Scientific Areas of Integrated Review Groups (IRGs)

For a listing of the Scientific Review Officer and membership roster for each study section, click on the study section roster under the study section name within an IRG listed below or go to the study section index (study sections listed alphabetically) and click on the specified roster next to the name of the study section.

Interdisciplinary Molecular Sciences and Training IRG [IMST]

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- Small Business: Biological Chemistry and Biophysics [IMST (10)]
- Small Business: Drug Discovery and Development [IMST (11)]
- Small Business: Devices and Detection Systems [IMST (12)]
- Small Business: Biomaterials, Delivery Systems, and Nanotechnology [IMST (13)]
- Small Business: Computational Biology, Image Processing, and Data Mining [IMST (14)]
- Small Business: Genes, Genomes, and Genetics [IMST (15)]
- Small Business: Cell Biology and Molecular Imaging [IMST (16)]
- Fellowship: Chemical and Bioanalytical Sciences [F04A]
- Fellowship: Biophysical and Biochemical Sciences [F04B]
- Fellowship: Cell Biology and Development [F05]
- Fellowship: Genes, Genomes, and Genetics [F08]
- Fellowship: Oncological Sciences [F09]
- Fellowship: Technology Development [F14]

Small Business: Biological Chemistry and Biophysics [IMST (10)]

[IMST (10) Roster]

The IMST (10) panel reviews small business applications in the general areas of biological chemistry and biophysics, including bioanalytical technologies, spectroscopic technologies, and technologies that advance high-throughput. Specific areas covered by IMST (10) include:

- Novel materials, labels and reagents, molecular probes, reporter systems, and surface chemistries
- Chemical synthesis
- Bioanalytical and spectroscopic technologies
- Robotic systems for crystallography and mass spectroscopy
- Structural and synthetic biology
- Technologies and methods for high-throughput applications, including assays, screens, and large-scale synthesis
- Biofuel synthesis and production

Small business panels with most closely related areas of similar science listed in rank order are:

Drug Discovery and Development [IMST (11)]
Devices and Detection Systems [IMST (12)]
Computational Biology, Image Processing, and Data Mining [IMST (14)]

TOP

Small Business: Drug Discovery and Development [IMST (11)]

[IMST (11) Roster]

The IMST (11) panel reviews small business applications in small molecule drug discovery and development. Specific areas covered by IMST (11) include:

- Medicinal, synthetic, combinatorial, pharmaceutical, natural product, peptide, and protein chemistry for therapeutic applications
- Purification and large-scale synthesis of biological molecules, peptides, proteins, or drugs
- Technologies for the manufacture of biological molecules or drugs
- Computational drug design

Small business panels with most closely related areas of similar science listed in rank order are:

Biological Chemistry and Biophysics [IMST (10)]
Biomaterials, Delivery Systems, and Nanotechnology [IMST (13)]
Devices and Detection Systems [IMST (12)]

TOP

Small Business: Devices and Detection Systems [IMST (12)]

[IMST (12) Roster]

The IMST (12) panel reviews small business applications in the general area of instrumentation and systems development, including sensor and monitoring technologies for biological, environmental, and biodefense purposes. Specific areas covered by IMST (12) include:

- Detectors and signal capture systems for use in instrumentation, molecular screens, and immunoassays
- Technologies for detecting or measuring analytes in biological fluids
- Technologies for point-of-care use, first response, or field monitoring
- Technologies for molecular separations and screens, immunoassays, chemical reactions, and molecular detection
- Micro- and nano-fabrication devices and technologies
- Electrochemical devices, microfluidic, nanofluidic, and robotic systems
- Biosensors, chips, and other platforms for detecting chemicals, toxins, and pathogens in the environment or workplace
- Platforms, devices, and manufacturing practices for reducing chemicals, toxins, and pathogens in the environment or workplace
- New surface coatings, and materials, and technology for environmental and biodefense purposes

Small business panels with most closely related areas of similar science listed in rank order are:

Biological Chemistry and Biophysics [IMST (10)]
Biomaterials, Delivery Systems, and Nanotechnology [IMST (13)]
Drug Discovery and Development [IMST (11)]

TOP

Small Business: Biomaterials, Delivery Systems, and Nanotechnology [IMST (13)]

[IMST (13) Roster]

The IMST (13) panel reviews small business applications in the general areas of biomaterials and new strategies, devices, vectors, and agents for delivering genes or drugs into cells or organisms. Specific areas covered by IMST (13) include:

- Biomaterial characterization and fabrication technologies
- Technologies to address molecular/cellular interfacial interactions
- Implantable technologies with a focus on biocompatibility
- Embryonic stem cell platforms and technologies
- Technologies for gene and drug delivery, including delivery vehicles and manufacturing processes
- Nanotechnology platforms, time release formulations, and other delivery vehicles

Small business panels with most closely related areas of similar science listed in rank order are:

Drug Discovery and Development [IMST (11)]
Devices and Detection Systems [IMST (12)]
Biological Chemistry and Biophysics [IMST (10)]

TOP

Small Business: Computational Biology, Image Processing, and Data Mining [IMST (14)]

[IMST (14) Roster]

The IMST (14) panel reviews small business applications with a dominant focus in computational and mathematical sciences. Specific areas covered by IMST (14) include:

- Data management, analytical techniques, and modeling
- Technologies and methods for image processing, data analysis and data mining
- Computational biology and bioinformatics
- Software engineering
- Ontologies and networks

Small business panels with most closely related areas of similar science listed in rank order are:

Genes, Genomes, and Genetics [IMST (15)]
Devices and Detection Systems [IMST (12)]

TOP

Small Business: Genes, Genomes, and Genetics [IMST (15)]

[IMST (15) Roster]

The IMST (15) panel reviews small business applications involved in areas of genetics, genomics, and nucleic acid technology. Specific areas covered by IMST (15) include:

- Technologies for genetic and genomic analysis, including the development of assays
- Technologies for molecular genetics and functional genomics
- Emerging oligonucleotide technologies
- Technologies for gene therapy and production of transgenic species
- Molecular genetic technologies for protein expression
- Bioinformatics technologies for development of functional genomics studies

Small business panels with most closely related areas of similar science listed in rank order are:

Computational Biology, Imaging Processing, and Data Mining [IMST (14)]
Biological Chemistry and Biophysics [IMST (10)]
Devices and Detection Systems [IMST (12)]

TOP

Small Business: Cell Biology and Molecular Imaging [IMST (16)]

[IMST (16) Roster]

The IMST (16) panel reviews small business applications in the general areas of cell biology and molecular imaging. Specific areas covered by IMST (16) include:

- Imaging technologies for monitoring molecular interactions and/or cellular activity
- Microfluidic systems for high-throughput evaluation of cell function
- Technologies for cell culture, including cell preservation, electroporation, development of single-use perfusion, and cell sorting
- Molecular genetics including transgenic agricultural products

Small business panels with most closely related areas of similar science listed in rank order are:

Devices and Detection Systems [IMST (12)]
Biological Chemistry and Biophysics [IMST (10)]
Computational Biology, Image Processing, and Data Mining [IMST (14)]

TOP

Fellowship: Chemical and Bioanalytical Sciences [F04A]

[F04A Roster]

The F04A panel reviews fellowship applications covering the chemistry of biologically and medicinally important molecules. This includes the synthesis, isolation and structural determination of small molecules as well as the chemistry of drug discovery and biological processes; structure-function relationships of enzymes and metalloproteins by kinetic and substrate analog studies; characterization of the chemistry of biologically relevant macromolecules including biopolymers and biomaterials; and development of analytical instrumentation and biosensors. Specific areas covered by F04A include:

