

FROM THE HORSE'S MOUTH

THE OFFICIAL NEWSLETTER OF THE KENTUCKY 4-H HORSE PROGRAM

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2024 Congress Recap!

The All American Quarter Horse Congress Youth Contest was held October 15-17 in Columbus, OH. Teams from traveled from New York to Florida to compete and could be representatives of 4-H, FFA or Breed Organizations. Kentucky's delegation participated in Communications, Hippology, and Horse Judging.

Communications kickstarted the contest, where Hadley Stanger gave her presentation *A Bit about Bits*. Hadley placed second for individual presentations and will representing Kentucky Equine 4-H at National's in November.



Kentucky's Hippology Team consisted of the following youth: Shelby Ford, Caleb O'Neal, Audrey Carter, and Nora Kubat. They earned the following placings:

4th-Team Judging

10th - Overall Team Highpoint

9th- Individual Judging, Audrey Carter

10th- Team Stations

Team Kentucky's Hippology Team was also granted the Award of Excellence for Problem Solving. This was in recognition of their strategic thinking during the team problem portion.



Members Danica Street and Evie Greenwell competed for Kentucky 4-H in the Horse Judging Contest. The youth gained valuable experience judging high quality horses through this contest. As seen on the cover, they were also able to meet VS Code Blue and his owner. This stallion is the sire of World and Major Futurity Champions and Superior Earners.

2024 Congress Recap!

The All American Quarter Horse Congress is a fantastic opportunity for youth to participate in knowledge contests, gain industry exposure, have fun, and build community. We thank all the students, parents, volunteers and coaches that supported this year's team and look forward to returning next year!

Our next contest is the Eastern National 4-H Horse Roundup, November 8-9 in Louisville, KY. Please join us in cheering on our Kentucky Delegation. Danica Street, Evie Greenwell, and Savanna Claggett will compete in Horse Judging. Hadley Stanger will represent Kentucky in the Individual Presentation.

Check for updates in our November Newsletter!



MENTOR HIGHLIGHT

This section is nomination based and is intended as a way to recognize and celebrate the incredible community we have.

The mentor highlight is for volunteer leaders and county agents. The youth highlight is for all Kentucky 4-Her's ages 9-18 years. Nominations are accepted from both youth and mentors.

YOUTH HIGHLIGHT



Each publish period, nominees will be reviewed and selected consisting of one mentor and one youth to share in our newsletter.

*Please email
anna.draeger@uky.edu for
nominations.*

Include the following in your email:

- ◇ Nominee name & associated county
- ◇ A short description of what makes them stand out, particularly in alignment with the 4-H mission.
- ◇ A photo of the nominee with permission to share.

Feel free to reach out with any questions!

MENTOR HIGHLIGHT

SYDNEY AGEE & BRIANA FRAZIER, MONTGOMERY COUNTY

October

In the true spirit of teamwork, this month's nomination came in as a pair. Please take a moment to read another member's appreciation for their work.

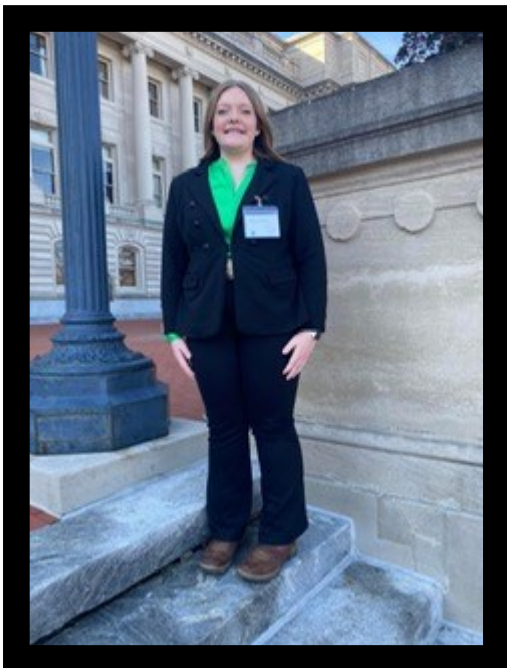
"These two young people were prior members of the saddle club and horse program, [they] stepped up to volunteer coach our equestrian drill team when the team was in need of a new coach 3 weeks prior to a competition 3 years ago and have stayed to help with this team as head coaches."

