

IN THE
Supreme Court of the United States

NATIONAL PORK PRODUCERS COUNCIL, ET AL.,
Petitioners,

v.

KAREN ROSS, IN HER OFFICIAL CAPACITY AS
SECRETARY OF THE CALIFORNIA DEPARTMENT OF
FOOD & AGRICULTURE, ET AL.,
Respondents.

**On Writ of Certiorari
to the United States Court of Appeals
for the Ninth Circuit**

**BRIEF OF
DONALD BROOM, ELENA CONTRERAS,
GWENDOLEN REYES-ILLG, JAMES REYNOLDS,
AND 374 ADDITIONAL ANIMAL-WELFARE
SCIENTISTS AND VETERINARIANS
AS *AMICI CURIAE* IN SUPPORT OF RESPONDENTS**

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INTEREST OF *AMICI CURIAE*¹

Amici are 378 animal-welfare scientists and doctors of veterinary medicine with different areas of expertise. Some are swine or livestock veterinarians; some treat pregnant patients of other species with physical changes and behavioral needs similar to those of pregnant pigs; and some are animal-welfare specialists. *Amici* believe that, in deciding the constitutionality of California's Proposition 12, the Court should have reliable information about the harms that gestation crates cause to the welfare of pigs.

This brief does not address legal issues relating to the dormant Commerce Clause. It instead presents a substantial body of peer-reviewed research showing that pigs inevitably suffer physical and psychological damage from long-term confinement to gestation crates that give them too little room to turn around or lie down. Other ways of housing pigs during pregnancy, properly designed and managed, cause them less suffering and improve their welfare.

An accurate understanding of gestation crates and their effects supports respondents' position that Proposition 12 is directed to food products that are made through cruel confinement practices that cause needless suffering. Accordingly, *amici* support respondents and affirmance.

¹ Pursuant to Supreme Court Rule 37.6, counsel for *amici* represent that they authored this brief in its entirety and that none of the parties or their counsel, nor any other person or entity other than *amici* or their counsel, made a monetary contribution intended to fund the preparation or submission of this brief. Pursuant to Rule 37.3(a), counsel for *amici* also represent that all parties have consented to the filing of this brief. This brief is being filed on behalf of *amici* and not on behalf of any of their academic institutions.

The Appendix to this brief sets forth the majority of *amici* who join in it. Biographies and credentials for four selected, individual *amici* follow.

Donald Broom, MA, PhD, ScD is Colleen Macleod Professor of Animal Welfare (Emeritus) at the University of Cambridge, where he earned his MA, PhD, and Doctor of Science. In 1986, Professor Broom was appointed the first Professor of Animal Welfare in the world in the University of Cambridge Department of Veterinary Medicine, and he has served in that role since. Professor Broom's research has included the behavior and welfare of female pigs in relation to housing; various methods for the scientific assessment of animal welfare; and the management, housing, and transport of farm animals, including pigs. He has served on many international and national scientific committees, including as Chairman of the European Union Scientific Veterinary Committee, Animal Welfare Section; Chairman of the World Organisation for Animal Health's Working Group on Land Animal Transport; and Honorary Fellow, and President, of the International Society for Applied Ethology. Professor Broom has authored or co-authored 11 books and 480 peer-reviewed scientific papers – 80 concerning pig welfare.

Elena Contreras, DVM, MS, PhD is an Assistant Professor of Animal Welfare and Behavior at the Long Island University College of Veterinary Medicine. She is also a remote co-instructor for Veterinary Ethics courses at Colorado State University College of Veterinary Medicine. She earned her Doctor of Veterinary Medicine from Ross University, MS in Ecology from Colorado State University, and PhD in Veterinary Clinical Sciences from Colorado State University, where she also completed a Shelter Internship and Fellowship. Professor Contreras worked

as a practicing veterinarian before being appointed to her current professorship. She has authored or co-authored more than a dozen peer-reviewed publications, including in the *Journal of Veterinary Internal Medicine* and *Journal of Animal Ethics*.

Gwendolen Reyes-Illg, DVM, MA is a practicing veterinarian. Dr. Reyes-Illg earned her Bachelor of Science in Zoology at the University of Florida, where she developed an environmental enrichment program for nursery and grower-finisher pigs in the college's Swine Unit. She earned her DVM at the University of Florida College of Veterinary Medicine and later earned a master's degree at Colorado State University, where she focused on veterinary ethics and remains an Affiliate Associate of the philosophy department. For the past 14 years, Dr. Reyes-Illg has worked with numerous species, including pigs, in diverse clinical settings such as veterinary hospitals, sanctuaries, and shelters.

James Reynolds, DVM, MPVM, DACAW has served as a Professor of Large Animal Medicine and Welfare at the Western University of Health Sciences for more than nine years. He earned his DVM and Master of Preventive Veterinary Medicine at the University of California, Davis. Professor Reynolds worked as a veterinarian in private practice for 14 years and as the Chief of Clinical Services for Production Medicine at the University of California, Davis for 12 years. He has extensive animal-welfare consulting experience both nationally and internationally. Professor Reynolds has served as Chair of the American Veterinary Medical Association Animal Welfare Committee. He has published more than a dozen peer-reviewed scientific papers.

INTRODUCTION AND SUMMARY

Proposition 12 reflects California's decision to rid its markets of pork produced through the use of gestation crates – a means of production it has determined to be cruel. Veterinary and animal-welfare science confirm that California's voters had an ample factual basis on which to make that determination.

Gestation crates hurt pigs. Dozens of peer-reviewed studies provide clear scientific evidence, using well-established indicators, that the welfare of a pig confined to a gestation crate is poor for most of her life. Gestation crates deny pigs the ability to engage in almost every natural behavior. Even the minimal movement of turning around (which a pregnant pig will do almost 200 times daily if given room) becomes impossible. The studies also show how pigs suffer from confinement. Some examples of suffering are physical, such as injuries from crate bars and urinary-tract infections that afflict pigs forced to stand, sit, and lie down day after day in their own excrement. Other examples of suffering are psychological. Researchers consistently find that pigs confined to gestation crates spend much time performing abnormal, functionless behaviors, such as “chewing” with empty mouths or on metal bars, and fail to respond to stimuli as a normal animal would.

