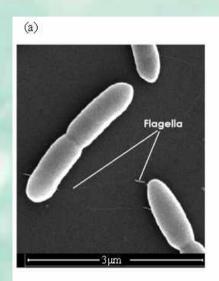
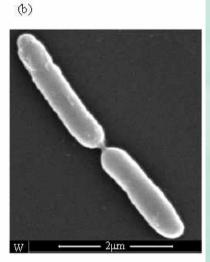
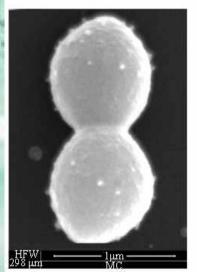


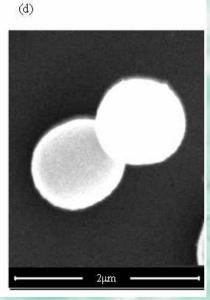
Advances in Microbiology





(c)







www.scirp.org/journal/aim

Journal Editorial Board

ISSN Print: 2165-3402 ISSN Online: 2165-3410

http://www.scirp.org/journal/aim

Editors-in-Chief

Prof. Yung-Fu Chang	Cornell University, USA
Prof. Alan W. Decho	University of South Carolina, USA

Associate Editors-in-Chief

Dr. Thaddeus Chukwuemeka Ezeji	The Ohio State University & OARDC, USA
Dr. Chang-Hui Shen	University of New York (CUNY), USA

Editorial Board

Dr. Kavanush (Kai) J. Arvana Louisiana State University, USA Prof. Andrei L. Barkovskii Georgia College & State University, USA Dr. Payam Behzadi Islamic Azad University, Iran INRA/CNRS Laboratory of the Interaction Plant-Microorganisms, France Prof. Frans J. de Bruijn **Prof. Sang Ho Choi** Seoul National University, South Korea Dr. Mohamed O. Elasri The University of Southern Mississippi, USA Prof. Daniel Y. C. Fung Kansas State University, USA Prof. Gamil Sayed Gamil Zeedan National Research Centre, Egypt **Prof. Elisabeth Grohmann** University of Freiburg, Germany Dr. Kaisa Haukka University of Helsinki, Finland **Prof. Ming-Liang He** City University of Hong Kong, China Prof. Carlos A. Jerez University of Chile, Chile Dr. Zvi Kelman University of Maryland, USA Prof. Mohiuddin Md. Taimur Khan University of New Mexico, USA Prof. Jian Li Monash University, Australia Prof. Yanbin Li University of Arkansas, USA Dr. Pamela A. Marshall Arizona State University, USA **Prof. James Gordon Mitchell** Flinders University, Australia Dr. Xiaozhen Mou Kent State University, USA Prof. Saleh A. Naser University of Central Florida, USA Prof. Michele K. Nishiguchi New Mexico State University, USA **Prof. Heui-Dong Park** Kyungpook National University, South Korea **Prof. Ales Prokop** Technical University Ostrava, Czech Republic **Prof. Alexander Rapoport** University of Latvia, Latvia Dr. Jyotisna Saxena The Ohio State University, USA **Dr. Maulin Pramod Shah** Industrial Waste Water Research Laboratory, India Prof. Abdelaal Shamseldin Genetic Engineering and Biotechnology Research Institute, Egypt Dr. Jun Sun Rush University, USA Dr. Jimmy Siu Hung Tsang The University of Hong Kong, China Prof. Michael K. Watters Valparaiso University, USA Dr. Jing Xu Northwestern University, USA Prof. Zhongtang Yu The Ohio State University, USA **Prof. Olga Zaborina** University of Chicago, USA Zhejiang University, China

