

## 馬臨床における科学的証拠に基づいた鍼治療

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### 【Xie 博士のプロフィール】

Xie 博士は鍼治療、漢方薬、薬膳、推拿など中国伝統医学を基本とした動物に関わる専門的な知識をもつ獣医師を育成するために渡米し、1998年に Chi University (氣大学) を創立、今なお熱心に教育ならびに研究活動を続けられています。Xie 博士は氣大学の運営に加えて、フロリダ大学、華南農業大学、中国西南大学での名誉教授として永続的に中国伝統獣医学 (TCVM) の教育・研究に携わり、中国伝統医学の全般についても豊富な知識や経験を広く持つことから、米中だけでなく世界的な TCVM の教育・研究者として唯一無二の存在となっています。なお Xie 博士が創立した氣大学は、通信教育制度を活用し、これまでに 75 か国以上から九千人以上の獣医師を受け入れ、TCVM の教育と実務訓練の中心を担ってきた実績があります。

氣大学を創立するまでの Xie 博士のご略歴は以下の通りで、TCVM 教育プログラムの構築に向けて、その礎を作るものとなっています。1983年に四川畜産獣医学大学で獣医学分野の理学士号を、さらに北京農業大学で獣医鍼学の理学修士ならびに博士号を取得され、同大学の准教授も務められました。この間、北京中医薬学院ならびに国立中医薬学院にて人体鍼治療に関するより高度な教育訓練も受けられています。1994年に渡米し、氣大学の創立に合わせるように 1999年に「鍼治療による馬の痛みの制御メカニズム」に関する研究でフロリダ大学から博士号を取得されました。Xie 博士は、中国農業省、国家科学技術委員会、北京農業大学、中華人民共和国獣医学協会、中華人民共和国 TCVM 協会、世界 TCVM 協会、アメリカホリスティック獣医師協会など、国別にすると米国、カナダ、日本、タイ、インドネシア、韓国、オーストラリア、メキシコ、ブラジル、ヨーロッパ、南アフリカなど、世界中を走り回ってご講演を続けられています。このような Xie 博士の全地球的な教育活動は、TCVM 教育・研究のさらなる発展にも役立たられています。TCVM への広報活動も活発で、CBS ニュース、ディスカバリー チャンネル、PBS からインタビューを積極的に受けられ、2005年の CBS ニュースでは Xie 博士は「動物鍼治療の第一人者」として紹介されています。執筆活動も盛んで、Xie 博士はこれまでに 20冊以上の著書、獣医学雑誌にも 200編以上の論文を出版、掲載しています。また、これら著作物の中で「獣医薬草学」、「謝の獣医鍼治療」、「伝統中獣医学: 基本原則」などは、世界中の多くの TCVM 教育の現場で教科書として利用され続けています。

## 【講演要旨】

私が初めて米国の土を踏んだのは 1992 年でした。当時、私が訪問した中国伝統医学校は、驚くことに「五行論」と「八綱弁証」のどちらかを主体とする二つの学派に分かれて教育が行われていました。この二つの理論は単に中国伝統医学の異なる側面であり、五行論と八綱弁証は切っても切れない関係にあります。どちらも中国伝統医学の基本であり、これまでの中国での経験を踏まえて、これら二つの理論を合わせて総合的な中国伝統獣医学 (TCVM) 教育プログラムを組み立てるにはどうすれば良いのかと考えていました。

その後、1994 年に家族とともにフロリダに定住したとき、私は地元の獣医師と友達になり、その中には動物を対象とした鍼治療や中国伝統医学の訓練を受けた人もいました。彼らは中国伝統医学の理論的な教育を受けておりましたが、それを動物へ応用して実際に鍼治療をすることはなく、また動物に針を刺すことはおろか、ほとんど鍼に触れたこともない状況でした。私は、これらの優秀な獣医師たちが、自分たちが熱心に学んできた技術について自信を持って実践できないことに心を痛め、米国における TCVM 教育プログラムについて改めて疑問を抱きつつ、数年が過ぎました。

私は 1997 年にかけて米国だけでなく、アイルランド、カナダ、日本などから招待され、TCVM について講演する機会に恵まれました。これらの旅行中、私は西洋医学にとってはまだ新しい古来から伝わる中国の獣医療技術についてもっと知りたいと熱望している多くの獣医師たちが存在することを知り、彼らの熱意に勇気づけられ、TCVM 教育プログラムの構築に向けて、その使命感を焚き上げる様々な刺激を受けました。例えばケンタッキー州での鍼治療セミナーの後、ある馬の開業獣医師が私に近づいてきて、「謝さん、あなたの 1 時間のプレゼンテーションを聞いて、20 年間の疑問が私の頭から消えました。」と多大なる礼を受けました。さらにカナダ人の獣医師は、私にもっと教える時間を用意すべきだったと嘆いていました。また私を招待した現地大学の教授から私の講演の後、「この人はこの複雑な古い理論を本当に理解しやすくすることができます。」と、お褒めの言葉を頂きました。これらの心強い言葉と、西洋獣医学では効果的な TCVM 教育プログラムが欠如しているのではないかという私の以前からの懸念が、最終的に私自身を動かし、1998 年に氣大学を創立する大きな契機となりました。

氣大学の創立により正しい理論の下で TCVM 教育プログラムが行われるようになり、氣大学は今や TCVM の教育や実務訓練を望む何千人もの獣医師にとって真の聖地となっています。今回の講演では馬における TCVM を中心に話を進めますが、この講演がみなさんにとってより良き知識や経験になることを心から歓迎します。

# Evidence-based clinical application of acupuncture in equine practice?

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## INTRODUCTION

Traditional Chinese Veterinary Medicine (TCVM) including acupuncture has been used to treat disease and relieve pain in horses for more than 2,000 years.<sup>1-2</sup> As the use of acupuncture has increased over the past few decades in countries where modern Western medicine is the foundation of health care, there has been increasing scientific effort to evaluate this ancient medical modality for objective evidence of efficacy.<sup>3-7</sup> This paper will discuss the basis of acupuncture and evidence-based clinical application of acupuncture in equine practice including diagnosis and treatment of lameness, pain management, reproductive and other diseases.

## WHAT IS ACUPUNCTURE?

While specifics will be presented below, as an introduction acupuncture comes from *Greek: acus* needle, *pungere* to pierce or to puncture the skin with a needle. It is often defined as applied stimulation at discrete and specific points on the body in order to cause a therapeutic effect. These discrete and specific locations on the body are called acupuncture points or acupoints. The defined stimulation methods are acupuncture techniques. In TCVM, acupuncture techniques included dry needling (DN) or conventional needling acupuncture, hemo-acupuncture (bloodletting), moxibustion (burning of the herb, *Artemisia vulgaris*, over acupuncture points), pneumo-acupuncture (injection of air under the skin), and firing acupuncture (counter-irritation with heat). In modern times, constant manual stimulation of the needles has been replaced by low current electrical stimulation (called electro-acupuncture, or EA). Aqua-acupuncture (injection of injectable agents including vitamin B12 into acupoints or AA) and gold-bead implantation (insertion of small metallic particles at certain acupoints) have been instituted and more commonly used. Also more recently, low-level lasers and static magnets are being used to stimulate certain superficial acupoints as part of acupuncture therapy.

## Acupuncture Procedures

The top three acupuncture techniques used currently in veterinary medicine are dry needling (DN), AA and EA.

### ***Dry Needling (DN) Technique***

DN is one of the earliest acupuncture techniques. In TCVM it is called White Needle *Bai-zhen* (no intentional bleeding). It is the most common acupuncture treatment modality in veterinary and human practice. It involves the insertion of thin sterile needles of certain gauges and lengths depending on species and location of acupoints.

### ***Electro-acupuncture (EA)***

Electroacupuncture (EA) is a growing and common adjunct to DN treatments. Historically EA started to be used clinically in China in the 1950's, and has become common in veterinary practices especially for analgesic purposes and other pain management.<sup>8-9</sup> Following placement and insertion of the acupuncture needles in appropriate acupoints, the application of a mild electrical current passed through the needles allows a repeatable, more consistent and prolonged therapeutic stimulation. The frequency and amplitude of the electrical current can be adjusted with either a high or low frequency, each having a different effect on systemic neuromodulation and the amplitude adjusted to the stimulation threshold of the patient. There are many types of EA units available with the ultimate goal of strengthening and altering the needle stimulation. Lower frequency (around 20 Hz) EA mediates endorphin release and is best for treating pain and muscle spasms. Higher frequency (80-120 Hz) is associated with 5-hydroxytryptamine (5-HT) release and may be best to re-educate the motor neurons in paresis and paralysis.<sup>8, 10-11</sup>

### ***Aqua-acupuncture (AA)***

Aqua-acupuncture (AA) involves the injection of fluids and soluble products into acupuncture points. Sterile saline, vitamin B12, homeopathic remedies, the patient's own blood, and local anesthetics are most commonly used in western acupuncture practice. AA is used to lengthen and strengthen an acupuncture treatment. It is also used when the patient will not remain calm long enough to keep filiform needles in place.<sup>8</sup> Injection of an animal's own blood has become common for injury, autoimmune and inflammatory disorders. An interesting example of AA is highlighted in a study where eight horses were randomly submitted to four different treatment protocols according to a Latin Square double-blind design in order to explore the clinical sedation effect of AA: 1) 0.1 ml kg<sup>-1</sup> of saline subcutaneously injected at the cervical region (negative control), 2) 0.1 mg kg<sup>-1</sup> of Acepromazine (Acp) injected subcutaneously at the cervical region (positive control), 3) 0.01 ml kg<sup>-1</sup> of saline injected into acupoint GV-1 (AA-saline) and 4) 0.01 mg kg<sup>-1</sup> of Acp injected into GV-1 (AA-diluted Acp, or only 10% dose of Acp as compared with positive control).<sup>12</sup> Signs of sedation were observed in positive control, AA-saline and AA-diluted Acp groups at 30 minutes. Only in AA-diluted Acp was noted with this sedation effect at 60 minutes after the injection. This study indicated that the saline injection in GV-1 produced sedation, and also the diluted acepromazine (0.01 mg kg<sup>-1</sup>) injection at GV-1 produced an even longer sedative effect than conventional cervical injection of acepromazine (0.1 mg kg<sup>-1</sup>).

**CAN ACUPUNCTURE BE USED AS A DIAGNOSTIC FOR LAMENESS?**

The acupoint sensitivity on palpation was reported to be used for diagnosis of lameness in horses by American equine practitioners in 1990's.<sup>13-14</sup> Out of 327 racing Thoroughbred horses, which were examined either for lameness or routine musculoskeletal evaluation, 176 (54%) indicated the metacarpophalangeal joint pathology (MPJP) using acupuncture diagnosis. Of 176 MPJP horses, 176 (100%) had sensitive LI-18, and 158 (90%) had sensitive SI-16.<sup>15</sup> Of 176 MPJP horses, 111 (63%) were not lame. Of the 65 horses that were lame, 18 (27.7%) became sound after IA mepivcaine hydrochloride in the fetlock. The remaining 47 (72.3%) were lame as a result of extra-articular fetlock or non-fetlock pain.

Acupoint sensitivity on palpation was tested in horses showing signs of hoof lameness with conventional diagnosis.<sup>16</sup> Sensitivity at LI-18 was found 23/30 (77%) chronic heel lameness horses, 31/45 (69%) acute heel lameness, 24/29 (83%) laminitis. Sensitivity at SI-16 was detected in 18/30 (60%) chronic heel lameness horses, 27/45 (60%) acute heel lameness, 11/29 (38%) laminitis. No correlation of foot lameness with acupuncture point sensitivity was found in this study in cases of subsolar abscess, bruised feet, hoof cracks and painful wounds.

One hundred and two client-owned horses were presented for routine acupuncture, reduced performance or lameness.<sup>17</sup> Each horse first underwent a <2-minute screening scan of acupuncture points (AP) and was classified as positive or negative for acupoint sensitivity by the same veterinarian certified in veterinary acupuncture and experienced in performing AP scans and unaware of the presenting complaint in all cases. Then each horse was evaluated for lameness and categorized as lame or sound by a different veterinarian. In the sound group, 40/51 (78.4%) horses had a negative AP scan and 11/51 (21.6%) had a positive AP scan. In the lame group, 9/51 (17.6%) horses had a negative AP scan and 42/51 (82.4%) had a positive AP scan ( $p<0.001$ ). Acupuncture scanning had a sensitivity of 82.4% to detect lameness and a specificity of 78.4%, with an accuracy of 80.4%. Significant but modest correlations existed between the side of the horse that was positive on the AP scan and the side of lameness. The conclusion of the study was that an AP scan could be a useful, quick screening tool during the physical examination to identify horses that should undergo a full lameness examination and other diagnostic testing.

