



Grayson-Jockey Club Research Foundation

Funding Research Since 1940, To Build Better Equine Health



2022 Annual Report

“Grayson Jockey Club Research Foundation has much to be proud of and one of the most impressive aspects is how efficiently new techniques, new treatments and even new vaccines are applied to routine clinical use.

These projects save the lives of horses of all breeds and many are used on an almost daily basis in our practice. None of this would be possible without the combined efforts of owners, trainers and horse lovers who help fund these projects and equally important the researchers from veterinary and human medical colleges and universities who write the grants, complete the projects and publish the results.”

Stephen M. Reed

Rood & Riddle Equine Hospital

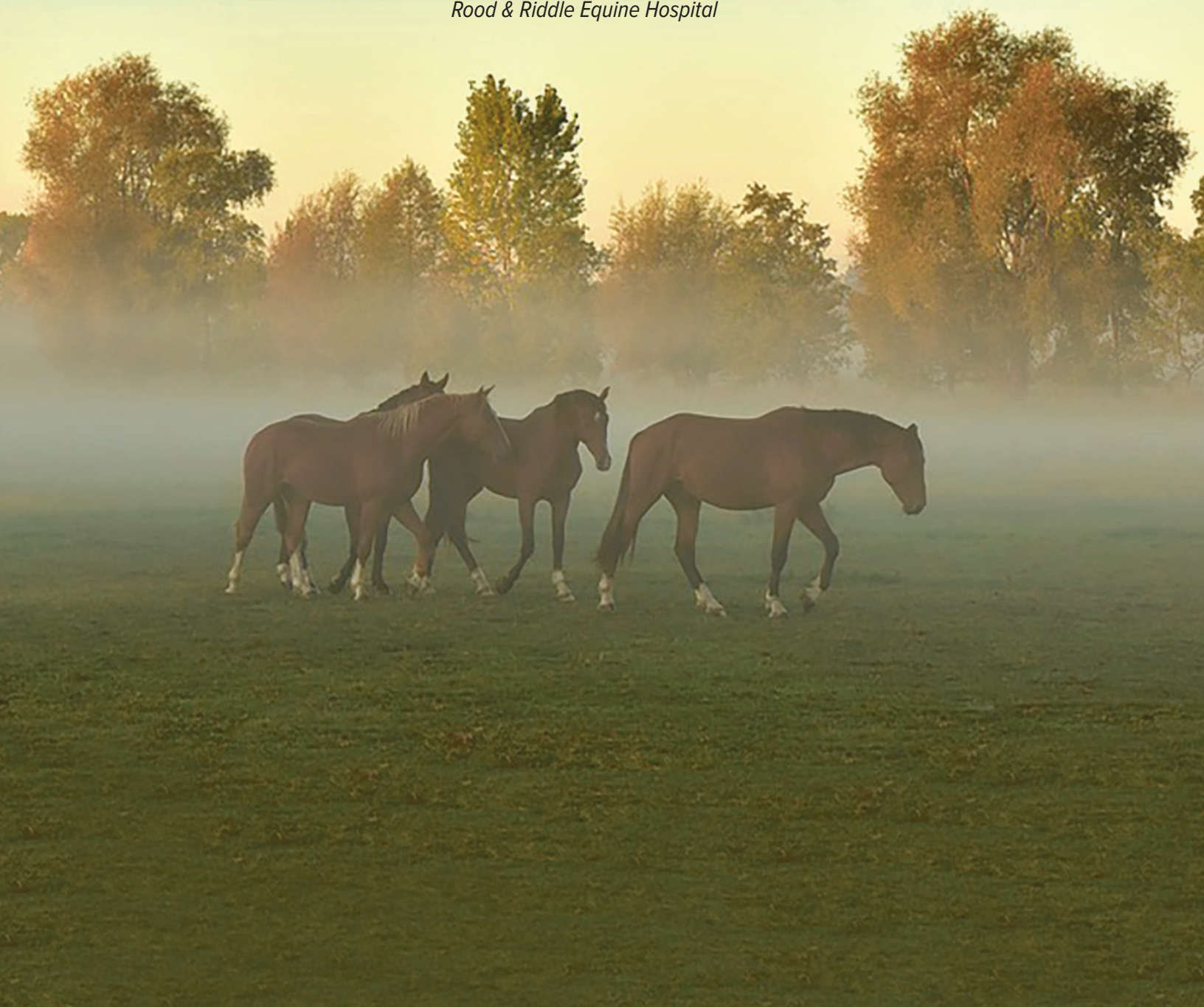


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DIRECTORS & OFFICERS

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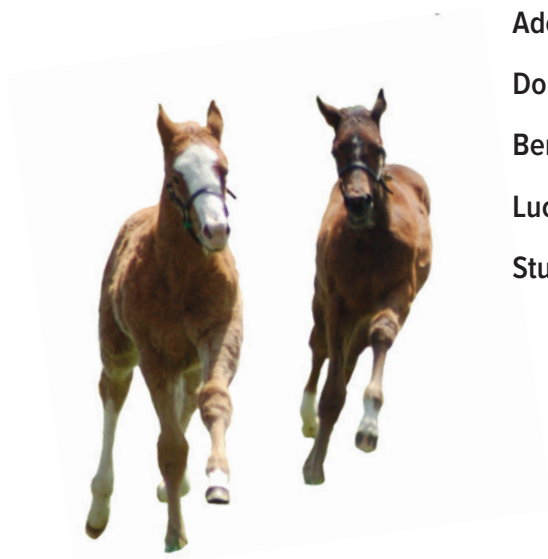
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Johnny Mac Smith, DVM
A. Gary Lavin Chair

HISTORY

The original Grayson Foundation was formed in 1940 and named in honor of Admiral Cary Grayson who was the personal physician to President Woodrow Wilson and the chairman of the American Red Cross, as well as a horseman himself. The foundation's first grant was made as a \$1,000 donation to the University of Pennsylvania School of Veterinary Medicine to continue its work on periodic ophthalmia.

