Animal Health Laboratory

- Traditional role & evolution of diagnostic laboratories
- Evolution of veterinary forensic sciences
- Veterinary diagnostic laboratories & forensic pathology
Veterinary Diagnostic Laboratory

- **Traditional role**
  - Natural & infectious diseases
  - Emergency preparedness

- **Traditional Clients**
  - Provincial government
  - Federal government
  - Veterinarians
  - Producers
  - Animal owners
Laboratory tests & equipment evolve

***Isolation***
- Viruses
- Bacteria
- Mycoplasma
- Parasitology
- Clinical Pathology
- Serology

***FAT ELISA***

***IHC PCR RT-PCR***

***Gene sequencing Clonality***

??
Increased standards: quality & safety

- 1957 - First organizational meeting of the Conference of Veterinary Laboratory Diagnosticians
- 1967 – CVLD – minimum standards
- 1969 – AAVLD accreditation program
Dissemination of results
Veterinary Diagnostic Pathologists

- Postmortem – cause of death or disease
- Histopathology
- Interpret and correlate ancillary test results
- Evolved incorporating QA measures, new tests, new methodologies
- The process and procedure of doing a postmortem and examining HE slides has not changed.
Evolution of Veterinary Forensic Sciences
Pertaining to, connected with, or used in courts of law of public discussion and debate
Animal cruelty hasn’t changed
But animal *welfare* has

Federal and provincial laws

Shelter medicine - specialty

Animal welfare - behaviour

Veterinary medicine
Scientific literature evolves:
Literature on veterinary forensics and animal welfare is exponentially increasing (pub med)
Federal & provincial laws have changed

- 2008 Criminal Code of Canada revised from 1892
- OSPCA Act 2009 – mandatory reporting for veterinarians

Animal abuse court cases, Canada 1970-2016
Scrutiny of the laws has increased
Queens District Attorney Richard A. Brown announced today the creation of an Animal Cruelty Prosecutions Unit, which will work closely with the newly formed New York City Police Department’s Animal Cruelty Investigations Squad (which assumed the ASPCA’s law enforcement function in July 2014) in pursing allegations of animal cruelty, abuse and neglect in Queens County. "Acts of animal cruelty can range from neglect and abandonment to serious physical injury and even death and include such organized blood sports as dog and gamecock fighting which are inhumanly staged for the entertainment and gambling purposes of their spectators and in which the animals are encouraged to fight to the death," said District Attorney Brown. "Such atrocities, which studies have shown can be a precursor to crimes against people, constitute criminal activity against innocent and abused animal victims in our communities and warrant prosecution.”
Attorneys specialize in the prosecution of animal abuse.
Evolve: recognition of the link

87% of this occurred in front of women to control them

63% of aggressive criminals had deliberately inflicted harm on animals in childhood

68% of battered women report violence to their animals

75% occurred in the presence of their children

35% of search warrants executed for animal abuse or dog fighting investigations resulted in seizures of narcotics or guns

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Societal impact

Suspected dog fighting ring broken in Ontario

A large dog fighting ring may be operating in Ontario and Michigan. The Ontario Society for the Prevention of Cruelty to Animals says 29 pit bulls were seized from an apparently abandoned farm near Cobourg, Ontario.

Neighbour describes dog attack on woman killed in her backyard

'I saw blood, and the dog was still attacking her,' Farid Benzenati says after dog mauls woman, 55.
Paradigms evolve

<table>
<thead>
<tr>
<th>The Past</th>
<th>Today</th>
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<tbody>
<tr>
<td><em>It's just an animal.</em></td>
<td>Studies have proven that most species of animals are sentient beings</td>
</tr>
<tr>
<td></td>
<td>and companion animals, in particular, feel emotions and pain similar</td>
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<tr>
<td><em>Animals have no rights.</em></td>
<td>Every state in the United States has passed laws, many felony laws,</td>
</tr>
<tr>
<td></td>
<td>against cruelty to animals.</td>
</tr>
<tr>
<td><em>This is how we’ve always treated</em></td>
<td>Laws and society are evolving to what we instinctively know to be</td>
</tr>
<tr>
<td><em>animals.</em></td>
<td>ethically and morally right in the treatment of animals. As society</td>
</tr>
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<td></td>
<td>and laws change, so must behavior. Just because cockfighting was a</td>
</tr>
<tr>
<td><em>It’s only a misdemeanor.</em></td>
<td>cultural tradition in the past does not mean that it is tolerated or</td>
</tr>
<tr>
<td></td>
<td>legal today.</td>
</tr>
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<td></td>
<td>Every state but one now has felony laws for the most serious forms of</td>
</tr>
<tr>
<td><em>I have more important cases to</em></td>
<td>animal cruelty. And while some incidents are misdemeanor crimes, animal</td>
</tr>
<tr>
<td><em>deal with.</em></td>
<td>abuse should not be treated dismissively due to its connection to a</td>
</tr>
<tr>
<td></td>
<td>host of other crimes.</td>
</tr>
<tr>
<td></td>
<td>When you hold animal abusers accountable, you can prevent other crime</td>
</tr>
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<td></td>
<td>and begin to change a community in regards to safety.</td>
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Veterinary Forensic Community Evolves

