Applying mouse genetics expertise to research

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Dr. Linder discusses her transition from providing mouse models to researchers to conducting mouse research herself.

After completing post-doctoral research in biochemistry at Washington State University, you worked in the Genetic Resources department at The Jackson Laboratory. What inspired this career decision?

I learned that The Jackson Laboratory had a Technical Services Advisor position opening when I was looking for academic positions after my post-doc. The position seemed to fit my personality, requiring a combination of scientific expertise and the ability to communicate with a wide variety of people. I was thrilled to move to Bar Harbor, ME, and Acadia National Park. I attended conferences and gave talks all over the US and Europe. I also had the opportunity to work on bioinformatics databases and development of mouse model information to assist scientists in choosing the best mouse for their research.

One of the most important things I learned in that position was to work with a broad spectrum of people with a wide variety of educational experiences. I worked with incredible scientists, veterinarians, customer service representatives and other professionals. I was humbled by the extensive knowledge of the animal caretakers and colony managers. I also learned how important good training and education are to success. I had an exceptional mentor in Dr. Muriel Davisson, and this has helped me tremendously in eventually running my own research laboratory.

You now hold an academic position at New Mexico Highlands University, where you conduct research on the regulation of spermatogenesis. How did you become interested in this topic?

I became interested in cell and developmental biology during my doctoral training, conducting my dissertation research on metabolic activation following fertilization in sea urchins. For my post-doctoral research, I was lucky enough to find a wonderful opportunity in the laboratory of Dr. Michael Griswold at Washington State University. My position at The Jackson Laboratory did not allow time to continue this research, but when I accepted a position in academia after 10 years away from the bench, I decided to combine my acquired mouse genetics expertise with my interest in the regulation of spermatogenesis. I managed to do this with funding from a NIH NM-INBRE grant and the support of two mentors, Mike Griswold and Mary Ann Handel.

I think that spermatogenesis is the perfect developmental biology system: within a single organ you can find 19 different stages of development from spermatogonial stem cells to elongated spermatids. Spermatogenesis is regulated by endocrine, paracrine and autocrine signaling pathways; there is still so much to discover about this process that it will keep me busy throughout my career.

In your experience, how can one benefit from holding both academic and nonacademic positions in the course of one's career?

I have learned so much from both environments. The Jackson Laboratory is a unique institution, combining research with the business of supplying mice from one of the largest repositories of mouse models for biomedical research. My position allowed me to greatly expand my knowledge base in areas ranging from basic animal care and husbandry to experimental design in almost every field of research. As I moved into administration, I was lucky enough to receive some professional training and experience in management, finance, leadership and team building.

Returning to academia has been incredibly rewarding and has presented a number of new opportunities and challenges. In a comprehensive university, one has three areas of responsibility: teaching, service and research. I enjoy all three areas, but I seem to spend a great deal of time on teaching and service while research often has to be fit in the cracks. I serve as an academic advisor for several student clubs, and this past summer I led a group of students on a Habitat for Humanity trip to Honduras. I have been fortunate to have some excellent students in my laboratory, currently including six undergraduates, two graduate students and a new research associate, so I am definitely in the laboratory on a daily basis. It is great to be part of the academic community and interact directly with other faculty and with students in the classroom and lab.