



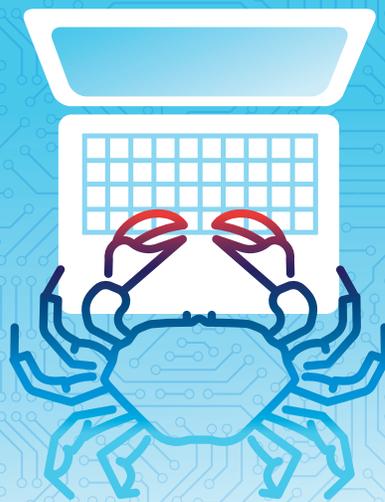
ONLINE Professional Development Conference

PROGRAM GUIDE





2020
PROFESSIONAL
DEVELOPMENT
CONFERENCE



NABT2020/ONLINE
NOVEMBER 2020

Special Thanks

NABT thanks these organizations for their generous support of activities at the 2020 Professional Development Conference.

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FROM THE PRESIDENT

Dear NABT Members and Colleagues,

The strength of NABT has always been the members and this is especially true in 2020. While the pandemic has changed the way we do things, it has also highlighted the value of our organization and the needs that we meet.

At the start of the pandemic, biology teachers looked to NABT for resources and teaching tips. In turn, NABT curated resources to share on our website, provided free access to *The American Biology Teacher* archive, and we hosted several webinars and online events. All of these resources have been well used and appreciated by our community.

In the late Spring, the NABT Board of Directors made the decision to move our annual conference online. Protecting the health and safety of the NABT community is our top priority, and hosting an online conference enables NABT to still provide hours of informative sessions to hundreds of teachers. Even though the NABT community cannot meet in-person in 2020, we are still excited to offer the same high-quality speakers, sessions, and special events that are the hallmark of the NABT Conference during our first-ever NABT Virtual Conference.

2020 may have changed the way NABT does things, but it did not change what we do or who we serve.

Thank you for being part of this amazing community of educators and for your continued support of NABT,



A handwritten signature in black ink that reads "Sharon Gusky". The signature is fluid and cursive.

Sharon Gusky
NABT President
2020

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ABOUT THE PROFESSIONAL DEVELOPMENT CONFERENCE

All functions, meetings, and exhibits will take place on the NABT Virtual Conference Platform unless otherwise noted. Please consult this guide for more information.

ABOUT ACCESSIBILITY

Careful consideration is made during the planning of the NABT Conference to make it accessible to all participants. Should you require special services, please go to the registration area to contact an NABT representative. We will strive to meet your needs.

CERTIFICATE OF ATTENDANCE

See page 47.

NABT HELP DESK

NABT will have a manned HELP DESK during the live dates of the conference. If you should need assistance after January 7th, please contact NABT directly.

FUTURE NABT CONFERENCE DATES & SITES

2021 Professional Development Conference
November 11–14, 2021
Atlanta Marriott Marquis
Atlanta, GA

2022 Professional Development Conference
November 10–13, 2022
JW Marriott Indianapolis
Indianapolis, IN

2023 Professional Development Conference
November 2–5, 2023
Baltimore Marriott Waterfront
Baltimore, MD



2020 NABT CONFERENCE APP

Search for NABT when you visit the App Store and Google Play to download the app and start using it today!



USE #NABT2020 TO TWEET ABOUT THE EVENT!

ABOUT NABT

The National Association of Biology Teachers (NABT) is the leader in life science education.™ Our association is the largest national organization dedicated exclusively to supporting biology and life science educators. Our members—representing all grade levels—teach more than one million students each year! Learn more by visiting www.NABT.org.

VISITING THE EXHIBIT HALL

The NABT Exhibit Hall is your venue to interact with a variety of curriculum developers, equipment manufacturers, non-profit partners, and other organizations with resources to benefit you as a biology educator.

The Exhibit Hall will be accessible when the online platform is live, but we also have some designated hours for you to connect online with each exhibitor.

THURSDAY, NOVEMBER 5

5:00 PM – 8:00 PM EST

FRIDAY, NOVEMBER 6

9:00 AM – 6:30 PM EST

SATURDAY, NOVEMBER 7

8:30 AM – 4:00 PM EST



Providing Session Feedback

All education sessions are reviewed by the NABT Professional Development Committee for acceptance. Help us ensure you see great sessions at the NABT Conference by sharing your comments at <https://www.surveymonkey.com/r/2020sessionfeedback>



Phone: (888) 501-NABT
E-mail: office@NABT.org
Website: www.NABT.org

NABT

BioClub



MEMBERS

American International School of Muscat, North Chesterfield, VA
Arcadia High School, Phoenix, AZ
Archbishop Curley High School, Baltimore, MD
Arroyo High School, San Lorenzo, CA
Athens High School, Troy, MI
Ayala High School, Chino Hills, CA
The Barstow School, Kansas City, MO
Bethlehem High School, Bardstown, KY
Bishop Garcia Diego High School, Santa Barbara, CA
Brentwood Academy, Brentwood, TN
Broad River Elementary, Beaufort, SC
Canadian Valley Technical Center, OK
Caney Valley High School, Ramona, OK
Cardinal Gibbons High School, Raleigh, NC
Carrboro High School, Carrboro, NC
Castle Park High School, Chula Vista, CA
Center for Advanced Professional Studies, Overland Park, KS
Central Carolina Technical College, Sumter, SC
Central Falls High School, Central Falls, RI
Central Magnet School, Murfreesboro, TN
Charleston High School, Greenup, IL
Chelan High School, Chelan, WA
Chester High School, Chester, PA
Clayton High School, Clayton, MO
Colonia High School, Colonia, NJ
Coronado High School, Colorado Springs, CO
Cuyohoga Community College, Macedonia, OH
Darnell-Cookman School of the Medical Arts, Jacksonville, FL
DeVry Advantage Academy, Chicago, IL
Dora R-III School, Dora, MO
Dougherty Valley High School, San Ramon, CA

Eastern Mennonite High School, Harrisonburg, VA
El Centro College, Dallas, TX
Emmett High School, Emmett, ID
Fairhaven High School, Fairhaven, MA
Florida SouthWestern State College, Naples, FL
Freedom High School, Freedom, WI
George Washington High, Charleston, WV
Gillette College, Gillette, WY
Grafton High School, Grafton, WI
Grand View University, De Moines, IA
Greater Lowell Technical High School, Tyngsborough, MA
Greater New Bedford Regional Vocational Technical High School, New Bedford, MA
Greensburg Salem High School, Greensburg, PA
Harmony School in Innovation, Katy, TX
Heathwood Hall Episcopal School, Columbia, SC
Hillsboro High School, Hillsboro, OR
Hilltop High School, Chula Vista, CA
Holt High School, Holt, MI
The Independent School, Wichita, KS
Kenmore West High School, Buffalo, NY
Kent County High School, Worton, MD
Kettle Run High School, Nokesville, VA
Lake Metroparks, Concord, OH
Lakeville North High School, Lakeville, MN
Lexington High School, Mansfield, OH
Los Fresnos High School, Los Fresnos, TX
Martin Luther College, New Ulm, MN
Mary Persons High School, Forsyth, GA
Marysville High School, Marysville, KS
Metropolitan Community College, Omaha, NE
Midland Park High School, Midland Park, NJ
Minnetonka High School, Minnetonka, MN

Moscow High School, Moscow, ID
Mount Abraham Union High School, Bristol, VT
Nassau Community College, Garden City, NY
Palm Tree School, Fairfax, VA
Panorama High School, Panora, IA
Perkins High School, Sandusky, OH
Pike High School Freshman Center, Indianapolis, IN
Pikeview High School, Princeton, WV
Putnam City High School, Oklahoma City, OK
Riverside City College, Riverside, CA
Salem High School, Salem, IN
Saltsburg High School, Saltsburg, PA
Seabury Hall, Makawao, HI
Seneca East High School, Attica, OH
Sherando High School, Winchester, VA
Skyline High School, Sammamish, WA
Snow College, Ephraim, UT
Southeast Community College, Lincoln, NE
Southern Wells High School, Poneto, IN
St. Andrew's Episcopal School, Potomac, MD
St. Clair High School, St. Clair, MI
State Library of PA, Lykens, PA
Stillwater High School, Stillwater, OK
The Summit County Day School, Cincinnati, OH
Sunlake High School, Land O'Lakes, FL
Tiffin Columbian High School, Tiffin, OH
Unionville High School, Kennett Square, PA
University Christian High School, Hickory, NC
Valley View High School, Archbald, PA
Vincennes University, Vincennes, IN
Visitation Academy - Saint Louis, St. Louis, MO
West Mifflin Area High School, West Mifflin, PA
Worthington Christian High School, Worthington, OH
York Community High School, Marion, IL

The mission of the NABT BioClub is to recruit, support, nurture, and promote students who have an interest in biological sciences for personal reasons, academic preparation, the betterment of society, and possible career opportunities by providing guidance, resources, and activities to meet these goals.

Look for the BioClub logo to indicate recommended articles for NABT BioClub members. If you are interested in forming a chapter of the NABT BioClub, contact NABT at office@nabt.org.

Sponsored by

CAROLINA
www.carolina.com

FRIDAY November 6

PLENARY SPEAKER

Ayana Elizabeth Johnson, Ph.D.

Ocean Collectiv, Washington, DC

Ayana Elizabeth Johnson, Ph.D. is a marine biologist, policy expert, writer, and Brooklyn native. She is founder of Urban Ocean Lab, a think tank for coastal cities, and founder and CEO of Ocean Collectiv, a consulting firm for conservation solutions. Previously, as executive director of the Waitt Institute, Dr. Johnson co-founded the Blue Halo Initiative and led the Caribbean's first successful island-wide ocean zoning effort. She also developed ocean policy at the EPA and NOAA, and was a leader of the *March for Science*.

Dr. Johnson earned a B.A. from Harvard University in environmental science and public policy, and a Ph.D. from Scripps Institution of

Oceanography in marine biology, with a dissertation on the ecology, socio-economics, and policy of sustainably managing coral reefs. The fish trap she invented to reduce bycatch won the first Rare/National Geographic Solution Search.

Her op-eds have been published in *The New York Times*, *Washington Post*, *Los Angeles Times*, and *The Guardian*, and she blogs on *Scientific American*. She was named one of *ELLE's* 27 Women Leading on Climate. *Outside Magazine* called her "the most influential marine biologist of our time."



INVITED SPEAKER

Ann Reid

Executive Director, National Center for Science Education
Oakland, CA

Ann Reid became the executive director of NCSE in 2014. For 15 years she worked as a research biologist at the Armed Forces Institute of Pathology, where she was responsible for sequencing the 1918

flu virus. She served as a Senior Program Officer at the NRC's Board on Life Sciences for five years and most recently, as director of the American Academy of Microbiology.



SCOTT WILLIAMSON SPEAKER SERIES

Orley “Chip” Taylor, Ph.D.

Director, Monarch Watch

Professor Emeritus, Department of Ecology & Evolutionary Biology
University of Kansas, Lawrence, KS

Trained as an insect ecologist, Dr. Chip Taylor has published papers on species assemblages, hybridization, reproductive biology, population dynamics, and plant demographics and pollination. Starting in 1974, Chip Taylor established research sites and directed students studying Neotropical African honey bees (killer bees) in French Guiana, Venezuela, and Mexico. In 1992, as the bee research was coming to an end, Taylor founded Monarch Watch, an outreach program focused on education, research, and conservation relative to monarch butterflies. For the last 18 years, Monarch Watch has

enlisted the help of volunteers to tag monarchs during the fall migration. This program has produced many new insights into the dynamics of the monarch migration. Four years ago, in recognition that habitats for monarchs are declining at a rate of 6,000 acres a day in the United States, Monarch Watch created the Monarch Waystation program. The goal of this program is to inspire the public, schools, and others to create habitats for monarch butterflies and to assist Monarch Watch in educating the public about the decline in resources for monarchs, pollinators, and all wildlife that share the same habitats.

HHMI NIGHT AT THE MOVIES: *INVENTING TOMORROW***Laura Nix**Director, Writer, and Producer
Los Angeles, CA

Laura Nix is a director, writer and producer working in non-fiction and fiction. Her short film, *WALK RUN CHA-CHA*, was nominated for a 2020 Academy Award for Best Documentary Short Subject, and *The New York Times* series, *FROM HERE TO HOME*, in which the film appears, was nominated for a 2020 News and Documentary Emmy. Her feature documentary *INVENTING TOMORROW* won a 2019 Peabody Award. Laura also directed the feature documentaries *THE YES MEN ARE REVOLTING*, *THE LIGHT IN*

HER EYES, and *WHETHER YOU LIKE IT OR NOT: THE STORY OF HEDWIG*, as well as the award-winning fiction feature *THE POLITICS OF FUR*. She was named a 2018 Chicken & Egg Breakthrough Filmmaker and was awarded the Sundance Institute/Discovery Impact Fellowship in 2017. Raised in New York state and based in Los Angeles, Laura is a film expert for the U.S. State Department’s American Film Showcase and a member of the Academy of Motion Picture Arts and Sciences.



