Advanced Biology PLUS

ASMSA
STEM PATHWAYS

Dr. Whitney Holden and Dr. Patrycja Krakowiak

DESCRIPTION

- **Outreach program designed to improve teacher quality and student outcomes in Advanced Placement (AP®) Biology**
- **Supported by Arkansas Department of Education (ADE) Grant since 2017**
- **UNIT materials**
  - MINIMUM (required) vs. MAXIMUM (available)
  - STANDARD (optimal) vs. CONDENSED (alternative)
- **HANDBOOK: https://tinyurl.com/AdvancedBioPlusHandbook**
- **Co-directed by Dr. Holden and Dr. Krakowiak**

Co-Directors

Advanced Biology PLUS
and
Arkansas Summer Research Institute (ASRI)

Dr. Whitney Holden

- B.S. in Biochemistry
- Ph.D. in Microbiology & Immunology
- Certificate in College Teaching from Vanderbilt Univ. Center for Teaching
- Life Science Specialist at ASMSA
- Co-Director of Adv. Bio PLUS + ASRI
- YouTube Channel: *Biology Professor*

Dr. Patrycja Krakowiak

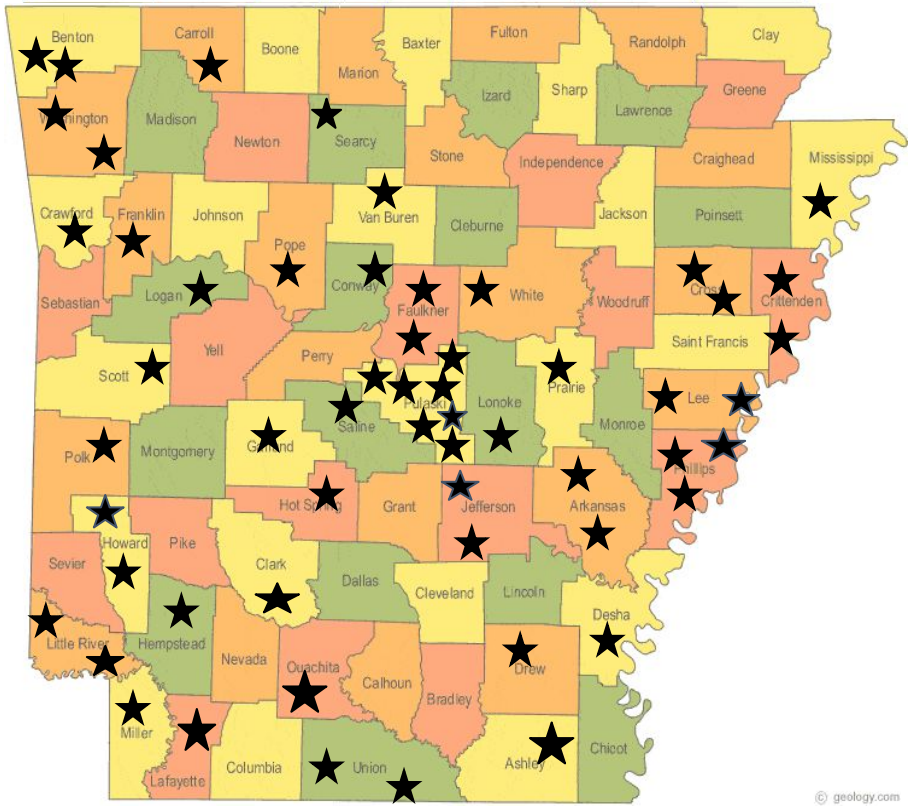
- B.S. in Chemistry with emphasis in Molecular Biology
- Ph.D. in Human Genetics
- Post-doctoral fellowship at NIH
- Assistant Professor at UAMS
- Life Science Specialist at ASMSA
- Nationally Board Certified+PAEMST finalist

DETAILS

- **WHAT**
  - Yearlong pacing, materials, tools, assessments, labs, equipment
- **WHERE**
  - ASMSA (Arkansas School for Math, Sciences and Arts)
- **WHEN (virtual for now)**
  - Summer Boot Camp + Semester Workshops (2)
- **WHO**
  - Any Arkansas AP Biology teacher with at least 1 student
- **COST**
  - $100 registration fee per teacher (NO student tuition)