A Brazilian group evaluated 810 athletic horses involved in different disciplines for soundness/lameness because of poor performance, lameness, refusal to jump, upward fixation of the patella, thoracolumbar spine or sacroiliac pain, suspensory lesion, and front hoof problems from 2001 through 2012.<sup>18</sup> They used acupuncture sensitivity on palpation and clinically diagnosed 86 (9.4%) horses with stifle syndrome. Twenty-two (25.6%) of the 86 horses with stifle syndrome underwent ultrasonography and/or radiography, and lesions were detected in 21 (95.5%). The diagnostic points for stifle syndrome included BL-20, BL-21, local stifle points, GB-27, SP-13, ST-30, and the sacral acupuncture point BL-54. They concluded that acupuncture point sensitivity for diagnosis of stifle disease may be considered a reliable diagnostic method and suggested it be included in routine clinical examination of horses and in reference textbooks as a lameness diagnostic modality. And finally, an equine practitioner from South Africa has reported identifying soft injuries and pain in horses using diagnostic points associated the GB Channel with good clinical results.<sup>19-20</sup>

## ACUPUNCTURE FOR GENERAL PAIN MANAGEMENT AND MECHANISM

A recent publication reported that acupuncture analgesia mediated through increasing substances in the body including 5-hydroxytryptamine (5-HT), which increased the pain threshold, also improved the absorption of pain inducing inflammatory substances.<sup>21</sup> Another study indicated that low-level laser acupuncture can improve the pain threshold of rabbits, goats, pigs, mice and dogs, and increases the concentration of 5-HT in cerebral spinal fluid which suppresses the evoked cortical potential thereby inhibiting pain.<sup>22</sup> EA using 2.0 Hz, continuous wave, 6 volts, 30 minutes once per day for 4 weeks was stimulated at acupoints SP-10, ST-34, ST-35, *Nei-xi-yan*, ST-36, and GB-34 in rabbit knee osteoarthritis models. Results showed that EA reduced the levels of inflammatory factors including IL-1 $\alpha$ , TNF- $\beta$ , and prostaglandin E<sub>2</sub> to alleviate the inflammation reaction and also notable pain relief.<sup>23</sup>

The effect of different frequencies (2 Hz, 40 Hz, 60 Hz, 100 Hz) of EA on the pain threshold has also been studied using the goat as a model.<sup>24</sup> Two pairs of acupoints *Bai-hui* and *Qi-jia*, *Er-gen* and *San-yang-luo* were stimulated with EA for 30 minutes. Their results showed that of the frequencies studied EA with 60 Hz had the best effect for pain relief. Follow-up studies confirmed that EA also had an aftereffect of pain relief.<sup>25</sup> This study indicated that after being stimulated via EA with 60 Hz for 30 minutes the pain threshold of goats increased and reached its peak at Hour 0 i.e. at the end of EA stimulation. The pain tolerance then decreased gradually to the baseline by Hour 5, however, by Hour 6 the pain threshold began to rebound and reached a second peak at Hour 8, and then gradually fell again reaching baseline at Hour 12. The mean pain threshold during the time from 0 to 12 hours after EA was higher ( $p < 0.05$ ) than that at 0.5 hour before EA, which showed that the EA-induced analgesic aftereffect lasted for at least 12 h in goats.<sup>25</sup>

The efficacy of various frequencies of EA for pain relief in 22 horses was systematically reviewed in a clinical trial.<sup>26</sup> Focused radiant light/heat was used as a noxious stimulus and was directed onto the equine pastern to elicit the classic flexion-withdrawal reflex. Hoof withdrawal reflex latency (HWRL) was defined as the time (in seconds) between lamp illumination and the withdrawal of the hoof. The results indicate that the HWRL is a valid measurement to assess pain perception and to document pain relief from acupuncture. The results also suggest that EA treatments at high frequencies (120 Hz) with 30 minutes induce a stronger analgesic effect than EA treatments at low frequencies (20 Hz) with 30 minutes in local regions; however, EA treatments at lower frequencies induced longer analgesia.

A double 3x3 Latin Square design was applied in studying experimental lameness in 6 horses. Lameness was produced in each subject by tightening a setscrew against the sole of the hoof.<sup>27</sup> Lameness grading scores of 0, 1, 2, and 3 were used to evaluate the severity of lameness. Three types of stride length were measured: total stride length

(TSL), front half stride length (FHSL) and back half stride length (BHSL). The difference between FHSL and BHSL was defined as DFB (difference front/back). The DFB increased significantly when the horse was lame suggesting that the DFB could be used as an objective parameter to measure lameness in horses. EA reduced the lameness score significantly in this study. Plasma concentrations of  $\beta$ -endorphin, ACTH and cortisol were measured in both of the above experiments. In addition to EA significantly increased the HWRL and reduced the lameness score, and simultaneously increased the plasma  $\beta$ -endorphin concentration. These results indicate that the release of  $\beta$ -endorphin may be the pathway in which acupuncture relieves experimental pain. None of the acupuncture treatments altered the ACTH concentrations which indicates that ACTH is not involved in EA analgesia.

A different result was reported however, in a pilot study which indicated that acupuncture treatment had no effect on pain in horses.<sup>28</sup> Nine horses of palmar heel pain with lameness scale varied from 1 to 3 were at random assigned to an acupuncture and control group. Twice weekly visits on non-successive days were made to each horse. Horses in the treatment group received 20 min of DN and EA at each visit; horses in the control group received no treatment. The same acupuncture points were applied to each horse in the treatment group (n=5): Bai-hui, BL-11, BL-13, PC-1, HT-9, LU-1, and LU-11 with the dry needle; and SI-9 and LI-11 bilaterally with EA of 2 to 5 Hz. The researchers found with observational grading that all 4 horses in the control group maintained the same grade of lameness through the duration of the study or improved on 1 or both limbs by no more than 1 grade of lameness. Of the 5 horses in the treatment group, 3 showed improvement of 1 lameness grade on 1 or both limbs, 1 horse did not change, and 1 horse's lameness worsened through the course of the study. There was no statistically significant difference in grade of lameness between treatment and control animals at both initial and final assessment. Therefore, the researchers of this study concluded that acupuncture did not reliably modulate palmar heel pain in horses.<sup>28</sup> A 2006 systematic review indicated that there was no compelling evidence to recommend or reject acupuncture for any condition in domestic animals including horses and dogs even though some encouraging data do exist that warrant further investigation in independent rigorous trials.<sup>29</sup>

Different outcomes of acupuncture on lameness may be associated with the fact that lameness itself can be subjective to study. However, objective gait analyses using inertial sensors were adopted in a recent blinded and crossover study in horses. Objective gait analyses were performed before and after each treatment and at 1, 3 and 7 days after the last treatment (time-points 1-9, respectively).<sup>30</sup> Horses were assessed at the trot in a straight line on a hard surface and on the lunge on the left and right reins on a soft surface (conditions 1-3, respectively). Acupuncture treatment was found to decrease hip hike difference under all conditions including condition 1: control,  $6.3 \pm 6.4$  mm versus treatment,  $0.2 \pm 6.4$  mm ( $p = 0.007$ ); condition 2: control,  $9.7 \pm 7.8$  mm versus treatment,  $2.8 \pm 7.8$  mm ( $p = 0.032$ ); condition 3: control,  $7.3 \pm 6.3$  mm versus treatment,  $2.7 \pm 6.4$  mm ( $p = 0.003$ )]. This study indicated that acupuncture treatment changed the horses' gaits (appreciable by objective analyses), with treated horses moving in a more symmetrical manner, which suggests a lesser degree of discomfort.

## ELECTRO-ACUPUNCTURE ANALGESIA FOR SURGICAL PROCEDURES

EA analgesia (EAA) was used for surgical procedures without anesthesia drugs for the first time in 1958.<sup>31-32</sup> EAA was conducted with the frequency of 20 Hz initially for 10 minutes and then gradually increased the frequency to 55 Hz for another 10-20 minutes. The frequency of 55 Hz was sustained for the entire surgical procedure. Under the EAA multiple surgical protocols including suturing skin lacerations, subcutaneous mass excision, hernia repair and castration have been performed successfully without drug induced general anesthesia in 18 healthy experimental animals (10 stallions and 8 mares, from 8 to 15 years old, weighed from 350 to 450 kg) and 7 equine clinical cases (2 foals, 1 gelding, 2 stallions and 2 donkeys).<sup>33</sup> Surgeries on the head and neck, the chest wall, the thigh, and the abdomen, as well as castration were performed on experimental animals. Each animal, whether clinical or experimental, had an independent acupoints plan, depending on the site of surgery with electroacupuncture stimulation throughout the duration of the surgery.<sup>33</sup>

In another report, twenty-three surgeries in 23 cattle described the effectiveness of EA induced surgical anesthesia/analgesia relative to regional needle placement.<sup>34</sup> The locations of regional EA were divided into 4 groups: a dorsal acupoint group (*Tian Ping* [GV-5] and *Bai Hui* (n= 7); a lumbar acupoint group (*Yao Pang* 1 [BL-21], *Yao Pang* 2 [BL-23], *Yao Pang* 3 [BL-24] and *Yao Pang* 4 [BL-25] (n=5); a combined dorsal-lumbar acupoint group (n=8); and a control group using the last intercostal space to the femoral area as shame points (n=3). Surgeries performed on cattle in the dorsal acupoint group and assessed for degree of analgesia were 2 laparotomies, 3 umbilical hernia repairs and 2 castrations. Similarly, surgeries performed on cattle in the lumbar group were 5 omentopexy surgeries for correction of left-sided displacement of the abomasum, whereas surgeries performed on the dorsal-lumbar acupoint group consisted of 4 omentopexies for correction of left-sided displacement of the abomasum, 1 omentopexy for correction of right-sided displacement of the abomasum, 2 rumenotomies and 1 cesarean section. The acupoints were stimulated with currents of 2-6 V (30 Hz) in dorsal acupoint group, 0.5-2.0 V (30 Hz) in lumbar acupoint group and 0.3-2.5 V (30 Hz) in dorsal-lumbar acupoint group. The results of their analyses showed that the recumbency and induction time in the dorsal acupoint group were about 10 seconds to 1 minute respectively and the induction time of analgesia was about 1-6 minutes, in all animals except 1 who failed to respond to the EA. While the induction time of analgesia in lumbar and dorsal-lumbar acupoint groups was about 10 minutes. The authors concluded that with their protocols in responsive animals that their described dorsal acupoint points might be useful in providing analgesia for surgeries requiring the patient to be in a recumbent position. Whereas the use of their described lumbar and dorsal-lumbar acupoint points might be useful for standing surgeries in cattle.<sup>34</sup>

A clinical trial was conducted to compare the effects of EA and butorphanol on hemodynamic and respiratory variables and rectal analgesia in mares (N=8) using controlled rectal distention as a noxious stimulus.<sup>35</sup> Each horse received saline (0.9%



NaCl) solution (0.01 mL/kg, IV; control treatment), butorphanol tartrate (0.1 mg/kg, IV), or 2 hours of EA at acupoints BL-21, 25, and 27 on both sides of the vertebral column, Bai hui, and ST-36 (right side only). The order of treatments in each mare was randomized. At least 7 days elapsed between treatments. A balloon was inserted in the rectum of each mare, and controlled distention of the balloon (pressures of  $<$  or  $=$  220 mm Hg) was used to measure nociceptive rectal pain threshold. Both Butorphanol and EA provided statistically equal analgesia to induced rectal stimuli (mean  $\pm$  SD, 214  $\pm$  24 vs 174  $\pm$  35 mm Hg of balloon pressure, respectively). The conclusions and clinical relevance were that EA and butorphanol (0.1 mg/kg, IV) may provide useful rectal analgesia in horses and EA produces less effect on hemodynamic and respiratory variables when compared to butorphanol.