From the beginning, the aim was to support research at existing institutions through funding rather than carry out the research itself. William Woodward Sr, chairman of The Jockey Club, stated that the formation of the foundation is "the result of the conviction of a large number of persons devoted to the raising and breeding of horses that there is a positive need for further research in veterinary medicine and in the breeding, raising, and handling of horses." In 1940, the horse and mule were still deeply involved in military defense, and the scope of the foundation's efforts went far beyond the Thoroughbred, to all breeds, although the impetus came from leaders in Thoroughbred racing. Over nearly a half century, the Grayson Foundation operated as a separate entity, fulfilling the purposes of its founders despite constant limitations on available funding.

The Jockey Club created a research foundation in 1984, and five years later this was merged with the Grayson Foundation, to be known since then as the Grayson-Jockey Club Research Foundation, Inc. (GJCRF, the Foundation). The merger has been fruitful in the funding of scientific advancements and the fundamental health of horses and in recent years it has been able to disperse more than \$1 million annually in grants.

Over the years there have been several major donors who were instrumental in enhancing the success of the foundation in fulfilling its mission. In 1991, the Robert J. Kleberg and Helen C. Kleberg Foundation donated \$2 million to Grayson-Jockey Club Research Foundation. Mr. Kleberg had studied genetics and as head of King Ranch, developed the Santa Gertrudis breed of cattle. He also was instrumental in development of the American Quarter Horse and the list of many excellent Thoroughbreds he bred includes 1946 Triple Crown winner Assault.

In 1993, the foundation received another major gift when Paul Mellon donated the \$1 million bonus that his Kentucky Derby winner Sea Hero won in the Chrysler Triple Crown Challenge. Mr. Mellon requested that double that amount be raised in response, and this endowment drive was successfully concluded during the 1995/96 fiscal year. The \$1 million was double-matched, as members of The Jockey Club and other contributors donated more than \$2 million. Mellon passed away in 1999, leaving \$2.5 million to the foundation's endowment. In 2000, the foundation created the Rokeby Circle as the designation for those who contribute \$10,000 or more in a given year. Rokeby is the name of Mr. Mellon's beloved Virginia estate.

In 2004, the Oxley Challenge was initiated. Under the direction of foundation board member John C. Oxley, his family's Oxley foundation pledged \$1 million over four years contingent on the foundation's raising a like amount from new income sources. The Foundation was successful in that match, and so received \$250,000 from the Oxley Foundation in each of four years.

In collaboration with The Jockey Club, the foundation coordinated and underwrote the first Welfare and Safety of the Racehorse Summit (summit) in 2006. That meeting, and a second gathering of industry experts in 2008, generated a number of recommendations that the industry has embraced to a large extent. The Jockey Club's Thoroughbred Safety Committee endorsed recommendations of the summit, and the National Thoroughbred Racing Association's Safety and Integrity Alliance program is based in part on those recommendations. Also, the Equine Injury Database, which is designed to provide the industry much needed epidemiological analysis of trends, aimed at improving injury rates nationally, evolved from the summit. All additional summits have been held at Keeneland, in 2010, 2012, 2014, 2015, 2016, 2018 and 2022, (see page 6 for details.) In 2020 the summit was held as a webinar.

Grayson reached a milestone for funding more than \$1 million in research for the first time in 2007, and 2022 is the eighth straight year that more than \$1 million has been approved.

RESEARCH HIGHLIGHTS SINCE 1940

First Equine Influenza Vaccine
Virus Abortion Vaccine
Equine Infectious Anemia Study
Development Of The Field Of Biomechanics
Defined The Cause Of Colitis X
Control Of The Shaker Foal Syndrome
Defined Nature Of Wobbler Syndrome
Equine Viral Arteritis Vaccine
Study Of Risk Of Injury From Front Toe Grabs
Equine Protozoal Myeloencephalitis Study
Gene Therapy For Equine Arthritis
Cause And Diagnosis Of Placentitis In Mares
New Vaccination Approaches Against R. Equi Pneumonia
Muscular Factors Influencing Airway Size In Exercising

Dietary Implications For Colon Impaction
Equine Viral Arteritis Vaccine
New Protocols For Alleviating Buck Shins
Study Of Bacteria Associated With MRLS
Studies Of Immunity To EPM
Developing "Physiological Trim" Promoting Healthy Hooves
Laminitis Study Leading To Cryotherapy Treatment Protocols
Initiated Primary Work On Piroplasmosis
EIPH Study
PET Scan Project
Messenger RNA Molecule to Treat Rhodococcus Equi
Bisphosphonate Research
Treatment Regimens for EHM & Development of Outbreak Protocols
Extensive Rhodococcus Studies, Prevention, Treatment & Vaccine Efforts

YEAR IN REVIEW

Research

The foundation was proud to mark the eighth straight year to fund more than \$1 million in research in 2022 by funding \$1,661,180 for 15 new projects and 10 continuing projects at 16 universities, as well as three career development awards. The 2022 slate of research brings Grayson's totals since 1940 to more than \$38.2 million to underwrite more than 416 projects at 45 universities.

The foundation continues to receive reports and video updates from researchers funded by Grayson. An example of such a video came from Dr. Andrew Van Eps, researcher at the University of Pennsylvania on his project entitled, *"Sirolimus for the control of insulin dysregulation."*



His study is to determine if sirolimus will be an effective and safe therapy for controlling insulin dysregulation and preventing endocrinopathic laminitis in horses. This update and other videos are available at grayson-jockeyclub.org.

After the March board meeting, some attending directors saw the results of the Grayson-funded research at Rood and Riddle Equine Hospital where they watched the PET (positron emission



tomography) scanner in action.

Grayson helped fund Dr. Mathieu Spriet at the University of California-Davis in developing this technology to evaluate fetlocks, monitor horses for injury, and track healing.

Grayson issued a formal call for research applications in 2022 focused on the development of a nucleic acid-based vaccine against equine herpes virus (EHV). Dr. John Ballantyne and Fargo-Moorhead Area Foundation have committed \$2 million to fund this research. EHV-1 and EHM are highly contagious, affecting horses of every breed and discipline, and they continue to cause significant economic losses through closures of racetracks and sales barns, delays in training schedules, and severe disease and death of horses.

Membership and Development

In 2022 the Corporate Partners program continued to grow with 12 partners sponsoring or co-sponsoring \$389,000 on research projects. Our corporate sponsors in 2022 were: Churchill Downs, Great American Insurance, Hard Scuffle, the John William Pope Foundation, the Keeneland Foundation, New York Thoroughbred Horsemen's Association, Oak Tree Racing Association, Thoroughbred Charities of

America, United States Eventing Association, USA Equestrian Trust, the Viola Foundation, and WinStar Farm.