PARTICIPANTS

- **Program**
  - 5 years
- **Participants**
  - 57 schools
  - 68 teachers
  - >1000 students



Last Update:
November 2021

Benefits to Teachers

- **Materials and training**
  - Pear Decks, Quizlet + Blooket
  - Labster + Lab Training
  - Canvas + Videos
  - Content + Assessments
  - Weekly Pacing Calendar

- **Biotechnology Expansion Packs: electrophoresis, probes, models**
- **Networking with biology teachers and experts**
- **Up to 36 PD hours: training in content, labs, technology platforms**

Benefits to Teachers

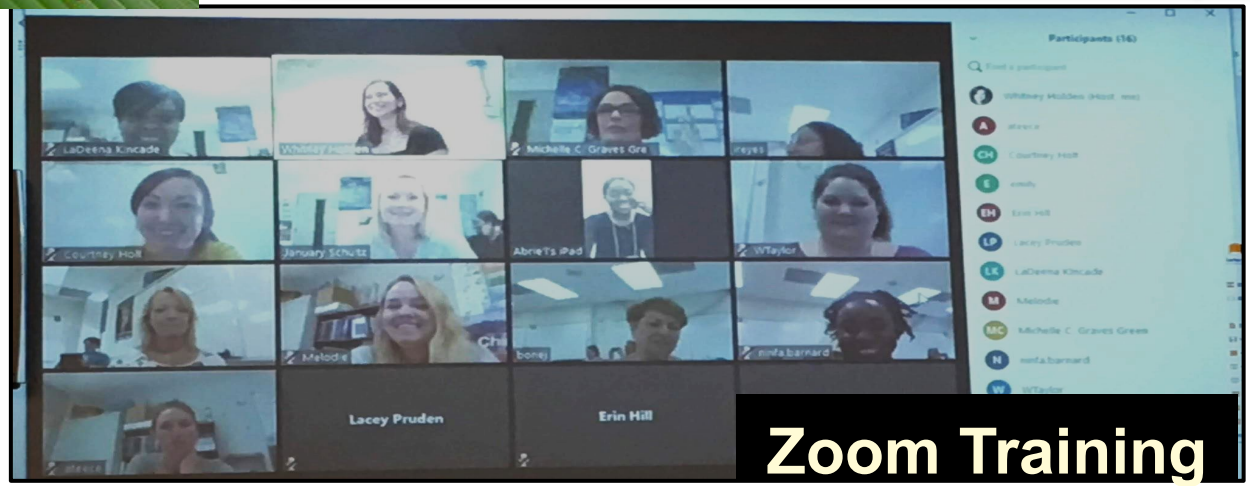
- **MINIMUMS (requirements)**
  - Interactive Notes (students answer application questions as you teach)
  - Questions of the Week (AP© style practice questions)
  - Scientific Skills (at least 1 per Unit feature Science Practices)
  - Golden Sheets (reviews of entire Units on 1 - 2 cardstock pages)
  - Laboratory (1 per Unit, hands-on/inquiry guided and/or digital)
  - Assessments (pre/post and 1 per Unit, include previous AP© questions) w/ reviews
- **MAXIMUMS (optional)**
  - Google slides (once per unit a Pear deck) with videos of all of them on Canvas
  - POGILs, Labsters (digital labs), Science News (FREE), Projects
  - Quizzes (Quizlets/Blookets practice), Homework (interactive vocab),

Benefits to Students

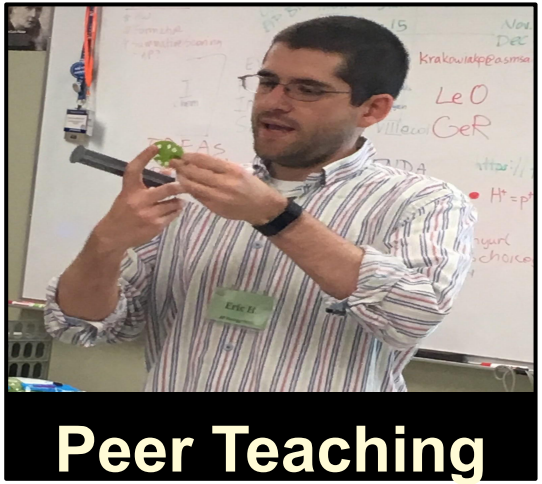
- Access to experts at ASMSA
- Opportunity to earn college credit (AP® exam)
- Improve written/verbal communication skills
- Experience in digital learning
  - use a learning management system
  - introductory experience with an online class

