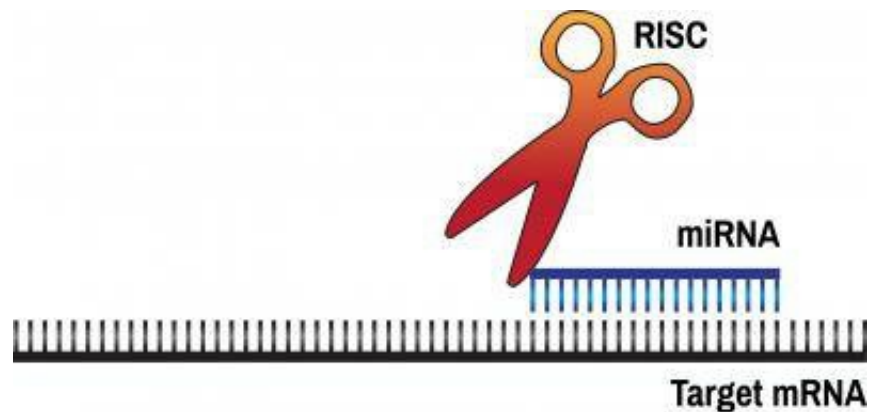


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## Using Undergraduate Molecular Biology Labs to Discover Targets of miRNAs in Humans

By Adam Idica, Jordan Thompson, Irene Munk Pedersen, and Pavan Kadandale



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### 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 this 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:

Idica, A., Thompson, J., Pedersen, I. M., Kadandale, P. (2019). [Using Undergraduate Molecular Biology Labs to Discover Targets of miRNAs in Humans. Network for Integrating Bioinformatics into Life Sciences Education](#), QUBES Educational Resources.  
[doi:10.25334/Q4XM9B](https://doi.org/10.25334/Q4XM9B)

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## 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.

Idica, A., Thompson, J., Munk Pedersen, I., and Kadandale, P. 2015. Using Undergraduate Molecular Biology Labs to Discover Targets of miRNAs in Humans. *CourseSource*. <https://doi.org/10.24918/cs.2015.10>

This resource is included in the [Network for Integrating Bioinformatics into Life Sciences Education \(NIBLSE; pronounced "nibbles"\) collection](#). NIBLSE is a 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.*

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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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