Alternatives to gestation crates allow at least some movement and cause less harm. Free-range and group-pen systems are the historical norm in the United States; long-term confinement in gestation crates was a minority practice until the late 1980s or early 1990s. Since then, our understanding of gestation crates' harmful effects on pigs has increased. Some jurisdictions have outlawed them, and major pork producers and retailers have forsworn them

voluntarily. Producers have found – and studies confirm – that alternatives to gestation crates can achieve crates’ supposed benefits without their inherent drawbacks. For example, pigs in group pens can engage in at least some natural behaviors, like moving about, defecating away from their resting sites, and socializing with other pigs. Although aggression and competition for food sometimes occur in group pens, producers can minimize those problems through proper design and good stockmanship, particularly non-competitive feeding practices. In contrast, the only way to avoid the harms that gestation crates cause is to avoid the crates themselves.

Finally, *amici* disagree vigorously with the brief of petitioners’ *amicus* American Association of Swine Veterinarians (“AASV”), which repeatedly but inaccurately claims that “scientific consensus” supports the use of gestation crates. The AASV relies heavily on studies published by the National Pork Board and funded by the pork industry, which focus on purported effects of gestation crates on mother pigs’ “productivity” and “performance” – that is, economic benefits to pork producers – rather than on animal welfare. Its analysis disregards peer-reviewed research, ignores the harms that gestation crates inflict on pigs, and overstates the crates’ claimed benefits of reducing aggression and food competition, which – as even the AASV’s sources acknowledge – producers can and do control through other means.

The weight of the scientific evidence strongly supports the conclusion that gestation crates cause profound, avoidable suffering and deprive pigs of a minimally acceptable level of welfare. California’s judgment that pork produced through such cruelty should not be sold in its markets is reasonable and humane.

BACKGROUND

Pregnant pigs range from 300-pound gilts (females who have never given birth) to 525-to-790-pound sows. A typical gestation crate is 2.0 to 2.3 feet wide and 6.6 to 6.9 feet long – only slightly larger than a pregnant pig and providing less than 16 square feet of space. To prevent inactive pigs from becoming obese and to minimize costs, producers keep them hungry. Crates usually sit side-by-side on a slatted floor so that the pigs’ excrement falls into a manure pond. Many female pigs are confined to gestation crates through successive pregnancies, each lasting from 112 to 115 days. Before giving birth, mother pigs are taken to “farrowing crates,” where they nurse their piglets. Once the piglets are weaned, female pigs are returned to gestation crates and impregnated again. This cycle continues until the pig dies or is sent to slaughter, typically after 4 pregnancies, but sometimes after as many as 14. A pig subjected to this system spends most of her life within the metal bars of gestation and farrowing crates.²

Proposition 12 condemns as “cruel” the act of “confining a breeding pig with less than 24 square feet of usable floorspace per pig.” Cal. Health & Safety Code § 25991(e)(3). California producers may not confine pigs “in a cruel manner,” and businesses may not knowingly sell in California “[w]hole pork meat” from cruelly confined pigs or their offspring. *Id.* § 25990(a), (b)(2). The statute exempts confinement shortly before giving birth and while nursing piglets, and for certain “temporary periods for animal husbandry purposes.” *Id.* § 25992(f)-(g).

² See Humane Soc’y Veterinary Med. Ass’n, *Veterinary Report on Gestation Crates* 1-2 (Apr. 2013), https://www.hsvma.org/assets/pdfs/hsvma_veterinary_report_gestation_crates.pdf.

ARGUMENT

I. Gestation Crates Harm Animal Welfare

Pigs, by nature, are clean, active, inquisitive, social, sentient, and intelligent. Gestation crates harm their welfare because, unlike alternatives, crates inherently deny pigs their most basic physical and psychological needs.

A. Pigs' Natural Behaviors and Cognition Require the Ability To Move About

1. In assessing the welfare of a confined animal, animal-welfare scientists and veterinarians consider the animal's behaviors within a natural habitat and whether (or to what extent) the animal can express those behaviors in conditions of confinement.³ This approach is particularly appropriate for pigs because there are only minor behavioral differences between domestic pigs on the one hand and their wild boar ancestors and feral pigs on the other.⁴

The natural behavior of female pigs is well understood. They form small social groups of two to four relatives, called "sounders." A sounder rests and sleeps together in a communal nest, and pigs leave the nest to defecate. Female pigs are active. They regulate their temperature by shading themselves, wallowing, or huddling together. They socialize with each other and forage by rooting, grazing, and exploring substrates.⁵

³ See Richard B. D'Eath & Simon P. Turner, *The Natural Behaviour of the Pig*, in *The Welfare of Pigs* 13, 13 (Jeremy N. Marchant-Forde ed., 2009) ("*Pig Welfare*") ("However welfare is defined, knowledge of natural behavior can be useful in identifying welfare problems.").

⁴ See *id.* at 17.

⁵ See *id.* at 17-21.

Aggression among female pigs rarely occurs in nature. Within each sounder, a stable hierarchy exists. And sounders avoid encounters with each other, likely by relying on scent cues.⁶

2. To assess a captive animal's welfare, it is important to consider the animal's "cognitive needs and capacities."⁷ Ignoring these needs "lead[s] to boredom and frustration, which promotes the appearance of abnormal behavior, especially [behav-ior] related to stress and reduced welfare."⁸

Pigs are intelligent. Studies show they have long-term memory,⁹ experience the passage of time,¹⁰ and play with objects and other pigs.¹¹ They also respond to the emotional states of other pigs.¹² For comparison, studies suggest that the cognitive abilities of pigs are similar to or greater than those of dogs. In one study, pigs solved a box-opening problem more

⁶ See *id.* at 21-23.

⁷ Christian Nawroth et al., *Farm Animal Cognition – Linking Behavior, Welfare and Ethics*, *Frontiers in Veterinary Sci.*, Feb. 2019, at 1.

⁸ *Id.* at 8.

⁹ See Amanda K. Gifford et al., *Objects as enrichment: Effects of object exposure time and delay interval on object recognition memory of the domestic pig*, 107 *Applied Animal Behaviour Sci.* 206 (Nov. 2007).

¹⁰ See Marek Špinko et al., *Do domestic pigs prefer short-term to medium-term confinement?*, 58 *Applied Animal Behaviour Sci.* 221 (July 1998).

¹¹ See Kristina Horback, *Nosing Around: Play in Pigs*, 1 *Animal Behavior & Cognition* 186 (May 2014).

