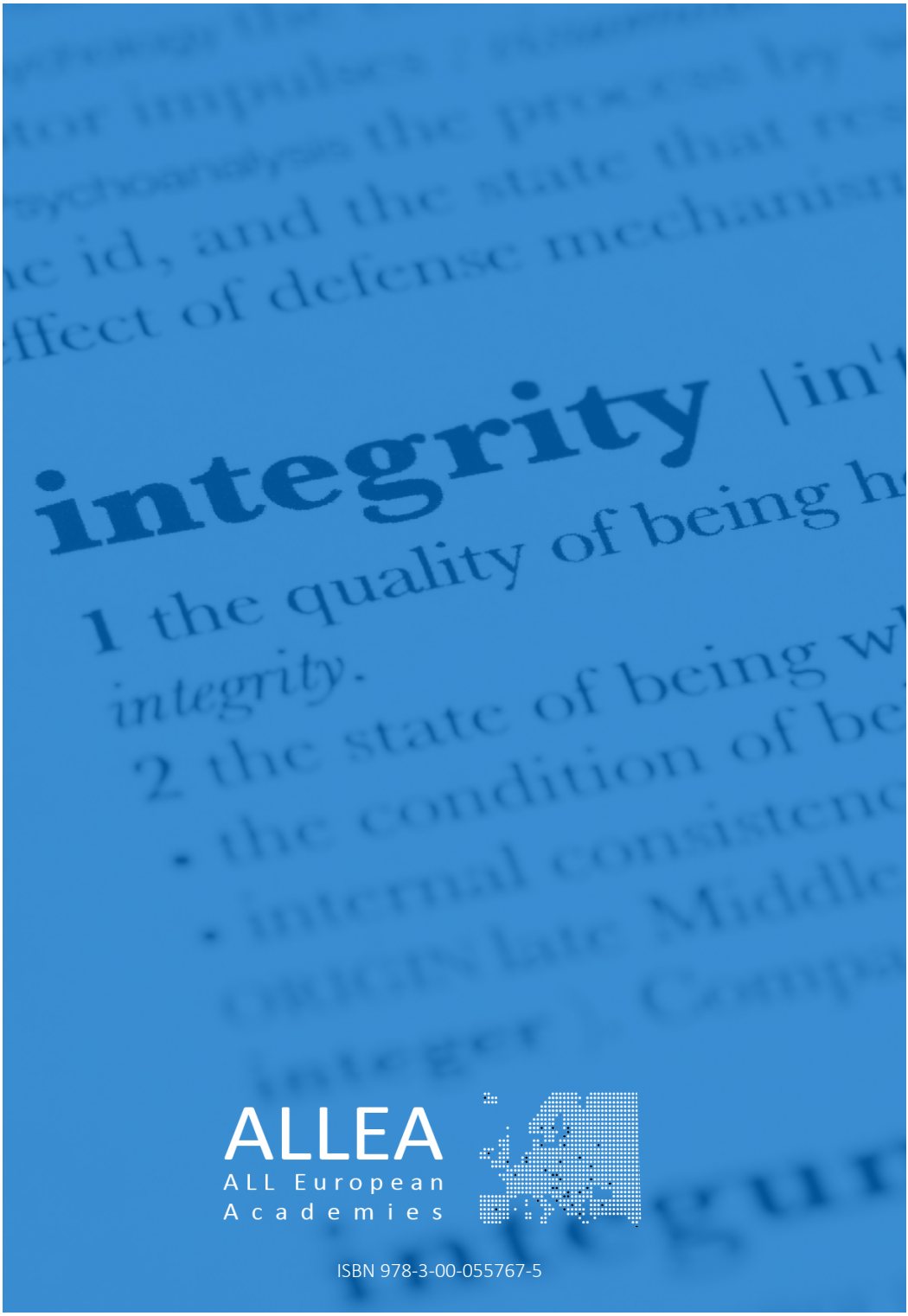
Member Academies

Albania: Akademia E Shkencave E Shqipërisë; **Armenia**: գիտությունների ազգային ակադեմիա; **Austria**: Österreichische Akademie der Wissenschaften; **Belarus**: Нацыянальная акадэмія навук Беларусі; **Belgium**: Academie Royale des Sciences des Lettres et des Beaux-Arts de Belgique; Koninklijke Vlaamse Academie van Belgie voor Wetenschappen en Kunsten; Koninklijke Academie voor Nederlandse Taal- en Letterkunde; Academie Royale de langue et de literature francaises de Belgique; **Bosnia and Herzegovina**: Akademija nauka i umjetnosti Bosne i Hercegovine; **Bulgaria**: Българска академия на науките; **Croatia**: Hrvatska Akademija Znanosti i Umjetnosti; **Czech Republic:** Akademie věd České republiky; Učená společnost České republiky; **Denmark**: Kongelige Danske Videnskabernes Selskab; **Estonia**: Eesti Teaduste Akadeemia; **Finland**: Tiedeakatemiain neuvottelukunta; **France**: Académie des Sciences - Institut de France; Académie des Inscriptions et Belles-Lettres; **Georgia:** საქართველოს მეცნიერებათა ეროვნული აკადემია; **Germany**: Leopoldina - Nationale Akademie der Wissenschaften; Union der deutschen Akademien der Wissenschaften; Akademie der Wissenschaften in Göttingen, Akademie der Wissenschaften und der Literatur Mainz, Bayerische Akademie der Wissenschaften, Berlin-Brandenburgische Akademie der Wissenschaften, Akademie der Wissenschaften in Hamburg, Heidelberger Akademie der Wissenschaften, Nordrhein-Westfälische Akademie der Wissenschaften und der Künste, Sächsische Akademie der Wissenschaften zu Leipzig (Associate Members); **Greece**: Ακαδημία Αθηνών; **Hungary:** Magyar Tudományos