Please carefully consider the following Category and Sub-category descriptions to find which section an individual abstract will best fit into the program.

**Neuroscience**

This emphasis covers all research on basic neuroscience and neurological disorders. This includes pathologies of the central and peripheral nervous system, as well as traumatic, degenerative, inflammatory and neoplastic nervous pathologies. In addition, it addresses basic and mechanistic research on the development and function of the nervous system.

* **Probes & Targets**

The design, chemical synthesis and characterization of imaging probes or reporter genes and their targets prior to *in vivo* applications. Research targeting new biological mechanisms where imaging is used as a tool to gain mechanistic insights into disease are included. All imaging modalities covered.

* **Preclinical Imaging**

All applications where new imaging tools and probes are evaluated in preclinical models belong to this category. It also includes the preclinical testing of previously developed imaging probes for new applications/uses.

* **Translational and Human Studies**

Research on humans or (non-human) studies with demonstrated potential for clinical impact or immediate translation should be submitted to this category. It includes prospective and retrospective studies as well as studies on new pharmaceuticals at phase I-IV where imaging plays a significant role in the study. Studies on Omics and its combination with imaging are also welcome.

* **Image-guided Therapy and Theranostics**

Research covering theranostic repurposing of existing molecular imaging probes, applications where imaging is used to plan treatment and/or to monitor response to treatment, as well as novel approaches to integrate molecular imaging with conventional therapy are included under this category. This includes imaging approaches as well as drug and contrast agent delivery in the context of neurological disorders, including neurodegenerative disease and cerebrovascular disease. Preclinical testing of theranostic agents/strategies and human translational applications are covered.

**Oncology**

Solid and non-solid tumors, tumor development, progression and therapy are addressed in this emphasis. Multiscale research from cells to humans is covered that focuses on the mechanistic investigation of cancer-related biological processes, probe development and novel diagnostic and therapeutic applications.

* **Probes & Targets**

The design, chemical synthesis and characterization of imaging probes or reporter genes and their targets prior to *in vivo* applications. Research targeting new biological mechanisms where imaging is used as a tool to gain mechanistic insights into disease are included. All imaging modalities covered.

* **Preclinical Imaging**

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**Cardiovascular and Systemic Diseases (Cardiovascular, lungs, kidney, liver and pancreas)**

Research in this emphasis addresses pathomechanisms of cardiovascular diseases, including myocardial dysfunction and infarction, atherosclerosis, arteritis, thrombosis and embolism as well as kidney dysfunction. It also covers investigation of metabolic pathways and mechanisms as well as metabolic diseases such as diabetes and osteoporosis. The emphasis may also include investigations on the gut-liver axis, liver and pancreas function (including islet cells) as well as on metabolism in fat tissues and other pathologically altered tissues and tumors. Studies on therapeutic interventions (e.g. new drugs or cell transplantations) will also be considered.

* **Probes & Targets**

The design, chemical synthesis and characterization of imaging probes or reporter genes and their targets prior to *in vivo* applications. Research targeting new biological mechanisms where imaging is used as a tool to gain mechanistic insights into disease are included. All imaging modalities covered.

* **Preclinical Imaging**

All applications where new imaging tools and probes are evaluated in preclinical models belong to this category. It also includes the preclinical testing of previously developed imaging probes for new applications/uses.

* **Translational and Human Studies**

Research on humans or (non-human) studies with demonstrated potential for clinical impact or immediate translation should be submitted to this category. It includes prospective and retrospective studies as well as studies on new pharmaceuticals at phase I-IV where imaging plays a significant role in the study. Studies on Omics and its combination with imaging are also welcome.

* **Image-guided Therapy and Theranostics**

Research focuses on theranostic applications of molecular imaging probes to visualize biological processes in real-time, enabling treatment planning and response monitoring. It explores novel integration of molecular imaging with conventional/genetic therapies, imaging biomarkers, and innovative nanoparticle-based drug delivery systems for managing cardiovascular diseases, including theranostic strategies for preclinical testing and human translational applications.

**Immunology/Inflammation**

This category deals with imaging peripheral and central inflammatory reactions in different pathologies, targeting cellular and tissue markers of inflammation. This category also covers the dynamic non-invasive visualization of the immune response, using innovative imaging technologies, across multiple diseases and following therapeutic intervention, for purposes of tracking immune cells and assessing their interactions with the host and microenvironment. We encourage submissions where the immune system is the primary focus, rather than the disease itself, which might be a better-fit for other disease-specific categories (e.g. oncology track).

* **Probes & Targets**

The design, chemical synthesis and characterization of imaging probes or reporter genes and their targets prior to *in vivo* applications. Research targeting new biological mechanisms where imaging is used as a tool to gain mechanistic insights into disease are included. All imaging modalities covered.