- Chemical synthesis of therapeutic, pharmacological, biological, or biochemical compounds
- Development and optimization of synthetic reactions, including analysis of reaction mechanisms and kinetics
- Biosynthetic or biomimetic synthesis of natural products, including design of enzyme substrates or inhibitors
- Isolation, structural determination, and chemical synthesis of complex natural products
- Enzyme mechanism studies, including mutagenesis, analyses of transient and transition states, and steady state kinetics
- Bioinorganic chemistry, including synthesis and properties of coordination compounds and their thermodynamics, kinetics and structures
- Function and mechanism of metalloproteins, including their spectroscopic characterization
- Analytical and clinical chemistry, including fabrication methods for biomaterials and biosensor development and development of mass spectrometry, capillary electrophoresis, microfluidics, lab-on-a-chip, and other microfabicated devices
- RNA enzymology, including catalytic RNA and ribozymes

Fellowship panels with most closely related areas of similar science listed in rank order are:

Biophysical and Biochemical Sciences [F04B]
Cell Biology and Development [F05]
Oncological Sciences [F09]
Technology Development [F14]

TOP

Fellowship: Biophysical and Biochemical Sciences [F04B]

[F04B Roster]

The F04B panel reviews fellowship applications covering structure and biophysical behavior and dynamics of biological macromolecules. This includes applications concerned with the structure-function relationships of proteins, nucleic acids, glycoproteins, lipid bilayers and membrane proteins; X-ray crystallography, multi-dimensional NMR, electron microscopy, circular dichroism, fluorescence, and computational methods; single molecule dynamics and interactions by fluorescence and microscopic techniques; and molecular interactions for defining and maintaining cellular shape and function. Specific areas covered by F04B include:

- Proteomics, global approaches to protein function, and posttranslational modification
- Computational data mining for analysis of proteins and related microarrays
- Physical chemistry of biological macromolecules, including conformation and structure of proteins and nucleic acids
- Spectroscopic methods, including multi-dimensional nuclear magnetic resonance, X-ray crystallography, Raman and FTIR
- Protein and nucleic acid folding and conformation by experimental and computational methods
- Thermodynamics of macromolecular interactions, including isothermal calorimetry
- Kinetic analyses, including pH or temperature jump methods
- Structure and physical chemistry of lipid bilayer membranes and related model systems
- Physical chemical instrumentation, including development of new approaches and application of computers to such instrumentation
- Indirect methods for structure and dynamics determinations, including fluorescence dye labeling and tethering
- Carbohydrate biochemistry and glycoproteins, including synthesis and processing
- Signal transduction at molecular or subcellular levels, including protein structure, function, and enzymology
- Extracellular matrix at molecular or subcellular levels
- Motility and cytoskeleton at molecular or subcellular levels

Fellowship panels with most closely related areas of similar science listed in rank order are:

Chemical and Bioanalytical Sciences [F04A]
Cell Biology and Development [F05]
Biochemical and Molecular Neuroscience [F03A]
Biophysical and Physiological Neuroscience [F03B]

TOP

Fellowship: Cell Biology and Development [F05]

[F05 Roster]

The F05 panel reviews fellowship applications in the broad areas of molecular, cellular and developmental biology when the research focus is to understand basic principles of cell structure, function, regulation and differentiation. The study section encompasses the scientific disciplines covered by the Cell Biology (CB) IRG and the Biology of Development and Aging (BDA) IRG. Specific areas covered by F05 include:

- Biogenesis, organization, and functions of the plasma membrane and endomembrane organelles, including transmembrane transport, vesicular transport, macromolecular trafficking, and autophagy
- Cell adhesion, cell polarity, cytoskeleton and cell motility Extracellular matrix, including its biogenesis, organization, and interactions with the cell surface
- Cell cycle and cell growth regulation, cell senescence and cell death (apoptosis), mitosis, meiosis, cytokinesis, telomeres
- Developmental cell biology, including cell fate determination, cellular basis of embryonic patterning, developmental regulation of gene expression, and cell differentiation, germ and stem cell biology
- Protein stability and turnover, including chaperone function and ubiquitin-based degradation and related processes, signal transduction at the cellular level
- Gene expression and its regulation, including chromatin structure, transcription, RNA processing, translation, and RNA stability
- Nuclear organization, including chromosomal organization and nuclear import and export
- Anterior and posterior eye biology (retina and lens)