SATURDAY November 7

INVITED SPEAKER

Neil Lamb, Ph.D.

Vice President for Educational Outreach

HudsonAlpha Institute for Biotechnology, Huntsville, AL

As the vice president for educational outreach at the HudsonAlpha Institute for Biotechnology, Neil Lamb, Ph.D., unites the two subjects for which he has the most passion: education and science.

Lamb completed his Ph.D. and postgraduate training at Emory University in Atlanta where he was a faculty member in human genetics

and responsible for lab management, bioethics oversight, and genetic education in the school of medicine. His career shifted from hands-on science to science education when he realized that he had found his true calling: inspiring a passion for human genetics and technology in others. He joined HudsonAlpha in 2006 to lead the educational outreach team.



BOARD OF DIRECTORS

President: **Sharon Gusky**
 President-Elect: **Julie Angle**
 Past President: **Sherry Annee**
 Secretary/Treasurer: **Steven Christenson**
 Director-at-Large: **Lindsey Fields**
 Director-at-Large: **Cindy Gay**
 Director/Coordinator: **Anna Hiatt**
 Director/Coordinator: **Madelene Loftin**

Executive Director: **Jaclyn Reeves-Pepin**

REGIONAL COORDINATORS

Region I (CT, ME, MA, NH, RI, VT): **Todd Ryan**
 Region II (DE, DC, MD, NJ, NY, PA, VA): **Karen Lucci**
 Region III (IL, IN, MI, OH, WI): **Kevin English**
 Region IV (IA, KS, MN, MO, NE, ND, SD): **Anna Hiatt**
 Region V (KY, NC, SC, TN, WV): **Kim Sadler**
 Region VI (AL, FL, GA, LA, MS, PR): **Madelene Loftin**
 Region VII (AZ, AR, NM, OK, TX): **Kristy Daniel**
 Region VIII (CO, ID, MT, NV, UT, WY): **Cindy Gay**
 Region IX (AK, CA, HI, OR, WA, Pacific Territories):
Camden Hanzlick-Burton
 Region X (Canadian Provinces & Territories): **Patrick Wells**

SECTION CHAIRS

NABT BioClub: **Ashlie Gowitzka**
 AP Biology Section: **Mark Little**
 Four-Year College & University Section: **Erin Baumgartner**
 Two-Year College Biology Section: **Andrew Corless**

COMMITTEE CHAIRS

ABT Journal Advisory Committee: **William McComas**
 Archival Committee: **Vacant**
 Awards Committee: **Jason Crean**
 Equity & Inclusion Committee: **Vacant**
 Finance Committee: **Steven Christenson**
 Honorary Membership Committee: **Julie Angle**
 Informal Science Education Committee: **Vacant**
 Member Resources Committee: **Catherine Ambros**
 Nominating Committee: **Bob Melton**
 Past President Advisory Council: **Julie Angle**
 Professional Development Committee: **Ryan Reardon**
 Retired Member Committee: **Dennis Gathmann**

BOARD APPOINTED REPRESENTATIVES

OBTA National Coordinator: **Mark Little**
 Introductory Biology Task Force: **Anna Hiatt & Cindy Gay**
 Social Media Task Force: **John M. Moore & Stacey Kiser**
 Pre-Service Teacher Advisory Committee: **Julie Angle**

AFFILIATE MEMBERS

Biology Teachers Association of New Jersey (**BTANJ**)
 Colorado Biology Teachers Association (**CBTA**)
 Cleveland Regional Association of Biologists (**CRABS**)
 Connecticut Association of Biology Teachers (**CTABT**)
 Delaware Association of Biology Teachers (**DABT**)
 Empire State Association of Two-Year College Biologists (**ESATYCB**)
 Hong Kong Association of Biology Teachers (**HKABT**)
 Illinois Association of Biology Teachers (**IABT**)
 Illinois Association of Community College Biologists (**IACCB**)
 Indiana Association of Biology Teachers (**IABT**)
 Kansas Association of Biology Teachers (**KABT**)
 Louisiana Association of Biology Teachers (**LABT**)
 Massachusetts Association of Biology Teachers (**MABT**)
 Michigan Association of Biology Teachers (**MABT**)
 Mississippi Association of Biology Educators (**MSABE**)
 Missouri Association of Biology Teachers (**MOBioTA**)
 New York Biology Teachers Association (**NYBTA**)
 South Carolina Association of Biology Teachers (**SCABT**)
 Texas Association of Biology Teachers (**TABT**)
 Tennessee Association of Biology Teachers (**TNABT**)
 Virginia Association of Biology Teachers (**VABT**)

NABT AWARDS PROGRAM

BIOCLUB STUDENT AWARDS

Natalie Fullerman
Lake Metroparks, Concord, OH

Aubrey Ukena
Snow College, Ephraim, UT

Outstanding student members of a NABT BioClub are eligible for this textbook scholarship, with one student from a BioClub high school chapter and one student from a community college chapter being eligible each year.

Sponsored by Carolina Biological Supply Company

BIOLOGY EDUCATOR LEADERSHIP SCHOLARSHIP (BELS)

Adronisha Frazier
Louisiana State University, Baton Rouge, LA

The Biology Educator Leadership Scholarship (BELS) supports teachers who are furthering their education in the life sciences or science education. The award recipient is a practicing educator who has been accepted into a graduate program at a Masters or Doctoral level.

Sponsored by NABT Member Donations

DISTINGUISHED SERVICE AWARD

Not awarded in 2020

Established in 1988 to commemorate the 50th anniversary of the NABT, the Distinguished Service Award is presented to a nationally recognized individual who has made major contributions to biology education through his or her research, writing, and teaching.

Sponsored by the National Association of Biology Teachers

ECOLOGY/ENVIRONMENTAL SCIENCE TEACHING AWARD

Tara Alcorn
Greater Lowell Technical High School,
Tyngsborough, MA

This award recognizes a middle or high school teacher who has successfully developed and demonstrated an innovative approach in the teaching of ecology/environmental science and has carried their commitment to the environment into the community.

Sponsored by Vernier Software and Technology

EVOLUTION EDUCATION AWARD

Glenn Branch
National Center for Science Education,
Oakland, CA

This award recognizes innovative classroom teachers and their efforts to promote the accurate understanding of biological evolution within the larger community.

Sponsored by BEACON and BSCS

FOUR-YEAR COLLEGE & UNIVERSITY SECTION BIOLOGY TEACHING AWARD

Kelly Hogan
University of North Carolina, Chapel Hill, NC

This award recognizes creativity and innovation in undergraduate biology teaching, including curriculum design, teaching strategies, and laboratory utilization that have been implemented and demonstrated to be effective.

Sponsored by NABT's Four-Year College & University Section

FOUR-YEAR COLLEGE & UNIVERSITY SECTION RESEARCH IN BIOLOGY EDUCATION AWARD

Amanda Glaze-Crampes
Georgia Southern University

Recognizing innovation in research that furthers our understanding of undergraduate biology teaching, this award is given to an individual who displays creativity in scholarship and research in biology education.

Sponsored by NABT's Four-Year College & University Section

GENETICS EDUCATION AWARD

Elizabeth Forrester
Baylor School, Chattanooga, TN

This award recognizes innovative, student-centered classroom instruction that promotes the understanding of genetics and its impact on inheritance, health, and biological research.

Sponsored by ASHG and GSA

HONORARY MEMBERSHIP

Bob Melton
Putnam City Schools, Oklahoma City, OK

The highest honor from the association, the Honorary Membership recognizes those individuals who have achieved distinction in teaching, research, or service in the biological sciences and designates them lifetime members of NABT.

Sponsored by the National Association of Biology Teachers

JENNIFER PFANNERSTILL TRAVEL AWARD

Nicole Werner
Interboro High School, Prospect Park, PA

Established to honor the memory of Jennifer Pfannerstill, this award is a need-based scholarship to support a teacher who has demonstrated a commitment to personal and professional development by helping that individual attend the NABT Conference for the first time.

Sponsored by NABT & Private Donations

THE KIM FOGLIA AP® BIOLOGY SERVICE AWARD

Chris Monsour
Tiffin Columbian High School, Tiffin, OH

The Kim Foglia AP® Biology Service Award recognizes an AP® Biology teacher who displays a willingness to share materials, serves as a mentor to both students and professional colleagues, creates an innovative and student centered classroom environment, and exemplifies a personal philosophy that encourages professional growth as a teacher and member of the AP® community.

Sponsored by the Neil A. Campbell Educational Trust and Pearson

OUTSTANDING BIOLOGY TEACHER AWARD (OBTA)

See the full OBTA listing for 2020 Honorees

For over 50 years, the Outstanding Biology Teacher Award (OBTA) honors outstanding biology educators from grades 7-12 who are judged on their teaching ability and experience, cooperativeness in the school and community, creativity, inventiveness, initiative, and student-teacher relationships.

Sponsored by Carolina Biological Supply Company, with special consideration from Bio-Rad Laboratories, the Botanical Society of America, Flinn Scientific, The MiniOne System, PASCO Scientific, and Population Connection.

OUTSTANDING NEW BIOLOGY TEACHER ACHIEVEMENT AWARD

Matt Holden
Fayetteville High School, Fayetteville, AR

This award recognizes outstanding teaching in grades 7-12 by a "new" biology/life science instructor within their first three years of teaching biology who has developed an original and outstanding program or technique while also making a contribution to the profession at the start of their career.

Sponsored by the Neil A. Campbell Educational Trust and Pearson

PROF. CHAN TWO-YEAR COLLEGE AWARD FOR THE ENGAGED TEACHING OF BIOLOGY

Not awarded in 2020

This award recognizes a two-year college faculty member who has successfully developed and demonstrated an innovative, hands-on approach in the teaching of biology and has carried their commitment into the community to promote biology education.

Sponsored by Sarah McBride and John Melville

THE RON MARDIGIAN BIOTECHNOLOGY TEACHING AWARD

Not awarded in 2020

This award recognizes a secondary school teacher or undergraduate college biology instructor who demonstrates outstanding and creative teaching of biotechnology by incorporating active laboratory work in the classroom.

Sponsored by Bio-Rad Laboratories

TWO-YEAR COLLEGE BIOLOGY TEACHING AWARD

Heather Seitz
Johnson County Community College,
Overland Park, KS

This award recognizes a two-year college biology educator who employs new and creative techniques to demonstrate excellence in teaching and scholarship through publications, teaching strategies, curriculum design, or laboratory utilization.

Sponsored by NABT's Two-Year College Section and Cell Zone, Inc.



Outstanding Biology Teacher Award

For over 50 years the National Association of Biology Teachers has been committed to recognizing outstanding biology teachers.

THE OUTSTANDING BIOLOGY TEACHER AWARD IS PROUDLY SPONSORED BY:

CAROLINA[®]
www.carolina.com

Other consideration provided by Bio-Rad Laboratories, the Botanical Society of America, miniPCR, and Population Connection.

THANK YOU TO OBTA DIRECTORS

NABT would like to thank our OBTA Directors, whose ongoing commitment to this program has helped NABT present the award to thousands of outstanding teachers.



