# CURRICULUM VITAE

# L. Bruce Gladden, Professor

School of Kinesiology, Auburn University

## Education:

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| --- | --- | --- | --- |
| University of Florida, Gainesville |  | Postdoctoral Fellow | 1976-1978 |
|  |  | Department of Physiology |  |
| University of Tennessee |  | Ph.D., Zoology | 1976 |
| University of Tennessee, Knoxville |  | B.S., Zoology | 1972 |

## Professional Experience:

Auburn University, School of Kinesiology, Tenured Professor, 1989-Present

University of Louisville, Exercise Physiology Laboratory Director, 1987-1989

University of Louisville, Exercise Physiology Laboratory, Associate Professor, 1984-1989 University of Louisville, Exercise Physiology Laboratory, Assistant Professor, 1978-1984

## **Honors and Awards**:

President-Elect, President, Past-President, American College of Sports Medicine, 2020-2023

Auburn University Creative Research and Scholarship Award, 2020

Vice-President, American College of Sports Medicine, 2018-2020

Chair, Environmental and Exercise Physiology Council of American Physiological Society, 2016-2019

Environmental & Exercise Physiology Section Honor Award – American Physiological Society, 2020

Fellow of the American Physiological Society, 2018

American College of Sports Medicine Citation Award, 2015

Texas A & M Department of Health & Kinesiology Scholar Award, 2015

Editor-in-Chief, *Medicine & Science in Sports & Exercise*, 2014-present

American College of Sports Medicine (ACSM) Board of Trustees, Representative for Basic Sciences, 2011-2014

Councillor, Environmental and Exercise Physiology section of American Physiological Society, 2011-2014

Virginia Commonwealth University Department of Health and Human Performance Distinguished Scholar Lecturer, 2011

Outstanding Exercise Science Alumni Award, University of Tennessee, Knoxville, 2010

Service Award, Southeast American College of Sports Medicine (SEACSM), 2009

Humana-Germany-Sherman Distinguished Professor in Education, Auburn University, 1999-2004

Chair-Elect, Chair, Past-Chair – Auburn University Faculty Senate, 1999-2002

Henry J. Montoye Scholar, Southeast American College of Sports Medicine (SEACSM), 2000

Auburn University Graduate Faculty Lecturer, 1998

Fellow #382, National Academy of Kinesiology, Inducted 1997

Alumni Professor, Auburn University, 1996-2001

President-elect, President, Past-President: Southeast American College of

Sports Medicine, 1995-1997

Fellow, American College of Sports Medicine since 1980

Outstanding Researcher of the Year, Auburn University College of Education, 1992

Parker B. Francis Foundation Fellow, 1978

Postdoctoral Fellow in Respiratory Physiology - National Institutes of Health Respiratory Training Grant, University of Florida, 1976-1978.

Received National Science Foundation Undergraduate Research Participant's Fellowship, 1972.

Received B.S. Degree "With Honors", 1972.

Received an Accelerated Scholarship, Educational Opportunity Grant and National Defense Loan for undergraduate education at the University of Tennessee, 1969-1972.

## **Article-length publications**:

Google Scholar h-index **= 44; 6,869 citations as of 11/28/2020**

### Book Chapters

113. **Gladden, L. Bruce**. Lactate Metabolism during Exercise. *In* Poortmans, J. R. (ed): *Principles of Exercise Biochemistry*, 3rd, revised edition, Medicine and Sport Science, Basel, Karger, 2003, volume 46, pp. 152-196.

112. Brooks, George A., and **L. Bruce Gladden**. Chapter 8. Metabolic Systems:

Anaerobic Metabolism (Glycolytic and Phosphagen). *In* Tipton, C. M. (ed): *Exercise Physiology: People and Ideas*. New York: Oxford University Press, 2003, pp. 322-360.

111. **Gladden, L. Bruce**. Chapter 14. Lactate transport and metabolism during exercise.

In: *Handbook of Physiology. Exercise: Regulation and Integration of Multiple Systems*, edited by Loring B. Rowell and John T. Shepherd. New York: Oxford University Press, 1996, pp. 614-648.

