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.

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Referral & Review

Molecular, Cellular, and Developmental Neuroscience IRG [MDCN]

Study sections of the Molecular, Cellular, and Developmental Neuroscience [MDCN] IRG review applications on the structure and function of neuronal, glial, and other excitable cells, as well as the development of both the central and the peripheral nervous systems, inclusive of the visual system and other excitable cells. Excitable cells, in addition to neural cells, include endocrine and neuroendocrine cells, pancreatic beta-cells, chromaffin cells, muscle cells, neuromuscular junctions, etc. Areas of interest include the functional characteristics of ion channels, the mechanisms by which extra- and intracellular signals are transduced and the functional characteristics of the transducers themselves, general mechanisms underlying the process of cell death, analyses of neural cell lineage, factors that specify or influence neuronal migration pathways or axonal pathfinding, processes that involve the maturation of neurons and glia, the formation of patterns and boundaries that lead to the development of adult brain regions and nuclei, and other aspects of the basic cellular and molecular physiology of neurons and glia. Applications reviewed in the MDCN IRG may be relevant to disorders or injuries, but their emphasis lies more in revealing the basic biological processes that underlie or may be altered in disorder than in treating the disorder or its manifestations.

The MDCN IRG also has Special Emphasis Panels for the review of fellowship and SBIR/STTR applications as well as neurotechnology, bioengineering, neurogenetics and neuroinformatics applications.

In addition to this IRG, the Integrative, Functional, and Cognitive Neuroscience [IFCN] and Brain Disorders and Clinical Neuroscience [BDCN] IRGs within CSR focus on the review of neuroscience-related applications. Please see the descriptions and shared interest statements of these IRGs for a complete description of their review venues.

The following study sections are included within the MDCN IRG:

Synapses, Cytoskeleton and Trafficking Study Section [SYN] ***Formerly MDCN-1***
Neurodegeneration and the Biology of Glia Study Section [NDBG] ***Formerly MDCN-2***
Biophysics of Synapses, Channels, and Transporters Study Section [BSCT] ***Formerly MDCN-3***
Neurotransporters, Receptors, Channels and Calcium Signaling Study Section [NTRC] ***Formerly MDCN-4***
Molecular Neuropharmacology and Signaling Study Section [MNPS] ***Formerly MDCN-5***
Neurogenesis and Cell Fate Study Section [NCF] ***Formerly MDCN-6***
Neurodifferentiation, Plasticity, and Regeneration Study Section [NDPR] ***Formerly MDCN-7***

Molecular, Cellular and Developmental Neuroscience Small Business Activities [SBIR/STTR]
Special Emphasis Panel [MDCN Small Business SEP]
Biochemical and Molecular Neuroscience Fellowship Study Section [F03A]
Biophysical and Physiological Neuroscience Fellowship Study Section [F03B]

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Synapses, Cytoskeleton and Trafficking Study Section [SYN]

Formerly MDCN-1

[SYN Roster]

The Synapses, Cytoskeleton and Trafficking [SYN] Study Section reviews applications on the basic cell biology of nerve, muscle and other excitable cells, including synaptic plasticity, protein and organelle trafficking, cell surface and extracellular matrix molecules in cell recognition and function, and cytoskeletal functions across the life span. Emphasis is on fundamental mechanisms of excitable cell function, including those relevant to disease processes.

Specific areas covered by SYN:

- Formation, regulation, maintenance, and dynamics of synaptic structure and function in the central and peripheral nervous systems
- Molecular neuronal mechanisms of endocytosis, exocytosis and membrane recycling; protein assembly, folding and targeting; organelle, protein, and mRNA localization and trafficking
- Structure, function, modification, assembly and regulation of cytoskeletal proteins and molecular motors; axonal and dendritic transport; neuronal polarity, growth cones, and structural plasticity; cytoskeletal pathology; the proteosome/ubiquitin system
- Regulation of extracellular space; cell surface, extracellular matrix, and transmembrane components, and their function; cell recognition

SYN has the following shared interests within the MDCN IRG:

- (1) NDBG and SYN share interests with respect to cytoskeletal pathology as related to neurodegenerative diseases. NDBG may be more appropriate if the emphasis is on the neurodegenerative aspects, but SYN may be more appropriate if the focus is more on cytoskeletal and/or trafficking issues. (2) NDBG and SYN also share an interest in the area of proteolytic processing and the proteosome/ubiquitin system. Studies that focus primarily on the role of these processes in neurodegeneration may be more appropriate for NDBG, while studies that focus primarily on the role of these processes in synaptic plasticity or trafficking may be more appropriate for SYN.
- BSCT and SYN share an interest in the area of synaptic function. Studies focused on the structure and function of signal transduction molecules may be more appropriate for BSCT, while more general studies of synaptic function may be more appropriate for SYN.

- NTRC and SYN share interests with respect to synaptic function and the cellular regulation of signal transducer molecules. NTRC may be more appropriate if the focus is on signal transduction pathways and electrophysiology, but SYN may be more appropriate for studies related to fundamental cellular, biochemical and molecular mechanisms of neuronal cell function.

- MNPS and SYN share an interest in the area of synaptic dynamics. MNPS may be more appropriate for studies focusing on neurotransmitter release, regulation and function, while SYN may be more appropriate for studies of exocytosis, endocytosis, cellular trafficking and cytoskeletal interactions.

- NDPR and SYN share interests in (1) the area of neuroplasticity. Studies focused on developmental and regenerative events, including process outgrowth and guidance, dendritic development, and synaptogenesis, may be more appropriate for NDPR. Studies focused on fundamental mechanisms of trafficking, basic cytoskeletal interactions, and synaptic function, including vesicular release, endocytosis, and receptor turnover may be more appropriate for SYN. (2) NDPR and SYN share interests in the study of cytoskeletal, cell membrane and extracellular matrix components. Those studies that focus on developmental events or repair mechanisms may be more appropriate for NDPR, while studies that focus on issues of trafficking or basic synaptic function may be more appropriate for SYN.

SYN has the following shared interests outside the MDCN IRG:

- **With the Cell Biology [CB] IRG:** (1) The study sections of the CB IRG and SYN share an interest in general aspects of cell biology. Studies that address molecules and basic cellular processes may be appropriate for CB. Studies that address molecules and processes characteristic of the nervous system may be appropriate for SYN. (2) An additional area of shared interest is in vision research. Studies involving the visual system that require specialized knowledge or appreciation of the retina and posterior portion of the eye may be appropriate for CB. Studies involving the visual system that focus on fundamental aspects of trafficking, cytoskeletal interactions and cell surface or extracellular matrix molecules may be appropriate for SYN.

- **With the Genes, Genomes and Genetics [GGG] IRG:** The GGG IRG and SYN share interests in neurogenetic studies. Where the primary focus is on genetic mechanisms, emerging genetic techniques, or studies of genomic screening, linkage analysis, and molecular genetic regulation, the GGG IRG may be more appropriate. Where the primary focus is on neural mechanisms, neural outcomes or neural diseases involving specific cytoskeletal or trafficking components (e.g., Fragile-X syndrome), SYN may be more appropriate.

