

المجلة الأردنية للعلوم الحياتية  
**Jordan Journal of Biological Sciences (JJBS)**  
<http://jjbs.hu.edu.jo>

**Jordan Journal of Biological Sciences (JJBS)** (ISSN: 1995–6673 (Print); 2307-7166 (Online)): An International Peer- Reviewed Research Journal financed by the Scientific Research Support Fund, Ministry of Higher Education and Scientific Research, Jordan and published quarterly by the Deanship of Research and Graduate Studies, The Hashemite University, Jordan.

**Editor-in-Chief**

**Professor Abu-Elteen, Khaled H.**  
Medical Mycology  
The Hashemite University

**Editorial Board (Arranged alphabetically)**

**Professor Abdalla, Shtaywy S.**  
Human Physiology, Tafila Technical University  
**Professor Abdel-Hafez, Sami K.**  
Immunoparasitology  
The World Islamic Science & Education University  
**Professor Al-Hadidi, Hakam F.**  
Toxicology and Clinical Pharmacology  
Jordan University of Science and Technology  
**Professor Bashir, Nabil A.**  
Biochemistry and Molecular Genetics  
Jordan University of Science and Technology

**Professor Elkarmi, Ali Z.**  
Bioengineering, The Hashemite University  
**Professor Lahham, Jamil N.**  
Plant Taxonomy, Yarmouk University  
**Professor Sallal, Abdul-Karim J.**  
Applied Microbiology  
Jordan University of Science and Technology  
**Professor Tarawneh, Khaled A.**  
Molecular Microbiology, Mutah University

**Associate Editorial Board**

**Professor Al-Hindi, Adnan I.**  
The Islamic University of Gaza, Palestine  
**Professor Al-Homida, Abdullah S.**  
King Saud University, Saudi Arabia  
**Professor Kachani, Malika**  
Western University of Health Sciences, USA

**Dr. Fass, Uwe W.**  
Oman Medical College, Sulatante of Oman  
**Dr. Gammoh, Noor**  
The University of Edinburgh, UK

**International Advisory Board**

**Prof. Abdul-Haque, Allah Hafiz**  
National Institute for Biotechnology and  
Genetic Engineering, Pakistan  
**Prof. El Makawy, Aida, I**  
National Research Center, Giza, Egypt  
**Prof. Ghannoum, Mahmoud A**  
University Hospital of Cleveland and Case  
Western Reserve University, U.S.A.  
**Prof. Hassanali, Ahmed**  
Kenyatta University, Nairobi, Kenya  
**Prof. Matar, Ghassan M**  
American University of Beirut, Lebanon  
**Prof. Nasher, Abdul Karim**  
Sanna' University, Yemen  
**Prof. Waitzbauer, Wolfgang**  
University of Vienna, Austria

**Prof. Bamburg, James**  
Colorado State University, U.S.A.  
**Prof. Garrick, Michael D**  
State University of New York at Buffalo, U.S.A.  
**Prof. Gurib-Fakim, Ameenah F**  
Center for Phytotherapy and Research,  
Ebene, Mauritius.  
**Prof. Kaviraj, Anilava**  
University of Kalyani, India  
**Prof. Martens, Jochen**  
Institute Fur Zoologie, Germany  
**Prof. Stanway, Glyn**  
University of Essex, England  
**Prof. Wan Yusoff, Wan Mohtar**  
University Kebangsaan Malaysia, Malaysia

**Submission Address**

**Professor Abu-Elteen, Khaled H.**  
Deanship of Scientific Research and Graduate Studies  
The Hashemite University  
P.O. Box 330127, Zarqa, 13115, Jordan  
Phone: +962-5-3903333 ext. 4399  
E-Mail: [jjbs@hu.edu.jo](mailto:jjbs@hu.edu.jo)

**Editorial Board Support Team**

**Language Editor**      **Publishing Layout**  
**Dr. Qusai Al-Debyan**      **Mohannad Oqdeh**