Thank you Sydney and Briana for your dedication to 4-H Youth!



YOUTH HIGHLIGHT

HADLEY STANGER, MEADE COUNTY



"Hadley is an incredibly genuine and intelligent member of 4-H. She not only proves successful in her contest endeavors, but also capitalizes on leadership opportunities. Her positivity and dedication to learning is inspiring!"

Hadley is a member of Equine Task Force and has competed in Communications at Southern Regionals (2nd Individual Presentation; 7th Public Speaking) and Quarter Horse Congress (2nd Individual Presentation). She will also be competing at Nationals in November for the Individual Presentation.

THE DMRT3 GENE

EDUCATIONAL ARTICLE BY ANNA DRAEGER

Later this month we will release our educational video on the gaits of the horse. Part of the video content includes gaited horses, specifically the Icelandic Horse. This article dives into how the DMRT3 gene helps to explain why some horses exhibit a wider gait distribution than others.

What is the DMRT3 Gene?

Two terms to be familiar with in this discussion are genotype and phenotype. Genotype refers to the genetic make-up of the animal, the actual DNA. Phenotype is the outward expression of genotype. This is what we can actually see.

The DMRT3 gene, also known as the Gait Keeper gene, is related to speed and lateral movement. It's influence on coordination allows for various ambling gaits. Typically, a three-gaited horse will have the genetic sequence CC (two copies of the nucleotide Cytosine). In the case of the gaited horse, there is a base-pair mutation from Cytosine (C) to Adenine (A). Horses with this mutation may be heterozygous (CA) or homozygous (AA). Whether a horse is CC, CA, or AA depends on the dam and sire.

Thanks to this genetic “accident” and selective breeding to preserve it, we now have a multitude of breeds that grant riders a smoother trip in the saddle.

What is observed with each genotype?

While the genotype makes it seem like a clean rule, gene expression isn't always as clear. Generally, one would expect to observe an increased capacity for lateral movement and speed as the genotype shifts from CC to CA to AA (Promerová et al., 2014).

Consider this concept in regards to Icelandic Horses. It would be expected that the AA horse would be five-gaited, exhibiting the gaits: walk, trot, canter, tölt (their version of an ambling gait) and flying pace (a racing gait, such as you would see in Standardbred pacers). This horse would likely exhibit tölt with natural speed range and/or pace freely in the field without training. Generally, a CA horse is expected to demonstrate tölt, however they might not have the capabilities for flying pace. A horse with CC genotype would not exhibit these extra gaits (*continued on next page*)

THE DMRT3 GENE

EDUCATIONAL ARTICLE BY ANNA DRAEGER

freely in the field and would likely struggle significantly in attempted gait training.

While training can influence the quality of a horse's gaits, when the frequency of the base-pair mutation is reduced the horse's ability to demonstrate ambling gaits freely, without training is reduced (Kristjansson et al., 2014).

Tracking characteristics

To assist breeders in preserving desired characteristics, some breed registries offer tools that record genetic testing and ridden performance. In Icelandic Horses, there is a program known as WorldFengur. While this program can track numerous characteristics, today the focus will stay on ability to gait. Once a horse is genetically tested for this marker, it is documented on their permanent record, confirming genotype. If there is not an entered DNA test, the program can provide an estimate of what the result could be. This is based on the individual's performance in breeding evaluations or via the data available for their sire, dam, and related offspring.