- International Forensic Veterinary Sciences Association – 10 years!
- American Academy of Forensic Sciences
- Textbooks: Munro, Cooper (2nd ed), Merck (2nd ed),
- North American Veterinary Community annual conference (>17,000 attendees, >500 speakers)
- Incorporating VFS into undergraduate programs (Midwestern, Georgia, Penn)
- Incorporating into shelter medicine certification
- Graduate training - Cornell
Education in Veterinary Forensic Sciences Evolves

Online Programs in Veterinary Forensic Sciences

Veterinary Forensic Sciences Online Graduate Programs

Overview Admission Requirements Tuition & Fees

Veterinary Forensic Sciences: Master’s Degree and Graduate Certificate

NAVET Folio Exclusive • Earn Your Certificate in Veterinary Forensics

NAVET Folio introduces VFSM: a comprehensive, six-course, online self-directed series on veterinary forensic science and medicine and animal crime scene investigation (CSI). Here’s an overview of this opportunity to study with some of the best and most renowned leaders in their fields of expertise.
Have veterinary diagnostic laboratories & pathologists evolved to meet the needs of the legal system?
What are the needs of the legal system?

1. PM examination emphasis on identifying forensically significant findings (e.g., injuries), collecting potentially relevant evidence & maintaining **chain of custody**

2. **Documentation** serve the needs of the participants in the justice system: police, Crown, defense, court

3. Be able to testify fairly, objectively, and in a language that clearly communicates the findings

4. Findings and opinions often require interpretation

5. Expert must be aware of the limits of their expertise and stay within them

https://www.attorneygeneral.jus.gov.on.ca/inquiries/goudge/report/v1_en_pdf/Vol_1_Eng_ES.pdf
Differences from medical forensic pathology

- Jurisdiction: SPCA, Humane societies, Police
- User pay – issue for some police units/crown attorneys and individual owners
- Veterinary pathologists do not attend death scenes
- No government forensic sciences laboratory for animals
- Quality of information from investigators
- No recognized certification in veterinary forensic pathology
“In cases of suspected animal abuse, cases may be submitted by law enforcement agencies for specialized documented investigations.”

PATHOLOGY IS ONLY ONE PART OF THE FORENSIC INVESTIGATION
- Meet the needs of the legal system
- Scientific & legal credibility
- Evidence
- One part of an investigation
- Duty is to the court
- Implications of interpretation
- Documentation

- Investigate natural disease
- Scientific credibility
- Samples
- Standard report
- Diagnosis
Forensic PM objective

The examination and report should provide enough detail for another expert to draw independent conclusions based on the documentation.
Review of Procedures and Protocols

H. W. Brooks Brownlie¹ and R. Munro²

Abstract
Investigation of animal-related crime, and therefore submission of forensic cases to veterinary pathology facilities, is increasing, yet many veterinary pathologists are unfamiliar and often uncomfortable with involvement in the forensic necropsy. This article discusses various aspects of the forensic necropsy without specific attention to any particular species group or crime. General advice is given on procedures, documentation, and recording of the examination, and the article indicates how these features may differ from those used in investigation of natural disease. It also discusses evidence management, including recordkeeping, identification of evidence, labeling of photographs, and use of standard operating procedures and protocols. Various written and visual methods for documentation of the forensic necropsy are covered, and adjunctive topics such as sample collection, assessment, and description of wounds and taphonomy are included. Cause, mechanism, and manner of death are defined, and guidance to the use of these terms is given. The aim of this article is to offer guidance on procedural aspects of the forensic necropsy.

Guidelines & Standards for Veterinary Forensic Postmortems….are coming
STRENGTHENING FORENSIC SCIENCE IN THE UNITED STATES
A PATH FORWARD

Committee on Identifying the Needs of the Forensic Science Community
Committee on Science, Technology, and Law Policy and Global Affairs
Committee on Applied and Theoretical Statistics
Division on Engineering and Physical Sciences

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Are veterinary pathologists prepared?

