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JM Week 1. Terminology

Broom, D. and K.G. Johnson. 1993. Approaching questions of stress and welfare. In: Stress and Animal Welfare. Kluwer Academic Publishers, pp 1-7 #

Fraser and Broom. 1997. Welfare terminology and concepts. In: Farm animal behaviour and welfare. CAB International. pp 256-265 ¥

AJ Week 2. Concepts of measuring welfare: physiology, behavior, performance and health.

Fraser, A. F. and D. M. Broom, 1997. Welfare Measurement. In: Farm animal behaviour and welfare. CAB International. pp 266-279. ¥

Gonyou 1986. Assessment of comfort and well-being in farm animals. J. Anim. Sci. 62:1769-1775. ¥

[Broom, D. M. 1991. Animal welfare concepts and measurement. J. Anim Sci 69: 4167-4175](#)

[Swanson, J. C. 1995. Farm animal well-being and intensive production systems. J. Anim. Sci. 73:2744-2751.](#)

STUDENTS WILL FIND A RESEARCH RELATED PAPER AND PREPARE AND SUBMIT AN ABSTRACT BEFORE THIS CLASS MEETS.

All Week 3. Alternative concepts of animal welfare: feelings, physiology, vocalizations, & asymmetry

[Duncan, I. 1993. Welfare is to do with what animals feel. J. Ag & Appl Ethics 6:8-14. \[feelings approach\]](#)

McGlone, J. 1993. What is animal welfare? J. Ag & Appl Ethics 6:26-36. [physiology approach]¥

[White, RG, JA DeShazer, CJ Tressler, GM Borchert, S Davey, A Waninge, AM Parkhurst, MJ Milanuk, and ET Clemens. 1995. Vocal and physiological response of pig during castration with or without anesthetic. J. Anim Sci 73:381-386. \[Vocalizations\]](#)

[Tuytens, FAM, L Maertens, E Van Poucke, A Van Nuffel, S Debeuckelaere, J. Creve and L Lens. 2005. Measuring fluctuating asymmetry in fattening rabbits: A valid indicator of performance and housing quality. J Anim Sci 83:2645-2652.](#)

STUDENTS WILL FIND A RESEARCH RELATED PAPER AND PREPARE AND SUBMIT AN ABSTRACT BEFORE THIS CLASS MEETS.

JS Week 4. Measuring welfare over short and long periods

Broom DM, Johnson KG. 1993. Assessing welfare: short-term response. In: Stress and animal welfare. 87-110. #

Broom DM, Johnson KG. 1993. Assessing welfare: long-term response. In: Stress and animal welfare. 111-144. #

[Mostl E, Palme R. 2002. Hormones and indicators of stress. Domestic Anim Endocrinol 23:67-74.](#)

[Trickle feeding paper \(Hulbert McGlone, 2006\)](#)

[Hunt & Hambly, 2006. Fecal corticosterone in mice.](#)

Measuring Behavior: Leader John McGlone

Week 5. Sampling methods

Altmann, J. 1974. Observational study of behavior. Behaviour. 49:227-267 ¥

No abstracts due.

Week 6. Time-lapse and validation of behavioral methods

Arnold Meeks, C. and J McGlone. 1986. Validating techniques to sample behavior of confined, young pigs. *Appl Anim Behav Sci* 16:149-155. ¥

[Mitloehner, F., J. Morrow-Tesch, S. Wilson, J. Dailey and J McGlone. 2001. Behavioral sampling techniques for feedlot cattle. *J. Anim Sci* 79:1189-1193.](#)

STUDENTS FIND A RESEARCH PAPER THAT USES A GIVEN BEHAVIORAL MEASURE AND STUDENTS WILL WRITE AN ABSTRACT THAT INCLUDES ASSESSMENT OF THE SAMPLING METHOD

Week 7. Mid term Exam

Behavioral measures of farm animal welfare: Leader Anna Johnson

Week 8. Early reviews

Banks, E. M. 1982. Behavioral research to answer questions about animal welfare. *J. Anim. Sci.* 54:434-446. ¥

