

American Society for Microbiology Kadner Institute, Kellogg Center July 28, 2010

Career Pathways in Public Health

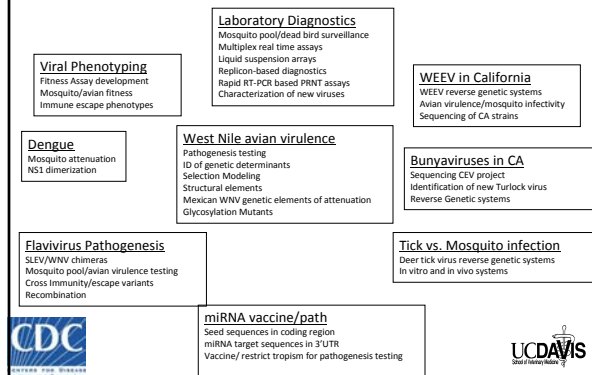
Aaron C. Brault, PhD
Research Microbiologist
Division of Vector-Borne Diseases
NCEZID/DVBD/ADB/VA



Why am I speaking? (Irene asked me here because.....)

- Awarded an ASM postdoctoral fellowship-2001
- Transitioned to an academic position-2003
- Came back to a position in Public Health-2008
- Serve as a preceptor for ASM post-docs-2009

Research Projects- in a public health/academic setting



Division of Vector-Borne Disease (DVBD)

- Fort Collins, CO..... *New Belgium Brewery, CSU, skiing, hiking (Rocky Mountain National Park)* as of noon today-it's 64°F!
- Arboviral Disease Branch (ADB)-West Nile virus, dengue, yellow fever virus, Chikungunya virus
- Bacterial Diseases Branch (BDB)-Lyme Disease, Tularemia, Bartonella, plague

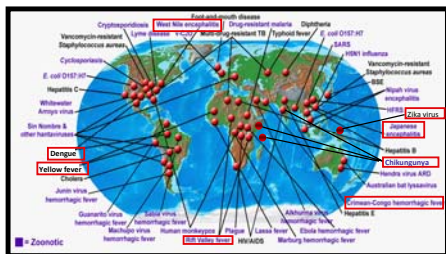
Division of Vector-Borne Infectious Disease, Fort Collins, Colorado

- Four Branches: **Arboviral Diseases Branch** and **Bacterial Diseases Branches** (Fort Collins); **Dengue Branch** (Puerto Rico); **Rickettsial Diseases** (Atlanta)
- We Just lost the "I"

Fort Collins DVBD Research Activities

- 1) effective **surveillance** for vector-borne viral and bacterial agents and their arthropod vectors
- 2) **Research/epi aid**-conduct field and laboratory research and epidemic aid investigations
- 3) **Disease parameters**-define etiology, ecology, and pathogenesis in order to develop improved methods and strategies for diagnosis, surveillance, prevention and control
- 4) **Consultation**-provide diagnostic reference and epidemiologic consultation, on request, to state and local health departments, other components of CDC, other federal agencies, and national and international health organizations
- 5) **Backstopping**-provide intramural and extramural technical expertise and assistance in professional training activities. Emphasis is given to laboratory and epidemiologic research to improve diagnosis, surveillance, prevention, and control of diseases of major public health importance such as.....

Arboviruses and emerging agents of human disease



My Career Pathway

- Undergraduate degree-Zoology-Texas A&M University (1991-95)

My Career Pathway

Undergraduate degree-Zoology-Texas A&M University (1991-95)-

Early Interests in Parasitology (evolution of complex lifecycles of pathogens)- combined DVM/PhD program at Texas A&M University-Laboratory experience in Dr. John Gold's Lab sequencing the fathead minnow mitochondrial DNA genome

Pathobiology graduate-advisor "Those Yale arbovirology guys are going to Galveston, that sounds like a really good opportunity-I'd go down there"

My Career Pathway

- Undergraduate degree-Zoology-Texas A&M University (1991-95)
- Graduate Work-Arbovirology, University of Texas Medical Branch, Galveston, TX (1995-2001)

Graduate Work-University of Texas Medical Branch, Galveston, TX (1995-2001)- no hurricanes!