- **With the Musculoskeletal, Oral and Skin Sciences [MOSS] IRG:** The MOSS IRG and SYN share an interest in skeletal muscle. MOSS may be more appropriate for studies of clinical aspects of skeletal muscle, skeletal muscle development and/or skeletal muscle force production, but SYN may be more appropriate when the primary focus in on neural structure and function, or the neuronal control of muscle force production.

- **With the Respiratory Sciences [RES] IRG:** The RES IRG and SYN have broadly shared interests in the areas of (1) neurotransmitters and (2) neural plasticity. Studies of neurotransmitters, when in the context of understanding the central control of breathing, may be more appropriate for RES, while studies focused on the broader understanding of neurotransmitter function may be more appropriate for SYN. Studies of respiratory neural plasticity, when in the context of response to hypoxia, may be more appropriate for RES, while studies on broader aspects of neural plasticity may be more appropriate for SYN.

- **With the Integrative, Functional and Cognitive Neuroscience [IFCN] IRG:** The IFCN IRG and SYN share interests in cellular interactions involving cell surface and extracellular matrix molecules.

Studies of such cellular interactions in the context of integrated circuits, systems, and behavior may be appropriate for IFCN. Studies of cellular interactions in the context of single cells may be appropriate for SYN.

- **With the Brain Disorders and Clinical Neuroscience [BDCN] IRG:** (1) The study sections of the BDCN IRG and SYN share interest in the fundamental mechanisms of excitable cell function relevant to disease processes in the nervous system. Applications focused primarily on the disease or disease processes may be more appropriate for the BDCN IRG. Studies that focus primarily on the basic underlying cellular or molecular mechanisms may be more appropriate for SYN. (2) An additional area of shared interest is in vision research. Studies involving the visual system that require specialized knowledge or appreciation of the anterior portion of the eye may be appropriate for the BDCN IRG. Studies involving the visual system that focus on fundamental aspects of trafficking, cytoskeletal interactions and cell surface or extracellular matrix molecules may be appropriate for SYN.

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Neurodegeneration and the Biology of the Glia Study Section [NDBG]

Formerly MDCN-2

[NDBG Roster]

The Neurodegeneration and the Biology of the Glia [NDBG] Study Section reviews applications on neurodegeneration and programmed cell death; mapping novel transcripts and functional analysis of cloned gene products involved in cell injury, survival or death; aspects of oxidative metabolism; glial cell biology and glial-neuronal interactions [Schwann cells, oligodendrocytes, astrocytes, microglia]; mechanisms of glial differentiation, metabolism, and myelination; glial-mediated mechanisms of neuroinflammation and neuroimmune function across the life span. The roles of genetic factors, trophic molecules and extrinsic influences [including toxins, hormones, and addictive substances] in these processes, and aspects of disease, injury, repair and interventional strategies are considered.

Specific areas covered by NDBG:

- Regulation of nerve cell death and cell survival; functions and mechanisms of action of signaling molecules [such as neurotrophic factors, growth factors, cytokines] and electrical activity in regulating cell survival; intracellular signaling pathways leading to apoptosis, and their intersection with the signal transduction pathways of survival.

- Mechanisms involved in nerve cell death due to aging, injury and environmental or genetic factors, which could include excitotoxins, free radicals, and neurodegenerative disease genes; excitotoxic, necrotic, and apoptotic mechanisms; and studies of mechanisms relevant to the development of neuroprotective strategies, such as the administration of exogenous growth factors.

- Oxidative metabolism; special metabolic and energy demands of neurons and glia; relevant aspects of mitochondrial function and localization; aspects of mitochondrial dysfunction in disease states.

- Glial cell biology, neuroglial interactions, and myelination in the adult; growth factors and receptors involved in neuroglial function; synthesis, regulation and degradation of myelin; inductive signals for the initiation, maintenance, and degradation of myelin; remyelination processes

- Glial response to injury or infection, and immune function; inductive signals, phagocytosis [microglia], activity of neuroimmune molecules and the innate immune response in the nervous system [e.g.,

cytokines, interleukins]

NDBG has the following shared interests within the MDCN IRG:

- SYN and NDBG share an interest in cytoskeletal pathology as related to neurodegenerative diseases. SYN may be more appropriate if the focus is on cytoskeletal and/or trafficking issues, but NDBG may be more appropriate if the emphasis is on the neurodegenerative aspects.

- (1) NCF and NDBG share an interest in the area of cell death. Studies that focus on the involvement of cell death in lineage restriction or patterning in the developing nervous system may be more appropriate for NCF. Studies of mechanisms of cell death per se or in response to injury or insult may be more appropriate for NDBG. (2) NCF and NDBG share an interest in the area of signaling molecules. Studies of signaling molecules [e.g., growth factors] that affect multiple aspects of development may be appropriate for NDBG when the principal focus is on the role of these molecules in neuroprotection. (3) Another area of shared interest is in glial cell biology and myelin formation. NCF may be more appropriate for studies of glial cell differentiation and myelin formation during development, while NDBG may be more appropriate for studies of general glial cell biology and myelin formation in the adult.

- MNPS and NDBG share interests in the areas of energy and oxidative metabolism and excitotoxicity. MNPS may be more appropriate for studies focused on aspects of oxidative metabolism and excitotoxic agents per se, while NDBG may be more appropriate for studies focused on the energy demands of neurons and glia, and studies of mitochondria function and dysfunction, or the role of oxidative stress in neurodegeneration or neuroprotection.

- NDPR and NDBG share an interest in the areas of glial-neuronal interactions and repair following injury. Studies focused on the role of glia in axon outgrowth, nerve regeneration, and synapse formation and studies examining spinal cord regeneration, peripheral nerve regeneration, and the restoration of synaptic function may be appropriate for NDPR. Studies focused on mechanisms of neurodegeneration, neuronal survival, glial responses to injury, or myelination may be appropriate for NDBG.

NDBG has the following shared interests outside the MDCN IRG:

- **With the Genes, Genomes and Genetics [GGG] IRG:** The GGG IRG and NDBG share interests in the studies of genomic screening, linkage analysis, and molecular genetic regulation. Where the primary focus is on genetic mechanisms or emerging genetic techniques, the GGG IRG may be more appropriate. Studies of genomic screening, linkage analysis, and molecular genetic regulation, where the primary focus is on neural mechanisms, outcomes or neural diseases, may be more appropriate for NDBG.

- **With the Cell Biology [CB] IRG:** (1) The CB IRG and NDBG have shared interests in the area of cell death. The CB IRG may be more appropriate for applications in the context of general cell death, while NDBG may be more appropriate for applications that focus on the death of cells in the nervous system. (2) Another area of shared interest is in vision research. Applications involving the visual system that require specialized knowledge or appreciation of the retina or posterior eye may be more appropriate for the CB IRG. Applications involving the visual system that are focused on fundamental aspects of neurodegeneration, oxidative metabolism, or excitotoxicity may be more appropriate for NDBG.

