



# Morphological Characteristics of the Placenta of Arabian Mares Foaling at the W.K. Kellogg Arabian Horse Center

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## Background

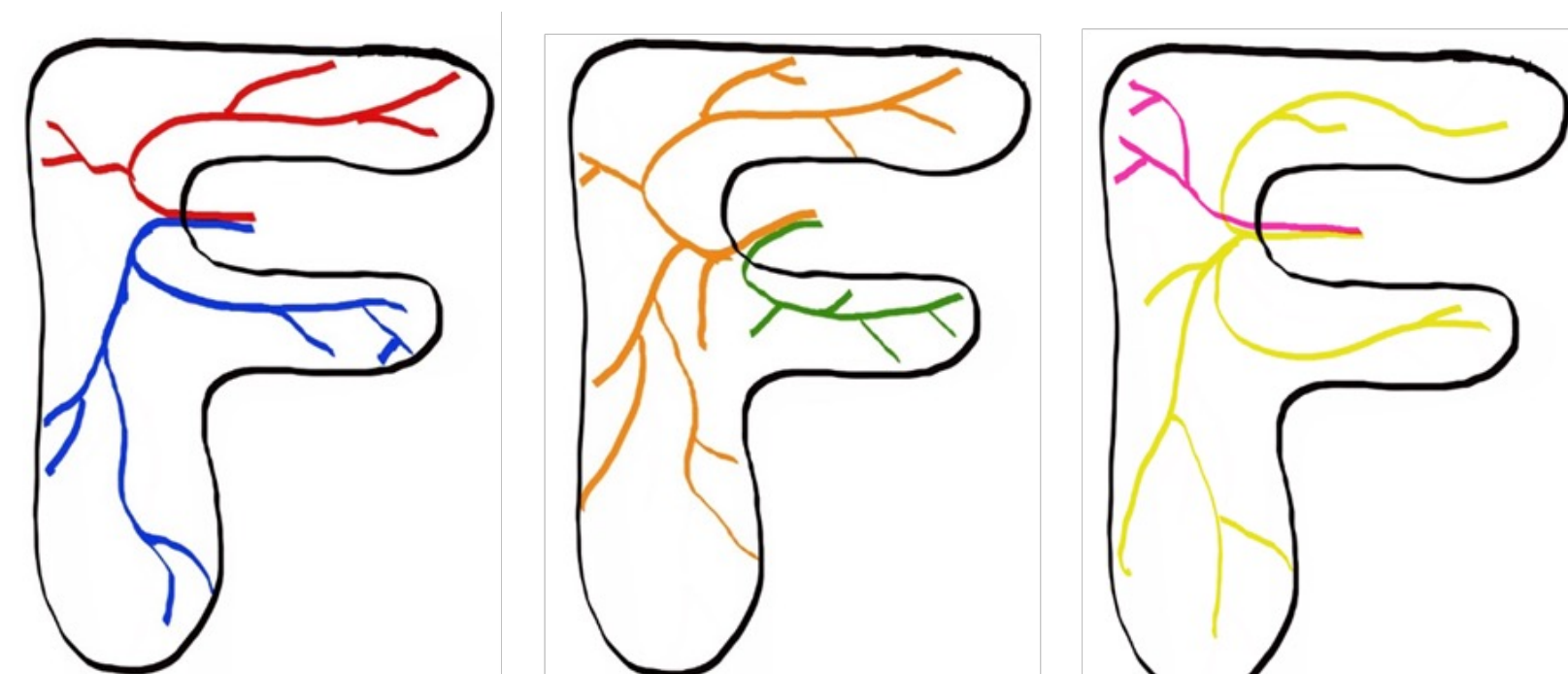
- Most studies that describe the normal equine placenta have focused on the Thoroughbred breed<sup>1</sup>.
- The current study determined morphological characteristics of the placenta of Arabian mares foaling at the W.K. Kellogg Arabian Horse Center at Cal Poly Pomona (Figure 1).



