AERC BOD Conference Call minutes 4/9/18

The meeting was called to order by President Paul Latiolais at 6:05 pm.

Roll by Kathleen Henkel. Present were Michael Campbell, Monica Chapman, Connie Caudill, Angie Mikkelson, Jan Stevens, Tonya Stroud-Oaks, Mary Howell, Nick Kohut DVM, John Parke, Lisa Schneider, Vance Stine, Susan Kasemeyer, Troy Eckard, Marcia Hefker-Miles, Shawn Bowling, Olin Balch DVM, Robert Marshall DVM, Mike Maul, Heather Reynolds, Christoph Schork. Also on the call - Research Committee Chair, Jerry Gillespie DVM. Terry Woolley-Howe and Paul Sidio joined shortly after the meeting began.

Jan Stevens made the motion to accept the agenda, it was 2nd by Heather Reynolds. Motion passed Vance Stine made a motion to approve the corrected minutes from the 3/8/18 Board meeting, 2nd by Marcia Hefker-Miles. Motion passed Susan Kasemeyer moved that the 2/10/18 minutes be approved with a 2nd from Bob Marshall DVM. Motion passed. Christoph Schork made the motion to approve the 3/11/18 corrected minutes with a 2nd from Marcia Hefker-Miles. Motion passed. Connie Caudill made a motion to excuse Mollie Krumlaw-Smith. Olin Balch DVM seconded the motion. Motion passed.

Statistical report – Kathleen gave the Statistical report

Membership as of 4/10/17	4045
Membership as of 4/9/18	4176
Sanction fees as of 4/9/17	\$ 13,958
Sanction fees as of 4/9/18	\$ 12,025
Rider fees as of 4/9/17	\$ 15,173
Rider fees as of 4/9/18	\$ 14,034
New members as of 4/10/1	7 301
New members as of 4/9/18	326

Paul Latiolais asked for approval of the P&G committee members whom were selected by the chair, Diane Rowley. Bianca Chevalier, Gail Conway DVM, Stephanie Palmer-DuRoss, Debbie Schultz, Dennis Sousa. Motion to approve was made by Olin Balch DVM and it was 2nd by Susan Kasemeyer. There was a discussion that concluded the members are diversified regionally as well as in experiences. Motion passed.

Paul Latiolais appointed Marica Hefker-Miles as the Board Parliamentarian. Susan Kasemeyer made a motion to approve with Troy Eckard making the second. Marcia Hefker-Miles volunteered her services for the job, she stated that she is not an expert but has served in this capacity and is willing to share her skills in order to help the board meetings stay on track and in accordance to Roberts Rules of Order. John Parke appreciated the fact that Marcia Hefker-Miles is taking on that role but cautioned that Roberts Rules of Order is not the last word but California Corporate Law. Motion passed

Paul Latiolais appointed Monica Chapman to chair the Ad Hoc USEF/FEI Committee, Terry Woolley Howe to chair the Competition Committee and Marcia Hefker-Miles to chair the Education Committee. Monica has been speaking to some potential committee members that she will select to serve on the committee. The members will come from different points of view. The first order of business is to define a charter for the committee.

Susan Kasemeyer moved to approve the Committee Chairs with Olin Balch DVM making the 2nd. Motion passed.

Jerry Gillespie DVM thanked the Board for allowing him to present the AERC Research at the 2018 Tevis Ride Motion from the Research Committee. He explained how this study would give more information than the previous Virginia City and Cooley Ranch ride study since horses were fairly close in traveling to those rides but for the Tevis there will be greater diversity as many are transported longer distances. Weight of the horses will be taken before leaving home, at the vetting in, at Robinson Flat and possibly one other besides the finish. The proposed Tevis research will be an extension of the AERC research at the 2016 Cooley Ranch Ride and the 2017 Virginia City Ride. The results of these studies were reported at the 2017 and 2018 AERC Conventions.

Like the earlier studies at Cooley Ranch and Virginia City Rides, the 2018 Tevis study will focus on a very important ailment in endurance horses, dehydration. The studies have shown that horses dehydrate (lose body water) during transport to rides if the journey requires more than 2 hours. The horses do not usually have time to rehydrate before the start of the rides and will continue to dehydrate during the ride in both 50 mile and 100 mile rides. It will be important to investigate the extent of dehydration in the Tevis horses during a 100 mile ride with ambient temperature around 100 degrees F. The research is expected to collect home-stable body weights and ride-arrival weights to assess the extent of dehydration do to transport to the Tevis venue.

The motion request that AERC provide funds in the amount of \$4,000 from the AERC Research Fund to continue our studies on dehydration of endurance horses traveling to the 2018 Tevis Ride and during the Ride. The motion will have AERC and the Tevis Foundation share in the cost of the proposed 2018 Tevis study; \$4,000 funded by AERC and \$2,450 funded by Tevis Foundation; TOTAL \$6,450.

The Statistician will charge the minimum consultation fee required by the University of California, Davis (\$600/hr.). She estimates 5 hours work required to do the statistics on the data from the proposed study.

The motion requests funds for the maintenance of the scale-transporting equipment and the two scales. Also the motion is requesting purchase fund for supplies/parts for the scales, which have proven to be vulnerable to wear and breakdown during studies. It is important to have these back-up parts on The Principal Investigator, Jerry Gillespie and Co-Investigator will donate their time to the project.

The requested funds will come from the AERC Research Fund which currently has a balance of \$30,973.

Motion passed.

Connie Caudill presented a motion from the National Championship Committee for the allowance of an open division to the 50 and 100 mile AERC National Championship ride. The motion will allow AERC National Championship ride managers to host an open division in each distance. The open ride to be held in conjunction with the National Championship Ride. This would be optional to the ride manager. The National Championship Ride entry fee will not exceed the open ride entry fee. It is strictly up to the RM to host an open ride as some ride venues are not capable of holding more riders. The NC Committee is hopeful that with this addition that more ride managers will be willing to host the ride. Adding an open ride may help the ride to be financially stable. Motion passed.

Connie Caudill presented a motion from the National Championship Committee that would modify the 100 mile qualifications for the NC Ride.

The alternative to requiring a one day 100 mile completion would be that the horse and rider team may use a pioneer ride (in place of a one day 100) as their qualification along with the required mileage.

100-mile National Championship qualifications: Horse must have 500 AERC lifetime miles AND Rider must have 500 AERC lifetime miles be not necessarily together. Within the mileage requirements the horse and rider as a team must have one of the following:

- A one day 100 mile ride
- A pioneer ride (a ride being at least 3 days with 155 miles or more)

Other ways to qualify for the 100:

Rider/Horse team that completed the previous year in their regional overall top 10 standings is qualified for either distance

1000 lifetime endurance miles as a horse/rider team Motion passed

Connie Caudill presented a Membership Drive and completion award subsidy motion for the areas in the NW region (excluding Canada as they currently already receive a reduction in day members fees). The motion was second by John Parke.

The states of Oregon and Washington have suffered the loss of many riders, ride managers and rides over the past 2 years. The motion would waive AERC <u>day</u> member fees as well as provide completion awards to the NW region ride

managers. It is hopeful that this motion will assist the AERC rides, riders and ride managers in this area. The goal is to encourage people to become ride managers so that riders will have more rides to attend. We hope to introduce newer riders in this area to AERC and also recruit past members of AERC. The process may help stabilize AERC in the NW region. On the bright side, Idaho has remained stable and even has added another pioneer ride since 2016.

Susan Kasemeyer stated that day member fees need to be charged in order for them to be insured. Connie Caudill agreed that the motion should include a reduced day member fee of \$1.00. Vance Stine felt that we should review the status of the program in this region after one year to determine if we want to continue with the membership drive. Connie Caudill and John Parke accepted the revisions to the motion.

Revised motion-

- AERC will provide ride managers in the NW region within the borders of the US with AERC branded completion awards. (AERC T-shirts, coffee mugs or equivalent). Completion awards will be sent to Ride Manager's when requested. Ride Managers will pay postage to AERC for mailing the awards.
- The \$15 day member fees in these areas will be reduced to \$1.00.
- The Board will review the motions effectiveness after one year to determine if we should continue with the program through 5/31/2020.

Motion passed with one vote opposed.

Nick Kohut DVM and Bob Marshall DVM presented an update of the motion that had previously been presented from the Veterinary Committee to add the External Magnetic Field Device to the prohibited treatment Appendix F.

