ANNEX 1: ERC PEER REVIEW EVALUATION PANELS (ERC PANELS)

For the planning and operation of the evaluation of ERC grant proposals by panels, the following panel structure applies. There are 25 ERC panels to cover all fields of science, engineering and scholarship assigned to three research domains: Physical Sciences and Engineering (10 Panels, PE1–PE10), Life Sciences (9 Panels, LS1–LS9) and Social Sciences and Humanities (6 Panels, SH1–SH6).

The panel names are accompanied by a list of ERC keywords indicating the fields of research covered by the respective ERC panels.

The ERC keywords must always be read in the overall context of the panel’s titles and sub-titles.

Social Sciences and Humanities

<table>
<thead>
<tr>
<th>Panel</th>
<th>Title</th>
<th>Keywords</th>
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| SH1   | Individuals, Markets and Organisations: Economics, finance and management | SH1_1 Macroeconomics; monetary economics; economic growth  
SH1_2 International trade; international business; international management; spatial economics  
SH1_3 Financial economics; monetary economics  
SH1_4 Financial economics; banking; corporate finance; international finance; accounting; auditing; insurance  
SH1_5 Labour and demographic economics; human resource management  
SH1_6 Econometrics; operations research  
SH1_7 Behavioural economics; experimental economics; neuro-economics  
SH1_8 Microeconomics; game theory  
SH1_9 Industrial organisation; strategy; entrepreneurship  
SH1_10 Management; marketing; organisational behaviour; operations management  
SH1_11 Technological change, innovation, research & development  
SH1_12 Agricultural economics; energy economics; environmental economics  
SH1_13 Public economics; political economics; law and economics  
SH1_14 Quantitative economic history; institutional economics; economic systems |
| SH2   | Institutions, Values, Environment and Space: Political science, law, sustainability science, geography, regional studies and planning | SH2_1 Political systems, governance  
SH2_2 Democratisation and social movements  
SH2_3 Conflict resolution, war  
SH2_4 Legal studies, constitutions, human rights, comparative law  
SH2_5 International relations, global and transnational governance  
SH2_6 Sustainability sciences, environment and resources  
SH2_7 Environmental and climate change, societal impact and policy  
SH2_8 Energy, transportation and mobility  
SH2_9 Urban, regional and rural studies  
SH2_10 Land use and regional planning  
SH2_11 Human, economic and social geography  
SH2_12 GIS, spatial analysis; big data in political, geographical and legal studies |
| SH3   | The Social World, Diversity, Population: Sociology, social psychology, demography, education, communication | SH3_1 Social structure, social mobility  
SH3_2 Inequalities, discrimination, prejudice, aggression and violence, antisocial behaviour  
SH3_3 Social integration, exclusion, prosocial behaviour |
SH3_4  Attitudes and beliefs
SH3_5  Social influence; power and group behaviour; classroom management
SH3_6  Diversity and identities, gender, interethnic relations
SH3_7  Social policies, welfare
SH3_8  Population dynamics; households, family and fertility
SH3_9  Health, ageing and society
SH3_10 Social aspects of learning, curriculum studies, educational policies
SH3_11 Communication and information, networks, media
SH3_12 Digital social research
SH3_13 Science and technology studies

**SH4  The Human Mind and Its Complexity:** Cognitive science, psychology, linguistics, philosophy of mind

SH4_1  Cognitive basis of human development and education, developmental disorders; comparative cognition
SH4_2  Personality and social cognition; emotion
SH4_3  Clinical and health psychology
SH4_4  Neuropsychology
SH4_5  Attention, perception, action, consciousness
SH4_6  Learning, memory; cognition in ageing
SH4_7  Reasoning, decision-making; intelligence
SH4_8  Language learning and processing (first and second languages)
SH4_9  Theoretical linguistics; computational linguistics
SH4_10 Language typology
SH4_11 Pragmatics, sociolinguistics, discourse analysis
SH4_12 Philosophy of mind, philosophy of language
SH4_13 Philosophy of science, epistemology, logic

