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Using Undergraduate Molecular Biology Labs to Discover Targets of miRNAs in Humans
By Adam Idica, Jordan Thompson, Irene Munk Peders and Pavan Kadandale

Module Description:
This resource is an easily adaptable lab module that can be used in existing...
undergraduate molecular biology lab courses to conduct authentic scientific research. Students use a variety of databases to identify likely candidate genes whose expression may be altered by a given miR, and then experimentally test their predictions in human cells. This inquiry-based module gives students a taste of real scientific research and excites them about the possibility that, even as a student, they have the potential to contribute to cutting edge research.

Teaching Setting:

This module was used in a large enrollment (100 students per quarter), upper-division molecular biology lab course. The students meet for a common lecture by the instructor, and then are split into 5 lab sections of twenty students each. Each lab section is run by a graduate student TA, and the students work through the activities of the lab module in pairs. However, the module is easily adapted to a number of different contexts, since the technical complexity of the activities is not very high.

QUBES Citation:

Related Materials and Opportunities:

This resource is also published in the journal CourseSource, an open-access journal of peer-reviewed teaching resources for undergraduate biological sciences. See the resource’s CourseSource citation below.

https://doi.org/10.24918/cs.2015.10

This resource is included in the Network for Integrating Bioinformatics into Sciences Education (NIBLSE; pronounced "nibbles") collection. NIBLSE is National Science Foundation (NSF) Research Coordination Network for Undergraduate Biology Education (RCN-UBE) with the long-term goal to establish bioinformatics as an essential component of undergraduate life sciences education. Learn more about NIBLSE. View the December 2018 NIBLSE Newsletter and subscribe to the NIBSLE newsletter.

If you adopt and adapt this module, you are highly encouraged to share your adaptation back with the QUBES community using the QUBES Resources System for sharing Open Education Resources.
QUBES is a community of math and biology educators who share resources and methods for preparing students to use quantitative approaches to tackle real, complex, biological problems.

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