Examining this concept through a Punnett Square can help visualize results of poten-

tial crosses. To preserve this trait, it would be important to plan to at least cross between a CA and AA horse. This match would grant a 50% chance the offspring would be CA and a 50% chance of AA (Figure 1). Compare this to matching a non-gaited horse (CC) with a four-gaiter (CA). Now there is a 50% chance of breeding out that gene mutation (Figure 2). You might have the idea now, but now cross two CA horses. What are your odds? You should have found a 25% chance of a CC (or non-gaited) offspring (Figure 3). This all goes to demonstrate how selective breeding can

impact characteristics in the gene pool.

	C	A
A	CA	AA
A	CA	AA

Figure 1. CA and AA cross.

	C	C
C	CC	CC
A	CA	CA

Figure 2. CC and CA cross.

	C	A
C	CC	CA
A	CA	AA

Figure 3. CA and CA cross.

THE DMRT3 GENE

EDUCATIONAL ARTICLE BY ANNA DRAEGER

Final Thoughts & Takeaways

Within the equine industry, intentions are typically focused on breeding the horse that runs faster, jumps higher, and behaves better. One important thing to remember with genetics, is that nothing is guaranteed. There are several factors that contribute to the final outcome. Understanding the science behind what we see and making informed decisions from that can help provide direction. This better equips individuals to follow their breeding goals.



References

Kristjansson, T., Bjornsdottir, S., Sigurdsson, A., Andersson, L.S., Lindgren, G., Helyar, S.J., Klonowski, A.M., Arnason, T. 2014. *The effect of the 'Gait keeper' mutation in the DMRT3 gene on gaiting ability in Icelandic horses.* Journal of Animal Breeding & Genetics 131(6)415-425. DOI: <https://doi.org/10.1111/jbg.12112>

Promerová, M., Andersson, L.S., Juras, R., Penedo, MCT., Reissmann, M., Tozaki, T., Bellone, R., Dunner, S., Hořin, P., Imslad, P., Mikko, S., Modrý, D., Roed, K.H., Schwochow, D., Vega-Pla J.L., Mehrabani-Yeganeh, H., Yousefi-Mashouf, N., Cothran, E.G., Lindgren, G., Andersson, L. 2014. *Worldwide frequency distribution of the "Gait keeper" mutation in the DMRT3 gene.* Animal Genetics 45(2) 274-282. DOI: <https://doi.org/10.1111/age.12120>

Enjoy the read? Interested in learning more?

Click on the image below!



Genes

April 17, 2013 • Posted by Natalie DeFee Mendik, MA

otion patterns in horses.

Swedish researchers discovered that genetic makeup affect

Topics: Article, Gait Patterns, Genetics

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Upcoming Events

Click each image to learn more. Are you hosting or know of an event you want to share?

Email anna.draeger@uky.edu to list it here.



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Hallowhinny

SUNDAY, OCTOBER 27 – SUNDAY, OCTOBER 27, 2024 09:00AM – 05:00PM KENTUCKY HORSE PARK



Location: Kentucky Horse Park

Kentucky Humane Society –Horses 101

Horses 101

This four week course is for inexperienced horse lovers who want to learn the basics of equine care and handling so they can become more familiar with horses. Some graduates of this course go on to become horse adopters/owners. Others have decided to volunteer at Willow Hope Farm to learn more and hone their horse-handling skills, while other participants take this opportunity to overcome a fear of horses. Willow Hope Farm is a working horse farm that houses rescue horses in rehab or training, along with those available for adoption. You will spend time hands-on with horses, learn about the mission of the KHS Equine C.A.R.E. program, and have time to relax, decompress and enjoy the company of horses in the rolling hills of horse country. All horse activities are from the ground with no riding involved. No prior experience with horses is required.

The Horses 101 course is \$200 per person. Potential first-time adopters who are interested in adoption through KHS and complete this course may have their \$200 fee applied towards their adoption fees. This course is held indoors under a covered arena, so all courses are rain or shine.

Space is limited. Please RSVP by Saturday, October 26.