canvas

Content Delivery: Teachers



Zoom Training

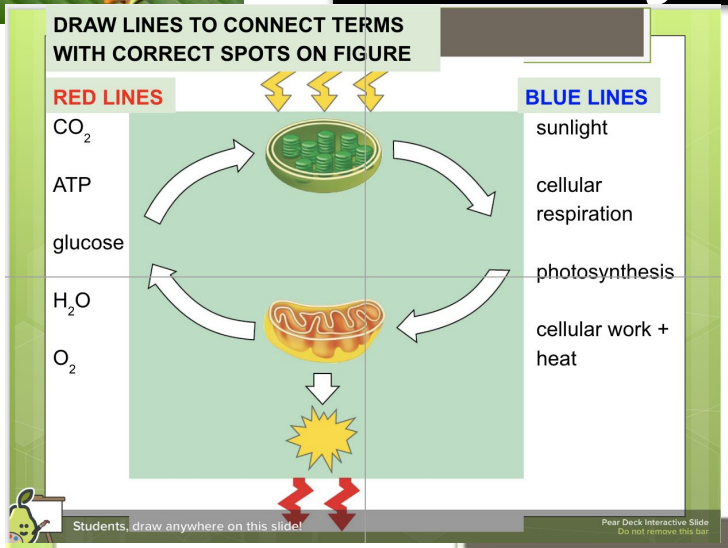


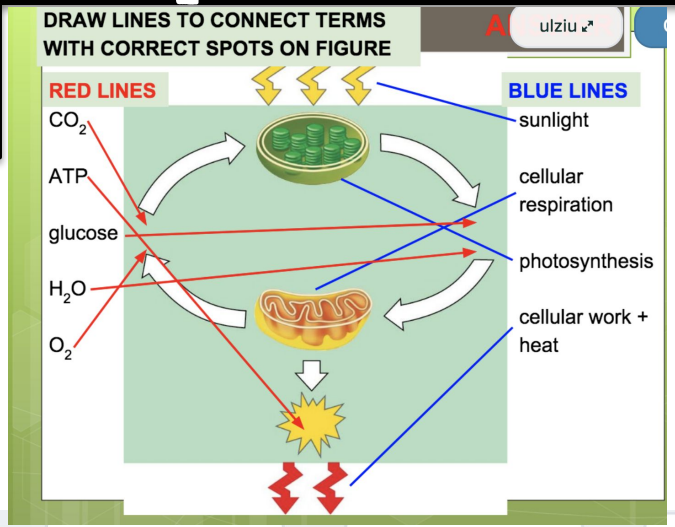
Peer Teaching

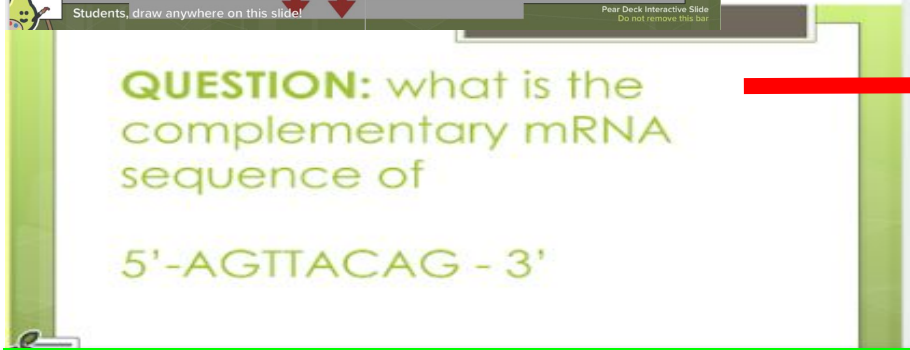
Boot Camp Lab

Content Workshop