Through the Horsemen's Bookkeeper at any track, jockeys can donate \$1 from each mount to the foundation. More than \$15,000 in support came from jockeys who participated from: Del Mar Thoroughbred Club, Delaware Park, Gulfstream Park, Keeneland, Los Alamitos, Oaklawn, Prairie Meadows, Remington Park, Ruidoso Downs, Santa Anita Park, and Sunland Park.



The Tribute program received more than \$2,000 in donations for tributes to 32 horses and one canine. The Equine division of Sterling Thompson Insurance continues to partner with the foundation and recognizes their clients who have lost a horse with a donation to the program.

In September President Jamie Haydon interviewed U.S. Eventing Association (USEA) CEO Rob Burke to explain the partnership between the foundation and USEA in helping to fund equine research through mount fees, similar to Grayson's Jockey program.

In late 2021, Grayson announced the creation of an endowment to support a full-time position, the "A. Gary Lavin Chair," in recognition of Dr. Gary Lavin's contributions to the foundation and equine health. In 2022 the goal for that campaign was reached and Dr. Johnny Mac Smith, DVM was named to the A. Gary Lavin Chair.

Sponsorship and Education

Grayson was able to participate on-site at many events and horse shows this season, including United States Pony Club Research Fair, United States Eventing Annual Meeting, Dressage Festival of Champions, Saddlebred World Championships, Retired Racehorse Project, American Quarter Horse Association All-American Quarter Horse Congress, and National Horse Show Barn Night.

As the 2022 Charity of Choice for the Land Rover Kentucky Three-Day Event, a farm-to-table dinner and auction was held on the Thursday evening of the week of competition.

This collaboration raised more than \$20,000 to benefit Grayson. The Grayson volunteer T-shirts for the nearly 2,000 volunteers it takes to put on this event served as walking advertising for Grayson on the NBC broadcast coverage.





The foundation also continued to provide information through the VET Chat series. 2022 webinars featured the following:

UNDERSTANDING UTERINE BIOFILM

Dr. Ryan Ferris, Summit Equine-Interview with Rood & Riddle

BISPHOSPHONATES STUDY UPDATE

Dr. Heather Knych, University of California-Davis

OPTIMIZING BONE GROWTH TO REDUCE EQUINE FRACTURE

Dr. Mariana Kersh, University of Illinois Urbana-Champaign

IDENTIFYING HORSES AT INCREASED RISK OF DEVELOPING SUDDEN CARDIAC DEATH

*Dr. Molly McCue & Dr. Sian Durward-Akhurst
University of Minnesota*

Marketing and Awareness

The Professional Circle continues thanks to a generous donation by Mrs. Jacquelyn Mars. Grayson ambassadors Lauren Kieffer, Margie Goldstein Engle, Beezie Madden, and Daniela Moguel, along with other riders, helped to make our Land Rover auction a success. Daniela Moguel specifically appeared on America's Best Racing's La Trifecta podcast to talk specifically about Grayson and its support of the sport horse.



Grayson also engaged in a relationship with International Equestrian Sports-Network - Horse & Country TV, through which Grayson sponsored an episode of the Masterclass Series with Grayson ambassador Lauren Kieffer. Grayson will also receive a new 30-second commercial spot produced by Horse and Country.

The foundation promoted its first DINEOUT for Charity from October 26 through November 29 with several local restaurants participating in the event. This event overlapped several local equine events, including the National Horse Show and the Breeders' Cup. Restaurants either donated a percentage of sales or a portion of sales on specific entrees and drinks to equine health.



More than \$3,000 was raised during the event.

Old Kentucky Chocolates (OKC) also teamed up with Grayson in 2023, donating \$1 for each special box of its assorted chocolates to be donated to the foundation. This box featured



a beautiful equine photo by Chairperson Dell Hancock. Information about Grayson's mission was included in the box and several local stations broadcast interviews with OKC's owner, Julia Kirkpatrick, and Grayson's president, Jamie Haydon.

The first "Research Spotlight" of 2022 was published in the April edition of BloodHorse magazine, announcing the 2022 research projects and career award winners. The summer edition featured the PET Scan and the Welfare Summit (see page 6). The foundation's online newsletter, "Equine Research News," published the annual Stallion Durability and Soundness Statistics. The foundation also produced its first tabloid, The Grayson Gazette, which featured a reprint of the story ran in The Plaid Horse explaining our mission and highlighted current projects, testimonials, and events.

Dell Hancock, chairman of the foundation, was named the fifth recipient of the Dinny Phipps Award which was presented at the Belmont Stakes Charity Celebration (BSCC) on June 9. Earle Mack created the award in 2017 in memory of Phipps to honor an individual or individuals who have demonstrated dedication to equine health.



Previous winners of the Dinny Phipps Award are the Phipps family, Frank Stronach, John Oxley, and Michael Del Giudice. The BSCC, traditionally one of Grayson's largest fundraisers, was held at the famed Tavern on the Green in New York City's Central Park.

Horseshoe Indianapolis partnered with Grayson for the third consecutive year for the "Grayson Grass Challenge" to raise money for the foundation. The five-week handicapping contest ran from August 2 through September 1. Participants in the challenge submitted selections on two specified races held each week at Horseshoe Indianapolis. Each contestant was given a \$500 bankroll provided by Horseshoe Indianapolis from which participants wagered \$50 per race.



A check for \$9,000 was presented to the foundation from the proceeds of this event.

2022 WELFARE & SAFETY OF THE RACEHORSE SUMMIT

The 10th Welfare and Safety of the Racehorse Summit was held at Keeneland sales pavilion in Lexington, Kentucky, on June 22.

The summit featured a range of presentations on the progress of the racing industry to promote the health of its equine and human athletes while focusing on the significance of data in facilitating these gains.



The summit was co-hosted by The Jockey Club and Grayson-Jockey Club Research Foundation and was open to the public. It was emceed by Annise Montplaisir, equine education coordinator of the Kentucky Equine Education Project Foundation and president of Amplify Horse Racing.

