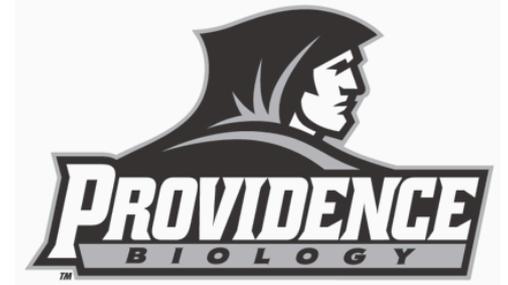




PROVIDENCE
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Lessons from COVID-driven teaching adjustments

Brett Pellock, Ph.D.
Associate Professor of Biology
Providence College

RI-INBRE Winter Retreat
15 January 2021

Introduction and Context

12th year at Providence College

Spring 2020: *Microbiology with Lab*

36 students in 2 sections of lecture and 2 of lab

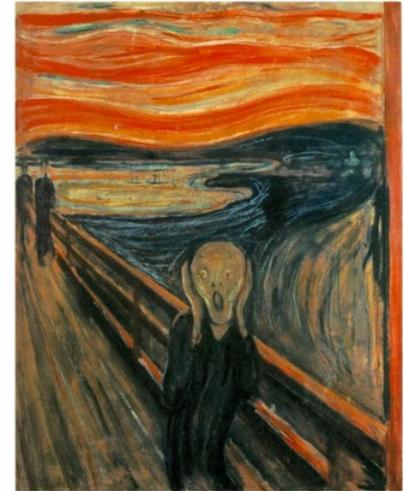
Fall 2020: *General Biology I*

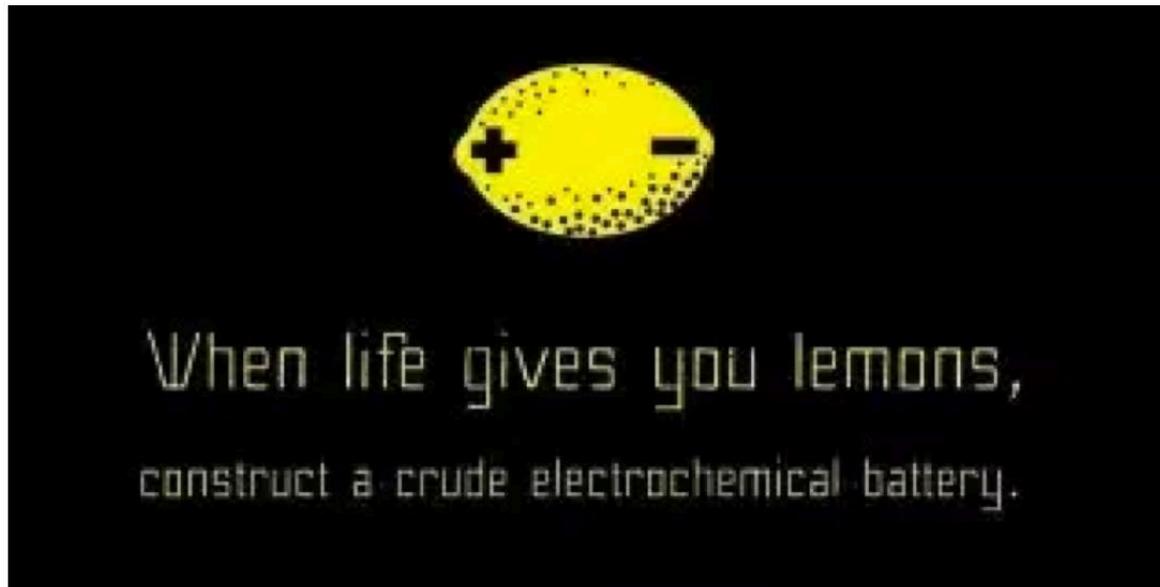
87 students in 2 lecture sections

Spring 2020 – *Microbiology*

- **Challenges:**

- Didn't plan for this
- Restructured course on the fly
- Students experienced a wide variety of circumstances
- Zoom fatigue set in quickly
- My children were online for school





Spring 2020 – *Microbiology*

- **Addressing the challenges: Simplify.**
 - Knew it could not be the same as in-person
 - Canceled lab
 - Mini-lectures – distillation to key points
 - Guided discussions – application of concepts



Will continue to use guided discussions in upper level courses

COVID-19/SARS-CoV-2 Discussion #1 – Virology

Please read the articles at following links. As you do so, research and consider the following questions in advance of our class discussion.

Links:

<https://www.nytimes.com/interactive/2020/03/11/science/how-coronavirus-hijacks-your-cells.html>

<https://www.nytimes.com/interactive/2020/04/03/science/coronavirus-genome-bad-news-wrapped-in-protein.html>

Note: Providence College has NYT subscription access for faculty, students, and staff:
<https://pml.providence.edu/research/nyt-wsj-subscription/>

