

(2) Grants-in-Aid for Scientific Research FY2013 List of Categories, Areas, Disciplines and Research Fields

○ List of Disciplines and Research Fields with a Time Limit

Area	Detail	Item Number	Set Period
Bioethics	<p>“Bioethics” is the field which mainly treats ethical aspects of life. However, it is an interdisciplinary field which not only treats various humanity fields, such as philosophy, ethics, sociology, law, economics, politics, cultural anthropology and history of technology but also overcrossing with a number of scientific fields such as biology, bio-science, anthropology, genetics, public health, pharmacology, basic medicine, clinical medicine, forensic medicine and nursing.</p> <p>Bioethics was founded in the USA in the 1970s, and its importance has been acknowledged widely throughout the world, especially in an era where genetic engineering, biotechnology and state-of-the-art medical technology are rapidly developing.</p> <p>In this field, many problems such as informed consent, medical decision making, abortion, genetic diagnosis, surrogate birth, brain death and transplantation, euthanasia and death with dignity, terminal care, ethics in nursing, human clone research, animal experimentation, genetic modification and so on are left unsolved. We sincerely hope that many ambitious researchers will endeavor in these areas of study.</p>	9043	
Tourism Studies	<p>The academic development of tourism studies complements the policy of promoting Japan as a tourism-oriented country from a scientific viewpoint. Until now, interdisciplinary scientific research on tourism has been carried out from diverse perspectives, such as, for example, “ecotourism”, “green” tourism, health tourism, “new” tourism (such as, for example, industrial and cultural tourism), the economic effects of tourism, the influence of tourism on regional communities and culture, town development and regional promotion through tourism, international tourism policy, the behavior and psychology of tourists, etc. These research topics have been extensively studied, in an interdisciplinary way, in every area of science, such as business administration, commercial science, economics, geography, sociology, psychology, civil engineering, urban engineering, architecture, environmental studies, etc. In each area, research activities on tourism have intensified. Nevertheless, in order to further the development of tourism studies academically, it is necessary to harmonize these dispersed research areas through interdisciplinary study.</p> <p>In this area, JSPS expects to promote the research activities ranging from basic theory concerning the original development of tourism studies to various kinds of applied research, in addition to the promotion of expansive research that entails a practical and academic approach, and that contributes to the development of those economic and social sectors engaged in tourism.</p>	9044	FY2011 — FY2013
Reliable environmental measurement methods	<p>In order to understand totally the relation between life and earth environment and to continue the reliable environment of the earth, it is required to develop a new measurement methods based on a new metrology. In this field, new measurement methods are developed to understand a safe life, a food safety, a medical safety, and a reliable environment. Especially, a super selective and wide dynamic range analytic method, a mobile and energy-saving measurement instrument, an imaging technique, super-selective analytical reagents, a new detection method of bio-related micro particle such as virus and pollen are highly required. In order to achieve the reliable environmental measurement methods, a wide approach is expected from medical, agricultural, pharmaceutical, environmental fields, in addition to scientific and engineering fields.</p>	9045	