OBTA HONOREES 2020

Region I

Julie Boehm

Wellesley High School
Wellesley Hills, MA

Catherine Hibbitt

Lincoln School
Providence, RI

Region II

Alice Scheele

Patrick Henry High School
Ashland, VA

Region III

Heather Essig

Visitation Academy
Town and Country, MO

Robert Furlong

Otsego High School
Bowling Green, OH

Michelle Griffin-Wenzel

Germantown High School
Germantown, WI

Wendy Johnson

East Kentwood Freshman Campus
Kentwood, MI

Michelle Kozik

Homewood-Flossmoor High School
Flossmoor, IL

Reena Markstahler

Southwood High School
Wabash, IN

Region IV

Lisa Fucello

Brandon Valley High School
Brandon, SD

Andrew Taylor

Olathe Northwest High School
Olathe, KS

Region V

Amber Lawson

Salisbury High School
Salisbury, NC

Christina Nicholas-Hurt

Siegel High School
Murfreesboro, TN

Region VI

Annette Buckner

Dalton High School
Dalton, GA

Nerissa DeRamus

Thompson High School
Alabaster, AL

Region VII

Chance Duncan

Russellville High School
Russellville, AR

Chelsea Herndon

Metro Technology Center
Oklahoma City, OK

Barrett (Barry) Ide

Greenhill School
Addison, TX

Zachary Zimmerman

Shadow Ridge High School
Surprise, AZ

Region VIII

Ross Sappenfield

Vail Mountain School
Vail, CO

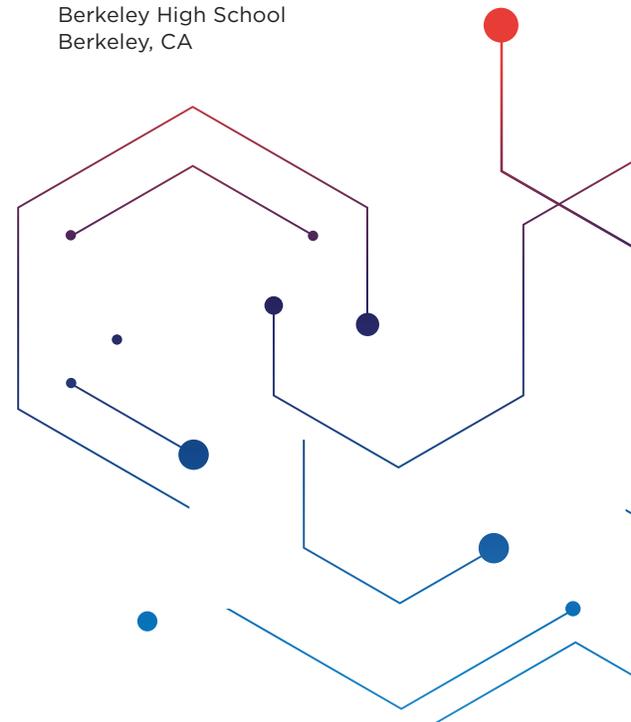
Sarah Urban

Capital High School
Helena, MT

Region IX

Glenn Wolkenfeld

Berkeley High School
Berkeley, CA



PAST PRESIDENTS & CONFERENCE LOCATIONS

- 2019** — Sherry Annee, Chicago, IL
- 2018** — Elizabeth Cowles, San Diego, CA
- 2017** — Susan Finazzo, St. Louis, MO
- 2016** — Bob Melton, Denver, CO
- 2015** — Jane Ellis, Providence, RI
- 2014** — Stacey Kiser, Cleveland, OH
- 2013** — Mark Little, Atlanta, GA
- 2012** — Donald French, Dallas, TX
- 2011** — Dan Ward, Anaheim, CA
- 2010** — Bunny Jaskot, Minneapolis, MN
- 2009** — John M. Moore, Denver, CO
- 2008** — Todd Carter, Memphis, TN
- 2007** — Patricia Waller, Atlanta, GA
- 2006** — Toby Horn, Albuquerque, NM
- 2005** — Rebecca E. Ross, Milwaukee, WI
- 2004** — Margaret (Betsy) Ott, Chicago, IL
- 2003** — Catherine W. Ueckert, Portland, OR
- 2002** — Brad Williamson, Cincinnati, OH
- 2001** — Ann S. Lumsden, Montreal, QC, Canada
- 2000** — Phil McCrea, Orlando, FL
- 1999** — Richard D. Storey, Ft. Worth, TX
- 1998** — VivianLee Ward, Reno, NV
- 1997** — Alan McCormack, Minneapolis, MN
- 1996** — Elizabeth Carvellas, Charlotte, NC
- 1995** — Gordon E. Uno, Phoenix, AZ
- 1994** — Barbara Schulz, St. Louis, MO
- 1993** — Ivo E. Lindauer, Boston, MA
- 1992** — Alton L. Biggs, Denver, CO
- 1991** — Joseph D. McInerney, Nashville, TN

- 1990** — Nancy V. Ridenour, Houston, TX
- 1989** — John Penick, San Diego, CA
- 1988** — Jane Abbott, Chicago, IL
- 1987** — Donald S. Emmeluth, Cincinnati, OH
- 1986** — George S. Zahrobsky, Baltimore, MD
- 1985** — Thomas R. Mertens, Orlando, FL
- 1984** — Marjorie King, Purdue Univ., IN
- 1983** — Jane Butler Kahle, Philadelphia, PA
- 1982** — Jerry Resnick, Detroit, MI
- 1981** — Edward J. Kormondy, Las Vegas, NV
- 1980** — Stanley D. Roth, Boston, MA
- 1979** — Manert Kennedy, New Orleans, LA
- 1978** — Glen E. Peterson, Chicago, IL
- 1977** — Jack L. Carter, Anaheim, CA
- 1976** — Haven Kolb, Denver, CO
- 1975** — Thomas J. Cleaver, Portland, OR
- 1974** — Barbara K. Hopper, New York, NY
- 1973** — Addison E. Lee, St. Louis, MO
- 1972** — Claude A. Welch, San Francisco, CA
- 1971** — H. Bentley Glass, Chicago, IL
- 1970** — Robert E. Yager, Denver, CO
- 1969** — Burton E. Voss, Philadelphia, PA
- 1968** — Jack Fishleder, Anaheim, CA
- 1967** — William V. Mayer, New York, NY w/AAAS
- 1966** — Arnold B. Grobman, Washington, D.C. w/AAAS
- 1965** — L. S. McClung, U of CA, Berkeley w/AAAS
- 1964** — Ted F. Andrews, Boulder, CO w/AIBS
- 1963** — Philip R. Fordyce, U of MA, Amherst, MA w/AIBS
- 1962** — Muriel Beuschlein, Corvallis, OR w/AIBS

- 1961** — Paul V. Webster, Denver, CO w/AAAS
- 1960** — Howard E. Weaver, New York, NY w/AAAS
- 1959** — Paul E. Klinge, Chicago, IL w/AAAS
- 1958** — Irene Hollenbeck, Washington, D.C. w/AAAS
- 1957** — John Breukelman, Indianapolis, IN w/AAAS
- 1956** — John P. Harrold, New York, NY w/AAAS
- 1955** — Brother H. Charles Severin, Atlanta, GA w/AAAS
- 1954** — Arthur J. Baker, Berkeley, CA w/AAAS
- 1953** — Leo F. Hadsall, Boston, MA w/AAAS
- 1952** — Harvey E. Stork, St. Louis, MO w/AAAS
- 1951** — Richard L. Weaver, Philadelphia, PA w/AAAS
- 1950** — Betty L. Wheeler, Cleveland, OH w/AAAS
- 1949** — Ruth A. Dodge, New York, NY w/AAAS
- 1948** — Howard A. Michaud, Washington, D.C. w/AAAS
- 1947** — E. Laurence Palmer, Chicago, IL w/AAAS
- 1946** — Prevo L. Whitaker, Boston, MA w/AAAS
- 1945** — Helen Trowbridge, St. Louis, MO w/AAAS
- 1944** — Merle A. Russell, No Meeting
- 1943** — Merle A. Russell, No Meeting
- 1942** — Homer A. Stephens, No Meeting
- 1941** — George W. Jeffers, Dallas, TX w/AAAS
- 1940** — Malcolm D. Campbell, Philadelphia, PA w/AAAS
- 1939** — Myrl C. Lichtenwalter, Columbus, OH w/AAAS
- 1938** — First Formal Meeting*, Richmond, VA w/ AAAS

*** birth of NABT occurred on July 1, 1938 in New York City, NY**

HONORARY MEMBERS

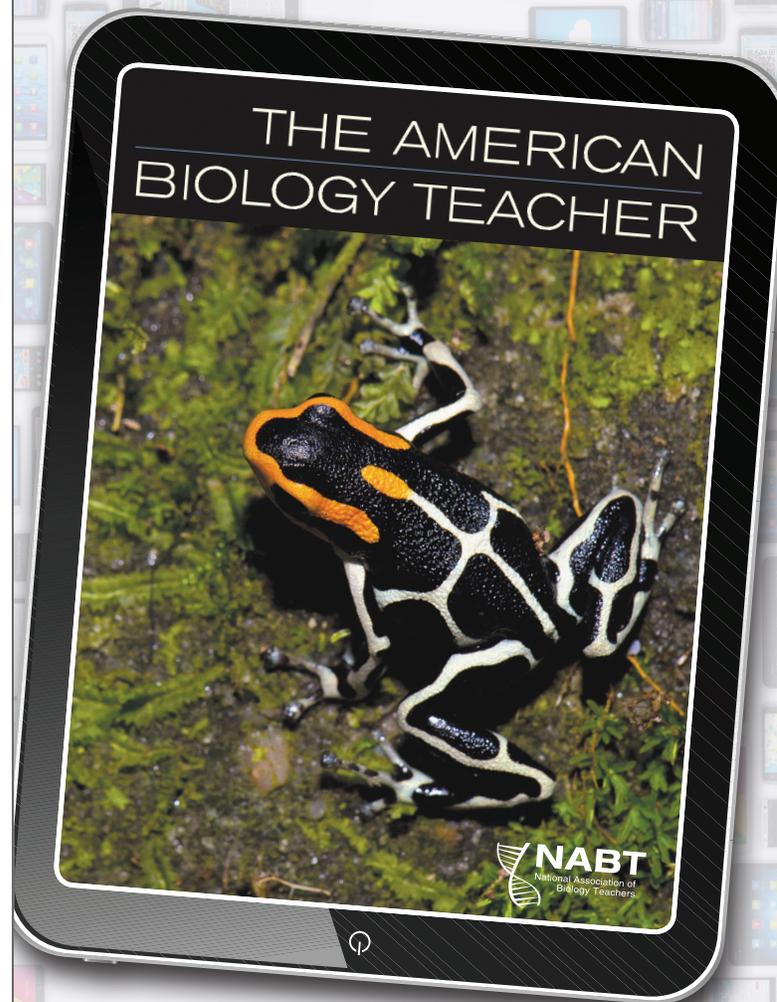
- 2019** — Dennis Gathmann
- 2018** — Michael Sipes
- 2017** — John M. Moore
- 2016** — Margaret (Betsy) Ott
- 2015** — Sharon Radford
- 2014** — Jay Labov
- 2013** — Todd Carter
- 2012** — Maura Flannery
- 2011** — Louisa Stark
- 2010** — Patricia Waller, Brad Williamson
- 2009** — NOT AWARDED
- 2008** — Donald Cronkite
- 2007** — William H. Leonard
- 2006** — Terry Hufford
- 2005** — Randy Moore, Eugenie Scott
- 2004** — John Penick
- 2003** — Donald Emmeluth
- 2002** — Leonard Blessing
- 2001** — Gordon E. Uno
- 2000** — Elizabeth Carvellas
- 1999** — NOT AWARDED

- 1998** — Ivo E. Lindauer
- 1997** — Sam Rhine
- 1996** — Kenneth S. House
- 1995** — Joseph D. Novak
- 1994** — Nancy V. Ridenour, Alton L. Biggs
- 1993** — George S. Zahrobsky
- 1992** — Jon R. Hendrix
- 1991** — Robert E. Yager
- 1990** — Jane Butler Kahle
- 1989** — Joseph D. McInerney
- 1988** — Thomas R. Mertens, Marjorie King
- 1987** — Floyd Nordland
- 1986** — Donald S. Dean
- 1985** — Stanley Weinberg
- 1984** — Jack L. Carter, Samuel Postlethwait
- 1983** — Manert Kennedy
- 1982** — Harold “Sandy” Wiper, Jerry P. Lightner
- 1981** — Sophie Wolfe
- 1980** — Sister M. Gabrielle, Ted F. Andrews, Sister Marian Catherine McGrann
- 1979** — Ingrith Olsen

- 1978** — John A. Moore
- 1977** — Addison E. Lee
- 1976** — Paul DeHart Hurd
- 1975** — Garrett Hardin, Stanley E. Williamson
- 1974** — H. Seymour Fowler
- 1973** — William V. Mayer
- 1972** — Chester A. Lawson, Paul E. Klinge, Robert L. Gantert
- 1971** — NOT AWARDED
- 1970** — NOT AWARDED
- 1969** — Arnold B. Grobman
- 1968** — NOT AWARDED
- 1967** — NOT AWARDED
- 1966** — NOT AWARDED
- 1965** — John Breukelman, H. Bentley Glass, George W. Beadle, Paul B. Sears, Brother H. Charles Severin
- 1964** — E. Laurence Palmer, Hermann J. Muller, Roger Tory Peterson, Oscar Riddle, Helen Irene Battle

