The ACVP Strategic Plan was completed in 2018. Four goals were developed to ultimately support the vision of the strategic plan to advance veterinary pathology to the cutting edge of science and medicine and increase the impact on animal and human health. Implementation of the strategic plan included the creation of three task force committees in the following areas: Future Practice of Pathology, Governance, and Intramural Grant Program Implementation. The task force committees were put in place for a defined period of time to create guidance documents for ACVP leadership and standing committees as they execute the strategic plan.

The Future Practice of Pathology Task Force (TF) was assembled in late 2018. The TF met via teleconference biweekly beginning in early 2019. Members were selected from a broad cross section of the college and included anatomic and clinical pathologists, individuals working in research, academia, diagnostics, and industry, and early, mid, and late career individuals. The TF members included:

- **Kelli Boyd** (Chair) Vanderbilt University Medical Center
- **Famke Aeffner** Amgen Inc.
- **Jan Andrews** Antech Inc.
- **Gillian Beamer** Tufts University
- **Linda Berent** University of Missouri
- **Nick Crossland** Boston University School of Medicine
- **Russell Fraser** Atlantic Veterinary College, University of PEI
- **Jessica Hokamp** The Ohio State University
- **Mike Oglesbee** The Ohio State University
- **Dan Rudmann** Charles River Laboratories
- **Laura Snyder** Marshfield Labs
- **Mee-Ja Sula** University of Tennessee Knoxville
- **Krystal Vail** Texas A&M University

*Anatomic Pathologist
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_The authors of the Future Practice Task Force declare no conflict of interest in the preparation of this report._
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Task Force Charges

The TF was charged with the following objectives and to produce a guidance document within 12 months:

1. Identify aspects of the current practice of veterinary pathology that are likely to remain, change, or become obsolete.

2. Identify new diagnostic and investigative approaches that are currently in place, in development, or projected for implementation, and that may be practical and applicable to veterinary pathology.

3. Consider such approaches for anatomic and clinical pathology in the context of diagnostic laboratories and research that may include toxicology and drug development, and education.

4. Envision veterinary pathologists as leaders of such transitions and creators of new technologies and/or procedures.

The committee submitted the following report to council on September 5, 2019.
Executive summary

The practice of pathology is rapidly evolving. The intersection of technology and pathology is driving this fast-paced evolution. Whole slide imaging to produce digital slides is common place and is forcing pathologists to embrace and become experts in digital pathology, quantitative imaging, artificial intelligence, and deep learning. In addition to the technologic impacts to our daily practice, new types of data and large complex data sets will be presented to the pathologist for integration and distillation to biological relevance. We must be proactive to establish pathologists as leaders and experts that are integral to the creation, validation, and interpretation of new and complex technology and data. This will involve creation of new partnerships with technology inventors and different types of professional societies than those we have partnered with in the past. Major themes became evident as the task force considered charges include the following:

1. Traditional veterinary pathology residency programs in anatomic and clinical pathology administered at veterinary schools have limited resources and access to digital and artificial intelligence technologies. Support from stakeholders including ACVP to provide access to digital pathology resources and virtual training networks will increase the needed exposure of veterinary pathology trainees to a broad spectrum of digital and cutting edge technologies and data types which are critical to their future success.

2. Veterinary pathologists must cement ourselves as essential experts and leaders for establishing ground truth and validating assays in research and diagnostic settings including interpretation of multiple coalescing data streams in the context of physiologic/pathophysiologic relevance.

3. Pathologists at all stages of their careers are being impacted by the rapidly changing environment. It is critical that the ACVP support and provide educational opportunities during the annual meeting and in new ways such as off cycle workshops or online offerings to support lifelong learning.

4. Pathologists and ACVP must build relationships with technology professionals and explore working relationships with new partners such as our MD colleagues experiencing similar challenges.

