EDITORIAL

Translational medicine in orthopaedics

The Journal of Orthopaedic Translation (JOT) is the only international journal that specializes in orthopaedic translational medicine currently available in the medical community, supported by an international editorial board composed of individuals from various medical subspecialties, yet with expertise in both basic and clinical aspects of the musculoskeletal sciences.

JOT provides a "home" for the international orthopaedic community to share innovations and advancement in both academic and industrial collaborations. JOT also provides support for clinical and translational researchers in data sharing, adoption of good laboratory and clinical practices, and effective use of informatics. JOT is therefore the journal to meet our current and future health challenges in musculoskeletal and related systems, focusing research efforts findings into the early diagnosis, prevention, treatment, and rehabilitation of musculoskeletal disorders.

JOT is managed by both the Chinese Speaking Orthopaedic Society and the International Chinese Musculoskeletal Research Society (ICMRS), which are sister societies and partners devoted to scientific and clinical research with translational potential over the past two decades, since their very inception.

About translational research/translational medicine/orthopaedic translation

There are many definitions concerning “Translational research,” but all share consensus on a broad and inclusive—rather than restrictive—definition [1,2]. Orthopaedic translation is a branch of Translational Medicine under the umbrella of Translation Research that deals with the process of transforming, not only laboratory discoveries into new therapies for patients, but also observations from the bedside for scientific validation and further improvement of clinical applications, generally known as "two-way traffic,,” which include “from bench to bedside and/or community” and “from bedside to bench to bedside/community [3,4].” In the past, the translational process took a decade or more before scientific findings from a research laboratory could be advanced through preclinical and clinical studies to result in a new regulatory-body-approved therapy or device for diagnosis, prevention, and treatment. As an opinion-sharing platform, the launch of JOT will function as a bridge to connect various domains within the translational roadmap and will accelerate the process or shorten the journey of orthopaedic translation.

Initiation of orthopaedic translation

The United States has long been regarded a pioneer of translational research. In order to address the need for better integrated and focused clinical and translational research support, the National Institute of Health (NIH) launched a unique program that funds Institutional Clinical and Translational Science Awards in 2006 to facilitate collaborative research. Because orthopaedic or musculoskeletal research is highly translational, soon after the launch of NIH’s initiative, the Orthopaedic Research Society (ORS) published an editorial paper, “Translational research: Whither the ORS?” in the Journal of Orthopaedic Research in 2008 and subsequently initiated its own translational roadmap with themes that parallel those of the NIH [3]. The themes include the formation of interdisciplinary teams, a focus on specific musculoskeletal diseases, interdisciplinary education, fostering translational career pathways, and established disease-oriented and disease-specific clusters or interests groups targeting the refractory chronic musculoskeletal diseases that plague our society, including osteoarthritis, osteoporosis, intervertebral disk degeneration, degenerative tendinopathy, and periprosthetic osteolysis. Although there is no national sponsored program in China, various clinical and research institutions mobilized their own resources and expertise to form around 50 centres labelled with "Translation Research" or "Translational Medicine" within the past 5 years following the NIH or ORS development.
patterns, and subsequently published a first monograph on translation medicine by Professor Dai Ke-rong, a leading orthopaedic surgeon and clinical scientist in 2012 [5].

Mission and vision of JOT in orthopaedic translation

The launch of JOT is a significant milestone in the international orthopaedic community. As a scientific journal dealing with translational medicine in musculoskeletal and related fields, JOT covers scientific and regulatory investigations to translate preclinical researches into clinical applications with specific emphasis on, for example, new biotechnologies, medical devices, biomaterials, bioengineering, disease-specific biomarkers, cellular and molecular medicine, genomics science, bioinformatics, applied immunology, molecular imaging, drug discovery and development, and last but not least, the regulation and health policies.

Papers accepted for publication by JOT will benefit and improve novel diagnostics/prognostics and therapeutics for clinical use, that is, will transform scientific discoveries arising from laboratory, clinical, or population studies into new clinical tools and applications that improve the health of musculoskeletal and related human systems by reducing disease incidence, morbidity, and mortality.

JOT welcomes the submission of high-quality manuscripts (original research papers, reviews, editorials, perspectives, and letters to the editors) in the field of musculoskeletal and related fields, which meet the general criteria of significance and scientific excellence, including both preclinical and clinical research. Clinical studies are encouraged for submission to JOT, including randomized trials, intervention studies, studies of screening and diagnostic tests, cohort studies, cost–effectiveness analyses, case–control studies, and surveys with good response rates. Comparative studies with available diagnostic tools and treatment methods or protocols and combination therapies for achieving better treatment efficacy are also highly desirable especially those with scientific discussion on obstacles present in their translational process.

Unique presentation format of translational research work

Formulation of research questions or study objectives

Translational orthopaedic research is a two-way street with respect to the formulation of research questions or study objectives, that is, mechanistic hypothesis-driven research (studies from bench to bedside) and clinical observation-driven studies (investigations from bedside to bench); however, the latter is normally excluded by purely scientific journals.

Study design with positive control is appreciated

Comparative studies with current diagnostic, preventive, and treatment protocols, drugs, biomaterials, or implants/devices, and even effective combination therapy are encouraged to provide essential information regarding the authors’ translational work and to prove its sustainability. As highlighted in the Instructions to Authors of JOT, testing or evaluation methods shall be standardized by referring to those listed in the ISO and/or American Society for Testing Materials (ASTM) whenever possible, so that these studies could be used directly as references for comparing findings that were generated under the same or at least comparable conditions for regulatory bodies or certified testing centres of the Food and Drug Administration in the United States or China Food and Drug Administration (CFDA) in China. This standardization will certainly help shorten the regulatory registration process. Combination therapy with better treatment efficiency, safety, and cost-effectiveness are also in the interests of JOT in its overall translational roadmap.

Discussion of obstacles in orthopaedic translation

JOT will be an effective platform to discuss obstacles and suggest or find solutions toward an effective orthopaedic translation. Therefore, JOT welcomes studies for establishing new regulatory guidelines that are not currently available yet relevant with the potential for adaptation into regulatory guidelines for accelerating clinical applications. Such efforts may help overcome one of the important regulatory burdens, that is, the balance between efficiency and transparency of management.

Platform in orthopaedic education

JOT also has an educational mission to meet the demands of maintaining or expanding the biomedical workforce and education programs that attract and retain young people in the translational and biomedical sciences in musculoskeletal and related areas. Given the present scenario of the scientific publishing market and the specificity of the publication, JOT provides a platform for training programs in translational research, and proposes and promotes initiatives that use new-generation interactive educational tools, such as open Internet platform, to fulfil the unmet need of disseminating new knowledge in clinical and translational orthopaedics that can lead to a better clinical practice. Education is a two-way street. Through publication of translational work in JOT, clinicians, biologists, and engineers may develop and speak a common language. This is particularly important for nonclinical scientists who need to be educated in the language of a clinician [4].

A bridge in translational orthopaedics with social missions

Translational orthopaedics has both regulatory and commercial implications in nature. With journal development, we hope that JOT would also be a platform to unite public, governmental, academic, and industry interests in supporting the publication of scientific papers that have an impact on accelerating and helping policy makers identify good topics, products, and regulations, and helping develop translatable...
products, especially cost-effective and safe ones on top of innovations in musculoskeletal and related medicine.

References


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