* **Preclinical Imaging**

All applications where new imaging tools and probes are evaluated in preclinical models belong to this category. It also includes the preclinical testing of previously developed imaging probes for new applications/uses.

* **Translational and Human Studies**

Research on humans or (non-human) studies with demonstrated potential for clinical impact or immediate translation should be submitted to this category. It includes prospective and retrospective studies as well as studies on new pharmaceuticals at phase I-IV where imaging plays a significant role in the study. Studies on Omics and its combination with imaging are also welcome.

* **Image-guided Therapy and Theranostics**

Research spanning theranostic repurposing of existing molecular imaging probes to combine therapeutic and diagnostic capabilities in a single platform, and/or exploration of novel ways to integrate molecular imaging with conventional therapies to guide treatment monitoring. Preclinical testing of theranostic agents/strategies towards real-time monitoring and treatment of inflammatory and immune-driven diseases are covered, including their clinical evaluation in human subjects.

**Infection**

This category deals with new developments in the field of infection imaging, covering the development of pathogen-specific molecular imaging agents in preclinical, translational, and clinical settings. This category also includes molecular imaging of the host response to specific infectious etiologies, the use of molecular imaging agents to assess antimicrobial drug pharmacokinetics, as well as the development and implementation of novel infection imaging agents/technologies and their translation to clinical practice.

* **Probes & Targets**

The design, chemical synthesis and characterization of imaging probes or reporter genes and their targets prior to *in vivo* applications. Research targeting new biological mechanisms where imaging is used as a tool to gain mechanistic insights into disease are included. All imaging modalities covered.

* **Preclinical Imaging**

All applications were new imaging tools and probes as well as the repurposing of existing ones, are evaluated in preclinical models of infection and infection-mediated host response.

* **Translational and Human Studies**

Research on humans or (non-human) studies with demonstrated potential for clinical impact or immediate translation should be submitted to this category. It includes prospective and retrospective studies as well as studies on new pharmaceuticals at phase I-IV where imaging plays a significant role in the study. Studies on Omics and its combination with imaging are also welcome.

* **Image-guided Therapy and Theranostics**

Research encompassing the theranostic repurposing of existing molecular imaging probes, applications where imaging is used for treatment planning and/or monitoring treatment response, and innovative strategies that integrate molecular imaging with conventional therapies. It also includes preclinical testing of theranostic agents and their translational applications in humans, including real-time monitoring of treatment responses to infections and infection-mediated host responses.

**Instrumentation**

This emphasis covers all hardware developments that are related to imaging devices and diagnostic or therapeutic assist systems. It also includes strategies for image reconstruction as it relates to specific instrumentation.

* **Innovation in Instrumentation**

This category will cover all research on new instrumentation, including imaging hardware and related image protocols or reconstruction techniques, hybrid imaging systems and (therapy) assist systems.

* **Image Guidance**

Presentations will be about new endoscopic devices and related optical, ultrasound and optoacoustic technologies as well as on image-guided surgery.

* **Microscopy**

Here, technologies and applications to image at mesoscopic down to subcellular level will be presented covering intravital microscopy, confocal and two photon microscopy, high resolution microscopy (e.g. STED, PALM, STORM) as well as mass spectroscopy (e.g. MALDI).

**New Chemistry, Materials and Probes**

This emphasis covers research whose primary innovation concerns chemical methods, materials and/or approaches which may have applications in multiple areas of biology rather than one specific disease. This includes research on new organic, inorganic or biomolecular probes, nanomaterials or synthetic strategies. The probes may be “always on”, responsive (as in biosensors) or have a therapeutic effect (e.g., theranostics). Novel approaches for biochemical analysis (e.g., metabolomics, in vitro diagnostics) with applications in multiple areas of biology/disease are also part of this category.

* **New Chemistry for Optical Imaging**

This category covers novel chemistry approaches and probe designs for optical imaging modalities (e.g., fluorescence, luminescence, photoacoustics) with applications in multiple biology/disease areas.

* **New Chemistry for Magnetic Resonance Imaging and Magnetic Particle Imaging**

This category covers novel chemistry approaches and probe designs for MRI and MPI with applications in multiple biology/disease areas.

* **New Chemistry for Nuclear Imaging**

This category covers novel chemistry approaches and probe designs for nuclear imaging with applications in multiple biology/disease areas.

* **New Chemistry for Ultrasound Imaging**

This category covers novel chemistry approaches and probe designs for ultrasound imaging with applications in multiple biology/disease areas.

* **New Chemistry for Multimodal Imaging**

This category covers novel chemistry approaches and probe designs for imaging with more than one modality and applications in multiple biology/disease areas.

* **New Approaches to Biochemical Analysis**

This category covers novel approaches for biochemical analysis (e.g., metabolomics, in vitro diagnostics) with applications in multiple areas of biology/disease.

