The Anatomy/Pathology section of Experimental Biology and Medicine invites reports of original research that provide novel insights integrating structure and function with regard to biology and medicine. A primary goal is to attract hypothesis driven or discovery-based investigations that focus on - and test - mechanistic or fundamental questions addressed by morphological techniques. For example, studies that correlate cellular and molecular biology with basic or pathological anatomy could include the use of electron microscopy (e.g., immuno- or cryoelectron microscopy), confocal laser scanning microscopy, or epifluorescent microscopy with molecular and cellular engineered probes. Accompanying biochemical, molecular, pharmacological, and/or behavioral analyses (e.g., Western blotting, laser capture microdissection, BrdU, apoptosis, nociception) will provide support for functional significance. Reports on single cells or multicellular organisms will be considered, and there is no restriction on subject matter. Purely descriptive studies or case reports are discouraged. All studies require appropriate control groups. Quantitative rather than just qualitative evidence is preferred, and data need to be evaluated by rigorous statistical analysis. Authors should keep in mind that scientific merit and clear communication will be primary factors evaluated by the referees. Of particular interest to this section of the journal are papers that relate research findings to the normal and abnormal human condition. This would include translational research using human cells and tissues, as well as parallels with models of human disease states (e.g., multiple sclerosis, Crohn's disease, and carcinogenesis).
*The Biochemistry and Molecular Biology section* publishes original research that is judged to make novel and substantive contributions to elucidating the molecular and cellular basis and/or mechanism of cell function or disease. Successful manuscripts will provide unambiguous conclusions supported by empirical, quantitative data. Manuscripts that merely report initial observations of a phenomenon without substantial insight into the underlying molecular basis of the process, report observations of already established processes in different organisms, or report population studies that lack additional empirical confirmation would not be suitable for Biochemistry and Molecular Biology.
The Bioimaging section invites original manuscripts and review papers in the field of the molecular, metabolic, ultrastructural and functional imaging of human and non-human animals. Papers that focus on the investigation of the morphological and functional architecture of single organs, tissues, and cells that provide novel and interesting results on the relation between structure, and function either in physiological or pathological conditions will be considered for publication. Studies in the field of novel non-invasive methodologies for the investigation of single organs, tissues, and cells with potential applications in the diagnostic or therapeutic domain are welcome. Research that combines multiple investigative approaches, such as genetics and imaging, or imaging with pharmacological probes, is welcome. Areas of interest encompass from whole organism, to tissues and cells, particularly including research in the field of the morphological and functional mapping of the human brain with X-ray computed tomography, (CT), magnetic resonance imaging (MRI), positron emission tomography (PET), transcranial magnetic stimulation (TMS), magnetoencephalography (MEG), electroencephalogram mapping, ultrasound imaging, photoacoustic imaging, optical coherence tomography, optical microscopy and others emerging technology. Studies on the in vivo imaging of the molecular mechanisms that underlie cognition and mental activity in healthy conditions as well as in the presence of neurological and psychiatric disorders and of the effects of pharmacological and non-pharmacological treatments are also are encouraged. Manuscripts will be reviewed on the basis of their scientific merit and respect of internationally accepted ethical standards for animal and human research. Original reports and critical reviews on specific topics will be considered. Submission of purely
clinical studies is discouraged. Single case reports will be considered only if they may represent a significant advancement in the comprehension of (patho-) physiological mechanisms.
The Biomedical Engineering section aims to publish original research articles and mini-reviews that integrate novel engineering methods with biology and medicine. Such examples include novel nanotechnology platforms for biosensing, imaging disease-specific biomarkers, and therapeutic delivery; advanced imaging technology (e.g. MRI, PET) for quantitative analysis of pathophysiology; novel biomaterial scaffold and controlled release technology for tissue engineering applications; and integrated imaging and therapeutic systems (Theranostics) for image-guided therapy. The BME section will strongly endorse interdisciplinary approaches bridging engineering sciences with biology and medicine, and will have reduced interests in traditional, well defined areas of research (e.g. biomedical transducers) unless unique designs that will lead to unprecedented biological discoveries are evident. For the mini-reviews, we strongly encourage thought leaders in the BME field to discuss future opportunities in the emerging key technologies, and how they may benefit biology and medicine. For original research articles, we emphasize the scientific merit as well as the artistic presentation for effective communication of the scientific data.