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epigenetics	<p>The regulation of gene expression is not achieved exclusively by the nucleotide sequence. The expression of genetic information is regulated by stable and yet plastic control mechanisms collectively referred to as epigenetics, that is, chemical and structural modifications of chromatin composed of genomic DNA and interacting proteins such as histones. Currently, epigenetics is a major research focus in the life sciences because of its demonstrated involvement in a wide variety of biological phenomena including embryogenesis, tissue-specific gene expression, genome imprinting, aging, tumorigenesis, neurodegenerative diseases and somatic cell cloning.</p> <p>JSPS is expecting ambitious research projects along these lines, which go beyond the frameworks of biological science disciplines such as genomics, molecular biology, cell biology, biochemistry, developmental biology, genetics and neuroscience, with the goal of elucidating the basic principles of epigenetics (operating principles, regulatory mechanisms and breakdown) commonly observed in the above-mentioned biological phenomena.</p>	9046	
Integrated Nutrition Science	<p>Nutrition science has contributed greatly to health promotion and improvement of physical strength/shape through the understandings of physiology, nutrients, and metabolism necessary for growth and maintenance of life. However, new issues such as overeating, food satiation, lifestyle-related diseases, stress, and aging, have been emerged. Recent advances in life science and analytical informatics technology enabled new approaches in this field: molecules, cells, laboratory animals to human population can now be included for research design. In order for such expansion in nutrition science to accelerate, establishment of a cross-sectoral research community beyond the existing frame, including eating habits studies, applied health science, food science, and clinical medicine is required.</p> <p>The goal of this new research field is to contribute toward maintaining/promoting health, preventing diseases, and potentiating therapeutic effects in the complex and diverse modern society. A broad range of studies with aim to build the platform of nutritional science and put the accomplishment into practice is encouraged.</p> <p>Nutrition science has contributed greatly to health promotion and improvement of physical strength/shape through the understandings of physiology, nutrients, and metabolism necessary for growth and maintenance of life. However, new issues such as overeating, food satiation, lifestyle-related diseases, stress, and aging, have been emerged. Recent advances in life science and analytical informatics technology enabled new approaches in this field: molecules, cells, laboratory animals to human population can now be included for research design. In order for such expansion in nutrition science to accelerate, establishment of a cross-sectoral research community beyond the existing frame, including eating habits studies, applied health science, food science, and clinical medicine is required.</p> <p>The goal of this new research field is to contribute toward maintaining/promoting health, preventing diseases, and potentiating therapeutic effects in the complex and diverse modern society. A broad range of studies with aim to build the platform of nutritional science and put the accomplishment into practice is encouraged.</p>	9047	FY2011 — FY2013
Regenerative medicine	<p>Human beings are composed of many organs and various types of cells within. These cells must self-renew themselves even after birth as well as during development, to maintain the homeostasis of the organ and to maintain their life against various environmental stresses.</p> <p>Regenerative medicine intends to repair and regenerate the damaged tissue/organ by manually controlling the self-renewing system, which resides endogenously in the organisms. Three-step approach, which includes in vitro, in vivo, and translational researches, is required for clinical application of the regenerative medicine. Identification of the cell-type specific differentiation factor and the establishment of the cell-type specific protocol for effective differentiation and purification system using somatic stem cells, embryonic stem (ES) cells, and induced pluripotent stem (iPS) cells are the important goals of in vitro researches. Thereafter, in vivo approaches using laboratory animals is important to establish the method to deliver the cells and to keep them alive and functional at the damaged lesion, in order to re-organize the damaged organ within the living organisms. To reach the final goal toward the clinical application, in vitro and in vivo findings should be gathered and translated into clinical medicine. Immunologic problem, such as rejection, or the differences in the organ size between experimental animals and humans are the challenges that should be solved in translational researches. Development of tissue engineering technology is one of the helpful candidates for solving those problems. Regenerative medicine is expected to become a new hope for the patients of refractory disorders such as heart diseases and neurodegenerative diseases. Moreover, regenerative medicine could reduce the inflated healthcare cost, which is becoming a big economic issue in the advanced country, by improving the quality of life of the elderly in the graying society. We are eager for the challenging proposals that would greatly advance this field.</p>	9048	