- **With the Biology of Development and Aging [BDA] IRG:** (1) The BDA IRG and NDBG share interests in the area of cell death. The BDA IRG may be more appropriate for applications in the broader context of cell death, while NDBG may be more appropriate for applications that focus on the death of

cells in the nervous system. (2) The BDA IRG and NDBG also have shared interests in the areas of cell cycle, aging and hormonal action. If the focus of the application is re-entry into the cell cycle as a general event, the basic cellular or molecular mechanisms, or overall protection, the application may be more appropriate for the BDA IRG. If the focus of the application is re-entry into the cell cycle as a neuropathological event, the cellular or molecular mechanisms in the nervous system, or neuroprotection, the application may be more appropriate for NDBG.

- **With the Immunology [IMM] IRG:** The IMM IRG and NDBG have shared interests in the area of immune function. The IMM IRG may be more appropriate when the emphasis is on immune interactions or the innate immune response in general. NDBG may be more appropriate when the emphasis is on neuroimmune interactions or the innate immune response within the nervous system.

- **With the Respiratory Sciences [RES] IRG:** The RES IRG and NDBG have shared interests in the area of neural plasticity. Studies of respiratory neural plasticity, when in the context of response to hypoxia, may be more appropriate for RES, while studies on broader aspects of neural plasticity may be more appropriate for NDBG.

- **With the Integrative, Functional and Cognitive Neuroscience [IFCN] IRG:** The IFCN IRG and NDBG share an interest in the neuronal basis of behavior; neuroendocrine and neuroimmune function; rhythms and oscillatory behavior; sensory systems; and motor function. Applications focused on these issues in the context of integrated circuits, systems, and behavior may be more appropriate for IFCN. Applications focused on these issues at the cellular or molecular level may be more appropriate for NDBG.

- **With the Brain Disorders and Clinical Neuroscience [BDCN] IRG:** (1) Study sections of the BDCN IRG share interests with NDBG in pathogenesis, injury, neurodegeneration and neuroimmune function. Applications may be more appropriate for the BDCN IRG if the context is disease while NDBG may be more appropriate if the primary focus is on the basic underlying cellular and molecular mechanisms. (2) The BDCN IRG and NDBG share interest in the analysis of cloned gene products. Initial mapping and cloning of human disease genes that affect the nervous system may be more appropriate for the BDCN IRG, while NDBG may be more appropriate if the context is basic science. (3) Another area of shared interest is in the area of vision research. Applications involving the visual system that require specialized knowledge or appreciation of the anterior portion of the eye may be more appropriate for the BDCN IRG. Applications involving the visual system that are focused on fundamental aspects of neurodegeneration, oxidative metabolism, or excitotoxicity may be more appropriate for NDBG.

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Biophysics of Synapses, Channels and Transporters Study Section [BSCT]

Formerly MDCN-3

[BSCT Roster]

The Biophysics of Synapses, Channels, and Transporters [BSCT] Study Section reviews applications on signal transduction in nerve, muscle, and other excitable cells, with the primary focus on the structure and function of the transducers themselves. This includes basic studies of subunit structure, molecular dynamics, gating and selectivity, and second-messenger cascades. General approaches may include molecular and structural biology, pharmacology, biophysics, electrophysiology, and protein chemistry, imaging and labeling techniques. Emphasis is on fundamental molecular mechanisms, including those relevant to disease processes.

Specific areas covered by BSCT:

- Signal transduction molecules; voltage-gated and ligand-gated ion channels; neuromodulators; gap junctions and connexins; sensory transducers; transduction molecules in muscle, glia, and other non-neuronal cells

- Model systems; relevant studies in in vivo, tissue slices, tissue culture; molecular function in transgenic cells, cell lines, oocytes, and other expression systems; relevant approaches using in vitro systems; artificial lipid bilayers

- Protein structure and function; patch-clamp and whole-cell electrophysiology; structural biology; molecular modeling; constructs altered through molecular genetic and chemical means; membrane interactions; crystallography and NMR

- Voltage-dependent, mechano- and ligand-gating, ionic selectivity and permeation; activation, inactivation, pharmacology, and other aspects of molecular regulation

- Coupling to second messenger pathways, including G-proteins and other enzymatic effectors; cyclic nucleotides and lipid metabolites; relevant enzyme pathways [kinases, phosphatases, phospholipases]

BSCT has the following shared interests within the MDCN IRG:

- SYN and BSCT share an interest in the area of synaptic function. SYN may be more appropriate for more general studies of synaptic function, while studies focused on the structure and function of signal transduction molecules may be more appropriate for BSCT.

- NTRC and BSCT share an interest in the area of signal transduction. NTRC may be more appropriate for studies of cellular electrophysiology, synthesis and regulation of the transduction molecules, and most studies involving calcium pathways, while BSCT may be more appropriate for molecular, structural, and biophysical studies.

- MNPS and BSCT share an interest in the area of signal transduction, especially with respect to second messenger pathways. MNPS may be more appropriate for neurochemical and pharmacological studies while BSCT may be more appropriate for molecular, structural, and biophysical studies.

BSCT has the following shared interests outside the MDCN IRG:

- **With the Biological Chemistry and Macromolecular Biophysics [BCMB] IRG:** The BCMB IRG and BSCT have shared interests in structural biology. BCMB may be more appropriate when the focus is on the structure/function of cell and model membranes, channels, receptors, proteins, etc. in general; however, BSCT may be more appropriate when the focus is on the structure/function of cell and model membranes, channels, receptors, proteins, etc. in a neuronal context.

- **With the Cell Biology [CB] IRG:** (1) The CB IRG and BSCT share interests in second messenger pathways. The CB IRG may be appropriate for studies of kinase/phosphatase pathways and the regulation of cell growth, but BSCT may be appropriate for studies of kinase/phosphatase pathways and the regulation of cell growth involving nervous system-specific proteins or functions unique to the nervous system. (2) The CB IRG and BSCT share an interest in the area of gap junctions and connexins. The CB IRG may be more appropriate for studies emphasizing the cell biology and biochemistry of gap junctions and connexins, while BSCT may be more appropriate for studies emphasizing the electrophysiological and biophysical aspects of gap junctions, particularly if the focus is on cells of the nervous system. (3)

The CB IRG and BSCT share an interest in muscle research. The CB IRG may be more appropriate for studies focused on muscle structure and contractile proteins, while BSCT may be more appropriate for studies focused on signal transduction in neurons and synapses. (4) Another shared interest is in the area of vision research. Studies that require specialized knowledge or appreciation of the retina or posterior portion of the eye may be more appropriate for the CB IRG. Studies that are focused on the molecular, structural, and biophysical aspects of signal transduction molecules, or on voltage-gated or ligand-gated ion channels may be more appropriate for BSCT.

- **With the Cardiovascular Sciences [CVS] IRG:** The CVS IRG and BSCT share an interest in cardiac muscle. CVS may be more appropriate for studies of clinical aspects of cardiac muscle, especially in the context of heart disease, but BSCT may be more appropriate for studies of the signal transduction molecules and mechanisms, especially in a biophysical context.

