Center for Scientific Review
National Institutes of Health

Scientific Areas of Integrated Review Groups (IRGs)

For a listing of the Scientific Review Administrator and membership roster for each study section, click on the study section roster under the study section name within the 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.

Last updated on 7th, September, 2004

Referral & Review

Biological Chemistry and Macromolecular Biophysics IRG [BCMB]

The Biological Chemistry and Macromolecular Biophysics [BCMB] IRG will review research applications on biochemical, biophysical, and chemical approaches to biomedical problems. The IRG has special expertise in macromolecular mechanisms, biochemistry, chemistry, structural biology, enzymology, biophysical methods, and the theory underlying the function of biological molecules and their interactions. This IRG encompasses the basic physical sciences that underlie biology at the molecular level. The IRG also bridges the development of technologies with a molecular focus and their application to biological problems.

The following study sections are included within the BCMB IRG:

Synthetic and Biological Chemistry A Study Section [SBC-A]
Synthetic and Biological Chemistry B Study Section [SBC-B]
Macromolecular Structure and Function A Study Section [MSF-A]
Macromolecular Structure and Function B Study Section [MSF-B]
Macromolecular Structure and Function C Study Section [MSF-C]
Biochemistry and Biophysics of Membranes Study Section [BBM]
Enabling Bioanalytical and Biophysical Technologies Study Section [EBT]
Chemical and Bioanalytical Sciences Fellowship Special Emphasis Panel [F04A]
Biophysical and Biochemical Sciences Fellowship Special Emphasis Panel [F04B]
Biological Chemistry and Macromolecular Biophysics Small Business [SBIR/STTR] Activities
Special Emphasis Panels [BCMB Small Business SEPs]

[Back to Top]

Synthetic and Biological Chemistry A and B Study Sections [SBC-A and SBC-B]

[SBC-A Roster] [SBC-B Roster]

These study sections review research activities central to biology and medicine in which chemical synthesis, molecular structure, and reaction mechanism have central roles. The SBC-A and SBC-B study sections review applications in synthetic and biological chemistry ranging from fundamental to applied research. The SBC-A and SBC-B study sections both integrate synthetic methods and target directed synthesis with chemical biology and medicinal chemistry.

Specific areas covered by SBC-A and SBC-B:

- Bioinorganic and bioorganic /chemical biology
  Discovery, invention, and application of synthetic chemistry and reagents to problems in biology.

- Drug design/medicinal chemistry
  The design and synthesis of novel molecules that modulate biochemical processes of potential clinical relevance, including the study of physiochemical, ADME (absorption, distribution, metabolism, excretion), pharmacokinetic, and pharmacological properties.

- Enzymology
  Studies of enzymes that focus predominantly on the design and synthesis of drugs or compounds with pharmaceutical potential.

- Synthetic methods
  Discovery and development of strategies, reactions, reagents, and catalysts for use in synthesis.

- Target-directed synthesis
  Total synthesis of natural products and other biologically interesting targets of defined structure.

Additional areas for SBC-A may include include:

- Bioconjugate chemistry: The attachment of active molecules to biopolymers, including proteins, nucleic acids, polysaccharides, and lipids.

- Biomaterials: The synthesis and study of polymers, molecular assemblies, and nanostructured materials of potential use in biological systems and medicine.

- Biomimetic chemistry: Development of molecules with structures and functions based on extrapolation from biological examples.

- Imaging agents: Synthesis of molecules to improve the detection of cellular processes and structures and diagnosis of disease states.

- Inorganic and organic reactions and mechanisms: Fundamental studies of chemical reactivity of biological relevance.

- Metals in chemistry: Investigation of the roles, both natural and designed, of metal ions in chemical structure and function.

- Molecular recognition: Elucidation of inter- and intramolecular noncovalently controlled phenomena of chemical and biological relevance.

- Molecular design: The use of biological molecules or their analogs as fundamental building blocks for the synthesis of compounds with novel functions.