A video replay of the summit, which was live streamed, is available at grayson-jockeyclub.org/WelfareSafety. Speakers included the following:

Dr. Tim Parkin, head of Bristol Veterinary School, kicked off presentations with an update on the Equine Injury Database, including a 31.5% drop in the rate of fatalities since it began collecting data in 2009.

Dr. Larry Bramlage of Rood & Riddle Equine Hospital presented on the importance of training 2-year-olds, noting that bone trains to the level of work, not the amount, while the cardiovascular system trains to the amount of work. Consequently, the development of their cardiovascular systems outpaces horses' skeletal systems.

Dr. Dionne Benson, chief veterinary officer of 1/ST Racing, talked about the changes implemented at 1/ST tracks following the highly publicized rash of breakdowns at Santa Anita Park in 2019.

Dr. Ryan Carpenter, a practicing surgeon at Equine Medical Center in California, described a program whereby racehorses that suffer complex musculoskeletal injuries on the track are given the opportunity to undergo surgery to repair their fractures.

Joseph Appelbaum, president of the New York Thoroughbred Horsemen's Association, moderated a panel on wearable technologies for horses. The panel included Valentin Rapin, managing director and co-founder of Arioneo; Will Duff Gordon, CEO of Total Performance Data (TPD); and Dr. Scott Palmer, equine medical director of the New York State Gaming Commission.

Emcee Montplaisir moderated a youth panel of individuals working in the Thoroughbred industry or pursuing a career in the industry consisting of Hayley Amoss, manager,

communications & social media, Breeders' Cup; Hallie Hardy, executive director, Horse Country; Dr. Ferrin Peterson, jockey and veterinarian; Eric Resendiz, student at Bluegrass Community & Technical College and former Amplify Horse Racing mentee; and Deja Robinson, pre-vet student.

A regulatory panel that was moderated by Dr. Mary Scollay-Ward, executive director and COO of the Racing Medication & Testing Consortium, offered their perspectives on the experience of a regulatory veterinarian. This group included Dr. Will Farmer, equine medical director, Churchill Downs; Dr. Jaclyn Bradley, Prairie Meadows; and Dr. Lynn Hovda, chief commission veterinarian, Minnesota Racing Commission.

Dr. Mathieu Spriet, professor of diagnostic imaging at University of California- Davis, presented findings from the use of positron emission tomography (PET) to evaluate fetlocks.

Dr. Jerry Hill, chief medical adviser for the British Horseracing Authority (BHA), detailed a strategy by the BHA to improve the physical and mental well-being of jockeys by raising weights, prioritizing nutrition, and revamping areas at the racetracks that are dedicated to riders on race day.

Dr. Wayne McIlwraith, founding director of the Orthopaedic Research Center at Colorado State University, talked about the history of surface testing and the Racing Surfaces Testing Laboratory.

Chris Dobbins, senior vice president of InCompass, summarized the programs that InCompass offers to tracks to assist them in collecting and organizing data that is used to promote safety and welfare, including current efforts to facilitate record keeping with the Horseracing Safety and Integrity Authority.

Dr. Stuart Brown, vice president of equine safety at Keeneland, reviewed safety protocols and how InCompass software provides Brown with important data for flagging horses that are at increased risk of injury.

Among the major accomplishments that have evolved from the previous nine summits are the Equine Injury Database; the Jockey Injury Database; the Racing Surfaces Testing Laboratory; a uniform trainer test and study guide; the racing surfaces white paper and publication of educational bulletins for track maintenance; the publication of stallion durability statistics; the Hoof: Inside and Out DVD, available in English and Spanish; protocols for horses working off of the veterinarian's list; recommended regulations that void the claim of horses suffering injuries during a race; and inclement weather protocols.