## **ACUPUNCTURE FOR TREATMENT OF OTHER CONDITIONS IN HORSES**

### **Back Pain**

A prospective study was conducted to evaluate the use of EA in the treatment of horses with signs of chronic thoracolumbar pain.<sup>36</sup> Fifteen horses were randomly allocated to 1 of 3 treatment groups. Horses in group 1 received EA stimulation (once every 3 days for 5 treatments), those in group 2 received phenylbutazone (2.2 mg/kg [1 mg/lb], PO, q 12 h, for 15 days), and those in group 3 received 0.9% NaCl saline solution (20 mL, PO, q 12 h for 15 days). Thoracolumbar pain scores (TPS) were evaluated before (baseline) and after each treatment. The TPS in horses receiving phenylbutazone and saline solution did not change significantly during the study ( $P=0.999$  and  $P=0.535$  respectively). After the third treatment, TPS in horses receiving EA stimulation were significantly lower than baseline ( $P<0.01$ ) and decreased from  $6.0 \pm 0.6$  to  $2.1 \pm 0.6$ . These statistically significant lower scores were maintained through follow-up 14 days after the 5<sup>th</sup> treatment. These results provided evidence that three sessions of EA treatment can successfully relieve signs of thoracolumbar pain in horses and the analgesic effect induced by EA can last for at least 20 days. Alternatively the oral administration of phenylbutazone was not found to effectively relieve signs of thoracolumbar pain.

Another clinical trial found that EA relieved chronic back pain in performance horses.<sup>37</sup> This study was a randomized, double blind, controlled trial to evaluate EA as a treatment for back pain in sport horses. Objective measurements of pain threshold levels were obtained with a pressure algometer. Twenty-three horses with chronic back pain were divided into control ( $N=7$ ) and treatment ( $N=16$ ) groups. Trigger (painful) points were identified on each horse and baseline pain threshold measurements were taken. The control group received sham EA treatments with no needle penetration or electrical stimulation. Routine EA was performed in the treatment group using filiform acupuncture needles inserted into GV-20, GV-6 and bilaterally at BL-26, BL-54, BL-21 and BL-17. Needles were connected to 5 pairs of electrical wires and an electrical impulse (4.5 volts) was delivered at a frequency of 20 Hz for 15 minutes and 80-120 Hz for 15 minutes. Both sham and control EA treatments were given over the course of 5 sessions, each spaced 3 days apart and all horses were rested during the study period. After 5 treatments, pressure

induced pain was statistically significantly reduced at the trigger points in the treatment group when compared to the control group using an unpaired t-test ( $p=0.034$ ). The conclusion was that EA and rest is an effective treatment for sport horses with chronic back pain and is better than sham EA and rest over a 15-day period. Similar findings have also been reported by other researchers.<sup>38-39</sup>

### **Laminitis and Navicular Disease**

A study was conducted to compare lameness levels before and after acupuncture treatments in horses with chronic laminitis.<sup>40</sup> Twelve adult horses with chronic laminitis received 2 acupuncture treatments 1 week apart. The points were treated using dry needling, hemo-acupuncture, and aqua-acupuncture. Lameness level was objectively evaluated using an inertial sensor-based lameness evaluation system (Lameness Locator™), as well as routine examinations following American Association of Equine Practitioners scoring before the first and 1 week after the second acupuncture treatment. Data were analyzed using Wilcoxon signed-rank test and  $P$ -values  $< 0.05$  were considered statistically significant. Both the Lameness Locator ( $P = 0.0269$ ) and routine lameness examination ( $P = 0.0039$ ) showed a significant reduction in lameness severity. This clinical trial supports using acupuncture, along with other treatment options, in treating chronic equine laminitis.<sup>40</sup> However, another clinical trial indicated that EA for the treatment of chronic laminitis ( $n = 5$ ) or navicular disease ( $n = 5$ ) was not significantly different in clinical scores as compared with control group.<sup>41</sup> As the researchers of this study pointed out that the small number of animals per group may have obscured a positive effect of acupuncture. In addition, the lower frequency using in this study (5 Hz for 20 minutes using the local acupoints) may be a factor as it countered the relatively recent study in which a high frequency (120 Hz for local acupoints) with 30 minutes induced a stronger analgesic effect than low frequencies (20 Hz) with 30 minutes in the local foot region.<sup>27</sup> Other reports support the use of acupuncture for the treatment of laminitis and navicular syndrome.<sup>42-43</sup>

### **Cervical Stiffness**

Eighteen (18) horses diagnosed with cervical stiffness were randomly divided into a Test group and a Control group.<sup>44</sup> Horses in the Test group received 3 EA treatments (20 Hz) 7-10 days apart, using 1-2 inch needles at a standard set of acupuncture points. Horses in the Control group received treatment on the same schedule but using 0.5mm press needles at non-acupuncture points. From each horse, two measurements of cervical lateral bend were taken prior to the first treatment and again 1 day after the last treatment. One measurement was the amount of bend before refusal (maximal bend, R1) and the other was amount of bend before compensation (Pre-compensation, R2). The comparison of the changes between the Test group and the Control group, based on the Wilcoxon Rank Sum test, revealed that the mean R1 change in the Test group is significantly larger than that in the Control group ( $9.83 \pm 8.87$  vs.  $-6.83 \pm 15.26$ ;  $p = 0.019$ ). The same analysis on R2 bend measurement reached the same conclusion ( $12.22 \pm 8.82$  vs.  $-5.17 \pm 13.07$ ;  $p = 0.008$ ).

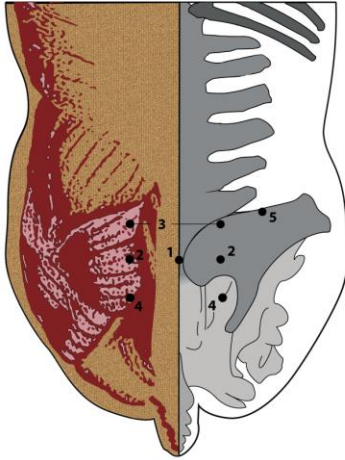
This study demonstrated that acupuncture can improve lateral bend in horses and can be an effective treatment for cervical stiffness. A group of researchers from Taiwan evaluated new acupuncture protocols for the clinical treatment of cervical spinal cord diseases in 19 dogs.<sup>45</sup> The time to improvement after treatment, and recovery time were compared by DN acupuncture with or without EA. The improvement and recovery times were longer in the DN+EA group than the DN group ( $p < 0.05$ ). Acupuncture with *Jing-jia-ji* was effective in cervical spinal cord diseases in different sized dogs and in middle-aged and senior dogs. The authors concluded that the newly standardized DN methodology offers clinical practitioners an effective way to improve the outcomes of cervical neurological diseases in dogs.

### **Reproductive Disorders and Mastitis**

The treatment of reproductive disorders and the promotion of fertility represent cornerstones of the equine and bovine industries. Acupuncture has anecdotally produced excellent results for treating mares with uterine fluid and/or urine pooling, especially older, pluriparous mares.<sup>46</sup> In bovine fifty-seven dairy cows that were diagnosed with infertility due to inactive ovaries were randomly assigned into four groups: electro-acupuncture (n=15), aqua-acupuncture (n=15), hormones (n=15) and control (n=12). Four acupoints used in both EA and AA groups were *Bai-hui* and GV-1, and bilateral *Yan-chi*. In the EA group an alternating frequency setting between 80-100 Hz was used for 30 minutes once a day for three consecutive days.<sup>47</sup> For AA, 15 ml of 5% dextrose was injected into each of these 4 points, once daily for 3 consecutive days. For the hormone group, FSH (100-200 units per injection) was given intramuscularly twice, 48 hours apart. For the control group, no treatment was given. After treatment in the EA group 13 out of 15 dairy cows (86.7%) showed a normal estrus, were inseminated, and 12 (80%) were diagnosed pregnant. In the AA group 9 out of 15 cows (60%) showed a normal estrus, were inseminated, and 7 (46.7%) were diagnosed pregnant. In the hormone group, 12 out of 15 (80%) showed a normal estrus, were inseminated, and 11 (73.3%) were diagnosed pregnant. In the control group, 4 out of 12 cows (33.3%) showed a normal estrus, were inseminated, and 2 (16.7%) conceived. The estrus and pregnant rates were not significantly different between the EA and hormone groups, and between the AA and control groups, but these rates in both EA and hormone groups were significantly higher than ones in the control and AA groups. In both AA and hormone groups, the milk progesterone level increased significantly after the treatment. This study indicated that EA was an effective therapy for infertility due to inactive ovaries. A clinical study demonstrated that an Aqua-acupuncture of herbals at GV-1 can prevent retained placenta in cows.<sup>48</sup> One hundred and twenty four pregnant dairy cows were selected to be in an untreated control group and observed after calving to determine the retained placenta rate for the farm. Fifty-two pregnant dairy cows from the same farm were selected for the study and randomly assigned to two groups: 30 cows in the herbal *Dang Hong Fu* group and 22 cows in a saline control group.<sup>48</sup> Immediately after calving 40 ml of *Dang Hong Fu* (40 grams of dried herbs) were injected into GV-1 in the herbal group and 40 ml of physiological saline were injected at the same site in the saline control group. Both groups were observed for retained placentas and the time until

placental expulsion was recorded in the others. The retained placenta rate for untreated cows that received no treatment was 35.5% (44/124). The incidence of retained placenta in the *Dang Hong Fu* group was 16.7% and in the saline control group 31%. The time for expulsion of placental membranes was a mean of 9 hours (range 3.5-24 hours) in the *Dang Hong Fu* group and a mean of 14.7 hours (range 3.0-24 hours) in the saline control group. When compared to the untreated control group, *Dang Hong Fu* aqua-acupuncture at GV-1 significantly reduced the incidence of retained placentas ( $p=0.047$ ;  $<0.05$ ), but saline aqua-acupuncture did not ( $p=0.740$ ;  $>0.05$ ). Herbal aqua-acupuncture may offer an easy treatment method to reduce the incidence of retained placenta in the cow with no observed adverse side effects.

Promising human studies have prompted calls for mergers between Chinese and conventional approaches.<sup>49</sup> From a systematic study involving a total of 12 clinical trials and 2,177 patients, the effect of acupuncture on human male infertility was equally effective as Traditional Chinese Herbal Medicine (TCM), and its effectiveness is enhanced when applied in combination with either TCM or Western medicine.<sup>50</sup> In another study, 114 human patients of in-vitro fertilization embryo transfer (IVF-ET) treated with standard long-term program at luteal phase were randomized into an acupuncture group and a control group, 57 cases in each.<sup>51</sup> In the acupuncture group, at the beginning of ovulatory induction, moxibustion was applied to CV-8, and acupuncture at CV-3, CV-4, CV-6 etc. till the transfer time for one session of treatment. Totally, 3 sessions were required. This study indicated that acupuncture and moxibustion affect estrogen level on hCG day, improve high-quality embryo rate, endometrial blood flow state and morphology so that the endometrial receptivity is increased.<sup>51</sup> However, equine studies have had conflicting results.<sup>52-54</sup> One of the reasons of the different results was the lack of the very important classical equine acupoint called *Yan-chi* that is a specific point for any infertility in horses (Figure 1 and Table 1). Secondly, the practitioner must rely on the classic Chinese differentiations of specific patterns for point recommendations. For example, ovulatory dysfunction, regardless of cause, is viewed as one of a number of possible deficiency patterns, which implies the existence of an aspect of the body that must be strengthened to achieve clinical results using acupoints including SP-6, KID-3, KID-7 and KID-10. And third, CV-4 and CV-6 in particular are among a group of points found to possess endocrine effects pertinent to reproduction, specifically ovulation in people. While several of these points can be used in the mare, other are not because access in a horse is difficult and at times dangerous, thus it is almost impossible to needle, however other reproduction related acupoints, in addition to *Yan-chi*, are effectively used points, such as *Shen-shu*, *Shen-peng* and *Shen-jiao* and others (Figure 1 and Table 1).