- **With the Musculoskeletal, Oral and Skin Sciences [MOSS] IRG:** The MOSS IRG and BSCT share an interest in skeletal muscle. MOSS may be more appropriate for studies of clinical aspects of skeletal muscle and/or skeletal muscle force production, but BSCT may be more appropriate when the primary focus in on neural structure and function and/or neuronal control of muscle force production.

- **With the Digestive Sciences [DIG] IRG:** The DIG IRG and BSCT share an interest in gastro-intestinal signal transduction. Studies focusing on drugs and signal transduction may be appropriate for DIG; however, studies focusing on general neuroactive drugs and neuronal signal transduction may be more appropriate for BSCT.

- **With the Integrative, Functional and Cognitive Neuroscience [IFCN] IRG:** (1) The IFCN IRG and BSCT share an interest in signal transduction. The IFCN IRG may be more appropriate for studies of transduction in the context of integrated circuits, systems, and behavior, including neuroendocrine and neuroimmune function; rhythms and oscillatory behavior, and sensory and motor function. BSCT may be more appropriate for studies of transduction at the molecular and cellular level, including second messenger pathways. (2) The IFCN IRG and BSCT share an interest in studies of long term potentiation [LTP] and long term depression [LTD]. The IFCN IRG may be more appropriate for studies of LTP and LTD in the context of learning, but BSCT may be more appropriate for studies of the biophysics of ion channels in LTP/LTD.

- **With the Brain Disorders and Clinical Neuroscience [BDCN] IRG:** (1) Study sections of the BDCN IRG share interests with BSCT in neurological disorders and injury. If a study involves research in neurological disease or injuries, the BDCN IRG may be more appropriate, but if the study involves fundamental cellular and molecular mechanisms in signal transduction, BSCT may be more appropriate. (2) Another shared interest is in vision research. Studies that require specialized knowledge or appreciation of the anterior portion of the eye may be more appropriate for the BDCN IRG. Studies that are focused on the molecular, structural, and biophysical aspects of signal transduction molecules, or on voltage-gated or ligand-gated ion channels may be more appropriate for BSCT.

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Neurotransporters, Receptors, Channels and Calcium Signaling Study Section [NTRC]

Formerly MDCN-4

[NTRC Roster]

The Neurotransporters, Receptors, Channels and Calcium Signaling [NTRC] Study Section reviews studies of signal transduction pathways in neurons, muscles, and other excitable cells with particular emphasis on

cellular regulation and physiology. This includes studies of calcium physiology, regulation of ionic gradients, ion pumps and molecular transporters, ion channels, and synthesis and regulation of transduction molecules. Studies may integrate molecular, cellular, electrophysiological, and imaging approaches to examine molecular regulation, transduction, biochemical changes, cellular physiology, and functional consequences. Emphasis is on fundamental cellular mechanisms, including those relevant to disease processes.

Specific areas covered by NTRC:

- Intracellular regulation of calcium; calcium channels, calcium storage, homeostasis, and buffering; calcium as a second messenger; electrophysiology; calcium imaging

- Ion pumps and molecular transporters; electrochemical coupling; maintenance of ionic gradients; membrane properties and electrodynamics; imaging studies

- Ion channels and neurotransmitter receptors; electrophysiological studies within the context of cellular physiology; interactions with second messenger systems; regulation and modulation of ion channels and receptors; ionotropic and metabotropic receptors

- Synthesis, insertion and regulation of transduction molecules; genetic regulation, transcription/translation, protein modification, localization, assembly, turnover, and degradation; local regulation of synaptic structure and function [i.e., insertion, accumulation, localization]

- Muscle cell electrophysiology and propagation of electrical signals

NTRC has the following shared interests within the MDCN IRG:

- SYN and NTRC share interests in the area of synaptic function and the cellular regulation of signal transducer molecules. If the focus is on fundamental cellular, biochemical and molecular mechanisms of neuronal cell function, the application may be more appropriate for SYN. NTRC may be more appropriate for studies focusing on electrophysiology and signal transduction pathways.

- BSCT and NTRC share interests in the area of signal transduction. NTRC may be more appropriate for studies of cellular electrophysiology and the synthesis and regulation of the transduction molecules, and most studies involving calcium pathways, while BSCT may be more appropriate for molecular, structural, and biophysical studies.

- MNPS and NTRC have significant shared interests in the area of signal transduction, especially with respect to second-messenger pathways. NTRC may be more appropriate for studies of cellular electrophysiology [especially involving calcium], while MNPS may be more appropriate for neurochemical and pharmacological studies.

- NDPR and NTRC share an interest in the plasticity of synaptic connections. NDPR may be more appropriate when the emphasis is predominantly on the cellular, biochemical and molecular aspects of synaptic plasticity, while NTRC may be more appropriate when the emphasis is more on cellular electrophysiology [especially involving calcium].

NTRC has the following shared interests outside the MDCN IRG:

- **With the Cell Biology [CB] IRG:** (1) The CB IRG and NTRC share interests in contractile proteins and

muscle research. The CB IRG may be more appropriate for general cellular studies of muscle structure and contractile proteins; NTRC may be more appropriate for electrophysiological studies of signal transduction. (2) The CB IRG also shares interests with NTRC in the area of vision research. Applications that require specialized knowledge or appreciation of the retina or the posterior portion of the eye may be more appropriate for the CB IRG; applications that focus on fundamental aspects of molecular transporters, ion pumps, and cellular electrophysiology, particularly if they involve calcium, may be more appropriate for NTRC.

- **With the Cardiovascular Sciences [CVS] IRG:** The CVS IRG and NTRC share interests in cardiac muscle. CVS may be more appropriate for clinical aspects of cardiac muscle, especially in the context of heart disease, but NTRC may be more appropriate for basic electrophysiological studies. CVS may also be appropriate for review of skeletal muscle excitation-coupling [E-C coupling].

- **With the Musculoskeletal, Oral and Skin Sciences [MOSS] IRG:** The MOSS IRG and NTRC share an interest in skeletal muscle. MOSS may be more appropriate for studies of clinical aspects of skeletal muscle and/or skeletal muscle force production, but NTRC may be more appropriate when the primary focus in on neural structure and function and/or neuronal control of muscle force production.

- **With the Digestive Sciences [DIG] IRG:** The DIG IRG and NTRC share an interest in gastro-intestinal signal transduction. Studies focusing on signal transduction and neuroendocrine peptides may be more appropriate for DIG; however, studies focusing on neuroendocrine peptides or general neuronal signal transduction may be more appropriate for NTRC.

- **With the Integrative, Functional and Cognitive Neuroscience [IFCN] IRG:** (1) The IFCN IRG and NTRC share interests in signal transduction and transport in the areas of the neuronal basis of behavior; neuroendocrine and neuroimmune function; rhythms and oscillatory behavior; sensory function; and motor function. The IFCN IRG may be more appropriate for such signal transduction and transport studies when the context is on integrated circuits, systems, and behavior. However, NTRC may be more appropriate for studies of transport or transduction molecules at the cellular electrophysiological level. (2) The IFCN IRG and NTRC also share interests in long-term potentiation [LTP] and long-term depression [LTD]. Applications involving LTP and LTD in learning may be assigned to the IFCN IRG, but applications involving the cellular and molecular basis of LTP/LTD may be assigned to NTRC, especially if they involve intracellular calcium signaling or physiology.