Additional areas for SBC-B may include include:

- Biosynthetic pathways: Elucidation and manipulation of the pathways by which primary and secondary metabolites are produced, including chemical strategies for combating infective agents and disease vectors.

- Diversity oriented synthesis: Development and application of synthetic strategies for the preparation of structurally diverse compounds and compound libraries of potential utility.

- Natural Products Discovery: Isolation and characterization of compounds of potential importance to human medicine from terrestrial and aquatic microbiological, plant, and animal sources.

The SBC Study Sections have the following shared interests within the BCMB IRG:

- **With Synthetic and Biological Chemistry A and B [SBC-A & SBC-B]:** SBC-A and SBC-B share interest in synthetic chemistry such that applications concerned with development of synthetic methods and total synthesis may be assigned equally to either study section. Although both study sections share interests in bioinorganic and medicinal chemistry, SBC-A could be assigned applications with emphasis on bioconjugates, biomaterials, biomimetics, metals, and imaging. SBC-B could be assigned applications with emphasis on bioorganic chemistry, biosynthetic pathways, and chemical diversity.

- **With Macromolecular Structure and Function A [MSF-A]:** The SBC-A and SBC-B study sections have shared interests in structure- and mechanism-based drug design with the MSF-A study section. Applications that emphasize synthetic or medicinal chemistry may be assigned to SBC-A or SBC-B. Applications that emphasize biochemical, structural, mechanistic or computational approaches may be assigned to MSF-A.

- **With Macromolecular Structure and Function B [MSF-B]:** The SBC-A study section has shared interests in peptide, protein, and nucleic acid design with MSF-B. Applications that emphasize chemical synthesis or drug design may be assigned for review by SBC-A. Applications that emphasize macromolecular structure or function may be assigned for review by MSF-B.

- **With Macromolecular Structure and Function C [MSF-C]:** The SBC-A study section has shared interests in imaging agents and approaches with MSF-C. Applications that emphasize chemical synthesis or design of imaging agents may be assigned for review by SBC-A. Applications that emphasize application of imaging agents to macromolecular structure or function may be assigned for review by MSF-C (or -A or- B as appropriate).

- **With Macromolecular Structure and Function A, B, and C [MSF-A, -B, & -C]:** The SBC-A and SBC-B study sections have shared interests with MSF-A, MSF-B, and MSF-C in development and analysis of inhibitors of macromolecular interactions (protein-protein, protein-nucleic acid, etc.). Applications that emphasize inhibitor synthesis or design could be assigned to SBC-A or -B. Applications that emphasize macromolecule and inhibitor interactions or functions could be assigned to MSF-A, -B, or -C.

- **With Biochemistry and Biophysics of Membranes [BBM]:** The SBC-A study section has a shared interest in development of reagents for manipulation and crystallization of membrane proteins with the BBM study section. Applications that are more synthetically oriented may be appropriate for SBC-A. Applications that are more structurally oriented may be appropriate for BBM. The SBC-A and SBC-B study sections have shared interests in enzymology with BBM. Applications with emphasis on enzymes that are potential targets for drug design and approach these targets using medicinal/synthetic chemistry methodologies may be assigned to SBC-A or SBC-B. Studies with emphasis on membrane enzymes as potential targets for drugs and approach these targets using biochemical, structural or computational methodologies may be assigned to BBM.

- **With Enabling Bioanalytical and Biophysical Technologies [EBT]:** Combinatorial chemistry and novel materials are shared interests. If the emphasis is synthetic chemistry, then assignment could be to SBC-A or -B. If the emphasis is analytical chemistry, then assignment could be to EBT.

The SBC Study Sections have the following shared interests outside the BCMB IRG:

- **With the Genes, Genomes, and Genetics [GGG] IRG:** SBC-A and SBC-B share interests with the GGG IRG in the area of small molecule regulation of gene expression. If emphasis is on the chemistry or design of small molecule regulators, then assignment could be to SBC-A or SBC-B. If emphasis is on genetic aspects of expression, then assignment could be to GGG.