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Care Studies	<p>The twenty-first century is expected to be a “century of care”, faced with such problems as an aging society coupled with a declining birthrate, ethical issues in medical treatment and nursing, mental difficulties suffered by people of all ages, and other issues. The English word “care” has been translated into various Japanese words which refer to nursing, care-giving, care-taking, treatment, consideration, concern, etc., and these Japanese words had been used and discussed separately in diverse fields such like medical treatment, nursing, care-giving, welfare, psychology, education, ethics, philosophy, etc. Recently, however, the original word “care” came to be used in a broader sense, out of the necessity, for cross-field discussions, so as to avoid limiting the problems to a particular field by using a specific Japanese term.</p> <p>From the 1980s on, research on “cross-field” care emerged, and this trend rapidly developed after the enforcement of the Nursing Care Insurance in 2000. It is hoped that care studies will be established as an independent area of study through multi-disciplinary participation by researchers of various scholarly fields, which include not only clinical investigation and on-the-spot investigation, but also fundamental theoretical research based on investigation of the literature and international academic exchange. JSPS is expecting research that will contribute significantly to the development of this field.</p>	9049	
Cultural Research	<p>This category includes broad research areas in the humanities and social sciences with special reference to language and culture. These are interdisciplinary research fields such as research in culture, cultural studies, cultural history, comparative culture (comparative literature), cross-cultural understanding/international understanding, international exchange, history of cultural interexchange, nationalism, post-colonialism, identity, migration and so forth.</p> <p>This category does not exclude fields where sociological, economical and legal knowledge methodology and interest is involved, and encourages a broadened approach with the possibility of interdisciplinary research.</p> <p>For example, within research on nationalism, it may be necessary to include considerations of research on culture, sociology, politics and law, among others, but in addition to consideration of research results from other fields, this kind of research should increase the possibilities of interdisciplinary research while it absorbs the various results and outcomes of cultural research to contribute to the positive development of the field.</p>	9050	FY2012 — FY2014
Land, Housing and Real Estate Study	<p>In our modern society of aging and decrease of birthrate, the research on the land, housing and real estate is extending to cover the vitalization in city center, community development, vitalization in urban and regional area, property market, real estate finance, valuation of real estate, bad debt problem, real estate securitization.</p> <p>The land, housing and real estate, whose values are occupying large portion of our gross national wealth, need to be appropriately evaluated and efficiently used by households, firms, and public organizations for improving our quality of life.</p> <p>This subject expects the inter-disciplinary study of economics, urban planning/social engineering, law, social welfare, sociology, psychology, political science, architecture, and housing e.t.c.</p>	9051	
Measurement Science and Technology in Omics	<p>As a newly emerging area of study in natural sciences, "Measurement Science and Technology in Omics" deals with measurement principles and techniques in omics sciences, which include proteomics, metabolomics (biological and natural objects, cells and etc.), metabonomics (pharmacology), glycomics, lipidomics, metallomics, adductomics, genomics, transcriptomics and combined omics (e.g., glycoproteomics). The suffix -ome as used in molecular biology refers to a totality of some sort, and the related suffix -omics is used to address the objects of study of such fields. Hence, "Measurement Science and Technology in Omics" is based on identification and analyses of molecules in a wide range of scientific fields. Each omics has its own molecular characteristics and requires intrinsic measurement techniques. For example, sugar chains are different from chains of lipids and those of peptides/protein. Measurement techniques in this area include non-destructive measurement, visualization/imaging analyses, on-site measurement, spectroscopy, mass spectrometry, ion measurement, and laser measurement, including information processing of measured data. Mass spectrometry research in this area covers qualitative and quantitative analyses, structural analyses, functional analyses, molecule-based analyses, and their application research. We are looking forward to receiving many good proposals which will greatly contribute to this area of research.</p>	9052	

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Space life science	<p>Space life science is a research field rich in originality and covering a wide range of sciences such as astrobiology which uses space environment for studies on the origin of life, gravity- and radiation-biology which aim to clarify adaptation and survival mechanisms of microbes, plants and animals, and human, by bringing them to the space environment definitely different from the earth, and engineering, medical and agricultural sciences necessary for experiment performance and human expeditions in the space. It is anticipated that experiments accomplished in the space environment will elucidate the fundamental mechanisms by which diverse organisms arose, adapted and evolved on the earth. Besides, space life science is the only current discipline that can deal the issues related to promotion of space development and utilization, environmental preservation from extraterrestrial view points, education for next generations of space ages. We are eager for the challenging proposals that would greatly contribute to the advancement of this field.</p>	9053	FY2012 — FY2014
Sleep Science	<p>Sleep science comprises multidisciplinary research fields ranging from basic biology (physiology, pharmacology, molecular biology, psychology and behavioral science), clinical medicine (psychiatry, neurology, respiratory medicine, otolaryngology, oral surgery, dentistry), sociology, cultural science to engineering. Sleep science has become an important research subject and has been gaining more and more attention worldwide from scientific interests as well as from social needs, partly because big traffic accidents occurred due to sleep disorders.</p> <p>We expect many highly motivated research proposals from various fields including basic research (sleep, circadian rhythms, or biological clock), clinical research (the pathophysiology and/or treatment of sleep abnormalities, parasomnia, or sleep disorders), sociology, engineering and cultural science.</p>	9054	
Natural Disaster Issues and Humanities/Social Sciences	<p>Large natural disasters, such as the Great East Japan Earthquake, cause immense human loss and material damage, posing various risks to Japanese society. To overcome these risks, research centered on civil engineering and construction is, of course, needed to get a grasp of the damage that can be caused to the physical environment and infrastructure and to devise measures for their restoration and reconstruction. Of concomitant importance is a need to advance systematic research on socio-economic damage and measures for its recovery and reconstruction as well. Required for this purpose are a diversified research approach with cross-disciplinarity, sustained research support, capability to respond to a wide expanse of affected areas and damage regionalities, and an enhanced knowledge base for supporting restoration and mitigating damage in the future. To this end, thematic research on “earthquake disaster issues” will need to be advanced across a spectrum of humanities and social sciences fields.</p> <p>In this area, research will need to be undertaken in fields that do not fit neatly within existing research field categories. As research will need to be advanced from new perspective, an opportunity is accorded to systematically establish a new domain oriented to disaster issues within the humanities and social sciences. A strong demand to do this opens up opportunities for research that transcends topic setting within existing fields and enables research advancement and knowledge sharing across fields of the humanities and social sciences in ways that make it possible to gain a full-scope, cross-disciplinary grasp of earthquake damage and restoration.</p>	9055	FY2013 — FY2015

