



Corrigendum: Changes in the Carbon Metabolism of *Escherichia coli* During the Evolution of Doxycycline Resistance

Yiwen Yang¹, Jiandui Mi^{1,2,3,4}, Jiadi Liang¹, Xindi Liao^{1,2,3,4}, Baohua Ma⁵, Yongde Zou⁵, Yan Wang^{1,2,3,4}, Juanbo Liang⁶ and Yinbao Wu^{1,2,3,4*}

¹ College of Animal Science, National Engineering Research Center for Breeding Swine Industry, South China Agricultural University, Guangzhou, China, ² Ministry of Agriculture Key Laboratory of Tropical Agricultural Environment, South China Agricultural University, Guangzhou, China, ³ Key Laboratory of Chicken Genetics, Breeding and Reproduction, Ministry of Agriculture, Guangzhou, China, ⁴ Guangdong Provincial Key Laboratory of Agro-Animal Genomics and Molecular Breeding, South China Agricultural University, Guangzhou, China, ⁵ Nanhai Office of Foshan Customs House, Foshan, China, ⁶ Laboratory of Animal Production, Institute of Tropical Agriculture, Universiti Putra Malaysia, Serdang, Malaysia

Keywords: carbon metabolism, evolution, antibiotic resistance, DOX, *Escherichia coli*

A Corrigendum on

OPEN ACCESS

Edited by:

Rustam Aminov,
University of Aberdeen,
United Kingdom

Reviewed by:

Eric Altermann,
AgResearch Ltd, New Zealand

*Correspondence:

Yinbao Wu
wuyinbao@scau.edu.cn

Specialty section:

This article was submitted to
Antimicrobials, Resistance and
Chemotherapy,
a section of the journal
Frontiers in Microbiology

Received: 11 January 2022

Accepted: 13 January 2022

Published: 08 February 2022

Citation:

Yang Y, Mi J, Liang J, Liao X, Ma B, Zou Y, Wang Y, Liang J and Wu Y (2022) Corrigendum: Changes in the Carbon Metabolism of *Escherichia coli* During the Evolution of Doxycycline Resistance.
Front. Microbiol. 13:852577.
doi: 10.3389/fmicb.2022.852577

Changes in the Carbon Metabolism of *Escherichia coli* During the Evolution of Doxycycline Resistance

by Yang, Y., Mi, J., Liang, J., Liao, X., Ma, B., Zou, Y., Wang, Y., Liang, J., and Wu, Y. (2019). *Front. Microbiol.* 10:2506. doi: 10.3389/fmicb.2019.02506

In the original article, there was an error. The methods used to extract and purify RNA were not well described.

A correction has been made to **Materials and Methods, Transcriptome Sequencing and Analysis of *Escherichia coli*** section, paragraph 1:

“Total RNA of *Escherichia coli* was extracted using a E.Z.N.A Bacterial RNA Kit (R6950-01, OMEGA, USA) according to the manufacturer’s instruction. A total of 3 μg of RNA per sample was used as input material for RNA sample preparation. Sequencing libraries were generated using the NEBNext[®] Ultra[™] Directional RNA Library Prep Kit for Illumina[®] (NEB, USA) according to the manufacturer’s recommendations, and index codes were added to attribute sequences to each sample. Ribo-Zero rRNA Removal Kit (Bacteria) (Illumina, MRZB12424) was used for removal of rRNA from total RNA preparations. Fragmentation was carried out using divalent cations under elevated temperature in NEBNext First Strand Synthesis Reaction Buffer (5×). First strand cDNA was synthesized using random hexamer primers and M-MuLV reverse transcriptase (RNaseH-). Second-strand cDNA synthesis was subsequently performed using DNA polymerase I and RNase H. In the reaction buffer, dNTPs with dTTP were replaced by dUTP. Remaining overhangs were converted into blunt ends via exonuclease/polymerase activities. After adenylation of 3’ ends of DNA fragments, NEBNext adaptors with hairpin loop structures were ligated to prepare the samples for hybridization. To preferentially select cDNA fragments that were 150–200 bp in length, the library fragments were purified with the AMPure XP system (Beckman Coulter, Beverly, USA). Then, 3 μl of USER enzyme (NEB, USA) was used with size-selected, adaptor-ligated cDNA at 37°C for 15 min, followed by 5 min at 95°C before PCR. Then, PCR was performed with Phusion high-fidelity DNA polymerase, universal PCR primers, and Index (X) primer. Finally, products were purified (AMPure XP system), and library quality was assessed on an Agilent Bioanalyzer 2100 system.”

The authors apologize for this error and state that this does not change the scientific conclusions of the article in any way. The original article has been updated.

Publisher's Note: All claims expressed in this article are solely those of the authors and do not necessarily represent those of their affiliated organizations, or those of the publisher, the editors and the reviewers. Any product that may be evaluated in this article, or claim that may

be made by its manufacturer, is not guaranteed or endorsed by the publisher.

Copyright © 2022 Yang, Mi, Liang, Liao, Ma, Zou, Wang, Liang and Wu. This is an open-access article distributed under the terms of the Creative Commons Attribution License (CC BY). The use, distribution or reproduction in other forums is permitted, provided the original author(s) and the copyright owner(s) are credited and that the original publication in this journal is cited, in accordance with accepted academic practice. No use, distribution or reproduction is permitted which does not comply with these terms.