

## **ASBMB Research C**

## Table of Contents

<b>Planning Timeline</b> .....	3
--------------------------------	---

## Planning Timeline

Timeline	Date	Done	Description
>6 weeks prior			<p>Determine your budget. An example budget is on page 4. Reserve the meeting room, A/V equipment, WiFi access and catering.</p> <p>Develop a list of local grad students, postdocs and faculty who may be interested in attending the workshop.</p> <p>Create a workshop website (<a href="#">click here</a> for example).</p> <p>Finalize the agenda and post on the website.</p>

## **Workshop Logistics**

### **The basics:**

- 1) Budget The ASBMB budgeted \$3,800 for each workshop. This includes up to \$1,000 in travel and lodging stipend for the











**Permission Form**  
**{Institution}**

## **Appendix I - Detailed Agenda**

I. Pre-workshop preparation    Workshop host and project PI or steering committee member  
    A.

- III. Decide Your Destiny activity (30 min) Facilitator TBD
- A. Pre-workshop preparation assign group moderators
  - B. Create small groups of 3-4 people (20 min)
    - 1. Attendees self-select their groups by the foundational concept area with which they wish to work
    - 2. Each group should end up with at least three people
    - 3. Each group selects their goal and objective. Refer to sample goals and objectives in Appendix II
    - 4. Moderators can round out a group if needed, but should not be the reporter. Moderators will thus be helping at least two small groups
  - C. Make introductions within small groups (5 min)
    - 1. Name, institution, courses taught
  - D. Select group member roles (5 min) -Moderators hit the highlights of the literature searching resource page
    - 1. Literature searcher to encourage evidence-based teaching
    - 2. Electronic submitter to capture workshop products using supplied templates
    - 3. Verbal reporter to communicate products to other attendees

### **Literature Resources**

Evidence is critical in any endeavor to create scientific teaching tools. What works? How do we know? What assumptions are in place? What are the limitations of the methods?

#### **How to search:**

CBE—Life Sciences Education (ASCB)

- K. D. Tanner (2013) Structure matters: Twenty-one teaching strategies to promote student engagement and cultivate classroom equity. *CBE—Life Sciences Education* 12:322-331, doi: 10.1187/cbe.13-06-0115.
- D. Allen (2012) Recent Research in Science Teaching and Learning. *CBE—Life Sciences Education* 11:351-352, doi: 10.1187/cbe.12-09-0167.

Journal of Chemical Education (ACS)

- J. P. Andre (2013) Opera and poison: A secret and enjoyable approach to teaching and learning chemistry. *Journal of Chemical Education* 90:352-357, doi: 10.1021/ed300445b.
- M. H. Towns (2010) Developing learning objectives and assessment plans at a variety of institutions: Examples and case studies. *Journal of Chemical Education* 87:91-96, doi: 10.1021/ed8000039.

Science (AAAS)

- D. C. Haak, J. HilleRisLambers, E. Pitre, and S. Freeman (2011) Increased structure and active learning reduce the achievement gap in introductory biology. *Science* 332:1213-1216, doi: 10.1126/science.1204820.
- A. Y. Zheng, J. K. Lawhorn, T. Lumley, and S. Freeman (2011) Increased structure and active learning reduce the achievement gap in introductory biology. *Science* 319:414-415, doi: 10.1126/science.1147852.

## Appendix II – Alignment Tables

The following is an example BMB alignment table. While an overall goal may imply multiple specific learning objectives, only one objective is exemplified below. Alignment tables typically summarize the assessments and strategies, which are described more fully outside the table or in a separate document. Attendees should focus on one objective at one . See the template on the next page.

### Example overall learning goal:

Students should understand the core concept of macromolecular structure and function, including the nature of biological macromolecules, factors that impact structure, the relationship between structure and function, interactions, and regulation of function.

### Example specific learning objective:

Students should be able to **discuss** the diversity and complexity of various biologically relevant macromolecules and macromolecular assemblies in terms of the basic repeating units of the polymer and the types of linkages between them.

### Example alignment table:

<b>Overall learning goal:</b> Students should understand the core concept of macromolecular structure, including the nature of biological macromolecules and factors that impact structure.		
<b>Specific learning objectives</b>	<b>Learning assessments</b>	<b>Learning strategies</b>
<p style="text-align: center;"><u>                    </u>-2:</p> <p>Students should be able to <b>compare and contrast</b> various biologically relevant macromolecules and macromolecular assemblies in terms of the basic repeating units of the polymer and the types of linkages between them.</p>	<p style="text-align: center;"><u>Written Exam</u> <u>Question</u> T/F or multiple choice (3 pts.)</p>	<p style="text-align: center;"><u>Pre-class reading</u> Biomolecular structure (1 participation pt.)</p>
<p style="text-align: center;"><u>                    </u>-4:</p> <p>Students should be able to <b>sketch</b> various biologically relevant macromolecules and macromolecular assemblies in terms of the basic repeating units of the polymer and the types of linkages between them.</p>	<p style="text-align: center;"><u>Written exam</u> <u>question</u> Sketch a polymer (monomers 2 pts.) (linkage 1 pts.)</p>	<p style="text-align: center;"><u>In-class group activity</u> Table of biomolecules Turn in one per group (5 participation pts.)</p>

                    -6:

Students should be able to **defend** classifications of ions

**BMB alignment table template:**

Please save your template as a separate working document for your group with the filename  
LocationAbbreviation\_LastNameA+LastNameB+LastNameC.docx  
(e.g. Alignment\_USD\_Garcia+Nguyen+Smith.docx)

**Designed by:**

Name of group member  
Name of group member  
Name of group member

**Selected BMB aspect:**

Homeostasis, evolution, data analysis and interpretation, scientific process (circle one)

**Keywords:**

Search terms relevant to your alignment

**Initial overall learning goal:**

Insert the goal that accompanies your selected objective in its initial form.

**Initial specific learning objective:**

Insert your selected objective in its initial form.

<b>Overall learning goal:</b> Insert refined goal	
<b>Specific</b>	

---



## References

- [1] J. T. Tansey, T. Baird, Jr., M. M. Cox, K. M. Fox, J. Knight, D. Sears, and E. Bell. (2013), Foundational Concepts and Underlying Theories for Majors in Biochemistry and Molecular Biology. *Biochemistry and Molecular Biology Education*. doi: 10.1002/bmb.20727.
- [2] H. B. White, M. A. Benore, T. F. Sumter, B. D. Caldwell, and E. Bell. (2013), What Skills Should Graduates of Undergraduate Biochemistry and Molecular Biology Programs Have Upon Graduation? *Biochemistry and Molecular Biology Education*. doi: 10.1002/bmb.20729.
- [3] A. Wright, J. Provost, J. A. Roecklein-Canfield, and E. Bell. (2013), Essential Concepts and Underlying Theories from Physics, Chemistry, and Mathematics for Biochemistry and Molecular Biology Majors. *Biochemistry and Molecular Biology Education*. doi: 10.1002/bmb.20728.
- [4] J. Handelsman, S. Miller, C. Pfund (2006) *Scientific Teaching*, W. H. Freeman and Co.
- [5] G. WBqib0ETBT9b0E81 0 0 1 295.97 481.75 Tm[(S)] TJT29 0 0 1 86.064 uate s-10(a Bi1 by D0 1 334.ig1