Pedagogy Example: Pear Decks

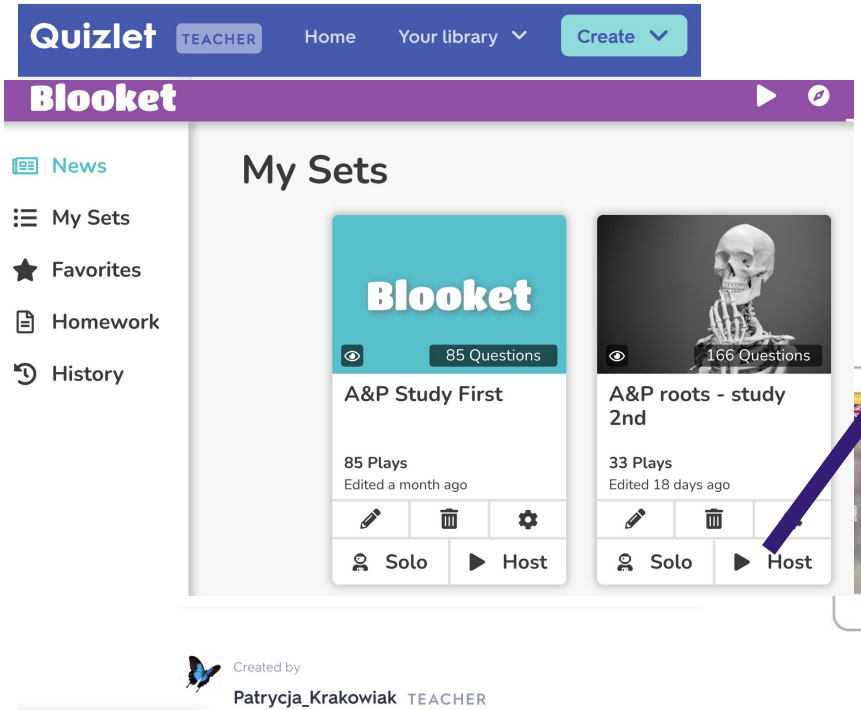


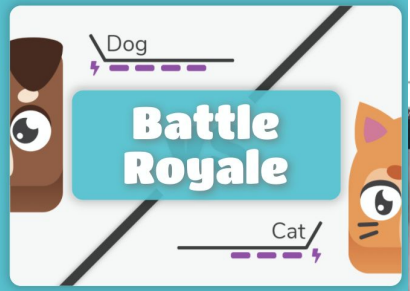


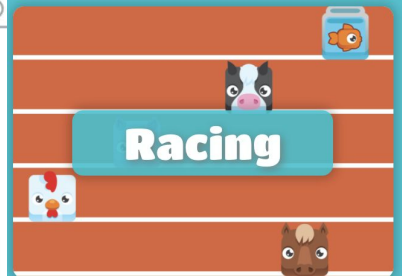


Premium Subscription INCLUDED and Already Made For Every UNIT!!!