- **With the Brain Disorders and Clinical Neuroscience [BDCN] IRG:** (1) The BDCN IRG shares interests with NTRC in neurological disorders. If a study involves research in neural disorders and injury, BDCN may be more appropriate; however, if the study involves fundamental cellular mechanisms in signal transduction, NTRC may be more appropriate. (2) BDCN also shares interests with NTRC in the area of vision research. Applications that require specialized knowledge or appreciation of the anterior portion of the eye may be more appropriate for the BDCN IRG; while applications that focus on fundamental aspects of molecular transporters, ion pumps, and cellular electrophysiology, particularly if they involve calcium, may be more appropriate for NTRC.

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Molecular Neuropharmacology and Signaling Study Section [MNPS]

Formerly MDCN-5

[MNPS Roster]

The Molecular Neuropharmacology and Signaling [MNPS] Study Section reviews projects on neuronal and muscle signal transduction and neurotransmitters with a particular focus on neurochemical and

pharmacological mechanisms. This includes studies of ligand interactions, neuromodulator interactions, neurotransmitter metabolism, and the development of therapeutic compounds. Emphasis is on fundamental cellular mechanisms, including those relevant to disease processes.

Specific areas covered by MNPS:

- Pharmacological and neurochemical studies of ligand activation, G-protein coupling, and signal transduction cascades; studies of receptor agonists and antagonists; development of experimental and therapeutic approaches

- Neurotransmitter and neuromodulator pathways; enzyme function and regulation; regulatory mechanisms; metabolic plasticity within the cell; synaptic dynamics [release, diffusion, inactivation, re-uptake]

- Modulators of synaptic function, including growth factors, neurotrophins, neuropeptides, neurosteroids and neurotoxins; neurophysiology and neuropharmacology of modulatory mechanisms

- Ligand activation of second messenger pathways; pharmacological and neurochemical studies of ligand activation of G-proteins and other effectors

MNPS has the following shared interests within the MDCN IRG:

- SYN and MNPS share an interest in the area of synaptic dynamics. SYN may be more appropriate for studies of exocytosis, endocytosis and cellular trafficking while MNPS may be more appropriate for studies focusing on neurotransmitter release, regulation and function.

- NDBG and MNPS share interests in the areas of energy and oxidative metabolism and excitotoxicity. NDBG may be more appropriate for studies focused on the energy demands of neurons and glia, mitochondria function and dysfunction, and the role of oxidative stress in neurodegeneration or neuroprotection, while MNPS may be more appropriate for studies focused on oxidative metabolism and excitotoxic agents.

- BSCT and MNPS have significant shared interest in the area of signal transduction, especially with respect to second messenger pathways. BSCT may be more appropriate for molecular, structural, biochemical and biophysical studies, while MNPS may be more appropriate for neurochemical and pharmacological studies of signal transduction.

- NTRC and MNPS have significant shared interests in the area of signal transduction. NTRC may be more appropriate for studies of cellular electrophysiology, the synthesis and regulation of transduction molecules, and most studies involving calciumpathways, while MNPS may be more appropriate for the neurochemical and pharmacological aspects of signal transduction.

MNPS has the following shared interests outside the MDCN IRG:

- **With the Biological Chemistry and Macromolecular Biophysics [BCMB] IRG:** (1) The BCMB IRG and MNPS share interests in the area of receptor agonist/antagonist studies. If the focus is chemical synthesis of these molecules, BCMB may be more appropriate. If the focus is receptor activation/inactivation in neural systems, MNPS may be more appropriate. (2) The BCMB IRG and MNPS also share interest in the area of molecular pharmacology and medicinal chemistry/drug design. If the focus is primarily on molecular pharmacological/pharmacokinetic or medicinal chemistry/drug design per se, the BCMB IRG may be more appropriate. If the focus is on molecular

pharmacology/pharmacokinetics or medicinal chemistry/drug design in the context of agents affecting neural systems, MNPS may be more appropriate.

- **With the Cell Biology [CB] IRG:** (1) The CB IRG and MNPS share an interest in signal transduction and second messenger pathways. The CB IRG may be more appropriate for studies of kinase/phosphatase pathways and the regulation of cell growth, while MNPS may be more appropriate for studies of phosphorylation/dephosphorylation of brain-specific proteins or functions unique to the nervous system. (2) Another shared interest is in vision research. Applications that require specialized knowledge or appreciation of the posterior portion of the eye or the retina may be more appropriate for the CB IRG, while applications that focus on neurochemical and pharmacological aspects of signal transduction may be more appropriate for MNPS.

- **With the Cardiovascular Sciences [CVS] IRG:** The CVS IRG and MNPS share an interest in cardiac muscle. CVS may be more appropriate for clinical research on cardiac muscle, especially in the context of heart disease. MNPS may be more appropriate for neurochemical and pharmacological studies of signal transduction molecules in neuronal systems controlling the heart.

- **With the Endocrinology, Metabolism, Nutrition and Reproductive Sciences [EMNR] IRG:** The EMNR IRG and MNPS have broadly shared interests in the areas of neuropeptide/receptor interactions, second messengers and effectors, and neuropeptide processing enzymes. Studies of receptors for hypothalamic releasing or inhibiting factors or neuropeptide processing may be assigned to the EMNR IRG; studies of such receptors may be assigned to MNPS when the focus is on signaling that is specific to neurons/glia.

- **With the Digestive Sciences [DIG] IRG:** The DIG IRG and MNPS share interests in gastro-intestinal signal transduction. Studies on signal transduction by neuroendocrine peptides may be more appropriate for the DIG IRG when the focus is on the actions or disposition of nutrients. Studies on such signal transduction may be more appropriate for MNPS when the focus is on signaling that is specific to neurons/glia.

- **With the Respiratory Sciences [RES] IRG:** The RES IRG and MNPS have broadly shared interests in the areas of (1) neurotransmitters and (2) neural plasticity. Studies of neurotransmitters, when in the context of understanding the central control of breathing, may be more appropriate for RES, while studies focused on the broader understanding of neurotransmitter function may be more appropriate for MNPS. Studies of respiratory neural plasticity, when in the context of response to hypoxia, may be more appropriate for RES, while studies on broader aspects of neural plasticity may be more appropriate for MNPS.

- **With the Integrative, Functional and Cognitive Neuroscience [IFCN] IRG:** (1) Study sections of the IFCN IRG and MNPS share interest in signal transduction. The IFCN IRG may be more appropriate for signal transduction studies involving integrated circuits, systems, and behavior, while MNPS may be more appropriate for studies involving transduction molecules and G-protein coupled receptors, with a particular emphasis on neurochemical and pharmacological approaches. (2) Another area of shared interest is in long-term potentiation [LTP] and long-term depression [LTD]. The IFCN IRG may be more appropriate for applications involving LTP and LTD in learning, but MNPS may be more appropriate for applications involving the pharmacological basis of LTP/LTD.