Scientific AND legal credibility
Attitudes

• “I really hate these cases” & “I refuse to do them”
• “My institution refers legal and insurance cases elsewhere”
• “We need standards and training”
• “A huge black hole for most of us”

Brief Communication

A Survey of Attitudes of Board-Certified Veterinary Pathologists to Forensic Veterinary Pathology

B. J. McEwen¹ and S. P. McDonough²

Abstract
An electronic survey was conducted to determine the attitudes of veterinary pathologists toward forensic pathology and the adequacy of their training in the discipline. The survey was sent to 1993 diplomats of the American College of Veterinary Pathologists and 311 completed responses were analyzed. Of respondents, 80% report receiving at least 1 type of medicolegal case, with cases from law enforcement received most frequently. Most (74%) of the respondents indicated that their previous training did not prepare them adequately to handle forensic cases and almost half of the respondents (48%) indicated that they needed more training on serving as an expert witness. Relative risk ratios (RRR) and odds ratios (OR) were generated to determine the strength of a statistically significant association. Responses from a free-text entry question determining additional training needs could be grouped into 3 main categories: (1) veterinary forensic pathology science and procedures, (2) documentation, evidence collection and handling, and (3) knowledge of the medicolegal system. Last, a field for additional comments or suggestions regarding veterinary forensic pathology was completed by 167 respondents and many reinforced the need for training in the categories previously described. The survey highlights that a significant proportion of diplomates of the American College of Veterinary Pathologists are currently engaged in veterinary forensic pathology but feel their training has not adequately prepared them for these cases. Hopefully, the survey results will inform the college and residency training coordinators as they address the training requirements for an important emerging discipline.
ISSUES

- 48% need more expert witness training
- 28% are nervous going to court
- 25% do not receive enough information about the death scene from investigators
- 25% frustrated with the amount of time and work required to document these cases

Was prior training adequate for law enforcement cases?

- Yes 26%
- No 74%

B. J. McEwen, and S. P. McDonough Vet Pathol 2016;0300985815625756
“There’s no time to do legal cases in a busy diagnostic lab, the return on time invested is small’’”

“I feel fairly comfortable doing these at this stage of my career because I realize that we will never have the time/resources to do a ‘human level’ forensic autopsy. A good lawyer would probably have most evidence thrown out on grounds such as continuity of evidence…the cost of additional effort this from happening is prohibitive.”

“Have a robust chain of custody standard operating procedures”

“No big deal, just like any other case. We will never be able to reproduce the ME [medical examiner] system.”
Are forensic cases just like any other case?

What are human level forensic autopsies?

Do we need to reproduce the ME system to do a forensic PM?
Are the rules of justice different for animal cruelty?

Is the expectation of the court different for veterinary postmortems vs human autopsies?

- PM examination emphasis on identifying forensically significant findings (e.g., injuries), collecting potentially relevant evidence & maintaining chain of custody
- Documentation serve the needs of the participants in the justice system: police, Crown, defense, court
- Be able to testify fairly, objectively, and in a language that clearly communicates the findings
- Findings and opinions often require interpretation
- Expert must be aware of the limits of their expertise and stay within them
Impact of opinions

- Are our opinions in these cases “no big deal”? 
- Reliability matters a great deal to the justice system 
- Flawed pathology can lead to tragic outcomes 
  - Wrongful convictions and incarceration of innocent people 
  - A true perpetrator escapes conviction
Cases do not exist in a vacuum

- Interpersonal violence
- Other criminal activities (drugs, gambling, pornography etc)
- Mental health (hoarders)
- Perpetrators may escalate to crimes against humans

When animals are abused – people are at risk
When people are abused – animals are at risk

“He who is cruel to animals becomes hard also in his dealings with men. We can judge the heart of a man by his treatment of animals.”

Immanuel Kant

Lockwood & Arkow 2016 Vet Pathol 53(5):910-918
Veterinary pathologists and laboratories will need to decide IF:

- Cases of animal cruelty are important
- We should meet the needs of the legal system with thorough documentation, or continue to document these as cases of natural disease
- We should learn from the mistakes and the improvements in medical forensic pathology
Mini-symposia and workshops on veterinary forensic pathology have been included in the ACVP annual meetings (and very well attended!)

Sep 2016 Veterinary Pathology – special issue devoted to veterinary forensic pathology

New textbook veterinary forensic pathology
The difference is in the degree of documentation = time

- Postmortem
- Histopathology
- Interpret and correlate ancillary test results – diagnostic imaging, toxicology
- The process and procedure of doing a postmortem and examining HE slides has not changed, but the degree and type of documentation has increased for forensic cases
- Standards and guidelines for veterinary forensic postmortems
Future?

- Training – undergraduate, graduate DVM
- Guidelines or standards
- Funding – Cornell
"Knowing is not enough; we must apply. Willing is not enough; we must do."
- Goethe
Will I ever find out “Who’s a good dog”?
Link Between Animal Abuse & Interpersonal Violence

Veterinarians

Veterinary Diagnostic Laboratory

Psychosocial Reaction to Animal Abuse

Law Enforcement

Criminal Code of Canada

Provincial and Municipal Laws

Public Safety

Crimes Against People