### Invited Articles

110. Grassi, Bruno, Michael C. Hogan, **L. Bruce Gladden**. Microvascular O2 delivery and O2 utilization during metabolic transitions in skeletal muscle. One-hundred years after the pioneering work by August Krogh. *Comparative biochemistry and physiology. Part A, Molecular & integrative physiology*, online ahead of print, PMID: 33212294 doi:

10.1016/j.cbpa.2020

109. Poole, David C., Harry B. Rossiter, George A. Brooks, **L. Bruce Gladden**. The anaerobic threshold: 50+ years of controversy. *Journal of Physiology*, online ahead of print, PMID: 33112439 doi: 10.1113/JP279963

108. Goodwin, Matthew L., **L. Bruce Gladden**, Maarten W. Nijsten. Lactate-Protected Hypoglycemia (LPH). *Frontiers in Neuroscience* 14:920. doi: 10.3389/fnins.2020. 00920

107. Glancy, Brian, Daniel A. Kane, Andreas N. Kavazis, Matthew L. Goodwin, Wayne T. Willis, **L. Bruce Gladden**. Mitochondrial lactate metabolism: history and implications for exercise and disease. *Journal of Physiology*, online ahead of print, PMID: 32358865 doi: [10.1113/JP278930](https://doi.org/10.1113/jp278930)

106. **Gladden, L. Bruce**. Lactate as a key metabolic intermediate in cancer. *Annals of Translational Medicine* 7(10):210, 2019.

105. Ferguson, Brian S., Matthew J. Rogatzki, Matthew L. Goodwin, Daniel A. Kane, Zachary Rightmire and **L. Bruce Gladden**. Lactate metabolism: historical context, prior misinterpretations, and current understanding. *European Journal of Applied Physiology* 118(4):691-728, 2018. doi: 10.1007/s00421-017-3795-6 – 11,000 accesses as of 11/28/2020

104. Rogatzki, Matthew J., Brian S. Ferguson, Matthew L. Goodwin, and **L. Bruce Gladden**. Lactate is always the end product of glycolysis. *Frontiers in Neuroscience*

9:22, 2015. doi:10.3389/fnins.2015.00022 – 41,472 views as of 11/28/2020

103. Goodwin, Matthew L., **L. Bruce Gladden**, Maarten W.N. Nijsten, Kevin B. Jones.

Lactate and Cancer: Revisiting the Warburg Effect in an Era of Lactate Shuttling.

*Frontiers in Nutrition*. 1:27, 2014. doi:10.3389/fnut.2014.00027 – 25,333 views as of 11/28/2020

102. Clanton, Thomas L., Michael C. Hogan, and **L. Bruce Gladden**.Regulation of cellular gas exchange, oxygen sensing and metabolic control. *Comprehensive Physiology* 3(3):1135-1190, 2013.

101. McDonald, James R. and **L. Bruce Gladden**. Anaerobic Metabolism in *Encyclopedia of Exercise Medicine in Health and Disease*, Ed. by Frank C. Mooren, Springer Berlin Heidelberg, pp. 69-71; 2012. Print ISBN 978-3-540-36065-0, Online ISBN 978-3-54029807-6.

100. **Gladden, L. Bruce**, J. W. Yates, and Edward T. Howley. Who needs a bag? *Medicine & Science in Sports & Exercise* 44(2):288-289, 2012.

99. **Gladden, L. Bruce**, Matthew L. Goodwin, James R. McDonald, and Maarten W.N. Nijsten. Fuel for cancer cells? *Cell Cycle* 10:15, 2421-2422, 2011.

98. **Gladden, L. Bruce**. 200th Anniversary of lactate research in muscle. *Exercise and Sports Sciences Reviews* 36:109-115, 2008.

97. **Gladden, L. Bruce**. Current trends in lactate metabolism: Introduction. *Medicine & Science in Sports & Exercise* 40:475-476, 2008.

96. **Gladden, L. Bruce**. A “lactatic” perspective on metabolism. *Medicine & Science in Sports & Exercise* 40:477-485, 2008.

95. **Gladden, L. Bruce**. Perspectives. Is there an intracellular lactate shuttle in skeletal muscle? *Journal of Physiology* 582:899, 2007.

94. Goodwin, Matthew L., Andres Hernandez, James E. Harris, and **L. Bruce Gladden**.

Blood lactate measurements and analysis during exercise: A guide for clinicians. *Journal of Diabetes Science and Technology* 1(4):558-569, 2007.