**Bioengineering, Synthetic Biology and Basic Biology**

This emphasis covers research whose primary innovation concerns bioengineering approaches at the level of proteins, genetic circuits and cells, which may have applications in multiple areas of biology rather than a specific disease. This includes reporter genes, cell-based biosensors, and related techniques. It also includes fundamental advances in gene-based and cell-based therapy (including genome editing) that apply to multiple biological or disease areas. In addition, it includes research in basic biology that does not fit into any of the existing biological or disease categories (for example, organismal development, evolutionary biology). Furthermore, research on “-omics” and systems biology approaches applicable to multiple biology/disease areas can be submitted to this emphasis.

* **Reporter Genes and Protein Engineering**

This category covers novel reporter genes and protein engineering approaches with applications in multiple biology/disease areas.

* **Cell-Based Reporters, Therapeutics and Cellular Engineering**

This category covers novel cell-based reporters, therapeutics, regenerative medicine and cellular engineering approaches with applications in multiple biology/disease areas. Genetic engineering and genome editing approaches are also included.

* **Tissue Engineering and Regenerative Medicine**

This category addresses research in the fields of tissue engineering, regenerative medicine, organoid models and organs on a chip.

* **Systems and Basic Biology**

Systems biology applications search for mathematical descriptions of physiological and pathophysiological processes at different scales. In this context, input data may derive from imaging and Omics. Basic Biology covers research in basic biology that does not fit into any of the other biological or disease categories (for example, organismal development, evolutionary biology).

* **Spatial Gene/Protein Mapping Technologies**

Spatially resolved gene expression or spatial transcriptomics imaging (e.g. with the 10x Genomics platform, FISH, multiplexed FISH etc.) or mass spectrometry imaging (MSI)-based techniques (e.g. MALDI, DESI etc.) to visualize the distribution of proteins, peptides, metabolites, drugs etc. within tissues. Any other method that provides a quantitative readout of either whole transcriptome or targeted gene expression mapped to specific locations in a tissue

**Computational & Data Science**

This emphasis covers computational and methodological approaches to molecular imaging data, including modeling, image analysis, image processing and quantification.

* **Machine Learning: Applications**

Pre-clinical or clinical studies that apply machine learning methods to analyze molecular imaging data form the basis of this category. The focus is on the use or evaluation of machine learning algorithms for applications in molecular imaging studies and analysis, as well as the inclusion of big data in studies.

* **Machine Learning: Basic Developments**

Basic developments include new algorithms or conceptual approaches for statistical analyses that are broadly applicable to imaging or other data. This includes methods to improve the efficiency of machine learning (transfer learning) and other investigations into the development of machine learning itself.

* **Modeling & Quantification**

This category covers the use, evaluation and novel approaches for modeling, quantifying and analyzing imaging data. This includes kinetic modeling of PET or other dynamic datasets, biological or biochemical models and simulations. Any new analytical or numerical approaches to quantify imaging data is appropriate for this category.

* **Image Pre/Post-processing**

Novel methods to process or analyze imaging data are considered in this category. This can include pre- or postprocessing methods that address motion, physiology or other noisy parameters. It also includes new approaches in image registration, especially for multi-modal imaging data, and methods involving image reconstruction. Any methods that improve image quality, sensitivity or accuracy fall into this category.

**MOMIL (Managers of Molecular Imaging Labs)**

* **Financial and Resource Management**

Focuses on budgeting, cost control, resource allocation, and financial strategies necessary for the smooth operation of molecular imaging laboratories. Topics should be centered on financial planning, cost-efficiency, and managing physical and human resources.

* **Operational Strategy and Growth**

Covers long-term strategic planning, identifying opportunities for business growth, and overcoming high-level operational challenges. This category is about navigating the broader business landscape and charting a course for laboratory expansion and scaling, rather than focusing on daily operations or performance metrics.

* **Regulatory Compliance and Facility Management**

Encompasses adherence to regulatory standards, accreditation requirements, safety protocols, and the logistics of planning, maintaining, and expanding laboratory facilities. Topics here should focus on compliance with external regulations and internal processes for managing lab infrastructure.

* **Leadership and Organizational Development**

Focuses on leadership strategies, team-building, and the development of organizational structures to support a high-performing laboratory environment. This category includes managing staff, fostering a collaborative culture, and creating leadership development programs for lab directors and staff.

* **Industry Collaboration and Competition**

Explores the dynamics between private sector and academic institutions, including collaboration, competition, and their impact on research, funding, and operational strategies. Topics here should address interactions between industry and academia, partnerships, and competitive pressures.

* **Performance Metrics and Quality Assurance**

Focuses on developing and implementing performance metrics, quality assurance processes, and continuous improvement efforts. Topics should be centered around measuring operational effectiveness, ensuring high-quality standards, and improving processes through data-driven insights.