- **With the Bioengineering Sciences and Technologies [BST] IRG:** SBC-A and SBC-B share interests with the BST IRG in the areas of biomaterials, imaging agents, gene delivery strategies, and molecular design. Applications focusing on chemical aspects of these topics could be assigned to SBC-A or SBC-B. Applications focusing on bioengineering aspects could be assigned to BST.

- **With the Immunology [IMM]; Infectious Diseases and Microbiology [IDM]; AIDS and Related Research [AARR]; Oncological Sciences [ONC]; Hematology [HEME]; Cardiovascular Sciences [CVS]; Endocrinology, Metabolism, Nutrition, and Reproductive Sciences [EMNR]; Musculoskeletal, Oral and Skin Sciences [MOSS]; Digestive Sciences [DIG]; Respiratory Sciences [RES]; Renal and Urological Sciences [RUS]; and the Brain Disorders and Clinical Neuroscience [BDCN] IRGs:** The SBC-A and SBC-B study sections have shared interests in drug design and medicinal chemistry with the organ and disease-oriented IRGs. Applications that emphasize early drug discovery (hit to lead and lead optimization) could generally be assigned to SBC-A and SBC-B. Studies that emphasize candidate selection, preclinical and clinical evaluation could be assigned to the organ and disease-oriented IRGs.

- **With the Surgical Sciences, Biomedical Imaging and Bioengineering [SBIB] IRG:** SBC-A and SBC-B share interests with the SBIB IRG in the areas of biomaterials and imaging agents. Applications emphasizing chemical aspects of these topics could be assigned to SBC-A or SBC-B. Applications emphasizing medical bioengineering aspects could be assigned to SBIB.

[Back to Top]

Macromolecular Structure and Function A, B & C Study Sections

[MSF-A, MSF-B & MSF-C]

[MSF-A Roster] [MSF-B Roster] [MSF-C Roster]

The Macromolecular Structure and Function [MSF] Study Sections review applications that focus on the biochemistry and biophysics of sequence-structure-function relationships in proteins, nucleic acids, carbohydrates, their complexes, and interactions with small molecules. Experimental approaches include physical and chemical methods to study interactions between molecules. A broad range of theoretical and computational approaches as well as kinetic, mechanistic, and thermodynamic characterizations of biomolecules and their functions are included. The emphasis is on the application of these and other biochemical and biophysical methods to problems of biological relevance.

A large number of applications fall naturally into the Macromolecular Structure and Function study sections. Metallobiochemical applications, in a broad sense, including such topics as metals in biology, chemical reactions and mechanisms, imaging agents, and molecular design, may be clustered in MSF-A. In addition, glycobiology applications may be clustered in MSF-B, and protein-protein and macromolecular assembly interactions may be clustered in MSF-C. Crystallographic studies should be at home in any of the three study sections.

Specific areas covered by MSF-A, -B, & C:

- Macromolecular structure-function relationships
- Protein, nucleic acid, and carbohydrate structures
- Protein-ligand interactions
- Enzymology
- Macromolecular interactions
- Molecular regulatory mechanisms
- Theoretical studies

Additional areas for MSF-A may include:

- Mechanistic enzymology of proteins and RNA
- Theoretical studies of enzyme mechanisms
- Inorganic and organic reactions and mechanisms of biological relevance
- Molecular design of drugs and other molecules
- Metalloproteins
- Enzymes, metals, and cofactors
- Synthetic models of active sites
- Mechanisms of post-transcriptional and post-translational modifications
- Inhibitors, their mechanisms of action, and their design

Additional areas for MSF-B may include:

- Sequence-structure-function correlations
- Protein-ligand interactions
- Structure determination of all macromolecules
- Structure prediction
- Mechanisms of protein and nucleic acid folding and misfolding
- Glycobiology
- Protein and nucleic acid design
- Conformational dynamics
- Proteomics and glycomics