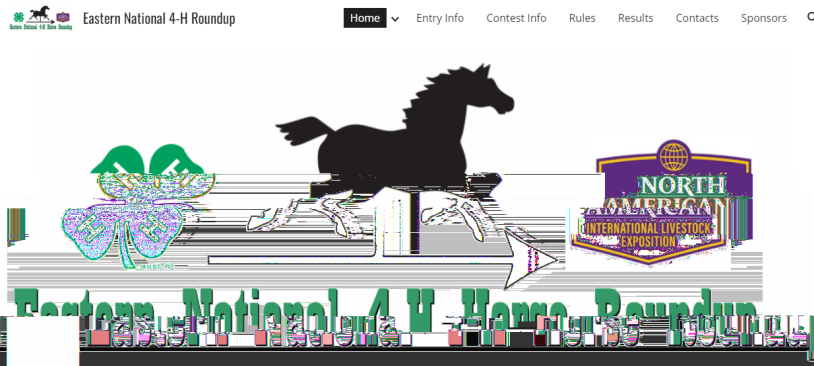
Contact Katie Murphy, Willow Hope Farm Manager, at horses@kyhumane.org or 502-272-1068 to reserve your spot today!

COURSE DATES	TIMES
Saturday, November 2	9:30am – 11:30am
Saturday, November 9	9:30am – 11:30am
Saturday, November 16	9:30am – 11:30am
Saturday, November 23	9:30am – 11:30am

Location: Willow Hope Farm , Simpsonville, KY

Dates: November 2, 9, 16, 23

RSVP by: October 26



NOVEMBER 8-9, 2024

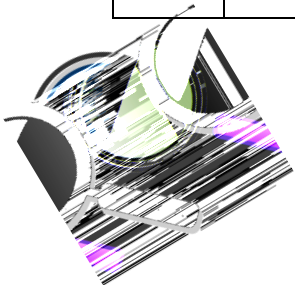
Location: Kentucky Fair & Exposition Center

Events across Kentucky can also be found by visiting the

[Kentucky Horse Council Website](#)

GAITS OF THE HORSE WORD SEARCH

P	G	F	F	Q	F	T	R	K	B
S	A	L	I	Z	O	S	E	Y	O
L	L	S	N	K	X	V	T	P	Y
O	L	J	O	G	T	A	N	O	R
W	O	B	L	C	R	W	A	L	K
G	P	A	G	P	O	K	C	A	R
A	W	C	T	A	T	R	O	R	E
I	D	K	F	C	S	P	T	G	U
T	X	C	R	E	K	T	L	O	T



Walk

Jog

Canter

Words to Search:

Pace

Tolt

Rack

Slow Gait

Fox Trot

Paso Corto

Fino

Largo

Gallop

Back

Free equestrian themed templates for pumpkin carving!

It's the time of year for pumpkin carving! We've discovered some free resources for horse themed templates that we wanted to share. Invite some friends, head to your local pumpkin patch, pick a template and have some fall fun. Share some of your equestrian themed pumpkin carving or painting creations by tagging us on social media or including #Kentucky4HHorse. We'd love to see (and share) how they turn out!

Facebook:

[Kentucky 4-H Horse Program](#)

Instagram (we have a new page):

[Kentucky 4-H Horse Program](#)

Make sure to like & follow us for updates and fun, educational content!



