



# Sweat Patch Biomarker Pilot Study at NIH

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## My Summer:

This summer I had the privilege of working at the National Institutes of Health (NIH) within the National Institute of Nursing Research (NINR) in the Henderson/Gill Research group under Dr. Lichen Xiang. I spent the summer conducting a pilot study on verifying the viability of sweat patches to analyze electrolytes in both artificial and human sweat. It was an exciting summer of literature research, experimentation, and analysis.

## What I learned:

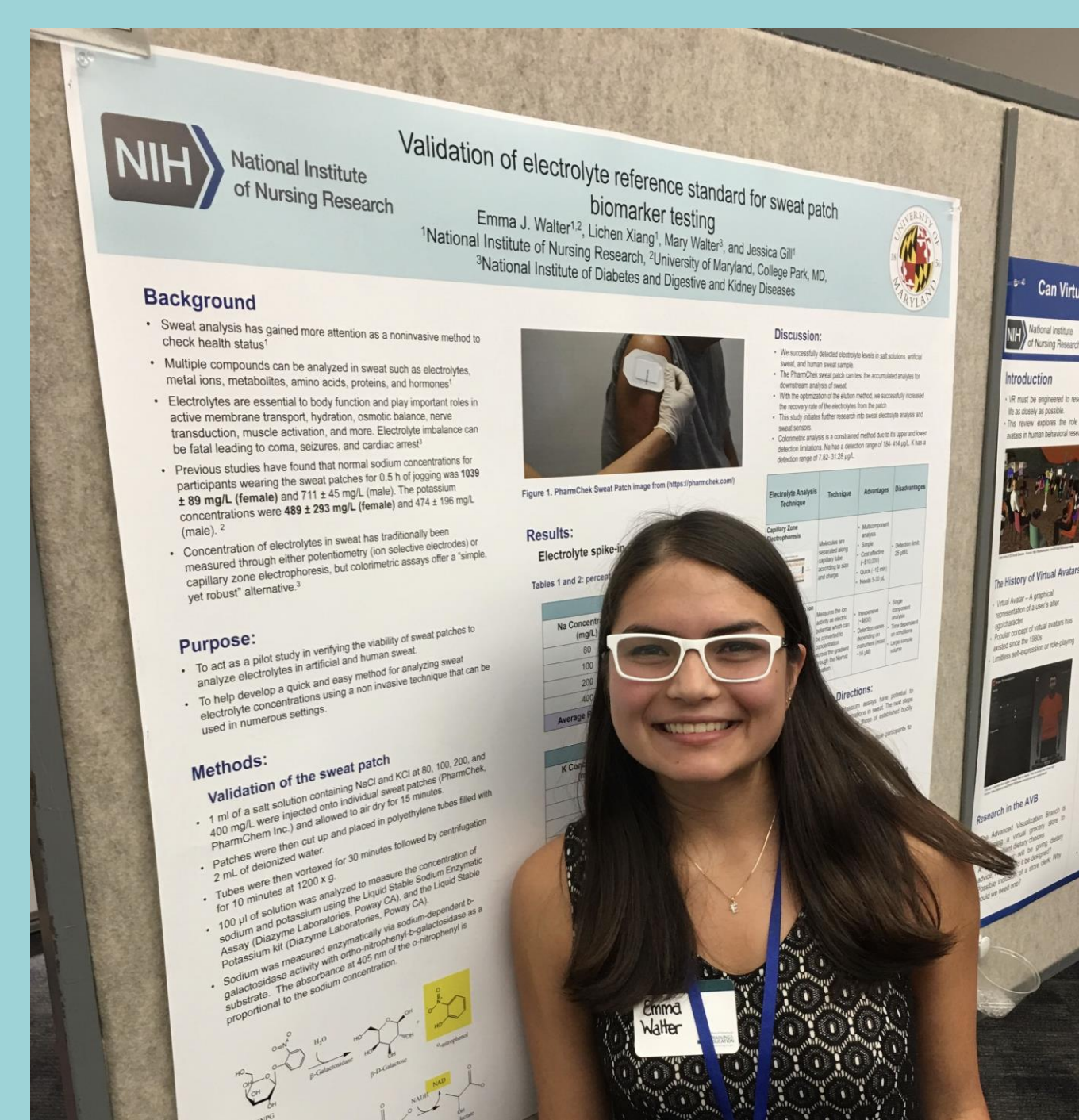