Additional areas for MSF-C may include:

- Mechanisms of allostery
- Protein-nucleic acid interactions
- Molecular mechanism of signaling
- Energy-dependent conformational changes (e.g., molecular motors)
- Metabolic pathways and networks
- Macromolecular assemblies and their design
- Protein-protein interactions and protein interaction networks
- Biophysical studies of muscle structure and function
- Single molecule investigations and approaches to improved detection of biological processes

The MSF Study Sections have the following shared interests within the BCMB IRG:

- **With Synthetic and Biological Chemistry [SBC-A & -B]:** The SBC-A and SBC-B study sections have shared interests in structure- and mechanism-based drug design with the MSF-A study section. Applications that focus on synthetic or medicinal chemistry may be assigned to SBC-A or SBC-B. Applications that focus on biochemical, structural, mechanistic or computational approaches may be assigned to MSF-A.

- **With Biochemistry and Biophysics of Membranes [BBM]:** Studies of membrane-bound enzymes may be considered by MSF-A if the primary emphasis is on chemical mechanisms, otherwise they may be considered by BBM. Investigations of soluble domains of membrane-bound proteins (including receptors) may be reviewed by MSF-C if the primary emphasis is on their extra-membrane function.

- **With Enabling Bioanalytical and Biophysical Technologies [EBT]:** Studies addressing improvements in biomolecular structure determination may be directed to MSF-B if they are targeted to a specific biological problem or are likely to yield short term benefits. More speculative projects and ones that may require a number of years to achieve fruition may be directed to EBT.

The MSF Study Sections have the following shared interests outside the BCMB IRG:

- **With the Genes, Genomes, and Genetics [GGG] IRG:** The MSF Study Sections share interests with the GGG IRG in the area of structural and mechanistic investigations of gene function. If focus is on structural and mechanistic investigations of gene function that are making use of emerging biophysical methodologies, then appropriate assignment may be to one of the MSF study sections. If focus is on genetic aspects of gene function, then assignment may be to GGG.

- **With the Cell Biology [CB] IRG:** The MSF Study Sections share interests with the CB IRG in the area of cell function. Applications that focus on biophysical questions may be appropriate for one of the MSF study sections. Applications that focus on cell biological questions may be appropriate for one of the CB study sections.

- **With the Bioengineering Sciences and Technologies [BST] IRG:** The MSF Study Sections share interests with the BST IRG in the areas of computational biology and bioinformatics. Applications in these areas that include the use of structural and biophysical information may be appropriate for the MSF-B or MSF-C study sections. Applications in these areas that include the use of bioengineering information may be appropriate for the BST IRG.

- **With the Biology of Development and Aging [BDA]; Immunology [IMM]; Infectious Diseases and Microbiology [IDM]; AIDS and Related Research [AARR]; Oncological Sciences [ONC]; Hematology [HEME]; Cardiovascular Sciences [CVS]; Endocrinology, Metabolism, Nutrition, and Reproductive Sciences [EMNR]; Musculoskeletal, Oral and Skin Sciences [MOSS], Digestive Sciences [DIG], Respiratory Sciences [RES], Renal and Urological Sciences [RUS], and the Molecular, Cellular, and Developmental Neuroscience [MDCN] IRGs:** Applications with an organ or disease focus may be of interest to the MSF Study Sections, particularly in the areas of structure determination, drug design, and medicinal chemistry. For applications with focus on questions of the specific organ or disease, including preclinical and clinical studies, assignment to the organ or disease IRGs may be appropriate. For applications with focus on basic questions of structure determination or early drug discovery (hit to lead and lead optimization), assignment to one of the MSF Study Sections may be appropriate.