Proposed Motion Add language to Rule 13, appendix F item #6 (prohibited substances) to read: "The use of external magnetic field devices and electropulse generating devices on equines shall be allowed up to 24 hours prior to the pre ride veterinary exam at AERC sanctioned rides, but use within 24 hours of the pre ride veterinary exam and during a ride shall be prohibited".

The purpose of AERC Drug Rule 13 is in part to ensure fair competition by allowing horses to compete only under their natural ability and without the influence of treatment. Prohibiting the use of external magnetic field devices and electropulse generating devices at the ride site is consistent with that purpose and will promote fair and safe competition. To be implemented immediately.

Bob Marshall DVM, stated that claims made on the machines' website included pain reliever and an antiinflammatory for up to 72 hours. Like the Shockwave treatment time frame, riders would be on the honor system. Olin Balch DVM made an amendment to the motion to ban usage of the machine for 48 hours before vet-in. Vance Stine seconded the amendment.

After more discussion, Olin Balch DVM stated that he would like to amend his amendment to 72 hours. Vance Stine agreed to the amendment. Amendment to the motion passed with 6 opposed.

The amended motion - "The use of external magnetic field devices and electropulse generating devices on equines shall be allowed up to 72 hours prior to the pre ride veterinary exam at AERC sanctioned rides, but use within 72 hours of the pre ride veterinary exam and during a ride shall be prohibited".

There was further discussion concerning the time frame and lack of enforcement capabilities. It was noted that the machine could be used on people during the ride and on equines once they are out of competition which would include the BC judging. Motion passed with 7 opposed.

Paul Latiolais asked the committee chairs to review their respective committee charters and report on them at midyear. The charters currently on file will be sent to the committee chairs by Kathleen Henkel with assistance from Connie Caudill.

Paul Latiolais would like the Strategic Plan Groups to oversee the implementation plan. Lisa Schneider graciously offered to help any group with the implementation plan.

Paul Latiolais announced that the Mid Year Board meeting would be held in Denver, Colorado on August 4, 2018.

At 8:20 pm, John Parke made a motion to adjourn, Connie Caudill second. Motion passed

MOTION PROPOSAL

Motion NameUpdate to rule 13, Appendix F (Drug rule, prohibited treatment appendix)Proposing CommitteeVeterinary CommitteeDate of MotionAERC board meeting, March, 2018Classification of Motion RequestRule updateProposed Motion Add language to Rule 13, appendix F item #6 (prohibited substances) toread: "The use of external magnetic field devices and electropulse generating devices on equines shall beallowed up to 24 hours prior to the pre ride veterinary exam at AERC sanctioned rides, but use within 24hours of the pre ride veterinary exam and during a ride shall be prohibited".

- 1. Background, analysis and benefit The AERC Veterinary Committee is tasked with updating AERC Rule 13 appendices as needed. As newer treatment modalities are developed and become available, they are to be assessed by the Veterinary Committee and added to the Prohibited Treatment Appendix F as necessary.
- 2. External magnetic field devices are currently prohibited by Appendix F, item #6 of rule 13. Appendix F, item #6 currently reads: "Any external magnetic field device or electropulse generator device applied either over the entire body or specifically on pressure points. This would include but not be limited to P3 machines." However, these devices are currently prohibited only "if administered to an equine while it is competing in an endurance ride". Per 13.3.1
- 3. The use of external magnetic field devices by lay persons is becoming more widespread in equine athletes. There is not reliable scientific literature clarifying the safety, efficacy, or length of time of any effects of this therapy. Available information is predominantly anecdotal. The purported purpose of its use in part is for the management of pain. It is the opinion of the Veterinary Committee that in order

to 1) project a positive image of the treatment of equine athletes at AERC sanctioned rides and 2) remain consistent with the purpose of the drug rule which is to protect

equines from harm and to ensure fair competition and to ensure that horses perform without the influence of any veterinary treatment, the use of these devices should be limited to off site use and not be allowed at the venue of AERC sanctioned rides.

Budget effect/impactUpdating/reprinting of appendix F, Rule 13.Benefit and/or Impact to Membership and/or the AERCThe purpose of AERC Drug Rule13 is in part to ensure fair competition by allowing horses to compete only under their natural ability andwithout the influence of treatment. Prohibiting the use of external magnetic field devices and electropulsegenerating devices at the ride site is consistent with that purpose and will promote fair and safe competition.Impact on AERC OfficeUpdating appendix F, rule 13.Committees consulted and/or affectedRules CommitteeImplementation planTo be implemented immediately.

Supporting materials Rule 13 Supporting approvals Veterinary Committee, Rules Committee

*** AERC Board of Directors MOTION PROPOSAL

Motion Name National Championship 100 Mile ride qualification modification

Proposing Committee National Championship

Date of Motion 4/11/18

Classification of Motion Request (new, change, add, delete, by-law, rule, policy) revise qualification

Proposed Motion (use exact wording)

Alternative to requiring a one day 100 completion to enter the NC 100 mile ride; the horse and rider team may use a pioneer ride as their qualification along with the required mileage. (Pioneer ride consist of at least a 3 day ride with at least 155 miles). The following will be the new qualification requirements for the NC 100 mile ride;

100-mile ride: Horse must have 500 lifetime AERC miles AND Rider must have 500 AERC lifetime miles with at least 1-one day 100 mile ride or a pioneer ride as a team together. The mileage requirements must be met with AERC endurance competitions of 50 miles or more

- no limited distance miles count towards qualification criteria. Alternative qualification for

100 mile ride: Horse/ rider team has completed 1,000 AERC endurance miles together

(rides 50 miles or more only) they are qualified to enter.

Alternative qualification: Rider/Horse team that completed the previous year in their regional overall top 10 standing is qualified for either distance.

Background, analysis and benefit (describe the problem this motion is solving)

Some on the committee felt that people who compete in pioneer rides are very capable of knowing their horse well enough to ride 100 miles at the championship ride. Pioneer riders may be willing to travel longer distances to enter the championship ride if they were qualified to ride in the 100 but wouldn't just to ride 50 miles.

Budget effect/impact (Attach spreadsheet if appropriate) none

Benefit and/or Impact to Membership and/or the AERC Organization

Possibility of higher attendance in the NC ride.

Committees consulted and/or affected National Championship

Implementation plan (Schedule, resources, financial) 2018 National Championship Ride

\$\$\$ AERC Board of Directors

MOTION PROPOSAL

Motion Name: Request for Funding for AERC Research at the 2018 Tevis Ride Proposing Committee: *AERC Research Committee – Jerry R. Gillespie, Chair of Research Committee* Date of Motion: 15 March 2018

Classification of Motion Request (new, change, add, delete, by-law, rule, policy): New Research

Proposed Motion (use exact wording): It is moved that AERC provide funds in the amount of \$4,000 from the AERC Research Fund to continue our studies on dehydration of endurance horses traveling to the 2018 Tevis Ride and during the Ride. (see attached proposal) I am attaching a budget request in which I propose the AERC and the Tevis Foundation share in the cost of the proposed 2018 Tevis study; \$4,000 funded by AERC and \$2,450 funded by Tevis Foundation; TOTAL \$6,450.

Background, analysis and benefit (describe the problem this motion is solving): The proposed Tevis Research will be an extension of the AERC Research at the 2016 Cooley Ranch Ride and the 2017 Virginia City Ride. The results of these studies were report at the 2017 and 2018 AERC Conventions. (more background in the attached Research Proposal) Budget effect/impact (Attach spreadsheet if appropriate): We anticipate no budgetary impact on AERC. The requested funds will come from the AERC Research Fund.

Benefit and/or Impact to Membership and/or the AERC Organization: Of great concern to the Membership and the Organization is the welfare of the endurance horse. Like the earlier studies at Cooley Ranch and Virginia City Rides, the 2018 Tevis Study will focus on a very important ailment in endurance horses, dehydration. Our studies have shown that

horses dehydrate (loose body water) during transport to rides if the journey requires more than 2 hours. The horses do not usually have time to rehydrate before the start of the rides and will continue to dehydrate during the ride in both 50 mile and 100 mile rides. It will be important to investigate the extent of dehydration in the Tevis horses during a 100 mile ride with ambient temperature around 100 degrees F. We expect to collect home-stable body weights and ride-arrival weights to assess the extent of dehydration do to transport to the Tevis venue.