1=*Bai-hui*, 2=*Shen-shu*, 3=*Shen-peng*, 4=*Shen-jiao*, 5=*Yan-chi*

**Figure 1. The commonly used acupoints for infertility in horses**

Table 1. The commonly used classical acupoints in horses.

| Acupoint         | Anatomy   | Indication  |
|------------------|---|---|
| <i>Bai-hui</i>   | On dorsal mid line at the Lumbosacral space             | Lumbar pain, hindquarter pain or weakness, general calming, <i>Yang</i> Deficiency, infertility |
| <i>Shen-shu</i>  | 2 <i>cun</i> lateral to <i>Bai-hui</i>                  | Lumbar pain, infertility, general pain management, hindquarter weakness                         |
| <i>Shen-peng</i> | 2 <i>cun</i> cranial to <i>Shen-shu</i>                 | Same as <i>Shen-shu</i>   |
| <i>Shen-jiao</i> | 2 <i>cun</i> caudal to <i>Shen-shu</i>                  | Same as <i>Shen-shu</i>   |
| <i>Yan-chi</i>   | Midpoint between top of tuber coxa and <i>Shen-peng</i> | Female or male infertility, poor athletic performance, hindquarter pain/arthritis               |

*Cun* is an acupuncture point measurement unit. The length of the first tail vertebra is equal to 1 *Cun*. The width of the last rib is equal to 1 *Cun*

### Stress Response

Acupuncture has been shown to have the beneficial effect of reducing stress responses in horses.<sup>55</sup> A study was conducted to compare the effects of injecting the standard dose of acepromazine (ACP) (0.1 mg/kg, IM) with those of Aqua-acupuncture (1/10 of the standard acepromazine dose at the acupoint GV-1) on the stress responses of healthy horses undergoing road transport for 2.5 hours. Four different treatments were applied immediately before loading, with 8 animals/treatment: injection of saline or ACP (0.1 mg/kg, IM) at the base of the neck and injection of saline or 1/10 ACP (0.01 mg/kg) at the

GV-1 acupoint. The road transport increased heart rate (HR), respiratory rate, body temperature, and serum cortisol of the untreated horses (injected with saline at the base of the neck). Aqua-acupuncture at GV-1 reduced the average HR and transport-induced increase in HR at unloading, without changing the other variables. On the other hand, ACP (0.1 mg/kg) produced significant sedation and reduced the transport-induced increase in respiratory rate but without preventing the stress-induced increase of cortisol.<sup>55</sup> Similarly, sedation was induced in horses receiving a 20-minute session of dry needle acupuncture at GV-1, HT-7, GV-20 and BL-52 assessed by the failure to fully respond to the sudden appearance of a multi-colored umbrella as a stressor.<sup>56</sup>

### **Emergency Resuscitation**

Acupoint GV-26 which in the horse is located just below the nostrils at the midpoint of the philtrum nasale, can be used in an emergency situation to resuscitate animals including the horse.<sup>57</sup> A study of 69 cats and dogs reported that acupuncture at the acupoint GV-26 restored respiration to normal or near normal rates within 10 to 30 seconds of needle insertion in 100% of animals if there was no concurrent cardiac arrest. When cardiac arrest occurred and vital signs were absent the revival rate was 43%.<sup>58</sup> In a clinical report with patients following narcotic induced narcosis, 243 cases in 17 different species of domestic and exotic animals and birds, acupuncture resuscitation approached the 100% efficacy reported in clinically healthy dogs.<sup>59</sup> However, in animals affected with different diseases the success of intervention was smaller (77.47%). In zoo animals suffering from narcosis the resuscitation effectiveness achieved was 92.6%. The resuscitation effect was based not only on strictly determined points but also on diffusive irritation of the respective point and its surroundings by acupressure. These studies indicate what has also been widely discussed and anecdotally demonstrated by practitioners in the field for many years.

### **Metabolic Capacity**

Eighteen Thoroughbred racehorses were randomly divided into three groups (n = 6 per group): negative control, sham aquapuncture or positive control and acupuncture treatment groups. Horses in the acupuncture group received 5 mL distilled water injected into acupoints including Bai-hui, ST-30, ST-36, GB-27, SP-13 and BL22 along with hemo-acupuncture (bleeding) at TH-1 and BL-67 for six aquapuncture sessions during the 3-week period (twice weekly). All horses had the same trainer and jockey and were submitted to at least 8 months of training and racing. The horses did not race during a 2-week period before and after the experiment. Cardiovascular values were not different between times or groups. The metabolic capacity values were statistically greater after treatment only for the acupuncture group compared with pretreatment. Creatine kinase concentrations were statistically greater after exercise for all groups, and aspartate aminotransferase concentrations were not different between times or groups. This study indicated that acupuncture increased the anaerobic metabolism of Thoroughbred horses

without interference in cardiovascular performance or release of muscle enzymes in medium load exercises.<sup>60</sup>

### **Laryngeal Hemiplegia**

Laryngeal hemiplegia (LH) is an important disease related to poor performance and upper respiratory noise in horses.<sup>61</sup> While surgical procedures may be effective in young horses with grade III or IV disease, surgical procedures may be inconvenient for the treatment of LH in horses if the problems occur during the sale seasons or may be denied by some horse owners. Therefore, horse owners may try to find alternative methods for the treatment of recurrent laryngeal neuropathy. Thoroughbred horses (n=18) referred to the acupuncture service at the Veterinary Medical Center at the University of Florida for the treatment of LH were involved in this study. All horses underwent endoscopy with left-sided flaccid laryngeal tissue that adducted during breathing noted during the exam. The hemiplegia endoscopic grades ranged from II a to IIIb. Electroacupuncture was performed once per week for a total of 3 to 7 times depending on the severity of hemiplegia. The acupoints used were LI-15, LI-17, LI-18, GB-21, CV-23, ST-9, SI-17, Hou-bi and Hou-shu. The EA treatment used 20 Hz for 10 minutes, then at 80 to 120 Hz for 10 minutes (Fig 1). All horses had endoscopic examinations by independent (blinded) equine practitioners after 1 or 2 days after the last EA treatment. The endoscopic grades of hemiplegia had improved in all the horses, to between normal and grade IIb. The respiratory noise during training also appeared to be improved after the treatment.<sup>62</sup>

### **Stem Cell**

The effects of EA on the mobilization of stem cells in horses, mice, rats and humans has recently been studied.<sup>63</sup> In all four species, equivalent acupoints LI-4, LI-11, GV-14 and Bai-hui (or GV-20 in humans) were used with EA stimulation of 30 Hz for 45 minutes. Stimulation using EA in humans, horses, mice and rats resulted in mobilization of mesenchymal stem cell (MSC)-like cells into systemic circulation. MSC origin of the EA-mobilized cells was supported by their ability to enhance arterIALIZATION of blood vessels in vivo. Mobilization of MSC-like cells was preceded by a time-dependent increase in plasma norepinephrine levels and was blocked by pretreatment with propranolol. Analysis by fMRI in EA-stimulated rats revealed increased functional connectivity between the anterior hypothalamus and the amygdala. Pharmacological disinhibition of these regions enhanced sympathetic activation and similarly resulted in release of MSC-like cells into the circulation. Following partial rupture of the Achilles tendon, EA produced long-lasting and powerful analgesia and generation of increased type 1 collagen content, indicative of tendon injury remodeling; however, this effect was blocked in propranolol-treated rats. Thus, EA activates the sympathetic nervous system to mobilize MSC-like cells into circulation which can be used to enhance tissue repair and provide analgesic relief.

### **CONCLUSION**

Acupuncture stimulation, especially electro-acupuncture, can release neurotransmitters such as 5-HT and endogenous opioids including  $\beta$ -endorphin, which appear to be the main pathways in which acupuncture relieves pain. Although the strength of the clinical trials cited above vary, acupuncture has been shown to be a viable integrative treatment for back pain, foot pain, cervical stiffness, laryngeal hemiplegia and infertility in horses. Acupoint sensitivity on palpation may be useful for the assessment of lameness along with conventional diagnostics in horses. Future well-designed studies are needed in order to strengthen the recommendation for acupuncture in the diagnosis and treatment of clinical conditions in horses.

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- 1999-2004 Lecturer, College of Veterinary Medicine, University of Florida
- 1994-1998 Research Fellow Department of Animal Science, University of Florida
- 2018-now Professor emeritus, College of Veterinary Medicine, China Agricultural University
- 1992-1994 Associate Professor and Staff Veterinarian: the Beijing Agricultural University, College of Veterinary Medicine. PR China
- 1988-1991 Assistant Professor and Staff Veterinarian: the Beijing Agricultural University, College of Veterinary Medicine. PR China
- 1983-1988 Lecturer and Staff Veterinarian: the Beijing Agricultural University, College of Veterinary Medicine. PR China

## CLINICAL ACTIVITIES

- 2021-now TCVM clinician in Chi Animal Hospital
- 1999-2021 TCVM clinician in the Large/Small Animal Hospital, University of Florida

## PUBLICATIONS

### Books

1. Ma A, **Xie H.** TCVM for the Diagnosis & Treatment of Pain, Emergency, Trauma, And Diseases of The Eyes, Ears, Nose, And Mouth. Reddick, FL: Chi University Press. 2022
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3. Fowler M, **Xie H.** *Integrative and Traditional Chinese Veterinary Food Therapy.* Reddick, FL: Chi University Press. 2020 (889 pages)
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5. Ma A, Liu C, Yu C, **Xie H.** *TCVM Approach to Veterinary Dermatological and Immune-mediated Diseases.* Reddick, FL: Chi Institute Press. 2019 (350 pages)
6. **Xie H,** Ma A. *Pain, Lameness, Neurological and Endocrine Disorders-TCVM Update.* Reddick, FL: Chi Institute Press. 2018 (288 pages)
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  21. Yang Z & **Xie H**: *Traditional Chinese Veterinary Medicine-Empirical Techniques to Scientific Validation*. Reddick, FL: Jing-tang Publishing. 2010 (439 pages).
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5. Mangan E, **Xie H**. Clinical Application of Chinese Herbal Medicine in Equine Practice. *Veterinary Clinics of North America: Equine Practice*. 38(3):541-555, 2022
6. **Xie H**. Traditional Chinese Veterinary Medicine for the Treatment of Diarrhea in Horses. *American Journal of Traditional Chinese Veterinary Medicine*. 17(1): 69-74, 2022
7. **Xie H**, Holyoak GR. Evidence-based Application of Acupuncture in Equine Practice. *American Journal of Traditional Chinese Veterinary Medicine*. 16(2): 41-52, 2021
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17. Memon M, **Xie H**, Shmalberg J. Canine and Feline Patients Referred Exclusively for Acupuncture and Herbs: A Two Year Retrospective Analysis. *J Acupunct Meridian Stud*. 12(5):160-165, 2019
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- McKinley T, Shekhar A, Febo M, Johnson PL, Chang LJ, Gao Z, Kolonin MG, Lai S, Ma J, Dong X, White FA, **Xie H**, Yoder MC, Grant MB. Electroacupuncture Promotes Central Nervous System-Dependent Release of Mesenchymal Stem Cells. *STEM CELLS*. 35:1303–1315, 2017
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151. Yu C, Zhang, Lu G, Wang Q, Shi Z, Xu J, **Xie H** et al: Study on the characteristics of animal meridians and acupuncture points. Proceedings of China Association of Animal Science and Veterinary Medicine, Shanghai, PR China. October, 1991 pgs 554-560. (In Chinese)

## FUNDING HISTORY

2013-2019: H Xie (PI), Kow K (CO-PI), Shmalberg J (CO-PI), American Holistic Veterinary Medical Foundation, Effect of acupuncture and herbal medicine on Lymphoma in dogs, \$82,132.20 from American Holistic Veterinary Medical Foundation (AHVMF)

2012-2019: CO-PI (PI: Maria Grant), Electroacupuncture-induced mesenchymal stem cell-like cell mobilization is mediated by activation of sympathetic centers in the CNS and results in tendon repair, \$100,000 (unrestricted funds) from University of Florida and Indiana University

2008-2012: CO-PI (PI: Robert Mackay): Does Combined Treatment with Acupuncture and Herbal Medicine Cure Anhidrosis? A Controlled Study. \$ 14,407 from Morris Animal Foundation.

2008-2010: CO-PI (PI: Cantwell): Electro-acupuncture to decrease intraocular pressure in Rhesus monkeys with chronic glaucoma. \$25,000 from American Holistic Veterinary Medical Association (AHVMA)

2005: CO-PI (PI: Cantwell): Electro-acupuncture to decrease intraocular pressure in Rhesus monkeys with chronic glaucoma. Funded by University of Florida College Vet Med 2005 Development Award Competition, \$7,500

2003 to 2006: PI. Effect of acupuncture on canine cancer. Funded privately, \$5,000.

2001: CO –PI (PI: Dr. Merritt): Effect of Electro-acupuncture at Jiang-ya on Visceral Pain in an Equine Colic Model. Funded by Morris Animal Foundation. \$23,456

2000: CO-PI (PI: Dr. Merritt): Effect of Acupuncture on Visceral Pain in an Equine Colic Model. Funded by the American Association of Equine Practitioners (AAEP). \$9,551

1999: Co-PI (PI: Dr. Merritt): Efficacy of acupuncture on alleviating discomfort in horses. Funded by Parimutual. \$25,000.