¹² See Inonge Reimert et al., *Emotions on the loose: emotional contagion and the role of oxytocin in pigs*, 18 *Animal Cognition* 517 (2015).

quickly than dogs did.¹³ In another study, despite relatively poor dexterity and eyesight, pigs learned how to play a joystick-operated video game – an ability they share with primates.¹⁴ In a third study, pigs showed the rare ability to learn quickly how a mirror works and to use this information.¹⁵

B. By Denying Pigs the Ability To Move and To Socialize, Gestation Crates Hurt Them Physically and Psychologically

1. Long-term confinement in gestation crates prevents pigs from meeting their biological and behavioral needs and frustrates their natural instincts. Given space, pregnant pigs will turn around almost 200 times per day;¹⁶ in a gestation crate, they cannot do so even once. They can only stand up, sit, and lie down. Even transitioning between these three options is difficult because the dimensions of gestation crates are designed for a pig's static space requirement, which is less space than the pig needs to change posture.¹⁷ To demonstrate that pigs prefer to avoid confinement, one study of gilts found that

¹³ See Paula Pérez Fraga et al., *Who turns to the human? Companion pigs' and dogs' behaviour in the unsolvable task paradigm*, 24 *Animal Cognition* 33 (2021).

¹⁴ See Candace C. Croney & Sarah T. Boysen, *Acquisition of a Joystick-Operated Video Task by Pigs (Sus scrofa)*, *Frontiers in Psych.*, Feb. 2021.

¹⁵ See Donald M. Broom et al., *Pigs learn what a mirror image represents and use it to obtain information*, 78 *Animal Behaviour* 1037 (2009).

¹⁶ See Knut Egil Bøe et al., *Turning around by pregnant sows*, 133 *Applied Animal Behaviour Sci.* 164 (2011).

¹⁷ See Jeremy N. Marchant & Donald M. Broom, *Factors affecting posture-changing in loose-housed and confined gestating sows*, 63 *Animal Sci.* 477 (1996).

when repeatedly required to choose between two sets of stalls – one imposing a short period of confinement and the other a longer period – the pigs learned which stalls imposed a shorter period and preferred those stalls.¹⁸

Gestation crates also prevent pigs from following other natural instincts. Pigs in gestation crates cannot exit their crates to eliminate, but must live amid their own feces and urine. Such conditions expose them to unnaturally high levels of ammonia. Studies have shown that such exposure is aversive to pigs: “given the opportunity, [they] learn to avoid” it.¹⁹ Likewise, pigs in gestation crates have no material with which to nest or forage. Multiple studies confirm that rooting behavior is “a high priority behaviour in pigs.”²⁰ Finally, pigs in gestation crates cannot engage in normal social interactions with other pigs.

2. By thwarting or re-directing pigs’ natural instincts, gestation crates cause them to suffer profound physical and psychological harms.²¹ Dozens of peer-reviewed studies have confirmed those harms. The findings of those studies confirm that there is a

¹⁸ See Špinka et al., 58 *Applied Animal Behaviour Sci.* at 229-31.

¹⁹ J.H. Smith et al., *The preference of pigs for fresh air over ammoniated air*, 49 *Applied Animal Behaviour Sci.* 417, 422 (1996).

²⁰ Merete Studnitz et al., *Why do pigs root and in what will they root? A review on the exploratory behaviour of pigs in relation to environmental enrichment*, 107 *Applied Animal Behaviour Sci.* 183, 185 (2007).

²¹ See generally Donald M. Broom et al., *A comparison of the welfare of sows in different housing conditions*, 61 *Animal Sci.* 369 (1995).

sound empirical basis for California’s judgment that the use of gestation crates is cruel and inhumane.

Gestation crates cause physical suffering. As female pigs expand in pregnancy, crates press more and more against their bodies, causing discomfort, lesions or pressure sores, and rectal prolapse.²² Crates prevent hungry pigs from accessing food in neighboring stalls, but pigs still try to do so, injuring their heads and snouts.²³ Pigs develop urinary-tract infections because the unnatural “dog-sitting position” that crates require “helps to force [their own] fecal material into the[ir] vagina[s].”²⁴ When pigs sit or lie down, their legs extend into neighboring stalls, where other pigs weighing hundreds of pounds can step on them, causing broken bones, lacerations, and other severe injuries.²⁵ The narrow dimensions also “preclude adequate resting” and “cause continuous resting problems.”²⁶

Pigs’ lack of movement in gestation crates also harms them. Immobility causes musculoskeletal atrophy, which, when combined with a wet, slatted floor, makes changing positions difficult and increases

²² See Vassilios Papatsiros et al., *Rectal Prolapse in Pregnant Sows due to Stall Housing*, 1 J. Veterinary Sci. & Tech. 1 (Nov. 2012).

²³ See Leena Anil et al., *Evaluation of the relationship between injuries and size of gestation stalls relative to size of sows*, 221 J. Am. Veterinary Med. Ass’n 834 (Sept. 2002).

²⁴ *Diseases of Swine* 830 (Jeffrey J. Zimmerman et al. eds., 11th ed. 2019).

²⁵ See Anil et al., 221 J. Am. Veterinary Med. Ass’n at 836.

²⁶ European Food Safety Auth., *Welfare of pigs on farm*, EFSA J. 100 (June 30, 2022) (“EFSA Op.”), <https://www.efsa.europa.eu/sites/default/files/2022-08/EFSA2-7421.pdf>.

the risk of slipping and injury.²⁷ Immobility is also associated with constipation, which causes discomfort and can increase the risk of complications associated with giving birth.²⁸ Finally, immobility impairs cardiovascular fitness, as shown by higher resting heart rates for female pigs confined to crates compared to those housed in group pens.²⁹

Pigs' pregnant condition worsens these effects. Pregnant pigs generally have the same physical needs as other pregnant mammals. Those needs include exercise and the ability to adopt a comfortable posture to make the painful bodily changes caused by pregnancy bearable. The pregnancy-related physical needs of pigs are perhaps greater than in other species because selection for meat production has changed their bodies, making it harder to stand and lie down,³⁰ and has increased the number of piglets

²⁷ See Jeremy N. Marchant & Donald M. Broom, *Effects of housing system on movement and leg strength in sows*, 41 *Applied Animal Behaviour Sci.* 275 (1994); Erin L. Schenck et al., *Exercising stall-housed gestating gilts: Effects on lameness, the musculo-skeletal system, production, and behavior*, 86 *J. Animal Sci.* 3166 (Nov. 2008); N. Mouttoto et al., *Foot lesions in finishing pigs and their associations with the type of floor*, 144 *Veterinary Rec.* 629 (June 1999).