NABT DISTINGUISHED SERVICE AWARD RECIPIENTS

- 2019** — Bonnie Bassler, Princeton University, Princeton, NJ
- 2018** — Ed Yong, The Atlantic, Washington, D.C.
- 2017** — May Berenbaum, University of Illinois Urbana-Champaign, Urbana, IL
- 2016** — Temple Grandin, Colorado State University, Fort Collins, CO
- 2015** — Carl Zimmer, Yale University, New Haven, CT
- 2014** — The Lacks Family (descendents of Henrietta Lacks), Baltimore, MD
- 2013** — Rita R. Colwell, University of Maryland College Park and Johns Hopkins University Bloomberg School of Public Health, College Park, MD
- 2012** — Michael Pollan, UC Berkeley Graduate School of Journalism, Berkeley, CA
- 2011** — Neil Shubin, University of Chicago, Chicago, IL
- 2010** — Richard Dawkins, The Richard Dawkins Foundation for Reason and Science, Falcon, CO
- 2009** — Mario Capecchi, University of Utah, Salt Lake City, UT
- 2008** — Ken Miller, Brown University, Providence, RI
- 2007** — Sean B. Carroll, University of Wisconsin — Madison, Madison, WI
- 2006** — Shirley Malcom, AAAS, Washington, D.C.
- 2005** — James A. Thompson, University of Wisconsin—Madison, Madison, WI; and Nina Leopold Bradley, Aldo Leopold Foundation, Baraboo, WI
- 2004** — Barbara Bancroft, RN, CPP Associates, Inc., Chicago, IL
- 2003** — Roberta Pagon, M.D., Children's Hospital & Regional Medical Center, Seattle, WA
- 2002** — Thomas E. Lovejoy, The H. John Heinz III Center for Science, Economics and the Environment, Washington, D.C.
- 2001** — E.O. Wilson, Harvard University, Cambridge, MA
- 2000** — Roger and Deborah Fouts, Chimpanzee and Human Communication Institute, Ellensburg, WA
- 1999** — Jack Horner, Museum of the Rockies, Bozeman, MT
- 1998** — Leroy Hood, University of Washington, Seattle, WA
- 1997** — Neal Lane, National Science Foundation, Washington, D.C.; and Donald Kennedy, Stanford University, Palo Alto, CA
- 1996** — Francis Collins, National Institutes of Health, Bethesda, MD
- 1995** — Carl Djerassi, Stanford University, Palo Alto, CA
- 1994** — Bruce Alberts, National Academy of Sciences, Washington, D.C.
- 1993** — Nancy S. Wexler, College of Physicians and Surgeons of Columbia University, New York State Psychiatric Institute, New York, NY
- 1992** — Paul R. Ehrlich, Stanford University, Palo Alto, CA
- 1991** — Stephen Jay Gould, Harvard University, Cambridge, MA
- 1990** — Peter Raven, Missouri Botanical Garden, St. Louis, MO
- 1989** — Stanley Cohen, Stanford University, Palo Alto, CA
- 1988** — Lynn Margulis, University of Massachusetts, Boston, MA; and James D. Watson, Cold Spring Laboratory, Cold Spring Harbor, NY



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NABT
National Association of
Biology Teachers

SPECIAL EVENTS

THURSDAY November 12

4:00 PM – 6:00 PM

NABT Inclusive Teaching Symposium: Inclusive Teaching in Theory & Practice

NABT Symposium • General Biology • Symposium (120 min) • HS, 2YC, 4YC

Refereed sessions will highlight culturally relevant pedagogy in life sciences education, address research on the impacts of such practice on student outcomes, and describe how research-based strategies are put into direct practice for in-person, online, and asynchronous modalities.

Proceedings are online at nabt.org/2020-Inclusive-Teaching-Symposium

SATURDAY November 14

12:00 PM – 4:00 PM

2979 Designing Effective Classroom Tests

NABT Special Workshop • General Biology • Special Workshop (240 min) • 2YC, 4YC

During this session, participants will focus on writing measurable learning objectives and learn how to create a “fair” test using selected-response items at several cognitive levels that assess outcomes equitably.

Peggy Brickman, University of Georgia, GA; Rebecca Orr, Collin College, Plano, TX; Melissa Csikari, HHMI BioInteractive, Chevy Chase, MD

TUESDAY November 17

6:00 PM – 9:30 PM

3001 Designing Effective Classroom Tests

NABT Special Workshop • General Biology • Special Workshop (210 min) • 2YC, 4YC

During this session, participants will focus on writing measurable learning objectives and learn how to create a “fair” test using selected-response items at several cognitive levels that assess outcomes equitably.

Peggy Brickman, University of Georgia, GA; Rebecca Orr, Collin College, Plano, TX; Melissa Csikari, HHMI BioInteractive, Chevy Chase, MD

WEDNESDAY November 18

5:00 PM – 6:30 PM

3005 Demystifying Bioinformatics as a Tool to Teach Modern Genetics and Genomics**NABT Special Workshop • Genetics • Special Workshop (90 min) • HS, 2YC, GA**

Teaching the Genome Generation (TtGG) is a program that trains high school teachers to modernize their teaching of genetics and genomics. Learn ways to incorporate bioinformatics instruction into biology lessons.

Sarah Wojiski, Emaly Piecuch, and Christina Vallianatos, The Jackson Lab, Bar Harbor, ME

SATURDAY November 21

12:00 PM – 3:00 PM

3010 Storylining in Biology for Coherent Instruction**NABT Special Workshop • Instructional Strategies • Special Workshop (180 min) • MS, HS, GA**

Storylines led by engaging phenomena improve student engagement and understanding of the overarching biological concepts. Using phenomena to anchor instruction and lead instruction are modeled in this workshop.

Jason Crean, Lyons Township HS/Saint Xavier University, Woodridge, IL; Kristin Rademaker and Kathy Van Hoeck, All Species Education Consulting, Woodridge, IL

THURSDAY December 3

6:00 PM – 7:00 PM

2815 An Introduction to Misconception-Based Teaching Using the Nature of Science**NABT Special Workshop • General Biology • Special Workshop (180 min) • MS, HS, GA**

Participants will understand how to spot the fallacies of science denial (FLICC method) while being introduced to a data-driven, misconception-based approach of teaching that can be used with a variety of important scientific concepts.

Lin Andrews, Tom Freeman, John Mead, and Blake Touchet, National Center for Science Education, Oakland, CA

Thursday

Abbreviation Key

E: Elementary School	2Y: Two-Year College
MS: Middle School	4Y: Four-Year College
HS: High School	GA: General Audience

AP® is a registered trademark.

* The following list details when the sessions were presented during the live days of the Online Conference.

All sessions were available on-demand until February 3, 2020.

6:00PM – 7:00PM**Two-Year College Section Reception****NABT Live • Special Event**

Two-year college instructors are invited to share successes, challenges, epiphanies, and best practices during this online social event.

Four-Year College & University Section Reception**NABT Live • Special Event**

College and university faculty, education researchers, and students are invited to learn more about the program's initiatives, and opportunities available through NABT.

AP Biology Section Reception**NABT Live • Special Event**

Meet AP Biology teachers in a friendly, informal setting to ask questions, share insights, and build community. You may even get to meet some of your favorite fellow AP teachers in person.

NABT Meet & Greet**NABT Live • Special Event**

You are invited to meet in a friendly, informal Zoom setting to ask questions, share insights, and build community. Open to all attendees.

BioClub Reception**NABT Live • Special Event**

The NABT BioClub continues to grow, and all advisors (and potential advisors) are encouraged to come share ideas about their clubs. Join the club (BioClub, that is)!

Thank You Sustaining Members!

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Washington University in St Louis
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Sustaining Members share NABT's mission to promote biology and life science education. Learn more at www.NABT.org.

Friday

Abbreviation Key

E: Elementary School **2Y:** Two-Year College
MS: Middle School **4Y:** Four-Year College
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* The following list details when the sessions were presented during the live days of the Online Conference.

All session were available on-demand until February 3, 2020.

10:00 AM – 11:00 AM

PLENARY SESSION

Ayana Elizabeth Johnson

➔ See page 4 for biography.

A Conversation with Ayana Elizabeth Johnson

NABT Live • Special Speaker (60 min) • GA

Join us for a special conservation conversation with Dr. Ayana Elizabeth Johnson. Ayana is a marine biologist, policy expert, writer, and Brooklyn native. She is the founder of Urban Ocean Lab, a think tank for the future of coastal cities, and founder and CEO of Ocean Collectiv, a consulting firm for conservation solutions. Her mission is to build community around solutions for our climate crisis. Find her @ayanaeliza.

A special thanks to Nicole Veltre-Luton for interviewing Dr. Johnson on behalf of the NABT Community.

11:00 AM – 12:00 AM

2980 Exploring Visual and Quantitative Models of Population Ecology Using HHMI BioInteractive Resources

BioInteractive Live • AP Biology • Interactive Workshop (60 min) • HS, 2YC

We will investigate population dynamics in the Serengeti using images, graphs, interactive tools, and video clips to help us better understand population changes over time.

Robin Bulleri, Carrboro High School, Carrboro, NC and Scott Sowell, Darnell-Cookman Middle/High School, Jacksonville, FL

SPECIAL PROGRAM PRESENTED BY

Oregon National Primate Research Center

2846 Cancer Medicine Focus Connects Students to Real-Life STEM Applications of Cryopreservation and Biomaterials Technologies

Channel 1 • Anatomy & Physiology • Interactive Workshop (60 min) • HS, 2YC, 4YC

Explore free NGSS-aligned biology activities that integrate concepts in cancer biology with preserving fertility in cancer patients through real-life medical examples and cutting-edge cryopreservation and biomaterials technology.

Mary B. Zelinski and Diana Gordon, Oregon National Primate Research Center, Beaverton, OR

2753 Half-Earth Hummingbirds: Guided Inquiry to Explore Biodiversity, Ecology, and Conservation with Hands-on Teamwork

Channel 2 • Ecology/Environmental Science/Sustainability • Interactive Workshop (60 min) • MS, HS, 2YC

The Half-Earth Map is a free interactive map revealing Earth's species, nature reserves, and human impacts. Explore team-based, hands-on lessons on hummingbirds and other charismatic species that reveal biodiversity fundamentals.

Dennis Liu and Amanda Briody, E.O. Wilson Biodiversity Foundation, Durham, NC; Erika Mitkus, The Governor's Academy, Byfield, MA; Jonathan Bower, Del Mar High School, San Jose, CA

2958 My Classes are Pointless

Channel 3 • Instructional Strategies • Interactive Workshop (60 min) • GA

Join us in a discussion on running your classes without points, in a low stress environment, and where student focus is on learning and not grades.

Paul Strode, Fairview High School, Boulder, CO and Aaron Mathieu, Acton-Boxborough Regional High School, Jefferson, MA

1:00 PM – 3:30 PM

12th Annual Biology Education Research Symposium

NABT Live • Instructional Strategies • Symposium (120 min) • 2YC, 4YC, GA

NABT is proud to present the Annual Biology Education Research Symposium, which it now in its 12th year! Presentations were accepted through a double-blind review process open to biology instructors and education researchers at all levels. The symposium format is a traditional presentation of papers by individual or co-authors lasting 15 minutes each.

See page 22 for the full proceedings.

1:00 PM – 2:00 PM**2981 Exploring Viral Diversity with HHMI BioInteractive Resources****BioInteractive Live • Microbiology & Cell Biology • Interactive Workshop (60 min) • HS, 2YC, 4YC**

The coronavirus pandemic has raised our awareness about viruses. In this session, we will highlight resources to engage students while they explore viral diversity through structural and data analysis.

Valerie May, Woodstock Academy, Woodstock, CT and Jacqueline Washington, Nyack College, Nyack, NY

2917 Teaching Cellular Respiration through Computational Modeling and Simulation—No coding required!**Channel 1 • Science Practices • Interactive Workshop (60 min) • HS, 2YC, 4YC**

Participants will experience, from a student's perspective, a computational modeling lesson on cellular respiration, which includes both model building and model behavior (simulations).

Ehren Whigham, University of Nebraska-Lincoln, Lincoln, NE

2746 What's Lurking in Your Soil: Primer to Public Databases and Bioinformatics**Channel 2 • Biotechnology • Interactive Workshop (60 min) • HS, 2YC**

This session presents a case study in which students use a public DNA database and basic bioinformatics tools to identify pathogens and other organisms found in a soil sample.

Jane Hunt, EducationProjects.org, Dublin, OH and Zack Bateson, National Agricultural Genotyping Center, Fargo, ND

2721 Equity and Belonging through Modified Biology Storylines**Channel 3 • General Biology • Interactive Workshop (60 min) • HS**

Explore strategies to modify storylines that increase belonging. Testimonies from biology and special education teachers who have implemented storylines to bring NGSS and equity to students with learning needs will be shared.

Lisa Pavic, Glenbrook South High School, Madeline Thomas, Sarah Davis, Lauren Baker, and Julia Navarro, Glenbrook South High School, Glenview, IL

2:00 PM – 2:30 PM**2781 Teaching Neuroscience in High School Including Experiential Learning****Channel 1 • Neuroscience • Demonstration (30 min) • HS, 2YC, 4YC**

We will describe a unique neuroscience curriculum that links behavior with the neurobiology of the brain. The course includes open-ended lab investigations using neurorobots as models of the brain.

