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**REPORT ON LEGISLATION BY THE ANIMAL LAW COMMITTEE**

**A. 00226**

**Assembly Member Rosenthal**

AN ACT to amend the education law, in relation to prohibiting vivisection at colleges and universities in the state where a scientifically and educationally satisfactory method or strategy exists.

**THIS LEGISLATION IS APPROVED**

**SUMMARY OF THE PROPOSED LAW**

The proposed legislation (Assembly Bill No. 226) would amend the education law to prohibit vivisection at colleges, universities, professional, proprietary or graduate schools in New York State where a scientifically and educationally satisfactory method or strategy exists. The proposed legislation defines “vivisection” as “experimentation through surgery on an organism to view living internal structure.” A “scientifically and educationally satisfactory method or strategy” is defined as “a teaching method or strategy that accomplishes the goal of the proposed education or training or teaching method or strategy used by a majority of other institutions of higher education to accomplish the same goal.”<sup>1</sup> This legislation does not limit the non-invasive use of animals in higher education (for example, in cognitive-behavioral research) or the use of animals in biomedical research.

**JUSTIFICATION**

The Animal Law Committee supports this legislation because it (a) limits unnecessary vivisection that causes pain and suffering to live animals, (b) it resolves inconsistent practices with respect to the use of live animals in higher education, and (c) it addresses the growing public opposition to these practices.

**a) This legislation limits unnecessary practices that cause pain and suffering to animals and/or the unnecessary killing of animals.**

In higher education, the practice of vivisection has declined; yet some colleges and universities continue to use vivisection as an educational method. In vivisection, animals experience pain and suffering (either in the experiment itself, or in the preparation for the

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<sup>1</sup> N.Y. Assembly Bill No. 226 § 1 (2015-2016), at <https://www.nysenate.gov/legislation/bills/2015/a226>. (All internet sources last visited on December 26, 2015.)

experiment) and are often killed when the experiment is completed. For example, in one common undergraduate level lab exercise, students experiment on the heart of a living turtle that is still alive but brain dead “for the dual reason that its brain has been shredded and that its lungs are collapsed.”<sup>2</sup> In another routine practice, students isolate the gastrocnemius muscle in a live frog’s leg and observe contractions caused by electrical stimulus.<sup>3</sup> These exercises merely demonstrate already well-known facts and techniques and do not contribute to the development of medicine.

Practices like those described above are allowed to occur in New York State schools because New York’s state animal cruelty statutes specifically exclude scientific experiments on live animals. Agriculture and Markets Law section 353 bars certain acts of cruelty against animals, but contains the following exception:

Nothing herein contained shall be construed to prohibit or interfere with any properly conducted scientific tests, experiments or investigations, involving the use of living animals performed or conducted in laboratories or institutions, which are approved for these purposes by the state commissioner of health.

Agriculture and Markets Law section 353-a, concerning aggravated cruelty to animals, contains a similar exception. Yet, if vivisection were practiced outside of approved laboratories or institutions, many educational activities involving vivisection in classrooms would violate animal cruelty laws.<sup>4</sup>

**b) This legislation resolves inconsistent practices in the invasive use of live animals in higher education.**

In the United States, the use of live animals for invasive experiments in higher education is declining due in part to availability of equal or superior alternatives.<sup>5</sup> As explained below, medical schools have nearly eliminated the use of vivisection in coursework and veterinary schools are increasingly using more alternatives to vivisection. Yet, the use of vivisection is still common on the undergraduate level.

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<sup>2</sup> A sample lesson plan entitled “Control of Heartbeat in a Turtle” from Wesleyan College Biology Department is available on-line at <http://pierce.wesleyancollege.edu/faculty/brhoades/courses/Bio340manual/lab8html>.

<sup>3</sup> A sample lesson plan entitled “Contractility of Skeletal Muscle using Frog Gastrocnemius Muscle” developed by Biopac System, Inc. in conjunction with the Department of Biology, University of Northern Iowa, is available on line at <http://www.biopac.com/wp-content/uploads/a02.pdf>.

<sup>4</sup> Piers Beirne, *Criminology and Animal Studies: A Sociological View*, 10 SOCIETY & ANIMALS 381, 381-386 (2002), <http://digitalcommons.usm.maine.edu/criminology>. There is an increasing awareness of the connection between cruelty to animals and human violence. See for example, CHILD ABUSE, DOMESTIC VIOLENCE, AND ANIMAL ABUSE (Frank Ascione & Phillip Arkow eds., 1999); CLIFTON P. FLYNN, UNDERSTANDING ANIMAL ABUSE: A SOCIOLOGICAL ANALYSIS (2012); THE LINK BETWEEN ANIMAL ABUSE AND HUMAN VIOLENCE (Andrew Linzey ed., 2009).