The TF has prepared this document through the lens of the next five-to-ten years of our profession with some broad projections beyond that timeframe. We acknowledge that our profession is evolving rapidly, and part of our future practice is to be adaptable life-long learners and leaders in the development, qualification, validation, and implementation of novel technologies. We also acknowledge that our college is composed of a heterogeneous cohort of individuals that invest their time across a broad spectrum of pathology practices. With this in mind, we devised three categories:

1. Discovery and applied research (Academia and Industry)
2. Veterinary pathology diagnostics
3. Veterinary pathology education
These categories represent functional aspects of pathology practice that are not mutually exclusive. Many pathologists have overlapping job activities that require us to shift in and out of these categories in the course of a single day regardless of where we work (e.g., industry, academia, diagnostic laboratory, government). We will frame our response to the charges in the context of these categories. There was discussion of including regulatory and safety as a unique category. The consensus is that this niche would be addressed within the category of discovery and applied research and diagnostic pathology.

**ASPECTS OF THE CURRENT PRACTICE OF VETERINARY PATHOLOGY THAT ARE LIKELY TO REMAIN**

**General Practice**

Regardless of our subspecialties, pathologists collectively receive a diverse portfolio of data sourced by an interdisciplinary team (i.e., clinicians and research partners) and integrate these data sets as a means to diagnose disease, define pathogenic mechanisms and pathogenesis, and study alterations of physiological processes. The ability to assimilate data and make interpretations that capture systematically the alterations in physiological processes, is unique to pathologists. As the fields of medicine and science advance, there will continue to be the need to interpret findings in context of biological systems (i.e., host species or model system) and relate findings to changes at both the tissue and whole-body level. Pathologists play a critical role in that process.

In the context of **anatomic pathology** assessing structure-function relationships through the evaluation of tissue at a gross, microscopic, and submicroscopic level will remain the foundation of our practice. Processing tissue after formalin fixation into paraffin blocks, mounting sections on slides, and staining with hematoxylin and eosin will remain the standard practice for microscopy. While other fixation and processing procedures may be applied in specific situations, we do not expect standard formalin fixed paraffin embedding procedures to be eliminated. Many pathologists will continue to use and train with a traditional light microscope to evaluate glass slides throughout the next decade. **Clinical pathologists** will continue to be experts in laboratory medicine including assay development, validation, and quality control. They will also continue to be experts in evaluation and interpretation of laboratory diagnostic testing (biochemical profiles, urine chemistry profiles, endocrine panels, automated CBC analysis, coagulation profiles, and blood typing) and cytologic specimens including blood smears, urinalysis, bone marrow evaluation, aspirates, body fluids, and impression smears. Standard techniques of cytology and blood smear preparation are expected to remain the same, with Romanowsky type stains remaining the standard. Further, although significant advances have been made in improving digital cytology capabilities, the vast majority of veterinary clinical pathologists will continue to review glass slides with light microscopy for evaluation of blood smears, cytologies, and urine sediments for routine diagnostic evaluation. The veterinary clinical pathologist will continue to be needed as a source of information regarding correct troubleshooting for quality control and quality assurance issues. Smaller in-clinic bench top analyzers cannot match the quality control capabilities of instruments within large reference laboratories, and frequently general practice clinicians do not have complete understanding of quality assurance programs and processes.
Discovery and Applied Research

Pathologists will continue to lead and/or be members of multidisciplinary research teams providing expertise in study design and interpretation of results in spontaneous and experimental animal models of disease. Pathologists will also continue to have independent basic and translational research programs to advance human and animal health. Individuals in this field will be proactive in the incorporation and integration of novel technological modalities resulting in an enriched multimodal morphomolecular characterization of disease. Advanced technologies to be complemented with traditional histologic approaches include modalities such as magnetic resonance imaging, computed tomography, positive emission tomography, intravital imaging system, ultrasound, mass spectrometry, super resolution microscopy, 3D microscopy, high-plex IHC and ISH, flow cytometry, mass spectrometry, electron microscopy, genomics, proteomics, and metabolomics. In addition, pathologists should be well versed in the optimization and formal validation of multiplex biomarker panels as well as image analysis platforms that serve to quantitatively annotate and enabling the pathologist to establish biological relevance to the data.