Impact on AERC Office (Work load, budget): Minor

Committees consulted and/or affected: No Other Committees consulted. However the information from these studies should enrich presentations in the Education Committee, Inform members of the Veterinary Committee, and provide guidance to the Ride Managers

Committee	e			
Supporting	g materials (List of any other documents and	d/or spreadsheets): At	tached	
Research	Proposal with budget and budget justification	n.		
Supporting Committee	g approvals (proposing committee, participa e	ting committees) AER	.C Research	
Supportin	g documents regarding Dr. Gillespie's Tev	vis 2018 research mot	tion:	
Budget for	r 2018 Tevis Dehydration Study			
Aki Tanak	va – Scientific & Statistical consultation • 5 h	ours @		
\$600/hr.	s 3.000	ours e		
Jerry Gille	espie - Principal Investigator: 150 hours @ \$	600/hr. (\$90.000)	- NC –	
Martha Gi	illespie – Investigator: !00 hours @ \$400/hr.	(\$40,000)	- NC	
	SUBTOTAL \$ 3,000			
EQUIPMI	ENT AND SUPPLIES:			
Scale back	x-up and Replacement parts for Trancell scal tteries (one) for	e and for Optima scal	e; Rechargeable	
Readouts		\$ 50		
ea.)	Readout wiring to scale (one for each reado \$ 100	ut, @ \$50		
,	Backup force plates-(two@\$300			
ea.)		\$ 600		
,	Recording supplies (secretarial			
supplies)		\$ 500		
	Hay bales for scale			
borders			\$ 400	
	Miscellaneous supplies (small tools, lubrican	nts,		
etc.)	\$ 10	00		
	Trailer and generator			
maintenan	1ce		<u>\$ 100</u>	
	SUBTOTAL			
	<u>\$ 1,850</u>			
тралет	AND VOLUNTEED SUDDODT, Soolo			
TRAVEL transport	AND VOLUNTEERSUITORT. State		\$ 300	
ti alispoi t	Volunteer travel evnenses (10		\$ 500	
volunteers	x)	\$ 1.000		
(oraniceers	Volunteer T-	φ 1 ,000		
shirts			\$ 300	
			<u>+</u>	
	SUBTOTAL			
	<u>\$ 1,600</u>			
GRAND				
TOTAL				
\$ 6,450				

Proposed Budget Request:

AERC Research Fund Tevis Foundation <u>\$ 2,450</u>

TOTAL \$ 6,450

BUDGET JUSTIFICATION: PERSONEL:

The Principal Investigator and Co-Investigator will donate their time to the project. The Statistician will charge the minimum consultation fee required by the University of California, Davis (\$600/hr.). She estimates 5 hours work required to do the statistics on the data from the proposed study.

EQUIPMENT AND SUPPLIES:

We are requesting funds for the maintenance of the scale-transporting equipment and the two scales. We are requesting purchase fund for supplies/parts for the scales, which have proven to be vulnerable to wear and breakdown during studies. It is important to have these back-up parts on hand to quickly repair scales so there is no disruption of the study because of equipment failure.

The investigators are donating the cost of maintenance and operation of the transport vehicles for the two scales.

TRAVEL AND VOLUNTEER SUPPORT:

The supplies for recording data are essential to the study.

The investigators are donating the computers and computer/printer supplies required by the study.

It is important that the Research Volunteers be easily identified with "research T-shirts" during the study. We are requesting funds for the purchase of unique t-shirts.

Volunteers are donating most of their expenses to the project. We are requesting

\$100/volunteer for their expenses during the 4-day (Thursday through Sunday) research project to help offset their costs for food, lodging and transportation.

If the proposed funding streams are not approved by AERC and/or Tevis, or if these organizations do not agree to fund the research in some fashion in full amount requested, the Principal Investigator reserves the right to withdraw from conducting the proposed research at the 2018 Tevis. Please see additional information sent via attachment to this agenda.

{{{ AERC Board of Directors

MOTION PROPOSAL

This Motion Proposal form is to be used in the development, presentation and approval process of submitting motions to the Board.

Motion Name - Two year Membership Drive and completion awards subsidy in the NW Region

Proposing Committee – Connie Caudill and the Membership Committee Date of Motion 4/9/18 Classification of Motion Request (new, change, add, delete, by-law, rule, p

Classification of Motion Request (new, change, add, delete, by-law, rule, policy) -short term policy

Proposed Motion (use exact wording)

1. **AERC** will provide ride managers in the NW Region completion awards that have the AERC brand upon request from the RM. (AERC T-shirts, coffee mugs or equivalent).

****Ride Managers will be responsible for the postage on the mailing of the awards.****

2. The \$15 Nonmembers rider fees in these areas will be waived for a period of 2 years Starting on 6/1/2018 and ending on 6/1/2020.

Background, analysis and benefit (describe the problem this motion is solving)

The states of Oregon and Washington have suffered the loss of many riders, ride managers and rides over the past 2 years. Through this motion, AERC will assist the AERC rides, riders and ride managers in this area. The goal is to encourage people to become ride managers so to have more rides to attend. Also want to expose some of the newer riders in this area to AERC and bring back past members of AERC. The rides have been significantly smaller than in the past.

In 2016, OR and WA had 33 days of endurance rides of which 2 were Pioneer rides. In 2017 these two had 17 days of endurance rides of which 2 were Pioneer rides.

In 2018 these two so far only have 11 ride days on the calendar of which 0 are pioneer rides. This region needs ride managers and rides in order to encourage riders to continue in the

sport and to join AERC. On the bright side, Idaho has remained stable and even has added another pioneer ride since 2016.

Budget effect/impact (Attach spreadsheet if appropriate)

Waiving nonmember fees may impact the budget positively if we can recruit more riders

and members in the area. The AERC branded awards will be a marketing tool for AERC.

Benefit and/or Impact to Membership and/or the AERC Organization

May help stabilize AERC in the NW by building up endurance rides which in the long run will benefit AERC financially.

Impact on AERC Office (Work load, budget)

The Office will need to send notices to the RM's in this region to make them aware of the

program. Should only send completion awards to RM's who make a request. Ride

Managers will pay postage to AERC for mailing the awards. The Office will need to order

and send out completion awards as requested.

Committees consulted and/or affected Finance,

Membership

Implementation plan (Schedule, resources, financial) Start on

6/1/18 and end on 5/31/20 (period of 2 years)

I. Title:

Tracking Body Fluid Losses and Gains in Competing Horses During The 2018 Western States Equestrian Endurance Competition Period.¹

Abstract: Previous studies have shown that horses competing in endurance rides loose body weight (BW) associated with their loss of body fluid and electrolytes, and these losses average nearly 5% of pre-ride body weight, and may be as large as 10% of BW or more in some horses. Under these short-term circumstances, the BW losses are deduced to be losses in body water through sweating, (as much as 100 liters in some endurances horses following a 50-mile competition); although, there is a small amount of weight loss do to the elimination of feces and urine during these long distance competitions. It has been shown that horses also loose BW during transport or competition at higher ambient temperatures. It has been noted by investigators and control veterinarians at endurance rides, that the percentage of body weight loss from start to end of the ride does not relate well to the onset of dehydration-related ailments. This poor relationship may be because all horses do not start at the same hydration

level, i.e., there may be a large variation in the hydration level of horses at the start of the race relative to their homeostatic hydration level. If one assumes that most horses are in a homeostatic hydration level at their home stable, then their BW at rest at home could be used as a baseline for fluid loss/gain during transportation to the ride and during the ride. Variation from the homeostatic BW would represent the absolute hydration level during and following the ride.

We hypothesize that the *absolute hydration* level of endurance horses during an endurance ride would likely affect to their performance in the ride and their subsequence susceptibility to dehydration-related ailments. We will test this hypothesis by collecting/measuring horse body weights at the following sites; a) garnering home-weights of horses prior to their travel to the 2017 Western States Equestrian Endurance Event (WSE), b) upon arrival at the WSE-site (i.e., the Auburn Fair Grounds &/or the Robie Point and/or the Auburn grounds, c) at several

¹ An Endurance Competition Period includes *six phases*; a. during travel to the race site, b. during rest at the race site prior to the competition (usually overnight), c. during each segment of the competition, d. during the rest at the race site after the competition and prior to transport home, e. during transport home, and f. during recovery-rest at home.

veterinary exam points along the WSE, d) at the finish, and e. twelve (12) hours after the horses finish the event, and e) garner data from horses within 24 hours in their home environment. We will correlate these findings to performance and health measures for each horse during the ride.

