

# Barking up a Storm: What Dog DNA Testing Can Tell Us about Statistical Errors

Lily Li, Eric Tarapore, Dail Chapman, and Debra Mauzy-Melitz<sup>1</sup>

<sup>1</sup>University of California Irvine, Developmental and Cell Biology, 68105 Verano Pl., Irvine CA USA 92617

([lillyl1@uci.edu](mailto:lillyl1@uci.edu); [dmauzyme@uci.edu](mailto:dmauzyme@uci.edu))

Recent technical advances have made sequencing more accessible than ever before, leading to an increase in public interest in DNA testing. DNA testing results include ancestry information and potential risk factors associated with disease. However, these results are largely dependent on the reference population used by each company, which leads to potential errors. While founded in human genomics, the field has expanded to offer DNA testing for dogs (carrying over the same kinds of problems)! Fostered by an activity detailing current sequencing tools, this active learning exercise has students identify type I/type II statistical errors using real results from Wisdom Panel Dog DNA tests. To enhance this activity, we conclude with a discussion of current genetic testing limitations, exercising students' abilities to critique popular science fads.

**Keywords:** dog DNA, statistics, genetic testing

## Mission, Review Process & Disclaimer

The Association for Biology Laboratory Education (ABLE) was founded in 1979 to promote information exchange among university and college educators actively concerned with teaching biology in a laboratory setting. The focus of ABLE is to improve the undergraduate biology laboratory experience by promoting the development and dissemination of interesting, innovative, and reliable laboratory exercises. For more information about ABLE, please visit <http://www.ableweb.org/>.

Papers published in *Tested Studies for Laboratory Teaching: Peer-Reviewed Proceedings of the Conference of the Association for Biology Laboratory Education* are evaluated and selected by a committee prior to presentation at the conference, peer-reviewed by participants at the conference, and edited by members of the ABLE Editorial Board.

## Citing This Article

Li L, Tarapore E, Chapman D., and Mauzy-Melitz D. 2019. Barking up a storm: what dog DNA testing can tell us about statistical errors Article 41 In: McMahon K, editor. *Tested studies for laboratory teaching*. Volume 40. *Proceedings of the 40th Conference of the Association for Biology Laboratory Education (ABLE)*. <http://www.ableweb.org/volumes/vol-40/?art=41>

Compilation © 2019 by the Association for Biology Laboratory Education, ISBN 1-890444-17-0. All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording, or otherwise, without the prior written permission of the copyright owner.

ABLE strongly encourages individuals to use the exercises in this proceedings volume in their teaching program. If this exercise is used solely at one's own institution with no intent for profit, it is excluded from the preceding copyright restriction, unless otherwise noted on the copyright notice of the individual chapter in this volume. Proper credit to this publication must be included in your laboratory outline for each use; a sample citation is given above.