[Back to Top]

Biochemistry and Biophysics of Membranes Study Section [BBM]

[BBM Roster]

The BBM Study Section will consider research applications focused on all biochemical and biophysical aspects of membrane structure and function. Cell membranes play a vital role in many areas of cell biology, which means considerable overlap with cell biology-related IRGs. The distinguishing characteristic of applications reviewed by the BBM study section is a direct focus on the molecular details of processes that occur on or within membranes. Areas include the use of a variety of biochemical and biophysical techniques to understand the structure and function of membranes.

Specific areas covered by BBM include:

- Membrane architecture
- Membrane protein folding, assembly, and dynamics
- Membrane protein structure
- Methods for membrane protein structure determination, including crystallization
- Membrane-based energy transduction
- Function of transporters, channels, receptors, and membrane-bound enzymes
- Enzyme mechanism within membranes and interfaces
- Lipid metabolism and function
- Biophysics of membrane interfaces and signaling
- Lipid-protein interactions
- Biophysics of membrane fusion mechanisms

- Computational and modeling approaches to membranes and membrane proteins
- Structure of membrane glycoproteins and glycolipids

BBM has the following sharedinterests within the BCMB IRG:

- **With Synthetic and Biological Chemistry [SBC-A & -B]:** The SBC-A and SBC-B study sections have shared interests in enzymology with the BBM study section. Applications that focus extensively on enzymes that are potential targets for drug design and approach these targets using medicinal/synthetic chemistry methodologies may be assigned to SBC-A or SBC-B. Studies that focus on membrane enzymes as potential targets for drugs and approach these targets using biochemical, structural or computational methodologies may be assigned to BBM.

- **With Macromolecular Structure and Function A [MSF-A]:** Enzyme mechanisms are a shared interest. If the study of an enzyme mechanism does not take place within membranes or at membrane interfaces, assignment for review may be to MSF-A. If the study involves an enzyme mechanism within or at the surface of a membrane, assignment for review may be to BBM.

- **With Macromolecular Structure and Function B [MSF-B]:** Protein folding is a shared interest. If applications concern folding processes or structures of domains of membrane associated-proteins that do not specifically involve membrane components, they may be assigned to MSF-B. If applications concern folding processes that occur in membranes or aspects of macromolecular domain structure related to signaling through the membrane, they may be assigned to BBM.

- **With Macromolecular Structure and Function C [MSF-C]:** Investigations of soluble domains of membrane-bound proteins (including receptors) may be reviewed by MSF-C if the primary emphasis is on their extra-membrane function.

- **With Enabling Bioanalytical and Biophysical Technologies [EBT]:** Studies of methods development are a shared interest. Applications focused on development of methods with general applicability could be assigned to EBT. Applications focused on development of methods for membrane protein structure determination, including crystallization, could be assigned to BBM.

BBM has the following shared interests outside the BCMB IRG:

- **With the Cell Biology [CB] IRG:** Molecular studies of membrane, protein, and organelle trafficking are shared interests between the CB IRG and the BBM study section. Applications that focus on the cell biology of membrane and protein trafficking, transport, and organelles could be referred to the CB IRG. Applications that focus on biochemical and biophysical aspects of these processes could be referred to the BBM study section.

- **With the Immunology [IMM]; Infectious Diseases and Microbiology [IDM]; AIDS and Related Research [AARR]; and the Molecular, Cellular, and Developmental Neuroscience [MDCN] IRGs:** Membrane biochemistry and protein-protein interactions between cells and channels are shared interests with these IRGs and the BBM study section. If an application focuses on an immunological, infectious disease, or neuroscientific question, then assignment to the appropriate organ or disease IRG may be appropriate. If an application focuses on biochemical or biophysical principles of membrane components, then assignment to BBM may be appropriate.

[Back to Top]

Enabling Bioanalytical and Biophysical Technologies Study Section [EBT]

[EBT Roster]

The EBT study section will consider applications (R01, R21, SBIR/STTR, etc.) focused on the development of new bioanalytical and biophysical tools, emerging techniques, and instruments. The goal of these will be to probe the molecular aspects of biological systems. Both hypothesis driven and non-hypothesis driven applications are expected. Many of these applications will explore either novel technologies or improvements to existing techniques such as improved resolution,

sensitivity, throughput, and the fundamental underpinnings of these techniques.