II. Investigators.

Principal Investigator: Jerry R. Gillespie, DVM, PhD 3700 Feliz Creek Road Hopland, CA 95449 jerrygillespie222@gmail.com 530/867-4394

<u>Collaborators</u>: **Cheryl Langbein, DVM** Santa Rosa, CA Co-Principal Investigator: Martha Gillespie, BS 3700 Feliz Creek Road Hopland, CA 95449 mgillespie222@gmail.com 530/304-7817

Statistical Consultant: Aki Tanaka, DVM, PhD. UCD, Davis, CA

Western States Veterinarians (to be named)

IV. Study Proposal.

- 1. **Hypothesis:** The horses that encounter metabolic ailments during or after an endurance competition have the greatest absolute losses of body fluids and electrolytes as a function of their baseline body fluid level in a stable, low-stress, homeostatic environment, e.g., their home-stable environment.
- 2. OBJECTIVE OF STUDY: To estimate the *absolute* changes in hydration, as measured by body weight changes from their homeostatic hydration (home-stable weight), that occur in individual endurance horses during the six phases of an *Endurance Competition Period (ECP)*; a. during travel to the race site, b. during rest at the race site prior to the competition (usually overnight), c. during each segment of the competition, d. during the rest at the race site after the competition and prior to transport home, e. during transport home, and f. during recovery-rest at home. We will correlate the absolute hydration status of each horse with its; a) veterinary scores at each checkpoint, b) rate of travel in each segment of the competition, c) the placement in the competitions, and d) its veterinary evaluations at each veterinary check point and finishing veterinary score prior to departure from the ride site.

3. Justification, Significance and Literature Review:

Justification and Literature Review: The Principal Investigator for the proposed study has completed studies of the weight loss during transportation to a ride (2016 Cooley Ranch Ride; two 50 mile and two LD competitions and a 100 mile competitions, 2017 Virginia City 100, VC100) and during and following these endurance competitions. The results of the 2016 Cooley Ranch Ride studies have been reported at the Veterinary Continuing Education Course in conjunction with the American Endurance Ride Conference (AERC) 2017 Annual Convention. The results of the Virginia City 100 (VC100) study will be reported at the 2018 AERC Convention (Reno).

To gain a more complete understanding of the dehydration of endurance horses in a 100-mile competition, it is important that we extend our study form the VC100 to another premier 100-mile competition. Ideally, that 100-mile competition will be the 2018 Western States Endurance Ride (Tevis). We are proposing a study that will follow our protocol that has been successful at the Cooley Ranch Rides and the 2017 VC100. Here is a partial list of why the Tevis dehydration study is important:

- 1. Our previous studies have shown the importance of the dehydration during travel to the event. More recently, our 2017 VC100 studies also showed travel-dehydration, however the numbers of participants in this portion of the study were small, and large numbers are needed to confirm travel-dehydration in endurance horses. This is important to better understand what factors during transportation contribute to the loss of body water. It is very important that we have a standard homeostatic home-stable weight for comparing to the weight changes that occur through out the Endurance Competition Period (ECP).
- The temperatures through out the ride period at the VC100 were cool (40 – 50 degrees F.), which is in contrast to the much warmer temperatures expected at the 2018 Tevis, and encounter during our previous studies of dehydration at endurance events.
- 3. The rocky trails at the VC100 substantially limited the speed of the horses and their level of exercise work. Because they travelled slowly many horses were not able to complete the final loop, which limited our data-collection in the last part of the ride.

There have been studies of hydration in horses during most of the six phases of the ECP, but there have been only limited studies that follow the hydration of the same horses through several phases and none that followed changes in all phases. While knowing the relative changes of hydration during each phase for groups of horses is informative, the sequential changes in hydration of individual horses through all the

phases is important if we are to know the full magnitude of dehydration during and following a competition of individual horses. The complete hydration-profile of horses during the ECP might explain why some horses with 10% body weight (BW) loss during competition show severe clinical signs of exhaustion/dehydration following an endurance competitions, and others with the same percentage of weight loss show no clinical signs and place high in the competition (15,26). These horses may have started at very different *actual hydration levels* depending upon their relative losses and gains during the first two phases of the endurance competition period.

For example, if we presume that a horse kept in a low-stress, stable-home environment will have a normal or physiologically sufficient total body hydration level, then based upon previous studies (1-4), we can assume that these horses will become dehydrated during transport (the longer the distance and the higher the ambient temperature in the vehicle the greater the loss of weight and greater dehydration)(1,2,4). Recovery during rest (e.g., overnight rest prior to the start of an endurance competition) with free access to water facilitates rehydration, but the extent of rehydration is variable and may require more than 24 hours (15). There are few studies that have data on these critical times leading up to the start of an endurance competition, and these periods

(transport-period, and pre-ride rest period) are critical in determining the *actual hydration-status* of a horse starting an endurance competition.

Friend et al, and others (1-4) have shown that horses dehydrate during transport, which would be associated with "phase a," in the ECP. Several studies have demonstrated dehydration during endurance competition (5-15).

There is extensive literature (5-15) describing dehydration during endurance competitions of different distances. Horses show a substantial fluid and electrolyte loss during the first segments of endurance competitions (7,8,13,15,24). The rate of dehydration during the later portions of the competition has been shown to slow in most horses (7,8,13,15,24). There are very few studies following the body-hydration profile in endurance horses during the 12 to 24 hours following the competition (15), but in general horses appear to gain body water back slowly requiring more than 24 hours to fully return to pre-competition values (15). The rate of drinking and rehydration has been shown to be greatest in horses administered electrolytes per os, during and following competitions (15,19,26).

In a review paper (Challenges of Endurance Exercise: Hydration and Electrolyte Depletion, Proceedings of the 2010 Kentucky Equine Research Nutrition Conference, 94-111)(15), H. C. Schott thoroughly described the

changes in electrolyte and fluid (body water) occurring in horses during competition in endurance rides of different distances (25 to 100 miles). In brief, several investigators have shown changes in body weight;

packed cell volume; blood protein concentration; and electrolyte changes associated with dehydration in horses during competition (5,6,13,14,17,23). These changes in hydration have been associated with a variety of serious ailments in horses in endurance competitions; such as colic, "exhaustion syndrome," cardiovascular collapse/failure (5-25) although, the pathogeneses of these ailments in individual horses have rarely been confirmed, i.e., no direct relationship between extent of dehydration and these ailments have been confirmed (15). However, there is strong clinical evidence that shows that prompt and aggressive intravenous fluid replacement will often reverse clinical signs of these ailments and prevent progress to severe, debilitating symptoms and/or death (15,23). Most endurance horses appear to be able to tolerate significant body fluid loss during endurance competitions, and it is not unusual for successful horses to loose 10% of their body weight during competition and show no ill effects following the ride (15,26)

There are at least three major metabolic syndromes, which have been associated with dehydration of endurance horses during competition: a) colic, b) exhaustion syndrome, and c) cardiovascular shock/failure (16-

25). The pathogeneses of these syndromes have not been completely documented in the endurance ride environment, and the exact role of body fluid and electrolyte loss during endurance competition in these syndromes has not been proven (15,24). Further, the clinical signs associated with these syndromes appear to overlap in many horses during or following competitions. Clinically, it is recognized that any of these three syndromes, alone, or in combination can cause severe discomfort/pain and not infrequently lead to death of horses if not treated aggressively soon after detection of clinical signs (19,23,24). The clinical signs of these syndromes appear to be frequently reversed with aggressive intravenous administration of 15 or more liters of electrolyte-balanced fluids (15).

Significance: This will be an important extension of our studies of hydration in endurance horses during all phases of an Endurance Competition Period (ECP). Our aim is to estimate of horse's absolute hydration status and correlate it with measures of performance of each horse in the study.

4. Experimental Methods and Design:

a. Venue: 2018 Tevis Endurance Ride

- b. **Horses in the Study:** The Researchers and their volunteers will work with the Tevis Ride Management to recruit rides to participate in the study. We will make every effort to make participation non-invasive to the riders riding enjoyment or success. We anticipate no interference with the normal conduct of the ride by the veterinarians and ride officials.
- c. The core of the study to add to the already existing data on dehydration in endurance horses during competition, it is important that we recruit riders to garner home-stable weights within a week's time prior to departing for the Tevis venue. In addition to the home weights, we will collect weights of horses at the Tevis venue with two very accurate, large-animal, electronic scales. During the transport we propose to provide 5 riders with sensors to record trailer temperatures and humidity. These instruments are very small but record temperature and humidity values every few minutes. The data can be downloaded later from these devices. Readings will be taken no less than every 15 minutes during the conveyance.

d. Protocol for collection of home weights:

The HOME-STABLE WEIGHT and other weights during the ride will be very important to increasing our understanding of dehydration in horses competing in 100 mile endurance rides.