Bill Wallace and Bobby Asher, Georgetown Day School, Washington DC; Christopher Harris, Backyard Brains, Ann Arbor, MI

SPECIAL PROGRAMMING PRESENTED BY Bio-Rad**Use CRISPR-Cas9 for Genome Editing with the Out of the Blue CRISPR Kit****Channel 2 • Genetics • Demonstration (30 min) • HS, 2YC, 4YC**

Now your students can do real CRISPR gene editing using a safe bacterial system. Follow this step-by-step walkthrough of the lacZ lab activity in Bio-Rad's Out of the Blue Kit.

Presented by Bio-Rad Laboratories, Hercules, CA

2735 Gender Diversity in the Biology Classroom: Small Tweaks and Big Shifts**Channel 3 • General Biology • Interactive Workshop (30 min) • MS, HS GA**

Integrate gender diversity into your teaching for accurate, inclusive, and future-ready biology lessons! Participants will explore our free framework, exam examples, and resources.

Sam Long, Jeffco Public Schools, Westminster, CO; River Suh, Exploratorium, San Francisco, CA; Lewis Steller, The Academy for Precision Learning, Seattle, WA

2:30 PM – 3:30 PM**2983 Is It CRAP? Using Tools from HHMI BioInteractive to Develop Science Literacy Skills****BioInteractive Live • Science Practices • Interactive Workshop (60 min) • HS, 2YC, 4YC**

Participants will engage with two sets of resources for developing students' science literacy skills: the CRAP test to evaluate science in the news and a tool for analyzing scientific papers.

Helen Snodgrass, Consultant, Winchester, VA, and Karen Lucci, Hopewell Valley Regional School District, Pennington, NJ

2897 Teaching Resilience and the Biology of Climate Science Using Computer Simulations**Channel 2 • Ecology/Environmental Science/Sustainability • Interactive Workshop (60 min) • HS, 2YC, 4YC, GA**

User-friendly computer simulations help high school and college biology students explore how human actions can help mitigate the effects of climate change. Bring a laptop and your course's standards!

Jon Darkow, Seneca East High School, Attica, OH and Kirstin Milks, Bloomington High School South, Bloomington, IN

2925 Creating and Using Assessments to Develop Science Practices in STEM Learners

Channel 3 • Instructional Strategies • Interactive Workshop (60 min) • GA

Participants will develop assessment questions for use during and after instruction that engage students in the science practices. Strategies for using student-performance data to inform instruction will be discussed.

Karen Lionberger and Mitch Price, The College Board, New York, NY

3:30 PM – 4:00 PM

2924 Biotechnology in Agriculture

Channel 2 • Biotechnology • Interactive Workshop (30 min) • MS, HS, 2YC

Biofuels, GMOs, and plant the glow! Explore three different activities that connect plants to biotechnology and agriculture.

Courtney Behrle, BioNetwork, Raleigh NC

2899 Developing Analysis and Argumentative Skills for AP Students: Tips from AP Readers

Channel 3 • AP Biology • Interactive Workshop (30 min) • HS

Current AP Readers will provide teachers with a variety of tools for improving students' analytical and writing skills on AP FRQ, including the new course articulation and past FRQ.

Christine Lesh, Winters Mill High School, Westminster, MD and Amy Inselberger, A. E. Stevenson High School, Lincolnshire, IL

4:00 PM – 5:00 PM

SCOTT WILLIAMSON SPEAKER:

Chip Taylor

➔ See page 5 for biography.

The Monarch Decline: A Clash of Two Hypotheses

NABT Live • Special Speaker (60 min) • HS, 2YC, 4YC, GA

The numbers of monarchs recorded reaching the overwintering sites in Mexico have been declining for the better part of two decades. The recent numbers are cited as being only about 20% of those measured in the 1990s. Two hypotheses have been offered to explain this decline, namely, the loss of habitats containing milkweeds that serve as the hosts for monarch larvae due to changes in agriculture. The alternative view is that the decline is due to an increase in mortality during the migration during the last two decades. The habitat loss hypothesis has become known as the "milkweed limitation hypothesis" with the second known as the "migration mortality hypothesis". Dr. Chip Taylor will outline both hypothesis. The milkweed limitation hypothesis is strongly supported by data while the migration mortality hypothesis is based on supposition and logic. For the later hypothesis to be validated, three conditions have to be met. These tenants were tested using data from the monarch tagging program administered by Monarch Watch.

2982 Models in Ecology: Using HHMI BioInteractive Resources to Make Student Thinking Visible

BioInteractive Live • Science Practices • Interactive Workshop (60 min) • HS, 2YC, 4YC

Participants will construct and revise models to investigate relationships and productivity in ecological systems. Classroom strategies used will highlight the instructor's role and student learning process.

Ann Brokaw, Rocky River High School, Rocky River, OH and Kim Parfitt, Central High School, Cheyenne, WY

2837 Taste Buds in Your Gut? Exploring Taste, Sweeteners, and Glucose Homeostasis

Channel 1 • AP Biology • Interactive Workshop (60 min) • MS, HS, 2YC

Experiment with a series of sugar solutions and the "sugar-blocking" tea *Gymnema sylvestre* while modeling cellular communication pathways in the tongue and the gut, then evaluate possible mechanisms of action.

Joan Griswold and Atom Lesiak, University of Washington, Seattle, WA

2816 Photosynthesis: Spatial and Temporal Impacts on This Changing Planet

Channel 2 • Ecology/Environmental Science/Sustainability • Interactive Workshop (60 min) • MS, HS

Explore free resources in a NGSS storyline sequence anchored by photosynthesis and climate change at vast spatial and temporal scales. Threaded resources include interactive simulations, data models, and systems modeling.

Steven Rogg, Coherent Learning Design, Kenosha, WI and Missy Holzer, Chatham High School, Chatham, NJ

5:00 PM – 5:30 PM

**SPECIAL PROGRAMMING
PRESENTED BY ADInstruments**

Walk through our Biology Lab Solution, created in partnership with Vernier!

Channel 1 • Technology in the Classroom • Demonstration (30 min) • HS, 2YC, 4YC

Join Whitney to walk through our complete biology lab solution, created in partnership with Vernier. Whitney shows you how to create an interactive, hands-on, active learning environment specifically designed to improve outcomes in introductory biology, whether you are teaching in-lab, fully online, or a blended/flipped curriculum. Combine our Biology Collection with Vernier's Go Direct® sensors to provide an engaging, hands-on learning experience for students.

Presented by ADInstruments, Inc, Colorado Springs, CO

2932 Connecting Form & Function with Ecology Using a Natural History Database

Channel 2 • Ecology/Environmental Science/Sustainability • Demonstration (30 min) • HS, 2YC, 4YC

Birds are used as a model organism to teach the relationship between form and ecological niches. Students conduct research using online natural history databases to produce collaborative and individual projects.

Melissa Haswell, Davenport University, Grand Rapids, MI

2738 ¿Que es eso? Differentiating Instruction for English Language Learners in the Biology Classroom

Channel 3 • Instructional Strategies • Interactive Workshop (30 min) • MS, HS

As teachers, we are always challenged to meet the growing needs of our students. Learn about strategies that can help English Language Learners not just meet expectations but surpass them.

Alexander Eden, Greater Lowell Technical High School, Tyngsborough, MA

5:30 PM – 6:00 PM

INVITED SPEAKER

Ann Reid

➔ See page 4 for biography.

Are You Ready for Some Good News About Evolution?

NABT Live • Special Speaker (60 min) • GA

Just fifteen short years ago, the world watched as a federal court in Pennsylvania took up the question of whether intelligent design could be taught as a valid scientific alternative to evolution in public school biology classes. It was a great relief when the judge ruled that it could not, but a survey of evolution teaching practices conducted just after the trial revealed that—illegal or not—about one in eight public high school biology teachers taught creationism, and only about one-third of teachers covered evolution in accordance with the well-established science. Twelve years later, we repeated that survey and found considerable improvement. This talk will present the main findings of the survey, dig into some of the reasons for improvement, and point out where work is still needed.

2987 HHMI BioInteractive Video Case Studies: A Powerful Tool for In-Person or Online Engagement

BioInteractive Live • General Biology • Demonstration (30 min) • HS, 2YC, 4YC

This session will explore how HHMI BioInteractive video case studies and interactive tools can be used effectively in both in-person and virtual classrooms.

Phil Gibson, University of Oklahoma, Norman, OK

2945 Fact and Fiction: Using the COVID-19 Pandemic to Teach Non-science Majors

Channel 1 • Instructional Strategies • Paper (30 min) • HS, 2YC, 4YC

A general-education biology course for non-science majors was transformed to center on COVID-19. Student-centered learning included all aspects of viral biology as well as connections to personal fields of study.

Kerry Cheesman, Capital University, Columbus, OH

**SPECIAL PROGRAMMING
PRESENTED BY CourseHero**

Creative Assessments for Online Learning

Channel 2 • Instructional Strategies • Demonstration (30 min) • HS, 2YC, 4YC

Creative Assessments For Online Learning by Benjamin Wiggins, Manager of Instruction of Biology, University of Washington.

Presented by CourseHero, Redwood City, CA

7:00 PM – 8:30 PM

**HHMI Night at the Movies:
Inventing Tomorrow with
Director Laura Nix**

NABT Live • Special Event • GA

HHMI BioInteractive (www.biointeractive.org) and NABT are pleased to host the 10th Annual HHMI Night at the Movies. This year's movie "Inventing Tomorrow," tells the story of six inspiring teenagers from around the globe who are creating cutting-edge solutions to confront some of the world's most pressing environmental threats as they prepare to compete in the International Science and Engineering Fair. The *LA Times* called the film "inspirational and invigorating," and *The Nerdist* said the students featured in the film felt like "the cavalry coming to save us from ourselves, these extraordinary, driven, eco-compassionate children are cancelling the apocalypse."

The movie will be followed by a special live discussion with students featured in the film.

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2020 NABT Biology Education Research Symposium

ONLINE

Friday, November 6, 2020

The symposium is coordinated by the NABT Four-Year College & University Section's Research Committee.

We extend a special thank you to our reviewers for their time and detailed feedback.

Watch the research presentations at <https://www.youtube.com/watch?v=3uvNSrIR4Ns>

Living Organisms and the Life Science Class: A Case Study

Cole Entress, Teachers College – Columbia University, New York, NY

Biology teachers, especially at the secondary level, have largely traded their touchstone experiences—investigations that feature living organisms—for so-called “dry labs” and simulations. This trade has been driven by well-known changes to education policy and funding, but also by something else: the quiet disappearance of laboratory and field-based work from biology teacher education. Nonetheless, some biology teachers manage to routinely incorporate direct engagement with living organisms into their classes. How these teachers develop the expertise and the professional identity needed to sustain such difficult, largely unsupported work remains unknown. This case study, therefore, investigated how Mr. Dewlap—an early-career biology teacher with an unusually deep knowledge of natural history—learned about living organisms, and how this knowledge informed his identity and practice as a science teacher. Mr. Dewlap's story reveals how activities like animal-keeping can provide both teachers and students with a deep, personal connection to the natural world and to science. However, it also illustrates how knowledge about live organisms has been marginalized within formal education. Indeed, Mr. Dewlap's knowledge came almost exclusively from informal sources. This case suggests that the “lost art” of caring for and studying living organisms deserves renewed attention within biology (teacher) education.

Initial Development and Validation of the Plant Awareness Disparity Index

Kathryn M. Parsley, Bernie J. Daigle, and Jaime L. Sabel, University of Memphis, Memphis, TN

Plant awareness disparity (PAD, formerly plant blindness) is the tendency not to notice plants in one's environment (Wandersee & Schussler, 1999). This can lead to a host of misconceptions regarding how important plants are to the biosphere and human affairs. Many interventions have been proposed to alleviate PAD, but it is difficult to determine how effective these interventions are due to a lack of a valid and reliable measure of PAD. To address this, we developed the plant awareness disparity index (PADI). The PADI is a likert-style survey that measures all four components of PAD as described by Dr. Elisabeth Schussler: attention, attitude, knowledge, and relative interest. We report the initial development, validation process, and factor structure of the instrument in biology students at the university level. This research will be of interest to botanical, ecological, and environmental educators, as well as anyone interested in the development and validation of new instruments. Our research also highlights the importance of valid assessments in education research and intervention design, which has implications for education research and instructors at all levels.