The Bionanoscience section is a forum for original research and reviews on topics at the interface between nanotechnology and the biological or medical sciences:

Nanotechnology is broadly defined as research and technology development at the atomic, molecular or macromolecular levels in the length scale of approximately 1-100 nanometer range. Of particular interest are manuscripts describing synthetic or natural nanostructures that have innovative applications in the treatment or diagnosis of disease or in the advancement of basic biological research. This encompasses topics in the field of nanomedicine. While no less important, the development and application of medical devices and instrumentation involving nanotechnology is not emphasized in the Bionanosciences section and manuscripts in this area might be suited for the Biomedical Engineering section.
The Cell and Developmental Biology section welcomes manuscript submissions that encompass mechanisms that regulate cellular structure and activity, particularly as they relate to developmental processes. Examples of developmental processes include control of early embryogenesis and mechanisms that determine cellular lineage and fate. The use of model lower organisms such as yeast, Drosophila and Caenorhabditis elegans are most welcome, as are vertebrate models of differentiation and development. At the cellular level, the Cell and Development section will entertain manuscripts that examine basic mechanisms of cellular activity such as regulation of cell division, cell cycle, cellular responses to DNA damage, cell polarity, adhesion and migration. The section also includes manuscripts that describe mechanisms of transformation, cell senescence and autophagy and pathways that lead to malignancy. Manuscripts that use single cell analyses of nucleic acids and proteins that provide insight into cellular and developmental mechanisms are also welcome. The above examples represent the types of research areas that will be considered by this section, but the list should not be considered as all inclusive.
The Endocrinology and Nutrition section welcomes the receipt of manuscripts on each of these areas of experimental biology and medicine. Of particular interest are original research articles and timely reviews on these subjects that would be of widespread interest. In the field of Endocrinology we welcome novel findings related to the actions of hormones on their target tissues and new findings related to clinical endocrine disorders. These include but are not limited to findings regarding hormone receptors and their signaling pathways, developmental changes in endocrine function, identification or clarification of hormone functions, targeted deletions of genes important to endocrine function, and nutritional factors impacting endocrine function and diseases of the endocrine system as well as mechanisms of glucoregulation and pathobiology of diabetes and complications. There will be less interest in studies of single nucleotide polymorphisms unless a functional link to hormone-related metabolic status is demonstrated. In the area of Nutrition, original manuscripts on metabolism, nutrigenomics, nutritional biochemistry, food safety, clinical nutrition, cancer nutrition and nutrition/aging/health are particularly welcomed. However, there will be reduced interest in articles addressing eating disorders, food policy, and sports nutrition.
The Genomics, Proteomics and Bioinformatics section: EBM solicits original research papers and review articles, meeting symposia and, brief communications in genetics, genomics, epigenomics, metagenomics, proteomics, metabolomics and related areas of bioinformatics. We are also interested in contributions that describe new workflows and methods of data processing, analysis and integration across scales – from sequence variants to social and economic impact. Submissions will be initially reviewed by editorial staff to ensure that the purpose of the study and the quality of text and figures meet EBM standards. If judged suitable, papers will then be sent out for conventional peer review.
The Immunology/Microbiology/Virology section has a broad remit and welcomes the receipt of manuscripts reporting novel research findings and reviews on each of these aspects of experimental biology and medicine. Studies with clear translational relevance are particularly encouraged, such as investigations of bacterial/viral diseases, cancer immunology, transplantation medicine, autoimmunity, allergy, development of vaccination strategies and novel immunotherapies. There is reduced interest in articles on fundamental topics such as the taxonomy of microorganisms, unless innovative research tools and concepts are employed to address previously intractable questions. While emphasizing the importance of scientific content (quality and novelty), our editorial policy recognizes the importance of clear and lucid presentations as reflected in the eloquence of the scientific language and the clarity and quality of the figures used for data or conceptual presentations.