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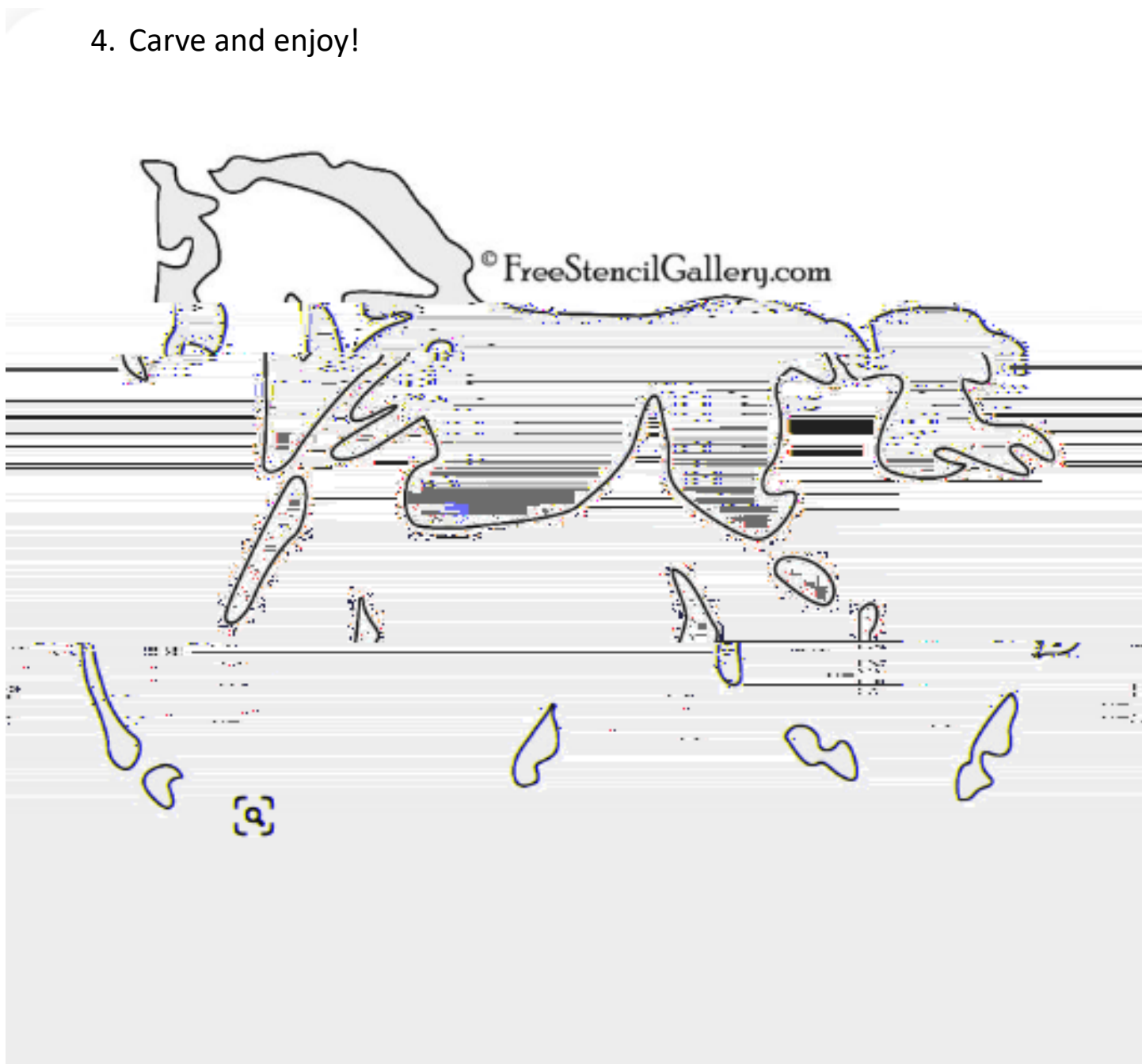


Click the image to follow the link!

Free Equestrian Pumpkin Carving Templates: Horse Jack-o-Lantern Printable Downloads

SEPTEMBER 25, 2023

1. Print the image below on an 8.5 x 11 piece of paper
2. Tape to pumpkin
3. Use a pen, pencil or carving kit to trace the outline
4. Carve and enjoy!





That's all for this month!
Thanks for reading,
and we wish you a
safe and fun
October!

~Anna



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Visit our Website!

[https://afs.ca.uky.edu/4h-youth/
horse](https://afs.ca.uky.edu/4h-youth/horse)

Send us an email!

Dr. Fernanda Camargo: fernanda.camargo@uky.edu

Anna Draeger: anna.draeger@uky.edu

Or give us a call at 859-257-7501