<sup>5</sup> New England Anti-Vivisection Society (NEAVS). *Graduate and Professional Schools*, <http://www.neavs.org/education/graduate-professional>

### ***Medical Schools***

The Physicians Committee for Responsible Medicine reports that as of September 16, 2015, only two medical schools in the United States (none of them in New York State) have live animal laboratories.<sup>6</sup> All other medical schools (including the 16 institutions in New York) use modern, cost effective, and humane alternatives such as computerized manikins, human patient simulators, and other interactive and advanced computer simulations.<sup>7</sup> In emergency medicine residency programs, 17 institutions in the United States continue to perform invasive procedures on animals.<sup>8</sup> Yet, in New York State, only one (Icahn School of Medicine at Mount Sinai (Beth Israel)) continues to use live animal models.<sup>9</sup>

### ***Veterinary Schools***

Some veterinary schools still use live animals in “terminal surgeries” where healthy animals are used in surgical training and later killed. Dogs, mice, rats, and birds are the most commonly used species in veterinary training.<sup>10</sup>

But several veterinary schools are offering alternatives to terminal surgeries using healthy animals.<sup>11</sup> One alternative is teaching students to provide care of sick or injured animals in a clinical setting under the close supervision of surgical instructor/practitioner. In clinics, students are exposed to all phases of patient care, including surgery and postsurgical pain management. In 2005, the College of Veterinary Medicine at Cornell University launched the Shelter Medicine Program to educate veterinarians and veterinary students in medicine for animals in shelters and to provide medical and behavioral outreach to animal shelters.<sup>12</sup> Another alternative is using animals that are euthanized due to a medical reason.<sup>13</sup> The Cummings School of Veterinary Medicine at Tufts University was the first school to implement a client donation or willed body program for anatomy and some surgical and clinical skills training. (Tufts has eliminated

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<sup>6</sup> Physicians Committee for Responsible Medicine (PCRM), *Medical School*

*Curricula with Live Animal Laboratories*, at <http://www.pcrm.org/research/edtraining/meded>

<sup>7</sup> *Id.* See also, HSUS, *Fact Sheet: Medical Training Using Animals*, at [http://www.humanesociety.org/issues/medical\\_training/qa/questions\\_answers.html](http://www.humanesociety.org/issues/medical_training/qa/questions_answers.html). Alternatives also include surgical and microsurgical training boards, perfusion models, laparoscopy simulators, and a wide range of computer platforms for learning anatomy, physiology (cardiovascular, pulmonary, renal, etc.), and gastrointestinal and muscle function.

<sup>8</sup>PCRM, *Animal Use in Allopathic and Osteopathic (†) Emergency Medicine Residency Programs in the United States: An Ongoing Survey (Nov. 16, 2015)*, <http://www.pcrm.org/research/edtraining/emergency/animal-use-in-emergency-medicine-residency>.

<sup>9</sup> *Id.*

<sup>10</sup> HSUS, *Fact Sheet: Medical Training Using Animals*, at [http://www.humanesociety.org/issues/medical\\_training/qa/questions\\_answers.html](http://www.humanesociety.org/issues/medical_training/qa/questions_answers.html).

<sup>11</sup> NEAVS, *Graduate and Professional Schools*, *supra*, note 5. NEAVS, *Alternatives in Education*, <http://www.neavs.org/alternatives/in-education>.

<sup>12</sup>Cornell University College of Veterinary Medicine, *Maddie’s Shelter Medicine at Cornell*, <http://www.sheltermedicine.vet.cornell.edu>.

<sup>13</sup> Andrew Knight, *The Effectiveness of Humane Teaching Methods in Veterinary Education*, 24 ALTEX, 91, 92-93 (2007), [http://www.andrewknight.inf/...humane\\_educ/humane.../humane\\_educ.html](http://www.andrewknight.inf/...humane_educ/humane.../humane_educ.html).

terminal surgeries from its core teaching program, and has adopted a policy that “strongly encourages that healthy animals involved in the teaching program not be subjected to invasive or terminal procedures.”<sup>14</sup>) At least eight other veterinary schools have cadaver donation programs.