Volume 6 Number 3



March 2016

Table of Contents

Detection of <i>kla</i> NIDNA 4 and Constin Deletedness in Clinical Indiates of	
Detection of <i>bla</i> NDM-1 and Genetic Relatedness in Clinical Isolates of <i>Escherichia coli</i> Producing Extended Spectrum β-Lactamase from Tertiary	
Care Centres in South India	
N. Narayanan, M. Suresh, J. P. Rajamma, M. K. P. Ramakrishnan	
A New Evaluation Method for Antibiotic-Resistant Bacterial Groups in Environment	
K. Watanabe, N. Horinishi, K. Matsumoto, A. Tanaka, K. Yakushido	
Incidence of Extended-Spectrum Beta-Lactamase-Producing Klebsiella	
<i>pneumoniae</i> among Patients and in the Environment of Hassan II Hospital, Settat, Morocco	
S. Natoubi, A. Barguigua, S. B. Zriouil, N. Baghdad, M. Timinouni, A. Hilali, S. Amghar, K. Zerouali	
Low Efficiency of the Commonly Prescribed Drugs against Klebsiella pneumonia,	
Escherichia coli and Acinetobacter Species as the Causative Agents of Blood Stream	
Infection in Malabo, Equatorial Guinea	
A. Shatalov, Y. Shilo, R. Nakhash, D. Zhdanov	162
Polyfunctional T Cell and Neutralizing Antibody Responses to ACAM2000™	
Smallpox Vaccine Immunization in Primary-Vaccinated Individuals	
S. Sukhumvittaya, S. Ampol, K. Pattanapanyasat, W. Kantakamalakul	169
Functional Characterization of CRISPR-Cas System in the Ethanologenic Bacterium	
Zymomonas mobilis ZM4	
G. Dong, M. X. He, H. Feng	178
Investigation of Pseudomonas aeruginosa Resistance Pattern	
against Antibiotics in Clinical Samples from Iranian Educational Hospital	
Z. Rostamzadeh, M. Mohammadian, A. Rostamzade	190
Review: Gram Negative Bacteria in Brewing	
P. Ashtavinayak, H. A. Elizabeth	195
Transcriptional Analysis of Pseudomonas stutzeri A1501 Associated with Host Rice	
K. M. Alam, T. Zhang, Y. L. Yan, W. Zhang, M. Lin, W. Lu	210
The Locus PgaABCD of Acinetobacter junii Putatively Responsible for	
Poly-6-(1, 6)-N-Acetylglucosamine Biosynthesis Might Be Related to	
Biofilm Formation: A Computational Analysis	
B. K. Tiwary, A. Kumar, R. K. Pathak, N. Pandey, K. K. Yadav, R. Chakraborty	222
A Study of the Microbial Community at the Interface between Granite Bedrock	
and Soil Using a Culture-Independent and Culture-Dependent Approach	
K. Olsson-Francis, V. K. Pearson, P. F. Schofield, A. Oliver, S. Summers	233

The figure on the front cover is from the article published in Advances in Microbiology, 2016, Vol. 6, No. 3, pp. 195-209 by Paradh Ashtavinayak, Hill Annie Elizabeth.

Advances in Microbiology (AiM)

Journal Information

SUBSCRIPTIONS

The *Advances in Microbiology* (Online at Scientific Research Publishing, <u>www.SciRP.org</u>) is published monthly by Scientific Research Publishing, Inc., USA.

Subscription rates: Print: \$79 per issue. To subscribe, please contact Journals Subscriptions Department, E-mail: sub@scirp.org

SERVICES

Advertisements Advertisement Sales Department, E-mail: <u>service@scirp.org</u>

Reprints (minimum quantity 100 copies) Reprints Co-ordinator, Scientific Research Publishing, Inc., USA. E-mail: <u>sub@scirp.org</u>

COPYRIGHT

COPYRIGHT AND REUSE RIGHTS FOR THE FRONT MATTER OF THE JOURNAL:

Copyright © 2016 by Scientific Research Publishing Inc.

This work is licensed under the Creative Commons Attribution International License (CC BY). http://creativecommons.org/licenses/by/4.0/

COPYRIGHT FOR INDIVIDUAL PAPERS OF THE JOURNAL:

Copyright © 2016 by author(s) and Scientific Research Publishing Inc.

REUSE RIGHTS FOR INDIVIDUAL PAPERS:

Note: At SCIRP authors can choose between CC BY and CC BY-NC. Please consult each paper for its reuse rights.