Diverse Research Project- Medical entomology, Molecular/Classical Virology, animal studies, field studies, GIS

"Molecular determinants of Venezuelan equine encephalitis virus emergence" laboratory of Dr. Scott Weaver

NIH T32 Training fellowship
MaLaughlin Infection and Immunity Fellowship



Study sites in and around the 1993 Chiapas epizootic foci



California Mosquito Surveillance Activities For the past 8 years

Increased Demand for the development of high throughput system:



1998.....	4,266 pools	
1999.....	3,746	
2000.....	4,325	
2001.....	3,686	2002.....4,900
2003.....	10,111	
2004.....	>16,000	~2-fold increase
2005.....	>20,000	~2-fold increase

My Career Pathway

- Undergraduate degree-Zoology-Texas A&M University (1991-95)
- Graduate Work-Arbovirology, University of Texas Medical Branch, Galveston, TX (1995-2001)
- ASM Postdoctoral fellow-CDC/DVBID 2001-03
- Asst Professor UC Davis 2003-06
- Research Microbiologist (ASM preceptor) 09-

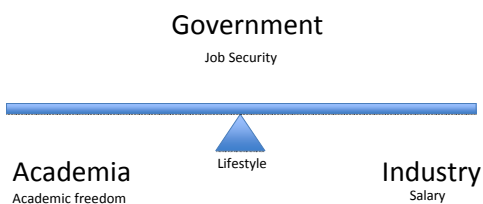
ADB- Brault: Molecular Viral Genetics

- Diagnostic Assay Development
- Field Studies
- Virulence Determinants and Vector Competence of arboviruses- West Nile virus
 - Develop reverse genetic systems
 - Identification of WNV avian virulence determinants
- Development of new mechanisms for the creation of live attenuated vaccine candidates
 - Use miRNA sequences to restrict tropisms
 - Codon de-optimization

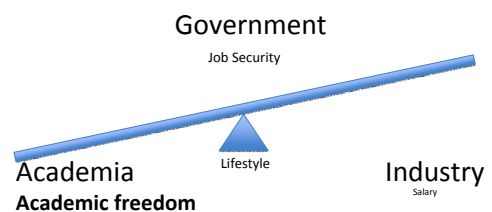
What's really different about Government?

- Different bureaucracy (Constantly changing with different administrations)
- Reorganizations?
- Less flexibility for independence (travel/publishing)
- Hypothesis driven research transition to results based with the question "how does this impact human health"?
- Funding-some internal competitive funds (BARDA, bioterrorism)

What kind of career path is for you?

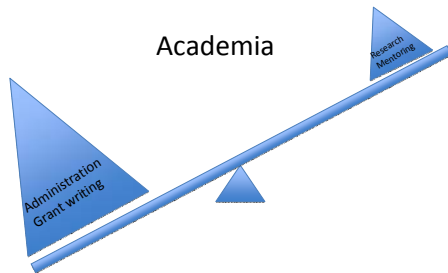


What kind of career path is for you?



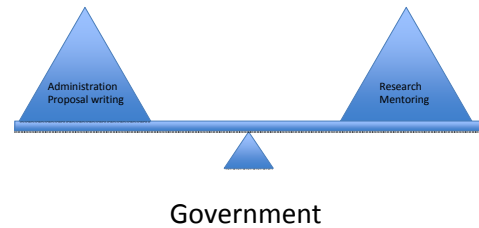
What kind of career path is for you?

What you spend your time doing



What kind of career path is for you?

What you spend your time doing



Teaching, Research and Service

- All three are required for advancement in academia
- “Teaching” replaced with “training” in Public health laboratory setting
- Research is applied
- Service (outbreak investigations, grant review committees, IACUC)

Things that I have been told and learned.....

- Learn to say “**NO**”-I have never really picked up on this one
- Prioritize
- Maintain an eclectic research portfolio
- Collaborate-network
- Maintain a reasonable sized lab and do not let this dictate your research direction

Contact information

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