Veterinary Diagnostics

There will continue to be a need for pathologists to provide accurate and rapid diagnoses and surveillance of diseases in animals. In fact, there is a growing desire by veterinarians for even more rapid turn-around of diagnostic test results and the ability to have a pathologist at hand at any hour.

Veterinary Education

Pathologists will continue to provide training to the next generation of residents as well as veterinary students. Mechanisms of disease, gross and microscopic evaluation and interpretation, laboratory investigation, assay validation, and quality control and assurance will continue to be a foundation of residency training programs, while fundamentals of general and systems pathology will form the core of veterinary student training. In particular, the provision of veterinary student training is unlikely to change greatly with the exception of increasing use of digital whole slide images (WSI) or scans (WSS) to train in large group settings (see below).

ASPECTS OF THE CURRENT PRACTICE THAT WILL CHANGE

General practice

WSI or WSS will gradually replace the microscope. This will happen more rapidly in anatomic pathology than in clinical pathology. Pathologists will be increasing the use of whole slide imaging for all aspects of their practice. In large diagnostic laboratories (e.g., IDEXX) and in the discovery setting, WSI have already largely replaced glass slides and (non-GLP) peer review is often performed on WSI. All pathologists will need to be comfortable utilizing WSI for case review. However, because of the inertia associated with institutional buy-in due, in part, to the cost of scanners, and the ongoing costs associated with validation, staffing, data storage and security, information technology, and slide management, a complete transition to this technology will occur at a variable pace across programs and institutions. The use of rapid in-clinic slide imaging scanners for cytologic diagnosis is currently available commercially in veterinary private practice and institutions nationwide. The ability to provide digital cytological
images rapidly in the clinic will build digital slide archives with appropriate metadata that will become resources for teaching, as well as databases that enable quick slide retrieval ultimately improving patient care and increasing customer satisfaction. However, the rapid implementation of this technology has out-paced the development of quality assurance standards. Engagement of clinical pathologists in developing quality assurance standards for digital cytological WSI critical.

Digital images lend themselves to analysis via quantitative imaging platforms which produce data that are more amenable to statistical analyses and that may mitigate intra- and inter-pathologist variability. Pathologists will need to become familiar with both open-source and commercially available quantitative software applications. The pathologist should be able to appropriately apply algorithms to tissue analysis or provide guidance to technicians or researchers on the appropriate application of quantitative image analysis algorithms. Simultaneously, the pathologist must accurately acknowledge and communicate the technological needs and limitations associated with these applications.

Artificial intelligence (AI) will emerge as a technology that allows automated differentiation of “normal” versus “abnormal” tissue in the WSI allowing the pathologist to focus more time on the abnormal. AI will also help the pathologist with difficult analyses such as the consistent recognition of rare occurrences (e.g., small clusters of neoplastic cell in a lymph node). The evolution of complex AI technologies is occurring outside of the field of pathology. Pathologists are integral and must take the lead working with AI developers in the histomorphological space to appropriately adapt and validate AI to microscopic evaluation in research and diagnostic settings.

Regardless of discipline, pathologists will increasingly interact and interface with information technology professionals. This can come in the form of collaborations at the institutional, academic and/or industry level, support staff for commercial platforms, or community forums for open-source platforms. Quantitative image analysis, AI, deep learning, cloud-based information sharing, and orchestration of future education infrastructures will all require close partnerships between the pathologist and information technology professionals. Furthermore, computer scientists, data scientists, and image analysis scientists will rely on pathologists to establish the “ground truth” (i.e., assess the empirical evidence) on which these complicated technologies are built. Pathologists will be required to work with software development professionals on the front end to develop appropriate tools and on the back end to identify discrepancies, troubleshoot those problems, and ultimately validate the new technology.