**SH5  Cultures and Cultural Production:** Literature, philology, cultural studies, anthropology, study of the arts, philosophy

SH5_1  Classics, ancient literature and art
SH5_2  Theory and history of literature, comparative literature
SH5_3  Philology and palaeography; historical linguistics
SH5_4  Visual and performing arts, film, design
SH5_5  Music and musicology; history of music
SH5_6  History of art and architecture, arts-based research
SH5_7  Museums, exhibitions, conservation and restoration
SH5_8  Cultural studies, cultural identities and memories, cultural heritage
SH5_9  Social anthropology, religious studies, symbolic representation
SH5_10 Metaphysics, philosophical anthropology; aesthetics
SH5_11 Ethics; social and political philosophy
SH5_12 History of philosophy
SH5_13 Computational Modelling and Digitisation in the Cultural Sphere

**SH6  The Study of the Human Past:** Archaeology and history

SH6_1  Historiography, Theory and methods in history, including the analysis of digital data
SH6_2  Classical archaeology, history of archaeology
SH6_3  General archaeology, archaeometry, landscape archaeology
SH6_4  Prehistory, palaeoanthropology, palaeodemography, protohistory
SH6_5  Ancient history
SH6_6  Medieval history
SH6_7  Early modern history
SH6_8  Modern and contemporary history
SH6_9  Colonial and post-colonial history
SH6_10 Global history, transnational history, comparative history, entangled histories
SH6_11 Social and economic history
SH6_12 Gender history; Cultural History; History of Collective Identities and Memories
SH6_13 History of Ideas, Intellectual History, history of economic thought
SH6_14 History of Science, Medicine and Technologies

Physical Sciences and Engineering

PE1 Mathematics: All areas of mathematics, pure and applied, plus mathematical foundations of computer science, mathematical physics and statistics
PE1_1 Logic and foundations
PE1_2 Algebra
PE1_3 Number theory
PE1_4 Algebraic and complex geometry
PE1_5 Geometry
PE1_6 Topology
PE1_7 Lie groups, Lie algebras
PE1_8 Analysis
PE1_9 Operator algebras and functional analysis
PE1_10 ODE and dynamical systems
PE1_11 Theoretical aspects of partial differential equations
PE1_12 Mathematical physics
PE1_13 Probability
PE1_14 Statistics
PE1_15 Discrete mathematics and combinatorics
PE1_16 Mathematical aspects of computer science
PE1_17 Numerical analysis
PE1_18 Scientific computing and data processing
PE1_19 Control theory and optimisation
PE1_20 Application of mathematics in sciences
PE1_21 Application of mathematics in industry and society

PE2 Fundamental Constituents of Matter: Particle, nuclear, plasma, atomic, molecular, gas, and optical physics
PE2_1 Fundamental interactions and fields
PE2_2 Particle physics
PE2_3 Nuclear physics
PE2_4 Nuclear astrophysics
PE2_5 Gas and plasma physics
PE2_6  Electromagnetism
PE2_7  Atomic, molecular physics
PE2_8  Ultra-cold atoms and molecules
PE2_9  Optics, non-linear optics and nano-optics
PE2_10 Quantum optics and quantum information
PE2_11 Lasers, ultra-short lasers and laser physics
PE2_12 Acoustics
PE2_13 Relativity
PE2_14 Thermodynamics
PE2_15 Non-linear physics
PE2_16 General physics
PE2_17 Metrology and measurement
PE2_18 Statistical physics (gases)

PE3  **Condensed Matter Physics:**  Structure, electronic properties, fluids, nanosciences, biophysics