A Nationwide Study Exploring the Religious Backgrounds and Evolution Perceptions of Black and Hispanic Biology Students

Elizabeth Barnes, Middle Tennessee State University, Murfreesboro, TN; Sara Brownell and K. Supriya, Arizona State University, Tempe, AZ

The evolution education experiences of underrepresented minority (URM) students is an emerging area of research because past inquiries indicate they have differential outcomes, such as lower evolution acceptance. Further, URM students are on average more religious, which is also associated with lower evolution acceptance. However, we do not know the extent to which strong religiosity among URM biology students can explain their lower evolution acceptance. We surveyed 8,192 students in 60 college biology courses across 15 states and examined how their racial/ethnic identity and religiosity were related to their acceptance of evolution. We found that Hispanic students are, on average, slightly more religious than Asian and White students and are slightly less accepting of evolution. However, Black students were more religious and less accepting of evolution than any other racial/ethnic identity group. The higher average religiosity of Hispanic and Black students mediated their lower evolution acceptance. This study highlights the importance of considering student religiosity in creating inclusive evolution education for Black and Hispanic biology students. We discuss how our results have implications for the underrepresentation of Black individuals within evolutionary biology.

Instructor Conceptions of Diversity in Higher Education

Stanley M. Lo, Nicole Suarez, and Stacey Brydges, University of California San Diego, La Jolla, CA

Institutions have increasingly made the commitment to diversify higher education, and instructors play integral roles in creating an inclusive environment. This study asks: How do instructors conceptualize diversity in higher education, and how do these conceptions influence curriculum and instruction? Using phenomenography as the theoretical framework, we examined the qualitatively different ways in which individual instructors experience and understand diversity. These ways of understanding are organized into an outcome space with specific aspects that describe the phenomenon of diversity and variations within each aspect that distinguish the individual experiences. Data were collected through semi-structured interviews with 32 instructors from two-year and four-year minority-serving institutions. Transcripts were analyzed using grounded theory, and data were coded by two researchers to ensure reliability. Five aspects were identified from our data: student features, legitimized membership, intelligence mindset, faculty role, and learning environment. Variations among experiences were organized into an outcome space with three distinct conceptions of diversity, which we termed essentialist, functionalist, and existentialist. Overall, our results indicate that faculty acknowledge different student features and have varying understanding for what diversity means and why it is important in higher education, and some conceptions of diversity do not necessarily suggest an inclusive culture.

SPECIAL GUEST PRESENTER:

Amanda Glaze-Crampes
Georgia Southern University,
Statesboro, GA

*Recipient of the 2020 NABT Four-Year
College Section Research in Biology
Education Award*

Barriers, Beliefs, and Border Crossings: Worldview and the Pursuit of Scientific Literacy

Scientific literacy is arguably the ultimate goal of science education across levels. However, for many in the United States, barriers are present that hinder and obfuscate attempts to build literacy and lead to science denial. While we are fighting this battle in public forums, we must also be aware that the same misinformation, misconceptions, and conflict are also present among university students, science majors, and future teachers. Understanding the worldviews connected to our lived experiences and those of our students is a foundation for improving scientific literacy that transcends the classroom. Approaching controversy and question from that place of understanding is a powerful tool in bridging gaps and opening discourse where communication has been otherwise stifled by conflict, fear, and distrust. While content mediums such as evolution are critical hinge points where these interactions occur, intentional acknowledgment of worldviews, responsive teaching, and outreach are essential tools across science education and public engagement in science. These tools are the key to combating science denialism and preparing the next generation of scientific thinkers in the United States.

Saturday

Abbreviation Key

E: Elementary School

2Y: Two-Year College

MS: Middle School

4Y: Four-Year College

HS: High School

GA: General Audience

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10:00 AM – 11:00 AM

INVITED SPEAKER

Neil Lamb

➔ See page 6 for biography.

Top 10 Genetics and Biotech Stories 2020

NABT Live • Special Speaker (60 min) • MS, HS, GA

Award-winning educator Dr. Neil Lamb will explain some of the coolest genomics discoveries of the previous 18 months. Participants will become familiar with the annual “Genetics and Biotech Guidebook”, produced annually by the educational outreach branch of the HudsonAlpha Institute for Biotechnology. Packed with ‘too new for textbooks’ content and phrased in student-friendly language, all participants will receive access to a FREE digital version of the guidebook for classroom use.

10:00 AM – 10:30 AM

2988 Using HHMI BioInteractive’s Data Explorer for Data Visualization and Analysis in the Classroom

BioInteractive Live • General Biology • Interactive Workshop (30 min) • HS, 2YC, 4YC

In this session, we will explore how students can use the new tool Data Explorer to examine data sets, create graphs, and carry out statistical analyses.

Kaitlin Bonner, St. John Fisher College, Rochester, NY

10:00 AM – 11:00 AM

2834 AP Environmental Science Lab Manual: A Work in Progress

Channel 2 • Ecology/Environmental Science/Sustainability • Interactive Workshop (60 min) • HS

Participants will preview activities from the upcoming AP Environmental Science lab manual. Participants will discuss and reflect on how integrating these activities into their instruction can support all students.

David Hong, The College Board, New York, NY and Denise Ortiz, New Braunfels High School, New Braunfels, TX

2852 EvolvingSTEM: A Three-dimensional Laboratory Evolution Curriculum to Increase Student Learning and Engagement in Life Sciences

Channel 3 • Evolution • Interactive Workshop (60 min) • HS, 2YC, 4YC

We will share an NGSS-aligned curriculum that uses authentic, student-led research to teach genetics, ecosystem dynamics, microbiology, and biotechnology skills within the organizing principle of evolution.

Abigail Matela, University of Pittsburgh, Pittsburgh, PA; Edwina Kinchington, Pittsburgh Science and Technology Academy, Pittsburgh, PA; Ronald Kinser, Sewickley Academy, Sewickley, PA

11:00 AM – 11:30 AM

2788 Authentic Research for All Students at All Institution Types

Channel 1 • Curriculum Development • Demonstration (30 min) • 2YC, 4YC

HHMI is partnering with 2-year and 4-year institutions to replace their traditional introductory biology labs with an HHMI-developed and supported discovery-based course-based authentic research project (CRE).

Viknesh Sivanathan, HHMI, Chevy Chase, MD and Steve Caruso, University of Maryland Baltimore County, Baltimore, MD

2939 Using Type 2 Diabetes to Anchor Biological Concepts

Channel 2 • General Biology • Interactive Workshop (30 min) • MS, HS, 2YC

Type 2 diabetes anchors core ideas about feedback mechanisms, population traits, nutrition, solutions to complex problems and more. Students analyze CDC data and model glucose homeostasis, either in-class or online.

Joan Griswold, University of Washington, Seattle, WA

2911 Every Classroom Matters: Impacting Science Denial One Class at a Time

Channel 3 • General Biology • Paper (30 min) • GA

Evolution education is noted as the greatest failing in science education, but the trends surrounding evolution are expanding. Every class is a front line in the battle for science literacy.

Amanda Glaze-Crampes, Georgia Southern University, Statesboro, GA

11:30 AM – 12:00 PM

2986 Using HHMI BioInteractive Resources to Investigate if Climate Extremes Drive Evolutionary Change in Anole Lizards

BioInteractive Live • Science Practices • Interactive Workshop (30 min) • HS, 2YC, 4YC

Participants will actively engage in the science practices of analyzing and interpreting data and constructing explanations that are built around data sets acquired from recent primary literature.

Mark Eberhard, St. Clair High School, St. Clair, MI

11:30 AM – 12:30 PM**2020 Poster Competition Winners**

NABT Live • Instructional Strategies • Symposium (120 min) • 2YC, 4YC

Student competition 1st place winners will present their award-winning research, and take your questions during this session. All posters are available at <https://nabt.org/Events-2020-Posters>

See page 28 for a complete listing of posters.

2795 Beyond Nicotine: Examining the Effects of Flavored Electronic Cigarettes on the Respiratory Immune System

Channel 2 • Anatomy & Physiology • Interactive Workshop (60 min) • HS, 2YC, 4YC

Conduct and receive a data interpretation activity that enables students to analyze data from toxicological studies assessing the impact of e-liquids and their resulting aerosols on the respiratory immune system.

Dana Haine and Elise Hickman, UNC-Chapel Hill, Chapel Hill, NC

2820 Bioenergetics: Applying Overarching Principles, Visualizations, and Metacognition

Channel 1 • General Biology • Demonstration (60 min) • HS, 2YC, 4YC

Provide the participant with an Overarching Principles of the bioenergetic processes and how the use of modeling visualizations and metacognition can assist in student learning of these perceived difficult concepts.

John Moore, Taylor University, Upland, IN

2844 How to Teach Inclusively: Tips, Tricks, and Evidence for Your Biology Course

Channel 3 • Instructional Strategies • Symposium (60 min) • HS, 2YC, 4YC

Come learn practical ways to make your biology courses (lab or lecture, face-2-face or online) more inclusive from instruction and assessment inclusion experts. Hosted by the iEMBER network.

Michael Moore, Western Michigan University, Kalamazoo, MI; Natalia Caporale, University of California - Davis, Davis, CA; Elizabeth Martinez, Illinois Mathematics and Science Academy, Aurora, IL; Rachel Tennial, University of Arkansas at Little Rock, Little Rock, AR

1:00 PM – 1:30 PM

2985 Seeing the Big Picture: Encouraging Students to Think of Themselves as Scientists with HHMI BioInteractive

BioInteractive Live • Science Practices • Interactive Workshop (30 min) • MS, HS, GA

Many students engage with science standards, missing the “why” and relevance of what they learn. Come learn to use HHMI BioInteractive resources to help all students see themselves as scientists.

Samantha Johnson, Arroyo High School/HHMI BioInteractive, San Lorenzo, CA

1:00 PM – 2:00 PM

2769 Creating Computational Models of Dynamic Biological Systems

Channel 1 • Science Practices • Interactive Workshop (60 min) • HS, 2YC, 4YC

Biological systems are dynamic systems. Climate change, COVID-19, and feedback loops are dynamic systems. Build systems models using online tools to model patterns characteristic throughout biology. Bring your laptop.

Jon Darkow, Seneca East High School, Attica, OH and Brad Williamson, University of Kansas, Lawrence, KS

2822 Inquiry-based Learning with Real Life Scientists: PlantingScience Makes it Happen!

Channel 2 • Botany & Plant Biology • Interactive Workshop (60 min) • MS, HS, 2YC

Teachers are using the FREE website, PlantingScience, to have students run their own inquiry labs under the online mentorship of current scientists. Try out a lab or two for yourself!

Catrina Adams, Botanical Society of American, St. Louis, MO and Aubrey Mikos, Ottawa Township High School, Ottawa, IL

2798 Teaching Human Evolution: Reasons, Resources, & Relationships

Channel 3 • Evolution • Demonstration (60 min) • MS, HS, GA

Come spend time with three leading human evolution educators and learn how to respectfully engage your students using the history of paleoanthropology as well as the latest in 3D Printing!

John Mead, St. Mark's School of Texas, Dallas, TX; Amanda Glaze-Crampes, Georgia Southern University, Statesboro, GA; Molly Selba, University of Florida, Gainesville, FL

2:00 PM – 3:30 PM

NABT AP Biology Symposium

NABT Live • AP Biology • Symposium (90 min) • HS

With so many changes in what teaching and learning looks like in the AP Classroom, this year's AP Biology Symposium will focus on helping those who are remote, hybrid, and face-to-face, find tools to navigate these difficult times.

Part I of the symposium will highlight resources released by the College Board that help teachers provide asynchronous opportunities for their students. Participants will learn how to incorporate the AP Daily videos, topic questions, the progress dashboard. Part II of the symposium will include the opportunities for teachers to discuss what is working, what is not working, and a Q&A.

Mark Little, Broomfield High School (retired), Broomfield, CO and Chris Monsour, Columbian High School, Tiffin, OH

2:00 PM – 2:30 PM**2908 Building-BRICKS of Life: A Versatile Model for Cell Biology and Biotechnology**

Channel 1 • General Biology • Interactive Workshop (30 min) • MS, HS, GA

A versatile method to model the Central Dogma using Lego bricks. This method provides a framework to scaffold complex concepts and explore gene expression, mutations, genetic engineering, and biotechnology techniques.

Atom Lesiak, University of Washington, Seattle, WA

2886 Can Students Really Learn to Love Histology?

Channel 2 • Anatomy & Physiology • Demonstration (30 min) • HS, 2YC, 4YC

Having a hard time getting Anatomy and Physiology students to learn histology? Want to teach histology in other courses? Learn how Wifi microscopes have impacted student performance at Anderson University.

Joni Criswell, Anderson University, Anderson, SC

2935 Using Historical and Cultural Narratives of African Americans to Create Culturally Representative Biology Curriculum

Channel 3 • Ecology /Environmental Science/ Sustainability • Demonstration (30 min) • MS, HS, GA

This research is part of a larger funded NSF project. Both the research methods and the biology curriculum design and products use pragmatic approaches that merge theory and practice.