**Discovery and Applied Research**

Routine days are less common for discovery and applied research pathologists as work is dictated by hypothesis-driven or preclinical investigation that mandates adaptability, flexibility, and innovation. As pathologists are integral to tissue-based assays, they are also expected to guide interpretation of large complex data sets originating from a diverse array of study modalities. Ultimately, they are then responsible for integrating the data in such a way as to explain pathogenesis and/or establish physiological relevance across animal studies and to human conditions. An individual in this setting will need an understanding of the downstream assays that serve to more fruitfully interpret tissue-based analyses in order to fully address experimental aims.
In a discovery setting, the pathologist should have a thorough knowledge of the animal model they are working with, and in the case of recapitulating human diseases, understand limitations of the model system. The discovery pathologist should be well versed in the use of WSI and should be an expert resource on digital imaging and quantitative image analysis. As WSI becomes more of a standard practice, in certain settings, AI-based tools will be used to sort tissues section into normal/abnormal categories. This technology will greatly impact turn-around time of toxicology study evaluation and will facilitate better streamlining of the pathology workflow. In addition, AI will identify “hot spots” of abnormal tissue that will then allow the pathologist to target and expand their histologic evaluation. Furthermore, AI-driven autonomous segmentation of discrete morphological phenotypes will afford a more sensitive, unbiased, and qualitative characterization of disease phenotypes that can then be integrated with other study datasets serving to develop prognostic stratification and predictive/targeted treatment strategies. These types of data and the recently implemented Standard for Exchange of Nonclinical Data (SEND) initiative by the Food and Drug Administration will enable the undertaking of comprehensive and impactful animal model-based systematic reviews and meta-analyses which will guide scientists in animal and human disease and toxicology research. While AI will advance the impact of pathologist-generated data, the review of the entire tissue section will remain standard practice. Pathologists will also need to be aware of novel translational *in vitro* and *ex vivo* systems that help to bridge animal and human pathology and contribute to the 3Rs in animal research (reduction, refinement, replacement). Technologies such as “organs on a chip” are anticipated to advance in utility and offer an important ancillary testing paradigm for pathologists in discovery and applied research.

For outsource animal studies, digital peer review, including at GLP level, will be implemented in the next couple of years. This will further impact how pathologists in drug development conduct their business and interact with their colleagues.

Additionally, novel genetic methods (e.g., CRISPR), are transforming animal model development similar to how the transgenic and gene knockout/in technology moved modeling forward in the 1990’s. Pathologists are key partners for the effective development, validation, and utilization of these models.

Finally, *in vivo* microscopy (2D and 3D), like other imaging technologies discussed earlier, are improving technically to the point of enabling more broad application. Pathologists should be at the forefront to help guide the development of these techniques and test their application in research.

**Veterinary Diagnostics**

Large diagnostic labs will rely more on AI which is already in place for certain processes but will become fully integrated for tasks such as blood smear evaluation, urinalysis, fecal examination, and diagnosis of common tumors. Diagnostic clinical and anatomic pathologists will be needed to continue improvement and quality assurance of such AI software. Clinical and anatomic pathologists in this setting will take diagnostic pathology to the next level by leading the development of biomarkers to drive more precise methods of diagnosis, outcome prediction, and treatment.

Precision medicine will become part of veterinary diagnostic testing for companion animals. Diagnosticians will be developing and validating standard of care testing using methods such as
flow cytometry and genomics. Diagnostic pathologists will need to understand how to interpret this molecular data and integrate it into pathology reports.

As diagnostic testing evolves, pathologists should be the leaders in the development of standard practices, driving diagnostic testing schema, and providing the expert assay interpretation. Our MD colleagues have led efforts in this area in clinics by creating diagnostic management teams. Implementation of these teams has led to decreased requests for esoteric testing and streamlined diagnoses which translate to significant cost savings for hospitals.

For field diagnosticians, validating or implementing point of care testing will be significant areas of growth in the face of emerging zoonotic diseases and the importance of early detection in preserving herd health.

