

## Research area and Keywords

In the online portal, we ask you to choose a research area and 3-5 keywords that best fit your proposal. The first two keywords should be from the research area selected. The other 1-3 keywords can be freely chosen from all Research areas.

You can choose the keywords and research area from a pre-defined list, similar to the list used in MSCA programmes. The list includes subcategories for each of the research areas. These are not used anywhere in the evaluation procedure, but included for your convenience only.

To select the right research area, we recommend you to start with choosing the keywords that best represent your proposal. Knowing the keywords, select the research area that best fits your selection.

Note: The research area and keywords are used for the selection of reviewers, and not used in any other way in the evaluation procedure.

## Keywords per Research Area

### Chemistry (CHE)

<b>C1 – Inorganic Chemistry</b>		
Bioinorganic chemistry	Catalytic materials	Coordination chemistry
Chemistry of non-metals	Inorganic chemistry	Organometallic chemistry
Radiation and nuclear chemistry	Solid state materials	
<b>C2 – Organic, Polymer and Molecular Chemistry</b>		
Carbohydrates	Chirality	Click chemistry
Combinatorial chemistry	Heterocyclic chemistry	Macromolecular chemistry
Molecular architecture and structure	Molecular chemistry	Natural product synthesis
Nucleic acid chemistry	Organic chemistry	Organic reaction mechanisms
Peptide chemistry	Polymer chemistry	Stereochemistry
Supramolecular chemistry	Synthetic organic chemistry	
<b>C3 – Physical and Analytical Chemistry</b>		
Analytical chemistry	Chemical instrumentation and instrumental techniques	Chemical reactions: mechanisms, dynamics, kinetics and catalytic reactions
Chemistry of condensed matter	Crystallography and X-ray diffraction	Chromatography
Colloid chemistry	Corrosion	Crystallisation
Electrochemistry, electro dialysis, microfluidics, sensors	Forensic chemistry	Homogeneous catalysis
Heterogeneous catalysis	Ionic liquids	Magnetic resonance
Mass spectrometry	Method development in chemistry	Microscopy
Molecular dynamics	Molecular electronics	Photocatalysis
Photochemistry	Physical chemistry	Physical chemistry of biological systems
Quantum chemistry	Separation techniques/extraction	Spectroscopic and spectrometric techniques
Surface chemistry	Theoretical and computational chemistry	Trace analysis
<b>C4 – Applied and Industrial Chemistry</b>		
Batteries	Biological chemistry, biochemistry	Biomaterials, biomaterial synthesis
Ceramics	Coating	Enzymology
Food chemistry	Fuel cells	Graphene, carbon nanotubes
Green chemistry	Hydrogen production/storage	Intelligent materials, self-assembled materials
Materials for sensors	Medicinal chemistry	Nanochemistry
Nano-materials: oxides, alloys, composite, organic-inorganic hybrid, nanoparticles	Pharmaceutical processes and production, Regulatory aspects, quality assurance, good manufacturing practice	Plastics
Porous materials, metal organic framework (MOFs)	Solar cells	Structural properties of materials
Surface modification	Targeted drug delivery/discovery	Thin films
Toxicology	Water splitting	Water treatment/purification

### Economic Sciences (ECO)

<b>E1 – Economics</b>		
Applied research econometrics	Behavioural and experimental economics	Economic geography
Economic growth	Economic history	Economics of education
Environment economics	Financial econometrics	Game theory
Global macroeconomic challenges	Health economics	Industrial economics
International trade	Labour economics	Macroeconomics theory
Monetary economics, international finance	Political economy	Public economics
Social economics, welfare economics	Statistics and big data	Urban and regional economics
<b>E2 – Economic Development</b>		
Circular economy	Cluster development	Environment issues in development economics
Key enabling technologies for development	Natural resources management	Public administration
Research & Open innovation, competitiveness		
<b>E3 – Management</b>		

Corporate governance and management	Human resources management	Industrial organisation
Research and innovation management	Start-up's, new business models in entrepreneurship, social entrepreneurship	Strategy, marketing
Value chain and optimisation		
<b>E4 – Finance</b>		
Accounting, international accounting standards, reporting, tax issues related to accounting	Banks, insurance companies, financial intermediaries & fund, credit rating agencies	Corporate finance, fundamentals analysis, capital budgeting, venture capital, risk assessment
Financial markets, stock markets, fixed income markets, other markets investments, asset pricing, bonds, derivatives, commodities		