### ***Non-Professional Schools***

Undergraduate and graduate courses continue to use vivisection as an educational method, specifically in the fields of physiology, psychology, pharmacology, and zoology.<sup>15</sup> According to the New England Anti-Vivisection Society, every year millions of animals are used in college science courses.<sup>16</sup>

Specifically, in psychology courses, students are sometimes required to (a) surgically ablate or lesion the brains of small mammals; (b) insert or implant electrode recording devices through animals’ skulls; and (c) decapitate and dissect animals for tissue analysis.<sup>17</sup> In advanced physiology and anatomy classes, frogs can be subjected to a surgical procedure call pithing (severing), in which a sharp object (a pin or a knife) is inserted into the frog’s mouth or neck, to sever the spinal cord. Students then remove or destroy the brain. The purpose of pithing is to destroy the animal’s central nervous system in order to study physiological processes, as the animal will continue to function physiologically for hours after the procedure. The New England Anti-Vivisection Society describes this procedure as a “slow and hideous death for the frog, and extreme trauma for a student who believes it is unethical to cause pain and death to another living being.”<sup>18</sup> Such activities would be restricted under the proposed legislation.

In many cases, there are suitable alternatives to the use of live animals in classroom exercises. Databases of additional alternative teaching methodologies are available to educators and are continuing to develop. For example, The Norwegian Reference Centre for Laboratory Animal Science and Alternatives (NORECOPA) provides an English-language database containing information on over 3,500 audiovisual aids that may be used as alternatives or supplements to the use of animals in education and training.<sup>19</sup> Some training models include computer simulations, high quality videos, ethically sourced cadavers of animals who have died naturally or in accidents or, most commonly, have been euthanized for medical reasons, manikins, surgical simulators, and non-invasive self-experimentation.<sup>20</sup>

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<sup>14</sup> Tufts University, Cummings School of Veterinary Medicine, *Animal Use in the DVM Program*, <http://vet.tufts.edu/education/dvm-program/animal-use/>.

<sup>15</sup> AnimaLearn, AAVS, *Dying to Learn: Animal Use in Education*, <http://dyingtolearn.org/animalUseStudent.html>.; see also, JONATHAN BALCOMBE, *THE USE OF ANIMALS IN HIGHER EDUCATION: PROBLEMS, ALTERNATIVES, AND RECOMMENDATIONS* (Humane Society Press 2000).

<sup>16</sup> NEAVS, *Colleges and Universities*, <http://www.neavs.org/education/colleges-and-universities>.

<sup>17</sup> Paul F. Cunningham, *Animals in Psychology Education and Student Choice*, 8 *SOCIETY & ANIMALS* 191 (2000), [www.animalsandsociety.org/assets/library/416\\_s826.pdf](http://www.animalsandsociety.org/assets/library/416_s826.pdf). In addition to activities that would be affected by the proposed legislation barring vivisection, students in psychology courses may also be required to condition confined animals using food deprivation or electric shock and administer drugs to alter animals’ sensory capabilities.

<sup>18</sup> NEAVS, *supra* note 16.

<sup>19</sup> NORECOPA, A Norwegian Inventory of Alternatives (NORINA), <http://oslovet.norecopa.no/norina>

<sup>20</sup> *Id.*

**(c) This legislation addresses the growing opposition to vivisection by both the general public and students.**

There is growing opposition to vivisection by the general public and by students.

### ***The general public***

According to a 2015 poll conducted by Gallup, 67 percent of Americans are very or somewhat concerned with the way animals are used in research.<sup>21</sup> Opponents to labs in which animals are used and then killed believe it is ethically wrong to kill healthy animals when alternative methods are available.<sup>22</sup> Opponents also worry that the “terminal use of animals could lead to a decreased sensitivity among professional students and to a sense of irreverence for life.”<sup>23</sup>

### ***Students***

Psychological studies show that many students are opposed to performing invasive procedures on animals. These studies demonstrate that some students suffer psychological trauma when they are forced to perform procedures on animals that they perceive to be cruel, painful, or lethal.<sup>24</sup> Psychological trauma can dull a student’s observational and critical thinking skills.<sup>25</sup> Repeated exposure to these procedures can lead students to become desensitized and indifferent towards animal suffering. In order to cope with performing these objectionable procedures, studies show that some students develop a utilitarian view of animals.<sup>26</sup> For example, one study demonstrated that medical students, who were initially morally uneasy about performing terminal procedures on live dogs, subsequently developed a complete denial of responsibility and wrongdoing.<sup>27</sup> Studies further show that compassionate people may resist

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<sup>21</sup> Rebecca Rifkin, *In U.S., More Say Animals Should Have Same Rights as People*, Gallup.com (May 18, 2015), <http://www.gallup.com/poll/183275/say-animals-rights-people.aspx>.