1998: PI: Electro-acupuncture for the Treatment of Chronic Back Pain in Performing Horses: A Controlled Clinical Trial. Funded by Morris Animal Foundation. \$ 25,000.

## **PROFESSIONAL SOCIETY MEMBERSHIP AND ACTIVITIES**

American Association of Equine Practitioner (AAEP)  
Co-Facilitator of Therapeutic Options Forum in 2006 and 2007

American Veterinary Medical Association (AVMA)  
Member from 1997-now

American Association of Traditional Chinese Veterinary Medicine (AATCVM)  
Co-founder and Executive Director from 2006-now

World Association of Traditional Chinese Veterinary Medicine (WATCVM)  
Vice-president and Board of Directors from 2013-now

American Academy of Veterinary Acupuncture (AAVA)  
Chairman of the Research Committee from 2006-now



China Society of Traditional Chinese Veterinary Medicine, CHINA  
Advisory Board Director from 2000-now

International Veterinary Acupuncture Society (IVAS)  
Member from 1996-now

### **SERVICE TO JOURNALS AS A REVIEWER OF SCIENTIFIC ARTICLES**

Journal of the American Veterinary Medical Association (JAVMA) from 2003-now  
American Journal of Traditional Chinese Veterinary Medicine (also Executive Director)  
from 2006-now

PLOS ONE, reviewed 1 paper in 2018  
Korean Journal of Veterinary Research, reviewed 1 paper in 2018  
Small Animal Veterinarians, edited 6 papers in 2018  
American Journal of Traditional Chinese Veterinary Medicine, edited 10 papers in 2018

### **AWARDS, HONORS AND SPECIAL RECOGNITIONS**

2018: Honorary Full Professorship, China Agricultural University, Beijing, China, August 13, 2018

2015: Excellent Speaker Award from the 2015 annual conference of the World Association of Traditional Chinese Veterinary Medicine (WATCVM), Gainesville, Florida, USA, November 13, 2015

2015: Year of the Global Excellent Teacher from American Holistic Veterinary Medical Association (AHVMA), Augusta, GA, USA, October 18, 2015

2014: Fu-xi Award (the highest honor of the TCVM) from the Chinese Association of Traditional Veterinary Science (CATVS), Jia Yi, Taiwan

2014: Excellent Leadership Award for the World Association of Traditional Chinese Veterinary Medicine (WATCVM), Hebei, China

2013: Excellent Speaker Award for the 15<sup>th</sup> Annual International TCVM conference, World Association of Traditional Chinese Veterinary Medicine (WATCVM), September 11-15, 2013, El Escorial, Madrid, Spain

2013: Honorary full professorship from South China Agricultural University, Guang-zhou, China

2012: Year of the Holistic Teacher from American Holistic Veterinary Medical Association (AHVMA), Birmingham, USA

2012: Excellent Speaker Award for the 3<sup>rd</sup> Chinese Veterinary Conference (CVC) of the Chinese Veterinary Medical Association (ChVMA), Oct 28-30, Su Zhou, China

2012: Awarded Diploma for National Achievements of the Veterinary Medicine by the Chinese Veterinary Medical Association (ChVMA), Oct 28, Su Zhou China

2006 Honorary Professorship from Southwest University, Chong-qing, China

2005 Honorary recognition from the College of Veterinary Medicine, Ching-mai University, Thailand

2005 Recognized by the CBS Early Show as the acupuncture authority on Dec 28, 2005

2004 Excellent Speaker Award South China Agricultural University and China National Society of TCVM, China

1995 Awarded Diploma for National Achievements in Science-Technology from the National Science & Technology Committee, PR China

1994 Certificate of Merit for second place in the Annual Scientific Research Competition from the Beijing Agricultural University

1993 Certificate of merit for the third place in the Science-Technology Achievement Competition from the Organization Committee of the First Beijing Congress on Young Scientist's Science Technology

1992 Certificate of merit for third place in the Annual Scientific Achievement Competition from the Ministry of Agriculture, PR China

1989 Honorary recognition from the Department of Veterinary Medicine, Nihon University in Japan; During this time, I received honorary recognition from five Japanese newspapers

1989 Honorary certificate for the first place in the University's Teaching Competition from the Beijing Agricultural University

1989 Honorary certificate for the National Excellent Young Researcher from Chinese Society of Traditional Chinese Veterinary Medicine

1985 Certificate of award for the Annual University Excellent Researcher from the Beijing Agricultural University

## **INVITED PRESENTATIONS IN CONFERENCES AND PROGRAMS:**

### **International Lectures**

1. Invited locum professor at China Agricultural University, on January 13-14, 2020
2. Invited speaker for World Association of Traditional Chinese Veterinary Medicine (WATCVM) annual conference and 21<sup>st</sup> Annual International TCVM Conference, Shang-hai, China, August 31 to September, 2019

- Chinese Herbs for Immune-Mediated Diseases: Evidence-Based Clinical Application  
 TCVM For the Treatment of Pruritic Syndrome  
 TCVM for Autoimmune Thyroiditis in Dogs
3. Invited keynote speaker for Universidad Nacional Mayor de San Marcos, Faculty of Veterinary Medicine, July 12-14, 2019, Lima, Peru. 3-day veterinary acupuncture seminar.
  4. Invited speaker for World Association of Traditional Chinese Veterinary Medicine (WATCVM) annual conference and 20<sup>th</sup> Annual International TCVM Conference, Reddick, FL, November 1 to 2, 2018, Reddick, Florida
    - Degenerative myelopathy
    - TCVM for endocrine disorders in dogs and cats
    - How to use acupuncture for non diagnostic lameness in horses
    - TCVM for Equine metabolism disorder and Cushing's diseases in horses
    - TCVM for equine neurological diseases: laryngeal Hemiplegia, facial paralysis and "Sweeny"
    - TCVM for Lyme diseases in horses
    - Stallion and mare infertility:
  5. An invited speaker for veterinary acupuncture at College of Veterinary Medicine, China Agricultural University, Beijing, August 13-17, 2018
  6. An invited speaker for TCVM Seminar at College of Veterinary Medicine, South China Agricultural University, Guangzhou, May 17, 2018
    - a. TCVM Pros and Cons, and clinical application of Chinese herbs (3 hours)
  7. A keynote speaker for the first annual of Spain Association of Traditional Chinese Veterinary Medicine (SATCVM) conference Madrid, Spain, April 19-21, 2018
    - a. TCVM for degenerative myelopathy and Wei syndrome (1 hour)
    - b. TCVM for pruritus in dogs (1 hour)
    - c. TCVM for the Treatment of Cancers (1 hour)
    - d. Acupuncture as stem cell therapy (1 hour)
  8. A keynote speaker for World Association of Traditional Chinese Veterinary Medicine (WATCVM) annual conference and 19<sup>th</sup> Annual International TCVM Conference, Toronto, Canada, August 18-20, 2017
    - TCVM For Geriatric Medicine;
    - How To Evaluate The Quality Of Life In Geriatric Patients;
    - Current Regulatory Aspects Of Traditional Chinese Veterinary Medicine In Veterinary Sports Medicine
  9. An invited speaker for Veterinary Acupuncture Seminar at College of Veterinary Medicine, China Agricultural University, Beijing, August 24 to 27, 2017
  10. An Invited speaker for Veterinary Herbal Medicine at Shang-hai regional veterinary conference, Shang-hai, China, August 29 to 30, 2017.
    - a. Chinese herbal medicine for IBD (2 hours)
    - b. Chinese herbal medicine for epilepsy (2 hours)
    - c. Chinese herbal medicine for pain management (2 hours)
  11. A keynote speaker for the Swiss Veterinary Association annual conference- Complementary and Alternative Medicine program, Einsiedeln, Switzerland, November 11-12, 2016

- a. Introduction to TCVM Physiology and Pathology of Endocrine disorders (1 hour)
  - b. TCVM for diabetes in dogs and cats (1 hour)
  - c. TCVM for Cushing's diseases in dogs and cats (2 hours)
  - d. TCVM for equine metabolic syndrome and Cushing's disease (2 hours)
  - e. TCVM for hyperthyroidism and hypothyroidism (2 hours)
12. A keynote speaker for College of Veterinary Medicine, China Agricultural University, Beijing China August 24-27, 2016 (8 hours);
- a. TCVM for renal failure (2 hours)
  - b. TCVM for heart failure and behavior problems (2 hours)
  - c. TCVM for cancers (2 hours)
  - d. Feline acupuncture (2 hours)
13. A keynote speaker for World Association of Traditional Chinese Veterinary Medicine (WATCVM) annual conference and 18th Annual International TCVM Conference, Beijing, China, August 28-30, 2016
- a. A Prosopographical Study of Nine Different TCM Schools (1 hour)
  - b. The Practical Application and Use of the TCM Schools in Veterinary Medicine (1 hour)
14. The keynote speaker for Veterinary Acupuncture Seminar by College of Veterinary Medicine, Pretoria University, **Pretoria, South Africa**, July 25-30, 2016
- a. What is Veterinary Acupuncture Medicine (2 hours)
  - b. Veterinary Acupuncture Basis-Five Elements (2 hours)
  - c. Meridians and Channels (2 hours)
  - d. Acupuncture Points (2 hours)
  - e. Clinical Application of Veterinary Acupuncture (6 hours)
15. Coordinator and instructor for the canine acupuncture lab for the North American Veterinary Conference (NAVC), **Orlando, Florida**, January 19, 2016
- a. Canine Acupuncture lab (8 hours)
16. Keynote speaker for the 17<sup>th</sup> International Annual TCVM Conference sponsored by the World Association of Traditional Chinese Veterinary Medicine (WATCVM), **Gainesville, Florida**, November 12-15, 2015
- a. TCVM for Traumatic Injury (1 hour)
  - b. Traditional Chinese Veterinary Medicine for Pain and Other Emergencies (1 hour)
  - c. TCVM as a Diagnosis for Lameness and Pain in Veterinary Practice (1 hour)
  - d. Tips for TCVM Diagnosis and Treatment of Foot Lameness in Horses (1 hour)
  - e. TCVM Diagnosis and Treatment of Tendon and Ligament Injuries in Horses (1 hour)
  - f. Tips for TCVM Diagnosis and Treatment of Back Pain in Horses (1 hour)
17. The keynote speaker for Veterinary Acupuncture Seminar by College of Veterinary Medicine, Udayana University, **Bali, Indonesia**, July 22-27, 2015

- a. Veterinary Acupuncture-History (1 hour)
  - b. Veterinary Acupuncture-Fundamental Basis (5 hours)
  - c. Clinical Application of Veterinary Acupuncture in Small Animal Practice (4 hours)
18. A keynote speaker for World Small Animal Veterinary Association (WSAVA) annual conference-acupuncture program, **Bangkok, Thailand**, May 15-18, 2015
- a. Traditional Chinese Veterinary Medicine for Itching Dog (1hour)
  - b. Traditional Chinese Veterinary Medicine for Renal Failure (1 hour)
  - c. Acupuncture for Osteoarthritis and Pain Management (1 hour)
  - d. Acupuncture for neck pain and wobblers syndrome (1 hour)
19. Coordinator and instructor for the canine acupuncture lab for the 2015 North American Veterinary Conference (NAVC), Orlando, Florida, January 18, 2015
- a. Canine Acupuncture lab (8 hours)
20. A keynote speaker for World Association of Traditional Chinese Veterinary Medicine (WATCVM) annual conference and 16th Annual International TCVM Conference, Chia Yi University College of Veterinary Medicine, **Chia Yi, Taiwan**, August 19-22, 2014
- a. TCVM for emergency—resuscitation, anxiety, fever, pain and bleeding (1 hour)
  - b. TCVM for head/neck and back trauma and open wound (1 hour)
  - c. TCVM for ocular disorders in horses and dogs (1 hour)
  - d. TCVM for stomatitis, gingivitis, rhinitis, sinusitis (1 hour)
  - e. TCVM for soft tissue injury, burns, fracture and peripheral nerve damage (1 hour)
21. A speaker for the 5<sup>th</sup> Federation Asian Small Animal Veterinary Association (FASAVA), May 13-15, 2014, **Beijing, China**
- a. Cancers in dogs and cats: A TCVM Approach (2 hours)
  - b. TCVM for Liver Diseases (1 hour)
  - c. How to use acupuncture for the treatment of renal failure (1 hour)
22. Coordinator and speaker for the canine acupuncture lab for the 2014 North American Veterinary Conference (NAVC), Orlando, Florida, January 19, 2014
- a. Canine Acupuncture Lab (8 hours)
23. A speaker for the 2014 North American Veterinary Conference (NAVC), **Orlando, Florida**, January 18, 2014
- a. Acupuncture for Intervertebral Disc Disease (1 hour)
  - b. Treatment of Seizure (0.25 hour)
  - c. Treatment of Icterus/ Hepatitis (0.25 hour)
24. The keynote speaker for the Advanced Veterinary Acupuncture Seminar by the School of Veterinary and Life Sciences Murdoch University, **Perth, Western Australia, Australia**, Nov 25-26, 2013
- a. Tongue and pulse diagnosis (4 hours)
  - b. TCVM for Clinical Cases (4 hours)