#### Information Science and Engineering (ENG)

<b>G1 - Computer science and informatics</b>		
Algorithms, distributed, parallel and network algorithms, algorithmic game theory	Artificial intelligence, intelligent systems, multi agent systems	Bioinformatics, e-Health, medical informatics
Cognitive modelling, cognitive engineering, cognitive sciences	Complexity and cryptography, electronic security, privacy, biometrics	Theorem proving, symbolic, algebraic computations
Pervasive computing, ubiquitous computing, ambient intelligence, internet of things	Computer games, computer geometry, multi-media, augmented and virtual reality	Computer graphics, computer vision, multimedia, computer games
Parallel/distributed systems, GPGPU, grid, cloud processing systems	E-commerce, e-business, computational finance	E-learning, user modelling, collaborative systems
Intelligent robotics, cybernetics	Internet and semantic web, ontologies, database systems and libraries	Machine learning, data mining, statistical data processing and applications
Modelling engineering, human computer interaction, natural language processing	Numerical analysis, simulation, optimisation, modelling tools	Scientific computing and data processing
Sensor networks, embedded systems, hardware platforms	Software engineering, operating systems, computer languages	Neural networks, connectionist systems, fuzzy logic
Evolutionary computing, biologically-inspired computing	Theoretical computer science, formal methods	Quantum computing, DNA computing, photonic computing

#### **G2 - Systems and Communication Engineering: Electrical, electronic, communication, optical and systems engineering**

Control Engineering	Diagnostic and implantable devices, environmental monitoring	Electrical and electronic engineering: semiconductors, components, systems
Electronics, photonics	Human-computer-interfaces	Nano engineering
Networks (communication networks, sensor networks, networks of robots,etc.)	Optical engineering, photonics, lasers	Signal processing
Simulation engineering and modelling	Systems engineering, sensorics, actronics, automation	Wireless communications, communication, high frequency, mobile technology

#### **G3 - Products and Processes Engineering: Product design, process design and control, construction methods, civil engineering, energy processes, material engineering**

Aerospace engineering	Architecture, smart buildings, smart cities, urban engineering	Chemical engineering, technical chemistry
Civil engineering	Computational engineering and computer aided design	Energy collection, conversion and storage, renewable energy
Energy systems, smart energy, smart grids, wireless energy transfer	Environmental engineering and geotechnics	Fluid mechanics, hydraulic-, turbo-, and piston engines
Industrial bioengineering	Industrial design (product design, ergonomics, man-machine interfaces, etc.)	Lightweight construction, textile technology
Maritime engineering	Materials engineering	Mechanical and manufacturing engineering (shaping, mounting, joining, separation)
Production technology, process engineering	Sustainable design (for recycling, for environment, eco-design)	Transport engineering, intelligent transport systems
Waste treatment		

#### Environmental and Geosciences (ENV)

<b>V1 - Environment and society</b>		
Clean technologies, circular economy, life	Environmental determinants of health	Environmental regulations, climate

cycle assessment		negotiations and citizen science
Environmental risk assessment, monitoring	Mobility and transportation	Social and industrial ecology, sustainable development
Spatial and regional planning (including landscape and land management), GIS	Urbanization and urban planning, cities	Waste, by-products and residue management (including from agriculture)

#### **V2 - Earth system science**

Atmospheric chemistry, atmospheric composition, air pollution, indoor air quality	Biogeochemistry, biogeochemical cycles	Clean exploration and exploitation of natural resources
Climatology and climate change	Cryosphere, dynamics of snow and ice cover, sea ice, permafrost and ice sheets	Earth observations from space/remote sensing
Environmental chemistry, environmental forensics	Geochemistry, crystal chemistry, isotope geochemistry	Geology, tectonics, volcanology, physics of earth's interior, seismology
Hydrology, water management	Meteorology, atmospheric physics and dynamics	Mineralogy, petrology, igneous petrology, metamorphic petrology
Natural hazards	Noise pollution	Oceanography, marine science, coastal engineering
Paleoclimatology, paleoecology	Physical geography	Pollution (water, soil, sediment), rehabilitation and reconstruction of polluted areas, clean technologies
Sedimentology, soil science, palaeontology	Terrestrial ecology, land cover change	

#### **V3 - Evolutionary, population and environmental biology**

Animal behaviour	Biogeography, macro-ecology	Biodiversity, conservation biology
Comparative biology	Ecology	Ecotoxicology
Environmental, marine and freshwater biology	Population biology, population dynamics, population genetics	Species interactions (e.g. food-webs, symbiosis, parasitism, mutualism, bio-invasion)
Systems evolution, biological adaptation, phylogenetics, systematics		

