

2019

# Immersion in Physiology Bolsters Bedside Mechanistic Thinking

Rebecca Miller

*Virginia Commonwealth University*

Follow this and additional works at: [https://scholarscompass.vcu.edu/med\\_edu](https://scholarscompass.vcu.edu/med_edu)

Part of the [Medicine and Health Sciences Commons](#)

© The Author(s)

---

Downloaded from

[https://scholarscompass.vcu.edu/med\\_edu/60](https://scholarscompass.vcu.edu/med_edu/60)

This Poster is brought to you for free and open access by the School of Medicine at VCU Scholars Compass. It has been accepted for inclusion in Health Sciences Education Symposium by an authorized administrator of VCU Scholars Compass. For more information, please contact [libcompass@vcu.edu](mailto:libcompass@vcu.edu).

# Immersion in Physiology Bolsters Bedside Mechanistic Thinking

Michael L'Heureux, MD, Rebecca Miller, MD, Stephanie Ann Call, MD MSPH

## Purpose and Background

- Compression of education and training with other responsibilities into more limited work hours
- Shift towards algorithm-based teaching/practice
- Less time spent in practice of basic science
- Intellectual Curiosity/Mechanistic Thinking less emphasized
- Self-directed learning and intellectual curiosity a primary focus for improvement in 2017

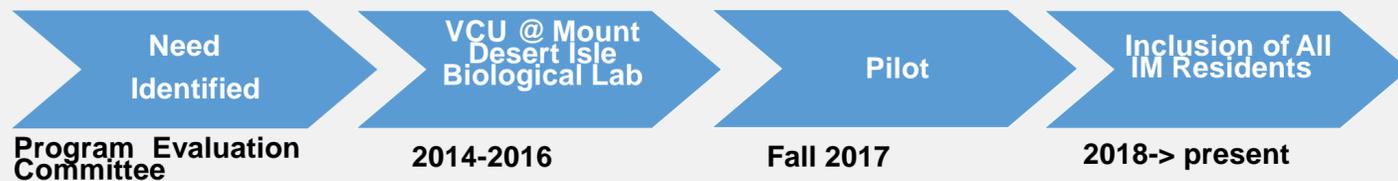
## Mission Statement

Through science experimentation in applied physiology, housestaff will reconnect with basic physiology and apply learned principles to commonly encountered clinical scenarios. Housestaff will participate in experiments to stimulate intellectual curiosity among participants and encourage appreciate and incorporation of physiology into their clinical and teaching roles.

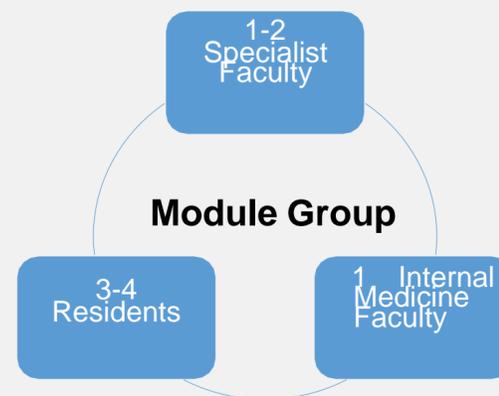
## Learner Objectives

By the end of the course, residents will/be able to:

1. Reconnect with and review concepts basic physiology
2. Participate in physiology experiments
3. Gain an appreciation for the scientific process
4. Practice presenting scientific data
5. Utilize concepts in physiology to promote in intellectual curiosity and mechanistic thinking
6. Apply principles of physiology to commonly encountered clinical scenarios
7. Integrate science and pathophysiology into clinical practice



Course Day	Itinerary	Description
SATURDAY	Arrive to facility/ Introduction Presentation	Overview of course and objectives for residents
SUNDAY	Experiment Day 1	- Concept Overview - Hypothesis Generation - Experimentation - Discussion of results
MONDAY	Presentation Day 1	Each group formally presents their data to their peers and faculty
TUESDAY	Experiment Day 2	Residents are switched to a second module (all modules chosen at random)
WEDNESDAY	Presentation Day 2/ Return home	Final formal presentation day with course closure



## Results



- Total 36 residents and 15 faculty attended to date
- Pre-course, immediate post-course, and 3-month post-course surveys
- Response rate: 100%, 83%, and 80% respectively
- Overwhelmingly positive feedback
- High satisfaction with interactions with faculty and peers
- >90% of residents felt we met objectives
- Self-reported behavior questions to evaluate change

*"I absolutely loved this experience. ...I feel so honored and lucky to have gotten to participate and promise to bring this excitement and culture forward with me in my daily thought process and in my teaching."*

*"I feel I've come away with a fresh perspective to approaching clinical questions"*

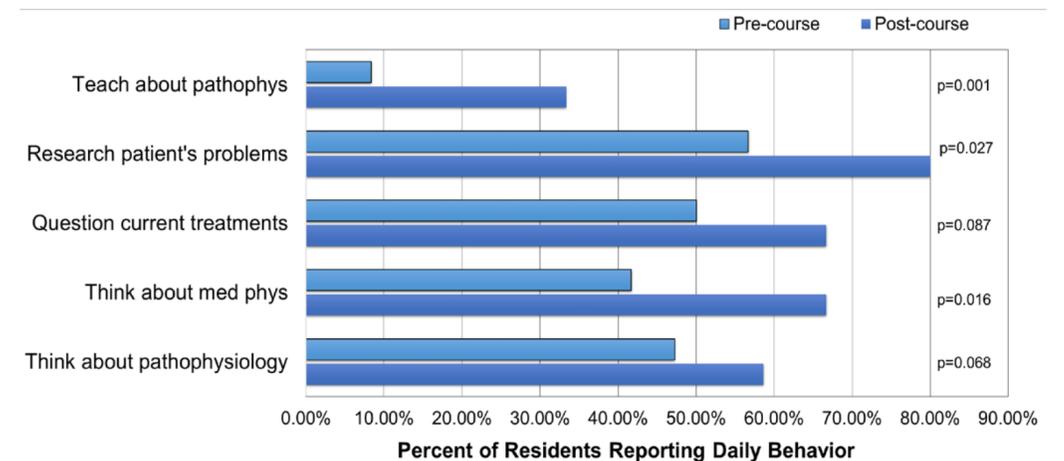
*"To be given five days to retreat ...was so special and brought back a spirit of curiosity that reminds me of my time in medical school."*

## Discussion

- Successfully implementation of an immersive course in physiology
- Residents positively regarded the course
- Nearly all residents reported we met our objectives
- Residents self-reported behaviors changed and lasted 3 months after the course
- We suspect these changes in behavior will be beneficial to patient care and quality of care provided

## Future Directions

- Include all medical residents
- Partner with other departments/institutions
- Objective measures: ITE, Board pass rate
- Impact on burnout and job satisfaction



## References

1. Spencer AL, Brosenitsch T, Levine AS, Kanter SL. Back to the basic sciences: An innovative approach to teaching senior medical students how best to integrate basic science and clinical medicine. Acad Med. 2008;83:662-669
2. Woods NN, Neville AJ, Levinson AJ, Howey EH, Oczkowski WJ, Norman GR. The value of basic science in clinical diagnosis. Acad Med. 2006;81(10 suppl):S124-S127.
3. Herzig SJ, Aird WC, Shah BJ, McKernan M, Zeidel ML. From hagfish to humans: teaching comparative physiology to internal medicine residents. Acad Med. 2012 Mar;87(3):372-7. doi: 10.1097/ACM.0b013e3182444c1b. PubMed PMID: 22373634.