²⁸ See Dominiek Maes et al., *Impact of group housing of pregnant sows on health*, 2 *Porcine Health Mgmt.* #17 (July 2016); Claudio Oliviero et al., *Environmental and sow-related factors affecting the duration of farrowing*, 119 *Animal Reproduction Sci.* 85 (2010).

²⁹ See Jeremy N. Marchant et al., *The effects of housing on heart rate of gestating sows during specific behaviours*, 55 *Applied Animal Behaviour Sci.* 67 (1997).

³⁰ See Fiona C. Rioja-Lang et al., *The effect of pen design on free space utilization of sows group housed in gestation pens equipped with free access stalls*, 148 *Applied Animal Behaviour Sci.* 93 (2013).

per litter.³¹ Crate confinement prolongs the process of giving birth³² and increases the likelihood that piglets will be stillborn³³ or die soon after birth.³⁴

Gestation crates also cause psychological suffering. That suffering has outward manifestations, especially abnormal, functionless behaviors called “stereotypies.” Some stereotypies mimic natural behavior – for example, pigs will “chew” on air or the metal bars of crates instead of straw, “root” in slatted floors instead of substrates, and “nest” with nothing instead of with natural materials. Other stereotypies have no natural parallel, such as sitting like a dog. Evidence ties stereotypies to stress, frustration, and boredom. Put differently, stereotypies suggest that pigs are trying, but failing, to cope with their environment.³⁵ Stereotypies also cause physical

³¹ See U.S. Dep’t of Agric., *Swine 2012, Part III: Changes in the U.S. Swine Industry, 1995-2012*, at 33 (Aug. 2017), https://www.aphis.usda.gov/animal_health/nahms/swine/downloads/swine2012/Swine2012_dr_Trends.pdf.

³² See Oliviero et al., 119 *Animal Reproduction Sci.* at 89-90.

³³ See Dannielle Glencorse et al., *Impact of Non-Confinement Accommodation on Farrowing Performance: A Systematic Review and Meta-Analysis of Farrowing Crates Versus Pens*, *Animals*, Nov. 12, 2019, at 13-15.

³⁴ See Elodie Merlot et al., *Improving maternal welfare during gestation has positive outcomes on neonatal survival and modulates offspring immune response in pigs*, 249 *Physiology & Behavior* #113751 (May 15, 2022).

³⁵ See P.E. Arellano et al., *Stereotyped behaviour, social interactions and suckling pattern of pigs housed in groups or in single crates*, 35 *Applied Animal Behaviour Sci.* 157, 158, 163-64 (1992).

harm – for example, bar-biting can injure pigs' mouths and cause painful broken teeth.³⁶

Crated pigs exhibit stereotypies at rates significantly higher than those of pigs in group pens,³⁷ and the incidence of stereotypies increases with the number of pregnancies a pig has had.³⁸ Stereotypic behavior is also extremely prevalent in absolute terms, with one study noting 92.6% of pigs in gestation crates exhibited stereotypies during one hour of observation.³⁹ Sham chewing is the most common; research shows it occurs hundreds of times daily, occupying 50-75% of a pig's waking hours.⁴⁰

Researchers have also observed that some confined pigs develop apathetic behavior, suggesting mental states akin to clinical depression.⁴¹ Pigs in crates often become inert and largely unresponsive to what

³⁶ See Eve Ala-Kurikka et al., *Pathological findings in spontaneously dead and euthanized sows – a descriptive study*, 5 *Porcine Health Mgmt.* #25, at 9-10 (Nov. 2019).

³⁷ See Caroline Vieuille-Thomas et al., *Stereotypies in pregnant sows: indications of influence of the housing system on the patterns expressed by the animals*, 44 *Applied Animal Behavior Sci.* 19, 24 tbl. 5 (1995); Arellano et al., 35 *Applied Animal Behaviour Sci.* at 162.

³⁸ See Ming-yue Zhang et al., *Effects of confinement duration and parity on stereotypic behavioral and physiological responses of pregnant sows*, 179 *Physiology & Behavior* 369, 371-75 (2017).

³⁹ See Vieuille-Thomas et al., 44 *Applied Animal Behavior Sci.* at 24 tbl. 5.

⁴⁰ See Jinyue Zhang et al., *Evaluation of Behavior and Affective State of Different-Parity Sows with Strong/Weak Pupil Light Reflex*, *Animals*, May 5, 2022, at 6 fig. 2.

⁴¹ See Donald M. Broom, *Stereotypies and responsiveness as welfare indicators in stall-housed sows*, *Brit. Soc'y Animal Prod. Winter Meeting*, Paper No. 19 (1986).

happens around them. One study examined how awake female pigs responded to having a few ounces of room-temperature water poured on their backs while lying down.⁴² Pigs kept in group pens generally sat or stood up within 30 seconds and performed a range of behaviors such as vocalizing, shaking their bodies, and raising their heads. Females in gestation crates, by contrast, failed to change body positions for far longer – a median of 12 minutes. They also performed far fewer normal behaviors in response to the stimulus. Recent research has confirmed these findings, identified accompanying neurological changes, and found evidence that anhedonia, or the inability to feel pleasure or enjoyment, develops in pigs after long-term confinement.⁴³

II. Alternatives to Gestation Crates Can Enhance Animal Welfare

A. Gestation Crates Are a Novel and Undesirable Development

Free-range and group-pen systems are the historical norms in the United States. Pig farming traditionally occurred on a small scale: “[i]n rural areas the world over, and even within urban settings, individual families would rear a few pigs to supplement their diet.”⁴⁴ Around World War II, changes in government policy and new technologies gradually encouraged the development of large-scale pig farms.⁴⁵

⁴² See Donald M. Broom, *Applications of Neurobiological Studies to Farm Animal Welfare*, in *Biology of Stress in Farm Animals: An Integrated Approach* 101, 107-08 (Pieter R. Wiepkema & P.W.M. van Adrichem eds., 1987).

⁴³ See Zhang et al., *Animals* at 8-10.

⁴⁴ Jeremy N. Marchant-Forde, *Introduction to the Welfare of Pigs*, in *Pig Welfare* 1, 2.

