



The ACVP/STP Coalition for Veterinary Pathology Fellows



Joint Non-Industry/Industry Presentation

“Phenotype of a Modern Day Pathologist with
a Focus on Career Opportunities in
Diagnostics vs. Research”

Phenotype of a Modern Day Pathologist

- Introduction and Panel Members
- Survey Results and Objectives
- Outline of Events

Phenotype of a Modern Day Pathologist

- Introduction
 - Welcome
- Panel Members
 - Jenny Thomas (Michigan St. Univ.)
 - Curtis Colleton (Bristol Myers-Squibb)
 - Buffy Howerth (Univ. Georgia)
 - Dan Rudmann (Eli Lilly)
 - Gerry O'Sullivan (Univ. Minnesota)
 - Mark Cartwright (Merck)
 - support members: Gary Cockerell and Susan Rees

Phenotype of a Modern Day Pathologist

- Survey Results and Objectives
 - 79% of Fellows attending 2010 ACVP/STP Coalition Symposium
 - Highest Ranking Discussion Topics
 - Career Opportunities (84%)
 - Career Qualifications (79%)
 - Career Advancement (52%)
 - Graduate/Professional Life (41%)

Phenotype of a Modern Day Pathologist

- **Outline of Events**

– Introduction	Mark Cartwright	5 min
– I Career Opportunities	Dan Rudmann	5 min
– NI Career Opportunities	Buffy Howerth	5 min
– Q&A Panel Discussion	Panel	15 min
– NI Career Qualifications	Gerry O’Sullivan	5 min
– I Career Qualifications	Curtis Colleton	5 min
– Q&A Panel Discussion	Panel	15 min
– Closing Remarks	Jenny Thomas	5 min

- **Thank you!**

Industry Opportunities

- Discovery Research and Investigative Biology and Pathology (Pharma, Ag, Chem, Devices, Government, Research Institutes)
- Regulatory Pathology and Toxicology
- Contract Research Organization Pathology and Toxicology
- Allied Professions Pathology Consultant (Imaging, Biomarker Development, Translational Medicine, Biotech)

Industry Opportunities

- **Discovery Research and Investigative Biology and Pathology**
 - Bench or leadership roles
 - Private research foundations (e.g. CIIT, NIH), public or privately held companies (e.g. Pharma, Chem, Ag)
 - Pathway, disease, target, technology focused
 - Project leadership and multidisciplinary interface
- **Regulatory Pathology and Toxicology**
 - Bench or leadership roles in similar environments
 - Compound or chemical focused
 - Project leadership and regulatory interface common

Industry Opportunities

- Contract Research Organization (CRO)
Pathology and Toxicology
 - Mostly GxP/regulatory pathology and toxicology applications
 - “Sponsor-focused”- organ system, report and data experts
 - Higher data productivity expectations than non-CRO
 - Speciality CROs to support imaging and discovery pathology work increasing
 - Bench and leadership roles

Industry Opportunities

- Allied Professions Pathology Consultant (Imaging, Biomarker Development, Translational Medicine, Biotech)
 - Both investigative and toxicologic/regulatory path opportunities
 - Depth and breadth to support consultant role
 - Project leadership and alliance management
 - Many international opportunities
 - Small business

Non-Industry Opportunities

- Three basic “efforts” in various combinations
 - Research
 - Service
 - Teaching

Research/Service/Teaching or Service/ Teaching

- Academia
 - Veterinary Schools, Medical Schools, other Universities
 - Tenure track
 - Clinical track
- State Diagnostic Laboratories
 - Associated with Veterinary Schools or Universities
 - Tenure track
 - Clinical track

Research/Service

- Academia
 - Veterinary Schools, Medical Schools, other Universities
 - Tenure track
 - Clinical track
- State Diagnostic Laboratories
 - Associated with Veterinary Schools or Universities
 - Tenure track
 - Clinical track
- Zoos and Aquaria
- Government Laboratories
 - National Wildlife Health Lab
 - NVSL

Research/Teaching

- Academia
 - Veterinary Schools, Medical Schools, other Universities
 - Tenure track

Service

- Academia
 - Veterinary Schools, Medical Schools, other Universities
 - Clinical track
- State Diagnostic Laboratories
- Government Laboratories
- Zoos, aquaria
- Private
 - Commercial
 - Individual