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Reconstruction Agriculture	<p>Agricultural science covers many issues related to agriculture; however, it has not envisioned earthquake damage on a scale of the Great East Japan Earthquake, leaving us unprepared to quickly and comprehensively respond to society's needs, particularly restoration and reconstruction. This has given rise to a need for a field of agriculture capable of flexibly addressing earthquake damage-related issues over a 1000-year time spectrum in designing sustainable agrarian, mountain and coastal communities and in building agricultural, forestry and fishery industries. Reconstruction agriculture is not a field aimed just at recovering the current earthquake damage; but, employing principals of prevention, it's expected to be developed with an aim to restoring agrarian, mountain and coastal communities damaged by storms and flooding caused by climate change or affected by unanticipated global issues or external pressures.</p> <p>The field of reconstruction agriculture comprises four areas: Planning, mechanism elucidation and effect analysis, technological development, and human resource development. Advancing research in them is expected to contribute significantly to the development of this field.</p> <p>Planning: Toward restoring earthquake damage, planning science related to agricultural, forestry and fishery communities; disaster risk management; socio-economic system design as related to damage recovery in agricultural, forestry and fishery communities</p> <p>Mechanism elucidation and impact assessment: Ecosystems affected by large-scale damage (e.g., river basins, forests, agricultural land, coastal areas, oceans), including monitoring, impact assessment, affect of radiation on crops, fish and livestock (analyzing migration and accumulation of radioactive substances, metabolic analysis); effect of radiation in the processing of plant, meat and fish products (dynamic analysis of radioactive substances)</p> <p>Technological development: Technology for restoring the infrastructure of agricultural, forestry and fishery communities; technology for desalinating and decontaminating agricultural land and residential areas; environmental restoration, purification and dilution technologies (e.g., microorganisms, bio-phytoremediation using plants, dilution/removal of radioactive substances from water systems); breeding salt-resistant plants; dilution and removal technologies for radiation-contaminated biomass; technology for converting and using woody waste as biomass fuel; creating systems for the emergency provision of perishable foods (vegetable factories);</p> <p>Human resource development: Implementing science communication and outreach programs in the reconstruction agricultural domain</p>	9056	FY2013 — FY2015
Public Policy	<p>Public policy research entails economic policy, urban planning and disaster-response policy on both the central and regional levels. A wide definition also includes policy, strategy, implementation and assessment stratum. Many of the research papers published in the reports, journals and bulletins of the Public Policy Studies Association JAPAN over the past 15 years can be attributed to the fields of law, political science and economics. What can also be seen in them is the emergence of a new research field called policy economics, created through collaboration and linkage among existing disciplines. One typical example of such merger is a field born out of collaboration between law and economics. Political economics became main stream for at least some period of time in the worldwide political science domain. Public economics advanced around the field of economics (by James M. Buchanan and others) has become a required component of high-level political-science education. In public policy literature, its formation process is the object of political-science analysis. Regarding policy concepts, results of public policy has been produced in various research areas, including, economics, welfare, the environment and urban planning. In actuating these results, only when various policies, laws, ordinance and rules are established on the central and local government levels, they give it generality. Furthermore, when the validity of public policy comes into question, judicial precedents in the courts are analyzed. A trend can be seen in an expansion of the social sciences under the name of public policy, which merges existing disciplines with disciples in a variety of other research domains. Collaboration and linkage among the fields of social sciences can elevate the standard of research in each of them, and potentially lead to the creation of new research fields. The key words in the public policy domain include law and economics, political economics, policy assessment, urban planning, welfare policy, environmental policy, governance, NGO/NPO, public economics, public choice, national debt/budget deficits, financing/bubble, strategic theory, and international public policy. Advancing research in them is expected to contribute significantly to the development of this field.</p>	9057	

(Note 1)

This table, in combination with the main table, applies only to "Scientific Research (C)", screening division "General".

(Note 2)

The set period is the fiscal year when the call for proposals is organized. Notwithstanding the set period, research projects of 3 to 5 years are being sought.