Pedagogy Example: Quizlets + Blookets

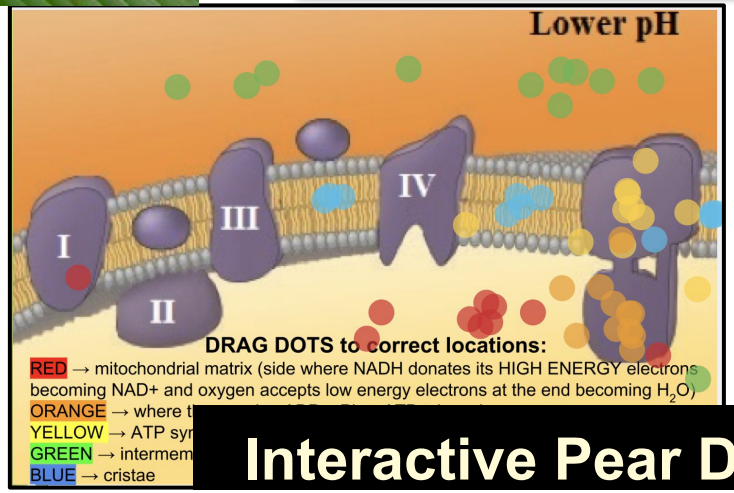




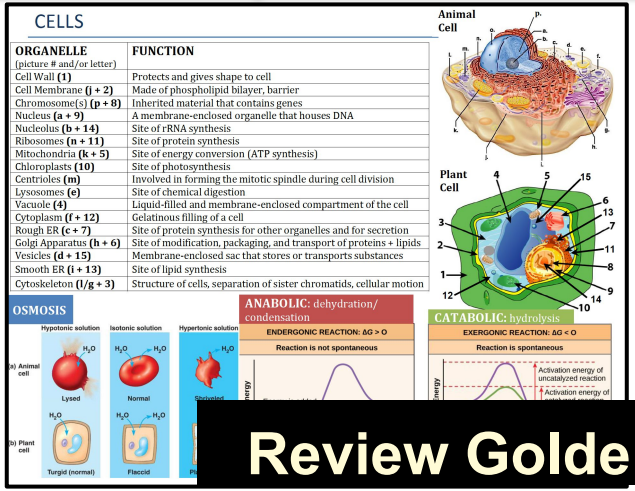


Already Made For Every CHAPTER!!!

Content Delivery: Students

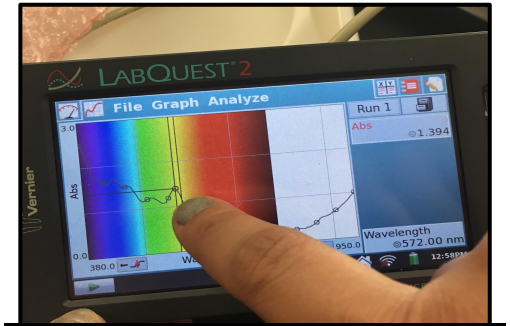


Interactive Pear Decks



Review Golden Sheets

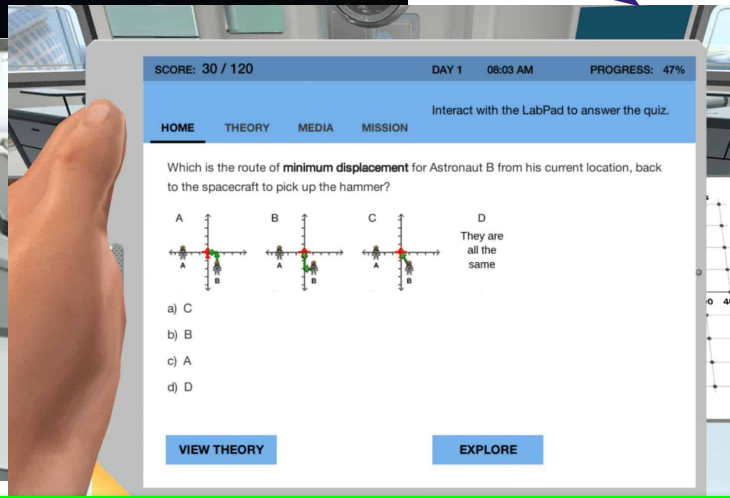
Labs @ ASMSA



Biotechnology

Labs @ Schools

Content Example: Labsters



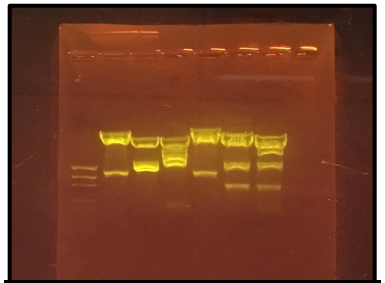
Subscription INCLUDED for all your AP Biology Students and Already Chosen for each Unit!

Biotechnology Lab Field Trips

- **Learn biotechnology skills**
  - insert gene from a jellyfish into E. coli to make them glow
  - use DNA fingerprinting with electrophoresis to identify culprit of a crime
- **Test hypotheses**
  - guided inquiry allows students to choose variables to test
  - statistical analyses

