Special Communication

THE FREE WILL DROVE SANDRA MEYER TO THE TARGET

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This is a story of a young medical student, Sandra Meyer from University of Ulm, Germany. She started soon after her first professional equivalent examinations [known as Physikum] on research work leading to the degree of doctorate in medicine [MD]. Although the work could be accomplished during clinical clerkships, the thesis could not be defended until after the house job and final State medical examinations. One can be selected for a five year residency program in the field of choice as a physician with a doctorate degree or without. In the latter case, a resident is addressed as a doctor and in the former simply physician or surgeon.

Sandra experienced a number of brain storming sessions on the following questions: the choice of research topic; whether to undertake the exercise at all; how to proceed; when and where to begin. These queries come to mind when one embarks on a research journey. A research idea needs critical analysis to decide what one is looking for, a curricular plan, and the will to venture forth and seize the initiative. In this brainstorming process, the enthusiasm of an individual can be reinforced or damped depending on whom one exchanges notes with.

The following conditions commonly dampen enthusiasm: progress of research is slow and incomplete, half done in many cases, bogged down in experimental trouble shootings, and subjected to variability of the supervisors patience and mood as well as the infrastructure and financial support for research. With this knowledge, an effective design of a road map should include: timely decisions, adequate allocation of time and space for the work, use of established methods of study, or in order to establish a new method to answer a research query.

One of the challenges is to acquire hands-on experience in the methodology of proposed research. The quality of work will depend on inter-personal relationships and the enabling environment. Sandras research idea was imaginative. She wrote a stimulating, well conceptualized synopsis and obtained the time and support needed for her study. She realized that the will to work is finally everything that counts.

Sandra started her doctoral work with Professor Dr. P. Dietl in Physiology at the University of Ulm in April 2006. Her research work dealt first with the nurturing of mucus producing muscle cell line in order to characterize the membrane channels using the patch clamp technique. The technique would then be used as means to elucidate functions of the membrane channels.

It was Friday evening, 23 June 2006. Sandras experiments were yielding good results. She needed a few more experiments to conclude her work on the characterization of the mucus producing muscle membrane channels. Science was a real source of joy for her as her cell lines were hail and hearty. She was leaving for home over the weekend with the hope that her last experiment of the series would enable her on Monday to call it a day.

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The experiment, however, did not work on Monday. This could be considered as an experimental damper. The channels remained closed and not willing to open whatever she did over the whole day till midnight. Nothing helped. It seemed to be a complete strike by tender cells. Tuesday was also without any success. Colleagues were consulted for troubleshooting and yet nothing moved forward. The cells were not cooperating.

It was now the beginning of September. Sandra was reconstructing her experiment with a new cell line, rings, glass plates, pipettes and solutions. She smashed a few syringes on the wall out of anger and inability to find clues to the cause of failure. She tried another two methods but unfortunately they were not functioning either. Everyday she was in the lab for 12 hours. Nothing worked. For two months cells were not doing what they were supposed to do. Sometimes, science is a hard discipline. She was afraid that her work would not be completed in time for presentation in the upcoming doctoral seminar in December. She was hard-pressed for time.

Collegial courtesy and support prevented her from giving up the troubled project. It was also curiosity about why the experiment was not working that kept her going, with the hope to see a silver line in the dark clouds. There seemed to be another side of the moon which might be brighter. Sandra finally consulted her doctor father. She tried to explain that her frustration threshold was not high enough to continue for another two months in the lab. He responded in an artful manner that engendered confidence in her not to give up the fire for research. They concluded to park the patch experiment on ice. The newly thawed cell line should be tested for granules and their ability to exocytose using LTG dye method. It was difficult to take leave from the patch clamp. However, from the economy of time point of view, the alternative pathway seemed to be feasible.

Serendipity knocked at her door just as her experiments started functioning and yielding good results. Her cell line grew well. One of the cell types with large granules showed regularly exocytosis upon an adequate stimulus. Surprisingly, the exocytosis could even be blocked by an inhibitor of membrane channels from earlier experiments. What a surprise that the channels could elegantly be investigated by a dye method instead of being patch clamped.

All is well that ends well. December arrived. Sandra could conclude all her experiments on time. She started writing her doctoral dissertation on an original work worthy of being proud. Her joy was boundless as everything unfolded in a manner that enabled her to finish the project on time and present her thesis in the upcoming doctoral seminar.

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