The Neuroscience section of EBM welcomes reports on original high quality research in neuroscience that provides fundamental new insights into the workings of the nervous system in health and disease. A primary area of interest of the neuroscience section of the journal is hypothesis driven research that seeks to identify important and fundamental questions about how the nervous system develops, maintains homeostasis, contributes to sensory and motor information processing and control, performs higher cognitive functions and the processes that underlie these functions. Examples of the underlying processes include regulation of gene expression by cells of the nervous system, neurovascular coupling, synaptic and membrane function, properties of networks of neurons and glia, learning and memory, intra- and intercellular signaling, and the interaction of these processes in the nervous system with other systems such as the cardiovascular, endocrine and immune systems as well as in metabolic control and homeostasis. Studies on the effects of aging and a wide variety of neurological and psychiatric diseases on these processes including the identification of new potentially therapeutic targets and processes as well as the delineation of mechanisms for novel diagnostic approaches are of interest. In addition to such hypothesis driven research, original studies that are discovery based including screens and identification of molecular components of these processes and diseases, if framed the context of fundamental questions about nervous system development, function and dysfunction are also welcome. Studies of the effects of incompletely characterized compounds or mixtures of substances on nervous system development or function, whether natural or synthetic are not appropriate for the neuroscience
section of EBM. Likewise, studies that are primarily targeted at additional uses of clinical procedures.
*The Pharmacology and Toxicology section* covers a wide range of topics and this section strives to reflect that diversity. The Section will emphasize original work and reviews that elucidate drug mechanisms or unusual drug responses which contribute significant knowledge to pharmacology or toxicology. Submissions are expected to meet the standards of pharmacological investigation. For example, manuscripts should include dose-response analysis, rather than using a single dose, and seek to demonstrate cause and effect relationships, rather than only presenting correlational findings. Appropriate control groups, such as drug vehicle-treated and drug-exposed normal groups, should be included. While manuscripts in all areas of pharmacology are welcomed, studies on herbal medicines or plant extracts with unknown components or mixtures of active ingredients are generally not appropriate unless exceptional new activity has been discovered. Manuscripts reporting a known drug action on previously unstudied cells or tissue are generally also not appropriate without strong justification of the importance of the study.
The Physiology section welcomes high-quality manuscripts reporting innovative studies that address the function of whole organisms, organ systems, organs, cells, organelles, membranes and biomolecules in health and disease. Some examples of topics that fall within this section’s scope include studies of membrane ion transport and electrophysiology, autonomic control of internal organs, neuro-hormonal signaling mechanisms and their impact on cells and organs, adaptation and maladaptation of internal organs to environmental stresses, mechanisms of ischemic injury of internal organs and novel strategies to prevent such injury, mitochondrial support of cellular function and mediation of programmed cell death, physiological regulation of glomerular filtration and renal tubular electrolyte transport, neuroendocrine mechanisms of hypertension, mechanisms of excitotoxicity in brain neurons and its treatment, integrated regulation of cardiopulmonary function during exercise or hypoxia, and the impact of diabetes, inflammation and other disease processes on internal organs and their constituent cells. The criteria for evaluating manuscripts are the novelty and potential impact of the work, the clarity, quality and accuracy of the text, figures and tables, how effectively the methods, experimental design and statistical analyses address the hypotheses, and how well the results support the conclusions.
The Stem Cell Biology section seeks original articles and reviews that describe fundamental investigations in the rapidly expanding field of stem and progenitor cell biology. All aspects of stem cell biology are welcomed including mechanistic studies of embryonic stem cells; the reprogramming of cell fates by the mis-expression of transcription factors, RNAs, chemicals, or other such biological manipulations; studies of mechanisms involved in regulating the differentiation stem cells towards specific or alternate cell fates; the developmental biology of tissue-specific stem and/or progenitor cells; the epigenetics, genomics and proteomics of stem cells, and the biology of cancer stem cells. Articles are also welcomed that establish novel paradigms for clinical translation of cell based therapies involving the use of stem cells. Only those manuscripts that are well designed and written, provide significant new insights, and explore a topic in more than a superficial manner will be published.
