



## ERC Panel Structure and Descriptors

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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 indicating the fields of research covered by the respective ERC panels.

### Social Sciences and Humanities

#### **SH1 Individuals, institutions and markets:** economics, finance and management

- SH1\_1 Macroeconomics, growth, business cycles
- SH1\_2 Microeconomics, institutional economics
- SH1\_3 Econometrics, statistical methods
- SH1\_4 Financial markets, banking and corporate finance
- SH1\_5 Competitiveness, innovation, research and development
- SH1\_6 Consumer choice, behavioural economics, marketing
- SH1\_7 Organization studies, strategy
- SH1\_8 Human resource management, employment and earnings
- SH1\_9 Public administration, public economics
- SH1\_10 Income distribution, poverty
- SH1\_11 International trade, economic geography
- SH1\_12 Economic history, development

#### **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
- SH2\_2 Ageing, work, social policies
- SH2\_3 Kinship, cultural dimensions of classification and cognition, individual and social identity, gender
- SH2\_4 Myth, ritual, symbolic representations, religious studies
- SH2\_5 Ethnography
- SH2\_6 Globalization, migration, interethnic relations
- SH2\_7 Transformation of societies, democratization, social movements
- SH2\_8 Political systems, legitimacy of governance
- SH2\_9 Legal systems, constitutions, foundations of law
- SH2\_10 Private, public and social law
- SH2\_11 Global and transnational governance, international law, human rights
- SH2\_12 Communication networks, media, information society
- SH2\_13 Social studies of science and technology, S&T policies, science and society
- SH2\_14 History of science and technology



**SH3 Environment and society:** environmental studies, demography, social geography, urban and regional studies

- SH3\_1 Environment and sustainability
- SH3\_2 Environmental regulation and mediation
- SH3\_3 Social and industrial ecology
- SH3\_4 Geographical information systems, cartography
- SH3\_5 Human and social geography
- SH3\_6 Spatial and regional planning
- SH3\_7 Population dynamics
- SH3\_8 Urbanization and urban planning, cities
- SH3\_9 Mobility and transportation

**SH4 The Human Mind and its complexity:** cognition, psychology, linguistics, philosophy and education

- SH4\_1 Evolution of mind and cognitive functions, animal communication
- SH4\_2 Human life-span development
- SH4\_3 Neuropsychology and cognitive psychology
- SH4\_4 Clinical and experimental psychology,
- SH4\_5 Formal, cognitive, functional and computational linguistics
- SH4\_6 Typological, historical and comparative linguistics
- SH4\_7 Acquisition and knowledge of language: psycholinguistics, neurolinguistics
- SH4\_8 Use of language: pragmatics, sociolinguistics, discourse analysis
- SH4\_9 second language teaching and learning, language pathologies, lexicography, terminology
- SH4\_10 Philosophy, history of philosophy
- SH4\_11 Epistemology, logic, philosophy of science
- SH4\_12 Ethics and morality, bioethics
- SH4\_13 Education: principles, techniques, typologies

**SH5 Cultures and cultural production:** literature, visual and performing arts, music, cultural and comparative studies

- SH5\_1 Classics
- SH5\_2 History of literature
- SH5\_3 Literary theory and comparative literature, literary styles
- SH5\_4 Textual philology and palaeography
- SH5\_5 Visual arts
- SH5\_6 Performing arts
- SH5\_7 Museums and exhibitions
- SH5\_8 Numismatics, epigraphy
- SH5\_9 Music and musicology, history of music
- SH5\_10 History of art and architecture
- SH5\_11 Cultural studies, cultural diversity
- SH5\_12 Cultural memory, intangible cultural heritage

**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, ancient cultures



SH6\_4 Medieval history  
 SH6\_5 Modern and contemporary history  
 SH6\_6 Colonial history, entangled histories, global history  
 SH6\_7 Military history,  
 SH6\_8 Historiography, theory and methods of history  
 SH6\_9 History of ideas, intellectual history  
 SH6\_10 Social, economic, cultural and political history  
 SH6\_11 Collective memories, identities, lieux de mémoire, oral history  
 SH6\_12 Cultural heritage