93. **Gladden, L. Bruce**. Lactate metabolism: a new paradigm for the third millennium. *Journal of Physiology* 558:5-30, 2004. This review was in the top five most electronically accessed papers in the *Journal of Physiology* from June, 2004 through June, 2006. It then remained in the top 10-20 most-frequently read articles for almost every month through January, 2011. In 2005, figures from this review were used on the front and back covers of the *Journal of Physiology* “Reviews and Perspectives” collection. 1,335 citations as of 11/28/2020.

92. **Gladden, L. Bruce**. Lactic acid: New roles in a new millennium. *Proceedings of the National Academy of Sciences* 98:395-397, 2001.

91. **Gladden, L. Bruce**. The role of skeletal muscle in lactate exchange during exercise: introduction. *Medicine & Science in Sports & Exercise* 32:753-755, 2000.

90. **Gladden, L. Bruce**. Muscle as a consumer of lactate. *Medicine & Science in Sports & Exercise* 32:764-771, 2000.

89. Pascoe, David D. and **L. Bruce Gladden**. Glycogen resynthesis following short term high intensity exercise and resistance exercise. *Sports Medicine* 21:98-118, 1996.

88. **Gladden, L. Bruce**. Lactate uptake by skeletal muscle. *Exercise and Sports Sciences Reviews* 17:115-155, 1989.

87. **Gladden, L. Bruce**. Current "Anaerobic Threshold" Controversies. *Physiologist* 27:312-318, 1984.

### “Regular” Refereed Publications

86. Porcelli, Simone, Letizia Rasica, Brian S. Ferguson, Andreas N. Kavazis, James R. McDonald, Michael C. Hogan, Bruno Grassi, **L. Bruce Gladden**. Effect of acute nitrite infusion on contractile economy and metabolism in isolated skeletal muscle *in situ* during hypoxia. *Journal of Physiology* 598(12):2371-2384, 2020.

85. Mahmud, Sultan Z., **L. Bruce Gladden**, Andreas N. Kavazis, Robert W. Motl, Thomas S. Denney, Adil Bashir. Simultaneous measurement of perfusion and T2\* in calf muscle at 7T with submaximal exercise using radial acquisition. *Scientific Reports* 10(1):6342, 2020.

84. Mota, Gustavo R., Zachary B. Rightmire, Jeffrey S. Martin, James R. McDonald, Andreas N. Kavazis, David D. Pascoe, **L. Bruce Gladden**. Ischemic preconditioning has no effect on maximal arm cycling exercise in women. *European Journal of Applied Physiology* 120(2):369-380, 2020.

83. Romero, Matthew A., Petey W. Mumford, Paul A. Roberson, Shelby C. Osburn, Hailey

A. Parry, Andreas N. Kavazis, **L. Bruce Gladden**, Tonia S. Schwartz, Brent A. Baker, Ryan G. Toedebusch, Thomas E. Childs, Frank W. Booth, Michael D. Roberts. Five months of voluntary wheel running downregulates skeletal muscle LINE-1 gene expression in rats. *American Journal of Physiology: Cell Physiology* 317(6):C1313C1323, 2019.

82. Haun, Cody T., Christopher G. Vann, Christopher B. Mobley, Paul A. Roberson, Shelby C. Osburn, Hudson M. Holmes, Petey M. Mumford, Matthew A. Romero, Kaelin C. Young, Jordan R. Moon, **L. Bruce Gladden**, Robert D. Arnold, Michael A. Israetel, Annie N. Kirby, Michael D. Roberts. Effects of graded whey supplementation during extreme-volume resistance training. *Frontiers in Nutrition* 2018 Sep 11; 5:84.

doi:10.3389/fnut.2018.00084. eCollection 2018.

81. Yi, Sun, Brian S. Ferguson, Matthew J. Rogatzki, James R. McDonald, and **L. Bruce Gladden**. Muscle NIRS signals vs. venous blood hemoglobin oxygen saturation in skeletal muscle. *Medicine & Science in Sports & Exercise* 48(10):2013-2020, 2016.

80. Barberio, Matthew D., David J. Elmer, Richard H. Laird, Khalil A. Lee, **L. Bruce Gladden**, and David D. Pascoe. Systemic LPS and inflammatory response during consecutive days of exercise in heat. *International Journal of Sports Medicine* 36(3):262-270, 2015.

