

## **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: Social Sciences and Humanities (6 Panels, SH1–SH6), Physical Sciences and Engineering (10 Panels, PE1–PE10), Life Sciences (9 Panels, LS1–LS9).

The panel names are accompanied by a list of panel descriptors (i.e. ERC keywords) indicating the fields of research covered by the respective ERC panels.

The panel descriptors must always be read in the overall context of the panel's titles and sub-titles.

### **Social Sciences and Humanities**

#### **SH1 Individuals, Institutions and Markets:** Economics, finance and management

- SH1\_1 Macroeconomics
- SH1\_2 Development, economic growth
- SH1\_3 Microeconomics, behavioural economics
- SH1\_4 Marketing
- SH1\_5 Political economy, institutional economics, law and economics
- SH1\_6 Econometrics, statistical methods
- SH1\_7 Financial markets, asset prices, international finance
- SH1\_8 Banking, corporate finance, accounting
- SH1\_9 Competitiveness, innovation, research and development
- SH1\_10 Organization studies: theory & strategy, industrial organization
- SH1\_11 Labour economics, income distribution and poverty
- SH1\_12 Public economics
- SH1\_13 International trade
- SH1\_14 History of economic thought and quantitative economic history

#### **SH2 Institutions, Values, Beliefs and Behaviour:** Sociology, social anthropology, political science, law, communication, social studies of science and technology

- SH2\_1 Social structure, inequalities, social mobility, interethnic relations
- SH2\_2 Social policies, work and welfare
- SH2\_3 Kinship, cultural dimensions of classification and cognition, identity, gender
- SH2\_4 Myth, ritual, symbolic representations, religious studies
- SH2\_5 Democratization, social movements
- SH2\_6 Violence, conflict and conflict resolution
- SH2\_7 Political systems and institutions, governance
- SH2\_8 Legal studies, constitutions, comparative law, human rights
- SH2\_9 Global and transnational governance, international studies
- SH2\_10 Communication networks, media, information society
- SH2\_11 Social studies of science and technology

**SH3 Environment, Space and Population:** Environmental studies, geography, demography, migration, regional and urban studies

- SH3\_1 Environment, resources and sustainability
- SH3\_2 Environmental change and society
- SH3\_3 Environmental regulations and climate negotiations
- SH3\_4 Social and industrial ecology
- SH3\_5 Population dynamics, aging, health and society
- SH3\_6 Households, family and fertility
- SH3\_7 Migration
- SH3\_8 Mobility, tourism, transportation and logistics
- SH3\_9 Spatial development and architecture, land use, regional planning
- SH3\_10 Urban studies, regional studies
- SH3\_11 Social geography, infrastructure,
- SH3\_12 Geo-information and spatial data analysis

**SH4 The Human Mind and Its Complexity:** Cognitive science, psychology, linguistics, education

- SH4\_1 Evolution of mind and cognitive functions, animal communication
- SH4\_2 Human life-span development
- SH4\_3 Neuropsychology
- SH4\_4 Cognitive and experimental psychology: perception, action, and higher cognitive processes
- SH4\_5 Social and clinical psychology
- SH4\_6 Linguistics: formal, cognitive, functional and computational linguistics
- SH4\_7 Linguistics: typological, historical and comparative linguistics
- SH4\_8 Psycholinguistics and neurolinguistics: acquisition and knowledge of language, language pathologies
- SH4\_9 Use of language: pragmatics, sociolinguistics, discourse analysis, second language teaching and learning, lexicography, terminology
- SH4\_10 Philosophy of mind, epistemology and logic
- SH4\_11 Education: systems and institutions, teaching and learning

**SH5 Cultures and Cultural Production:** Literature and philosophy, visual and performing arts, music, cultural and comparative studies

- SH5\_1 Classics, ancient Greek and Latin literature and art
- SH5\_2 History of literature
- SH5\_3 Literary theory and comparative literature, literary styles
- SH5\_4 Textual philology, palaeography and epigraphy
- SH5\_5 Visual arts, performing arts, design
- SH5\_6 Philosophy, history of philosophy
- SH5\_7 Museums and exhibitions
- SH5\_8 Music and musicology, history of music
- SH5\_9 History of art and architecture
- SH5\_10 Cultural studies, cultural diversity
- SH5\_11 Cultural heritage, cultural memory