**Figure 1.** CP Madison Avenue and foal at W.K. Kellogg Arabian Horse Center, February 2023.

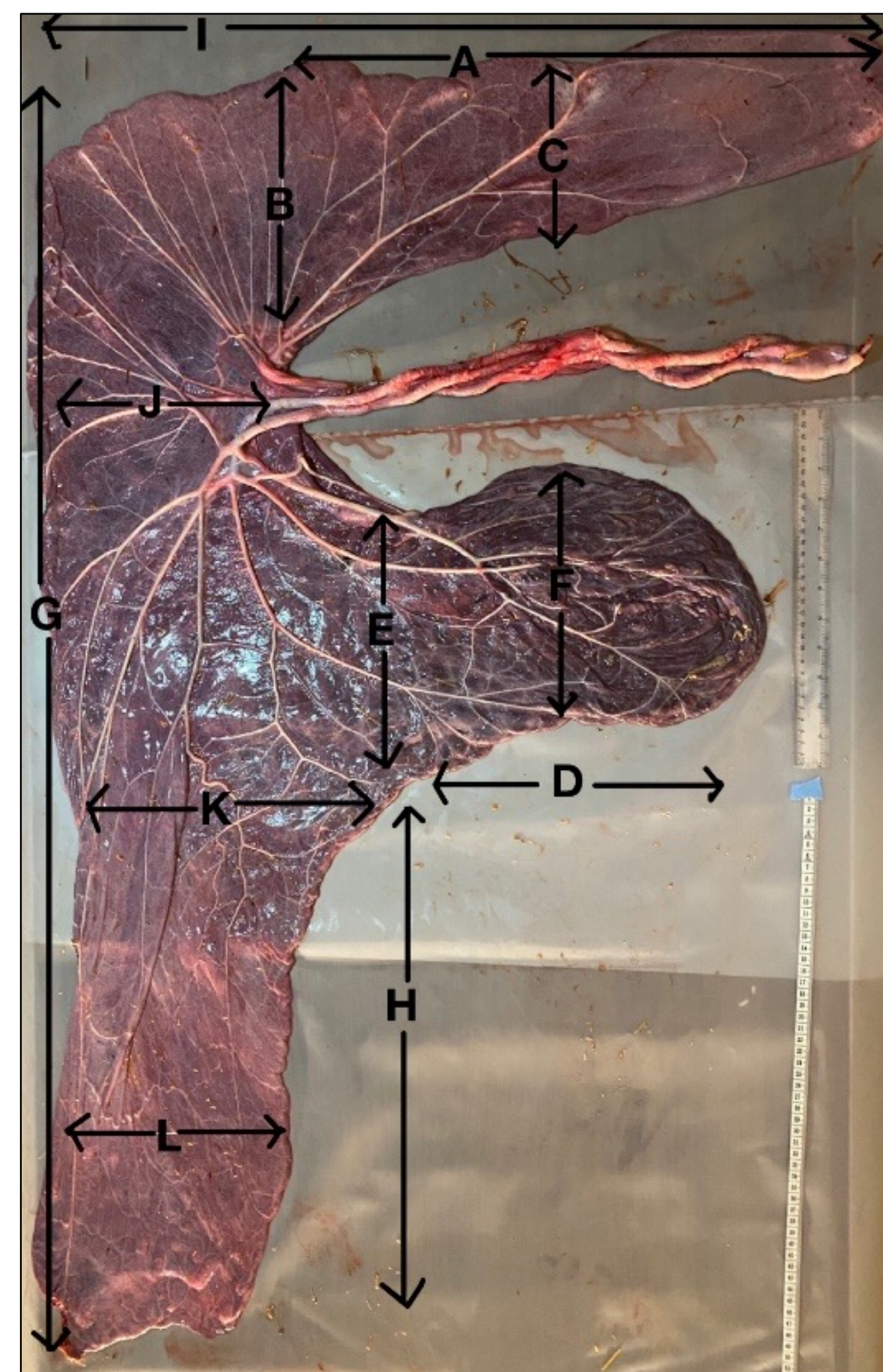
## Methods

- Nine pregnant mares housed at the Cal Poly Pomona W.K. Kellogg Arabian Horse Center were used in the study.
- Mares were observed during foaling via digital cameras and the placenta was collected immediately after it was delivered.
- The placenta was everted with the allantonic surface on the outside and laid out in a F-configuration.
- The placenta was photographed from above with a 30-cm ruler to allow the linear dimensions (A-L) and surface area of the placenta to be analyzed using Image J.