25. A keynote speaker for the first World Association of Traditional Chinese Veterinary Medicine (WATCVM) annual conference, **Madrid, Spain**, September 12-15, 2013
  - a. TCVM for geriatric medicine (2 hours)
  - b. Assessment on quality of life (1 hour)
  - c. TCVM for cancer in horses (1 hour)
  - d. TCVM for lymphoma and other cancers in dogs and cats (2 hours)
  
26. A speaker for the 11<sup>th</sup> International Herbal Symposium (HIS) Annual Conference, Wheaton College, **Norton, MA, USA**, June 28-30 in 2013.
  - a. Chinese herbal medicine for liver diseases (1 hour)
  - b. TCVM for itching dogs (1 hour)
  - c. Chinese herbs for Lyme and other infectious diseases (1 hour)
  - d. Chinese herbal medicine for renal failure (1 hour)
  
27. The Keynote speakers for the Annual Conference of the Nordic Veterinary Acupuncture Society (NoVAS), **Oslo, Norway**, April 5-7 2013.
  - a. TCVM for Immune-mediated diseases (4 hours)
  - b. TCVM for endocrine disorders (4 hours)
  
28. Coordinator for the canine acupuncture lab for the 2013 North American Veterinary Conference (NAVC), Orlando, Florida, January 20, 2013
  - a. Canine Acupuncture Lab (8 hours)
  
29. The program coordinator and a speaker for the TCVM track of the 3<sup>rd</sup> annual conference of Chinese Veterinary Medical Association (ChVMA), **Suzhou, China**, Oct 28-30, 2012
  - a. TCVM in the World: Trend and Future (1 hour)
  - b. TCVM for Osteoarthritis (1 hour)
  
30. A keynote speaker for Asia Pacific Veterinary Conference (APVC), **Bangkok, Thailand** October 10-12, 2012
  - a. How to use the TCVM for the Treatment of Thoracolumbar Intervertebral Disk Disease (IVDD) in Dogs (1 hour)
  - b. How to Use Acupuncture for Osteoarthritis (1 hour)
  - c. Itching Dogs: an alternative approach (1 hour)
  - d. Chinese Herbal Medicine for the Treatment of Cancers in Dogs (1 hour)
  
31. The invited speaker for South China Agricultural University, **Guang-zhou, China**, May 20, 2012
  - a. Veterinary acupuncture (4 hours)
  
32. The special invited speaker for Southwest University, **Chong-qing, China**, May 15, 2012
  - a. How TCVM impacts on Veterinary Medicine? (3 hours)
  
33. A Keynote Speaker for World Small Animal Veterinary Association (WSAVA) conference from October 13-17, 2011, **Jeju City, South Korea**
  - a. How to Use Acupuncture to Treat Renal Failure (1 hour)

- b. How to Use Acupuncture for the Treatment of Heart Failure (1 hour)
  - c. Feline Acupuncture (1 hour)
  - d. IBD with Acupuncture (1 hour)
34. Program creator and speaker for the Australian Veterinary Acupuncture Group Annual Conference, **Adelaide, South Australia, Australia**, May 21-22, 2011
- a. Clinical Application of TCVM in Equine Practice (5 hours)
  - b. Clinical Application of TCVM in Small Animal Practice (5 hours)
35. A keynote speaker for the Australia Veterinary Association annual (AVA) conference (9 hour topics), **Adelaide, South Australia, Australia**, May 15-20, 2011
- a. Retrospective Study on Effect of a Combination of Acupuncture and Herbal Medicine on Wobbler Syndrome in Dogs and Horses (1 hour)
  - b. Effect of TCVM for the Treatment of *Thoracolumbar* Intervertebral Disk Disease in dogs (1 hour)
  - c. How to Treat Degenerative Myelopathy (DM) in Dogs? (1 hour)
  - d. How to use acupuncture for Osteoarthritis (1 hour)
  - e. Acupuncture for the Diagnosis and Treatment of Lameness in Horses (1 hour)
  - f. Acupuncture for laminitis and navicular syndrome in horses (1 hour)
  - g. Indications and Contraindications of Veterinary Acupuncture (1 hour)
  - h. Assessment and Enhancement of the Quality of Life in Geriatric Patients (1 hour)
  - i. TCVM Geriatric Medicine (1 hour)
  - j. Top Five Chinese Veterinary Herbal Formulas: Clinical Application, Toxicity and Precautions (1 hour)
36. The special invited speaker for the Southwest University-Rong-chang Campus, **Rong Chang, Chongqing, China**, Feb 19, 2011
- a. Veterinary acupuncture in USA (3 hours)
37. A key speaker for the alternative medicine track of the North American Veterinary Conference (NAVC) in **Orlando, Florida**, Jan 15-19, 2011
- a. Master Class-How to Improve Acupuncture Results in Dogs and Cats (1.5 hours)
  - b. Using Acupuncture for Equine Musculoskeletal Conditions (1 hour)
  - c. How to Use TCVM to Treat Chronic Heaves and COPD in Horses (1 hour)
  - d. Laminitis in the Horse (1 hour)
  - e. Using TCVM to Treat Renal Failure (1 hour)
  - f. How to Use TCVM to Treat Hepatitis and Cholangitis Complex (1 hour)
  - g. How to Use TCVM to Treat Hepatomegaly and Hepatic Neoplasia (1 hour)
  - h. Congestive Heart Failure (15 min)
  - i. IBD in the Cat (15 min)
38. A speaker for International Conference on Traditional Chinese Veterinary Medicine by the Institute of Traditional Chinese Veterinary Medicine, Ministry of Agriculture, **Lanzhou, China**, September 13-16, 2010
- a. How to treat IVDD, wobblers and degenerative myelopathy (1 hour)
  - b. Geriatric medicine (2 hours)
  - c. TCVM Approach to Immune-Mediated Disease (1 hour)

39. An invited keynote speaker for the Qi Academy, **Düsseldorf, Germany**, May 6-9, 2010
  - a. TCVM Liver Physiology and Pathology (4 hours)
  - b. TCVM for Cushing's disease (1 hour)
  - c. TCVM for diabetes (1 hour)
  - d. TCVM for hyperthyroidism (1 hour)
  - e. TCVM for hypothyroidism (1 hour)
  - f. TCVM for hypertension and depression (1 hour)
  
40. Keynote speaker for Bioethicus Institute, **Botucatu, SP, Brazil** July 25, 2009
  - a. TCVM clinical application (8 hours)
  
41. Keynote speaker on the TCVM for Associacao Nacional de Clinicos Veterinarios de Pequenos Animais-Brasil (ANCLIVEPA-BR, Brazilian National Veterinary Medical Association) annual conference, **Sao Paulo, Brazil**, on July 24, 2009
  - a. TCVM diagnosis: how to recognize patterns in dogs and cats (3 hours)
  - b. Top 10 acupuncture points in dogs and cats (3 hours)
  
42. Keynote speaker on Veterinary Acupuncture at World Small Animal Veterinary Association (WSAVA)-the 34<sup>th</sup> world congress, **Sao Paulo, Brazil**, July 21-23, 2009
  - a. Acupuncture for respiratory disorders (1 hour)
  - b. Acupuncture in cats: Is there a difference from dogs? (1 hour)
  - c. Acupuncture for immunologic disorders (1 hour)
  - d. Acupuncture for dermatologic disorders (1 hour)
  
43. A speaker for the North American Veterinary Conference (NAVC) for Alternative Medicine at the annual conference (NAVC), **Orlando, Florida**, January 17-21, 2009
  - a. Using TCVM in Cancer Treatment (2 hours)
  - b. Small Animal & Equine Geriatric Medicine: TCVM Approach (2 hours)
  - c. How to Evaluate and Improve the Quality of Life (1 hour)
  - d. TCVM Geriatric Medicine (2 hours)
  - e. Equine Case-endocrine disorder (15 minutes)
  - f. Equine Case-navicular disease (15 minutes)
  
44. An invited speaker for the Qi Academy, **Düsseldorf, Germany**, July 08, 2008
  - a. Advanced Veterinary Acupuncture Techniques (5 hours)
  - b. Chinese herbal seminar (5 hours)
  
45. An invited speaker for the Southwest University, **Chongqing, China**, October 08, 2008
  - a. Advanced Chinese Veterinary Medicine Conference (10 hours)
  
46. An invited speaker for College of Veterinary Medicine, **Ching-mai University, Thailand**, 2007
  - a. Veterinary acupuncture workshop (2 days)
  - b. Help the Ching-mai University establish veterinary acupuncture
  
47. Keynote speaker on Veterinary Acupuncture at College of Veterinary Medicine, Jia-yi University, Tai-wan in 2007



48. Keynote and main speaker for the International Veterinary Acupuncture Society Veterinary Acupuncture Training program in 2007 (in San Antonio, TX), 2006 (in Tampa), 2005 (in San Diego), 2004 (in Houston, TX), 2003 (in Tampa) and 2002 (in San Diego)
49. Invited speaker on Veterinary Acupuncture at College of Veterinary Medicine, China Agricultural University, Beijing, China in 2006
50. The main invited speaker from the College of Veterinary Medicine, Ching-mai University, Thailand, 2005
51. Keynote speaker for International Traditional Chinese Veterinary Medicine Annual conference in China in 2006 (Beijing), 2004 (Cheng-du), 2002 (Hong-zhou) and 2000 (Guang-zhou)
52. Major speaker for the International Veterinary Acupuncture Society annual conference in 2005 (Salt Lake City, Utah), 1999 (Lexington, KY), 1997 (Quebec, Canada), 1995 (Boulder, CO) and 1994 (Orlando, FL)
53. Major speaker for the World Small Animal Veterinary Association (WSAVA) Alternative Medicine programs May 12-14, Mexico City, Mexico in 2005
54. Keynote speaker of Veterinary Acupuncture Course at Dept of Veterinary Medicine, Zhejiang University, Hongzhou, China in 2005
55. Major speaker of Veterinary Acupuncture Course at College of Veterinary Medicine, South China Agricultural University, Guang-zhou, China in 2004
56. Major speaker for Veterinary Acupuncture Course at College of Veterinary Medicine, Padova University, Padova, Italy in 2003
57. Major speaker for the International Veterinary Acupuncture Society Veterinary herbal training program in Boulder, CO in 2002, 2001, 2000, 1999, 1998, 1997 and 1996
58. Major speaker for Veterinary Acupuncture Seminars at Veterinary Medicine Dept, Nihon University, Japan in 1998 and 1989
59. Major speaker for Veterinary Acupuncture Seminar at Veterinary School, Mexico University in 1998 and 1992
60. Major speaker for the Veterinary Acupuncture training course in Thurles, Ireland in 1996

### National Lectures

1. Invited speaker for VMX (NAVC) annual conference 2022, Orlando, Florida. January 15, 2022.
  - a. An Overview of Acupuncture Dosage (50 min)
  - b. How to Adjust Acupuncture Dosage to Enhance Clinical Results (50 min)
  - c. Are There Any Magic Points for Osteoarthritis and Pain Management?
2. Invited speaker for the 2021 Annual Conference of the Veterinary Botanical Medicine Association (VBMA), Virtually on June 21, 2021
  - a. TCVM for Equine Protozoal Myeloencephalitis
3. A keynote speaker for 2020 annual conference of the American Holistic Veterinary Medical Association (AHVMA), Virtually from September 24 to 27, 2020
  - a. Keynote speaking: **On Adversity**
  - b. Chinese Herbals for Immune-Mediated Diseases: Evidence-Based Clinical Application (2 hours)
  - c. Black Box Theory-philosophic base for TCVM (1 hour)
  - d. Two W Diagnostic System: Using "Where" and "What" in TCVM Diagnostics (1 hour)