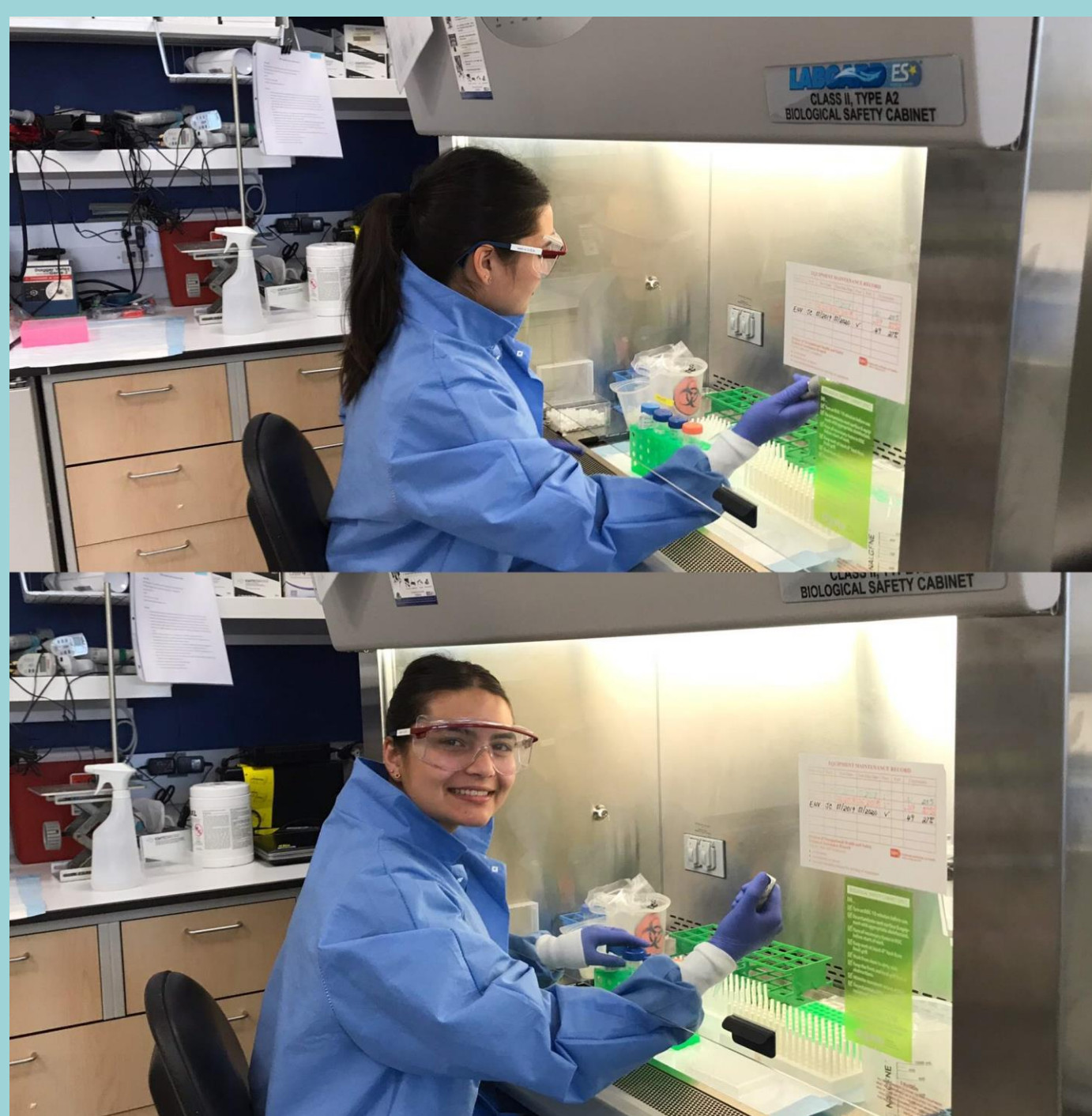
- Science is awesome.
- I thoroughly love research. I love researching about a topic and trying to conduct a study in order to learn something new or to try to accomplish something. It was really cool trying to problem solve and get the colorimetric analysis to work this summer. It involved a lot of experimental dilution but it all worked out in the end!
- My dream would be to some day go into medical research. This summer was amazing because I got to combine my love of chemistry with the fascination of medicine.

