

Using the Thermophile *Meiothermus ruber* as a Model System for Authentic Undergraduate and Faculty Research in Genome Analysis

Lori Scott

Augustana College, 639 38th St., Rock Island IL 61201 USA
(loriscott@augustana.edu)

The *Meiothermus ruber* Genome Analysis Project is a network of 4 two-year and four-year undergraduate institutions, with the goal of offering authentic research experiences in microbial genome analysis for faculty and students. The thermophilic bacterium *M. ruber* was “adopted” from the Department of Energy Joint Genome Institute’s (DOE JGI) Interpret-a-Genome Education Program. The DOE JGI offers microbial genome sequence data to colleges and universities for use in authentic research in genome annotation. The microbes in the Interpret-a-Genome program are unusual and from sparsely investigated parts of the tree of life, so the likelihood of exciting discoveries and variations on the classical pathways is high. This research model has been described as a “research career in a box” because of the many faculty resources offered through the DOE JGI, American Society of Microbiology Faculty Programs, Genomics Education National Initiative, and the Microbial Genome Annotation Network. Currently, over 250 students and 8 faculty have contributed in varied ways to the *M. ruber* Project since its inception in 2009. Student and faculty investigators have annotated individual genes and whole biochemical pathways, cloned and subsequently complemented genes for functional studies, investigated the phenomena of lateral gene transfer and thermostability, and more. In this mini-workshop, participants will: 1) explore some of the resources available for those who might want to start a genome analysis program; and 2) discuss how this model generates authentic research experiences.

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

Scott, L. 2013. Using the Thermophile *Meiothermus ruber* as a Model System for Authentic Undergraduate and Faculty Research in Genome Analysis. Page 382 in *Tested Studies for Laboratory Teaching*, Volume 34 (K. McMahon, Editor). Proceedings of the 34th Conference of the Association for Biology Laboratory Education (ABLE), 499 pages. <http://www.ableweb.org/volumes/vol-34/?art=39>

Compilation © 2013 by the Association for Biology Laboratory Education, ISBN 1-890444-16-2. 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.