@ASMSA

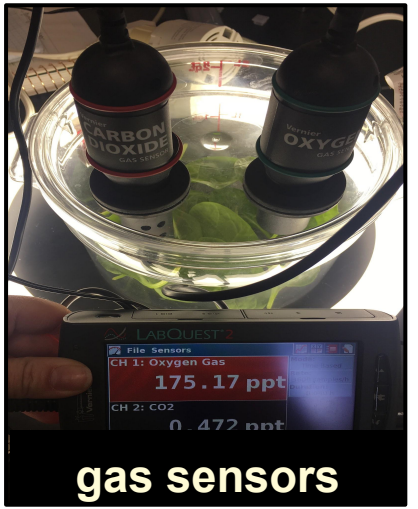
micropipettes



electrophoresis

@Schools

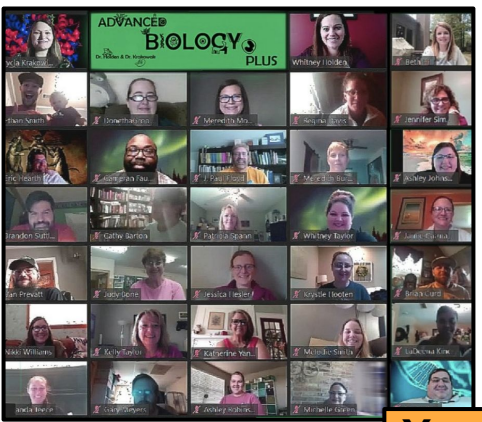
transformation



gas sensors

Program Expansion

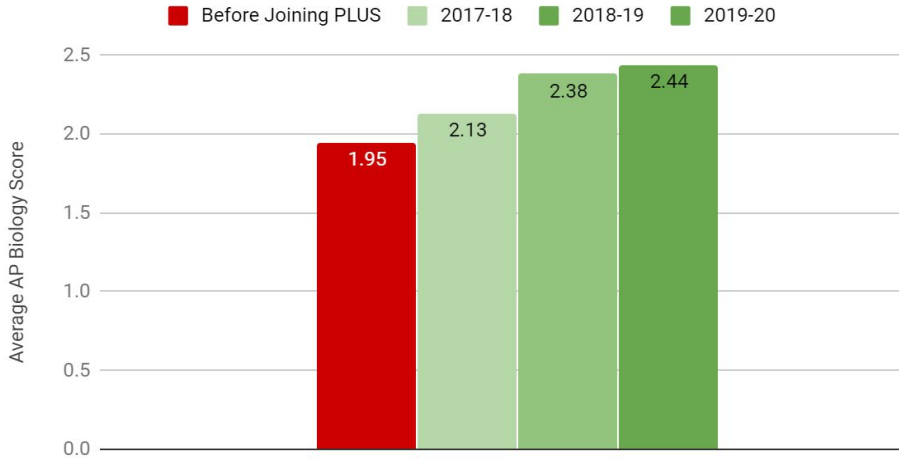
- **Pilot Year:** 14 schools
- **Year 2:** 24 schools
- **Year 3:** 27 schools
- **Year 4:** 36 schools + 3 grads
- **Year 5:** 40 schools + 10 grads



RESULTS

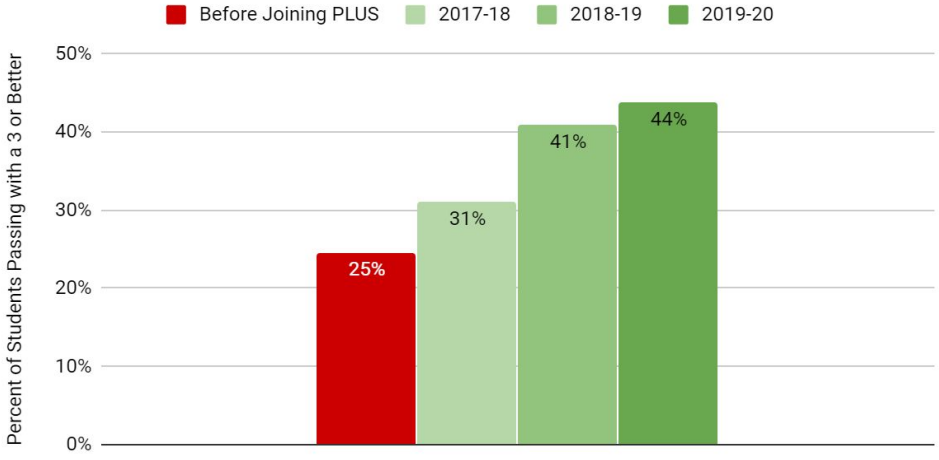
Impact of Advanced Biology PLUS on AP Biology Scores

Average Scores of Participating Schools Before Joining PLUS and for Each Cohort



Impact of Advanced Biology PLUS on AP Biology Passing Rate

Percent of Students Passing with a 3 or Better Before Joining PLUS and for Each Cohort



For registration and more information, visit:

https://tinyurl.com/2022APBioPLUSRegistration