

On 7/20/2017 3:06 PM, McMillan, Biko wrote:

Hi Dr. Patty,

Back in the 2013-2014 school year I took your chem class and came out with a C or C+ in both of your intro classes. I was humbled, to say the least. Admittedly, I still actually do dislike chemistry (I disliked it before I came to college), but I have to tell you how you saved my life...figuratively, of course.

I'm interning this summer at the Uniformed Services University of the Health Sciences over in Bethesda in a Microbiology lab and part of what I'm doing here involves me growing bacterial cultures in specific media. I formulated a question in my head and I asked my PI if I could test it and she said yes, but I would have to figure out how to do it since she didn't know. The specific task I had to do was remove phosphate from some growth media. I searched Pubmed and other search engines for close to 10 hours to try to find someone who had done it before and eventually I found a paper from 1975 which did exactly what I was describing but the wording of their methodology was off so it was hard to understand. I even tracked down one of the original authors but he couldn't remember how it was done, of course.

Then suddenly it hit me that I did actually know more chemistry than I gave myself credit for. Based off everything I knew, I was able to calculate the molarity of phosphate in the media and then calculate how much $MgCl_2$ I would need for this specific feat. What I didn't understand was why I would use $MgCl_2$ and also increase the pH and heat the solution...that was until I remembered the time I spent studying the solubility chart and realized that $MgPO_4$ was insoluble.

Premed students and also those going into research (I fall into both categories) often struggle with understanding why we would need so much in-depth chemistry if we are studying medicine or working in a micro lab but it truly shows up everywhere. We also assume that our grade dictates that we didn't learn much. We never realize that the saying "you know more than you think" isn't just a cute line to say to someone before they go into an exam--it's a mantra that young scientists should hold on to because the more we go into it at this age, the easier it is to feel intellectually inadequate.

...but now my PI wants me to type out the protocol to "dephosphate" the media since I'm the only one who knows how and I could very well be on my way to my first publication.

All this to say: THANK YOU.

Your tests and quizzes were hard, but the long hours studying and not getting that A or even a B was still very much worth it in the long run (but students should still try for the A).

Best,

Biko McMillan

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On Jul 20, 2017, at 8:22 PM, Patty Wisian-Neilson <pwisian@smu.edu> wrote:

Dear Biko,

Your email made my day! Even better, I was working on my syllabus for this fall and an assignment aimed at getting students to approach chemistry with thinking rather than memorization, so your timing was superb! If it's OK with you, I may use your story in my class. It's absolutely wonderful. I know so many students who made Cs in what they thought were important courses, who are extremely successful scientists, managers, business people, etc. It's how you learn to use knowledge and how to think that counts. THANK YOU for sending this. Good luck on your research and on getting that first publication. Nothing can ever replace the feeling of figuring out a hard problem like you did. It's is the best feeling in the world!

Sincerely,
Dr. P.

Dr. Patty,

I'd love for you to use my story! I had the same realization last summer at my Barcelona internship when I saw physics in my neuroscience lab and just had to share with Dr. Sekula. Glad I could give back in some way! I hope the students can pick on it from your assignment because the rote memorization we all have to use is great but it gets you nowhere if you can't apply it!

Thank you for your words of support! I'm hoping the long hours are worth it!

Best,

Biko