If competing horse's home-stable is more than **one hour travel** to the Tevis base camp (Robie Park) or Auburn Fair Grounds, we will request riders to weigh their horses before departing for the Tevis venue. We will assist riders in identifying certified scales in their neighborhoods. Some general locations are:

- Feed stores
- Veterinary practices
- Facility where large trucks are weighed (gravel, rock, soil retail plants)
- Municipal/county refuse plants (dump, landfill)
- Private ranch scales

Most California Counties have a Department of Weights and Measures, usually in conjunction with their Agriculture Department. Persons in this department can tell riders where he/she can weigh their horses.

When do riders need to collect their horses' home-stable weights? The closer to the time of their departure for the Tevis the better, but weights within a week of their departure will be satisfactory.

It is important that riders weigh their horses on a scale within <u>one hour's travel distance</u> from your stable.

If riders live within 1 hour travel time to the Robie Park or Auburn Fairgrounds we will collect their HOME WEIGHT upon his/her arrival-weight at one of the Tevis staging venues.

Please contact Jerry Gillespie (jerrygillespie222@gmail.com or 530/867-4394) if riders have any questions about the 2018 Dehydration Study.

- e. All horses entered in the Tevis will be included in the study: It is important to note that we will be available to weigh all horses in the 2018 Tevis Competitions regardless if they were able to gather home stable weights.
- **f. Protocol for the study at the Competition site.** The study will be divided into eight sections for weighing horses at the Tevis event site;
 - i. Arrival. We will set up scales several days ahead of the start of the ride and locate them at arrival points, Robie Park and the Auburn Fair Grounds. We will encourage riders to weight their horses as soon as possible after arrival at these Tevis staging areas.
 - **ii.** Pre-ride veterinary check. We have found that if we weigh horses immediately after the veterinary exam at each site, we cause minimal (no) disruption to the flow of the ride.
 - iii. Start weights (within approx.. 8 hrs. of start)
 - iv. Veterinary Check Point weights (specific sites to be determined with consultation with ride management and veterinarians).Ideally, we would have at least 3 vet check weigh stations.
 - v. Finish
 - vi. 12-24 hours after finish
 - **vii.** Departure weights
 - viii. Home stable weights.

g. Logistics of weighing horses at the Tevis venue:

- i. We have found very few (often none) horse refuse to be weighed, and our average weigh-time is less than 2 min/horse.
- **ii.** We will measure and record ambient temperature and humidity at the weigh points every 15 minutes beginning at the start of the ride and until the last horse has finished.
- iii. We will use two large animal, platform electronic-readout scales (Scale A & Scale B). The scales will be calibrated using

the following procedure: a. adjust the internal calibration and check the tare weight; b. determine the individual weight of 5 volunteers using a medical scale; c. the medical scale shall have been previously calibrated using certified weights of 10 and 50 lbs; d. immediately after determining the volunteers weights, we will check the calibration of each large animal scale by measuring the sequential weights of the persons; 1-person, 2 persons, 3 persons, 4 persons and 5 persons previously weighed on the medical scale. The scales will be checked for calibration prior to weighing each horse, throughout the study, using known reference weights. We will repeat the full calibration as needed throughout the study. We will also check accuracy of the scales against none calabration weights certified by Mendocino Department of Agriculture –Weights and Measures.



Figure 1. Horse being weighed at the Virginia City 100.

iv. We have efficient means of loading, moving and unloading scales at the ride site, i.e., we can move scales quickly from one site to the next, with very little set up time at each site.



Figure 2. Research Volunteers at the 2017 Virginia City 100 Ride.



Figure 3. Volunteers unloading scale at weigh site at the 2016 Cooley Ranch Ride.



Figure 4. Transport vehicle and trailer for moving large animal scales at endurance rides.

It is important to plan the logistics of the scale movement with Ride Management, which is essential to the success of the study.

v. Control veterinary data will be collected for all horses in the competition and analyzed. This data will correlated with each horse's BW and speed of travel for each loop for each horse.

h. Data collection and analysis (Data points planned are listed as in Attachment-1, at the end of the proposal):

- **i. Training ride volunteers;** prior to the start of the study and periodically during the course of the ride, we will have principals of the study train each volunteer. The aim is to have every volunteer understand the propose of the study and very specifically, their role in the study.
- **ii.** The horse body weights will be measured and recorded by two trained technicians working at each of the two scale sites throughout the study.
- **iii. Trained volunteers** will do timing of segments of the event. There will be two volunteers at each timing site; one will note the time for each horse and one will record the timing data.
- **iv.** Veterinary exam data will be recorded by a trained scribe assigned to each veterinarian as dictated by the control veterinarian at each veterinary checkpoint. This will include any diagnostic and treatment data that may occur for any of the horses during the ride.
- v. Statistical analysis and statistical correlations will be done by the PI using online statistical programs and as necessary with statistical consultants.

V. Animal Involvement Justification: We have designed this study to be non-invasive for the horses participating in the 2018 Tevis Ride. The only measures not usually collected at sanctioned endurance rides, will be the weighing of horses before, periodically at veterinary checkpoints during the ride, and after the completion of the ride. Our experience and that of several other investigators is that this is an extremely safe procedure and a normal husbandry practice at many equestrian stables. At least two weeks before the scheduled ride and in collaboration with Tevis Management, we are notifying all entered riders in the 2018 Tevis Ride of our intention to conduct the study.

VI. IACUC Approval (from the guidelines of the University of California, San Diego): Submitted by the Principal Investigator, Jerry R. Gillespie, DVM, PhD.

- 1. Jerry Gillespie, DVM, PhD., Principal Investigator, has had experience as a research Principal Investigator at the University of California, Davis and Kansas State University, and is familiar with the PHS Policy, USDA Regulations and UC-Davis policies for the care and use of animals, the provisions of the ILAR Guide to the Care and Use of Laboratory Animals, and all other federal, state, and local laws and regulations governing the use of animals in research. I agree to abide by all of these policies in the conduct of this investigation.
- 2. The Principal and Co-Principal Investigator are experienced equine veterinarians who are also experienced in doing humane research on horses. As Principal Investigator, I understand that emergency veterinary care will be administered to animals showing evidence of pain or illness, in addition to routine veterinary care as prescribed for individual species. I understand that it is my responsibility to provide current and updated emergency contact information for personnel who must be contacted in an animal emergency. I understand that any unanticipated pain or distress must be reported to the veterinarian or his/her designee. There will be a team of veterinarians on the ride site where this research will be conducted, who are responsible to assure the wellbeing of all horses in the ride.
- 3. The Principal Investigator is a diplomat in the American College of Veterinary Anesthesiologist, and as PI assures that I have reviewed carefully all procedures involved in this study and additionally I have consulted a group of veterinarians in the preparation of this proposal. There is NO anticipated pain for the horses due to the research proposed in this study.
- 4. As PI, I declare that all experiments involving live animals will be performed under my supervision or that of another qualified biomedical scientist listed on this protocol.
- 5. As PI, I certify that NO painful procedures are planned in conjunction with this investigation, and NO anesthetic procedures are planned as part of this research.
- 6. As the overseer of this research, I certify that I have attended the Mandatory Orientation to Research at the UC-Davis and Kansas State University.
- 7. I understand that the use of hazardous agents in animals may only be initiated after approval from EH&S.
- 8. I certify that all personnel on this protocol will be made aware of the hazards involving the use of live animals and tissues.
- 9. I understand that I must submit an amendment for any proposed changes to this protocol and wait for IACUC approval before beginning the work.
- 10. I understand that should I use the project described in this application as a basis for a proposal for funding (either extramural or intramural), it is my responsibility to ensure that the description of animal use in such funding proposals are identical in principle to that contained in this application.
- 11. I understand it is the responsibility of the Principal Investigator to ensure the safe and ethical conduct of all research conducted under this protocol, and to

assure that all research is carried out following federal, state, and local policies governing animal research.

- 12. I certify that I will maintain complete, up-to-date and accessible records of procedures on animals as required by policy and regulation.
- 13. I declare that the information provided in the accompanying protocol is accurate to the best of my knowledge.