⁴⁵ See *id.*

Even after that time, gestation crates took decades to come into common use. Supporters and opponents of crates agree that confining pigs in gestation crates is a new production technique: one article cited by *amicus* AASV calls the “individual gestation stall” a “fairly new” practice, to which the “majority” of American pigs have been subject only since “the late 1980s,”⁴⁶ while a report from respondent Humane Society traces the U.S. introduction of gestation crates to 1969 and majority adoption to “the 1980s and 90s.”⁴⁷

In the past two decades, scientific and public understanding of gestation crates’ harmful effects on pigs has increased, and their use in the United States and worldwide has been curtailed by legislative action or by voluntary changes in production methods. Ten States⁴⁸ have banned them, and the European Union (“EU”)⁴⁹ restricts their use; some

⁴⁶ John McGlone, *Gestation Stall Design and Space: Care of Pregnant Sows in Individual Gestation Housing* at 1, Nat’l Pork Bd. (2013), <https://porkcdn.s3.amazonaws.com/sites/all/files/documents/2013SowHousingWebinars/Gestation%20Stall%20Design%20and%20Space.pdf>.

⁴⁷ Humane Soc’y of the U.S., *An HSUS Report: Welfare Issues with Gestation Crates for Pregnant Sows* at 1 (Feb. 2013), <https://www.humanesociety.org/sites/default/files/docs/hsus-report-gestation-crates-for-pregnant-sows.pdf>.

⁴⁸ See U.S. Dep’t of Agric., *Livestock, Dairy, and Poultry Outlook: February 2022*, at 33-34 (Feb. 15, 2022), <https://www.ers.usda.gov/webdocs/outlooks/103284/ldp-m-332.pdf>. The tenth State is Ohio, which has regulations banning gestation crates effective in 2026.

⁴⁹ See Council Directive 2008/120/EC of 18 December 2008 laying down minimum standards for the protection of pigs, 2009 O.J. (L 47) 5, <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32008L0120&from=en>.

EU member states⁵⁰ have imposed further restrictions. Four foreign countries outside the EU have also banned their use.⁵¹ Major multinational pork producers, including the largest producers in the United States and Canada, have forsworn them voluntarily.⁵² Retailers, including many fast-food chains, have done the same.⁵³ Finally, in 2021, the World Organization for Animal Health (“WOAH”), the leading intergovernmental organization dedicated to improving animal health globally, adopted standards that recommend group housing for female pigs.⁵⁴

⁵⁰ See EFSA Op. 40.

⁵¹ Those four countries are Switzerland, the United Kingdom, Norway, and New Zealand. See Switzerland Animal Protection Ordinance of 23 April 2008 (status as at 1 March 2018), SR 455.1, art. 48, *available at* <https://bined.it/3SML3kt>; The Welfare of Farmed Animals (England) Regulations 2007, No. 2078, sched. 8, pt. 4, ¶ 27, <https://www.legislation.gov.uk/uksi/2007/2078/schedule/8>; Norway Regulations on Hold of Swine § 25; New Zealand Code of Welfare: Pigs, Minimum Standard No. 11 (2018), <https://www.mpi.govt.nz/dmsdocument/46048-Code-of-Welfare-Pigs>.

Additionally, the Australian and Canadian pork industries voluntarily committed to phase out the use of gestation crates. See Emma M. Baxter, *Sow welfare in the farrowing crate and alternatives*, in *Advances in Pig Welfare* 27 (Marek Špinko ed., 2017) (Australia); Nat’l Farm Animal Care Council, *Code of Practice for the Care and Handling of Pigs* § 1 (2014) (Canada), https://www.nfacc.ca/pdfs/codes/pig_code_of_practice.pdf.

⁵² See Humane Soc’y of the U.S., *Food Company Policies on Gestation Crates*, <https://www.humanesociety.org/sites/default/files/archive/assets/pdfs/farm/gestation-crate-policies.pdf>.

⁵³ See *id.*

⁵⁴ See WOAH, Animal Welfare and Pig Production Systems, art. 7.13.12 (July 19, 2021) (“Sows and gilts, like other pigs, are social animals and prefer living in groups, therefore pregnant sows and gilts should preferably be housed in groups.”),

One example of that widespread recognition is the “commitment” made by McDonald’s Corporation “to source from producers who do not use gestation stalls for pregnant sows.”⁵⁵ Petitioners misleadingly describe the McDonald’s commitment as “sourcing pork products from farmers who house sows in ‘individual stalls.’” Pet. Br. 47 n.10. In fact, the McDonald’s policy would “allow for confirmed pregnant sows to live in a group setting for the vast majority of their lives.”⁵⁶ The language that petitioners quote about “individual stalls” refers to a relatively short period of confinement (“four to six weeks”) from insemination until confirmed pregnancy.⁵⁷ That is hardly the endorsement of long-term confinement that petitioners suggest.

B. Alternatives to Gestation Crates Better Address the Natural Needs of Pregnant Pigs

Alternatives to gestation crates exist and can improve sow welfare compared to gestation crates. The primary means of compliance with Proposition 12’s standards for producers raising pigs for the sale of meat to California consumers will likely be group pens of sufficient size to give each pig 24 square feet of usable space. Approximately one-third of American female pigs are currently housed in group pens, showing the method’s commercial viability. See Agric. & Res. Econ. Professors Br. 8. Group penning

https://www.woah.org/fileadmin/Home/eng/Health_standards/tahc/current/chapitre_aw_pigs.pdf.

⁵⁵ McDonald’s Corp., *2022 Annual Meeting Update* at 7 (May 2022), https://corporate.mcdonalds.com/content/dam/gwscorp/assets/investors/events-presentations/meeting-resources/2022.05.04_MCD%20Annual%20Meeting%20Update_vF.pdf.

⁵⁶ *Id.* (bold omitted).

⁵⁷ *Id.*

encompasses a variety of practices and can be done well or poorly. Pork producers that choose to transition to group pens will thus have numerous options available to improve animal welfare.

When well-designed and well-managed, group pens enhance pig welfare greatly. Pigs have more freedom of movement, which allows them to lie more comfortably, regulate their body temperatures, explore, and experience positive social interactions. Pigs in group pens may be able to avoid unpleasant experiences, such as lying in their own excrement or putting pressure on an injury. With enough space, subordinate pigs can also avoid aggressive interactions, as they are naturally inclined to do.⁵⁸ Finally, in a group pen, there may be opportunities for environmental enrichment, like straw bedding that allows for nesting and rooting.

Group pens create the potential for both friendly and aggressive interactions between pigs, but good practices keep aggression to a low level. Ethological research has shown that, when pigs are kept in an appropriate environment, the dominance hierarchy is typically maintained by the behavior of more submissive animals, which avoid confrontation with dominant sows, rather than by constant fighting.⁵⁹ Today, many pork producers mitigate aggression through measures such as gradually familiarizing pigs to each other; limiting group size; grouping pigs of similar size and age together; providing sufficient space and flexible barriers for pigs to avoid one

⁵⁸ See Per Jensen & David G.M. Wood-Gush, *Social interactions in a group of free-ranging sows*, 12 *Applied Animal Behaviour Sci.* 327 (1984).

