2: Annexes

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

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, multi media, 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)