

Dr. Thomas Wiese
Department of Chemistry
Sabbatical Report
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- My sabbatical plans, though I kept the sabbatical application somewhat vague, were to
- 1) spend time at R-1 institutions, where I could see better what changes were occurring in the use of animals and radioactivity in biomedical research;
 - 2) spend time at a medical school getting refreshed on the current conduct of clinical trials;
 - 3) spend much time developing my capabilities of imaging, most particularly confocal microscopy;
 - 4) spend time working on projects I have started but not completed;
 - 5) update my math skills to better perform systems analysis and mathematical modeling of biochemical networks, which has become of more importance to my research agenda;
 - 6) build and rebuild network connections that have degraded gradually over my time at FHSU.

The sabbatical was productive but I did not accomplish all I had hoped (the above plans are ambitious even for a type A personality). I am most disappointed in goal six, network construction. Three of the institutions I had planned to spend time at in order to develop collaborations fell through. Two because people I intended to work with moved to new institutions further away from FHSU, and one because a potential collaborator did not receive tenure. I did however renew collaborations at two previous institutions so the goal was not a complete failure.

I vastly improved my math abilities by taking refresher courses. I completed Calculus I and Calculus II almost finished Calculus III. In addition I finished part of Differential Equations and portions of Probability. I worked through enough of a Bioinformatics course to realize it could not advance my knowledge in this area so did not waste the time completing it.

I finished and submitted two manuscripts. The first is titled "Developmental Regulation of the L-Fucokinase and Mannokinase in Embryonic and Postnatal Mice" and was submitted to *Developmental Biology*. It is been returned for revisions which am pursuing now. The second is a much larger work titled "Copper Induces Multiple Cellular Defects in Contributing to Nerve Cell Toxicity" which was also returned with recommendations to split the manuscript into two manuscripts and resubmit. Copper toxicity is a very complicated issue and splitting into two parts will hopefully finalize this body of work as have grown tired of it.

About one third of my time was spent on performing experiments and preparing slides for confocal microscopy. This is a new, cutting-edge technique which cannot be adequately described in writing. Confocal microscopes cost about \$250-\$275,000 so this work was performed at the University of Iowa. I also conducted an advanced fluorescence microscopy project at Wichita State University. This portion of the work will be presented 14 October in a Chemistry Department seminar which was the other means of reporting sabbatical results that had agreed to.

Finally, I have learned that the use of animals has become more difficult everywhere than it used to be, but that it is still a lot easier to do elsewhere than here. It was very refreshing to be doing hands-on clinical trials again, albeit in a much more limited role than when I was a full-time employee at a medical school.

Overall, I consider my sabbatical to have been highly productive. I would be remiss to not point out that students working with me here also prepared slides which were examined by both fluorescent and confocal microscopy. And, multiple past students were included on the two manuscripts submitted. Thus, sabbatical results have already impacted current and past undergraduate students.