Overview of SEI Activities in MCDB

Spring, 2010
The MCDB Team

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The MCD Biology Majors Curriculum

Introduction to MCD Biology (lab)  
↓
Genetics (lab)

Molecular Biology  
(either order)  
Cell Biology (lab)

Immunology or Developmental Biology (capstone courses)

Year
1
1, 2
2, 3<sup>a</sup>
3, 4<sup>b</sup>

a. Starting in Fall 2010, Molecular and Cell Biology will be taught as a single combined course.
b. In Spring 2011, Molecular Neurobiology will be added to the capstone courses.
Primary Objectives

For each core course, develop:

• Course- and topic-level learning goals
• A pre-/post-assessment to measure achievement of goals (learning gains)
• Active-learning materials to facilitate student progress toward learning goals

Evaluate effectiveness of these interventions through educational research
## Current status of the project

<table>
<thead>
<tr>
<th>Course</th>
<th>Learning goals</th>
<th>Pre-post assessment</th>
<th>Active-learning materials*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intro</td>
<td>Done</td>
<td>Done</td>
<td>Complete</td>
</tr>
<tr>
<td>Genetics</td>
<td>Done</td>
<td>Done</td>
<td>Complete</td>
</tr>
<tr>
<td>Cell</td>
<td>Done</td>
<td>In progress</td>
<td>Some</td>
</tr>
<tr>
<td>Molecular Development</td>
<td>Done</td>
<td>In progress</td>
<td>Some</td>
</tr>
<tr>
<td>Immunology</td>
<td>In progress</td>
<td>In progress</td>
<td>Some</td>
</tr>
</tbody>
</table>

* Clicker questions, homework, other in-class activities. Further development and archiving of these materials for all courses is ongoing.
Noteworthy statistics

• Over 60% of MCDB faculty who teach undergraduates are now participating actively with STFs on course transformation and materials development, including 90% of core course instructors.

• An additional 30% have interacted with STFs to some extent.

• Clickers with peer discussion are now used in all the MCDB core courses.

• Pre-/post-assessments are used in all but one MCDB core course.
Participating core-course faculty

Jennifer Martin (Intro)
Nancy Guild (Intro)
Ken Krauter (Genetics)
Tin Tin Su (Genetics)
Mark Winey (Genetics)
Michael Stowell (Molecular)
Greg Odorizzi (Cell)
Gia Voeltz (Cell)
Jenny Knight (Development)
Corrie Detweiler (Immunology)
Kevin Jones (Neurobiology)
Publications with SEI support


Submitted or in preparation


Smith, M.K., Wood, W.B., Krauter, K.A., Knight, J.K.: A combination of peer discussion and instructor explanation provides the most effective way for students to learn from in-class concept questions. *

Shi, J., Klymkowsky, M., Power, J. Bringing to light (and possibly illuminating) student thinking about experimental design and the role of controls. *

* See accompanying MCDB posters