79. Oldenbeuving, Geert, James R. McDonald, Matthew L. Goodwin, Reis Sayilir, Dirk-Jan Reijngoud, **L.B. Gladden**, Maarten W. Nijsten. A patient with acute liver failure and extreme hypoglycaemia with lactic acidosis who was not in a coma: causes and consequences of lactate-protected hypoglycaemia. *Anaesthesia Intensive Care* 42(4):507-511, 2014.

78. Wüst, Rob C.I., James R. McDonald, Yi Sun, Brian S. Ferguson, Matthew J. Rogatzki, Jessica Spires, John M. Kowalchuk, **L. Bruce Gladden**, and Harry B. Rossiter. Slowed muscle oxygen uptake kinetics with raised metabolism are not dependent on blood flow or recruitment dynamics. *Journal of Physiology* 592(8):1857-1871, 2014.

77. Yarar-Fisher, Ceren, David D. Pascoe, **L. Bruce Gladden**, John C. Quindry, J. Hudson, and Joellen Sefton. Acute physiological effects of whole body vibration (WBV) on central hemodynamics, muscle oxygenation and oxygen consumption in individuals with chronic spinal cord injury. *Disability and Rehabilitation* 36(2):136-145, 2014.

76. Spires, Jessica, **L. Bruce Gladden**, Bruno Grassi, Gerald M. Saidel, Matthew L.

Goodwin, and Nicola Lai. Distinguishing the effects of convective and diffusive O2 delivery on VO2 on-kinetics in skeletal muscle contracting at moderate intensity. *American Journal of Physiology Regulatory Integrative and Comparative Physiology* 305(5):R512-521, 2013.

75. Spires, Jessica, **L. Bruce Gladden**, Bruno Grassi, Gerald M. Saidel, and Nicola Lai. Model analysis of the relationship between intracellular PO2 and energy demand in skeletal muscle. *American Journal of Physiology Regulatory Integrative and Comparative Physiology* 303:R1110-R1126, 2012.

74. Østergaard, Lars, Kirsten Kjær, Kurt Jensen, **L. Bruce Gladden**, Torben Martinussen,

73. Lai, Nicola, Fatima Tolentino-Silva, Melita M. Nasca, Marco A. Silva, **L. Bruce Gladden**, and Marco E. Cabrera. Exercise intensity and oxygen uptake kinetics in African-American and Caucasian women. *European Journal of Applied Physiology* 112:973-982, 2012.

72. Goodwin, Matthew L., Andrés Hernández, Nicola Lai, Marco E. Cabrera, and **L. Bruce**

**Gladden**. VO2 on-kinetics in isolated canine muscle *in situ* during slowed convective O2 delivery. *Journal of Applied Physiology* 112:9-19, 2012.

71. Wüst, Rob C.I., Bruno Grassi, Michael C. Hogan, Richard A. Howlett, **L. Bruce Gladden**, and Harry B. Rossiter. Kinetic control of oxygen consumption during contractions in self-perfused skeletal muscle. *Journal of Physiology* 589 (16):3995-4009, 2011.

70. Grassi, Bruno, Harry B. Rossiter, Michael C. Hogan, Richard A. Howlett, James E. Harris, Matthew L. Goodwin, John L. Dobson, and **L. Bruce Gladden**. [Faster O2 uptake kinetics in canine skeletal muscle *in situ* after acute creatine kinase inhibition.](http://www.ncbi.nlm.nih.gov/pubmed/21059760) *Journal of Physiology* 589(Pt 1):221-233, 2011.

69. Hernández, Andrés, James R. McDonald, Nicola Lai, and **L. Bruce Gladden**. A prior

68. Hernández, Andrés, Matthew L. Goodwin, Nicola Lai, Marco E. Cabrera, James R.

McDonald, and **L. Bruce Gladden**. Contraction-by-contraction VO2 and computer controlled pump-perfusion as novel techniques to study skeletal muscle metabolism *in situ*. *Journal of Applied Physiology* 108:705-712, 2010.

