Effectively Assessing Laboratory and Research Skills

Planning for the Future
Pre-workshop Assignment

• Access and assess appropriate scientific literature. Develop hypotheses and propose appropriate experiments to test them.
• Use databases and bioinformatics tools.
• Design and conduct experiments and to record/archive the data appropriately.
• Use appropriate data analysis and interpret the results of experiments.
• Present the overall goals and detailed results of experiments in a variety of formats to a variety of audiences.
• Work safely, both alone and in an effective team.
• Summarize and convey information orally, visually, and in writing.
• Recognize and understand the ethical issues involved in both the conduct of research and in the dimensions of research.
A Consensus List of Skills to Guide Assessment

• 3 Broad Conceptual Areas:
  – Process of Science
    • Can develop a hypothesis, design and conduct appropriate Experiments
    • Is able to analyze and interpret data using appropriate quantitative modeling and simulation tools
  – Communication and Comprehension of Science
    • Can Access, Assess and Use Available Information
    • Is able to present scientific data in an appropriate context and in a variety of ways at different levels
  – Community of Practice Aspects of Science
    • Appreciates the opportunities for interdisciplinary collaboration and the ethical dimensions of science
    • Can work safely alone and in an effective team

What Skills Should Students of Undergraduate Biochemistry and Molecular Biology Programs Have Upon graduation?
Harold B. White, Marilee A. Benore, Takita F. Sumter, Benjamin D. Caldwell and Ellis Bell
Individual Plans for 2013-14
Workshop Plans for 2013-14
Promoting Concept Driven Teaching Strategies in BMB through Concept Assessments
Tuesday, April 23, 2013, 9:55 am - 12:10 pm
Session Chair Ellis Bell, Univ of Richmond

Project update
Ellis Bell, Univ of Richmond

Will this be on the test? Characterizing cognitive skills of undergraduate science assessments
Jennifer Momsen, North Dakota State Univ

Problem solving in biochemistry: Assessment, learning strategies, and preconceptions
Cheryl Sensibaugh, Univ of New Mexico

Biochemistry students’ misconceptions regarding enzyme-substrate interactions
Kim Linenberger, Iowa State University

Assessing student development of scientific thinking skills using the EDAT and ADAT: The Experimental Design and Analysis of Data Ability Tests
Karen Sirum, Bowling Green State Univ

General discussion
Moderated by Ellis Bell
STUDENT-CENTERED EDUCATION IN THE MOLECULAR LIFE SCIENCES

August 4–7, 2013 • Seattle University, Seattle, Wa.

ORGANIZERS

Vicky Minderhout and Jennifer Loertscher, Seattle University

This symposium will bring together a diverse community of educators and scientists to explore strategies to improve teaching and learning in biochemistry and molecular biology. The major goals of the symposium will be to share educational resources and to help participants develop their skills as teachers and educational scholars.

Register For This Event
Submit Abstract

The symposium will be highly interactive with most sessions involving active participation and reflection. A poster session, structured birds-of-a-feather sessions, and open networking time will be included to foster community building and sharing of resources among participants.

SESSIONS

Teaching for Knowledge and Skills Development
Using Assessment to Promote Deep Learning
Using Student Learning Data to Support Course Design
Strengthening the Future of Biochemistry and Molecular Biology through Improvements in the Education Pipeline

POSTER SESSION

Attendees are encouraged to submit a poster to showcase their work related to BMB teaching, undergraduate research projects, education research, or outreach.
UNDERGRADUATE AFFILIATE NETWORK (UAN)

The ASBMB Undergraduate Affiliate Network (UAN) is a national organization comprised of university-based chapters dedicated to the advancement of undergraduate research, research-based undergraduate education, and K-12 outreach in biochemistry and molecular biology.