<sup>22</sup> Gary J. Patronek & Annette Rauch, *Systematic Review of Comparative Studies Examining Alternatives to the Harmful use of Animals in Biomedical Education*, 230 JAVMA 37, 37 (2007), available at <http://avmajournals.avma.org/doi/abs/10.2460/javma.230.1.37>.

<sup>23</sup> *Id.* Additionally, the recognition of the link between human health and treatment of animals is growing. See, Aysha Aktar, *The Need to Include Animal Protection in Public Health Policies*, 34 JOURNAL OF PUBLIC HEALTH POLICY 549, 549-559 (2013), <http://www.palgrave-journals.com/jphp/journal/v34/n4/full/jphp201329a.html>. Studies have questioned how relevant animal testing is for predicting human health outcomes. See, Nathaniel Herzberg, *Mice losing their allure as experimental subjects to study Human Disease*, THE GUARDIAN, Mar. 20, 2015, <http://the-guardian.com/science/2015/mar/20/mice-client-trials-human-disease>.

<sup>24</sup> Theodora Capaldo, *The Psychological Effects on Students of Using Animals in Ways that They See as Ethically, Morally or Religiously Wrong*, 32 ATLA, 525, 525-531 (2004), available at [www.neavs.org/docs/atla\\_paperDr.Capaldo.pdf](http://www.neavs.org/docs/atla_paperDr.Capaldo.pdf); see also, Cunningham, *supra*, note 17, at 195. Cunningham states that a moral conflict is created for the student who has a teacher who believes that these invasive procedures are “justified and beneficial to learning,” because the students may feel compelled to complete the procedures although it goes against their conscience.

<sup>25</sup> Cunningham, *supra* note 17, at 199.

<sup>26</sup> Capaldo, *supra* note 24, at 526.

<sup>27</sup> *Id.*, at 529, citing, Arnold Arluke & Frederick Hafferty, *From Apprehension to Fascination with ‘Dog Lab’: The Use of Absolutions by Medical Students*, 25 JOURNAL OF CONTEMPORARY ETHNOGRAPHY, 201, 201-225 (1996). This study concludes that despite their initial reservations, the students begin to view labs as a learning

entering medical, veterinarian, or science careers, because they are opposed to performing harmful animal procedures.<sup>28</sup>

State choice laws have been enacted in several states to give students in primary and secondary schools alternative methods to learn about animal anatomy and physiology. For example, in New York State, elementary and secondary schools must permit alternate arrangements, without penalty, for students expressing a moral or religious objection to the performance or witnessing of the dissection of an animal.<sup>29</sup>

By contrast, there are currently no state laws that require colleges and universities to provide alternative choices for students who are opposed to dissection and vivisection in the classroom. However, at least 27 colleges and universities around the country have voluntarily adopted student choice policies and an additional 37 schools allow dissection alternatives.<sup>30</sup>

In 1994, Sarah Lawrence College became the first college to adopt a formal student choice policy.<sup>31</sup> In 2007, the Biology Department faculty at Hofstra University assessed the feasibility of various alternatives to harmful animal use and established a student choice policy that gives students the right to choose these alternatives.<sup>32</sup> Other colleges and universities have not adopted formal policies, but have informal or unwritten student choice policies.<sup>33</sup>

## OPPOSITION

Classes in which animals are harmed are controversial within veterinary and other life and health science courses. Students increasingly object to the harmful use of animals, and

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experience. The authors argue that this occurs because “medical school culture provided absolutions to students that neutralize their moral apprehension about dog lab and replaced it with a sense of fascination and awe.”

<sup>28</sup> Capaldo, *supra* note 24, at 526.

<sup>29</sup> See, N.Y. EDUC. LAW § 809 [4]. Additionally, subject to exceptions in certain cases approved by the Commissioner of Education, New York State schools may not permit the performance of lessons or experimental studies on vertebrate animals in the school or in activities conducted under school auspices where the lesson or experiment employs certain designated inhumane acts. N.Y. EDUC. LAW § 809 [2], [3].