Fellowship panels with most closely related areas of similar science listed in rank order are:

Genes, Genomes, and Genetics [F08]
Oncological Sciences [F09]
Biochemical and Biophysical Sciences [F04B]
Brain Disorders and Related Neuroscience [F01]

TOP

Fellowship: Genes, Genomes, and Genetics [F08]

[F08 Roster]

The F08 panel reviews fellowship applications in genomics and genetics, DNA replication and related mechanisms, and genomic and molecular aspects of gene expression. Both prokaryotic and eukaryotic biological systems (e.g., animals, bacteria, fungi, parasites, plants, viruses, etc.) are covered in this study section. Specific areas covered by F08 include:

- Bioinformatics, computational biology, and systems biology
- Chromosome structure, function, and gene expression
- Complex genetic traits and diseases
- DNA replication, recombination, and repair (including telomeres, transposable elements, and molecular cell cycle)
- Epigenetics
- Evolution and Population Genetics
- Gene expression and regulation (Transcription, RNA Processing and Translation)
- Genetics of complex diseases and traits
- Modeling and Systems Biology
- Proteomics

Fellowship panels with most closely related areas of similar science listed in rank order are:

Biophysical and Biochemical Sciences [F04B]
Cell Biology and Development [F05]
Immunology [F07]
Oncological Sciences [F09]

TOP

Fellowship: Oncological Sciences [F09]

[F09 Roster]

The F09 panel reviews fellowship applications in basic, translational, and clinical areas of cancer initiation, promotion, progression, diagnosis, treatment and prevention. Specifically, applications reviewed include chemical carcinogenesis, cancer genetics, nutritional carcinogenesis, radiation biology, tumor immunology, cancer therapeutic agents/treatment modalities, cancer biomarkers/signatures, chemoprevention, and translational research from bench to bedside. Specific areas covered by F09 include:

- Cancer prevention and diagnosis
- Cancer genetics, genomics, proteomics and biomarkers/signatures
- Cancer etiology, progression, and metastasis
- Gene regulation, oncogenes, tumor suppressor genes, signal transduction pathways in oncogenesis
- Chemical and viral carcinogenesis
- Cancer-related DNA damage and repair, genomic instability
- Signal transduction mechanisms in transformation and tumor progression

- Cancer therapy including immunotherapy, gene therapy, radiation therapy, drug discovery and molecular pharmacology
- Cancer immunology

Fellowship panels with most closely related areas of similar science listed in rank order are:

Cell Biology and Development [F05]
Genes, Genomes, and Genetics [F08]
Endocrinology, Metabolism, Nutrition and Reproductive Sciences [F06]
Immunology [F07]

TOP

Fellowship: Technology Development [F14]

[F14 Roster]

The F14 panel reviews fellowship applications that focus on fundamental aspects of bioengineering and technology development in their early stages, before specific practical uses are proven. Fellowship applications need not be hypothesis-driven and may focus on the development of specific products, methods, or principles. Specific areas covered by F14 include:

- Gene and drug delivery systems
- Biomaterials, biointerfaces, tissue engineering
- Data management and archiving, bioinformatics algorithms, grid computing, ontologies, data mining, representation and visualization
- Mathematical modeling and computational biology
- Instrumentation and systems for the analysis, detection, separation, synthesis, and screening of biological and medicinal molecules and cells
- Microscopic imaging technology; image analysis and management

Fellowship panels with most closely related areas of similar science listed in rank order are:

Bioengineering and Imaging [F15]
Chemical and Bioanalytical Sciences [F04A]
Biophysical and Biochemical Sciences [F04B]
Cell Biology and Development [F05]

TOP

TOP