- e. How to Improve Acupuncture Results in Horses (2 hours)
- 4. Invited speaker for VMX (NAVC) annual conference 2019, Orlando, Florida. January 19-23, 2019.
  - a. Acupuncture for neck pain and wobbler syndrome.
  - b. TCVM treatment for degenerative myelopathy in dogs.
  - c. TCVM Treatment of thoracolumbar intervertebral disk disease in dogs
- 5. Coordinator and speaker for the canine acupuncture lab for the 2018 Annual Convention of the American Veterinary Medical Association (AVMA), Denver July 15, 2018
  - a. Canine Acupuncture (8 hours)
- 6. Coordinator and speaker for the canine acupuncture lab for the 2017 Annual Convention of the American Veterinary Medical Association (AVMA), Indianapolis July 21-25, 2017
  - a. Canine Acupuncture (8 hours)
- 7. A keynote speaker for American Holistic Veterinary Medical Association (AHVMA), October 21 -24, 2017 at The Town and Country Resort in San Diego, CA
  - a. TCVM for the Treatment of Icterus (1 hour)
  - b. TCVM for renal failure (1 hour)
  - c. Can we cure behavioral problems (1 hour)
  - d. How to evaluate quality of life (1 hour)
  - e. TCVM for geriatric medicine (1 hour)
  - f. The Treatment as the diagnosis (1 hour)
- 8. Coordinator and speaker for the canine acupuncture lab for the 2016 Annual Convention of the American Veterinary Medical Association (AVMA), San Antonio, TX, August 8, 2016
  - a. Canine Acupuncture (8 hours)
- 9. A keynote speaker for American Holistic Veterinary Medical Association (AHVMA), September 10 - 13, 2016 at The Hyatt Regency, at the Greater Columbus Convention Center, in Columbus, Ohio.
  - a. TCVM for the Treatment of Cancers (1 hour)
  - c. TCVM for IVDD and degenerative myelopathy (1 hour)
  - d. TCVM for Seizure (1 hour)
  - e. TCVM for Emergency Conditions in Large Animals (1 hour)
  - f. TCVM for infertility in horses and dairy cows (1 hour)
  - g. Acupuncture as stem cell therapy? (1 hour)
- 10. A keynote speaker for American Holistic Veterinary Medical Association (AHVMA), Augusta, GA. October 17-20, 2015
  - a. TCVM for Equine Musculoskeletal Problems: Diagnosis and Treatment (1 hour)
  - b. Acupuncture for Laminitis and Navicular Syndrome in Horses (1 hour)
    - c. TCVM for Treatment of Equine Neurological Diseases (1 hour)
    - d. TCVM for the Treatment of Diarrhea in Horses (1 hour)
    - e. How to Use TCVM to Treat Recurrent Airway Obstruction (RAO) in Horses (1 hour)
    - f. TCVM for Emergency Conditions in Small Animals (1 hour)

- g. TCVM for the Treatment of Keratoconjunctivitis sicca in Dogs (1 hour)
- 11. Coordinator and speaker for the canine acupuncture lab for the 2015 Annual Convention of the American Veterinary Medical Association (AVMA), Boston, MA, July 12, 2015
  - a. Canine Acupuncture (8 hours)
- 12. A speaker for American Academy of Veterinary Acupuncture (AAVA) Annual Conference, Boston, MA, March 13-15, 2015
  - a. Chinese Herbal Medicine for the Treatment of Pruritic Canines (2 hours)
  - b. Traditional Chinese Veterinary Medicine for Treatment of Equine Neurological Conditions (2 hours)
- 13. The keynote speaker for the CAVM track of American Veterinary Medical Association (AVMA) 2014 Annual convention, Denver, CO, July 25-29, 2014
  - a. Introduction to Chinese Herbs: History, Toxicity and Safety Assessment (1 hour)
  - b. Chinese Herbs for Cancers: Evidence-Based Clinical Application (1 hour)
  - c. Chinese Herbs for Gastrointestinal Disorders: Evidence-Based Clinical Application (1 hour)
  - d. Chinese Herbs for Atopy and Other Immune-Mediated Diseases: Evidence-Based Clinical Application (1 hour)
- 14. Speaker for American Holistic Veterinary Medical Association (AHVMA), 2013 Annual Conference, Kansas City, MO, August 24-27, 2013
  - a. Equine Food Therapy (1 hour)
  - b. TCVM for cancer (1 hour)
  - c. TCVM for Cushing's disease in dogs (1 hour)
  - d. TCVM for diagnosis and treatment of foot lameness in horses (1 hour)
  - e. TCVM for equine metabolic syndrome and insulin resistance in horses (1 hour)
- 15. Creator, coordinator and main speaker for Veterinary Acupuncture-Fundamental Principles, VIN (online course) from Oct 30 to December 11, 2012 (10 hours)
  - a. Overview on TCVM (2 hours)
  - b. Yin-yang and Eight Principles (2 hours)
  - c. Five Elements and Zang-fu physiology (2 hours)
  - d. Meridians, Channels and TCVM Energy Pathway (2 hours)
  - e. Clinical Application of Veterinary Acupuncture (2 hours)
- 16. Speaker for American Holistic Veterinary Medical Association (AHVMA), 2012 Annual Conference, Birmingham, AL, Sept 8-11, 2012
  - a. TCVM for Exotic Animals (1 hour)
  - b. Tcvm Immunology and How to Approach to Immune-Mediated Disease (1 hour)
  - c. TCVM for Lymphoma in Dogs (1 hour)
  - d. TCVM for Wobbler Syndrome and Myelopathy (1 hour)
  - e. Toxicity and Safety Quality of Chinese Herbs (1 hour)

17. Creator, coordinator and main speaker for Introduction to Veterinary Herbal Medicine: CHM and TCVM, Veterinary Information Network (VIN) (online course), August 23 – October 7, 2011
  - a. Herbal ABC—Five Energy and Five Tastes (2 hours)
  - b. Herbal Safety and Quality Control (2 hours)
  - c. Herbal Indications and Contraindications (2 hours)
  - d. Top Five Herbal Medicine in Small Animals (2 hours)
  - e. Top Five Herbal Medicine in Large Animals (2 hours)
  
18. Creator, coordinator and main speaker for Veterinary Acupuncture-Fundamental Principle, Veterinary Information Network (VIN) (online course), from March 22 – May 6, 2011
  - a. Overview on TCVM (2 hours)
  - b. Yin-yang and Eight Principles (2 hours)
  - c. Five Elements and Zang-fu physiology (2 hours)
  - d. Meridians, Channels and TCVM Energy Pathway (2 hours)
  - e. Clinical Application of Veterinary Acupuncture (2 hours)
  
19. Program creator, coordinator and speaker for Western Veterinary Conference (WVC), Las Vegas, NV, August 5-7, 2011
  - a. Canine Acupuncture for Beginners (20-hour workshop)
  
20. Creator, coordinator and main speaker for Introduction to Veterinary Herbal Medicine: CHM and TCVM, VIN (online course), October 26 - December 7, 2010
  - a. Herbal ABC—Five Energy and Five Tastes (2 hours)
  - b. Herbal Safety and Quality Control (2 hours)
  - c. Herbal Indications and Contraindications (2 hours)
  - d. Top Five Herbal Medicine in Small Animals (2 hours)
  - e. Top Five Herbal Medicine in Large Animals (2 hours)
  
21. Creator, coordinator and main speaker for Veterinary Acupuncture-Fundamental Principle, Veterinary Information Network (VIN) (online course), from May 24 to June 28, 2010 (10 hours)
  - a. Overview on TCVM (2 hours)
  - b. Yin-yang and Eight Principles (2 hours)
  - c. Five Elements and Zang-fu physiology (2 hours)
  - d. Meridians, Channels and TCVM Energy Pathway (2 hours)
  - e. Clinical Application of Veterinary Acupuncture (2 hours)
  
22. Keynote speaker on alternative medicine of Western Veterinary Conference (WVC), Las Vegas, NV, February 14 – 18, 2010
  - a. Acupuncture for the Treatment of Chronic Renal Failure (1 hour)
  - b. How to Use Acupuncture for the Treatment of IBD (1 hour)
  - c. Acupuncture for Treatment of Osteoarthritis (1 hour)
  - d. Holistic Approach for Geriatric Patients (1 hour)
  - e. Congestive Heart Failure: A TCVM Approach (1 hour)
  - f. Acupuncture Treatment for Seizures in Dogs (1 hour)

- g. Acupuncture for Lameness in Horses (1 hour)
  - h. Acupuncture for Laminitis & Navicular Syndrome in Horses (1 hour)
  - i. Acupuncture for Chronic Diarrhea in Large Animals (1 hour)
23. Creator, coordinator and main speaker on acupuncture lab of Western Veterinary Conference (WVC), Las Vegas, NV, February 14 – 18, 2010
    - a. Equine Traditional Chinese Medicine Laboratory (4 hours)
    - b. Small Animal Traditional Chinese Medicine Laboratory (4 hours)
  24. Creator, coordinator and main speaker for Veterinary Acupuncture-Fundamental Principle, Veterinary Information Network (VIN) (online course), from February 24 – March 31, 2009
    - a. Overview on TCVM (2 hours)
    - b. Yin-yang and Eight Principles (2 hours)
    - c. Five Elements and Zang-fu physiology (2 hours)
    - d. Meridians, Channels and TCVM Energy Pathway (2 hours)
    - e. Clinical Application of Veterinary Acupuncture (2 hours)
  25. An invited speaker for American Academy of Veterinary Acupuncture (AAVA) at the annual conference in Nashville, TN, 2007
  26. An invited speaker for American Association of Equine Practitioners (AAEP) annual conference in 2007 (Orlando, FL) and 2001 (San Diego, CA)
  27. An invited speaker for Western Veterinary Conference (WVC)-the Alternative Medicine program at the annual conference in Las Vegas, 2007
  28. An invited speaker for North American Veterinary Conference (NAVC)- annual conference at the Alternative Medicine in 2006, 2005, 2004 and 2003
  29. A keynote speaker for the Annual Conference of the Veterinary Botanical Medicine Association (VBMA), Tulsa, OK, 2007
  30. An invited speaker for American Animal Hospital Association (AAHA)-Annual Conference, Long Beach, CA, 2006
  31. The coordinator and main speaker for Veterinary Acupuncture Course of North American Veterinary conference NAVPGI in Orlando in 2005
  32. Invited speaker for the American Veterinary Medical Association (AVMA)-the 142nd Annual Convention in Minneapolis, MN in 2005.
  33. Invited speaker for the Annual Conference of American Holistic Veterinary Medical Association (AHVMA), Eugene, Oregon 2002, Kauai, Hawaii, 1999

## Regional Lectures

1. A keynote speaker for the Alternative Med program of Atlantic City Vet Conference (ACVC) annual conference from Oct 11-13, 2017
  - a. Five Elements and Clinical Application
  - b. Acupoints, Meridians and Energy Pathway
  - c. Acupuncture wet lab
2. The creator, coordinator and main speaker on complementary/alternative medicine program of the Midwest Veterinary Conference (MVC), Columbus, Ohio, Feb 18-21, 2009
  - a. Canine Acupuncture lab (3 hours)
  - b. Congestive Heart Failure: an TCVM approach (1 hour)
  - c. Itching dog: an alternative approach (1 hour)
  - d. How to use acupuncture for the treatment of IBD (1 hour)
  - e. How to use acupuncture for Osteoarthritis (1 hour)
  - f. How to approach geriatric patients (1 hour)
  - g. How to Use Acupuncture and Herbal Medicine for Cancer Patients (1 hour)
3. Central Veterinary Conference (CVC) invited speaker main speaker for the Alternative Medicine program at the annual conference CVC-west, San Diego, 2007
4. Central Veterinary Conference (CVC) invited speaker main speaker for the Alternative Medicine program at the annual conference Kansas City, 2006
5. Midwest Veterinary Conference (MVC) invited speaker for the Alternative Medicine program at the annual conference in Columbus, Ohio, 2007 and 2006

### **State Lectures**

1. Creator and coordinator of the acupuncture program for the New England State Veterinary Associations (NEVMA) annual conference, Portland, ME, September 16-18, 2016
  - a. Veterinary acupuncture for beginners (1 day)
2. Creator and main speaker in College of Veterinary Medicine, Cornell University, Ithaca, NY, September 19-20, 2015
  - a. Canine Veterinary Acupuncture (15 hours, 1 credit)
  - b. Helping Cornell CVM establish Acupuncture program
3. Creator and coordinator of the acupuncture program for the New England State Veterinary Associations (NEVMA) annual conference, Portland, ME. on Sept. 18-21, 2014
  - a. Veterinary acupuncture program (2.5 days)
4. Creator and coordinator of the acupuncture program for Keystone Veterinary Conference, Pennsylvania Veterinary Medical Association, Hershey, Pennsylvania, August 15-16, 2014
  - a. Veterinary acupuncture for beginner (2 days)