VII. Recombinant DNA/Biohazards (no page limit): NONE

VIII. Facilities and Equipment (one-page limit): The research group has a tested electronic, large animal scale, and a trailer to move the trailer from one race site to another or to sites within a ride. We are requesting funds for a second scale, necessary for the conduct of this study. Both scales will be available for future AERC studies.

X. Proposed Budget:

PERSONNEL COSTS:

Volunteers and researchers support			- 0 –	
Statistical consultant:		9	\$2400	
	SUBTOTAL			\$2400
SUPPLIES & EQUIPMENT:				
Equipment purchases:		- 0 -		
Scale Maintenance:		\$1000		
Hay bales for border for scales:		\$ 250		
	SUBTOTAL			\$1250
OTHER:				
Food & drink for volunteers (4 days)		\$1000		
T-shirts for 30 volunteers		\$ 750		
	SUBTOTAL			\$1750
	GRAND TOTA	AL		<u>\$5400</u>

XI. BUDGET JUSTIFICATION:

PERSONNEL COSTS: The core research group are volunteers. The Investigators are giving their time and personal expenses related to the year-long research effort at no cost to the Project. The on site volunteers are providing their time and most of their expenses in support of the project. The only costs are those of the fee required by the statistical consultant. She has no choice as a member of the University of California, Davis , faculty but to charge a standard fee for her services to the Project.

SUPPLIES & EQUIPMENT: The equipment required for the project is on hand and in good repair. It is being provided by the Investigator and the AERC Research Committee. Our experience is that there will be some needed repair during the conduct of the Project, and we will attempt to anticipate these repairs by having needed parts on hand for the scales and transport equipment. The hay bales are

required to line the edges of the two scales to assure safety of the horses during weighing.

OTHER: These expenses are to support the approximately 30 volunteers who will be assisting in the Project for a total of four consecutive days.

XII. SOURCE OF FUNDS: The Principal Investigator is taking responsibility for raising funds for the project. Potential sources of funds:

Western States Endurance Ride Foundation\$100	0
AERC Research Fund\$300	00
Go-Fund-Me fund raising\$200)0
Other sources \$1000)

XIII. Cited References:

A. Transportation dehydration:

- Friend TH. Dehydration, stress, and water consumption of horses during long-distance commercial transport. J. Anim. Sci. 2000; 78: 2568-2580.
- 2. Friend, TH, Martin, TM, Householder, DD, and Bushong, DM. Stress responses of horses during a long period of transport in a commercial truck. *J. Am. Med. Assoc.* 1998; 212:838 844.

3. Foss, MA. And Lindner, A. Effects of trailer transport duration on body weight and blood biochemical variables of horses. *Pferdeheikunde*. 1996;12:435-437.

4. Mars, LA. Kiesling, HE. Ross, TT. Armstrong, JB. And Murray, L. Water acceptance and intake in horses under shipping stress. *J. Eq. Vet. Sci.* 1992;12:17-20.

B. Dehydration (weight loss) during endurance competitions:

- Andrews, FM, Ralston, SL. Sommardahl, CS. Maykuth, PL. Green, EM. White, SL. Williamson, LH. Holmes, CA. and Geiser, DR. Weight, water, and cation losses in horses competing in a three-day event. J. Am. Vet. Med. Assoc. 1994;205:721-724.
- Barton, MH. Williamson, L. Jacks, S. and Norton, N. Body weight, hematologic findings and serum and plasma biochemical findings of horses competing in a 48-, 83- or 159 km endurance ride under similar terrain and weather conditions. *Am. J. Vet. Res.* 2003;64:746-753.

- Carlson, GP. Thermoregulation and fluid balance in the exercising horse. In Snow DH, Persson, SGB. Rose, RJ.(Eds.): *Equine Exercise Physiology*. Cambridge, Granta Editions, 1983;291.
- 8. Carlson, GP. Haematology and body fluids in the equine athlete: A review, In:*Equine Exercise Physiology*, Eds. J.R. Gillespie and N.E. Robinson, ICEEP Publications, Davis, California. 1985;393-425.
- Eker, GL. And Lindinger, MI. Efects of terrain, speed temperature and distance on water and ion losses. *Equine Vet. J. Suppl.* 1995;18:298-305.
- 10. Hodgson, DR. McCutchen, LJ. Byrd, SK. et al. Dissipation of metabolic heat in the horse during exercise. J. Appl. Physiol.1993;74:1161.
- 11. Lawrence, L. Jackson, S. Kline, K. Moser, L. Powell, D. and Biel, M. Observations on body weight and condition of horses in a 150 mile endurance ride. *J. Equine Vet. Sci.* 1992; 12:320-324.
 12. Sampieri, F. Schott, HC. Hinchcliff, KW. Geor, RJ. And Jose-Cunilleras, E. Effects of sodium chloride and potassium chloride supplementation on endurance horses competing in 80-km rides. *Equine Vet. J. Suppl.* 2006; 36:19-26.
- Schott, HC, McGlade, KS, Molander, HA, Leroux, AJ and Hines, MT. Body weight, fluid, electrolyte and hormonal changes in horses competing in 50- and 100-mile endurance rides. *Am J. vet. Res.* 1997;58:303-309.
- 14. Schott, HC. Marlin, DJ. Geor, RJ. Holbrook, RC. Deaton, CM. Vincent, T. Dacre, K. Schroter, RC, Jose-Cunilleras, D. and Cornelisse, CJ. Changes in selected physiological and laboratory measurements in elite horses competing in a 160 km endurance ride. *Equine Vet. J., Suppl.* 2006;36:37-42.
- 15. Schott, HC. Challenges of Endurance Exercise: Hydration and electrolyte depletion. 17th Proc Kentucky Equine Research Nutrition Conference, Feeding and Veterinary Management of the Sport Horse, Lexington, KY. 2010;94-111.

C. Dehydration metabolic diseases:

- 16. Carlson, GP. Medical problems associated with protracted heat and work stress in horses. *Compend. Contin. Educ Pract. Vet.* 1985; 7: (suppl);S542.
- Carlson, GP. Ocen, PO. and Harrold, D. Clinicopathologic alterations in normal and exhausted endurance horses. *Teriogeno*. 6: 1976;6:93-104.
- 18. Fowler, ME. The exhausted horse syndrome. *In Proc.* 25th Annu. Meet. Am. Assoc. Equine Pract. 1979:25:479-482.
- Sosa Leon, A. Davie, AJ. Hodgson, DR, Evans, DL, and Rose, RJ. Effects of oral fluid and cardiorespiratory and metabolic responses to prolonged exercise. *Equine Vet J. Suppl.* 18: 1995; 274-278.

- Geor, RJ and McCutcheon, LJ. Thermoregulation and clinical disorders associated with exercise and heat stress. *Comp. Cont. Educ. Pract. Vet.* 1996;18:4336-444.
- Geor, RJ. And McCutcheon, LJ. Hydration effects on physiological strain of horses during exercise-heat stress. J. Appl. Physiol. 1998;84:2042-2051.
- 22. Foreman, JH. The exhausted horse syndrome. *Vet. Clin. N. Am.: Equine Pract.* 1998;14:205-219.
- 23. Fielding, CL. Magdesian, G. Rhodes, DM. Meier, CA. and Higgins, JC. Clinical and biochemical abnormalities in endurance horses eliminated from competition for medical complications and requiring emergency medical treatment: 30 cases (2005-2006). J. Vet. Emergency and Critical Care.2009:19:473-478.
- Flaminio, MJ. Rush, BR. Fluid and electrolyte balance in endurance horses. *Vet Clinics of North America: Equine Practice*. 1998.14:147-159.
- 25. Persson S. On blood volume and working capacity in horses. *Acta Vet Scand Suppl.* 1976; 19:1.

D. Tolerance of horses to dehydration and Other:

- 26. Meyer, H. and Coenen, M. Influence of exercise on the water and electrolyte content of the alimentary tract. *In Proc.* 11th Equine Nutr. Physiol. Symp. 1989;11:3-7.
- 27. Gillespie, JR. Kerr, J. Adamson, B. and Ellery, J. Adding to Our Understanding of Cardiac Recovery Index at Endurance Rides. *Endurance News*. 2015. August.