#### **V4 - Food Science, Agriculture, Forestry and Non-Medical Biotechnology**

Agriculture production systems (animals)	Agriculture production systems (crops), including fertilisation and nutrient management	Applied plant biology
Applied biotechnology (non-medical), bioreactors, applied microbiology	Aquaculture, fisheries	Biohazards, biological containment, biosafety, biosecurity
Biomass and biofuels production	Biomimetics	Crop protection, pest and disease control
Environmental biotechnology, bioremediation, biodegradation	Food sciences, safety, traceability, authenticity, agroindustry	Forestry and forest management, agroforestry
Soil biology, soil functionality, soil management		

### **Life Sciences (LIF)**

#### **L1 - Molecular and Structural Biology**

Biophysics (e.g. transport mechanisms, bioenergetics, fluorescence)	DNA synthesis and degradation	DNA repair and recombination
Molecular metabolism	Molecular interactions	Protein synthesis, folding, modification and turnover
Lipid synthesis, modification and turnover	Carbohydrate synthesis, modification and turnover	RNA synthesis, processing, modification and degradation
Structural biology (e.g. crystallography, EM, NMR, PET)		

#### **L2 - Genetics, Genomics, Bioinformatics and Systems Biology**

Applied genetic engineering, transgenic organisms, recombinant proteins, biosensors	Bioinformatics	Biological systems analysis, modelling and simulation
Biostatistics	Computational biology	Epigenetics and gene regulation
Genetic epidemiology	Genomics and functional genomics	Genetic and genomic variation and related disorders
Comparative, evolutionary and population genomics	Chromosome structure organisation and dynamics	Metabolomics (including glycomics)
Molecular genetics, reverse genetics and RNAi	Proteomics	Quantitative genetics

Systems biology	Transcriptomics	Plant genetics
Genome editing	Genetic pharmacology	
<b>L3 - Cellular and Developmental Biology</b>		
Developmental biology and technology	Pattern formation and embryology in animal organisms	Molecular transport mechanisms
Mechanisms of growth control and cell proliferation	Cell differentiation, physiology and dynamics	Morphology and functional imaging of cells
Organelle biology	Plant development pattern formation and embryology in plants	Molecular mechanisms of signal transduction
Stem cells and cellular programming	Mechanisms and dynamics of cell migration	
<b>L4 - Physiology, Pathophysiology and Endocrinology</b>		
Ageing	Cancer and its biological basis	Cardiovascular diseases
Comparative physiology	Endocrinology	Metabolism, biological basis of metabolism related disorders
Organ physiology and pathophysiology	Environmental physiology	Rare/orphan Diseases
Reproductive biomedicine (reproductive physiology and endocrinology, infertility and pregnancy research)		
<b>L5 - Neurosciences and neural disorders</b>		
Behavioural neuroscience (e.g. sleep, rhythms, speech, handedness)	Cognitive neuroscience (e.g. learning, memory, emotions, consciousness)	Neural development and neuroplasticity
Mechanisms of pain	Molecular and cellular neuroscience	Neuroanatomy and excitability
Physiology of nerves and motor systems	Medicines, psychoactive drugs and pharmacology, poison.	Neuroimaging and computational neuroscience
Neurological disorders (e.g. Alzheimer's disease, Huntington's disease, Parkinson's disease)	Psychiatric disorders and clinical psychology (e.g. schizophrenia, autism, Tourette's syndrome, obsessive compulsive disorder, depression, bipolar disorder, attention deficit hyperactivity disorder, addiction)	Sensory perception (nose and smell, tongue and taste, eyes and vision, ears and hearing, skin, pain, touch and movements)
<b>L6 - Immunity and infection</b>		
Bacteriology	Biological basis of cancer immunity	Biological basis of auto-immunity/tolerance
Biological basis of immunity related inflammatory disorders	Biological basis of other immunity related disorders	Cellular and adaptive immunity
Immunogenetics	Immunological memory and tolerance	Immunosignalling
Microbiology	Parasitology	Phagocytosis and innate immunity
Prevention and treatment of infection by pathogens (e.g. vaccination, antibiotics, fungicide)	Veterinary medicine and infectious diseases in animals	Virology
<b>L7 - Diagnostic tools, therapies and public health</b>		
Diagnostic tools (e.g. genetic, molecular diagnostic)	Drug discovery and design (formulation and delivery)	Drug therapy and clinical studies
In vivo bio and medical imaging	In vitro cell and tissue imaging	Environment and health risks, occupational medicine
Gene therapy, cell therapy, regenerative medicine	Tissue regeneration and engineering	Immunotherapy (vaccine discovery, genetic vaccines)
Health services, health care research	Medical engineering and technology	Personalised medicine (diagnostic/prognostic biomarker, patient-orientated management solutions)
Pharmacology, pharmacogenomics	Public health and epidemiology	Radiation therapy
Surgery		

