ASBMB-RCN Meeting at Moravian College – 3 March 2012

Interests and Demographics of Attendees

The 31 Schools Represented at this Meeting

Albert Einstein College of Medicine  Lafayette College  Rutgers University
Albright College  Lycoming College  St. Lawrence University
Amherst College  Manhattanville College  Stony Brook University
Bloomsburg University of PA  Marymount Manhattan College*  The Commonwealth Medical College
Bloomsburg University of Pennsylvania  Moravian College  University of California Santa Barbara
DeSales University  Muhlenberg College  University of Delaware*
Drexel University College of Arts & Sciences  Ohio State University  University of Pittsburgh
Eastern University  Philadelphia College of Osteopathic Medicine  Villanova University
Haverford College  Princeton University  Washington College
Juniata College  Ramapo College of NJ*  Wilson College

*R_schools with ASBMB Undergraduate Affiliate Chapters

Membership Representation in Professional Societies

8 American Society for Biochemistry and Molecular Biology
8 American Chemical Society
1 Protein Society
15 Other Societies

Courses that Registrants Teach

23 Biochemistry  Physical Chemistry  Hemoglobin  Bioorganic Chemistry
7 Introductory Biology  Protein Structure & Fcn  Biophysical Chemistry  Human Disease
6 General Chemistry  Mol. Basis of Disease/Med  Evolution  Microbiology Nutrition
6 Molecular Biology  Environmental Chemistry  Genetics and Society  Metabolism
6 Organic Chemistry  Proteins & Biomaterials  RNA Metabolism  Immunology
3 Cell Biology  Conformation & Dynamics  Parasitology  Genetics

Topics registrants find difficult to teach or for students to understand

pH, pKa, buffers and AA protonation (7)
Enzyme kinetics (4)
Chemical logic of enzyme mech (4)
Binding and cooperativity (3)
Metabolism (3)
Metabolic Control (2)
Intermolecular interactions
Redox reactions
Membrane transport
Membrane potentials
Thermodynamics
Electron transport
Oxidative phosphorylation
H-bonding
Photosynthesis
Genes→proteins→metabolism
Cell cycle
Stereochemical configurations
Visualization of 3d in 2D
Restriction enzymes and cloning
## Interests and Demographics of Registrants for Moravian Meeting

### Teaching Practices used by Participants

<table>
<thead>
<tr>
<th>Practice</th>
<th>Yes</th>
<th>No</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lecture</td>
<td>33</td>
<td>1</td>
<td>2</td>
<td>0</td>
<td>2</td>
<td>6</td>
<td>22</td>
</tr>
<tr>
<td>Lab Instruction</td>
<td>27</td>
<td>7</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>6</td>
<td>19</td>
</tr>
<tr>
<td>Undergrad Res Training</td>
<td>25</td>
<td>8</td>
<td>2</td>
<td>0</td>
<td>2</td>
<td>5</td>
<td>15</td>
</tr>
<tr>
<td>PBL</td>
<td>16</td>
<td>16</td>
<td>1</td>
<td>2</td>
<td>5</td>
<td>7</td>
<td>5</td>
</tr>
<tr>
<td>POGIL</td>
<td>11</td>
<td>21</td>
<td>2</td>
<td>1</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>PLTL</td>
<td>7</td>
<td>24</td>
<td>2</td>
<td>1</td>
<td>4</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Case Studies</td>
<td>20</td>
<td>12</td>
<td>2</td>
<td>1</td>
<td>9</td>
<td>7</td>
<td>2</td>
</tr>
<tr>
<td>Service learning</td>
<td>1</td>
<td>30</td>
<td>4</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Portfolios</td>
<td>1</td>
<td>30</td>
<td>4</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Clickers</td>
<td>14</td>
<td>17</td>
<td>1</td>
<td>4</td>
<td>2</td>
<td>4</td>
<td>9</td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Assessment Methods Used

<table>
<thead>
<tr>
<th>Method</th>
<th>Yes</th>
<th>No</th>
<th>Exclusive</th>
<th>&gt;75%</th>
<th>&gt;50%</th>
<th>&gt;25%</th>
<th>&lt;25</th>
<th>Like Info</th>
</tr>
</thead>
<tbody>
<tr>
<td>Multiple-choice Exams</td>
<td>32</td>
<td>2</td>
<td>1</td>
<td>3</td>
<td>11</td>
<td>5</td>
<td>13</td>
<td>2</td>
</tr>
<tr>
<td>Essay Examinations</td>
<td>31</td>
<td>2</td>
<td>1</td>
<td>6</td>
<td>13</td>
<td>7</td>
<td>6</td>
<td>4</td>
</tr>
<tr>
<td>Standardized Exams</td>
<td>7</td>
<td>25</td>
<td>0</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>Concept Inventories</td>
<td>2</td>
<td>30</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>18</td>
<td>19</td>
</tr>
<tr>
<td>Concept mapping</td>
<td>8</td>
<td>24</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>9</td>
<td>16</td>
</tr>
<tr>
<td>Oral Examinations</td>
<td>7</td>
<td>27</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>4</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>Group Examinations</td>
<td>4</td>
<td>27</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>4</td>
<td>13</td>
</tr>
</tbody>
</table>