XIV. Prior AERC Support during the last three years: \$16,000

XV. Biographical Data:

- A. Principal Investigator:
 - 1. Jerry R. Gillespie, DVM, PhD.
 - 2. Role in project: Oversee project and be involved in all aspects of planning and conducting the study. Will be responsible for analyzing the data and overseeing publication of results.
 - **3.** Current position: UCD professor, RETIRED (2007), Chair of AERC Research Committee
 - 4. Degrees: BS & DVM, Oklahoma State University: PhD, University of California Davis.
 - 5. Previous positions:
- 2002 2007 Director, Western Institute for Food Safety and Security, University of California, Davis

2000-2002	Executive Director, Joint Institute for Food Safety Research, Departments of Agriculture and Health and Human Services, Washington, D.C.
1994-2000	Director, Food Animal Health and Management Center, College of Veterinary Medicine, Kansas State University, Manhattan, KS
1985-1994	Professor and Head, Department of Clinical Sciences, College of Veterinary Medicine, Kansas State University, Manhattan, KS
1985-1994	Head of KSU-Veterinary Medical Teaching Hospital, College of Veterinary Medicine, Kansas State University, Manhattan, KS
1976-1985	Professor of Physiology, Department of Physiological Sciences, School of Veterinary Medicine and Human Physiology, School of Medicine, University of California, Davis, CA
1971-1973	Associate Dean of Student Services, School of Veterinary Medicine, University of California, Davis, CA
1971-1973	Associate Professor and Co-Chairman of Physiological Sciences, School of Veterinary Medicine, University of California, Davis, CA
1969-1976	Associate Professor of Physiology, Department of Physiological Sciences, School of Veterinary Medicine and Human Physiology, School of Medicine, University of California, Davis, CA
1968-1969	Associate Professor of Clinical Sciences, School of Veterinary Medicine, University of California, Davis, CA
1966-1968	Assistant Professor of Clinical Sciences, School of Veterinary Medicine, University of California, Davis, CA

Sabbatical Leaves

1980-1981	Sabbatical Leave, Laboratoire de Physiologie Respiratoire, Centre
	National de la Recherche Scientifique, Strasbourg, France
1973-1974	Sabbatical Leave, Department of Physiology, Harvard School of Public Health, Boston, MA

Post-Doctoral Appointments

1998	Agribusiness Seminar, Graduate School of Business
	Administration, Harvard University, January 1998
1989	Management Development Program, Harvard University,
	Cambridge, MA [Served on Advisory Board for Program (1989-
	1994)].
1965-1966	Post-doctoral Research Fellow, Cardiovascular Research
	Institute, University of California Medical Center, San
	Francisco, CA
1962-1965	Assistant Specialist, Department of Anatomy, University of
	California, Davis, CA

Veterinary Practice

1961-1962	General Ve	eterinary P	ractice,	Gothenburg	Animal Hosp	pital,
Gothenburg, I	Nebraska					

6. Major appointment and honors (partial list):

2002	Outstanding Alumni Achievement Award, School of Veterinary Medicine, University of California, Davis
2002	Special Service Citation – Secretary US Department of Health and Humane Services
2002	Special Service Citation-Commissioner of Food and Drug Administration
2001 Medicine	Chair of the National Academies of Practice – Veterinary
2001 Practice	Member of Administrative Council – National Academies of
1996	Selected as the recipient of the Faculty Achievement Award from the American Association of Veterinary Clinicians
1992-2002	Chair of Federation Equestre Internationale (FEI) Endurance Committee (six member international committee)
1992-2002	United States Equestrian Team, Committee on Endurance Competition
1992-2002	American Horse Show Association, Inc. Endurance Committee (The National Equestrian Federation of the United States)
1992-2002	Elected as Distinguished Practitioner in the National Academies of Practice in Veterinary Medicine

1992-1996	Chair, Planning Committee – FEI World Championship Endurance Ride, Kansas, USA.				
1989-2002	Editor-in-Chief, The Equine Athlete				
1989	Harvard Management Development Program, Cambridge, MA. Elected Class Representative and Member of Alumni Board.				
1988-2002	Harry M. Zweig Memorial Fund, Equine Research Committee, Cornell University, Ithaca, NY				
1988 – 2002	Member Board of Directors, American Horse Shows Association (renamed USA Equestrian Federation, 2001)				
1987-2002	Federation Equestre Internationale (FEI), International Certified Judge and Veterinarian				
1986. 1990	Life Sciences Committee, Council for International Exchange of Scholars, Washington, D.C.				
1986-1989	American Endurance Ride Conference Liaison Officer for American Association of Equine Practitioners				
1984-1985	President, Association for Equine Sports Medicine				
1984-85	President, Comparative Respiratory Society				
1982-2002	Member, International Committee for the International Conference on Equine Exercise Physiology				
1982-88	Chairman, American Association of Equine Practitioner's Committee on Equine Sports Medicine				
1982-87	Chairman, National Planning Committee for the 2 nd International Conference on Equine Exercise Physiology, San Diego, CA 1986				
1982-83	President-elect and Program Chairman, Comparative Respiratory Society				
1982-83	Chairman, Association for Equine Sports Medicine				
1982	West German National Equestrian Federation Outstanding Leadership Award 1982 in acknowledgment for contributions to the sport of equine endurance riding				

1980-81	Receipt of a Fulbright-Hayes Award
1980-81	National Institutes of Health - Senior International Fellow
1979-82	Representative Councilor American Thoracic Society

7. Selected peer-reviewed publications:

- 1998 Rush, B.L., E.S. Raub, W.S Rhoads, J.B.F. Flaminio, C.J. Matson, J.E. Hakala, J.R. Gillespie. Pulmonary Function in Horses with Recurrent Airway Obstruction After Aerosol and Parenteral Administration of Beclomethasone Dipropionate and Dexamethasone, Respectively. *American Journal of Veterinary Research* 59(8): 1039-1043, 1998
- Wagner, P.D., J.R. Gillespie, G.L. Landgren, M.R. Fedde, B.W. Jones, R.M. DeBowes, R.L. Pieschl and H.H. Erickson. Mechanism of Exercise-Induced Hypoxemia in the Horse. *Journal of Applied Physiology* 66(3):1227-1233, 1989
- 1989 Dunlop, C.I., D.S. Hodgson, J.W. Watson, J.R. Gillespie, E.P. Steffey and A.C. Jackson. High frequency jet ventilation in horses: an experimental study. *Equine Veterinary Journal* (1989) 21(5)342-346
- 1988 Landgren, G.L. and J.R. Gillespie. How Horses Breathe During High-Speed Galloping, 35th Annual Convention Proceedings, American Association of Equine Practitioners, Boston, MA, 1989:381-384
- 1988 Gillespie, J.R. The Respiratory System: Function and Functional Limits of the Equine Athlete. *Proceedings of the Thirty-Third Annual Convention of the AAEP*, New Orleans, LA, 1987:251-260
- 1987 Landgren, G.L., J.R. Gillespie, M.R. Fedde, B.W. Jones, P.L. Pieschl and P.D. Wagner. O2 Transport in the Horse During Rest and Exercise. Edited by Norberto C. Gonzalez and M. Roger Fedde. Plenum Publishing Corporation
- 1975 Gillespie, J.R. Postnatal lung growth and function in the foal. Journal of Reproduction and Fertility, Supplement 23
- 1974 Gillespie, J.R. The role of the respiratory system during exertion. *Journal of the South African Veterinary Association* 45(4):305-309
- 1973 Steffey, E.P. and J.R. Gillespie. Respiration and general anesthesia. *Veterinary Clinics of North America* 3(1):45-56