PE3_1  Structure of solids and liquids
PE3_2  Mechanical and acoustical properties of condensed matter, Lattice dynamics
PE3_3  Transport properties of condensed matter
PE3_4  Electronic properties of materials, surfaces, interfaces, nanostructures, etc.
PE3_5  Semiconductors and insulators: material growth, physical properties
PE3_6  Macroscopic quantum phenomena: superconductivity, superfluidity, etc.
PE3_7  Spintronics
PE3_8  Magnetism and strongly correlated systems
PE3_9  Condensed matter – beam interactions (photons, electrons, etc.)
PE3_10 Nanophysics: nanoelectronics, nanophotonics, nanomagnetism, nanoelectromechanics, etc.
PE3_11 Mesoscopic physics
PE3_12 Molecular electronics
PE3_13 Structure and dynamics of disordered systems: soft matter (gels, colloids, liquid crystals, etc.), glasses, defects, etc.
PE3_14 Fluid dynamics (physics)
PE3_15 Statistical physics: phase transitions, noise and fluctuations, models of complex systems, etc.
PE3_16 Physics of biological systems

PE4  **Physical and Analytical Chemical Sciences:**  Analytical chemistry, chemical theory, physical chemistry/chemical physics

PE4_1 Physical chemistry
PE4_2 Spectroscopic and spectrometric techniques
PE4_3 Molecular architecture and Structure
PE4_4 Surface science and nanostructures
PE4_5 Analytical chemistry
PE4_6 Chemical physics
PE4_7 Chemical instrumentation
PE4_8 Electrochemistry, electrodialysis, microfluidics, sensors
PE4_9 Method development in chemistry
PE4_10 Heterogeneous catalysis
PE4_11  Physical chemistry of biological systems
PE4_12  Chemical reactions: mechanisms, dynamics, kinetics and catalytic reactions
PE4_13  Theoretical and computational chemistry
PE4_14  Radiation and Nuclear chemistry
PE4_15  Photochemistry
PE4_16  Corrosion
PE4_17  Characterisation methods of materials
PE4_18  Environment chemistry

PE5  Synthetic Chemistry and Materials: Materials synthesis, structure-properties relations, functional and advanced materials, molecular architecture, organic chemistry
PE5_1  Structural properties of materials
PE5_2  Solid state materials
PE5_3  Surface modification
PE5_4  Thin films
PE5_5  Ionic liquids
PE5_6  New materials: oxides, alloys, composite, organic-inorganic hybrid, nanoparticles
PE5_7  Biomaterials, biomaterials synthesis
PE5_8  Intelligent materials – self assembled materials
PE5_9  Coordination chemistry
PE5_10  Colloid chemistry
PE5_11  Biological chemistry
PE5_12  Chemistry of condensed matter
PE5_13  Homogeneous catalysis
PE5_14  Macromolecular chemistry
PE5_15  Polymer chemistry
PE5_16  Supramolecular chemistry
PE5_17  Organic chemistry
PE5_18  Molecular chemistry
PE5_19  Combinatorial chemistry

PE6  Computer Science and Informatics: Informatics and information systems, computer science, scientific computing, intelligent systems
PE6_1  Computer architecture, pervasive computing, ubiquitous computing
PE6_2  Computer systems, parallel/distributed systems, sensor networks, embedded systems, cyber-physical systems
PE6_3  Software engineering, operating systems, computer languages
PE6_4  Theoretical computer science, formal methods, and quantum computing
PE6_5  Cryptology, security, privacy, quantum crypto
PE6_6  Algorithms, distributed, parallel and network algorithms, algorithmic game theory
PE6_7  Artificial intelligence, intelligent systems, multi agent systems
PE6_8  Computer graphics, computer vision, multimedia, computer games
PE6_9  Human computer interaction and interface, visualisation and natural language processing
PE6_10  Web and information systems, database systems, information retrieval and digital libraries, data fusion
PE6_11 Machine learning, statistical data processing and applications using signal processing (e.g. speech, image, video)
PE6_12 Scientific computing, simulation and modelling tools
PE6_13 Bioinformatics, biocomputing, and DNA and molecular computation