⁵⁹ See *id.* at 336.

another; avoiding hunger during the mixing period; and providing an adequate amount of resources, such as solid, bedded lying areas and water drinkers. If a pig has difficulty in the group environment, the producer can remove her temporarily to a “[r]elief pen.”⁶⁰

Competition over food is manageable as well. Producers can provide roughage to mitigate chronic hunger – which itself improves animal welfare – and decrease the importance of feeding time. Producers also use feeding systems that render competition futile or less rewarding. These systems range from rudimentary to advanced. For example, trickle feeders release a steady stream of food at approximately the rate that pigs consume it; feeding stalls prevent pigs from accessing one another’s feed; and electronic sow feeding (“ESF”) systems allow producers to individualize food intake.

In addition, Proposition 12 does not bar even long-term confinement in individual stalls in the production of pork for sale in California. It permits individual stalls that give pigs at least 24 square feet of usable floorspace. To be clear, long-term confinement even in larger individual stalls is far from ideal because it still prevents normal socializing and other natural behaviors. *See supra* pp. 10, 13-15. Nevertheless, it is more humane than long-term confinement in gestation crates where pigs cannot even turn around.

⁶⁰ Donald G. Levis, *Group Sow Housing Alternatives: Building New vs. Remodeling Existing Facilities*, Nat’l Hog Farmer (Oct. 15, 2013), <https://www.nationalhogfarmer.com/facilities/group-sow-housing-alternatives-building-new-vs-remodeling-existing-facilities>. Relief pens comply with Proposition 12’s standards for the sale of pork in California if they meet the minimum space standard of California Health & Safety Code § 25991(e)(3). Smaller crates can also be used temporarily under § 25992(g).

Research suggests that even “small increase[s] in stall dimensions could reduce injuries and improve well-being of sows considerably.”⁶¹

III. The AASV’s Analysis of Gestation Crates’ Welfare Effects Is Inaccurate and Unreliable

Amici animal-welfare scientists and veterinarians disagree strongly with the contentions of petitioners’ *amicus* AASV. The AASV contends not only that gestation crates promote animal welfare by preventing aggression and competition over food, AASV Br. 4-14, but also that a “scientific consensus” supports its position, *id.* at 14-17. The AASV’s presentation to this Court is not an accurate or reliable characterization of current science. It ignores important indicators of animal welfare and disregards the weight of the scientific literature that contradicts its assertion of consensus.

A. The AASV’s Welfare Analysis Is Flawed

An animal-welfare scientist or veterinarian assessing the animal-welfare effects of a housing system should consider all of the system’s effects rather than focusing on some and excluding others. The AASV’s analysis ignores many of the harms to animal welfare discussed above. It does not acknowledge the dozens of peer-reviewed articles confirming the physical and psychological suffering that gestation crates inherently inflict on pigs. Instead, the AASV focuses on gestation crates’ purported benefits – potential decreases in aggression, competition, and even production costs – to the exclusion of all else. Of the 10 pages its brief devotes to welfare, 7 focus on aggression between pigs, *see* AASV Br. 4-7, 9-11; one paragraph discusses compe-

⁶¹ Anil et al., 221 J. Am. Veterinary Med. Ass’n at 834.

tition over food in group pens, *id.* at 12-13; and a half-paragraph mentions stereotypies and piglet health, *id.* at 7-8. The result is a remarkable argument that forcing an intelligent, social animal to live alone in unrelieved confinement – hungry, hardly able to move, often lying in her own waste – is actually in her best interests.

Further, although the AASV implies that consideration of alternatives is relevant to a welfare analysis, it does not consider alternatives to gestation crates fairly. It incorrectly describes Proposition 12 as a choice between “individual stalls” and “group housing” – even as “legally mandat[ing] a one-size-fits-all solution.” *Id.* at 9, 17. As respondents California (at 47 n.24) and the Humane Society (at 49) explain, Proposition 12 does not ban individual stalls; it instead requires those raising pigs in California or for the production of pork that will be sold in California to give sows 24 square feet of usable floorspace. Those producers have flexibility to choose between individual stalls of sufficient size, outdoor paddocks, pasture-raised systems, and indoor group pens. Those who choose group penning can also use “relief pens” of sufficient size to house specific pigs individually. They can also supplement group housing with use of smaller crates for up to 6 hours at a time and up to 24 hours per month, *see* Cal. Health & Safety Code § 25992(g); and with individual farrowing crates for up to five days before birth and while piglets are nursing, *see id.* § 25992(f).

The AASV also mischaracterizes group pens. It purports to identify drawbacks of group pens, especially aggression and food competition. AASV Br. 8-9, 10-11. But, as explained above, group pens are a historical norm, *see supra* pp. 15-16, and techniques

to address drawbacks are familiar.⁶² The AASV calls these techniques “complex” or “elaborate,” AASV Br. 11, but it concedes they are effective, *id.* at 11-12, and its own sources state they are feasible.⁶³ For example, one source the AASV cites states that “it is possible to keep aggression to a minimum in well designed group-housing systems.”⁶⁴ Other sources the AASV cites discuss techniques such as modifying “pen size and shape,” “pen design,” or “pre-exposing pigs to auditory and olfactory stimulation in their new pen.”⁶⁵ By comparing gestation crates to group pens where no attempt is made to manage aggression or food competition, the AASV distorts its analysis.

Finally, the AASV introduces elements into its analysis that have little to do with animal welfare. It begins its brief by promising to discuss the “biological facts” necessary to an “assessment of animal welfare.”⁶⁶ But the brief’s actual analysis intertwines references to pigs’ “health” with references to

⁶² See, e.g., Lee J. Johnston & Yuzhi Li, *Group Sow Housing: Practical Considerations*, Nat’l Hog Farmer (Oct. 15, 2013), <https://www.nationalhogfarmer.com/facilities/group-sow-housing-practical-considerations>.

⁶³ See R. Tracy Rhodes et al., *A comprehensive review of housing for pregnant sows*, 227 J. Am. Veterinary Med. Ass’n 1580, 1584 (Nov. 2005).