**Education**

Education for pathologists will need to be career-long. Our methods of teaching and the learning objectives must evolve to match the development of our profession. Future pathologists in residency programs will need instruction on skillsets that are currently not included in most training programs. Most training programs are at veterinary schools that often have limited budgets and are highly focused on, and funded by, diagnostic pathology that is based upon conventional approaches. This in turn can hinder acquisition and/or implementation of new technologies. To address the gap in resources and vital curriculum needs, training programs should build and engage in virtual training networks (VTNs) with each other as well as non-veterinary school-based academic pathologists and non-academic pathologists using a common shared platform. Development of these VTNs should be a priority that could benefit tremendously from ACVP and other support (e.g. NIH, STP, digital technology providers). The VTNs ideally would eliminate the need for individual programs to make large capital investments while allowing for access to technology that most individuals will be using in their future practice.

The VTNs would enable participants (trainees) to partake in investigative approaches and integrate diverse data streams in order to arrive at conclusions related to pathogenesis (or pathophysiological processes). The networks could provide advanced training opportunities (e.g., externships) or collaborations which exposes the trainee to the technology. For early and mid-career pathologists, academic and non-academic institutes should be encouraged to provide sabbatical opportunities and workshops that focus on new technology and adoption. Additionally, ACVP should consider focused educational opportunities outside of the annual meeting for specific emerging and important technologies. These training opportunities are essential to establish early and mid-career pathologists as experts who can synthesize the traditional morphologic interpretation with the biochemical-molecular techniques of modern era pathology.

In addition to foundational pathology principles of structure, function, and pathogenesis of disease, emphasis should be placed on developing the critical thinking skills, leadership skills, and communication skills that are key to effectively working across multiple disciplines. There should be a focus on encouraging our trainees to always think about how we can advance the field, encouraging continuous innovation from the very start.
ASPECTS OF THE CURRENT PRACTICE THAT WILL BECOME OBSOLETE

General practice

The fundamentals of anatomic pathology will remain the same. Within the next 5-10 years there will be diminishing use of the microscope and pathologists working in isolation. While virtual slides will offer opportunities for pathologists to work off-site, pathologists in these settings will be part of larger diagnostic or research teams.

In the practice of clinical pathology, there are current procedures such as evaluation of blood smears, urinalysis, and fecal samples will be transitioned to AI for initial assessment. This will present opportunities for clinical pathologists to reframe their practice and create innovative ways to utilize their expertise. While in large diagnostic laboratories this transition will be rapid, it will likely be slower in training institutions. Given that training institutions will be slower to move to WSI, pathologists working with veterinary students and pathology training programs will need to teach basic microscopy techniques to veterinary students and residents.

NEW DIAGNOSTIC AND INVESTIGATIVE APPROACHES THAT ARE CURRENTLY IN PLACE, IN DEVELOPMENT OR PROJECTED FOR IMPLEMENTATION, AND THAT MAY BE PRACTICAL AND APPLICABLE TO VETERINARY PATHOLOGY

Pathologists will need an understanding of precision medicine and how it impacts future animal diagnostics and drives research questions. Novel diagnostic testing for companion animals will be critical for development of precision medicine diagnostics and includes assays such as NextGen sequencing, FACS analysis, RNAseq, rapid point of care diagnostics, and fluid biopsies.

Clinical pathologists should position future colleagues to be more discovery oriented and have some level of research training. The rapidly changing field and need for development of new biomarkers in companion animals makes the clinical pathologist perfectly poised to lead the field in the discovery and validation of cell- and fluid-based diagnostic and predictive testing, and precision medicine.

Clinical trials are increasing in companion animals and pathologists need to have an active presence on these trial teams and need to help design the sample collection, processing, and storage plan from the inception of the trial. The majority of clinical trials include biomarker methods on blood, bodily fluids, or tissue samples. Pathology expertise is critical for success of these types of investigations. As clinical trials and biorepositories become more common in companion animals, the pathologist should be a key player given their extensive expertise in cataloguing clinically relevant metadata. The network of pathologists is relatively small compared to other specialty colleges in veterinary medicine. This creates opportunities for communication between pathologists at different institutions to generate inter-institutional trials which improves and strengthens clinical trials/studies.

