



# From the lab bench to the Zoom room: promoting science literacy

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INNOVATIVE ONLINE TEACHING & RESEARCH DURING A PANDEMIC SYMPOSIUM

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# Transition to remote research activities

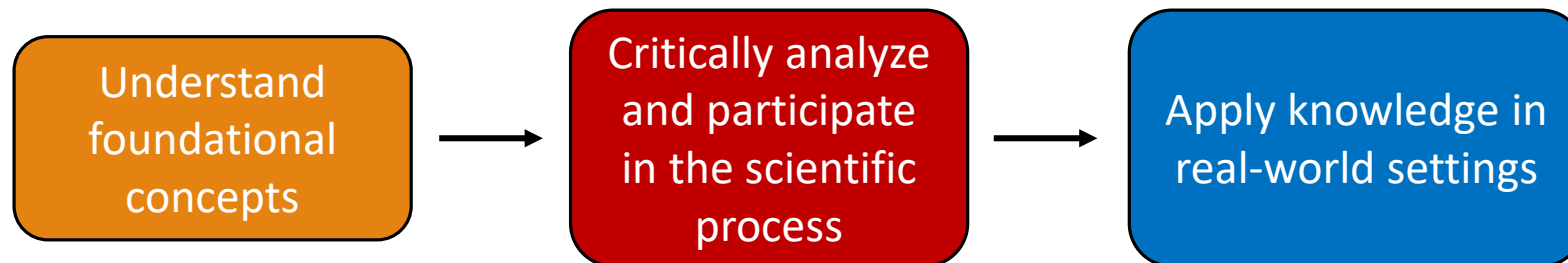


## In-person lab activities:

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- Sought to develop practical skills in molecular biology.
- Focus on examining cellular stress pathways in glucose dysregulation.
- Suspended ~ 6 weeks into fall 2020 term to de-densify lab to safely continue animal-based studies.

## **Utilized the video conferencing platform, Zoom, to promote science literacy**



# Focus on the following constructs:

Enhance  
understanding of  
foundational  
concepts

**Read scientific publications to increase understanding of relevant background knowledge in the field.**

- Selected review articles focused on hepatic ER stress and energy homeostasis.
- Selected relevant primary publication.

## **Chemical Chaperones Reduce ER Stress and Restore Glucose Homeostasis in a Mouse Model of Type 2 Diabetes**

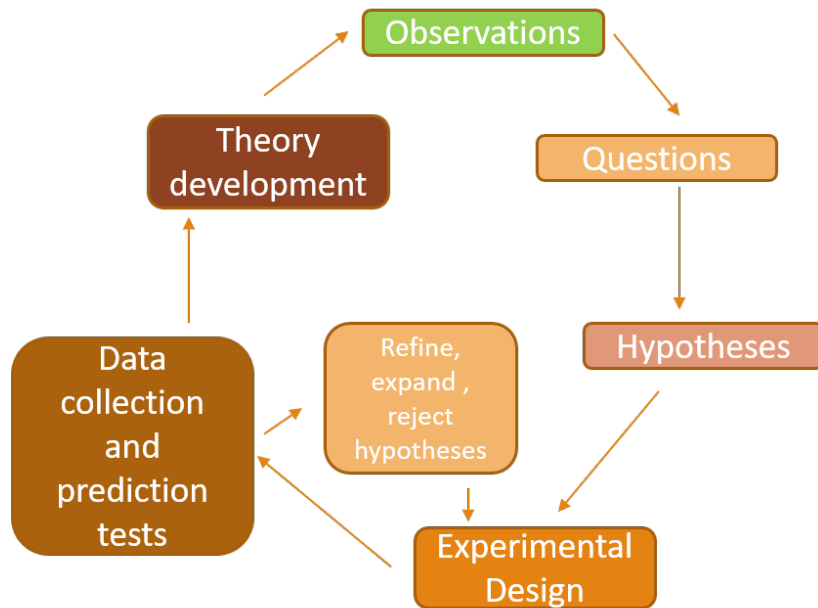
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# Focus on the following constructs:

Critically analyze  
and participate  
in the scientific  
process

Understand and evaluate experimental design, results, and interpretation of data.



**Develop skills in science communication.**

Effectively communicate Ozcan and colleagues' scientific findings and conclusions via a **PowerPoint presentation**.

- Served as final collaborative project between students that resulted in a journal-club styled presentation

*Critically assessed these findings in the context of our lab's research interests, while furthering their understanding of techniques commonly used in the lab.*

# What worked and planned changes

Zoom meetings and email communications:

reliable

flexible

Guided paper selections:

Navigating online databases (PubMed)

Primary vs secondary publications

Prompts and questions that guided students towards selection of useful articles

Scaffolded activities:

Initial list of Publications

Filtered list of publications matching criteria (conceptual and technical)

Critical engagement of scientific publications

Communication of learned knowledge

Planned changes

Tandem modification of shared documents:

- foster collaborative experience.

- resolve issues or misunderstandings in real time with opportunity to directly monitor how students remedy issues.

# Plans for remote research in spring 2021

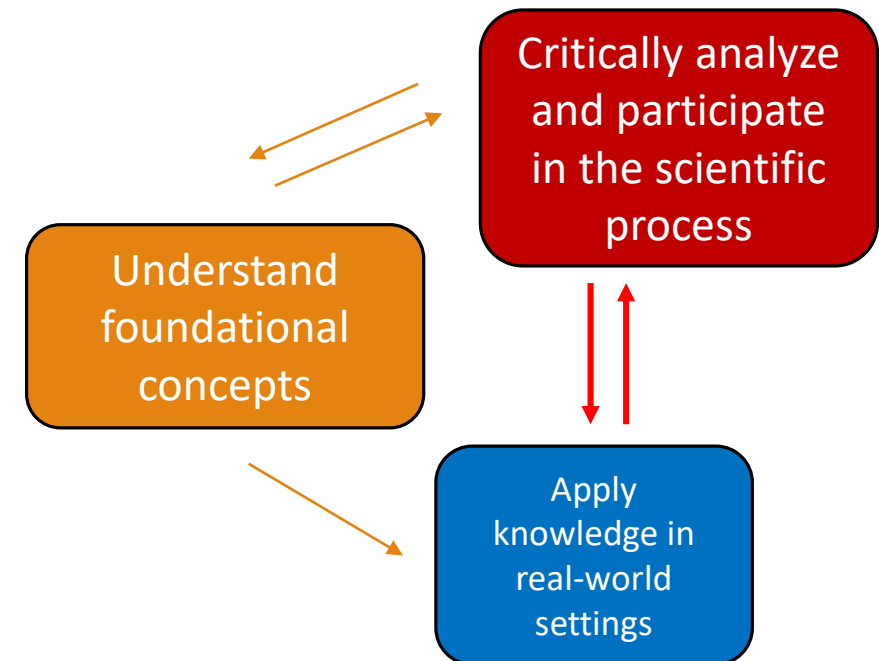
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## Journal-club presentations.

- Senior students will model for junior independent study students.

## Data processing and data analysis.

- Densitometry analysis of Western immunoblots using Microsoft Office, NIH Image J, and GraphPad Prism software.
- Data interpretation.



# Suggestions for impactful online research experiences.

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1. Set realistic expectations and milestone dates.

Provide sufficient guidance (i.e., concept check questions, guided prompts).

2. Ensure relevance to lab's research focus.

Smooth transition back to in-person research activities.

3. Engage in online pedagogy training.

Quality Matters certification workshops and courses.



## Acknowledgements:

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- **Rhode Island College** for professional development training in online pedagogy.
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# Questions?

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