- **With the Brain Disorders and Clinical Neuroscience [BDCN] IRG:** (1) The BDCN IRG and MNPS share interest in neurological disease processes. For studies focused on basic and clinical research in neural disorders and injury, BDCN may be more appropriate. For studies focused on signal transduction, G-protein coupling, and other fundamental cellular and molecular mechanisms underlying the neural disorders or injuries, MNPS may be more appropriate. (2) The BDCN IRG and MNPS also share interest in the area of vision research. Applications that require specialized knowledge or appreciation of the anterior portion of the eye may be more appropriate for the BDCN IRG, while applications that focus on neurochemical and pharmacological aspects of signal transduction may be more appropriate for MNPS.

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Neurogenesis and Cell Fate Study Section [NCF]

Formerly MDCN-6

[NCF Roster]

The Neurogenesis and Cell Fate [NCF] Study Section reviews applications concerned with the initial formation of cells in the developing nervous system, as well as cell specification, determination, and differentiation. Areas to be included are: regulation of the cell cycle; induction of neural tissue; brain region specification and patterning; stem cell and progenitor cell proliferation, migration, and phenotypic determination; development and regulation of circadian rhythms and oscillatory processes; and neuronal and glial differentiation. Emphasis is on fundamental mechanisms underlying these processes in normal development, and in responses to disease, injury, and extrinsic factors, including circadian events and prenatal exposure to drugs.

Specific areas covered by NCF:

- Regulation of the cell cycle; mechanisms of growth arrest and re-initiation of cell division and differentiation; initiation and regulation of circadian and oscillatory processes

- Fundamental cellular and molecular mechanisms of neural induction in normal development, including transcriptional regulation and signaling pathways; the cellular and molecular mechanisms through which the embryonic neural ectoderm acquires the characteristics of adult brain regions, including regionalization of gene transcription, cell-cell interactions, migration, circadian rhythmicity, and secreted signals that influence these events; effects of extrinsic factors, such as teratogens and drugs on these processes

- Neuronal and glial progenitors; cellular and molecular mechanisms of stem cell and progenitor cell induction, proliferation, migration, and phenotypic restriction; the influence of aging, extrinsic factors, disease and injury on these processes; characterization of stem cells for the purpose of repair following developmental and degenerative disease and injury

- Cell fate specification; effects of cell lineage, cell-intrinsic components [such as transcription factors], cell-cell interactions [before, during and after migration], secreted factors [such as growth factors, cytokines, hormones, and neurotransmitters], and drugs on the phenotypic determination of neurons and non-neuronal cells, particularly glia

- Neuronal and glial cell differentiation and specialization; transcriptional and post-transcriptional regulation of the acquisition of the differentiated cellular and molecular characteristics of neurons and glia, including cell morphology, excitability, growth factor responsiveness and expression of specific neurotransmitters and their receptors; cell-cell interactions, among neurons and non-neuronal cells, such as glia and other cells participating in the development of the nervous system, leading to cell specializations such as myelin, and the development of specialized structures like the blood-brain barrier

- Circadian rhythm and other oscillatory processes; cell and molecular genetics producing rhythmicity, genomic mechanisms, pathways, transcripts, intracellular pathways, cell cultures, mutagenesis, regulation of clock-controlled genes, and the modulation of oscillatory functions

NCF has the following shared interests within the MDCN IRG:

- SYN and NCF share an interest in the area of neuroplasticity. Applications dealing with fundamental mechanisms of neuroplasticity or with cytoskeletal functions and cell surface molecules may be more appropriate for SYN, while studies of plasticity associated with the establishment, maintenance, and reorganization of synaptic connections may be more appropriate for NCF.

- NDBG and NCF share an interest in (1) studies of cell death. Studies of mechanisms of neuronal cell death per se may be more appropriate for NDBG, but studies that focus on cell death in lineage restriction or patterning in the developing nervous system may be more appropriate for NCF. (2) NDBG and NCF also share an interest in the study of signaling molecules [e.g., growth factors]. Studies in which the principal focus is the role of these molecules in neural induction, specification, or differentiation may be more appropriate for NCF whereas studies of the neuroprotective effects of such factors or studies involving factors related to glial differentiation may be more appropriate for NDBG.

- NDPR and NCF share an interest in (1) studies of axonal projection patterns. Studies of mechanisms of axonal growth or establishment of connectivity per se may be more appropriate for NDPR, while studies in which axonal projection patterns are used as markers of cell identity or of nervous system regionalization may be more appropriate for NCF. (2) NDPR and NCF also share an interest in studies of signaling molecules [e.g., growth factors] that affect multiple aspects of development. These studies are more appropriate for NDPR when the principal focus is the role of these molecules in migratory events or in the establishment or modification of connectivity, whereas if the primary focus is on the role of these molecules in neural induction or specification, the studies may be more appropriate for NCF. (3) NDPR and NCF share an interest in neurogenetics. Genetic screens [e.g., in invertebrate] that initially involve screening of non-developmental characteristics [such as the organization, function or behavior of mature nervous systems], may be appropriate for NDPR if the principal aim is to relate mutations to fundamental processes that regulate migratory events or the establishment or modification of connectivity. Those studies in which the aim is to relate mutations to fundamental processes that regulate neural induction or specification may be more appropriate for NCF.

NCF has the following shared interests outside the MDCN IRG:

- **With the Genes, Genomes and Genetics [GGG] IRG:** (1) The GGG IRG and NCF share interests in neurogenetics. Applications having a primary focus on genetics or emerging genetic techniques may be reviewed by GGG. However, applications having a primary focus on fundamental issues of neurodevelopment may be reviewed by NCF. (2) GGG and NCF also share an interest in cell cycle regulation and transcription. Applications that focus on cell cycle regulation and transcription may be more appropriate for the GGG IRG. Applications that focus on cell cycle regulation and transcription in the nervous system may be more appropriate for NCF.

- **With the Cell Biology [CB] IRG:** The CB IRG and NCF share an interest in circadian rhythms. (1) Studies that focus on cellular and molecular mechanisms involved in circadian rhythms and general phototransduction mechanisms may be more appropriate for the CB IRG; whereas studies that focus on the neural cellular and molecular mechanisms involved may be more appropriate for NCF. (2) The CB IRG and NCF share an interest in cell death as it relates to lineage restriction or patterning. Applications that deal with the death of cells in a general context may be more appropriate for the CB IRG. Applications that deal with the death of cells in the context of the developing nervous system may be more appropriate for NCF. (3) The CB IRG and NCF share an interest in cell cycle regulation and transcription. Applications that focus on cell cycle regulation and transcription in general may be more appropriate for the CB IRG; whereas applications that focus on the nervous system may be more

appropriate for NCF. (4) The CB IRG and NCF share an interest in the visual system. Applications that require specialized knowledge or appreciation of the posterior portion of the eye or the retina may be reviewed in the CB IRG. Applications focusing on fundamental aspects of nervous system development may be reviewed in NCF.