⁶⁴ Donald G. Levis & Laurie Connor, *Group Housing Systems: Choices and Designs* at 2, Nat’l Pork Bd. (2013), <https://porkcheckoff.org/wp-content/uploads/2021/05/Group-Housing-Systems-Choices-and-Design.pdf>.

⁶⁵ John L. Barnett et al., *A review of the welfare issues for sows and piglets in relation to housing*, 52 Austl. J. Agric. Rsch. 1, 7 (2001).

⁶⁶ AASV Br. 1 (quoting Barnett et al., 52 Austl. J. Agric. Rsch. at 2).

“productivity” and “performance.” AASV Br. 4, 17.⁶⁷ The AASV’s sources similarly equate pig welfare with reproductive success.⁶⁸ And, as one of those sources states, “[r]eproductive performance is a key measure for profitability for swine farms.”⁶⁹ But whether long-term confinement in gestation crates is profitable for pork producers is different from whether it promotes pigs’ welfare – or, indeed, is consistent with minimal standards of humane treatment. By conflating those questions, the AASV creates the appearance of a welfare tradeoff where there is none.

B. No Scientific Consensus Supports the Use of Gestation Crates

As set forth in Parts I and II above, the weight of scientific authority recognizes that gestation crates are harmful and that well-designed and well-managed alternatives enhance animal welfare. The

⁶⁷ See also *id.* at 6 (the “central challenge[] of hog farming and veterinary practice” is “maximizing animal welfare *and* productivity across the entire herd”) (emphasis added); *id.* at 14 (“[t]he only question is whether animal welfare and productivity can be maximized by preempting the problem with individual stalls”).

⁶⁸ See, e.g., Rob Knox et al., *Effect of day of mixing gestating sows on measures of reproductive performance and animal welfare*, 92 J. Animal Sci. 1698, 1702-06 (2014); Pablo Moreno, *Pen Gestation Experience* 1 (June 6, 2007) (“[Pork producers] goal must be to maintain the sow’s gestation in order to reach the farrowing target.”); Janeen L. Salak-Johnson, *The Reality of Sow Stalls* 2 (June 6, 2007) (beginning its discussion of sow welfare with a discussion of reproductive performance); Rob V. Knox & Mark J. Estienne, *Group Housing Systems: Forming Gilt and Sow Groups*, Nat’l Pork Bd. (2013) (basing a discussion of sow welfare on fertility and reproduction metrics), <https://porkcheckoff.org/wp-content/uploads/2021/05/Group-Housing-Systems-Forming-Gilt-and-Sow-Groups.pdf>.

⁶⁹ Knox et al., 92 J. Animal Sci. at 1703.

AASV claims to identify two areas of scientific consensus supporting the use of gestation crates, but the scientific literature supports neither.

1. The AASV fails to show a “strong scientific consensus that, in order to maximize animal welfare, the choice between individual stalls and group pens must be made on a case-by-case basis.” AASV Br. 3. On the contrary, a peer-reviewed article in the *Journal of Animal Science* found “a considerable degree of consensus” among pig-welfare scientists that gestation crates are “low welfare systems” and that group housing increases welfare “substantial[ly].”⁷⁰

None of the eight articles the AASV cites for its claim, see AASV Br. 7 & nn.15-18; *id.* at 15-16 & nn.50-59, supports a different conclusion.⁷¹ *First*, four of the articles are not peer-reviewed,⁷² and five were published by the National Pork Board,⁷³ which

⁷⁰ Marc B.M. Bracke et al., *Decision support system for overall welfare assessment in pregnant sows B: Validation by expert opinion*, 80 J. Animal Sci. 1835, 1835, 1843, 1844 (2002).

⁷¹ Those articles are Knox & Estienne, *Group Housing Systems*; McGlone, *Gestation Stall Design*; Rhodes et al., *A comprehensive review of housing for pregnant sows*; Salak-Johnson, *The Reality of Sow Stalls*; John J. McGlone, *Review: Updated scientific evidence on the welfare of gestating sows kept in different housing systems*, 29 Prof'l Animal Scientist 189 (2013); Kenneth J. Stalder et al., *The Impact of Gestation Housing Systems on Sow Longevity* (June 6, 2007); Barnett et al., *A review of the welfare issues for sows and piglets in relation to housing*; and Moreno, *Pen Gestation Experience*.

⁷² See McGlone, *Gestation Stall Design*; Salak-Johnson, *The Reality of Sow Stalls*; Stalder et al., *The Impact of Gestation Housing Systems on Sow Longevity*; Moreno, *Pen Gestation Experience*.

⁷³ See Knox & Estienne, *Group Housing Systems*; McGlone, *Gestation Stall Design*; Salak-Johnson, *The Reality of Sow*

funds research to support the pork industry.⁷⁴ The AASV's pervasive reliance on such sources undermines its claim to consider the literature as a whole.

Second, not one of the AASV's articles itself states that a consensus exists in favor of flexibility to use gestation crates. Five articles do not even conduct a literature review or survey experts in the field, as would be expected for a claim of consensus.⁷⁵ The remaining three review the literature, but only one uses the word "consensus," identifying "a strong consensus among nearly all authors" that "stereotypes are an indication of welfare problems"⁷⁶ – a point the AASV neglects in its brief.

Third, in line with the AASV's erroneous approach of equating welfare with reproductive performance, six of its articles collapse the two issues into one

Stalls; Stalder et al., *The Impact of Gestation Housing Systems on Sow Longevity*; Moreno, *Pen Gestations Experience*. The National Pork Board sponsored the 2007 Sow Housing Forum at which the latter three papers were presented. See *Read More Sow Gestations Housing Stories*, Nat'l Hog Farmer (Feb. 14, 2012), <https://www.nationalhogfarmer.com/animal-well-being/read-more-sow-gestations-housing-stories>.

⁷⁴ The National Pork Board was created by the Pork Promotion, Research, and Consumer Information Act of 1985, 7 U.S.C. §§ 4801-4819. It is statutorily obligated to fund only "research designed to advance, expand, or improve the image, desirability, nutritional value, usage, marketability, production, or quality of porcine animals, pork, or pork products." *Id.* § 4802(13)(A).

⁷⁵ See Knox & Estienne, *Group Housing Systems*; McGlone, *Gestation Stall Design*; Salak-Johnson, *The Reality of Sow Stalls*; Stalder et al., *The Impact of Gestations Housing Systems on Sow Longevity*; Moreno, *Pen Gestations Experience*.