<sup>30</sup> See, NEAVS, *Alternatives in Education*, <http://www.neavs.org/alternatives/in-education>.

<sup>31</sup> Sarah Lawrence College, Sarah Lawrence Firsts, <https://www.sarahlawrence.edu/about/history/firsts.html>. Sarah Lawrence College includes this statement: “Sarah Lawrence College does not require students with ethical objections to participate in dissection. Students who choose to refrain from such activities will be given alternatives that provide similar experiences.” *Id.*, citing, HSUS, *Sarah Lawrence College Dissection Choice Policy*, at [http://www.hsus.org/web-files/PDF/ARI/Sarah\\_Lawrence\\_College\\_Policy.pdf](http://www.hsus.org/web-files/PDF/ARI/Sarah_Lawrence_College_Policy.pdf)

<sup>32</sup> Animalearn, *Dying to Learn*, *supra* note 15. As of 2012, five New York schools have an official Student Choice Policy. Animalearn, *Animals, Ethics, and Education*, AAVS, *Schools with Student Choice Policies or Allowing Dissection Alternatives*, at <http://www.animalearn.org/collegeSchools.php>. Available alternatives include computer software programs that simulate animal dissection or human anatomy and physiology, models, and human or animal cadavers donated through ethical sources. One popular, interactive computer software program is V-Frog, a virtual reality-based frog dissection program. Designed for high school to graduate level biology courses, a PC mouse allows students to pick up a scalpel, cut open skin, explore internal organs, watch a beating heart, observe digestion, conduct an endoscopy, look at underlying muscles, bones, and organs and observe nerve and muscle response, as well as other capabilities not possible with a physical specimen. See, NEAVS, *supra*, note 30.

<sup>33</sup> AnimaLearn, AAVS, *Dying to Learn: Animal Use in Education*, *supra* note 15.

request alternative teaching methods. In response, some universities have implemented formal policies to guide faculty responses to such cases, yet many other institutions have not done so. Instead they have dealt with these situations on an individual basis.<sup>34</sup>

Academics commonly cite educational efficacy as the main reason they are opposed to adopting alternative methods of teaching. Yet, veterinary educational studies have compared the learning outcomes achieved by non-harmful teaching methods with those achieved by harmful animal use. These studies demonstrate that if humane alternatives are well designed, they normally achieve learning outcomes as good, or in well over a third of all cases, better than those that rely on harmful animal use.<sup>35</sup>

A 2007 study conducted by the Center for Animals and Public Policy, Cummings School of Veterinary Medicine at Tufts concluded that the results associated with alternative methods of instruction were not significantly different from, or were superior to, results associated with conventional methods. The authors of the study encouraged “biomedical educators to consider how adopting alternative teaching methods could be of benefit to their teaching programs, students, and faculty members.”<sup>36</sup>

Veterinary schools may be wary that the proposed ban on vivisection would require them to transform their education programs immediately. But the introduced legislation is conditioned on the existence of an alternative “scientifically and educationally satisfactory method or strategy.” The proposed legislation defines a “scientifically and educationally satisfactory method or strategy” as a teaching strategy or method that “accomplishes the goal of the proposed education...used by a majority of other institutions of higher education to accomplish the same goal.”<sup>37</sup> Moreover, the harmful use of animals in veterinary programs is evolving. While professionals in veterinary education have not yet reached a consensus on the need for live-terminal laboratories, some schools have moved away from the use of animals in their teaching programs while others have significantly reduced the numbers of animals used. Many more schools are looking for alternatives.<sup>38</sup>

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<sup>34</sup> Andrew Knight, *Conscientious Objection to Harmful Animal use Within Veterinary and Other Biomedical Education*, 4 ANIMALS, 16, 16-34 (2014), [http:// www.andrewknight.info/.../conscientious\\_objection.html](http://www.andrewknight.info/.../conscientious_objection.html).

<sup>35</sup> *Id.*, 21. “Twenty nine papers in which comparison with harmful animal use did not occur illustrated additional benefits of humane teaching methods in veterinary education, including: time and cost savings, enhanced potential for customization and repeatability of the learning exercise, increased student confidence and satisfaction, increased compliance with animal use legislation, elimination of objections to the use of purpose-killed animals, and integration of clinical perspectives and ethics early in the curriculum.” See also, Andrew Knight, *The Effectiveness of Humane Teaching Methods in Veterinary Education*, *supra* note 13; Andrew Knight, *Humane Teaching Methods Prove Efficacious within Veterinary and other Biomedical Education*, ALTEX (Special Issue) 14, 213-220 (2008).

