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Greetings,

I recommend Eric Kramer to you enthusiastically for a position in systems biology.

Eric Kramer walked into my office approximately 2 years ago, soon after I had moved my lab to the University of Massachusetts. He wanted to talk to me about plant growth, which is something I work on. Eric trained as a physicist. Somewhere in physics there is a description of topology groups, I think string theorists worry about it, I don't know. But Eric noticed that grain patterns in wood reflect this abstract heuristic concretely. He was fascinated.

To understand the significance of his observation, he started learning about tree growth. The grain in wood is formed from a concentric pattern of cellular expansion that is coherent but allows local deviation, particularly when the growth field encounters an obstacle, such as a branch, living or dead. Eric developed models for these grain patterns in trees and he discussed them with me. These discussions were fascinating. Suddenly, I was in the position of having to justify assumptions that I had thought were facts. As a physicist, Eric was looking at these growth phenomena with fresh and intelligent eyes.

It turns out the grain patterns in wood depend in large measure on the plant hormone auxin. Very little is known about auxin movement in trees and Eric's models were for that reason rather unconstrained. He undertook to collaborate with a scientist at UMass, Jennifer Normanly, who is an expert in measuring auxin levels, and he and his students at Simon's Rock collected tree samples for measurement. Eric soon realized that almost all experimental biology on auxin is done on herbaceous plant organs (stems and roots) and usually growing ones, not wood. He also realized that there are fundamental lacunae in our understanding of how the molecule is transported. Thus, he moved from trying to understand grain patterns to trying to understand something more basic, namely the polar transport of auxin. He developed a model for polar auxin transport in non-woody tissue, which was published last year in Trends in Plant Science, the first new model for this process published in many years.

The model has explanatory power and makes novel, testable predictions. Auxin is a major plant hormone and Eric's work on how it is transported is likely to have a major impact. Already, one of the leading auxin biologists, Malcolm Bennett (University of Nottingham) contacted Eric on the strength of his paper and began to explore a couple of key predictions with him, work that has been accepted for Nature Cell Biology. However, his model also relies on one parameter for which there are only the poorest of estimates in the literature. This is the diffusion constant of auxin within the cell wall. Eric wanted to measure this parameter to improve his model and he had a sabbatical coming. I was able to obtain funding for him which allowed him to spend this academic year (05 – 06) in my lab. He is measuring this diffusion constant in two ways, one using photobleaching recovery kinetics and the other directly from following radioactive auxin as it diffuses in isolated cell walls. I have been completely impressed with Eric's ability to roll up his sleeves and get wet. Most physicists are feline, preferring to stay dry.

Eric is always stimulating. He reads voraciously and takes nothing for granted. He listens well and is never emotionally attached to his hypotheses. He thinks deeply about these phenomena and as a result makes a real contribution. I have a postdoc working on auxin related matters now, and he and Eric frequently discuss various points. It is no exaggeration to say that Eric is having a synergistic affect in the lab, making us think much harder about what is going on, and coming up with better experiments. It is a real boon having him here.

Personally, Eric is enthusiastic and energetic. He is friendly, interested in all the people in my lab, and interactive. I have never heard him lecture, but I expect he would be terrific. I am not entirely sure why he went to Simon's Rock, a small college in Western Mass. But I know that he now wants to leave. As he has gotten interested in biological problems, he has also gotten interested in the culture of biology, of experiments and meetings. He has gone to several plant biology meetings, including a FASEB meeting on Developmental Mechanisms (just plants) that I attended too by coincidence. He delights in exchanging ideas with established biologists, most of whom seem to reciprocate, enjoying a discussion with an interested physicist. He realizes now that Simon's Rock is too isolated and too teaching-oriented for his career objectives.

I am completely convinced that Eric will make a significant contribution to the field of auxin transport, working in association with experimentalists. I am equally convinced that given his polymath nature, he will not stop with auxin transport but will take up other challenges as they arise and develop other powerful and realistic models. It is rare to find a good physicist who is really interested in working with biologists. Eric is such a person. I urge you to interview him.

If you would like to speak with me about him personally, by all means call me.

Sincerely Yours,

Tobias I. Baskin