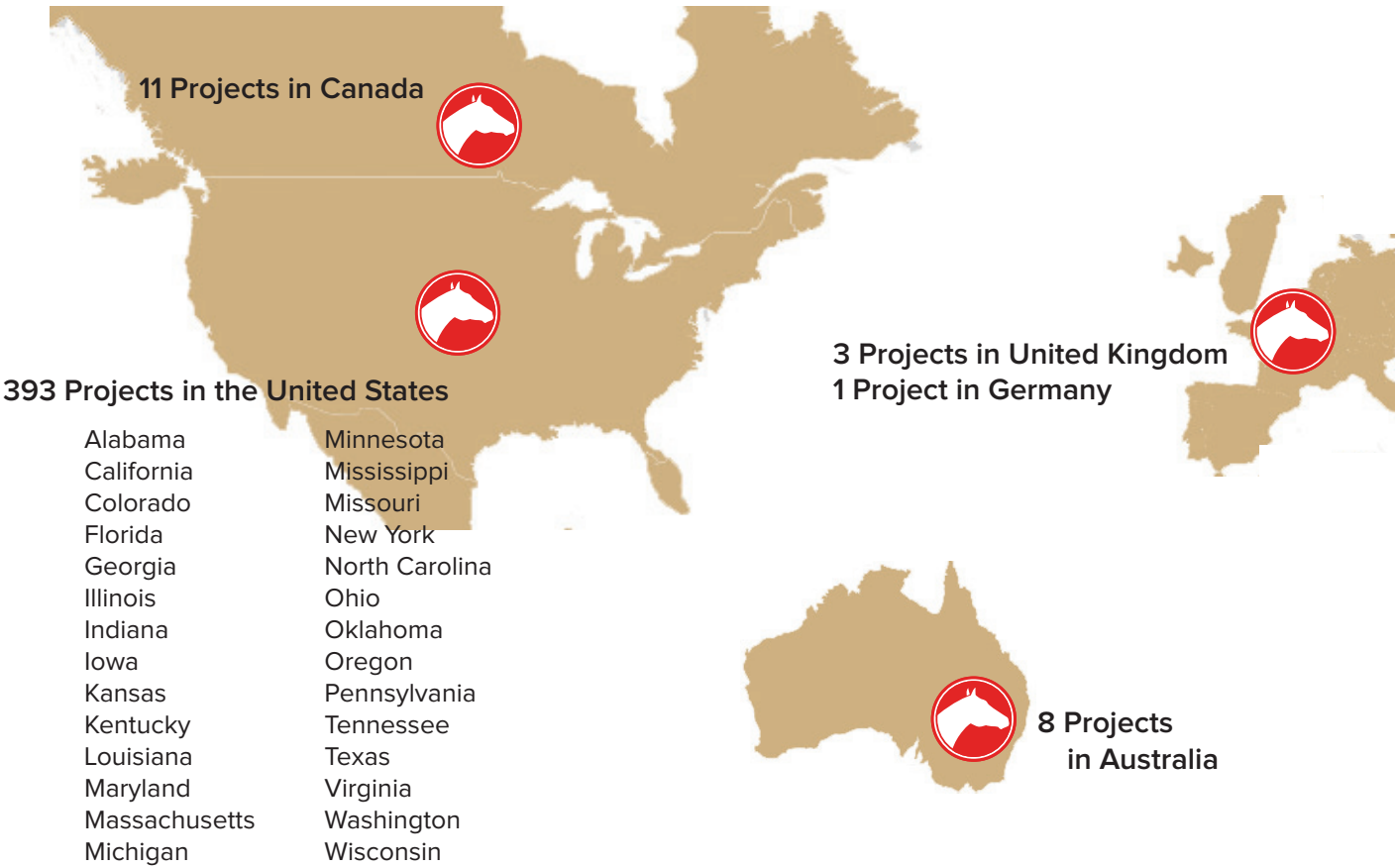
FOCUSED RESEARCH


The 2022 slate of research brings the Foundation’s totals since 1940 to more than \$38.2 million to underwrite more than 416 projects at 45 universities.

Auburn University
Baylor University
Case Western Reserve
Colorado State University
Cornell University
Harvard University
Iowa State University
Kansas State University
Louisiana State University
Ludwig Maximilians University/Germany
Massachusetts Institute of Technology
Michigan State University
Mississippi State University
North Carolina State University
The Ohio State University

Oklahoma State University
Oregon State University
Purdue University
Southern Illinois University
Temple University
Texas A&M University
Tufts University
University of California/Davis
University of Bristol/UK
University of Edinburgh/UK
University of Florida
University of Georgia
University of Glasgow/UK
University of Guelph/Canada
University of Illinois

University of Kentucky
University of Maryland
University of Melbourne/Australia
University of Minnesota
University of Mississippi
University of Missouri
University of N.Carolina-Wilmington
University of Oklahoma
University of Pennsylvania
University of Queensland/Australia
University of Saskatchewan/Canada
University of Tennessee
University of Wisconsin
Virginia Tech University
Washington State University



 Research results are published in peer-reviewed journals. All funded projects are scheduled for additional publications, including those still with ongoing research, with 254 eligible projects for publication and 356 total publications.

RESEARCH ADVISORY COMMITTEE



The Research Advisory Committee evaluates research proposals and advises the Foundation's board of directors on the basis of the needs of the industry and scientific quality of each project. For the 2022 grants allocation, the committee was composed of the following persons who served the Foundation without compensation.

Chairman

Stephen Reed, DACVIM

*Internal Medicine & Shareholder, Rood & Riddle Equine Hospital;
Emeritus Professor, The Ohio State University and
Adjunct Professor, Gluck Center, University of Kentucky
Rood & Riddle Equine Hospital • Lexington, KY
Graduate - The Ohio State University*

Members of the Board of Directors

Rick Arthur, DVM

*Equine Medical Director
California Horse Racing Board • Sierra Madre, CA
Graduate - University of California, Davis*

Larry Bramlage, DVM, MS, DACVS

*Surgeon and Shareholder
Rood & Riddle Equine Hospital • Lexington, KY
Graduate - The Ohio State University*

Consultant

Johnny Mac Smith, DVM

*Founding Partner
Peterson & Smith Equine Hospital • Ocala, FL
Graduate - Auburn University*

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Gluck Equine Research Center

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Graduate - University of California- Davis

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Assistant Professor

Louisiana State University • Baton Rouge, LA
Graduate - Louisiana State University

Brett Sponseller, DVM, PhD, Dipl. ACVIM

Associate Professor

Iowa State University • Ames, IA
Graduate - Cornell University

Andrew Van Eps, BVSc, PhD

Associate Professor

University of Pennsylvania • Kennett Square, PA
Graduate - The University of Queensland

FUNDED PROJECTS IN 2022

In 2022, Grayson-Jockey Club Research Foundation funded 25 research projects at 16 universities in the amount of \$1,661,180, along with three career development awards. Each project is outlined, as well as information on each of the career award winners.

NEW PROJECTS IN 2022

Persistence Of Antimicrobial Resistance In Horse Farms**

Laura Huber, Auburn University

This project will determine the effect of antimicrobial pressure on multidrug-resistant -R. equi persistence in the soil of horse breeding farms in a 5 year period.



Evaluating EVs From Equine Fetally-Derived MSCS

Fiona Hollinshead, Colorado State University

This project will be evaluating extracellular vesicles (EVs) from equine fetally-derived mesenchymal stem cells as an endometritis therapeutic.

Development Of A Palmar Osteochondral Disease Model

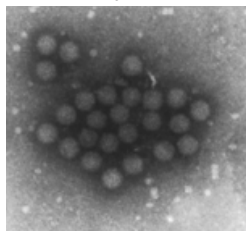
Chris Kawcak, Colorado State University

The goal of this proposal is to develop an experimental model of palmar osteochondral disease in horses to better study disease progression and facilitate development of improved treatment strategies.

Development Of A Vectored Vaccine To Equine Rotavirus A

Mariano Carossino, Louisiana State University

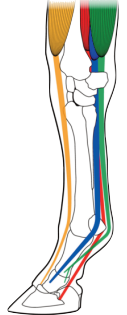
A novel viral vectored vaccine against equine rotavirus (A G3 and G14), the leading cause of foal diarrhea, will be designed and evaluated in mares and a neonatal mouse model as proof-of-concept.



Immunomodulation And Exosomes To Enhance Tendon Healing

Sushmitha Durgam, The Ohio State University

This study aims to characterize M1 and M2 macrophage-derived inflammatory factors and assess their impact on superficial digital flexor tendon tenocyte activities while examining the potential of extracellular vesicles/exosomes to enhance tendon healing.



Pharmacokinetics Of Oral Mycophenolate Mofetil In Horses

Gwendolen Lorch, The Ohio State University

This proposal will evaluate the pharmacokinetics of orally administered mycophenolate mofetil as a safe, effective and inexpensive immunosuppressant drug for management of equine immune-mediated disease.