The ASBMB UAN offers undergraduate students and faculty an opportunity to connect with each other and their local communities by providing a variety of regional and national networking opportunities such as seminar, conferences and research opportunities, Travel Awards (for students and faculty) to attend the ASBMB Annual Meeting and participation in the Undergraduate Poster Competition, career resources and professional development opportunities. Affiliated programs may organize local chapters of the ASBMB National Honor Society, XΩΛ, and students can be nominated for election to the International Chapter of XΩΛ. Start a chapter on your campus.

GOALS OF THE UAN

- To assist in the development of strong undergraduate programs in biochemistry and molecular biology.
- To provide undergraduate programs with access to seminar speakers and regional programs and symposia.
- To foster interactions between undergraduate educational and outreach programs both regionally and nationally.
- To recognize outstanding educational activities in the area of biochemistry and molecular biology by individuals and by programs.

ADVANTAGES OF JOINING THE UAN

Student Benefits

- Membership to ASBMB
- Free online subscriptions to the Journal of Biological Chemistry (JBC), Molecular & Cellular Proteomics (MCP) and the Journals of Lipid Research (JLR)
- Free subscription to the Society monthly magazine, ASBMB Today
- Free subscription to the UAN online newsletter Enzymatic
- Eligible for $400 Travel Awards to attend the ASBMB Annual Meeting and the Undergraduate Student Poster Competition
- UAN exclusive awards and scholarships: Undergraduate Research Awards, Outreach Support Award, Outstanding Chapter Award, 7-12 Teacher Summer Research Award and more.
- Election into the ASBMB National Honor Society
- Career Resources - employment, grant and internship opportunities
ASBMB DEGREE CERTIFICATION PROGRAM IN BIOCHEMISTRY AND MOLECULAR BIOLOGY

Welcome! For the past two years, the volunteers listed below have worked diligently to develop a program for certifying bachelor's degrees in biochemistry, molecular biology, and related subjects. Our objective has been to devise an accreditation program that serves the needs of both students and faculty. Clicking on the link below will take you to a document describing the version 1.0 of the program, including instructions for how your institution can apply to participate.

The goals of the ASBMB degree certification program are to provide:

1. A national, outcomes-based mechanism by which students receiving a B.S. or B.A. in Biochemistry & Molecular Biology or closely related majors are given an opportunity to have their degree certified by The American Society for Biochemistry and Molecular Biology (ASBMB).
2. A vehicle for recognizing undergraduate BMB programs whose features and infrastructure fulfill the basic expectations of the ASBMB.
3. Access to an independently constructed and scored instrument for assessing student achievement and program effectiveness.

The success of this program, and its continued development and improvement, depends on buy-in from you and other educators. Thank you for your interest. We look forward to both your feedback and your participation.

ASBMB DEGREE CERTIFICATION WORKING GROUP
Cheryl Bailey, HHMI
Suzanne Barbour, Virginia Commonwealth University
J. Ellis Bell, University of Richmond
Benjamin Caldwell, Missouri Western State University
Peter J. Kennedy, Virginia Tech
Debra Martin, St. Mary's University of Minnesota
Joseph Provost, San Diego University
Quinn Yenga, Montclair State University
Adelle Wolfson, Wesleyan University

Download the full Accreditation Program Description.

Click here to submit.
ASBMB DEGREE CERTIFICATION PROGRAM IN BIOCHEMISTRY AND MOLECULAR BIOLOGY

Welcome! For the past two years, the volunteers listed below have worked diligently to develop a program for certifying bachelor’s degrees in biochemistry, molecular biology, and related subjects. Our objective has been to devise an accreditation program that serves the needs of both students and faculty. Clicking on the link below will take you to a document describing the version 1.0 of the program, including instructions for how your institution can apply to participate.

The goals of the ASBMB degree certification program are to provide:

1. A national, outcomes-based mechanism by which students receiving a B.S. or B.A. in Biochemistry & Molecular Biology or closely related major are given an opportunity to have their degree certified by The American Society for Biochemistry and Molecular Biology (ASBMB).
2. A vehicle for recognizing undergraduate BMB programs whose features and infrastructure fulfill the basic expectations of the ASBMB.
3. Access to an independently constructed and scored instrument for assessing student achievement and program effectiveness.