Specific areas covered by EBT include:

- Bioanalytical techniques such as sensors, separations, mass spectrometry, spectroscopy, arrays, microfluidics, and novel assays.
- Biophysical techniques such as magnetic resonance techniques; optical, electron and x-ray microscopy; x-ray and neutron techniques.
- Novel materials, reagents, and surface chemistries related to either bioanalytical or biophysical methods, including nanotechnology.
- Software development applied to bioanalytical instrumentation, instrumentation control, data reduction, data analysis, or data mining.
- The feasibility of recently introduced technologies to examine and explore biological systems (for example, proteomics, genomics, metabolomics, sequencing, screening, characterizing macromolecular interactions, or clinical applications) both in vivo and in vitro.

EBT has the following shared interests within the BCMB IRG:

- **With Synthetic and Biological Chemistry A and B [SBC-A and SBC-B]:** Combinatorial chemistry and novel materials are shared interests. If the focus is synthetic chemistry, then assignment could be to SBC A or B. If the focus is analytical chemistry, then assignment could be to EBT.

- **With Macromolecular Structure and Function C [MSF-C]:** Single molecule biophysics is a shared interest. Applications for instrument or technique development in this area could be assigned to EBT. Applications that use single molecule techniques to study biological systems could be assigned to MSF-C.

- **With Macromolecular Structure and Function A, B, & C (MSF-A, -B, & -C):** The development of biophysical techniques is a shared interest. Applications focused on initial development could be assigned to EBT. As the technique matures and as the biological applications become obvious, applications could be assigned to MSF-A, -B, or -C.

- **With Biochemistry and Biophysics of Membranes [BBM]:** Studies of methods development are a shared interest. Applications focused on development of methods with general applicability could be assigned to EBT. Applications focused on development of methods for membrane protein structure determination, including crystallization, could be assigned to BBM.

EBT has the following shared interests outside the BCMB IRG:

- **With the Genes, Genomes, and Genetics [GGG] IRG:** The EBT study section shares interests with the GGG IRG in the area of tools for probing single nucleotide polymorphisms, arrays, and sequencing. An application with focus on the development of new fundamental tools in these areas could be assigned to EBT. An application with focus on the genetic aspects of tool development could be assigned to the GGG IRG.

- **With the Bioengineering Sciences and Technologies [BST] IRG:** The EBT study section shares interests with the BST IRG in the development of new tools. Applications in this area that focus on chemistry or biophysics could be assigned to EBT. Applications in this area that focus on bioengineering or biomaterials could be assigned to the BST IRG. Applications developing technologies for use in proteins are well suited for EBT and applications developing technologies aimed at nucleic acids are well suited for BST.

- **With the Immunology [IMM]; Renal and Urological Sciences [RUS]; Molecular, Cellular, and Developmental Neuroscience [MDCN]; Integrative, Functional, and Cognitive Neuroscience [IFCN]; and the Brain Disorders and Clinical Neuroscience [BDCN] IRGs:** EBT shares interests with all of these IRGs in developing new tools and

techniques. An application with emphasis on the development of a new tool or technique at the chemical or biophysical level (such as biomarkers) could be assigned to EBT. An application that uses such tools but with emphasis on the organ or disease could be assigned to appropriate organ or disease IRG.

[Back to Top]

Fellowship F04A and F04B Special Emphasis Panels

Chemical and Bioanalytical Sciences [F04A]

F04A 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

F04A has the following shared interests within the BCMB IRG:

- **With F04B (Biophysical and Biochemical Sciences Fellowship Special Emphasis Panel)** regarding the characterization of structure-function relationships of enzymes: Applications concerned with analysis of mechanism by inhibitor or kinetics studies may be assigned to F04A; applications concerned with structure determination by X-ray crystallographic or NMR spectroscopic methods may be assigned to F04B.