- **With the Biology of Development and Aging [BDA] IRG:** (1) The BDA IRG and NCF share an interest in the regulation of gene expression, patterning, cell fate specification and stem cells. Studies focused on general mechanisms applicable to all organ systems, whether CNS- or PNS-related, may be more appropriate for the BDA IRG. Studies focused on the nervous system in these areas, whether CNS- or PNS-related, may be more appropriate for NCF. (2) The BDA IRG and NCF share an interest in the general area of cellular development. If processes of general or non-neuronal cellular development are the focus, the BDA IRG may be more appropriate. However, if processes of neuronal cellular development are the focus, NCF may be more appropriate. (3) The BDA IRG and NCF also share an interest in embryogenesis and morphogenesis. Applications with a focus on general aspects of embryogenesis or morphogenesis may be more appropriate for the BDA IRG, whereas applications with a specific focus on nervous system development may be more appropriate for NCF. (4) The BDA IRG and NCF share an interest in cell death as it relates to lineage restriction or patterning. Applications that deal with the death of cells in a general context may be more appropriate for BDA. Applications that deal with the death of cells in the context of the developing nervous system may be more appropriate for NCF.

- **With the Biobehavioral and Behavioral Processes [BBBP]; Risk, Prevention and Health Behavior [RPHB]; and Health of the Population [HOP] IRGs:** The BBBP, RPHB, and HOP IRGs and NCF share interests in neural development. Applications emphasizing the behavioral or social science aspects of neural development may be reviewed in BBBP, RPHB, or HOP. Applications emphasizing the cellular, molecular or biochemical aspects of neural development may be reviewed in NCF.

- **With the Respiratory Sciences [RES] IRG:** The RES IRG and NCF have shared interests in the areas of rhythm generation. Studies of respiratory rhythm generation, including developmental studies in this area, may be more appropriate for RES, while studies focused on basic neural mechanisms of central pattern generators versus respiratory rhythm generation per se, may be more appropriate for NCF.

- **With the Integrative, Functional and Cognitive Neuroscience [IFCN] IRG:** (1) The IFCN IRG and NCF share interests in development and the effects of exposure to exogenous agents or stress. Those studies that focus on analysis of the organization, function or behavior of mature nervous systems may be more appropriate for the IFCN IRG. Those studies that focus on fundamental processes involved in neural induction, specification, or differentiation may be more appropriate for the NCF. (2) The IFCN IRG and NCF share an interest in circadian rhythms and oscillatory processes. If studies involve a largely systems approach, they may be more appropriate for the IFCN IRG. If studies involve molecular and cellular mechanisms, they may be more appropriate for NCF. (3) The IFCN IRG and NCF share an interest in the functionality of the developing chemosensory, visual, auditory, and vestibular systems. Where specific knowledge of the systems is essential, the IFCN IRG may be more appropriate; where specific knowledge of basic development or model systems is essential, NCF may be more appropriate.

- **With the Brain Disorders and Clinical Neuroscience [BDCN] IRG:** (1) The BDCN IRG and NCF share an interest in developmental defects. Studies of developmental effects of prenatal exposure to drugs may be more appropriate for the BDCN IRG, particularly if the focus is on clinical aspects. Studies of neural induction, specification, or differentiation may be more appropriate for NCF. (2) The BDCN IRG and NCF share an interest in studies involving stem cells. Studies in which the primary goal is a restorative/therapeutic outcome may be more appropriate for the BDCN IRG. Studies in which the primary goal is an understanding of neural induction, specification, or differentiation may be more appropriate for NCF. (3) The BDCN IRG and NCF also share an interest in the visual system. Applications that require specialized knowledge or appreciation of the anterior portion of the eye may be reviewed in the BDCN IRG. Applications focusing on fundamental aspects of nervous system development may be reviewed in NCF.

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Neurodifferentiation, Plasticity, and Regeneration Study Section [NDPR]

Formerly MDCN-7

[NDPR Roster]

The Neurodifferentiation, Plasticity, and Regeneration [NDPR] Study Section reviews applications focused on differentiation, plasticity, aging and regeneration of neuronal connectivity. This area includes process outgrowth, axon guidance, selection of synaptic targets, dendrite differentiation, establishment of neural maps, and formation and elimination of synaptic connections. Emphasis is on fundamental mechanisms underlying these processes in normal development and aging, and in response to disease, injury, and extrinsic factors, including prenatal exposure to drugs. The study section also reviews studies of the reestablishment of connectivity in aging, disease, and following injury, but with a focus on the analysis of cellular and molecular mechanisms that stimulate, inhibit, or otherwise perturb process growth and synapse formation.

Specific areas covered by NDPR:

- Substrates for neuronal and glial cell migration, including scaffolds; permissive and directional cues, and mechanisms through which they control cell motility, outgrowth and directional migration
- Cellular and molecular mechanisms, including signal transduction pathways that regulate axonal and dendritic outgrowth, fasciculation, branching and guidance; mechanisms regulating the selection of synaptic partners, including formation of topographic and laminar-specific projections
- Synapse formation and developmental plasticity. Initial formation and maturation of pre- and postsynaptic elements; mechanisms regulating the elaboration of arbors and retraction of processes, including the role of growth factors, cell-cell recognition molecules, electrical activity, and experience
- Regeneration of connections; positive factors [e.g., simulators of growth, directional cues, cell grafts (including stem cell grafts) and prosthetics] that can promote or direct axon sprouting, axon regrowth, and reestablishment of appropriate connections following injury; factors that inhibit these processes, and development of tools to overcome their effects

NDPR has the following shared interests within the MDCN IRG:

- (1) SYN and NDPR share interests in the area of neuroplasticity. Studies focused on fundamental mechanisms of trafficking, basic cytoskeletal interactions, and synaptic function, including vesicular release, endocytosis, and receptor turnover may be more appropriate for SYN. Studies focused on developmental and regenerative events, including process outgrowth and guidance, dendritic development, and synaptogenesis, may be more appropriate for NDPR. (2) SYN and NDPR share interests in the study of cytoskeletal, cell membrane and extracellular matrix components. Those studies that focus on issues of trafficking or basic synaptic function may be more appropriate for SYN, while studies that focus on developmental events or repair mechanisms may be more appropriate for NDPR.
- NDBG and NDPR share an interest in the areas of glial-neuronal interactions and repair following injury. Studies focused on mechanisms of neurodegeneration, neuronal survival, glial responses to injury, or myelination may be more appropriate for NDBG. Studies focused on the role of glia in axon outgrowth, nerve regeneration , and synapse formation and studies examining spinal cord regeneration,

peripheral nerve regeneration, and the restoration of synaptic function may be more appropriate for NDPR.