DISCLAIMER OF LIABILITY

Statements and opinions expressed in the articles and communications are those of the individual contributors and not the statements and opinion of Scientific Research Publishing, Inc. We assume no responsibility or liability for any damage or injury to persons or property arising out of the use of any materials, instructions, methods or ideas contained herein. We expressly disclaim any implied warranties of merchantability or fitness for a particular purpose. If expert assistance is required, the services of a competent professional person should be sought.

PRODUCTION INFORMATION

For manuscripts that have been accepted for publication, please contact: E-mail: <u>aim@scirp.org</u>





Advances in Microbiology

ISSN Print: 2165-3402 ISSN Online: 2165-3410

http://www.scirp.org/journal/aim

Advances in Microbiology (AiM) is an international journal dedicated to the latest advancement of Microbiology. The goal of this journal is to provide a platform for scientists and academicians all over the world to promote, share, and discuss various new issues and developments in different areas of Microbiology.

Editors-in-Chief

Prof. Yung-Fu Chang	Cornell University, USA
Prof. Alan W. Decho	University of South Carolina, USA

Associate Editors-in-Chief

Dr. Thaddeus Chukwuemeka Ezeji Dr. Chang-Hui Shen

Editorial Board

Dr. Kayanush (Kai) J. Aryana Prof. Andrei L. Barkovskii Dr. Payam Behzadi Prof. Frans J. de Bruijn Prof. Sang Ho Choi Dr. Mohamed O. Elasri Prof. Daniel Y. C. Fung Prof. Gamil Sayed Gamil Zeedan Prof. Elisabeth Grohmann Dr. Kaisa Haukka Prof. Ming-Liang He Prof. Carlos A. Jerez The Ohio State University & OARDC, USA University of New York (CUNY), USA

- Dr. Zvi Kelman Prof. Mohiuddin Md. Taimur Khan Prof. Jian Li Dr. Pamela A. Marshall Prof. James Gordon Mitchell Dr. Xiaozhen Mou Prof. Saleh A. Naser Prof. Michele K. Nishiguchi Prof. Heui-Dong Park Prof. Ales Prokop Prof. Alexander Rapoport
- Dr. Jyotisna Saxena Dr. Maulin Pramod Shah Prof. Abdelaal Shamseldin Dr. Jun Sun Dr. Jimmy Siu Hung Tsang Prof. Michael K. Watters Dr. Jing Xu Prof. Zhongtang Yu Prof. Olga Zaborina Dr. Zhe Zhang

All manuscripts must be prepared in English, and are subject to a rigorous and fair peer-review process. Accepted papers will immediately appear online followed by printed hard copy. The journal publishes original papers including but not limited to the following fields:

 Applied and Environmental Microbiology 	 Microbiology and Genetics
Bacteriology	 Microbiology and Immunology
Microbial Taxonomy	 Microbiology and Physiology
 Microbiology and Biochemistry 	 Mycology
 Microbiology and Ecology 	 Other Disciplines of Microbiology

We are also interested in: 1) Short Reports—2-5 page papers where an author can either present an idea with theoretical background but has not yet completed the research needed for a complete paper or preliminary data; 2) Book Reviews—Comments and critiques.

Website and E-Mail

http://www.scirp.org/journal/aim

E-Mail: aim@scirp.org

What is SCIRP?

Scientific Research Publishing (SCIRP) is one of the largest Open Access journal publishers. It is currently publishing more than 200 open access, online, peer-reviewed journals covering a wide range of academic disciplines. SCIRP serves the worldwide academic communities and contributes to the progress and application of science with its publication.

What is Open Access?

Art and Design Review

Advances in

ldvances in Biological hemistry Entomology

Applied Mathematics

Engineering

entiti e

All original research papers published by SCIRP are made freely and permanently accessible online immediately upon publication. To be able to provide open access journals, SCIRP defrays operation costs from authors and subscription charges only for its printed version. Open access publishing allows an immediate, worldwide, barrier-free, open access to the full text of research papers, which is in the best interests of the scientific community.

- High visibility for maximum global exposure with open access publishing model
- Rigorous peer review of research papers
- Prompt faster publication with less cost
- Guaranteed targeted, multidisciplinary audience



Soft

Website: http://www.scirp.org Subscription: sub@scirp.org Advertisement: service@scirp.org