- The length, number of umbilical cord vessels near the infundibulum and at the fetal end, and the number of twists in the umbilical cord were recorded.
- The placenta and umbilical cord were weighed.
- The vascular pattern was described as type I, II or III<sup>1</sup>(Figure 2).



**Figure 2.** Placental Vascular Pattern.

## Results



- Data was collected from eight mares. One mare had a retained placenta.
- The linear dimensions of the placenta are shown in Figure 3 and Table 1.

**Figure 3.** Measurements of the placenta (A-L) laid out in F-configuration from CP Visionaire.

**Table 1.** Placental measurements

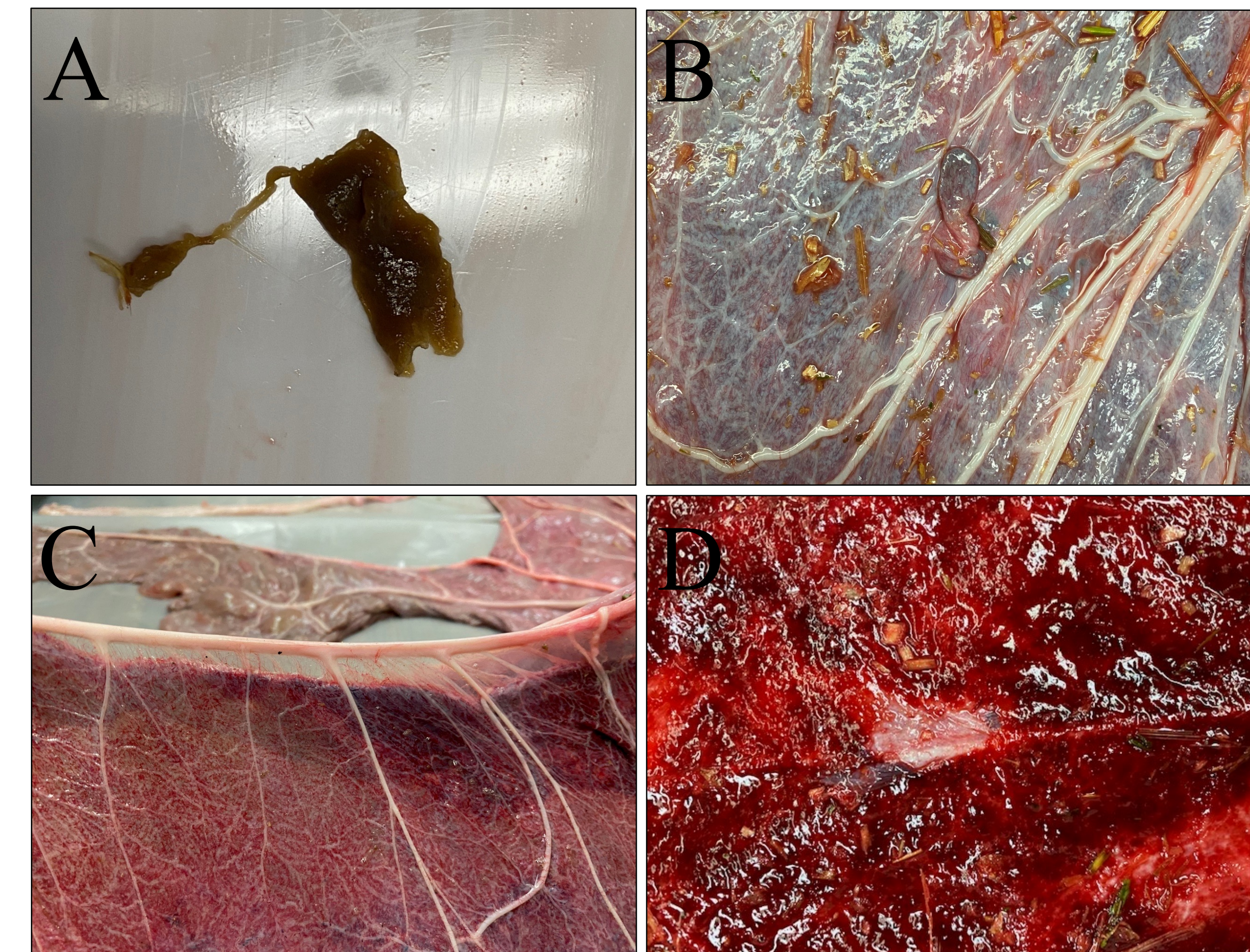
Measurement <sup>a</sup> (cm)	Mean ± SEM (n = 8)	Range
Length PH	49.1 ± 3.8	34.7 – 62.3
Diameter of PH, inner	22.8 ± 1.7	16.8 – 29.9
Diameter of PH, middle	14.9 ± 1.5	8.2 – 21.0
Length of NP	43.4 ± 1.9	37.6 – 51.0
Diameter of NPH, inner	18.5 ± 0.8	13.7 – 22.4
Diameter of NPH, middle	12.4 ± 0.9	9.1 – 16
Total Body length	120.6 ± 1.4	114.8 – 124.4
Body length, rear	57.5 ± 2.2	49.5 – 66.9
Front body + PH	75.7 ± 3.8	64.1 – 92.4
Width of the body, front	26.9 ± 1.8	19.1 – 32.2
Width of the body, middle	25.0 ± 2.1	19.1 – 31.7
Width of the body, rear	23.9 ± 1.5	19.0 – 27.3
Total Surface Area (cm <sup>2</sup> )	4600.1 ± 206.9	3596.2 – 5399.7
Placenta Weight (g)	2543.8 ± 138.9	1690 – 3060
Umbilical cord length (cm)	51.2 ± 3.2	39.0 – 62.0
Umbilical cord weight (g)	146.1 ± 11.4	112 – 181