Research

- Government Laboratories
 - USDA
 - NIH

Panel Discussion

Non-Industry/Industry Career Opportunities

Non-Industry Qualifications – General Considerations

- PhD degree
 - Provides more opportunities and flexibility in career paths
 - Almost essential for tenured positions
 - Provides skills in critical thinking/analysis, study design, data interpretation, scientific writing
- ACVP board certification is highly desirable for
 - diagnostic/service (clinical track) positions
 - positions that have a pathology training component, e.g., traditional tenured anatomic and clinical pathology positions in Vet Schools

Non-Industry Qualifications - Research

- Principal investigator (depending on the field)
 - PhD almost essential
 - Post doctoral research experience is highly desirable
 - Supportive research environment is important
 - Familiarity with IACUCs & responsible conduct of research
 - Develop skills in personnel management and good laboratory practice
- Collaborative research
 - No formal route, development of areas of interest and actively seeking collaborations, PhD often advantageous

Non-Industry Qualifications - Teaching

- Desirable to gain experience during one's pathology training program
 - Formal lectures to students
 - Small group teaching/interaction with rotation students
- Become familiar with teaching strategies and newer technologies for teaching
 - Take advantage of numerous University workshops on teaching
 - Problem based learning
 - WebCT, Moodle, iClickers etc

Non-Industry Qualifications - Diagnostics

- ACVP certification is essential, PhD less so but depends on field of activity
- Trend is towards more specialization
 - Companion animal, food animal, surgical pathology, zoo/wildlife/exotics, laboratory animal, nonhuman primates
 - Helpful to identify areas of interest and gain increased exposure by externships during training
 - Specialty residency and fellowship training, e.g., nonhuman primates, zoo/wildlife/exotics, mouse pathology
- Provides opportunities for collaborative research

Industry Qualifications- Basic

- DVM (or equivalent) and ACVP certification (or equivalent ECVP) in Anatomic /Clinical Pathology
- Up to 3 years experience in toxicological pathology
- Knowledge of regulatory requirements (GLP, IHC, EPA)
- Strong interpersonal, written and oral communication skills
- Ability to prepare reports, scientific manuscripts and deliver presentations
- Ability to function autonomously in a multidisciplinary team environment

Industry Qualifications- Preferred

- PhD or post-doctoral research experience in a relevant scientific discipline
- 3-5 years experience as a study pathologist supporting the regulatory filing for large and/or small molecules
- Demonstrated theoretical/practical knowledge and technical abilities in molecular biology, immunohistochemistry, advanced microscopy and image analysis
- Excellent communication, project management skills and recognized knowledge and expertise in the field of toxicologic and investigative pathology

Industry Qualifications- CRO

- Similar to Basic Requirements for Industry but certification qualified acceptable
 - Certification and advanced degree preferable
- Additional expertise/interest in gross examination and histopathological evaluation of sub-chronic and chronic studies
- Interaction with study directors and sponsors on all aspects of study conduct- knowledge of GLPs
- Scientific support to the technical group (necropsy, histology)
- Participation in pathology related method development and provide guidance to implement new technologies in the laboratory

Why is Industry Different?

- Diverse Stakeholders and Aggressive Stockholders
- Return on Investment (ROI) up to 15 years
- Risk/Benefit Tolerance
 - Based on Volatile Markets
 - Pipeline Advancements
- Cost of Quality
 - Quality Control/Assurance

Panel Discussion

Non-Industry/Industry Career Qualifications

Closing Thoughts

- Be prepared to be a life long learner
- Be flexible and keep an open mind
 - Many possible career paths
 - No path is wrong or permanent
 - Many opportunities for change
 - Challenge yourself with new ideas
- Take inventory of your strengths and weaknesses
 - Find out what makes you excited in your day to day activities
 - Find a position to complement your strengths and interests
- Job satisfaction is more important than salary

Closing Thoughts

- Develop expertise
 - Will evolve over time
 - May change as positions change
- Set goals and work to achieve them
- Develop a network of colleagues
 - Support
 - Collaborations
- Look for opportunities to be mentored and to be a mentor
- Don't forget importance of work-life balance
- Guard against burn-out

Closing Remarks

- Presentation will be posted on the ACVP-STP Coalition website
- Comments about this panel discussion and suggestions for future conversations welcome
- We would be happy to continue discussions
 - Post-meeting reception
 - Via telephone or email