- NCF and NDPR share an interest in (1) studies of axonal projection patterns. Studies in which axonal projection patterns are used as markers of cell identity or of nervous system regionalization may be more appropriate for NCF, while studies of mechanisms of axonal growth or establishment of connectivity per se may be more appropriate for NDPR. (2) NCF and NDPR also share an interest in studies of signaling molecules [e.g., growth factors] that affect multiple aspects of development. These studies are more appropriate for NCF if the primary focus is on the role of these molecules in neural induction or specification, while NDPR may be more appropriate when the principal focus is the role of these molecules in migratory events or in the establishment or modification of connectivity. (3) NCF and NDPR share an interest in neurogenetics. Those studies in which the aim is to relate mutations to fundamental processes that regulate neural induction or specification may be more appropriate for NCF. Genetic screens [e.g., in invertebrate] that initially involve screening of non-developmental characteristics [such as the organization, function or behavior of mature nervous systems], may be appropriate for NDPR if the principal aim is to relate mutations to fundamental processes that regulate migratory events or the establishment or modification of connectivity.

NDPR has the following shared interests outside the MDCN IRG:

- **With the Genes, Genomes and Genetics [GGG] IRG:** The GGG IRG and NDPR share interests in neurogenetics. Applications focused on emerging genetic techniques or on genetics using the nervous system as a model may be more appropriate for the GGG IRG. Applications focused on the molecular bases of neurogenetic development may be more appropriate for NDPR.

- **With the Cell Biology [CB] IRG:** The CB IRG and NDPR share interests in cellular development. CB IRG may be more appropriate if the main focus is cellular biology and physiology. NDPR may be more appropriate if the system under study is CNS- or PNS-based. (2) The CB IRG and NDPR also share interests in the area of vision research. Applications that require specialized knowledge or appreciation of the posterior portion of the eye or the retina may be more appropriate for the CB IRG. Applications focused on basic neurological aspects of nervous system development may be more appropriate for NDPR.

- **With the Biology of Development and Aging [BDA] IRG:** (1) The BDA IRG and NDPR share interests in embryogenesis and morphogenesis. Applications that emphasize general aspects of embryogenesis or morphogenesis may be more appropriate for the BDA IRG. Applications with a specific focus on nervous system development may be more appropriate for NDPR. (2) The BDA IRG and NDPR also share an interest in cell polarity, differentiation and regeneration. Studies focused on general mechanisms in these areas may be more appropriate for the BDA IRG. Studies focused on the nervous system in these areas may be more appropriate for NDPR.

- **With the Biobehavioral and Behavioral Processes [BBBP]; Risk, Prevention and Health Behavior [RPHB]; and Health of the Population [HOP] IRGs:** The behavioral and social science IRGs [BBBP, RPHB, and HOP] and NDPR share interests in neural development, aging, and injury. Applications that focus on behavioral or social aspects of neural development, aging and injury may be assigned to BBBP, RPHB, or HOP. Applications that focus on cellular or molecular aspects of neural development, aging and injury may be assigned to NDPR.

- **With the Musculoskeletal, Oral and Skin Sciences [MOSS] IRG:** The MOSS IRG and NDPR share an interest in skeletal muscle. MOSS may be more appropriate for studies of clinical aspects of skeletal muscle, skeletal muscle development and/or skeletal muscle force production, but NDPR may be more appropriate when the primary focus in on neural structure and function, or the neuronal control of muscle force production or development.

- **With the Respiratory Sciences [RES] IRG:** The RES IRG and NDPR have shared interests in the areas of (1) neurotransmitters, (2) neural plasticity and (3) development. Studies of neurotransmitters, when in the context of understanding the central control of breathing, may be more appropriate for RES, while studies focused on the broader understanding of neurotransmitter function may be more appropriate for NDPR. Studies of respiratory neural plasticity, when in the context of response to hypoxia, may be more appropriate for RES, while studies on broader aspects of neural plasticity may be more appropriate for NDPR. Studies of respiratory rhythm generation, including developmental studies in this area, may be more appropriate for RES, while studies focused on basic neural mechanisms of central pattern generators versus respiratory rhythm generation per se, may be more appropriate for NCF.

- **With the Integrative, Functional and Cognitive Neuroscience [IFCN] IRG:** (1) The IFCN IRG and NDPR share an interest in development. Such studies that focus on motivation and emotion may be more appropriate for the IFCN IRG. Such studies that focus on general neural development may be more appropriate for NDPR. (2) The IFCN IRG and NDPR also share interests in the regulation of brain activity and behavior. Those studies focusing on neuroendocrine and neuroimmune systems may be more appropriate for the IFCN IRG. Those studies focusing on development may be more appropriate for NDPR. (3) The IFCN IRG and NDPR also share interests in sleep, biorhythms, and the autonomic nervous system. If the focus is regulatory and integrative activity, the IFCN IRG may be appropriate. If the focus is development, NDPR may be more appropriate. (4) The IFCN IRG and NDPR also share interests in sensory systems. The IFCN IRG may review applications where a sensory system is used to study the specifics of sensation. NDPR may be appropriate for applications where a sensory system is used as a model to study principles of nervous system development. (5) The IFCN IRG and NDPR also share interests in motor systems. The IFCN IRG may review applications if the focus is specifically the motor system. NDPR may review applications if the focus is principles of nervous system development. (6) The IFCN IRG and NDPR also share interests in synaptic plasticity. Studies of plasticity associated with cognitive processes such as learning and memory may be more appropriate for the IFCN IRG. Studies of plasticity associated with the establishment, maintenance, and reorganization of synaptic connections may be more appropriate for NDPR.

- **With the Brain Disorders and Clinical Neuroscience [BDCN] IRG:** The BDCN IRG and NDPR have shared interests in the area of spinal cord and nerve regeneration. The BDCN IRG may be more appropriate for studies focused on clinical aspects of regeneration. NDPR may be more appropriate for studies focused on basic aspects of regeneration.

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Molecular, Cellular and Developmental Neuroscience Small Business Activities [SBIR/STTR] Special Emphasis Panel [MDCN Small Business SEP]

[MDCN (10) Roster]

The MDCN Small Business SEP [MDCN (10)], *previously ZRG1 MDCN-3 (10) B*, reviews SBIR/STTR applications within the areas covered by the MDCN IRG. The main focus is on the molecular and cellular level. In general, the projects involve development of devices, reagents, and software to probe channels, signal transduction, and the transducers themselves. Studies may involve basic biological processes that underlie or may be altered by disease processes. Examples of devices might include development of imaging and recording techniques; analytical and system controlling software; monitoring and assay platforms; neuroprosthetic devices; biosensors; and stem cells and cell culture systems. Projects might also focus on neurodrug discovery and development; molecular manipulation and engineering; development of specific research reagents and assays; therapeutics; and proteins that interact with and modulate neuroreceptors, transporters and transducers.

The MDCN Small Business SEP has the following shared interests outside the MDCN IRG:

- **With the Brain Disorders and Clinical Neuroscience [BDCN] IRG:** The BDCN IRG and MDCN (10) share interests in neuropathology. The BDCN IRG may review small business applications focused on a neural disease or disease process. MDCN (10) may review small business applications focused on a basic neural cellular or molecular mechanism.

[Referral & Review]

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