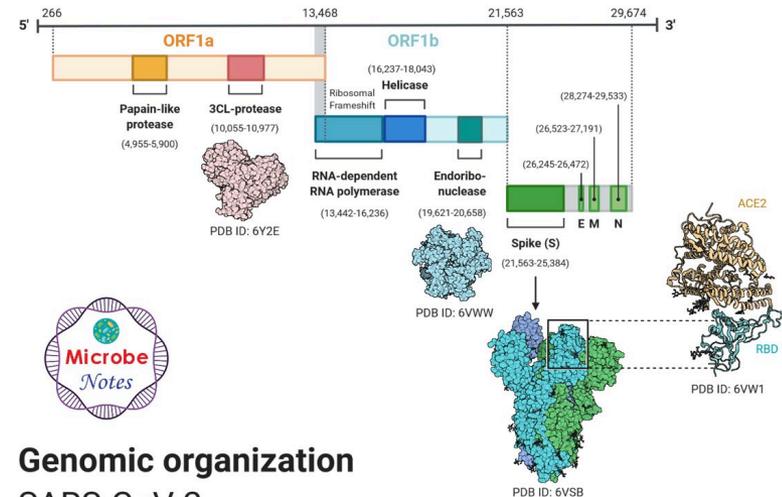
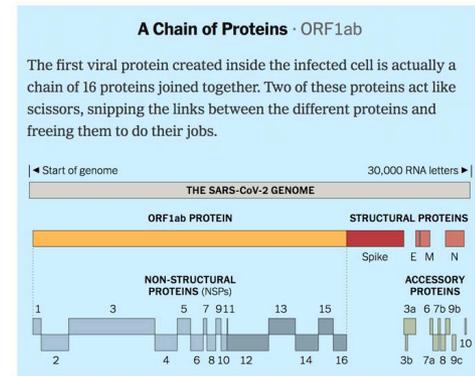
https://en.wikipedia.org/wiki/Severe_acute_respiratory_syndrome_coronavirus_2

https://en.wikipedia.org/wiki/Angiotensin-converting_enzyme_2

Questions:

- 1) Coronaviruses are zoonotic pathogens. What is a zoonotic disease, and why is this relevant for COVID-19/SARS-CoV-2? What are the potential zoonotic sources of COVID-19/SARS-CoV-2?
- 2) What is the receptor for COVID-19/SARS-CoV-2? What is the tissue distribution for this protein in humans? How does this affect the viral tropism of COVID-19/SARS-CoV-2 in human infections?
- 3) What does it mean to say that COVID-19/SARS-CoV-2 is a (+) strand RNA virus? How does the virus replicate itself during an infection?

Read the article NY Times articles and compare what you read to the diagram above. We will discuss this infection process together in class. Some helpful diagrams are on page 2. More detailed information is on pages 3-5 if you are interested and get that far.



Genomic organization
SARS-CoV-2



Fall 2020 – *General Biology I*

- **Advantage:**

- Time to plan
- Ability to leverage electronic resources

- **Challenges:**

- **Mostly first year students** – how to connect?
- Ever-changing mix of in-person and remote students
- Students in wide variety of circumstances
- Electronic platform fatigue

Avoiding electronic platform fatigue



TOP HAT



Webex Meetings



Instagram

Kahoot!



Google Meet

1. Simplicity of connection to course

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Home ▾ Advising (Brett Pellock) ▾ FA20M General Biology I ▾ Health P

Overview

- Syllabus
- Announcements
- Messages
- Calendar
- Resources
- Assignments
- Tests & Quizzes
- Gradebook
- Roster
- Zoom
- Site Info
- Research+Adopt ...
- Purchase Course Ma...
- Contact Us
- Library Help

OVERVIEW

Site Information Display

General Biology I - Fall 2020 - Pellock
Ruane 105 TWF 0830-0920 or TWF 0930-1030
Instructor: Dr. Brett Pellock (bpellock@providence.edu)
Office: Sowa LL33; Lab: Hickey Hall LL15
Zoom office hours: M 1400-1600, R 2100-2300, and by appointment
Zoom: providence.zoom.us/my/brettpellock
YouTube playlist: tinyurl.com/BIO103F20-Pellock

Peer Study Group Leader Sessions:
Justin Babu: Wednesday 1900-2100
<https://providence.zoom.us/my/jbabu>
Claire Stover Thursday 1900-2100
<https://providence.zoom.us/my/cstover423>
Laura Arango Sunday 2000-2200
<https://providence.zoom.us/j/8638730713>



- Central LMS info page

- One Zoom link

- One YouTube playlist

- TA Zoom links

2. Flexible, standard course content delivery

- Post slides and YouTube recording of the lecture by mid-afternoon before class.
- Zoom broadcast of live lecture on laptop camera at front of room.
- Pause and engage remote students during lecture
- Lots of virtual office hours from instructor and TAs

3. Restructured lectures and exam preparation cycle

- Shorter lectures to reduce Zoom fatigue.
- Applications questions at end of lecture.
- One or more review classes before exams.
- Synchronous and asynchronous online exam sections
- Lots of office hours from instructor and TAs

What will I keep?

- **Recorded lectures:** Flexibility and structured study aid
- **Virtual office hours:** Less formal and easier to connect with students
- **Shorter lectures:** Crisp and ensures time for synthesis
- **Exam preparation cycle:** Reviews during class time instead of at night; evening office hours

What needs work?

- **Online exams:**
 - **Harder to give a mix of Bloom's level questions**
 - **Students didn't fully take advantage of the reduced time pressure**
 - **Online cheating concerns**
- **Connection with students: Harder to identify and redirect struggling students**

What are your experiences and recommendations with:

- **A mix of in-person and remote students?**
- **Keeping everyone engaged?**
- **Remote labs?**
- **Online assessments?**
- **Research experiences for remote students?**
- **Research progress with added demands?**
- **Balancing personal and professional life?**
- **Mental health considerations?**
- **Other?**