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EDITORIAL

Scientific methods – the foundation of science

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"工欲善其事，必先利其器"

'If a workman wishes to do a good job, he must first sharpen his tools'

This ancient adage from Confucius maintains its relevance even now in the information age where the potential applications of new technology are limited only by the imagination. Historically, the development and dissemination of novel techniques & methods has served as a catalyst for scientific progress by re-defining what is possible within the laboratory. It is worth recounting that the breakthroughs in genetic engineering that led to the production of the first recombinant protein and the birth of biotechnology occurred within a decade of the discovery of the first restriction enzyme. Once again, we are on the cusp of a paradigm shift in the biological sciences following the discovery of yet another mechanism of prokaryotic immunity; the CRISPR/Cas system. A series of landmark publications involving a single enzyme in this system have seen it emerge as an incredibly versatile and powerful tool capable of manipulating the transcriptome, epigenome and even the genome itself. The rate at which such technology can be adapted and repurposed by the scientific community is a testament to the power of open access resources, and their capacity to facilitate and accelerate the exchange of ideas.

Given the importance of reliable techniques and methodologies in advancing scientific research, we are pleased to announce the launch of the Journal of Biological Methods (JBM, ISSN 2326-9901), a peer-reviewed open access journal dedicated to the publication of innovative, cutting-edge methods and techniques across the spectrum of life sciences.

This journal is an outgrowth of the Protocol Online [1] technical resource that was created in 1999 by one of our Editors-in-Chief, Long-Cheng Li. When Dr Li began his postdoctoral research at the University of California, San Francisco in 1998; the Internet was still in its infancy, and there were no effective easily accessible resources for acquiring reliable protocols for new experimental techniques. Few laboratories maintained active websites for sharing resources, and it was not until the advent of Internet search engines like Google, that there was a straightforward means of locating those that did. Recognizing the benefits of such a centralized online resource, Li launched the Protocol Online website in April 1999 as a database of categorized protocols that would be available through the Internet. Contributions from users throughout the international academic community gave Protocol Online both depth and breadth as well as the ability to expand rapidly. An interactive open access Q&A board: BioForum was added soon after and has since become an invaluable resource for young scientists as one of the most active bioscience communities online. Building on the success of Protocol Online and BioForum, JBM was conceived in 2013 to provide a formal publishing mechanism for scientists with an interest in developing, optimizing or creatively re-purposing techniques in the life sciences.

Dr Li is joined by Dr Dieter C Gruenert as Co-Editor-in-Chief, who is a Professor of Otolaryngology-Head and Neck Surgery as well as a member of the Eli and Edythe Broad Center for Regenerative Medicine and Stem Cell Research, the Institute of Human Genetics, the Helen Diller Family Comprehensive Cancer Center, and the Cardiovascular Research Institute at the University of California, San Francisco. Dr Gruenert has been a pioneer in human airway epithelial cell biology and generated some of the first immortalized human airway epithelial cell lines for the study of cystic fibrosis and respiratory disease. He has also pioneered sequence-specific polynucleotide-based genomic DNA modification strategies for the correction of disease causing mutations and the generation of transgenic animals. His recent work has been focused on the development and characterization of induced pluripotent stem (iPS) cells and their directed differentiation along lineage-specific pathways into organ specific progenitors. His background and expertise will be an integral component of the biomedical mission of JBM.

In this inaugural issue of JBM, we are proud to present a collection of articles covering a broad range of research topics. The first protocol paper by Madaan et al. presents a simplified, easy-to-follow method of isolating bone marrow derived dendritic cells up to 80-85% purity [2]. The first research article by Romanov et al. nicely introduces a noninvasive and sensitive assay for monitoring of renal allograft. By using the technique coamplification at lower denaturation temperature-PCR (COLD-PCR), the authors propose a cost-effective procedure for quantitative analysis of donor's DNA content in the recipient urine, based on the predetermined genetic differences in the mitochondrial DNA between the donor and the recipient. This paper has significant clinical application and provides proof-of-concept that increased donor-derived DNA present urine can serve as a predictive marker for allograft rejection [3]. The second research paper by Baumann et al. describes an FCS (Fluorescence Correlations Spectroscopy)-based method for the measurement of anomalous subdiffusion to study the movement of glucocorticoid receptor α (GRα)-GFP in U2OS cells [4]. Mathematical simulations indicate the capability to separate the spatial subdiffusion from temporal subdiffusion as graphically depicted in the cover image for this issue.

Finally, our aim is that JBM becomes not only a welcome addition to the scientific literature that makes a significant contribution to the advancement of science and technology, but also that it sets a standard for quality and innovation that is in line with the leading journals of this arena. To ensure that the journal maintains a high standard of scientific acumen, articles will be sent out for peer-review to a group

of experts in the field relevant to the article as are exemplified by the JBM Editorial Board. In addition, there will be regular editorials highlighting both advances in the field as well as specific articles in a given issue. JBM will also accept proposals for thematic issues that will be under auspices of a Guest Editor. This is a very intriguing time in the life sciences and JBM provides an exciting opportunity to lay the foundation for future innovation.

We hope that you enjoy reading our inaugural issue. On behalf of the editorial staff and colleagues, we thank you for all your continued encouragement and support.

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