- 1973 Cross, C.E., H. Gong, Jr., C.J. Kurpershoek, J.R. Gillespie and R.W. Hyde. Alterations in distribution of blood flow to the lung's diffusion surfaces during exercise. *Journal of Clinical Investigation* 52:414-421
- 1972 Nowell, J.A., J.R. Gillespie and W.S. Tyler. Scanning electron microscopy of chronic pulmonary emphysema: A study of the equine model. Proceedings of the 4th Annual Scanning Electron Microscope Symposium 297-304, IIT Research Institute, Chicago, IL. *Journal of the American Veterinary Medical Association* 16(1):57-60
- 1971 Tyler, W.S., J.R. Gillespie and J.A. Nowell. Modern functional morphology of the equine lung. *Equine Veterinary Journal* 3:84-94
- 1969 Gillespie, J.R., W.S. Tyler and L.W. Hall. Cardiopulmonary dysfunction in anesthetized, laterally recumbent horses. *American Journal of Veterinary Research* 30(1):61-72
- 1968 Eberly, V.E., J.R. Gillespie, W.S. Tyler and M.E. Fowler. Cardiovascular values in the horse during halothane anesthesia. *American Journal of Veterinary Research* 29:305-314
- 1968 Burgess, J.H., J.R. Gillespie, P.D. Graf and J.A. Nadal. Effect of pulmonary vascular pressures on single-breath CO diffusing capacity in dogs. *Journal of Applied Physiology* 24:692-696
- 1968Gillespie, J.R.Large animal restraint and surgical chute.Journal of theAmerican Veterinary Medical Association 152:634-637
- 1968 Hall, L.W., J.R. Gillespie and W.S. Tyler. Alveolar-arterial oxygen tension differences in anesthetized horses. *British Journal of Anaesthesia* 40:560-568
- 1967 Gillespie, J.R. and W.S. Tyler. Quantitative electron microscopy of the interalveolar septa of the horse lung. *American Review of Resp. Disease* 95:477-483
- 1967 Gillespie, J.R. and W.S. Tyler. Capillary and cellular changes in the alveolar walls of emphysematous horse lungs. *American Review of Resp. Disease* 95:484-490
- 1966 Gillespie, J.R., W.S. Tyler and V.E. Eberly. Pulmonary ventilation and resistance in emphysematous and control horses. *Journal of Applied Physiology* 21:416-422
- 1966 Eberly, V.E., W.S. Tyler and J.R. Gillespie. Cardiovascular parameters in emphysematous and control horses. *Journal of Applied Physiology* 21:883-889

- 1966 Gillespie, J.R. Factors affecting the pulmonary mechanics of the normal and emphysematous horse. Proceedings, Symposium on Acute Bovine Pulmonary Emphysema, University of Wyoming, Laramie, WY
- 1964 Gillespie, J.R., W.S. Tyler and V.E. Eberly. Blood pH2 and CO2 tensions in exercised, control and emphysematous horses. *American Journal of Physiology* 207:1067-1072
- 1964 Eberly, V.E., J.R. Gillespie and W.S. Tyler. Cardiovascular parameters in the Thoroughbred horse. *American Journal of Veterinary Research* 25:1712-1716

2. Books and Chapters:

- 1996 Flaminio, J.B.F., Gaughan, E.M., Gillespie, J.R. Exercise Intolerance in Endurance Horses. The Vet Clin North Am: Equine Practice. Vol. 12, No. 3, pg 565-580.
- 1992 Gillespie, J.R. The Respiratory System: Function and Functional Limits of the Equine Athlete, Volume II, pp 281-291. In: <u>Proceedings of the 9th International</u> <u>Conference of Racing Analysts and Veterinarians</u>, New Orleans, LA
- 1992 Gillespie, J.R. For the Equine Athlete, Running and Breathing are not Trivial Matters, pp 1-6. In: <u>Proceedings of the Focus on Endurance '93</u>, Equine Research Centre, University of Guelph, Guelph, Ontario, Canada
- 1991 Landgren, G.L., J.R. Gillespie and D.E. Leith. No Ventilatory Response to CO₂ in Thoroughbreds Galloping at 14 m s⁻¹. In: <u>Equine Exercise Physiology 3</u>. S.G.B. Persson, A. Lindholm and L.B. Jeffcott (Eds.) ICEEP Publications, Uppsala, Sweden
- 1991 Beaunoyer, D.E., S.G. Jackson, J.R. Gillespie and J.P. Baker. The Effect of Monosodium Glutemate Infusion on Time to Fatigue. In: <u>Equine Exercise Physiology 3</u>. S.G.B. Persson, A. Lindholm and L.B. Jeffcott (Eds.) ICEEP Publications, Uppsala, Sweden
- Gillespie, J.R., G.L. Landgren and D.E. Leith. 1:2 Ratio of Breathing to Stride Frequencies in a Galloping Horse Breathing 6% CO2. In: Equine Exercise Physiology 3.
 S.G.B. Persson, A. Lindholm and L.B. Jeffcott (Eds.) ICEEP Publications, Uppsala, Sweden
- 1987 Dahl, L-G., J.R. Gillespie, P. Kallings, S.G.B. Persson and J.R. Thornton. Effects of a cold environment on exercise tolerance in the horse. A review. Chapter

in <u>Equine Exercise Physiology 2</u>, J.R. Gillespie and N.E. Robinson (Eds.) ICEEP Publications, Davis, CA

- 1987 Gillespie, J.R., N.E. Robinson, Editors, <u>Equine Exercise Physiology 2</u>, ICEEP Publications, Davis, CA
 - 1984 Gillespie, J.R. and T.C. Amis. Respiratory physiology of the surgical patient. Chapter in <u>The Practice of Large Animal Surgery</u>. W.B. Saunders, Philadelphia, PA, Vol 1:356
- 1983 Gillespie, J.R. and J.R. Pascoe. Respiratory function in the exercising horse: A review. Chapter in <u>Equine Exercise Physiology</u>, D.H. Snow, S.G.B. Persson and R.J. Rose (Eds.) Granta Editions, Cambridge, England
- 1980 Gillespie, J.R., J.D. Berry, L.L. White and P. Lindsay. Effects on pulmonary function of low-level nitrogen dioxide exposure. Chapter 15, pp. 231-242. Ann Arbor, MI
 - 1980 Gillespie, J.R. <u>Control of breathing</u>. Scientific Foundations of Veterinary Medicine, Section III: Metabolism. Heinemann Medical Books Limited.
- 1976 Gillespie, J.R. Pulmonary physiology, 4 chapters (13. Introduction to respiration, 14. Internal respiration, 15. External Respiration, 16. Control of ventilation), pp.335-398.
 In: Veterinary Physiology, J.W. Phillis (Ed.), Scientechnica, Bristol, England
- 1976 Gillespie, J.R. Pathophysiologic classification and a diagnostic system for respiratory diseases, p. 266-267. In: <u>1976 Scientific Proceedings</u>, Anaheim, CA. May 16-21, 1976
- 1976 Wilson, A.F., R.D. Fairshter, J.R. Gillespie and J. Hackney. Evaluation of abnormal lung function. <u>Annual Review of Pharmacology and Toxicology</u> 16:465-486, H.W. Elliott (Editor)
- 1975 Robinson, N.E. and J.R. Gillespie. Physiology of the respiratory system, Chapter 17, 2:527-543, In: <u>Textbook of Veterinary Internal Medicine</u>; <u>Diseases of the Dog</u> and Cat, S.J. Ettinger (Ed.)
- 1975 A Review of hematologic response to exercise, Exercise, pp. 435-443. In: Proceedings First International Symposium on Equine Hematology, May 28-30, 1975, American Association of Equine Practitioners
- Gillespie, J.R., A. Kaufman, J. Steere and L. White. Arterial blood gases and pH during long distance running in the horse, Exercise, pp.450-468. In: <u>Proceedings First International Symposium on Equine Hematology, May 28-30, 1975</u>, American Association of Equine Practitioners

- Gillespie, J.R., O.W. Schalm and W.S. Tyler. Hematologic response of the horse to general anesthesia: A review and new date, General Anesthesia, pp.490496. In: <u>Proceedings First International Symposium on Equine Hematology, May 28-30, 1975</u>, American Association of Equine Practitioners
- 1974 Gillespie, J.R. and W.S. Tyler. Chronic obstructive lung disease in horses, pp.223-227. In: <u>Research Animals in Medicine</u>. L. Harmison, (Ed.)
- 1973 Gillespie, J.R. Heaves. Chapter in <u>Merck Veterinary Manual</u>, Merck & Co., Inc., Rahway, NJ, pp.889-890
- 1971 Gillespie, J.R. and N.E. Robinson. Clinical respiratory physiology, p. 165-173.
 In: E. Kirk and W.B. Saunders, (Eds.), <u>Current Veterinary Therapy</u>, Philadelphia (revised 1974)
- 1969 Gillespie, J.R., and W.S. Tyler. Chronic alveolar emphysema in the horse. In: <u>Advances in Veterinary Science</u>, Academic Press, Inc., New York and London 13:59-100
- 1969 Tyler, W.S. and J.R. Gillespie. Structural and functional alterations in horses with emphysema, p.38-51. In: <u>Animal Models for Biomedical Research</u>, Publication 1736, National Academy of Sciences
- 1965 Gillespie, J.R. The effect of enlarged airspaces on the function and structure of horse lungs. Ph.D. Thesis in Comparative Pathology
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