The success of this program, and its continued development and improvement, depends on buy-in from you and other educators. Thank you for your interest. We look forward to both your feedback and your participation.

ASBMB DEGREE CERTIFICATION WORKING GROUP
Cheryl Bailey, HHMI
Suzanne Barbour, Virginia Commonwealth University
J. Ellis Bell, University of Richmond
Benjamin Caldwell, Missouri Western State University
Peter J. Kennedy, Virginia Tech
Debra Martin, St. Mary’s University of Minnesota
Joseph Provost, San Diego University
Quinn Yenga, Montclair State University
Adelle Wolfson, Wesleyan University

Download the full Accreditation Program Description.
ASBMB DEGREE CERTIFICATION PROGRAM IN BIOCHEMISTRY AND MOLECULAR BIOLOGY

Welcome! For the past two years, the volunteers listed below have worked diligently to develop a program for certifying bachelor’s degrees in biochemistry, molecular biology, and related subjects. Our objective has been to devise an accreditation program that serves the needs of both students and faculty. Clicking on the link below will take you to a document describing the version 1.0 of the program, including instructions for how your institution can apply to participate.

The goals of the ASBMB degree certification program are to provide:

1. A national, outcomes-based mechanism by which students receiving a B.S. or B.A. in Biochemistry & Molecular Biology or closely related majors are given an opportunity to have their degree certified by The American Society for Biochemistry and Molecular Biology (ASBMB).
2. A vehicle for recognizing undergraduate BMB programs whose features and infrastructure fulfill the basic expectations of the ASBMB.
3. Access to an independently constructed and scored instrument for assessing student achievement and program effectiveness.

The success of this program, and its continued development and improvement, depends on buy in from you and other educators. Thank you for your interest. We look forward to both your feedback and your participation.

ASBMB DEGREE CERTIFICATION WORKING GROUP
Cheryl Bailey, HHMI
Suzanne Barbour, Virginia Commonwealth University
J. Ellis Bell, University of Richmond
Benjamin Caldwell, Missouri Western State University
Peter J. Kennedy, Virginia Tech
Debra Martin, St. Mary’s University of Minnesota
Joseph Provost, San Diego University
Quinn Yenga, Montclair State University
Adelle Wolfsen, Wesleyan University

Click here to submit
Download the full Accreditation Program Description.
ASBMB DEGREE CERTIFICATION PROGRAM IN BIOCHEMISTRY AND MOLECULAR BIOLOGY

Welcome! For the past two years, the volunteers listed below have worked diligently to develop a program for certifying bachelor's degrees in biochemistry, molecular biology, and related subjects. Our objective has been to devise an accreditation program that serves the needs of both students and faculty. Clicking on the link below will take you to a document describing the version 1.0 of the program, including instructions for how your institution can apply to participate.

The goals of the ASBMB degree certification program are to provide:

1. A national, outcomes-based mechanism by which students receiving a B.S. or B.A. in Biochemistry & Molecular Biology or closely related major are given an opportunity to have their degree certified by The American Society for Biochemistry and Molecular Biology (ASBMB).
2. A vehicle for recognizing undergraduate BMIB programs whose features and infrastructure fulfill the basic expectations of the ASBMB.
3. Access to an independently constructed and scored instrument for assessing student achievement and program effectiveness.

The success of this program, and its continued development and improvement, depends on buy-in from you and other educators. Thank you for your interest. We look forward to both your feedback and your participation.

ASBMB DEGREE CERTIFICATION WORKING GROUP
Cheryl Bailey, HHMI
Suzanne Barbour, Virginia Commonwealth University
J. Ellis Bell, University of Richmond
Benjamin Caldwell, Missouri Western State University
Peter J. Kennedy, Virginia Tech
Debra Martin, St. Mary's University of Minnesota
Joseph Provost, San Diego University
Quinn Yenga, Montclair State University
Addie Wolfson, Wesleyan University

Download the full Accreditation Program Description.