<sup>36</sup> NEAVS, *Alternatives in Education*, *supra*, note 30; see also Andrew Knight, *The Effectiveness of Humane Teaching Methods in Veterinary Education*, *supra* note 13, at 103-104. The March 2014 Student Handbook of the College of Veterinary Medicine at Cornell University (class of 2018) specifies that live animals will be used for teaching in certain obligatory core courses, but that no terminal procedures are performed on live animals used in teaching core courses. There is no such specification as to elective courses. See, [www.vet.cornell.edu/admissions/students/docs/classof2018StudentHandbooks.pdf](http://www.vet.cornell.edu/admissions/students/docs/classof2018StudentHandbooks.pdf). See also, Gary J. Patronek, and Annette Rauch, *Systematic Review of Comparative Studies*, *supra* note 22.

<sup>37</sup> N.Y. Assembly Bill No. 226 §1.

<sup>38</sup> *Are Live-Terminal Laboratories Necessary?* VETERINARY PRACTICE NEWS, April 2009, at 1, [www.veterinary/practicenews.com/?-2009/AreLive-TerminalLaboratoriesNecessary](http://www.veterinary/practicenews.com/?-2009/AreLive-TerminalLaboratoriesNecessary).

Opponents also express concern about the possible financial or administrative burdens of adopting alternative methods of teaching. But, educational animal use involves costly expenses, namely: the purchase, transportation, housing, feeding, euthanasia and disposal of these animals. In comparison, many humane alternatives are largely cost-free after the initial purchase is made. The use of humane alternatives also involves time benefits. For example, in a description of nerve physiology experiments, one professor described that, through the use of simulation, “[n]ot only is much more time devoted to the experiment, but time is available to explore the subject in greater depth.”<sup>39</sup>

Faculty members opposed to the introduction of alternative methods of teaching also claim loss of academic freedom as a concern.<sup>40</sup> Yet, legal studies have shown that academic freedom is not without limits where students hold sincere and conscientiously held objections.<sup>41</sup> The development of more humane teaching methods has led students increasingly to object to harmful animal use. Educational necessity is a less compelling argument to deny a student’s right to conscientiously object to harmful animal use where humane teaching methods produce superior or comparable results.<sup>42</sup>

## CONCLUSION

There has been significant progress in reducing the invasive use of live animals in medical and veterinary schools. The majority of U.S. medical schools have eliminated live laboratories in favor of humane alternatives. And many veterinary schools are restructuring their training programs with alternatives to live animal use. This proposed legislation will establish a consistent standard within the education system by prohibiting vivisection in all colleges, universities, graduate, proprietary and professional schools where a “scientifically and educationally satisfactory method or strategy” exists. For the aforementioned reasons, the New York City Bar Association’s Animal Law Committee supports the proposed legislation.

Animal Law Committee  
Lori Barrett, Chair

April 2016

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<sup>39</sup> Knight, *Conscientious Objection*, *supra* note 34, at 20, citing, K. Clarke, *The Use of Microcomputer, Simulations in Undergraduate Neurophysiology Experiments*, ALTERN. LAB. ANIM. 14, 134-140 (1987); C.R.: Dhein and M. Memon, *On-line Continuing Education at the College of Veterinary Medicine, Washington State University*, J.VET. MED. EDUC. 30, 41-46 (2003); D. Dewhurst and L. Jenkinson, *The Impact of Computer-based alternatives on the Use of Animals in Undergraduate Teaching*, ALTERN. LAB. ANIM. 23, 521-530 (1995).

<sup>40</sup> The U.S. National Association of Biology Teachers initially endorsed the use of humane alternatives in education, but later rescinded this policy. *See*, Knight *The Effectiveness of Humane Teaching Methods in Veterinary Education*, *supra* note 13, at 95. Knight attributes this reversal to opposition from biology teachers. .

<sup>41</sup> GARY L. FRANCIONE AND ANA E. CHARLTON, VIVISECTION AND DISSECTION IN THE CLASSROOM: A GUIDE TO CONSCIENTIOUS OBJECTION (Amer. Anti-Vivisection Society, 1992).

<sup>42</sup> Knight, *Conscientious Objection*, *supra* note 34, at 21-22.