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

- SH6\_1 Archaeology, archaeometry, landscape archaeology
- SH6\_2 Prehistory and protohistory
- SH6\_3 Ancient history

SH6_4	Medieval history
SH6_5	Early modern history
SH6_6	Modern and contemporary history
SH6_7	Colonial and post-colonial history, global and transnational history, entangled histories
SH6_8	Social and economic history
SH6_9	gender history
SH6_10	History of ideas, intellectual history, history of sciences and techniques
SH6_11	Cultural history, history of collective identities and memories
SH6_12	Historiography, theory and methods of history

## 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 optimization
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...
- PE3\_5 Semiconductors and insulators: material growth, physical properties
- PE3\_6 Macroscopic quantum phenomena: superconductivity, superfluidity...
- PE3\_7 Spintronics
- PE3\_8 Magnetism and strongly correlated systems
- PE3\_9 Condensed matter – beam interactions (photons, electrons...)
- PE3\_10 Nanophysics: nanoelectronics, nanophotonics, nanomagnetism, nanoelectromechanics...
- PE3\_11 Mesoscopic physics
- PE3\_12 Molecular electronics
- PE3\_13 Structure and dynamics of disordered systems: soft matter (gels, colloids, liquid crystals...), glasses, defects...
- PE3\_14 Fluid dynamics (physics)
- PE3\_15 Statistical physics: phase transitions, noise and fluctuations, models of complex systems...
- 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 Characterization 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 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, visualization 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:** Electronic, communication, optical and systems engineering

- PE7\_1 Control engineering
- PE7\_2 Electrical and electronic engineering: semiconductors, components, systems
- PE7\_3 Simulation engineering and modelling
- PE7\_4 Systems engineering, sensorics, actorics, automation
- PE7\_5 Micro- and nanoelectronics, optoelectronics
- PE7\_6 Communication technology, high-frequency technology
- PE7\_7 Signal processing
- PE7\_8 Networks (communication networks, sensor networks, networks of robots...)
- PE7\_9 Man-machine-interfaces
- PE7\_10 Robotics

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

- PE8\_1 Aerospace engineering
- PE8\_2 Chemical engineering, technical chemistry
- PE8\_3 Civil engineering, maritime/hydraulic engineering, geotechnics, waste treatment
- PE8\_4 Computational engineering
- PE8\_5 Fluid mechanics, hydraulic-, turbo-, and piston engines
- PE8\_6 Energy systems (production, distribution, application)
- PE8\_7 Micro (system) engineering
- PE8\_8 Mechanical and manufacturing engineering (shaping, mounting, joining, separation)
- PE8\_9 Materials engineering (biomaterials, metals, ceramics, polymers, composites...)
- PE8\_10 Production technology, process engineering
- PE8\_11 Industrial design (product design, ergonomics, man-machine interfaces...)
- PE8\_12 Sustainable design (for recycling, for environment, eco-design)
- PE8\_13 Lightweight construction, textile technology
- PE8\_14 Industrial bioengineering
- PE8\_15 Industrial biofuel production
- PE8\_16 Architectural engineering

**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, 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 Paleoclimatology, paleoecology
- 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, paleomagnetism
- 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:** Agricultural, animal, fishery, forestry and food sciences; biotechnology, genetic engineering, synthetic and chemical biology, industrial biosciences; environmental biotechnology and remediation

LS9\_1 Applied genetic engineering, transgenic organisms, recombinant proteins, biosensors

LS9\_2 Synthetic biology, chemical biology and new bio-engineering concepts

LS9\_3 Agriculture related to animal husbandry, dairying, livestock raising

LS9\_4 Aquaculture, fisheries

LS9\_5 Agriculture related to crop production, soil biology and cultivation, applied plant biology

LS9\_6 Food sciences

LS9\_7 Forestry, biomass production (e.g. for biofuels)

LS9\_8 Environmental biotechnology, bioremediation, biodegradation

LS9\_9 Applied biotechnology (non-medical), bioreactors, applied microbiology

LS9\_10 Biomimetics

LS9\_11 Biohazards, biological containment, biosafety, biosecurity