The Structural Biology section seeks original articles that addresses fundamental aspects of structural biology, which lead to either a better understanding of the functional/mechanistic properties of biologically important macromolecules or provide insight into pharmacological regulation of potential therapeutic targets. Manuscripts in this section will typically couple structural findings with additional experimental evidence (both - in vitro or in vivo) to support the conclusions made in the manuscript. EBM recognizes that structural biology is a diverse field and will welcome manuscripts that use various techniques, including but not limited to, X-ray crystallography, NMR, SAXS and Cryo-EM. If necessary, authors will be required to deposit coordinates to publically available databases (e.g. Protein Data Bank) and obtain an accession code. To support the quality of the structural information, authors are encourage to include validation reports when applicable. Manuscripts can include either high or low-resolution structural studies. Manuscripts that include molecular characterization of mechanisms using a variety of techniques are also acceptable. For example, coupling biophysical characterization with mutational analysis to define macromolecular assemblies. Submissions that are limited in scope to a single technique without supporting results are better suited for a different journal. This section will not accept manuscripts that are purely computational, however computational biology that supplements the structural findings is acceptable. Since EBM is a diverse journal with a broad readership, manuscripts should be written for a diverse audience. Authors are encouraged to design Figures to properly convey their structural results for a general audience. For minireviews we encourage leaders in the field to discuss recent
structural advances in their respective field and discuss future areas of exploration or areas that could benefit from a better molecular understanding.
The Systems Biology section recognizes both the breadth and complexity of the field, the need to strengthen the ties between biology, medicine, engineering and the physical sciences, and the challenges of spanning both basic research and clinical medicine. This section seeks manuscripts describing original research and reviews that span multiple disciplines, provide new interdisciplinary perspectives to challenging problems, or involve the application of new tools and techniques to biology and medicine. The desired focus of articles is that they are informative to all audiences within Experimental Biology and Medicine and are not directed solely towards narrow topics in either biology, medicine or physiology. This section should serve as a venue where biologists and physicians can learn about the application of new technologies to biological or clinical problems, with a biology content that is more than just proof-of-concept of a new tool, as might be expected by a device- or instrument-oriented specialty journal. Similarly, engineers and physical scientists should view this section as a source of information on practical, even clinical, needs of systems biology. We seek reviews of the breadth of approaches to either a practical problem, such as the many means to measure cellular mechanical forces developed by living cells in vitro, or an in-depth discussion of a systems-physiology problem that has yet to be explored by physical scientists and engineers, for example, the complexity of cardiac amino acid metabolism. Ideally, this section will serve as a meeting place for biologists, physicians, engineers and physical scientists to join together to explore the intersections of their core disciplines – an intersection best described as systems biology.
Translational Research is the research that connects or moves the study in one
discipline to another. Particularly for biomedicine, translational research is the
research that relates basic and clinical research to medical or industrial application.
As such, it includes a wide range of biological, medical, chemical, pharmacological,
engineering, and computational studies that aim at elucidating the mechanism of a
biological or disease related pathological function or process, or applying such
mechanistic understanding to the generation of new knowledge and strategies with
clinical or industrial implication. We are interested in publishing original and high
quality research that meets the goal and definition of translational research as
described above. This may include (not limited to) studies in the following example
areas: (1) identification or characterization of a biological target or signaling pathway
involved in a disease pathology or therapeutic invention; (2) discovery and
development of novel therapeutic or diagnostic methods or agents with implications
for clinical or industrial application; (3) study of the mechanism of action of currently
used drugs or new experimental agents at the molecular, cellular or systems level; (4)
clinical research for novel experimental therapeutics or new applications of existing
drugs or that reveals mechanistic insight into a disease process or new targets or
approaches for clinical intervention or prevention; (5) development of new tools or
methods by chemical, engineering, nanotechnology or computational techniques that
can be applied to study biology or human diseases; and (6) genetic, proteomic or
systems biological study to reveal new markers, pathways or targets for clinical
application. Reports of pure clinical methods, tools, procedures or observations
without molecular, cellular or systems investigation of mechanism or insight into new
mechanism or target for clinical treatment or detection are not acceptable. Studies of alternative medicine without mechanistic investigations as described above are also not accepted. For chemical, computational or engineering studies of molecular systems, some biological or clinical results must be presented or, in the absence of such data, such molecular systems should have clear potential for biological or medical application.