5. An invited speaker for the College of Veterinary Medicine, Louisiana State University, Baton Rouge, LA, November 29, 2012
  - a. Veterinary Acupuncture (3 hours)
  - b. Helping LSU CVM establish Acupuncture program
6. An invited main speaker for the Webinar of the Pennsylvania Veterinary Medical Association, January 9, 2011
  - a. Traditional Chinese Veterinary Medicine-Webinar (3 hours)
7. An invited main speaker on acupuncture in College of Veterinary Medicine, Washington State University, Pullman, Washington, Sept 12-13, 2009
  - a. Canine Veterinary Acupuncture (15 hours, 1 credit)
  - b. Help WSU CVM founding the acupuncture program
8. The invited speaker for the acupuncture program in College of Veterinary Medicine, Ohio State University, February 20, 2009
  - a. Veterinary Acupuncture: Indications and Contraindications (3 hours)
9. An invited speaker at the 2009 Atlantic Coast Veterinary Conference (ACVC) being held at the Atlantic City Convention Center, Atlantic City, NJ, October 12-15, 2009
  - a. Five Elements (2 hours)
  - b. Yin Yang and Eight Principles (1 hour)
  - c. Jing-lou System and Meridian (2 hours)
  - d. How to treat Osteoarthritis (1 hour)
10. Atlantic Veterinary Conference invited speaker for the Alternative Medicine program at the annual conference of the Atlantic City Veterinary Conference (ACVC), Oct 13-16, 2008, Atlantic City, NJ
  - a. How to understand TCVM-clinical application of Five Elements (1 hour)
  - b. Veterinary Acupuncture: Indication and Contraindication (1 hour)
  - c. Congested Heart Failure: an TCVM approach (1 hour)
  - d. Itching dog: an alternative approach (1 hour)
  - e. How to use acupuncture for the treatment of IBD (1 hour)
  - f. How to use acupuncture for Osteoarthritis (1 hour)
  - g. How to approach geriatric patients (1 hour)
  - h. Treatment of seizures in dogs with Acupuncture (1 hour)
  - i. How to Use Acupuncture for Treatment of Chronic Renal Failure (1 hour)
11. Invited main speaker in Alternative Medicine Seminars for College of Veterinary Medicine, Washington State University, Pullman WA- in 2008 and 2007.
12. Major speaker for the Florida Veterinary Medical Association annual meeting 2007, 2004
13. Invited main speaker for the College of Veterinary Medicine, University of California Davis, CA invited speaker in Alternative Medicine Seminars in 2006 and 2005
14. Acupuncture lectures for continuing education programs at Central Florida Community College, Florida in 1995 and 1996.

15. Chinese medicine speaker at Gluck Equine Research Center, University of Kentucky in 1996
16. Invited speaker for the Veterinary Acupuncture program at the College of Veterinary Medicine, Colorado State University, Boulder CO in 1998

### Local Lectures

1. The speaker for the Integrative Medicine/Holistic Club, College of Veterinary Medicine, University of Florida, Gainesville, FL, October 15<sup>??</sup>, 2019
  - a. Canine Acupuncture Lab (3 hours)
2. The speaker for the Integrative Medicine/Holistic Club, College of Veterinary Medicine, University of Florida, Gainesville, FL, October 26, 2018
  - a. Canine Acupuncture Lab (3 hours)
3. The speaker for the Integrative Medicine/Holistic Club, College of Veterinary Medicine, University of Florida, Gainesville, FL, October 17, 2017
  - a. Canine Acupuncture Lab (3 hours)
4. The speaker for the Holistic Club, College of Veterinary Medicine, University of Florida, Gainesville, FL, April 23, 2016
  - a. Canine Acupuncture Lab (3 hours)
5. Invited speaker for the Florida Thoroughbred Farm Managers, Ocala, FL, October 26, 2011
  - a. Introduction to Equine acupuncture and Chinese medicine (3 hours)
6. Invited speaker on Acupuncture for the Holistic Group, College of Veterinary Medicine, University of Florida, 2014, 2012, 2008, 1997
7. Invited speaker for Virginia Beach Veterinary Group, Norfolk, VA, May 7, 2008
  - a. Qi, energy and Meridian (1 hour)
  - b. Five Elements (1 hour)
  - c. Geriatric medicine: an alternative approach (1 hour)
  - d. Cancer patient: an alternative approach (1 hour)
8. Invited speaker for Referring Veterinarians Day, CVM, University of Florida in 2004, 2001
9. Invited speaker on Acupuncture for the American Association of Equine Practitioners University of Florida Student Chapter, Gainesville, Florida, 1997

### INSTRUCTIONAL ACTIVITIES

#### Acupuncture Elective Clerkship (VEM 5876)

|           |  |
|-----------|--|
| 2012-now  | Changed as Integrative Medicine Clerkship along with rehabilitation and offering 40 to 52 weeks/year |
| 2007-2012 | Expanded course offering to 52 weeks/yr  |
| 2002-2007 | Sole instructor  |
| 2005-2006 | Increased course offering to 24 weeks/yr   |
| 2002-2004 | Developed elective program for 12 weeks/yr (6-two-week blocks of 2-4                                 |



students)

### Acupuncture Internship Training

2009- Co-mentor  
2006-2008 Sole Coordinator and mentor of the Acupuncture Intern program  
2004-2006 Developed Acupuncture Internship program

| Acupuncture Interns      | Year completed |
|--------------------------|----------------|
| 1. Emily Mangan          | 2021           |
| 2. Dr. Shu Dai           | 2020           |
| 3. Dr. Emily Ross        | 2019           |
| 4. Dr. Megan Brumb       | 2017           |
| 5. Dr. Tony Yang         | 2017           |
| 6. Dr. Lindsay Hockman   | 2016           |
| 7. Dr. Diego R Sobrino   | 2015           |
| 8. Dr. Kelly Fishman     | 2014           |
| 9. Dr. Jessie Burgess    | 2013           |
| 10. Dr. Haleh Siapolo    | 2012           |
| 11. Dr. Lauren Frank     | 2011           |
| 12. Dr. Ron Koh          | 2010           |
| 13. Dr. Stacie Atria     | 2009           |
| 14. Dr. Justin Shmalberg | 2009           |
| 15. Dr. Yumiko Bannai    | 2008           |
| 16. Dr. Min Su Kim       | 2008           |
| 17. Dr. Elizabeth Carson | 2007           |
| 18. Dr. Madeline Yamate  | 2007           |
| 19. Dr. Carolina Ortiz   | 2006           |
| 20. Dr. Tiffany Rimar    | 2006           |

### Other UF Undergraduate and DVM Professional Courses

2014 to now VME 6905 Traditional Chinese Veterinary Medicine (1 credit) in spring  
2014  
2013 to now VEM 5931 International Veterinary Medicine  
2012 to now VEM 5506 International Veterinary Medicine  
2009 to now VEM5208—Veterinary Complementary and Alternative Medicine 2hrs  
lectures/2 hrs lab  
2005-2008 VEM 5289 Large Animal Pharmacology 2 hrs lecture  
2000-2008 VEM 5422 Equine Surgery Elective 2 hrs lecture  
1999- 2008 ANS 3237C Equine Health Management 1 hr lecture 4 hours lab  
1999-2008 VEM 5208 Additional approaches 2 hrs lecture 2 hrs lab

### Acupuncture Training for Visiting Professors and Visiting DVM Practitioners

1. Dr. Todd Hoebrook, Professor of Equine Medicine from College of Vet Med, Oklahoma

- State University Oct 2019 to May, 2020 (6 months)
2. Dr. Liting Cao, associate professor of TCVM from College of Vet Med, China Southwest University September 2019 to September 2020 (12 months)
  3. Dr. Yizhou Chen, associate professor of small animal surgery and vice Director of VMTH from College of Vet Med, South China Agricultural University September 2019 to September 2020 (12 months)
  4. Dr. Cui Liu, associate professor of TCVM from College of Vet Med, South China Agricultural University June 2018 to June 2019 (12 months)
  5. Dr. Dayou Shi, associate professor of TCVM from College of Vet Med, South China Agricultural University July 2016 to July 2017 (12 months)
  6. Dr. Shining Guo, professor of TCVM from College of Vet Med, South China Agricultural University Feb 2015 to Feb 2016 (12 months)
  7. Dr. Min Su Kim, associate professor of acupuncture and surgery from College of Veterinary Medicine, ChonBuk National University, South Korea, December 2013 to January 2015 (13 months)
  8. Dr. Aituan Ma, associate professor of TCVM from College of TCVM, Agri Uni of Hebei, China in 2012 (6 months)
  9. Dr. Jose Zilberschtein Juffe in 2012 (2 months)
  10. Dr. Sakyeng Shin from National Seoul University, South Korea from January 2011 to August, 2011 (a total of 7 months)
  11. Dr. Hou Zhengzhong from College of Vet Med, Northeast Agricultural University from August 27, 2010 to August 20, 2011 (12 months)
  12. Dr. Stephanie Reid from Canada (2 days)
  13. Dr. Mizuho Uchida from Japan (2 days)
  14. Dr. Jose Zilberschtein Juffe in 2011 (2 months)
  15. Dr. Jose Zilberschtein Juffe from Universidad De Murcia Vet School, Spain (2 months) in 2010
  16. Dr. Jianzhong Hou from Northeast Agricultural University Vet School, China (12 months) 2010/11
  17. Dr. Sakyeng Shin from Korea (6 months) in 2010/2011
  18. Dr. Lara Zinn from Germany (2 days) in 2010
  19. Dr. Ana Stella from Brazil (2 days) in 2010
  20. Dr. Daphne Haley for 2 days) in 2010
  21. Dr. Daniel King for 2 days in 2010
  22. Dr. Stephanie Reid from Canada (2 days) in 2010
  23. Dr. Mizuho Uchida from Japan (2 days) in 2010
  24. Dr. Melissa Alvarenga Haddad from Honduras (2 days) in 2008
  25. Dr. Vanessa Ferraz from Brazil (2 weeks) in 2007
  26. Dr. Sabine Vollstedt from Germany (3 days) in 2007
  27. Dr. Lorena LLOret from Spain (3 days) in 2006
  28. Dr. Lisa Trevisanello from Italy from August to December, 2004
  29. Dr. Carla Leon from Costa Rica (2 weeks) in 2004
  30. Dr. Jose Zilberschtein Juffe from Universidad De Murcia Vet School, Spain (3 months) in 2004
  31. Dr. Minsu Kim from National University Vet school, South Korea (3 months) in 2004
  32. Dr. Michael Mount from UC Davis Vet school from August 2002 to July 2003
  33. Dr. Chumnan Trinarong from Ching-mai University Vet School, Thailand in 2002 and 2003 (a total of 2 weeks)

34. Dr. Flavio Avila from Brazil from March to July, 2003 (5 months)
35. Dr. Inbar Isreali from Israel (3 months) in 2003
36. Dr. William McCormick (2 days) in 2002
37. Dr. Kosei Yamagiwa from Japan from January 2000 to December 2002 (2 years)

#### **Graduate Committee Activities**

1. Master Degree supervisory committee member for Chang Yu (UF LACS in 2015): Herbal toxicity and safety.
2. Master Degree supervisory committee member for 9 master degree students of South China Agricultural University (from 2012-2015): Sakyeng Shin, Connie Chevis, Linsey Wedemeyer, Lisa Trevisanello
3. Master Degree committee for Ron Koh (LACS UF, completion in 2012): Effect of Electro-acupuncture on vomiting in dogs
4. Co- Chair PhD committee for Karen M. von Deneen (LACS UF; completed 2010); fMRI investigation of the effects of acupuncture on the central control of food intake
5. PhD committee member for Weerapongse Tangjitjaroen (LACS UF; completed in 2009); Effect of acupuncture on the pulmonary function in horses
6. Co-chair MS committee for Porakote Kulchaiwat (Ching-mai University, Thailand; completed 2007); Effect of acupuncture on chronic back pain in performance horses
7. Co-chair MS committee for Dennis Wilcox (South China Agricultural University, China; completed 2006); Effect of Chinese herbs on hyperthyroidism in cats

#### **Supervision of veterinary student research projects for VEM 5991**

1. Sharon E Hunley in 2008
2. Stacie Trushman's senior project in 2007
3. Elizabeth Carson in 2006
4. Cassidy Rist in 2004