### Things registrants emphasize in teaching

<table>
<thead>
<tr>
<th>Emphasis</th>
<th>Rarely</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th>Strongly</th>
</tr>
</thead>
<tbody>
<tr>
<td>Facility with mathematics</td>
<td>6</td>
<td>2</td>
<td>9</td>
<td>12</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Writing clearly</td>
<td>3</td>
<td>0</td>
<td>9</td>
<td>15</td>
<td>6</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Construction of logical arguments</td>
<td>2</td>
<td>2</td>
<td>12</td>
<td>11</td>
<td>6</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interpretation of data</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>14</td>
<td>14</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Creating pictorial visual models by hand. (reactions/diagrams/graphs)</td>
<td>3</td>
<td>8</td>
<td>7</td>
<td>7</td>
<td>7</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>One or more molecular modeling programs in class</td>
<td>10</td>
<td>9</td>
<td>2</td>
<td>6</td>
<td>5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Molecular modeling in lab</td>
<td>11</td>
<td>4</td>
<td>5</td>
<td>3</td>
<td>7</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Molecular modeling take-home/out-of-class.</td>
<td>14</td>
<td>4</td>
<td>4</td>
<td>5</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>What platforms are you comfortable with?</td>
<td>Cn3D (2), UCSF Chimera (2), Jmol (4), PyMol (2), First Glance (2), Protein Explorer, Mac, NCBI structure, Swiss model, pdb viewer (2).</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Snippets from What do you hope to gain or learn by attending the meeting at Moravian?

- Shared knowledge of instructional strategies used and tested by other BMB educators.
- connections/networking with other Biochem/Mol Biol faculty to share/compare teaching strategies/pedagogies
- Discuss what skills and concepts should be prioritized for undergraduate students with others teaching the courses.
- become better acquainted with regional colleagues and hear about what others are doing!
- Strategies for implementing more student-centered active learning approaches in biochemistry curricula; approaches for effective assessment of student learning in biochemistry and molecular biology courses
- understand required and important concepts for biochemistry teaching for undergraduate and explore the ideas of better teaching pedagogical approaches for biochemistry education
- A clearer delineation and validation of core ideas in the undergraduate Biochemistry curriculum.
- To get a better sense of undergraduate preparation so that we can better position our graduate courses and learn more about new teaching methods and how they can be applied to biochemistry.
- Learn more about what kinds of foundations my students have from their undergraduate educations, and how they are accustomed to learning. Provide some insights that will help others who are teaching and advising pre-med students.
- Interested in concept inventories and non-lecture based pedagogical approaches.
- Interested in more ways to use active learning techniques to teach cell biology and biochemistry.
- Interested to meet peers at nearby schools. Interested in discussing what are the core concepts our students should learn and understand, and how we proposed to assess those best in the future.
- New approaches - New ideas.
- See how others teach, learn new teaching approaches, and get to know instructors.
- Dialogue with others about what to cover in a one-semester biochemistry course. New pedagogical approaches.
- Expand upon the techniques I use to teach Biochemistry. Find out what standards or benchmarks other institutions use to assess their Biochem majors. Network with other schools.
- Connecting with peers, teaching strategies for teaching metabolism, new laboratory ideas, and assessment techniques.
- Current teaching practice and emphasis of peer universities.
- Become familiar with non-lecture approaches. Learn about teaching technology such as clickers. Approaches to teaching and assessment that go beyond the traditional lecture and exam. Practical tips on how to implement PBL or POGIL.
- Pedagogical approaches. New ways to teach orgo, particularly in response to the new AAMC-HHMI guidelines. What are the basics students should learn and what tools/approaches can we use to effectively teach our students how to figure it out.
- Ways to get away from the lecture and have the students more invested in their own learning. Looking for any ideas - both in the teaching and in evaluation - that will make the students more active learners and ultimately move the class away from the lecture.
- Learning about new and innovative strategies to engage students in biochemistry and molecular biology education in the classroom and the laboratory.
- Update on current content and teaching strategies for biochem courses.
- New ideas for engaging students in the learning process.
- Learn what others are doing at their institutions. Get some feedback on work we are doing.
Interests and Demographics of Registrants for Moravian Meeting

- Learn more about what others consider to be core concepts and maybe contribute to the development of a set key concepts for biochemistry education. Learn more about assessment of student learning. Connect with other biochemistry educators in the region and perhaps share teaching materials and resources.
- Learning more about current practices in teaching biochemical topics.
- Intro to current trends and new ideas.
- Networking with other Biochem/Molecular Biol faculty, new ideas to implement.
- Innovative teaching methods. How to engage students in productive discussions/activities.
- Insights into how programs are developing.
- Gain an understanding of what the critical concepts are. Apply the foundations to learning those concepts in a laboratory setting (as well as deal with misconceptions).

Complied by Hal White
28 February 2012