Discovery and applied research pathologists should also find opportunity to participate in human clinical trials or other studies involving human tissue. As opportunities to work in this translational setting arise, the discovery and applied research pathologist should be adequately prepared to assume the role of study pathologist and partner closely with MD clinicians and pathologists.
As new diagnostic modalities are developed, the pathologist should be leading or be a team member in the effort. Diagnosticians should also be leading the emphasis on improved testing strategies. Similar to what has been done in human medicine with diagnostic management teams, the pathologists lead the team to prevent unnecessary testing and improve patient outcome and resource allocation.

ENVISION VETERINARY PATHOLOGISTS AS LEADERS OF SUCH TRANSITIONS AND CREATORS OF NEW TECHNOLOGIES AND/OR PROCEDURES

There is a tremendous opportunity for veterinary pathologists to be part of innovation. Whether one works in diagnostics, discovery and applied research, or education, the opportunities are plentiful. In the diagnostic setting, the landscape is wide open for developing new cutting-edge clinical tests for companion animals and translating diseases and syndromes observed in companion animals to human disease. The opportunity to standardize and streamline the way diagnostic testing is performed for specific disease entities via diagnostic teams is a unique way for pathologist to lead groups of clinicians, molecular biologists, and others.

As discovery and applied research pathologists, leading the development and implementation of new technology for tissue-based assays establishes the pathologist as an expert and valuable member of the discovery team. With new technologies for hyper-multiplexed assays, working with research teams to validate these assays and identify pertinent biomarkers requires a pathologist’s expertise. This is an example of natural niche for a pathologist to assume leadership roles in research settings. That role includes study conceptualization/project design, execution and reporting, and identifying optimal approaches to integrate data streams to best serve the discovery process.

In education, WSI and cloud-based applications for teaching provide a unique opportunity to innovate the training programs across the country and internationally. Combining resources of training programs to build VTNs brings unprecedented opportunities in residency programs.

As a college, AVCP is most often thought to have an emphasis on training programs and residents. As a college, there is work to be done around rebranding our diplomates and emphasizing their leadership potential in the areas of diagnostics, research, and education in the face of emerging technologies and evolving disciplines. This needs to be a concerted effort that may require the addition of personnel at the college level in the form of individuals with skills in science communication.

IMPORTANT POINTS TO CONSIDER

Our training programs increasingly need to train leaders in translational pathology. Generally, all pathologists would benefit from targeted leadership development training while in their residency program and in early career. Pathologists have demonstrated leadership at the University President, Veterinary School Dean, and Senior Vice President/President levels in both academic and non-academic sectors. Within the biomedical research environment, pathologists are leading institutes, clinical teams, business improvement and operational groups, and more traditional toxicology and biology organizations.
In addition, the ACVP Education and Life Long Learning Committees need to focus on ensuring that educational offerings are cutting edge and bring topics to established pathologists that provide the continuing education they need to address the rapidly changing landscape of pathology.

Strategic partnerships, with specialty groups, such as the Society of Toxicologic Pathology, American Society of Clinical Pathology, College of American Pathologists and the Digital Pathology Association should be initiated and expanded. ACVP members/representatives could represent the college and profession as active members of these groups (e.g., joining working groups, committees and attending meetings).

RECOMMENDATIONS FOR STANDING COMMITTEES

Education committee

- Continue to offer pre-meeting workshops related to digital pathology, AI, non-traditional microscopy techniques and applications.
- Continue to include sessions at annual meeting related to precision medicine, digital pathology, AI, genetic methodology, in-vivo microscopy.
- Include emerging technology sessions in the education program that focuses on those techniques, animal models, and other research concepts that are emerging across pathology and medical research.
- Consider extending the model of the ASIP special sessions with other organizations such as the Digital Pathology Association or Society of Toxicologic Pathology.
- Consider a keynote speaker with a leadership message to complement the scientific keynote. Invite a pathologist who has maintained a senior position at a veterinary school, large research institute, pharmaceutical company, or has had a non-traditional position (e.g., CEO of a start-up).
- Provide free exhibitor space for targeted providers of emerging technologies in return for training sessions on the technologies.