Akadémia; **Ireland**: The Royal Irish Academy - Acadamh Ríoga na hÉireann; **Israel**: תילארשיה תימואלה הימדקאה ם'יעדמל; **Italy**: Accademia Nazionale dei Lincei; Istituto Veneto di Scienze, Lettere ed Arti; Accademia delle Scienze di Torino; **Kosovo**: Akademia e Shkencave dhe e Arteve e Kosovës; **Latvia**: Latvijas Zinātņu akadēmija; **Lithuania**: Lietuvos mokslų akademijos; **Macedonia**: Македонска Академија на Науките и Уметностите; **Moldova**: Academia de Ştiinţe a Moldovei; **Montenegro**: Crnogorska akademija nauka i umjetnosti; **Netherlands**: Koninklijke Nederlandse Akademie van Wetenschappen; **Norway**: Det Norske Videnskaps-Akademi; Det Kongelige Norske Videnskabers Selskab **Poland**: Polska Akademia Umiejętności; Polska Akademia Nauk; **Portugal**: Academia das Ciências de Lisboa; **Romania**: Academia Română; **Russia**: Российская академия наук (Associate Member); **Serbia**: Srpska Akademija Nauka i Umetnosti; **Slovakia**: Slovenská Akadémia Vied; **Slovenia**: Slovenska akademija znanosti in umetnosti; **Spain**: Real Academia de Ciencias Morales y Políticas; Real Academia de Ciencias Exactas, Físicas y Naturales (Associate Member); Reial Acadèmia de Ciències i Arts de Barcelona; Institut d'Estudis Catalans; **Sweden**: Kungl. Vetenskapsakademien; Kungl. Vitterhets Historie och Antikvitets Akademien; **Switzerland**: Akademien der Wissenschaften Schweiz; **Turkey**: Türkiye Bilimler Akademisi; Bilim Akademisi (Associate Member); **Ukraine**: Національна академія наук України; **United Kingdom**: The British Academy; The Learned Society of Wales; The Royal Society; The Royal Society of Edinburgh



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