**PE7 Systems and Communication Engineering:** Electrical, electronic, communication, optical and systems engineering

- PE7_1 Control engineering
- PE7_2 Electrical engineering: power components and/or systems
- PE7_3 Simulation engineering and modelling
- PE7_4 (Micro and nano) systems engineering
- PE7_5 (Micro and nano) electronic, optoelectronic and photonic components
- PE7_6 Communication technology, high-frequency technology
- PE7_7 Signal processing
- PE7_8 Networks (communication networks, sensor networks, networks of robots, etc.)
- PE7_9 Man-machine-interfaces
- PE7_10 Robotics
- PE7_11 Components and systems for applications (in e.g. medicine, biology, environment)
- PE7_12 Electrical energy production, distribution, application

**PE8 Products and Processes Engineering:** Product design, process design and control, construction methods, civil engineering, energy processes, material engineering

- PE8_1 Aerospace engineering
- PE8_2 Chemical engineering, technical chemistry
- PE8_3 Civil engineering, architecture, maritime/hydraulic engineering, geotechnics, waste treatment
- PE8_4 Computational engineering
- PE8_5 Fluid mechanics, hydraulic-, turbo-, and piston engines
- PE8_6 Energy processes engineering
- PE8_7 Mechanical and manufacturing engineering (shaping, mounting, joining, separation)
- PE8_8 Materials engineering (metals, ceramics, polymers, composites, etc.)
- PE8_9 Production technology, process engineering
- PE8_10 Industrial design (product design, ergonomics, man-machine interfaces, etc.)
- PE8_11 Sustainable design (for recycling, for environment, eco-design)
- PE8_12 Lightweight construction, textile technology
- PE8_13 Industrial bioengineering

**PE9 Universe Sciences:** Astro-physics/chemistry/biology; solar system; stellar, galactic and extragalactic astronomy, planetary systems, cosmology, space science, instrumentation

- PE9_1 Solar and interplanetary physics
- PE9_2 Planetary systems sciences
- PE9_3 Interstellar medium
- PE9_4 Formation of stars and planets
- PE9_5 Astrobiology
- PE9_6 Stars and stellar systems
- PE9_7 The Galaxy
- PE9_8 Formation and evolution of galaxies
- PE9_9 Clusters of galaxies and large scale structures
| PE9_10 | High energy and particles astronomy – X-rays, cosmic rays, gamma rays, neutrinos |
| PE9_11 | Relativistic astrophysics |
| PE9_12 | Dark matter, dark energy |
| PE9_13 | Gravitational astronomy |
| PE9_14 | Cosmology |
| PE9_15 | Space Sciences |
| PE9_16 | Very large data bases: archiving, handling and analysis |
| PE9_17 | Instrumentation - telescopes, detectors and techniques |

**PE10 Earth System Science:** Physical geography, geology, geophysics, atmospheric sciences, oceanography, climatology, cryology, ecology, global environmental change, biogeochemical cycles, natural resources management

| PE10_1 | Atmospheric chemistry, atmospheric composition, air pollution |
| PE10_2 | Meteorology, atmospheric physics and dynamics |
| PE10_3 | Climatology and climate change |
| PE10_4 | Terrestrial ecology, land cover change |
| PE10_5 | Geology, tectonics, volcanology |
| PE10_6 | Palaeoclimatology, palaeoecology |
| PE10_7 | Physics of earth’s interior, seismology, volcanology |
| PE10_8 | Oceanography (physical, chemical, biological, geological) |
| PE10_9 | Biogeochemistry, biogeochemical cycles, environmental chemistry |
| PE10_10 | Mineralogy, petrology, igneous petrology, metamorphic petrology |
| PE10_11 | Geochemistry, crystal chemistry, isotope geochemistry, thermodynamics |
| PE10_12 | Sedimentology, soil science, palaeontology, earth evolution |
| PE10_13 | Physical geography |
| PE10_14 | Earth observations from space/remote sensing |
| PE10_15 | Geomagnetism, palaeomagnetism |
| PE10_16 | Ozone, upper atmosphere, ionosphere |
| PE10_17 | Hydrology, water and soil pollution |
| PE10_18 | Cryosphere, dynamics of snow and ice cover, sea ice, permafrosts and ice sheets |