[Gonyou, H. 1994. Why the study of animal behavior is associated with the animal welfare issue. *J. Anim. Sci.* 72:2171-2177.](#)

Broom, D. M., and K. G. Johnson. 2003. Stress and animal welfare. Pp 82-88. #

Broom, D. M., and K. G. Johnson. 2003. Stress and animal welfare. Pp 130-144. #

Week 9. Behavioral needs and motivation

[Baxter, M. R. 1983. Ethology in environmental design for animal production. *Appl. Anim. Behav. Sci.* 9:207-220.](#)

Dawkins, M. S. 1983. Battery hens name their price: Consumer demand theory and the measurements of ethological needs. *Anim. Behav.* 31:1195-1205. ¥

[Jensen, P., and F. M. Toates. 1993. Who needs “behavioural needs”? Motivational aspects of the needs of animals. *Appl. Anima. Behav. Sci.* 37:161-181.](#)

[Mason, G., and M. Mendl. 1997. Do the stereotypes of pigs, chickens and mink reflect adaptive species differences in the control of foraging? *Appl. Anim. Behav. Sci.* 53:45-58.](#)

STUDENTS WILL FIND A RESEARCH RELATED PAPER AND PREPARE AND SUBMIT AN ABSTRACT BEFORE THIS CLASS MEETS.

Physiological, performance and health measures of farm animal welfare: Leader Janeen Salak-Johnson

Week 10. Aspects of the Immune System and health as measures

[Blecha F. 2000. Immune system response to stress. In: *The biology of animal stress: basic principles and implications for animal welfare.* Moberg GP, Mench JA \(eds\). CABI publishing, New York. pp 111- 121.](#)

[Davis SL. 1998. Environmental modulation of the immune system via the endocrine system. *Domest Anim Endocrinol* 15:283-89.](#)

[Berge ACB, Lindeque P, Moore DA, Sischo WM. 2005. A clinical trial evaluating prophylactic and therapeutic antibiotic use on health and performance of preweaned calves. *J Dairy Sci* 88:2166-77.](#)

[*Kanitz E, Tuchscherer M, Puppe B, Tuchscherer A, Stabenow B. 2004. Consequences of repeated early isolation in domestic piglets \(*Sus scrofa*\) on their behavioural, neuroendocrine, and immunological responses. *Brain Behavior Immunity* 18:35-45.](#)

STUDENTS WILL FIND A RESEARCH RELATED PAPER AND PREPARE AND SUBMIT AN ABSTRACT BEFORE THIS CLASS MEETS.

Week 11. Aspects of the Neuroendocrine System and Performance as measures

[Matteri RL, Carroll JA, Dyer CJ. 2000. Neuroendocrine responses to stress. In: *The biology of animal stress: basic principles and implications for animal welfare.* Moberg GP, Mench JA \(eds\). CABI publishing, New York. pp](#)

43-76.

Abeni F, Calamari L, Calaza F, Speroni M, Bertoni G, Pirlo G. 2005. Welfare assessment based on metabolic and endocrine aspects in primiparous cows milked in a parlor or with an automatic milking system. J Dairy Sci 88:3542-52.

*Kanitz, E., M. Tuchscherer, B. Puppe, A. Tuchscherer, and B. Stabenow. 2004. Consequences of repeated early isolation in domestic piglets (*Sus scrofa*) on their behavioral, neuroendocrine, and immunological responses. Brain, Behavior, and Immunity. 18:35-45.

Smith RF, Dobson H. 2002. Hormonal interactions within the hypothalamus and pituitary with respect to stress and reproduction in sheep. Domestic Animal Endocrinol 23:75-85.

STUDENTS WILL FIND A RESEARCH RELATED PAPER AND PREPARE AND SUBMIT AN ABSTRACT BEFORE THIS CLASS MEETS.

Week 12. Final Exam April 27th 8:00-9:30 am