Abbreviations: PH, pregnant horn; NPH, nonpregnant horn  
<sup>a</sup>Measurements for retained placenta were omitted from the results.

**Table 2.** Placental parameters

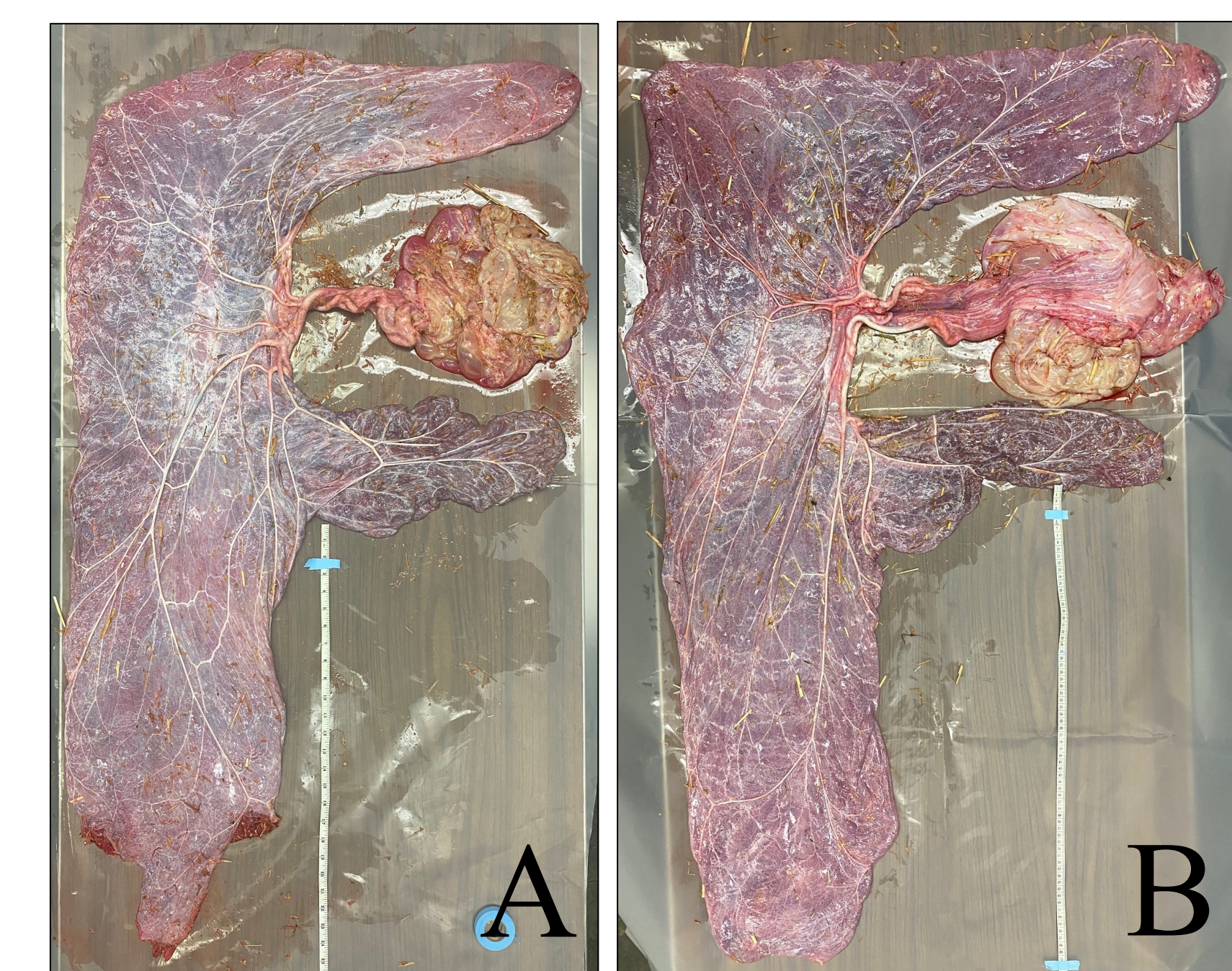
Parameter	Mean ± SEM (n = 3)	Range
Number of umbilical cord vessels near the infundibulum	4.0 ± 0.2	3 – 5
Number of umbilical cord vessels at fetal end	2.9 ± 0.1	2 – 3
Number of twists in umbilical cord	1.4 ± 0.4	0 – 3

## Results



**Figure 4.** (A) Tag of hippomane from the allantonic surface of one Arabian mare placenta. (B) Endometrial cup from the allantonic surface of one Arabian mare. (C) Webbing over major blood vessels near the base of the pregnant horn. (D) Lack of villi on folds of large blood vessels on the chorionic side of placenta.

- 3 placentas had tags of hippomane (Figure 4A).
- 1 placenta had an endometrial cup (Figure 4B).
- 8 placentas had webbing over vessels (Figure 4C).
- 7 placentas had lack of villi on vessels (Figure 4D).



**Figure 5.** (A) Vascular pattern I. (B) Vascular pattern III.

- 4 placentas had vascular pattern I.
- 1 placenta had vascular pattern II.
- 3 placentas had vascular pattern III.

## Conclusion

- The data provide a description of placental characteristics from Arabian Mares foaling at Cal Poly Pomona.

## Acknowledgements

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## References

1. S Wilsher, A Bowker, J Silva, W R Allen. Morphological Characteristics of the Placenta and Umbilical Cord of Arabian Mares Foaling in the United Arab Emirates. Equine Vet Sci. 2020 Aug;91:103124.