## Mathematics (MAT)

<b>M1 - Mathematics</b>		
Algebraic geometry	Algebraic number theory	Algebraic topology
Algorithms and complexity	Analytic number theory	Category theory and algebraic structures
Combinatorics	Complex analysis	Complex geometry
Differential Geometry	Functional analysis	Game Theory
General topology	Graph Theory	Group Theory
Harmonic analysis	Homological algebra	Low dimensional topology
Mathematical logic and set theory	Non commutative Geometry	Ordinary Differential Equations and

		Dynamical Systems
Partial Differential Equations	Probability	Ring theory
Set theory		
<b>M2 – Applied Mathematics</b>		
Control Theory	Data Analysis	Mathematical aspects of Biology
Mathematical aspects of Computer Science	Mathematical aspects of Economy and Finance	Mathematical aspects of Physics
Mathematics in Engineering and other Applied Sciences	Numerical analysis and scientific computing	Operational Research
Optimization	Scientific Computing	Statistics

### Physics (PHY)

<b>P1 – Particle and Nuclear Physics</b>		
Fundamental interactions and fields	Neutrino oscillations	Nuclear physics, heavy ions
Nuclear physics, nuclear structure	Particle accelerators and detectors	Particle physics, experiment
Particle physics, theory/phenomenology	Supersymmetric particles	Quantum chromodynamics
Quantum field theory		
<b>P2 – Atomic and molecular physics, optics</b>		
Atomic physics	Chemical Physics	Cold/Ultra-cold atoms and molecules
Laser physics	Metrology and measurement	Molecular physics
Nano-optics	Non linear optics	Interferometry
Optical physics	Photonics	Statistical physics (gases)
Quantum optics	Quantum electrodynamics	
<b>P3 - Condensed matter physics</b>		
Condensed matter, thermal properties	Condensed matter, transport properties	Condensed matter, mechanical and acoustical properties, lattice dynamics
Electronic properties of materials, surfaces, interfaces	Films and Interfaces	Fluid dynamics
Gas and plasma physics	High pressure physics	Low-temperature physics
Magnetism and strongly correlated systems	Mesoscopic physics	Nanophysics: nanoelectronics, nanophotonics, nanomagnetism, nanoelectromechanics, etc.
Phase transitions, phase equilibria	Polymer physics	Semiconductors and insulators
Soft condensed matter	Spintronics	Statistical mechanics (condensed matter)
Structure of solids and liquids	Superconductivity	Superfluids
Surface Physics		
<b>P4 – Astrophysics, Cosmology, Space science</b>		
Active Galactic Nucleus (AGN) , QSO	Astrobiology, astrochemistry	Astrometry
Astronomical instrumentation: telescopes, detectors, techniques	Astrophysical jets, accretion phenomena	Big bang nucleosynthesis
Clusters of galaxies and large scale structures	Cosmic Microwave Background (CMB)	Cosmology
Dark matter, dark energy	Formation and evolution of galaxies	Formation, structure and evolution of stars
Extrasolar planets and exoplanets	Gravitational lensing	Gravitational waves
High energy astrophysics	Interstellar medium	Nuclear astrophysics
Radio astronomy	Relativistic astrophysics	Solar physics
Solar system and planetary science	Space weather	
<b>P5 – Applied physics</b>		
Acoustics	Agrophysics	Biophysics and biophysical techniques
Communication Physics	Complex systems, Networks	Computational Physics
Geophysics	Laser applications	Medical Physics
Nanotechnology: nanomaterials, tools and techniques, applications of nanotechnology	Optical engineering	Optoelectronics
Photodetectors	Photonics applications	Photovoltaics and solar cells
Plasmonics	Quantum electronics	Quantum Technology and Quantum Devices
Solid-state devices		