## Mathematics, physical sciences, information and communication, engineering, universe and earth sciences

**PE1 Mathematical foundations:** 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 Partial differential equations  
 PE1\_12 Mathematical physics  
 PE1\_13 Probability and statistics  
 PE1\_14 Combinatorics  
 PE1\_15 Mathematical aspects of computer science  
 PE1\_16 Numerical analysis and scientific computing  
 PE1\_17 Control theory and optimization  
 PE1\_18 Application of mathematics in sciences

**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 Optics and quantum optics  
 PE2\_9 Lasers and laser physics



PE2\_10 Acoustics  
PE2\_11 Relativity  
PE2\_12 Classical physics  
PE2\_13 Thermodynamics  
PE2\_14 Non-linear physics  
PE2\_15 General physics  
PE2\_16 Metrology and measurement  
PE2\_17 Statistical physics (gases)

**PE3 Condensed matter physics:** structure, electronic properties, fluids, nanosciences

PE3\_1 Structure of solids and liquids  
PE3\_2 Mechanical and acoustical properties of condensed matter  
PE3\_3 Thermal properties of condensed matter  
PE3\_4 Transport properties of condensed matter,  
PE3\_5 Electronic properties of materials and transport  
PE3\_6 Lattice dynamics  
PE3\_7 Semiconductors  
PE3\_8 Superconductivity  
PE3\_9 Superfluids  
PE3\_10 Spintronics  
PE3\_11 Magnetism  
PE3\_12 Nanophysics: nanoelectronics, nanophotonics, nanomagnetism  
PE3\_13 Mesoscopic physics  
PE3\_14 Molecular electronics  
PE3\_15 Soft condensed matter (liquid crystals...)  
PE3\_16 Fluid dynamics (physics)  
PE3\_17 Statistical physics (condensed matter)  
PE3\_18 Phase transitions, phase equilibria  
PE3\_19 Biophysics

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

PE4\_1 Physical chemistry  
PE4\_2 Nanochemistry  
PE4\_3 Spectroscopic and spectrometric techniques  
PE4\_4 Molecular architecture and Structure  
PE4\_5 Surface science  
PE4\_6 Analytical chemistry  
PE4\_7 Chemical physics  
PE4\_8 Chemical instrumentation  
PE4\_9 Electrochemistry, electrodialysis, microfluidics  
PE4\_10 Combinatorial chemistry  
PE4\_11 Method development in chemistry  
PE4\_12 Catalysis  
PE4\_13 Physical chemistry of biological systems  
PE4\_14 Chemical reactions: mechanisms, dynamics, kinetics and catalytic reactions



PE4\_15 Theoretical and computational chemistry

PE4\_16 Radiation chemistry

PE4\_17 Nuclear chemistry

PE4\_18 Photochemistry

**PE5 Materials and Synthesis:** 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 Corrosion

PE5\_6 Porous materials

PE5\_7 Ionic liquids

PE5\_8 New materials: oxides, alloys, composite, organic-inorganic hybrid, superconductors

PE5\_9 Materials for sensors

PE5\_10 Nanomaterials : nanoparticles, nanotubes

PE5\_11 Biomaterials synthesis

PE5\_12 Intelligent materials – self assembled materials

PE5\_13 Environment chemistry

PE5\_14 Coordination chemistry

PE5\_15 Colloid chemistry

PE5\_16 Biological chemistry

PE5\_17 Chemistry of condensed matter

PE5\_18 Homogeneous and heterogeneous catalysis

PE5\_19 Characterization methods of materials

PE5\_20 Macromolecular chemistry,

PE5\_21 Polymer chemistry

PE5\_22 Supramolecular chemistry

PE5\_23 Organic chemistry

PE5\_24 Molecular chemistry

**PE6 Computer science and informatics:** informatics and information systems, computer science, scientific computing, intelligent systems

PE6\_1 Computer architecture

PE6\_2 Database management

PE6\_3 Formal methods

PE6\_4 Graphics and image processing

PE6\_5 Human computer interaction and interface

PE6\_6 Informatics and information systems

PE6\_7 Theoretical computer science including quantum information

PE6\_8 Intelligent systems

PE6\_9 Scientific computing

PE6\_10 Modelling tools

PE6\_11 Multimedia

PE6\_12 Parallel and Distributed Computing



PE6\_13 Speech recognition  
PE6\_14 Systems and software

**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\_4 Simulation engineering and modelling  
PE7\_5 Systems engineering, sensorics, actotics, automation  
PE7\_6 Micro- and nanoelectronics, optoelectronics  
PE7\_7 Communication technology, high-frequency technology  
PE7\_8 Signal processing  
PE7\_9 Networks  
PE7\_10 Man-machine-interfaces  
PE7\_11 Robotics