Novel Strangles Vaccine Using CD 40-Targeted Delivery

Luc Berghman, Texas A&M University

This project will be targeting bacterial components of Streptococcus equi spp. equi to the horse's immune surveillance cells (the APCs) that will result in a fast and strong immune response that will protect against strangles.

Trained Immunity In Foals

Angela Bordin, Texas A&M University

This project will study how giving oral live bacteria protects foals against infection by Rhodococcus equi, the cause of severe and debilitating pneumonia in foals, for future development of a vaccine.



Immunogenicity In Foals Of An mRNA Vaccine For R. Equi

Noah Cohen, Texas A&M University

This study proposes to develop an mRNA vaccine delivered by inhalation to protect foals against pneumonia caused by Rhodococcus equi.

** These projects have been funded in whole or in part by our Corporate Sponsors

FUNDED PROJECTS IN 2022

Does Antibiotic Treatment Change The Microbial Resistome

Paul Morley, Texas A&M University

This research will compare four antibiotic treatments to these protocols that can be selected to treat bacterial infections while also lessening the risks for promoting antibiotic resistance.

Equine Placentitis: New Approaches To An Old Problem **

Pouya Dini, University of California Davis

The goal of this study is to identify pathogens involved in placentitis and investigate their interaction with the placenta using bioinformatics and in vitro studies to develop better diagnostic and treatment methods.

Motion Of The Proximal Sesamoid Bones On Uneven Footing**

Susan Stover, University of California Davis

This study proposes to determine how hoof conformation, shoeing, and uneven racetrack surfaces could contribute to fetlock breakdowns.



Influence Of Vitamin D And Cortisol In R. Equi Infection

Kelsey Hart, University of Georgia

This study will investigate how blood levels of cortisol and vitamin D are related to the development and progression of *Rhodococcus equi* pneumonia in foals after natural exposure.

Fentanyl Matrix Patches In Horses

Rachel Reed, University of Georgia

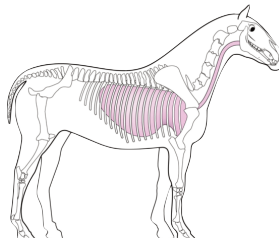
The aim is to show that fentanyl administered via patches placed on the skin is well absorbed and represents a promising means of providing clinically relevant continuous pain relief to horses.

Sirolimus For The Control Of Insulin Dysregulation

Andrew Van Eps, University of Pennsylvania

This study will evaluate the drug sirolimus (a potent suppressor of insulin production) for the treatment of insulin dysregulation (the most important cause of laminitis) in horses.

SECOND-YEAR PROJECTS



Asthma, Performance And Omega-3s In Racing Thoroughbreds

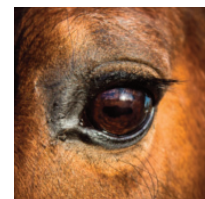
Laurent Couetil, Purdue University

The main purpose of the study is to investigate the variability of asthma severity in horses racing across the United States, its effect on performance and determine if omega-3 PUFA supplementation is beneficial.

Mitigation Of Equine Recurrent Uveitis Through SOC's

Joseph Larkin, University of Florida

This project seeks to design a topical eye drop, using a natural protein, which helps to prevent pain and blindness associated with equine recurrent uveitis.



Environmental Origins Of Equine Antimicrobial Resistance

Brandy Burgess, University of Georgia

This study will elucidate how antimicrobial resistance and virulence determinants are shared among horses and hospital environment, as well as the role antimicrobial exposure plays at this interface.

Treatment Of Joint Injury With Mesenchymal Stromal Cells

Thomas Koch, University of Guelph



This project deals with the evaluation of equine umbilical cord blood-derived mesenchymal stromal cells to treat joint injuries in horses.

Optimizing Bone Growth To Reduce Equine Fracture

Mariana Kersh, University of Illinois Urbana-Champaign

Reduction in distal limb fractures through exercise in young horses would have a significant positive impact on horse welfare and the economics and public perception of the horse industry.

*** These projects have been funded in whole or in part by our Corporate Sponsors*

FUNDED PROJECTS IN 2022

New Generation Equine Influenza Bivalent VLP Vaccine

Thomas Chambers, University of Kentucky

This study is designed to create a novel, safe and effective vaccine for equine influenza based on the 21st-century technology of noninfectious virus-like particles produced in plants.

Injury Prediction From Stride Derived Racing Load**

Chris Whitton, University of Melbourne

By studying patterns in bone fatigue accrual over time in racehorses, this project will help better, and earlier, identify horses at risk of limb injury, facilitating timely evidence based preventative strategies.

Predicting Exercising Arrhythmias With Resting Eggs**

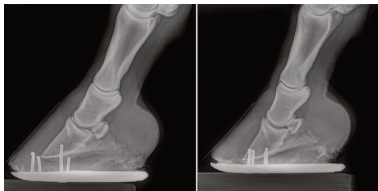
Molly McCue, University of Minnesota

This project will use at rest ECGs to identify horses with irregular heart rhythms at exercise that can cause sudden cardiac death (SCD), allowing for increased monitoring and improved understanding of SCD.



Understanding And Preventing Supporting Limb Laminitis

Andrew Van Eps, University of Pennsylvania



The aim of this study is to make supporting limb laminitis preventable through analysis of archived model tissues, a multi-center limb motion study of horses

at risk, and development of a prototype therapeutic device.

Diagnosis Of Incipient Condylar Stress Fracture**

Peter Muir, University of Wisconsin–Madison

This study will save the lives of racehorses by establishing screening using fetlock CT for diagnosis of horses with a high risk of imminent serious injury for personalized clinical care.

*** These projects have been funded in whole or in part by our Corporate Sponsors*



2022 CAREER DEVELOPMENT AWARDS

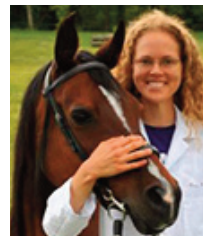
The 2022 career awards bring a total of 30 career awards by the foundation with more than 90% of recipients continuing in a research career.