Catherine Quinlan, Howard University, Washington, DC

2:30 PM – 3:30 PM**2984 Strategies to Promote Student Engagement and Learning Using HHMI BioInteractive Animations**

BioInteractive Live • Instructional Strategies • Interactive Workshop (60 min) • HS, 2YC, 4YC

Participants will experience and share best practices for using BioInteractive animations to engage biology students in active learning about altitude-adapted mice, photosynthesis, and more.

Cinthya Fernández, Tec de Monterrey, Mexico City, Mexico and Paul Beardsley, Cal Poly Pomona, Pomona, CA

2859 Storylining in Biology for Coherent Instruction

Channel 1 • Instructional Strategies • Interactive Workshop (60 min) • MS, HS, GA

Storylines led by engaging phenomena improve student engagement and understanding of the overarching biological concepts. Using phenomena to anchor instruction and lead instruction are modeled in this workshop.

Jason Crean, Lyons Township HS/Saint Xavier University, Woodridge, IL; Kristin Rademaker and Kathy Van Hoeck, All Species Education Consulting, Woodridge, IL

2960 Is One Lesson Enough? Race in the Biology Classroom

Channel 3 • Genetics • Interactive Workshop (60 min) • HS, 2YC

How do we weave discussions about race throughout our curriculum to address student misconceptions and increase student engagement? I will share with you the lessons I learned throughout 2019-20.

Tanea Hibler, Brophy College Preparatory, Phoenix, AZ Arizona

4:30 PM – 6:00 PM**2020 NABT Honors Presentation**

NABT Live • Special Event

Join us as we recognize the 2020 NABT Award recipients. This celebration honors exceptional biology teachers from all levels, and everyone is welcome to join us as we applaud these remarkable individuals.

2020 NABT Poster Session

The NABT Poster Session highlights classroom practices, research, and programs in three distinct categories: general strategies for teaching biology, the scholarship of teaching, and mentored student research.

Student poster authors are eligible for two competitions and winners were invited to present during the NABT Online Conference on Saturday, November 7th.

General (Non-Competition)

1. Quantitative Biology at Community Colleges: Building a Community of Biology and Math Faculty to Develop and Disseminate Open Educational Resources

Jennifer Buntz, Central New Mexico Community College, Albuquerque, NM; Joseph Esquibel, Lansing Community College, Lansing, MI; Kristen Jenkins, BioQUEST, Boyds, MD; Jillian Miller, Roane State College, Harriman, TN; Heather Seitz, Johnson County Community College, Overland Park, KS; John Starnes, Southcentral Kentucky Community & Technical College, Bowling Green, KY

2. Going Virtual: Converting Camp Bioscience to an Online Format

Carrie Buo, Rachael Kindig, Garrett Decker, & Matthew Brookover, University of Akron - Akron, OH

3. Do exam wrappers help students achieve better study habits in introductory biology

Kerry Cheesman & Kimberly Heym, Capital University, Columbus, OH

4. BioInteractive's Free Online Professional Learning Course on Evolution: Overview and Evaluation

Melissa Csikari, Howard Hughes Medical Institute, Chevy Chase, MD; Ashley Ertzman, Meghan Jeffus, & Paul Beardsley, Cal Poly Pomona, Pomona, CA

5. Draw a Scientist Revisited: The Influence of Outdoor Experiences on Children's Idea of a 'Scientist'

Sarah Haines & Chelsea McClure, Towson University, Towson, MD; Symone Barkley, National Aquarium, Baltimore, MD

6. Educators' Views on Dissection Alternatives During the COVID-19 Pandemic

Pamela Osenkowski, Ignas Karaliunas, & Merari Diorio, National Anti-Vivisection Society, Chicago, IL

7. Environmental Education in New Orleans City Park

Amanda Snyder & Aimée Thomas, Loyola University New Orleans, New Orleans, LA

8. The Effect of Optional Exam Retakes on Student Performance in Introductory Biology

K. Supriya, Christian Wright, Christofer Bang, Jessica Ebie, Christopher Pagliarulo, & Sara Brownell, Arizona State University, Tempe, AZ

9. Informal Teaching Activities Used to Bridge the Gap Between Theory and the Real World

Amanda Tang Nian & Aimée Thomas, Loyola University New Orleans, New Orleans, LA

10. Using Visual Modeling to Create More Student-centered Lessons

Ellen Wisner, University of North Carolina - Charlotte, Charlotte, NC

Biology Education Research: Graduate Competition

11. The Impacts of Maryland Green Schools on Environmental Parameters

Ayla McDonough & Sarah Haines, Towson University, Towson, MD

12. **1st Place!** Call on me! Undergraduates' perceptions of voluntarily asking questions in front of large-enrollment science classes

Erika Nadile, Katelyn Cooper, Sara Brownell, & Yi Zheng, Arizona State University, Tempe AZ; Michelle Stephens, Translation Genomics Research Institute, Phoenix, AZ

Biology Education Research: Undergraduate Competition

13. **1st Place:** Where do instructors come from? An analysis of influential institutions on current and future faculty

Anna Abraham, Daniel Grunspan, Sara Etebari, Samantha Maas, Julie Roberts & Sara Brownell, Arizona State University, Tempe, AZ

14. **The Marvelous Miracle Fruit: A pre-CURE Undergraduate Laboratory Exercise on Experimental Design**

Samantha Ganser, Justine Hines, & Michael Butler, Lafayette College, Easton, PA

15. **3rd Place:** Student Ideas about Gene Expression: Making Proteins vs. Punnett Squares

Aidan Link, University of Arkansas, Fayetteville, AR; Aeowynn Coakley, San Jose State University, San Jose, CA; Korinne Mills, Florida Southern College, Lakeland, FL; Dina Newman & L. Kate Wright, Rochester Institute of Technology, Rochester, NY

16. **2nd Place:** Maintaining Student Engagement During an Abrupt Instructional Transition: Lessons Learned from COVID-19

Sienna Senn & David Wessner, Davidson College, Davidson, NC

17. **Students Inaccurately Estimate Test Performance Despite Feedback from Active Learning**

Catherine Steele & Suann Yang, SUNY Geneseo, Geneseo, NY

Mentored Undergraduate Research: Competition

18. **3rd Place:** Undergraduate Perceptions of Bioethics Topics

Baylee Edwards, Arizona State University, Tempe AZ; Elizabeth Barnes; Middle Tennessee State University, Murfreesboro, TN

19. **2nd Place:** Annotation of the GemG Bacteriophage

Amanda Gregg, Rene Brenckman, Jianna Calcinari, & Sharon Gusky, Northwestern Connecticut Community College, Winsted, CT; Louise Leonard & Skylar Robinson, Torrington High School, Torrington, CT

20. **1st Place:** Characterization of Teosinte Branched1 Mutants in *Setaria viridis*

Hannah Oliver, Julie Angle, & Andrew Doust, Oklahoma State University, Stillwater, OK

21. **The Effects COVID-19 has on Chronic Kidney Disease (CKD) Patients at Stages 2 and 3**

Lopa Patel, Juhi Patel, Nalini Broadbelt, & Michelle Young, Massachusetts College of Pharmacy and Health Sciences University, Boston, MA

22. **Mentoring a Student in Completing a Directed Study - 'Using Stem Cells for Heart Valve Engineering'**

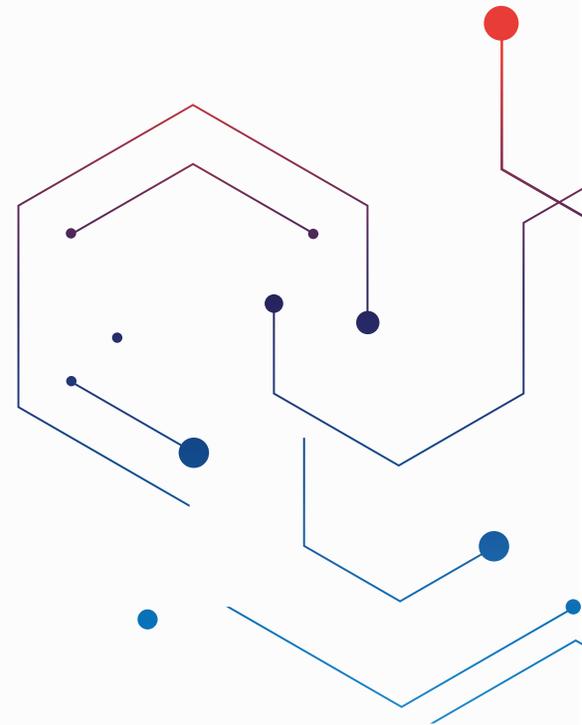
Amitoj Singh Sawhney, Nalini Broadbelt, & Michelle Young, Massachusetts College of Pharmacy and Health Sciences University, Boston, MA

23. **Gluten contamination: prevalence and risks associated with foods labeled "gluten-free"**

Sydney Skeie, Alysa Durbin, & Kerry Cheesman, Capital University, Columbus, OH

24. **Comparison of Ancestry Reports from Direct-to-Consumer Genetic Testing Kits**

Nate Vance, Kristina Amos, & Kerry Cheesman, Capital University, Columbus, OH



On-Demand

Abbreviation Key

E: Elementary School	2Y: Two-Year College
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HS: High School	GA: General Audience

AP® is a registered trademark.

Bringing Mock Surgery to Dissections

On-demand • Anatomy & Physiology • Demonstration (30 min) • HS, 2YC

Join us to discuss how you can enhance your dissections by integrating mock surgeries, including coronary bypass, lens replacement, kidney stone removal, and gastric bypass.

Ken Bateman and Julie Boehm, Wellesley High School, Wellesley, MA

SPECIAL PROGRAMMING PRESENTED BY Animalearn

Replace Dissection with Humane Technology: AR/VR and Beyond

On-demand • Anatomy & Physiology • Sponsor Session

Join Animalearn as we describe the issues with dissection and its humane, high-end alternatives. This is perfect for 2020 where teaching has moved to a virtual/hybrid environment.

Animalearn, Jenkintown, PA

SPECIAL PROGRAMMING PRESENTED BY Bio-Rad Laboratories

Tracking the Spread of SARS-CoV-2 Using a Flexible Gel Electrophoresis Kit

On-demand • Biotechnology • Sponsor Session

Early in 2020, a report of a COVID-19 outbreak among customers at a restaurant in China made news headlines. Researchers suspected the air conditioning was to blame, but how the virus spread was initially a mystery. Now it's time for your students to analyze swab samples by gel electrophoresis to determine which customers were infected, review details of the spreading event, and propose their own explanations.

Bio-Rad, Hercules, CA

SPECIAL PROGRAMMING PRESENTED BY Bio-Rad Laboratories

Detecting SARS-CoV-2 Using ELISA in the Classroom

On-demand • Biotechnology • Sponsor Session

The selective power of antibodies makes them excellent tools for COVID-19 diagnostics. Follow along as we show you how your students can explore SARS-CoV-2 detection methods using Bio-Rad's hands-on ELISA Immuno Explorer Kit.

Bio-Rad, Hercules, CA

SPECIAL PROGRAMMING PRESENTED BY HudsonAlpha

Biotech and Agriculture Intersect with Timeline Challenge

On-demand • Biotechnology • Sponsor Session

Investigate the intersection of agriculture and biotechnology using this free web-based activity from the HudsonAlpha Institute for Biotechnology. Tasked with finding a solution to an agriculture challenge such as developing hypoallergenic eggs or hornless dairy cattle, students research potential tools ranging from selective breeding to genome editing. Research and respond in one application, with real time monitoring from the Educator Portal.

HudsonAlpha Institute for Biotechnology, Huntsville, AL

SPECIAL PROGRAMMING PRESENTED BY miniPCR

COVID-19 webinar with miniPCR bio

On-demand • Biotechnology • Sponsor Session

miniPCR bio, Cambridge, MA

2933 Bioinformatic Resources to Explore Bone Gene Molecular Evolution and its Relationship to Skeletal Disease

On-demand • Evolution • Demonstration (30 min) • HS, 2YC, 4YC

This presentation will offer customizable activities to explore the molecular evolution of COL1A1, the main structural protein in bone, across both deep time (vertebrates) and recent time (human skeletal disease).

Daryn Stover, Arizona State University at Lake Havasu City, Lake Havasu City, AZ

Sean B. Carroll and a Series of Fortunate Events

On-demand • Evolution • Special Event • GA

Like every other species, we humans are here by accident. But it is shocking just how many things—any of which might never have occurred—had to happen in certain ways for any of us to exist. From an extremely improbable asteroid impact, to the wild gyrations of the Ice Age, to invisible accidents in our parents' gonads, we are all here through an astonishing series of fortunate events. And chance continues to reign every day over the razor-thin line between our life and death.