**Life Sciences**

**LS1 Molecular and Structural Biology and Biochemistry:** Molecular synthesis, modification and interaction, biochemistry, biophysics, structural biology, metabolism, signal transduction

| LS1_1 | Molecular interactions |
| LS1_2 | General biochemistry and metabolism |
| LS1_3 | DNA synthesis, modification, repair, recombination and degradation |
| LS1_4 | RNA synthesis, processing, modification and degradation |
| LS1_5 | Protein synthesis, modification and turnover |
| LS1_6 | Lipid synthesis, modification and turnover |
| LS1_7 | Carbohydrate synthesis, modification and turnover |
| LS1_8 | Biophysics (e.g. transport mechanisms, bioenergetics, fluorescence) |
| LS1_9 | Structural biology (crystallography and EM) |
| LS1_10 | Structural biology (NMR) |
| LS1_11 | Biochemistry and molecular mechanisms of signal transduction |
### LS2  Genetics, Genomics, Bioinformatics and Systems Biology:
Molecular and population genetics, genomics, transcriptomics, proteomics, metabolomics, bioinformatics, computational biology, biostatistics, biological modelling and simulation, systems biology, genetic epidemiology

- LS2_1  Genomics, comparative genomics, functional genomics
- LS2_2  Transcriptomics
- LS2_3  Proteomics
- LS2_4  Metabolomics
- LS2_5  Glycomics
- LS2_6  Molecular genetics, reverse genetics and RNAi
- LS2_7  Quantitative genetics
- LS2_8  Epigenetics and gene regulation
- LS2_9  Genetic epidemiology
- LS2_10  Bioinformatics
- LS2_11  Computational biology
- LS2_12  Biostatistics
- LS2_13  Systems biology
- LS2_14  Biological systems analysis, modelling and simulation

### LS3  Cellular and Developmental Biology:
Cell biology, cell physiology, signal transduction, organogenesis, developmental genetics, pattern formation in plants and animals, stem cell biology

- LS3_1  Morphology and functional imaging of cells
- LS3_2  Cell biology and molecular transport mechanisms
- LS3_3  Cell cycle and division
- LS3_4  Apoptosis
- LS3_5  Cell differentiation, physiology and dynamics
- LS3_6  Organelle biology
- LS3_7  Cell signalling and cellular interactions
- LS3_8  Signal transduction
- LS3_9  Development, developmental genetics, pattern formation and embryology in animals
- LS3_10  Development, developmental genetics, pattern formation and embryology in plants
- LS3_11  Cell genetics
- LS3_12  Stem cell biology

### LS4  Physiology, Pathophysiology and Endocrinology:
Organ physiology, pathophysiology, endocrinology, metabolism, ageing, tumorigenesis, cardiovascular disease, metabolic syndrome

- LS4_1  Organ physiology and pathophysiology
- LS4_2  Comparative physiology and pathophysiology
- LS4_3  Endocrinology
- LS4_4  Ageing
- LS4_5  Metabolism, biological basis of metabolism related disorders
- LS4_6  Cancer and its biological basis
- LS4_7  Cardiovascular diseases
- LS4_8  Non-communicable diseases (except for neural/psychiatric, immunity-related, metabolism-related disorders, cancer and cardiovascular diseases)
**LS5** Neurosciences and Neural Disorders: Neurobiology, neuroanatomy, neurophysiology, neurochemistry, neuropharmacology, neuroimaging, systems neuroscience, neurological and psychiatric disorders

| LS5_1  | Neuroanatomy and neurophysiology |
| LS5_2  | Molecular and cellular neuroscience |
| LS5_3  | Neurochemistry and neuropharmacology |
| LS5_4  | Sensory systems (e.g. visual system, auditory system) |
| LS5_5  | Mechanisms of pain |
| LS5_6  | Developmental neurobiology |
| LS5_7  | Cognition (e.g. learning, memory, emotions, speech) |
| LS5_8  | Behavioural neuroscience (e.g. sleep, consciousness, handedness) |
| LS5_9  | Systems neuroscience |
| LS5_10 | Neuroimaging and computational neuroscience |
| LS5_11 | Neurological disorders (e.g. Alzheimer’s disease, Huntington’s disease, Parkinson’s disease) |
| LS5_12 | Psychiatric disorders (e.g. schizophrenia, autism, Tourette’s syndrome, obsessive compulsive disorder, depression, bipolar disorder, attention deficit hyperactivity disorder) |

