



Weighing History at a PhD Thesis Defense

Dear Labby,

I have just defended, successfully, my PhD thesis. Well, successful in all but one respect. My project was on insulin-mediated signaling in adipose tissue and resulted in two first-authored publications. My defense went well, but near the end, the external member of the committee—call her EM—said, “OK, we’ve probed your grasp of your work, and we are satisfied. But now I want to go to a different point.” I was a bit scared but waited. She went on: “In neither the introduction section of your thesis nor in your defense presentation is there even a zephyr of historical background.” EM then asked me several questions about previous eras of insulin research, all of which I

flunked. She then asked me, and her words are etched in my mind, “Do you feel that a degree that has the name Doctor of Philosophy should be awarded to a student who seems to know nothing at all about the field prior to 1990?”

To say the least, I was dumbfounded. Another committee member then chimed in, saying “Our students do need to know more about the background of their field.” Then he turned to EM and asked, “But are you saying we should consider not passing this student on that sole criterion?” EM replied: “No, but I think it is important enough to have been raised, discussed, and heard by the student.” I then was excused, the committee deliberated a few minutes, and I was called back to learn that I had passed.

—Neo-Doctor of Philosophy

Dear Neo-Doctor of Philosophy,

First, you need not modify the title of your degree—all PhD recipients in the modern era are “neo” ones in the sense that a full grasp of the history of one’s field became impossible a century ago. Second, your thesis defense experience is rather unusual, not because the historical context point was raised but rather because it was brought forward with such force. Your committee’s external member was clearly exercised, but she might have made her point more diplomatically. After all, according to every other criteria, your defense went well. Labby offers the following thoughts.

First, there is a tendency for scientists of every generation to forget how little they knew as students and then, 40 or more years later, for them to suddenly think they knew a lot more than they did at the time. Some senior scientists get very grumpy about how little history their students seem to know. Yet these very same senior scientists might look in the mirror and reflect back some decades.

Accordingly, as a professor, Labby has adopted the “one generation” rule. It posits that finishing PhD students should know the key antecedents in their field back at least one generation. For example, a student defending a PhD in neuroscience should know what was done by Hodgkin and Huxley, but not necessarily what Camillo Golgi did. A student in genomics should know about another Hodgkin (Jonathan) and other key players in the 1970s to 1990s, such as DNA synthesizer pioneers Lee Hood, Michael Hunkapiller, Marvin Carruthers, and Robert Letsinger.

In your specific case, the external committee member clearly thought that you omitted historical context to an egregious degree. Labby always looks for a center of compromise. Your inquiry’s timing suggests that you are still making corrections in your thesis—that’s the norm. You should, both for the thesis revision and in your journey as a student, step back in the insulin field. Search in PubMed for Cuatrecasas, P.M., and you will see a key paper decades ago that revealed the hormone could act without entering cells. Then, just for your “non-thesis” erudition, go back to the insulin discovery and search for Bliss, M. (the definitive biographer of Frederick Banting). Look at the Nobel Medical Foundation website for the deliberations, opened to the public in 1973, that led to the 1923 Nobel Prize and the exclusion of Charles Best. And if you are still keen to learn more, beyond revising your thesis, read the extraordinary book *Breakthrough: Elizabeth Hughes, the Discovery of Insulin, and the Making of a Medical Miracle* (by Thea Cooper and Arthur Ainsberg, St. Martin’s Press, New York, 2010). You may not have appreciated during your thesis work at the bench, setting up immunoprecipitation experiments and running gels, what a long, grand journey the story of insulin has been. You are a part of its modern era and this might have been one of EM’s reasons for challenging you. In any case, your thesis research makes you a part of this noble guild.

Do reflect on this and make suitable revisions of your thesis. You don’t need to go back to Claude Bernard or Aristotle. But you can precipitate EM’s angst with thoughtful ammonium sulfate and come up with a well-intended fraction. And on behalf of all patients and their families, thank you for your work. ■

—Labby

Direct your questions to labby@ascb.org. Authors of questions chosen for publication may indicate whether or not they wish to be identified. Submissions may be edited for space and style.