The Storm Cat Career Development Award, inaugurated in 2006, is a \$20,000 grant designed as an early boost to an individual considering a career in equine research. It has been underwritten annually by Mrs. Lucy Young Hamilton, a GJCRF board member whose family stood the champion stallion Storm Cat at Overbrook Farm. In 2022 there were two award recipients:

Rosemary Bayless

*North Carolina State University,
mentor - Dr. Katie Sheats*

Her project is titled, "Cell-Free DNA as a Biomarker in Equine Colic Patients."



Sarah K. Shaffer

*University of California-Davis,
mentor - Dr. Susan Stover*

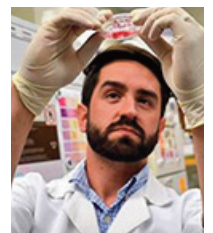
Her project is titled, "Linking Training to Stress-Reactions in Racehorse Bones."

The Elaine & Bertram Klein Development Award is a competitive program intended to promote development of promising investigators by providing a salary supplement of \$20,000 for one year. This program is restricted to one award per year and is named in honor of Elaine & Bertram Klein. The grant is funded by the Klein Family Foundation. The 2022 winner was:

Bruno C. Menarim

*Gluck Equine Research Center,
University of Kentucky,*

mentor - Dr. James MacLeod
His project is titled, "PPAR-γ Activation in the Treatment of Joint Inflammation."



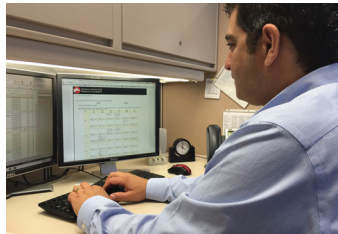
THE CYCLE OF A GRANT

Drs. Gary Lavin and Larry Bramlage reorganized the foundation's process of evaluating grants in 1999. Instead of having separate committees of academicians and practicing veterinarians, a single Research Advisory Committee (RAC) was created. The RAC includes 32 individuals representing various research specialties and veterinary practices from across North America. The RAC convenes in January to evaluate all proposals submitted by the research community, spending three days poring over the projects, rating them and recommending the best to the board of directors who determines how many projects can be funded in that year.

Application

Since 1940 the foundation has funded more 416 grants. For the last five years the total project awards have averaged more than \$1.44 million annually. For 2022, the foundation received 50 applications from 22 different institutions from Australia, Canada, and the United States.

All applicants must comply with the regulations pertaining to animal use in the proposed study, which is overseen by the INSTITUTIONAL ANIMAL CARE AND USE COMMITTEE (IACUC). The IACUC must review and approve the research project prior to funding.



RAC Scoring

The RAC is a mix of 32 equine scientists and practitioners capable of judging the merit of the most sophisticated proposals with clinical specialists from university clinics and private practices. The group includes representation of the major clinical disciplines such as surgery, internal medicine, and reproduction, along with the academic disciplines of pathology, immunology, microbiology, etc., with geographic diversity to reflect the importance of various local problems.

There is a multi-layered review process for each grant starting with the identification of experts on the subject matter and potential conflicts of interests within the RAC. Each grant is initially assigned four reviewers. The reviewers individually score the grant based on:

- (a) scientific approach
- (b) overall impression
- (c) impact
- (d) feasibility
- (e) budget

Each grant is scored numerically and given a written review. The RAC members assess and read all applications prior to the review meeting.

Final Review

During the RAC meeting, the essential activities are to discuss each proposal with the entire committee and to rank the order for all acceptable proposals. The group endeavors to reconcile mean scores between specialties to ensure that one discipline does not score significantly higher or lower than another discipline. Once grants are ranked numerically to ensure that each grant is ranked correctly for its strengths and weaknesses, each grant is then compared to its neighboring grant. If a grant is moved in the ranking it must be reassessed at each placing, compared to its higher and lower neighbor, to ensure that the placing is correct within the consensus of the group.



Funding

The recommendations of the RAC are presented to the board of directors for final review, with announcement of awards typically near the first week of March. The funding cycle commences April 1, with three equal payments made through the year.

A timeline is incorporated into the application document so that all investigators are aware of the schedule. The applicant in the original application predicts a schedule of progress. A progress statement is required on November 1 of the original funding year so that any problems with the investigation are identified early and adjustments can be made. Satisfactory progress must be documented in order to continue receiving funding.

Second-year funding must be approved by the foundation board following recommendations from the foundation office.

Donors

Donors whose contributions or portions thereof are designated as dues for membership shall have the privilege of participating in the annual election of directors. At the end of 2022, membership stood at 244 compared to 228 at the end of 2021. An “*” notes membership beside the name. Names and addresses of members are maintained in the foundation’s office at 821 Corporate Drive, Lexington, Kentucky 40503.



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Recognizing donors whose generosity has created a profound impact on the Foundation over the years and an extraordinary benefit to the horse.

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Honoring the generosity of the late Paul Mellon, GJCRF designates inclusion in the Rokeby Circle for those donors at the \$10,000-plus level within the year. The honor is named for Rokeby Farm, Mr. Mellon's estate in Virginia.