F04A has the following shared interests outside the BCMB IRG:

- **With F05 (Cell Biology and Development)** regarding enzyme mechanism and interaction: Applications that are concerned with the mechanism of an enzyme or a system of enzymes may be assigned to F04A; applications concerned with the effects on cellular function may be assigned to F05.

- **With F09 (Oncological Sciences)** regarding studies of cancer therapeutic agents: Applications that are concerned with developing and synthesizing new and different compounds may be assigned to F04A; applications that are concerned with studying the efficacy and safety of anticancer compounds may be assigned to F09.

Biophysical and Biochemical Sciences [F04B]

F04B 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

F04B has the following shared interests within the BCMB IRG:

- **With F04A (Chemical and Bioanalytical Sciences)** regarding the characterization of structure-function relationships of enzymes: Applications concerned with analysis of mechanism by inhibitor or kinetics studies may be assigned to F04A; applications concerned with structure determination by X-ray crystallographic or NMR spectroscopic methods may be assigned to F04B.

F04B has the following shared interests outside the BCMB IRG:

- **With F03A and F03B (Molecular, Cellular and Developmental Neuroscience)** regarding studies of membrane recycling, protein structure-function and cytoskeleton structure: Applications concerned with neuronal function and structure may be assigned to F03A or F03B; applications concerned with quantitative analysis of biomolecular interactions and defining specific folding conformations may be assigned to F04B. Also, studies of signal transduction and related processes that occur at the single cell level with emphasis on cell electrophysiology, molecular biophysics, and neurochemical pathways may be appropriate for F03B; studies of signal transduction and related processes that occur at the molecular level with emphasis on basic biochemistry or biophysics may be appropriate for F04B.

- **With F05 (Cell Biology and Development)** regarding cellular structure and function: Applications that are concerned with the molecular interactions among molecules that affect cellular structure may be assigned to F04B; applications that are concerned with structural and functional studies of cells and cell components when the emphasis is on molecular and cell biological context may be assigned to F05.

- **With F08 (Genetics, Microbiology, and Infectious Diseases):** Applications focused on enzymological or structural aspects of nucleic acids and nucleic acid protein interactions may be assigned to F04B; applications focused on mechanisms of DNA replication/repair and gene expression/regulation may be assigned to F08. However, a biophysical study of DNA or RNA may be assigned to F04B, not F08.

- **With F09 (Oncological Sciences):** Applications that are concerned with the physical chemistry and structure of

proteins, lipids, and other biopolymers may be assigned to F04B; applications that are concerned with studying the properties of cancer specific proteins, lipids, and related compounds may be assigned to F09.

Biological Chemistry and Macromolecular Biophysics Small Business Activities [SBIR/STTR] Special Emphasis Panels

[BCMB Small Business SEPs]

The BCMB IRG reviews SBIR/STTR applications within the areas covered by its regular study sections in two small business panels.

Bioanalytical Chemistry, Chemistry and Biophysics [BACB SEP - BCMB 10]

The BACB Special Emphasis Panel reviews SBIR/STTR applications in the general area of bioanalytical chemistry, chemistry and biophysics.

Specific areas covered by BACB include:

- Bioanalytical techniques such as mass spectrometry, sensors, separations, spectroscopy, arrays, microfluidics, and novel assays
- Nanotechnology
- Novel materials, reagents, and surface chemistries related to either bioanalytical or biophysical methods
- Development of instrumentation and systems for proteomics and protein analysis
- Biophysical techniques such as magnetic resonance techniques; optical, electron and x-ray microscopy; x-ray and neutron diffraction techniques
- Agents for bioremediation
- Structural biology, especially protein structure and interactions

The BACB Small Business SEP has the following shared interests within the BCMB IRG:

- **With Drug Discovery and Development [DDD SEP -BCMB 11]:** BACB shares interest in protein chemistry with DDD. If the emphasis is on the development of platforms, systems or methods for analysis, BACB may be more appropriate. If the emphasis is toward development of a therapeutic compound, DDD may be more appropriate.