**PE8 Products and process 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 Product design, ergonomics, man-machine interfaces  
PE8\_12 Lightweight construction, textile technology  
PE8\_13 Industrial bioengineering  
PE8\_14 Industrial biofuel production

**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
- PE9\_18 Solar planetology

**PE10 Earth system science:** physical geography, geology, geophysics, meteorology, 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)
- PE10\_9 Biogeochemistry, biogeochemical cycles, environmental chemistry
- PE10\_10 Mineralogy, petrology, igneous petrology, metamorphic petrology
- PE10\_11 Geochemistry, crystal chemistry, isotope geochemistry, thermodynamics,
- PE10\_13 Sedimentology, soil science, palaeontology, earth evolution
- PE10\_14 Physical geography
- PE10\_15 Earth observations from space/remote sensing
- PE10\_16 Geomagnetism, paleomagnetism
- PE10\_17 Ozone, upper atmosphere, ionosphere
- PE10\_18 Hydrology, water and soil pollution

## Life Sciences

**LS1 Molecular and Structural Biology and Biochemistry:** molecular biology, biochemistry, biophysics, structural biology, biochemistry of signal transduction

- LS1\_1 Molecular biology and interactions
- LS1\_2 General biochemistry and metabolism
- LS1\_3 DNA biosynthesis, modification, repair and degradation
- LS1\_4 RNA synthesis, processing, modification and degradation
- LS1\_5 Protein synthesis, modification and turnover
- LS1\_6 Biophysics
- LS1\_7 Structural biology (crystallography, NMR, EM)
- LS1\_8 Biochemistry of signal transduction





**LS2 Genetics, Genomics, Bioinformatics and Systems Biology:** genetics, population genetics, molecular 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

- 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, regeneration, tumorigenesis, cardiovascular disease, metabolic syndrome

- LS4\_1 Organ physiology
- LS4\_2 Comparative physiology
- 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 disorders, psychiatry

- LS5\_1 Neuroanatomy and neurosurgery
- LS5\_2 Neurophysiology
- 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 Behavioral 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:** immunobiology, aetiology of immune disorders, microbiology, virology, parasitology, global and other infectious diseases, population dynamics of infectious diseases, veterinary medicine

- LS6\_1 Innate immunity
- 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
- LS6\_13 Veterinary medicine

**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
- LS7\_5 Toxicology
- LS7\_6 Gene therapy, stem cell therapy, regenerative medicine
- LS7\_7 Surgery
- LS7\_8 Radiation therapy



- LS7\_9 Health services, health care research
- LS7\_10 Public health and epidemiology
- LS7\_11 Environment and health risks including radiation
- LS7\_12 Occupational medicine
- LS7\_13 Medical ethics

**LS8 Evolutionary, population and environmental biology:** evolution, ecology, animal behaviour, population biology, biodiversity, biogeography, marine biology, eco-toxicology, prokaryotic biology

- LS8\_1 Ecology (theoretical, community, population, microbial, evolutionary ecology)
- LS8\_2 Population biology, population dynamics, population genetics, plant-animal interactions
- LS8\_3 Systems eEvolution, biological adaptation, phylogenetics, systematics
- LS8\_4 Biodiversity, comparative biology
- LS8\_5 Conservation biology, ecology, genetics
- LS8\_6 Biogeography
- LS8\_7 Animal behaviour (behavioural ecology, animal communication)
- LS8\_8 Environmental and marine biology
- LS8\_9 Environmental toxicology
- LS8\_10 Prokaryotic biology
- LS8\_11 Symbiosis

**LS9 Applied life sciences and biotechnology:** agricultural, animal, fishery, forestry and food sciences; biotechnology, chemical biology, genetic engineering, synthetic biology, industrial biosciences; environmental biotechnology and remediation

- LS9\_1 Genetic engineering, transgenic organisms, recombinant proteins, biosensors
- LS9\_2 Synthetic 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 Biotechnology, bioreactors, applied microbiology
- LS9\_10 Biomimetics
- LS9\_11 Biohazards, biological containment, biosafety, biosecurity