**LS6** Immunity and Infection: The immune system and related disorders, infectious agents and diseases, prevention and treatment of infection

| LS6_1  | Innate immunity and inflammation |
| LS6_2  | Adaptive immunity |
| LS6_3  | Phagocytosis and cellular immunity |
| LS6_4  | Immunosignalling |
| LS6_5  | Immunological memory and tolerance |
| LS6_6  | Immunogenetics |
| LS6_7  | Microbiology |
| LS6_8  | Virology |
| LS6_9  | Bacteriology |
| LS6_10 | Parasitology |
| LS6_11 | Prevention and treatment of infection by pathogens (e.g. vaccination, antibiotics, fungicide) |
| LS6_12 | Biological basis of immunity related disorders (e.g. autoimmunity) |
| LS6_13 | Veterinary medicine and infectious diseases in animals |

**LS7** Diagnostic Tools, Therapies and Public Health: Aetiology, diagnosis and treatment of disease, public health, epidemiology, pharmacology, clinical medicine, regenerative medicine, medical ethics

| LS7_1  | Medical engineering and technology |
| LS7_2  | Diagnostic tools (e.g. genetic, imaging) |
| LS7_3  | Pharmacology, pharmacogenomics, drug discovery and design, drug therapy |
| LS7_4  | Analgesia and Surgery |
| LS7_5  | Toxicology |
| LS7_6  | Gene therapy, cell therapy, regenerative medicine |
| LS7_7  | Radiation therapy |
| LS7_8  | Health services, health care research |
LS7_9  Public health and epidemiology
LS7_10 Environment and health risks, occupational medicine
LS7_11 Medical ethics

LS8  Evolutionary, Population and Environmental Biology: Evolution, ecology, animal behaviour, population biology, biodiversity, biogeography, marine biology, ecotoxicology, microbial ecology

LS8_1 Ecology (theoretical and experimental; population, species and community level)
LS8_2 Population biology, population dynamics, population genetics
LS8_3 Systems evolution, biological adaptation, phylogenetics, systematics, comparative biology
LS8_4 Biodiversity, conservation biology, conservation genetics, invasion biology
LS8_5 Evolutionary biology: evolutionary ecology and genetics, co-evolution
LS8_6 Biogeography, macro-ecology
LS8_7 Animal behaviour
LS8_8 Environmental and marine biology
LS8_9 Environmental toxicology at the population and ecosystems level
LS8_10 Microbial ecology and evolution
LS8_11 Species interactions (e.g. food-webs, symbiosis, parasitism, mutualism)

LS9  Applied Life Sciences and Non-Medical Biotechnology: Applied plant and animal sciences; food sciences; forestry; industrial, environmental and non-medical biotechnologies, bioengineering; synthetic and chemical biology; biomimetics; bioremediation

LS9_1 Non-medical biotechnology and genetic engineering (including transgenic organisms, recombinant proteins, biosensors, bioreactors, microbiology)
LS9_2 Synthetic biology, chemical biology and bio-engineering
LS9_3 Animal sciences (including animal husbandry, aquaculture, fisheries, animal welfare)
LS9_4 Plant sciences (including crop production, plant breeding, agroecology, soil biology)
LS9_5 Food sciences (including food technology, nutrition)
LS9_6 Forestry and biomass production (including biofuels)
LS9_7 Environmental biotechnology (including bioremediation, biodegradation)
LS9_8 Biomimetics
LS9_9 Biohazards (including biological containment, biosafety, biosecurity)