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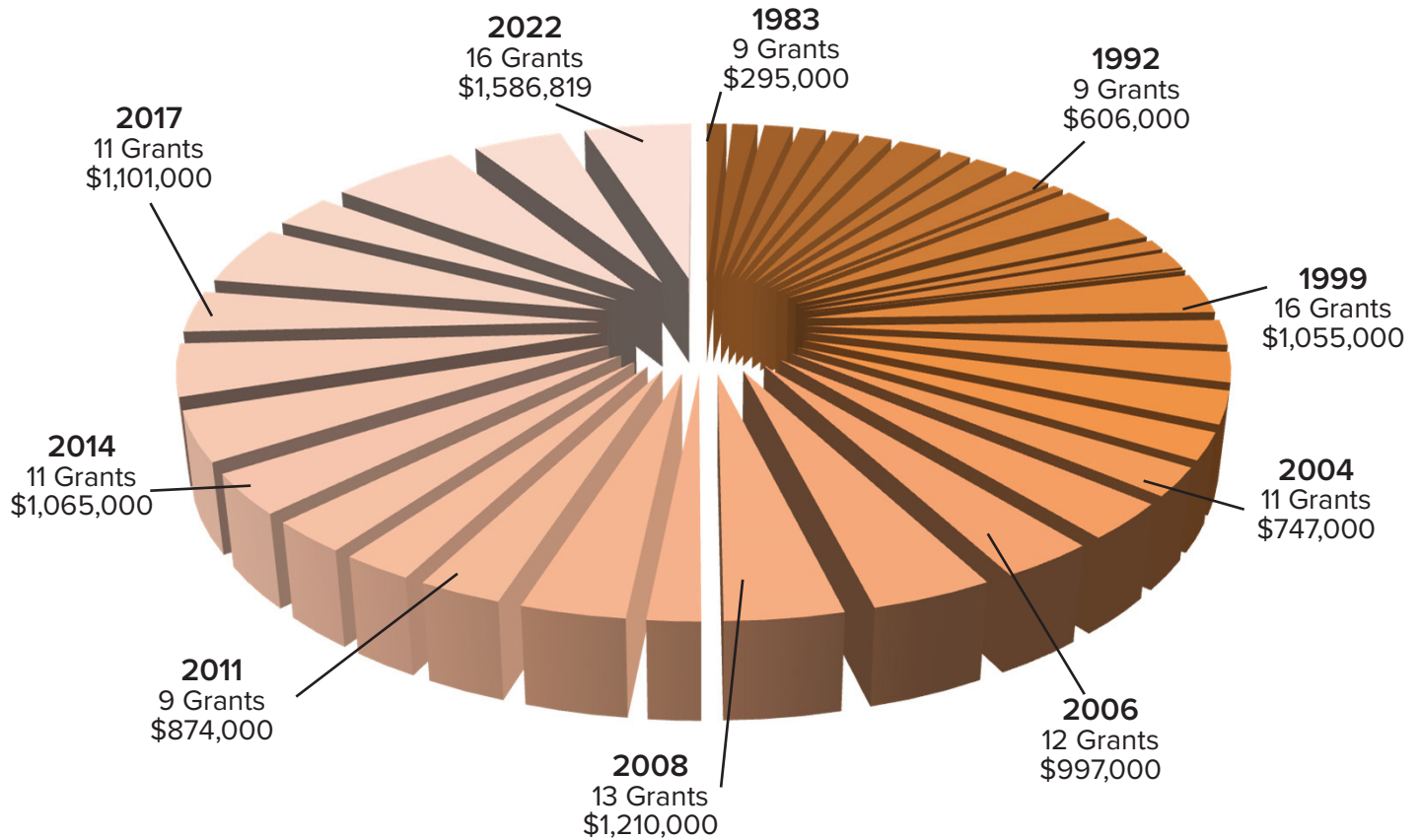
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| | | | |
|-----------------|------------------------|------------|---------|
| Rokeby Circle | \$10,000 <i>and up</i> | Patron | \$1,000 |
| Platinum Circle | \$ 7,500 | Supporting | \$ 500 |
| Gold Circle | \$ 5,000 | Sustaining | \$ 200 |
| Silver Circle | \$ 2,000 | Annual | \$ 100 |

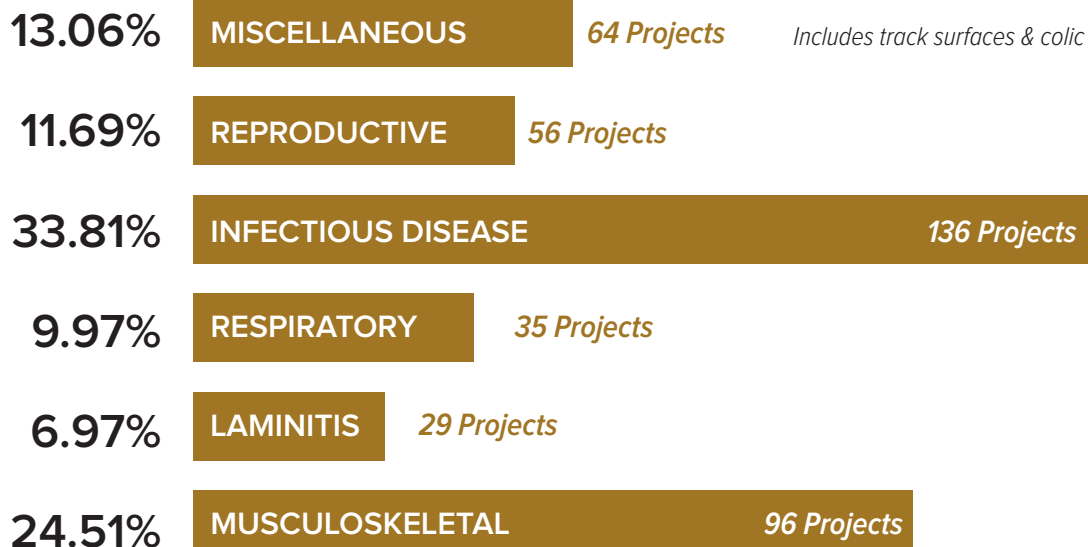
HISTORICAL FUNDING REVIEW

This chart illustrates the dollars given in support of research by the Foundation since 1983 and the rising cost associated with equine research.

**detailed awards from 1940-1982 are estimated*



The foundation supports the best equine research focusing on all health issues and responding to impact and current issues facing all breeds and disciplines. The research funded since 1983 to 2022 breaks down into the following health categories.



“The process of moving bench-top research to clinical practice can take a long time. In humans it can take easily over a decade to get the research out of the lab and into a clinical setting.

We are fortunate to have the Grayson-Jockey Club Research Foundation available to help researchers transfer new understandings of disease mechanisms gained in the laboratory into the development of new methods for diagnosis, therapy and prevention. Without the generosity of the foundation my research on infectious diseases would not have been possible in a clinical setting.”

Nathan Slovis DVM, Dipl. ACVIM, Director

McGee Medical Center - Hagyard Equine Medical Institute





Grayson-Jockey Club Research Foundation

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Grayson-Jockey Club Research Foundation is exempt from Federal income tax under section 501(c)(3) of the Internal Revenue Code of 1986 (the "Code") as an organization operated exclusively for educational and scientific purposes. Contributions made to the Foundation are deductible by donors in computing their taxable income in the manner and to the extent provided by section 170 of the Code. Bequests, legacies, devices or transfers are deductible in computing the value of the taxable estate of a decedent for Federal estate tax purposes in the manner and to the extent provided by section 2055 of the Code.

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