Lifelong learning committee

- Offer workshop opportunities on emerging technologies independent of the Annual Meeting.
- Potentially partner with other pathology groups, Society of Toxicologic Pathology, American Association of Veterinary Laboratory Diagnosticians, Digital Pathology Association, CL Davis Foundation, American Society of Clinical Pathology, and College of American Pathologist to deliver learning opportunities.
- Consider Webinars and other virtual media approaches (e.g., short training videos-YouTube- or Khan Academy-like) that member and students can access which cover emerging technology, “hot” science topics, and leadership/business concepts. This online CE development could be a charge for a subcommittee and should liaison with a member of the informatics and communications committee.
The training program committee

- Support/facilitate development of VTN.
- Establish a subcommittee of academic, private research, and industrial pathologists which has the goal of creating shared teaching modules and community of experts on topics that are outside the traditional training materials. Systematically incorporate these offerings into veterinary or residency pathology curricula across the US and Canada. This subcommittee should have an informatics and communications committee representative to offer support in building informatics and communications-based support to help accomplish the subcommittee’s mission.
- Identify models from MD training programs where these networks and virtual training models exist and determine if these can be adapted to DVM/VMD pathology programs.
- An easy step forward is to involve the training program committee immediately with development of greater opportunities for inter-institutional resident swapping and funding for industry, pharmaceutical, research/development, and diagnostic laboratory externships for residents in academic settings that currently have limited access to areas outside of the university diagnostic lab setting. These externships are currently offered but are generally competitive and greater opportunities for more residents are needed.

The informatics committee

- Complete a SWOT (Strengths Weaknesses, Opportunities and Threats) analysis of informatics as it pertains to veterinary pathology now and in the future.
- Based on this SWOT analysis, provide recommendations to Council on establishing the appropriate ACVP-sponsored infrastructure to support all aspects of the strategic plan with regards to the future directions of veterinary pathology.

The foundations committee

- Possibly provide stipends to support attendance at informatics or digital pathology meetings/workshops. (Also, define who those stipends should be provided for.)
- Support training program ancillary training opportunities (i.e., externships and virtual training networks).
- Consider applying for training program-agnostic grants from appropriate funding agencies or private organizations (companies, etc.) to support advancing training and continuing education for veterinary pathology in high impact areas (precision medicine, AI, etc.) per the recommendations above.
- Identify a key research area and “theme” to build a veterinary pathology/comparative pathology message for fundraising across our membership and with targeted external groups. Examples could include “Companion animal and human oncology- we share the same challenge”; “Artificial intelligence in human and veterinary pathology- more power for pathology data to advance medical diagnostics”; “Zoonoses and emerging infectious diseases- working together to insure public health”; “The mammalian genome: veterinary and human pathology research targeting rare diseases”.

The communications group

- Increase awareness of existing training opportunities.
- Several of these committees could work together for a meeting focused around AI that is aimed at the resident and early career level pathologist to provide more understanding of
the current technology, what is lacking, and what is needed from the pathologists and software engineers to improve AI and associated technologies. Some thoughts would be involving the education committee in designing the meeting around this major focus, the life-long learning committee and the pathology informatics committee in assistance with bringing in experts in AI development, and the training program committee at advertising and gearing workshops towards young pathologists and trainees. Rather than simple discussion or lecture format, it would be helpful to bring in workshop / hands-on activities throughout the entire meeting such that pathologists at all levels can investigate the current AI available and provide feedback on where improvement is needed.

- This group will be key to collaborate closely with the above teams to insure the appropriate and focused communication necessary for success of any initiative supporting the strategic plan of ACVP