Phone interview for Northern Arizona University, 2/28/12

Relevant Information:

Funding:
IGERT – identifying key links between genes and the environment; molecular genetics, environmental sciences, spatio-temporal modeling

NSF GK-12

Faculty: 17 of 42 are women – 40%

Alison Adams – yeast genetics, chromosome instability resulting from arsenic and uranium

W. Linn Montgomery – feeding and reproduction of fishes (2005)

Nancy E. Muleady-Mecham – adjunct prof, natural history, field interpretation, A&P, pathophysiology, teaching

Kiisa Nishikawa – biomechanics and neural control, ballistic tongue projection, frog jumping, mouse running

Catherine R. Propper – network of gene interactions involved in development of endocrine function, endocrine function in response to environmental chemicals (2011, 4), Chair of Graduate Program

Steve Shuster – animal mating systems

Catherine Ueckert – biology education

Maribeth Watwood – biodegradation of organic compounds, soil remediation ecology, bioremediation, nutrient cycling, wetland ecology, microbial community diversity

Thomas Whitham – cottonwood riparian communities and pinyon-juniper woodlands, plant-herbivore interactions, ecological genetics, environmental stress, plant-fungal and ant-aphid mutualisms

Jason Wilder – human evolution, genetics, genomics, human genes that confer resistence to malaria, and the influence of variation in microRNA pathways on cancer susceptibility and progression

Facts:
state university
25,000 undergrads
Flagstaff 65,000 pop
42 professors

My answers:

Tell us about your research.

I am interested in identifying the underlying functional, molecular, and developmental bases for phenotypic variation. I say I take a systems biology approach, because I'm interested in processes that occur at multiple levels, from environment and community, down through population, organism, cell, and molecule, and I like to use all of these perspectives in order to get at emergent properties that can only be identified by taking a more holistic approach.

I'm currently applying this approach to the question of why Drosophila sperm are so long. We're using transgenic flies whose sperm glow red or green and figuring out how sperm competition works in several species to find out how it's evolving in different species, and what role does it play in reproductive isolation between sister species?

We're also exploring the genetic architecture of male and female reproductive traits to try to understand the coevolutionary dynamic between female reproductive tract morphology and sperm morphology. We're exploring a case study in sperm length using a QTL RAD mapping approach, and my future goal is to take these candidate sperm length genes and use an in vitro cell culture system to understand their roles during spermatogenesis.

Why are you interested in our position?
You have a very diverse and dynamic department that with an impressive proportion of faculty who are very active in research as well as a clear commitment to teaching. There seems to be a good amount of collegiality and collaboration with multiple groups publishing together. Plus, you live in Flagstaff.

Who in the department could you collaborate with?
Steve Shuster – sexual selection, Jason Wilder – interests in molecular evolution and evolutionary genomics, I could see my future work on spermatogenesis overlapping with Catherine Propper has worked on effects of endocrine disrupters on reproductive function, Alison Adams has done work on cytoskeletal structure and function, Richard Posner's expertise in computational biology and bioinformatics will certainly be valuable to my research, Alice Gibb and Kiisa Nishakawa would be great to talk about biomechanics of sperm with, Stan Lindstedt could help me think about allometry and energetics of testis size in different lineages. Thomas Witham's research on community genetics is really interesting to me, can't think of specific projects at the moment, but he's doing the kind of research I wished I could have done in the system I was working on as a graduate student.

What strategies and approaches would you use to teach to the diversity in our student body?
To me, this question is really about teaching, because in most teaching situations you're going to get a wide range of backgrounds and abilities. I approach teaching to diversity with a carrot and a stick. The stick is just about establishing clear guidelines and expectations about behavior with zero tolerance for shenanigans and irresponsibility.

The carrot is about establishing a relationship with students and fostering an environment where students feel safe and comfortable enough to participate and ask questions. (This won't necessarily reach everyone.) This includes learning their names and interests, and facilitating student-student relationships through group interactions and peer instruction. I would also use frequent assessments to keep track of progress.

Why should we hire you?
Because I am good at a lot of things. I ask and answer creative and innovative research questions that NSF seems to like, I am good at thinking outside the box and in multidisciplinary ways, I am good at teaching, I'm good at getting things done, and I'm really good at working with others. Plus, I'm have a good record of writing fundable grants. I am a reliable colleague, and I'm a good team player. Also, I would be a good person to bridge the functional morphologists and biomechanics group and the genetics and molecular biology group.

How would you incorporate your research into teaching?
Well first, I wouldn't limit it to just my research, but I would, as much as I can, use real life examples to make material more relevant and interesting to students. When I was teaching biostatistics, some of the datasets I had students working with were my actual data. In teaching genetics, I would, as much as possible, use real-world examples. In teaching a genetics lab, I would certainly use Drosophila, with one possibility of having students run a selection experiment throughout the course and measure phenotypic frequencies at the beginning and at the end, so they can see selection in action. Ideally, I would want them to come up with the questions and the experiment.

What is your teaching philosophy?
Carrot and stick, like parenting-light. Learning by doing, try to identify needs.

What will be your approach to teaching courses that you have not taught before?
To re-invent the wheel as little as possible, take advantage of as many resources as possible, and to not expect it to be perfect the first time through. I will see if I can get previous lectures and notes that I can start with. I'm told that it takes 5 years to develop a course, which seems like a long time, but really, I guess it actually takes that long.

Other questions they asked:

What was your most rewarding teaching experience?
I described my experience as an undergrad TA for a field class.

What do you hope to accomplish in your career?
To have gotten a tenure-track position and to be able to do the kind of research I want.

Do we have your permission to call your references? We may also call other references you haven't listed; is there anyone you would prefer we not call?
Yes, no.

My questions:

What is the committee and the department looking for in this search, what do you want the candidate to bring to the table?

Will there be other hires over the next few years?

What is the department's trajectory over the next five or ten years? Will there be other hires in the near future? Is the department looking to expand in certain areas?

What would you want the candidate to teach?

What are the teaching responsibilities? (Some teaching universities object to the term "teaching load.")

What are class sizes like?

What are the student backgrounds like? Where are they typically coming from (mostly local)?

What are the requirements for tenure?

What kinds of resources are available on campus in terms of equipment, facilities?

How are graduate students funded? Summer funding?

What's the grad curriculum like? Are there other courses you would like to see offered for graduate students?

How many grads are supported on RA's vs. TA's? Are there typically enough TA's available for all the grads who need them?

Do graduate students apply for NSF predoctoral fellowships? Are they successful?

What's a Regents' Professor?