## My Site:

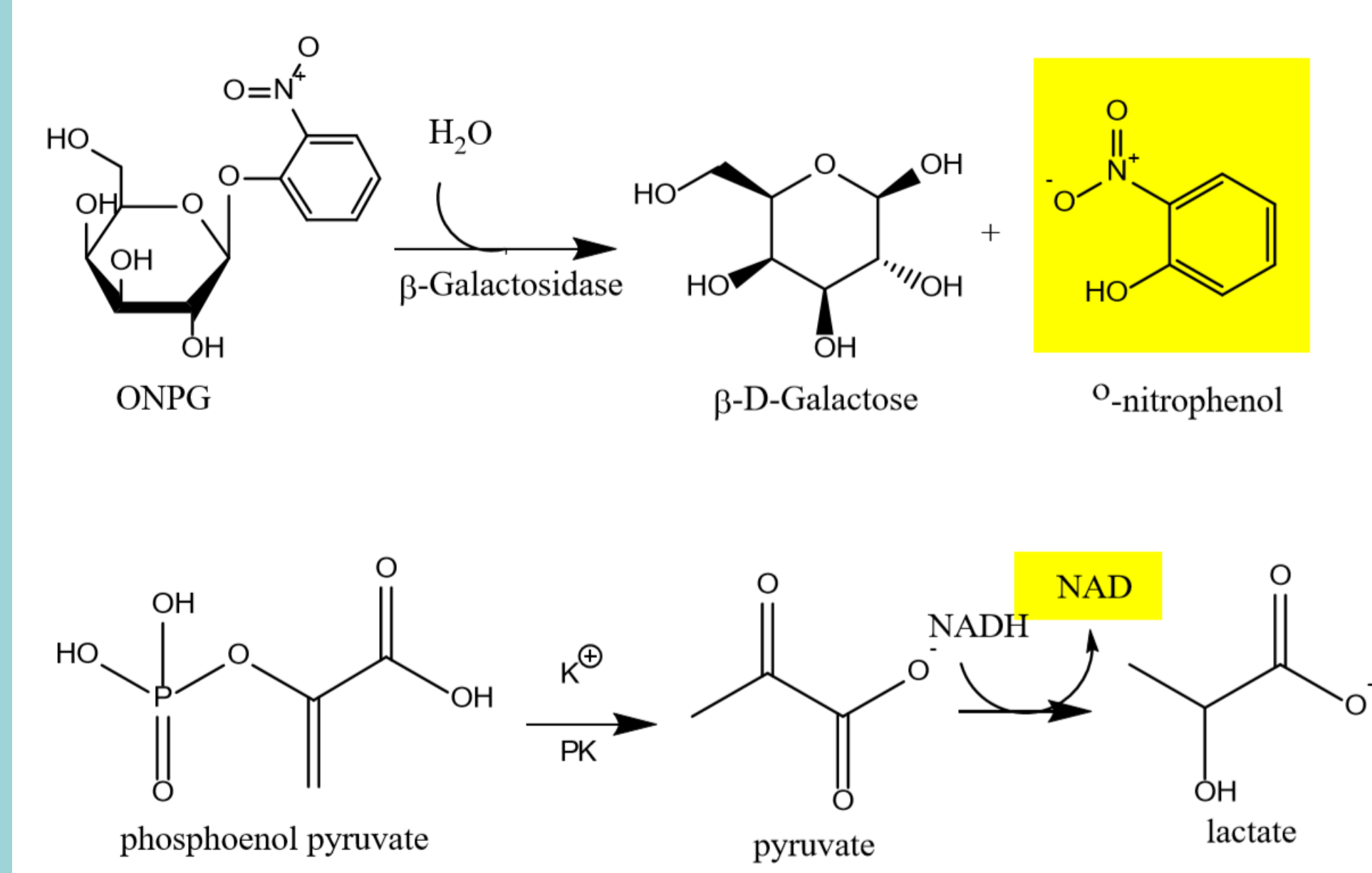
Henderson/Gill Lab within the National Institutes of Nursing Research (NINR) within National Institutes of Health (NIH)

## Research:

I worked at NIH this summer from late May till late August. My summer started mostly with literature research- learning about the background of sweat testing, specifically the different techniques to measure different biomarkers in sweat such as electrolytes, metal ions, metabolites, amino acids, etc, and the importance of this info. Then later in the summer my mentor, Lichen, and I started designing a pilot study using PharmChek sweat patches to collect sweat and colorimetric analysis to analyze the electrolyte concentrations, and eventually we conducted the study. His lab is planning on using this information to eventually conduct a much larger sweat study for people of all different social, cultural, economic, backgrounds.



Photograph of me spiking artificial sweat onto PharmChek sweat patches (left). Photograph of me in front of my research poster presenting my results at the end of the summer.



This is the basic reaction of the colorimetric analysis used to analyze the concentrations of electrolytes in the sweat patch samples. I just think this reaction is so simple and clever and I spent so long this summer researching different ways to measure these concentrations and this was the cheapest and fastest method I could find.

## Impact:

My work this summer was a pilot study meaning that it was the first study to take place using these sweat patches and the colorimetric analysis method to verify that this was a viable option to both measure and analyze electrolytes in sweat. My study was a success and the Gill lab at NINR is planning on moving forward in their future studies using these sweat patches and analysis method.

## Future Work:

In the future I really hope to pursue research and my education within biochemistry to one day continue conducting research in a lab.

## Acknowledgments:

I would like to thank Dr. Lichen Xiang for being my mentor all summer and leading me through this project and research. I learned so much about the scientific method and conducting a study from him! I would also like to thank the Gill lab at the NINR as well as NIH and the OITE summer intern program. In addition I want to thank Drs. Holtz and Merck and all of SGC!