### Social Sciences and Humanities (SOC)

<b>S1 - Sociology, social anthropology</b>		
Ageing, health social policies	Attitudes and values	Demography, population issues and policies
Fertility, family dynamics, policies	Gender studies	Globalization, glocalization, antiglobalism
Inequalities, discrimination, prejudice, aggression and violence, antisocial behaviour	Kinship, cultural dimensions of classification and cognition, identity	Migration, refugees, asylum, interethnic relations, conflicts and integration of migrants
Myth, ritual, symbolic representations, religious studies	Qualitative methods, ethnography, case studies	Rural population, agriculture, innovation, depopulation
Social economy, social entrepreneurship	Social influence, power and group behaviour, classroom management	Social integration, exclusion, inequalities, participation and prosocial behaviour
Social structure, social mobility	Social theory	Social welfare and neoliberalism
Sociology of education	Sociology of knowledge	Transformation of societies, democratization, social movements
Urban sociology, urban theory, urban studies, global cities, territorialisation	Work, employment, precariousness	Youth studies
<b>S2 - Political science</b>		
Comparative politics	Development studies	Electoral politics, Political parties, Citizenship and public engagement
EU and European politics	Foreign policy	Game theory, Logic of collective choice
Human, economic and social geography	International relations, Global governance, International politics and history; geopolitics	Migration policy
Political economy	Political systems and institutions, governance	Political theory, Political thought, Political philosophy; Ideologies
Politics of gender, Race, Discrimination and inequalities; Identity politics	Public administration, Public policies	Regional and territorial politics
Relations with public interest groups	Theories of conflict, violence and security; Negotiation and mediation	
<b>S3 - Law</b>		
Business, corporate and securities law	Comparative law	Criminal law
Education law	Employment and labour law, social law	European law
Family and juvenile law	Health law	Intellectual property and innovation law; Data protection law, IT law
International law, human and civil rights; Violence, conflict and peacebuilding	Legal systems, constitutions, foundations of law	Private law, consumer protection law
Public law, immigration law, environmental law	Sports and entertainment law	
<b>S4 - Communication</b>		
Communication networks, media, including social media, information society	Crisis communication theory and procedures	Digital social research, audiovisual social services
Information & communication technology and the world of work	Information society and education	Institutional communication
Lobbying	Political communication and strategy	Social communication, verbal and non verbal communication
Social studies of science and technology		
<b>S5 - Cognition, psychology, linguistics</b>		
Biological psychology: mind-body connection, health, stress and disease	Cognitive psychology: learning, cognition	Development across the life-span and developmental psychopathology
Ergonomics, human factors, user modelling, and neuroergonomics	Evolution of mind and cognitive functions, animal communication	Formal, cognitive, functional and computational linguistics
Neuropsychology and neurolinguistics	Psycholinguistics: acquisition, comprehension, production	Socio-cultural psychology and social cognition
Typological, historical and comparative linguistics	Use of language: pragmatics, sociolinguistics, discourse analysis, second language teaching and learning, lexicography, terminology	
<b>S6 - Philosophy</b>		
Aesthetics and philosophy of culture and anthropology	Analytic philosophy	Epistemology, logic, philosophy of science
Ethics and morality, bioethics	History of philosophy	Metaphysics
Phenomenology	Philosophy of religion	Social and political philosophy

<b>S7 – Education</b>		
Education systems, institutions and policies, sociology of education	Educational assessment, feedback	Learning technologies, e-learning, tutoring systems, learning analytics
Lifelong learning, workplace learning and training, heutagogy	Philosophy of education, human development	Teaching and learning methodologies, pedagogy, andragogy, psychology of education
<b>S8 - Literature, arts, music, cultural and comparative studies</b>		
African literature	Classics, ancient Greek and Latin literature and art	Comparative literature
Computational modelling and digitisation in the cultural Sphere	Contemporary literature	Cultural memory, intangible cultural heritage
Cultural studies, cultural diversity	History of art and architecture, arts-based research	History of art criticism
History of books, codicology	History of collections	History of fashion design
History of literature	Latin American literature	Library and archival science; Librarianship
Literary theory and comparative literature, literary styles	Medieval literature	Modern literature
Museums and exhibitions, conservation and restoration	Music and musicology, history of music	Oriental and East Asian literature
Textual philology, palaeography and epigraphy	Visual arts, performing arts, film, design	
<b>S9 - Archaeology, history and memory</b>		
American archaeology, art and culture	Ancient history	Asian archaeology, art and culture
Classical archaeology and art, history of archaeology	Collective memories, identities, lieux de mémoire, oral history	Colonial and post-colonial history, global and transnational history, entangled histories
Cultural heritage, cultural memory	Cultural history; History of collective identities and memories	Diplomatics
Early and modern archaeology	Egyptology and ancient near eastern archaeology, art and culture	Gender history
General archaeology, archaeometry, landscape archaeology	Historiography, theory and methods in history, including the analysis of digital data	History of ideas, intellectual history, history of science, techniques and technologies
Industrial archaeology	Medieval history	Military history
Modern and contemporary archaeology	Modern and contemporary history	Numismatics, epigraphy
Prehistory, palaeoanthropology, palaeodemography, protohistory	Social, economic, cultural and political history	