The BACB Small Business SEP has the following shared interests outside of the BCMB IRG:

- **With the Bioengineering Sciences and Technologies [BST] IRG:** The BACB SEP shares interests with the BST IRG in the development of new tools and instrumentation. Small business applications in this area that focus on instrumentation and tools using bioanalytical, chemical or biophysical approaches may be assigned to BACB. Applications in this area that focus on instrumentation and tools using bioengineering and biomaterials approaches could be assigned to the BST IRG.

- **With the Biology of Development and Aging [BDA]; Immunology [IMM]; Infectious Diseases and Microbiology [IDM]; AIDS and Related Research [AARR]; Oncological Sciences [ONC]; Hematology [HEME]; Cardiovascular Sciences [CVS]; Endocrinology, Metabolism, Nutrition, and Reproductive Sciences [EMNR]; Musculoskeletal, Oral and Skin Sciences [MOSS], Digestive Sciences [DIG], Respiratory Sciences [RES], Renal and Urological Sciences [RUS], and the Molecular, Cellular, and Developmental Neuroscience [MDCN] IRGs:** The BACB SEP shares interests with disease and organ based IRGs in the development of use of new tools and instrumentation. Small business applications that focus on instrumentation and tools using bioanalytical, chemical or biophysical approaches may be assigned to BACB. Applications that focus on applying these tools to a disease or organ

specific issue may be assigned to the relevant organ or disease IRG.

Drug Discovery and Development [DDD SEP - BCMB 11]

This Special Emphasis Panel reviews SBIR/STTR applications in small molecule drug discovery and development, medicinal chemistry, pharmaceutical chemistry, protein based therapeutics, and protein chemistry. The focus is on development of therapeutics.

Specific areas covered by DDD include:

- Medicinal chemistry
- Synthetic chemistry
- Combinatorial chemistry
- Natural Product chemistry
- Pharmaceutical chemistry
- Computational drug design
- Protein therapeutics
- Protein chemistry and engineering
- Purification and biochemical analysis of proteins

The DDD Small Business SEP has the following shared interests within the BCMB IRG:

- **With Bioanalytical Chemistry, Chemistry and Biophysics [BACB SEP - BCMB 10]:** DDD shares interest in protein chemistry with BACB. If the emphasis is on the development of platforms, systems or methods for analysis, BACB may be more appropriate. If the emphasis is toward development of a therapeutic compound, DDD may be more appropriate.

The DDD Small Business SEP has the following shared interests outside of the BCMB IRG:

- **With the Bioengineering Sciences and Technologies [BST] IRG:** The DDD SEP shares interests with the BST IRG in drug development and delivery. Small business applications that focus on the synthesis or chemistry of drugs and delivery systems may be referred to DDD. Small business applications that focus on the bioengineering of drugs and delivery systems may be referred to the BST IRG.

- **With the Biology of Development and Aging [BDA]; Immunology [IMM]; Infectious Diseases and Microbiology [IDM]; AIDS and Related Research [AARR]; Oncological Sciences [ONC]; Hematology [HEME]; Cardiovascular Sciences [CVS]; Endocrinology, Metabolism, Nutrition, and Reproductive Sciences [EMNR]; Musculoskeletal, Oral and Skin Sciences [MOSS], Digestive Sciences [DIG], Respiratory Sciences [RES], Renal and Urological Sciences [RUS], and the Molecular, Cellular, and Developmental Neuroscience [MDCN] IRGs:** The DDD SEP shares interests with disease and organ based IRGs in drug development and delivery. SBIR/STTR applications with a focus on basic questions of structure determination or early drug discovery (hit to lead and lead optimization) or containing a substantial synthetic component may be assigned to DDD. Applications on the clinical evaluation of a drug candidate may be assigned to the relevant organ or disease IRG.

[Back to Top]

[Referral & Review]


CSR
Home Page