⁷⁶ Rhodes et al., 227 J. Am. Veterinary Med. Ass'n at 1584.

discussion.⁷⁷ One article is referring to production, not animal welfare, when it says that both gestation crates and group pens have “advantages and disadvantages” and yield “good results.”⁷⁸ Another denies a “clear cut advantage to any sow gestation housing system,”⁷⁹ but is referring to sow longevity, reproductive failure, and sow performance, without taking other welfare metrics into account.

Fourth, at least two of the AASV’s sources contradict the propositions for which the AASV cites them. The AASV claims that the 2005 review by Rhodes et al. found “very similar observable levels of sow welfare” in individual- and group-housed sows, AASV Br. 15 & n.51, but the Rhodes review found that stereotypies are more common in crated sows; that “[s]ows from group pens had improved maneuvering ability and comfort and fewer skin lesions than sows from stalls”; and that “lack of control over stressful components of the environment suggests a reduction in welfare.”⁸⁰ The AASV cites a 2013 McGlone article for the same claim, *see id.* at 15 & n.50, but McGlone expressly declined to “argue the merits of individual versus group housing.”⁸¹

⁷⁷ See Knox & Estienne, *Group Housing Systems*; Rhodes et al., *A comprehensive review of housing for pregnant sows*; Salak-Johnson, *The Reality of Sow Stalls*; McGlone, *Updated scientific evidence*; Stalder et al., *The Impact of Gestation Housing Systems on Sow Longevity*; Moreno, *Pen Gestation Experience*.

⁷⁸ AASV Br. 16 (quoting Moreno, *Pen Gestation Experience* at 1).

⁷⁹ *Id.* (quoting Stalder et al., *The Impact of Gestation Housing Systems on Sow Longevity* at 4).

⁸⁰ Rhodes et al., 227 J. Am. Veterinary Med. Ass’n at 1583, 1584, 1585.

⁸¹ McGlone, *Gestation Stall Design* at 1.

Similarly, the AASV mischaracterizes a 2001 study by Barnett et al. that addresses the practice of short-term confinement, not the long-term confinement that Proposition 12 identifies as cruel. The Barnett study was conducted in Australia in the early 2000s and acknowledges that long-term confinement was not common in Australia then.⁸² To the contrary, it praises the “industry practice of limiting the time that sows are individually housed” as a “sensible precaution[,]” given “the lack of welfare data on continuous individual housing.”⁸³

2. The AASV also fails to show a “strong scientific consensus that individual stalls provide health benefits by protecting sows from aggression and social subordination.” AASV Br. 7.

Neither of the AASV’s cited sources – the Barnett study and the Knox & Estienne article – purports to diagnose such a consensus. The Knox & Estienne article is a non-peer-reviewed publication of the National Pork Board. The AASV also takes the Barnett study’s statements out of context to create a misleading impression. The AASV first quotes the statement that, by the 1980s, early research had not shown “physiological evidence that stalls (of certain designs) were associated with a risk to the welfare of pregnant pigs.”⁸⁴ But on the same page, the Barnett study explains that later research found such evidence, including that pigs housed in stalls of certain designs “had high levels of aggressive interactions

⁸² See Barnett et al., 52 *Austl. J. Agric. Rsch.* at 13.

⁸³ *Id.*

⁸⁴ AASV Br. 7 (quoting Barnett et al., 52 *Austl. J. Agric. Rsch.* at 5).

with their neighbors.”⁸⁵ The AASV next quotes a statement that “stall housing . . . may have reproductive and welfare advantages.”⁸⁶ But the Barnett study endorses “increas[ing] movement opportunities for individually housed pigs,” reasoning it “may lead to . . . improved welfare.”⁸⁷ These sources do not reflect any “strong consensus” supporting the use of gestation crates to control aggression or against Proposition 12.

To be sure, if “protecting sows from aggression” means decreasing direct physical contact with other sows, long-term confinement to gestation crates has that effect.⁸⁸ But there is no consensus that this type of reduction in aggression is a net benefit to animal welfare after accounting for the cost of the physical and psychological suffering that gestation crates inflict. Further, the AASV’s own sources acknowledge that there are other methods for controlling aggression and food competition in group-penning environments. *See supra* pp. 22-23. And even if protecting pigs from other pigs were the only type of welfare to be considered (which it is not), pigs would still be better off in larger individual stalls than in gestation crates.

California can reasonably conclude that terminating almost every natural behavior of a mother pig outside of eating, sleeping, and birthing is harmful to her welfare. That intuitive conclusion becomes more, not less, certain after a balanced review of scientific

⁸⁵ Barnett et al., 52 *Austl. J. Agric. Rsch.* at 5.

⁸⁶ AASV Br. 7 (quoting Barnett et al., 52 *Austl. J. Agric. Rsch.* at 21) (ellipsis in original).

⁸⁷ Barnett et al., 52 *Austl. J. Agric. Rsch.* at 13.

⁸⁸ *See* Anil et al., 221 *J. Am. Veterinary Med. Ass’n* at 836.

research into pigs' needs and the effects of confining them to gestation crates for nearly their entire lives. Proposition 12 is a reasonable step to prevent the sale within California of pork made through cruel and inhumane means.

CONCLUSION

Amici support respondents' position that the judgment of the court of appeals should be affirmed.

Respectfully submitted,

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August 15, 2022

APPENDIX

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11. Staci Baker, DVM
12. Alaina L. Barclay, DVM
13. Lariann Baretta, DVM
14. Gabrielle Bassin, DVM
15. George Bates, DVM
16. Adam Bauknecht, DVM
17. Caitlin Baxter, DVM, MS
18. Savannah Beauregard, DVM
19. Deborah Beck-Ross, DVM
20. E'Lise Christensen Bell, DVM, DACVB⁵
21. Maria Bell, DVM

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² Master of Public Health

³ Veterinary Medical Doctor

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28. Crystal Bloodworth, DVM
29. Kimberly Bodner, DVM
30. Rebecca Boncheck, VMD
31. Colette Bonte, DVM
32. Emma Bratton, DVM
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39. Kathleen J. Brown, DVM
40. Mary Brown, DVM, MPH
41. Deborah Bryant, DVM, DACVB
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71. Leigh Ann Collins, DVM

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120. Hadar Friedman, DVM
121. Nicole Froelich, DVM
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133. Andrea Goldy, DVM
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140. Sara Greenslit, DVM
141. Pamela Greenwald, DVM, MS
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364. Robin Woodley, DVM

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- 371. Erin Zamzow, DVM
- 372. Franchesca Zenitsky, DVM
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