Sean B. Carroll, Author, Chevy Chase, MD

2751 KELP Resource Bank: Teaching and Adapting Resources Inspired by Real-World Phenomena

On-demand • General Biology • Demonstration (30 min) • MS, HS, GA

Explore a free resource bank of twelve NGSS-aligned interdisciplinary lessons, grounded in fieldwork done in the Galápagos Islands, and learn strategies to begin adapting them to your classroom.

Jamie Melton, Roy High School, Roy, UT and Erika Mitkus, The Governor's Academy, Byfield, MA

**SPECIAL PROGRAMMING
PRESENTED BY Biotility****Biotility On Demand Video**On-demand • General Biology •
Sponsor Session

Biotility, University of Florida, Alachua, FL

**SPECIAL PROGRAMMING
PRESENTED BY Edvotek****Edvotek Learning Center**On-demand • General Biology •
Sponsor SessionOverview of Edvotek kits, equipment,
& teacher resources.

EDVOTEK, Washington, DC

**SPECIAL PROGRAMMING
PRESENTED BY Modern Biology****Modern Biology
Program Discussion**On-demand • General Biology •
Sponsor SessionA discussion and walkthrough of some
relevant experiments and program for
the modern teaching laboratory.

Modern Biology, Lafayette, IN

**SPECIAL PROGRAMMING
PRESENTED BY Oregon National
Primate Research Center****Oregon National Primate
Research Center Virtual
Tour Video**On-demand • General Biology •
Sponsor SessionThis virtual tour of the Oregon
National Primate Research Center
(includes video of our animals as well
as visits with scientists and animal
care professionals.Oregon National Primate Research Center,
Hillsboro, OR**SPECIAL PROGRAMMING
PRESENTED BY Science Learning****10 min Video Overview of
the V-Scope Explorer and
BioWild Designs**On-demand • General Biology •
Sponsor SessionThis video gives an overview of
V-Scope Explorer resources that
including a html5-based virtual
microscope program, closed captioned
video descriptions of specimens, and
virtual lab guides related to specimens
in the program. Also, BioWild Designs
are shown in which microscopic
images are incorporated into the
fabric of clothing and accessories.

Science Learning, Washington, NC

**SPECIAL PROGRAMMING
PRESENTED BY uHandy****uHandy for Educators |
Microscope Ideas and
Solutions in Hybrid Modes**On-demand • General Biology •
Sponsor SessionHow can you conduct hands-on
activities with microscopes when
hybrid teaching modes become
inevitable? Looking for ways to
engage students both in the classroom
or behind screens as if everyone is
right in the same lab? Check out why
uHandy Mobile Microscope can be
your best friend to make it!

uHandy Microscopes, loveuhandy.com

**SPECIAL PROGRAMMING
PRESENTED BY Vernier Biology****Vernier Biology
Sensors Overview**On-demand • General Biology •
Sponsor SessionView this video for an overview of
Vernier's offerings for biology sensors.Vernier Software & Technology,
Beaverton, OR**Jim Allison "Breakthrough":
An Educator's Resource
Introduction**On-demand • General Biology •
Symposium (30 min)The Jim Allison: Breakthrough Educator
Toolkit is a companion resource for
teaching the film in the classroom. It
includes lessons, discussion questions,
research and lab activities, and
opportunities to explore careers in the
fields of science and medicine. These
activities can be used or adapted for use in
high school, college, and post-secondary
classrooms. Learn more at [https://www.
breakthroughdoc.com/toolkit](https://www.breakthroughdoc.com/toolkit)

Uncommon Productions, Los Angeles, CA

**SPECIAL PROGRAMMING
PRESENTED BY Wiley****Knewton Alta Booth
Education Session
Recording**On-demand • General Biology •
Sponsor SessionThis session provides a 15 minute
overview of Knewton Alta's adaptive
technology and actionable analytics.

Wiley, Hoboken NJ

**SPECIAL PROGRAMMING
PRESENTED BY Bio-Rad****Use CRISPR-Cas9 for
Genome Editing with the
Out of the Blue CRISPR Kit**On-demand • Genetics •
Sponsor SessionNow your students can do real
CRISPR gene editing using a safe
bacterial system. Follow this step-
by-step walkthrough of the lacZ lab
activity in Bio-Rad's Out of the
Blue Kit.

Bio-Rad Laboratories, Hercules, CA

**SPECIAL PROGRAMMING
PRESENTED BY Bio-Rad**

CRISPR Confirmation: Genotyping CRISPR-Cas9 Gene Editing with the Out of the Blue Genotyping Extension

**On-demand • Genetics •
Sponsor Session •**

You've made a precise gene edit with CRISPR, but how do you know for sure? See how to use PCR to determine the genotype of Out of the Blue edited bacteria using Bio-Rad's Out of the Blue Genotyping Extension.

Bio-Rad Laboratories, Hercules, CA

**SPECIAL PROGRAMMING PRE-
SENTED BY HudsonAlpha**

GenomeCache: How to Make Your Genome Walk

**On-demand • Genetics • Sponsor
Session**

Want your students to explore the human genome in an interactive way? Learn about countless genes while strolling through chromosomes 1 through 22, plus X and Y with GenomeCache®, a free app in the Apple Store and Google Play. Developed by the HudsonAlpha Institute for Biotechnology, GenomeCache is designed to take students on a tour of the human genome using their phone to guide them.

HudsonAlpha Institute for Biotechnology,
Huntsville, AL

2785 Science Literacy for Modern Students: Tips & Tools for Reading, Listening, & Talking About Science!

**On-demand • Instructional Strategies •
Interactive Workshop (30 min) • MS, HS**

In addition to reading science, students are also getting their scientific information from videos and podcasts. Come try techniques that can be used, with or without technology, to understand science.

Aubrey Mikos, Ottawa Township High School,
Ottawa, IL

2919 Using Student Mindset, Self-efficacy, Science Identity, Support from Teachers, and Grit to Predict Course Performance

**On-demand • Instructional Strategies •
Paper (30 min) • 2YC, 4YC, GA**

How well can we predict student performance in introductory life science courses from measures of their perceptions of themselves and their teachers? Come find out!

Austin Leone, John Stewart, Evan Davis, and
Donald French, Oklahoma State University,
Stillwater, OK

**SPECIAL PROGRAMMING
PRESENTED BY ADInstruments**

How to Move Your Course Material into an Online Format for Distance Learning!

**On-demand • Instructional
Strategies • Sponsor Session**

Join expert instructional designer, Ellen, to see how easy it is to move your biology content from Microsoft Office (Word, Excel, Powerpoint), Google Drive and LabChart into our modern online learning platform, Lt. Lt is ideal for both in-lab and distance teaching, or a mix. Video also contains information on how to convert your content into a flipped classroom model.

ADInstruments, Inc., Colorado Springs, CO

**SPECIAL PROGRAMMING
PRESENTED BY ADInstruments**

Pro Tips for Online Teaching: Everything from Aesthetics to Effective IBL!

**On-demand • Instructional
Strategies • Sponsor Session**

Best practice tips and tricks from expert instructional designer, Charlotte Steel at ADI. Learn > How to design great lessons from scratch > How to improve methods for assessment using Bloom's taxonomy > Ways to improve lesson accessibility and inclusion > Ways to incorporate inquiry based learning into lessons effectively.

ADInstruments, Inc., Colorado Springs, CO

**SPECIAL PROGRAMMING
PRESENTED BY Carolina Biological
Supply Company**

Providing a Flexible Learning Experience for High School Biology Labs

**On-demand • Instructional
Strategies • Sponsor Session**

Carolina Biology Supply Company,
Burlington, NC

**SPECIAL PROGRAMMING
PRESENTED BY Carolina Biological
Supply Company**

Carolina Kits 3D Life Science Flexibility without Compromise

**On-demand • Instructional
Strategies • Sponsor Session**

Carolina Biology Supply Company,
Burlington, NC

**SPECIAL PROGRAMMING
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How Practice Builds Our Hidden Learning System

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This session took place during Course Hero's 2020 virtual Education Summit as a part of the General Session. (Featuring Barbara Oakley, Professor Engineering, Oakland University)

Course Hero, Redwood City, CA

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This is part 1 of a session that took place during Course Hero's 2020 Virtual Education Summit as a part of the Professional Development and Well-Being track. To view part 2, please navigate to the NABT video library and look for a video titled, "Part 2: What Do I Do with THIS? Revamping Inherited Teaching Materials."

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Micro-Techniques for Macro-Engagement: Lightning Talks for Teaching Approaches in Biology

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Course Hero, Redwood City, CA

SPECIAL PROGRAMMING PROVIDED BY LabXchange

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LabXchange is a free platform for science education developed at Harvard University that lets educators remix and share high-quality content to support personalized learning. LabXchange also connects learners, educators and researchers through social features such as private classes, discussion forums, and the ability to mentor or be mentored. This recording is from a special webinar was hosted for NABT members to highlight how LabXchange can support differentiated and remote teaching and learning.

Jessica Silverman, LabXchange/Harvard University, Cambridge, MA

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Bio-Rad Laboratories, Hercules, CA

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ADInstruments, Inc., Colorado Springs, CO

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ADInstruments, Inc., Colorado Springs, CO

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Former high school science teacher and CEO of DataClassroom, Dr. Aaron Reedy, walks you through a short introduction to working with data in the DataClassroom web-app. See how it can help your students in grades 6-12 make better graphs and bridge the gap from lab activities to quantitative thinking about data.

DataClassroom, Charlottesville, VA



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Colorado Springs, CO

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● American Phytopathological Society

St. Paul, MN

apsnet.org

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● American Society of Human Genetics

Rockville, MD

ashg.org

● Animalearn

Jenkintown, PA

animalearn.org

Animalearn works to end the harmful use of animals in education. We strive to build awareness about animal use in the classroom and help to nurture a respect for all creatures. Animalearn helps both educators and students find the most effective non-animal methods to teach and study science. Our alternatives to dissection loan program, The Science Bank, is home to over 650 high-quality, animal-friendly humane science education products, from which educators can borrow for free.

● Bedford, Freeman & Worth High School Publishers

Hamilton, NJ

highschool.bfwpub.com

Bedford, Freeman & Worth (BFW) High School Publishers is your source for innovative science resources. We publish the best-selling book, Environmental Science for AP[®], as well as Principles of Life for AP[®] Biology and Living by Chemistry for pre-AP[®] Chemistry. Stop our booth to receive more information on these programs.

● Bio-Rad Laboratories, Inc.

Hercules, CA

bio-rad.com

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Alachua, FL

biotility.research.ufl.edu/

● Carolina Biological Supply Company

Burlington, NC

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Carolina Biological Supply Company is a worldwide leader in science education, providing top-quality, innovative materials for educators. Carolina serves the K-16 market with everything needed to equip science laboratories and classrooms. Products, kits, NGSS lab solutions, and free teacher resources are available at carolina.com. Carolina™ Science catalog available upon request.

● Course Hero

Redwood City, CA

coursehero.com/educators

● DataClassroom

Charlottesville, VA

dataclassroom.com

DataClassroom is a web-app that allows students and teachers (grades 6-12) to engage with data through graphing and animated hypothesis testing. Your students can take a dataset or upload their own, make publication-quality graphs in seconds, and can move up to animated hypothesis test when they are ready. The best part of a science class will always be hands-on labs and experimentation. DataClassroom integrates next generation data-skills with the learning experiences you are already creating.

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Chevy Chase, MD

biointeractive.org

Our stories anchor a variety of classroom resources based on peer-reviewed science. From data-rich activities and case studies to high-quality videos and interactive media, our resources are designed to connect students to big ideas in biology, promote engagement with science practices, and instill awe and wonder about the living world.

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Huntsville, AL

hudsonalpha.org

HudsonAlpha Institute for Biotechnology is a nonprofit institute dedicated to innovating in the field of genomic technology and sciences. Opened in 2008, its mission is four-fold: sparking scientific discoveries; bringing genomic medicine into clinical care; fostering life sciences entrepreneurship and business growth; and encouraging the creation of a genomics-literate society.

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● Modern Biology, Inc.

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● Oregon National Primate Research Center at OHSU

Beaverton, OR

ohsu.edu/onprc

● Pivot Interactives

Afton, MN

pivotinteractives.com

Pivot Interactives delivers active learning experiences to supplement science curriculum. With an extensive library of labs and activities crafted by veteran science educators, Pivot Interactives helps students develop critical thinking skills through active investigation of natural phenomena in biology, environmental science, chemistry, and physics. Within each activity, students make observations, form and test predictions, design and execute experiments, collect and analyze data, and draw conclusions. Pivot Interactives makes it easy for teachers to integrate active learning in any science course.

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● **miniPCR**
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NABT President - 2020



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