67. Lai, Nicola, Haiying Zhou, Gerald M. Saidel, Martin Wolf, Kevin McCully, **L. Bruce Gladden**, and Marco E. Cabrera. [Modeling oxygenation in venous blood and skeletal muscle in response to exercise using near-infrared spectroscopy.](http://www.ncbi.nlm.nih.gov/pubmed/19342438?ordinalpos=1&itool=EntrezSystem2.PEntrez.Pubmed.Pubmed_ResultsPanel.Pubmed_DefaultReportPanel.Pubmed_RVDocSum) *Journal of Applied Physiology* 106:1858-1874, 2009.

66. Grassi, Bruno, **L. Bruce Gladden**, Michael C. Hogan, and Jerzy A. Zoladz. Letter to the

Editor. Reply to Borrani, Malatesta, and Candau. Is progressive recruitment of muscle fibers required for the development of the slow component of VO2 kinetics? *Journal of Applied Physiology* 106: 747, 2009.

65. Wall, Sarah J, Mary E. Rudisill, and **L. Bruce Gladden**. Cortisol response to physical activity in African American toddlers attending full-time day care. *Research Quarterly for Exercise and Sport* 80:739-746, 2009.

64. Lai, Nicola, **L. Bruce Gladden**, Pierre G. Carlier, and Marco E. Cabrera. Models of muscle contraction and energetics. *Drug Discovery Today* 5(4):273-288, 2008.

63. Zoladz, Jerzy A., **L. Bruce Gladden**, Michael C. Hogan, Zenon Nieckarz, and Bruno

Grassi. Progressive recruitment of muscle fibers is not necessary for the slow component of VO2 kinetics. *Journal of Applied Physiology*, 105:575-580, 2008.

62. Lai, Nicola, Gerald M. Saidel, Bruno Grassi, **L. Bruce Gladden**, and Marco E. Cabrera. Model of oxygen transport and metabolism predicts effect of hyperoxia on canine muscle oxygen uptake dynamics. *Journal of Applied Physiology* 103:1366-1378, 2007.

61. Howlett, Richard A., Kevin M. Kelley, Bruno Grassi, **L. Bruce Gladden**, and Michael C. Hogan. Caffeine administration results in greater tension development in previously fatigued canine muscle in situ. *Experimental Physiology* 90(6):873-879, 2005.

60. Grassi, Bruno, Michael C. Hogan, Kevin M. Kelley, Richard A. Howlett, and **L. Bruce Gladden**. Effects of nitric oxide synthase inhibition by L-NAME on oxygen uptake kinetics in isolated canine muscle *in situ*. *Journal of Physiology* 568(Pt 3):1021-1033, 2005.

59. Pattillo, Robin E. and **L. Bruce Gladden**. Red blood cell lactate transport in sickle disease and sickle cell trait. *Journal of Applied Physiology* 99:822-827, 2005.

58. Sahlin, Kent, JesBak Sørensen, **L. Bruce Gladden**, Harry B. Rossiter, and Preben K.

Pedersen. Prior heavy exercise eliminates VO2 slow component and reduces efficiency during submaximal exercise in humans *Journal of Physiology* 564(Pt 3):765-773, 2005.

57. McAnulty, Steven R., Lisa McAnulty, David D. Pascoe, Sareen S. Gropper, Robert E.

55. Evans, Ronald K., Dean D. Schwartz, and **L. Bruce Gladden**. Effect of myocardial volume overload and heart failure on lactate transport into isolated cardiac myocytes. *Journal of Applied Physiology* 94:1169-1176, 2003.

54. Dobson, John L. and **L. Bruce Gladden**. Effect of rhythmic tetanic skeletal muscle contractions on peak muscle perfusion. *Journal of Applied Physiology* 94:11-19, 2003.

53. Kelley, Kevin M., Jason J. Hamann, Christine Navarre, and **L. Bruce Gladden** Lactate metabolism in resting and contracting canine skeletal muscle with elevated lactate concentration. *Journal of Applied Physiology* 93:865-872, 2002.

52. Grassi, Bruno, Michael C. Hogan, Paul L. Greenhaff, Jason J. Hamann, Kevin M. Kelley,

William G. Aschenbach, Dumitru Constantin-Teodosiu, and **L. Bruce Gladden**. VO2 on kinetics in dog gastrocnemius in situ following activation of pyruvate dehydrogenase by dichloroacetate. *Journal of Physiology* 538:195-207, 2002.

51. Hamann, Jason J., Kevin M. Kelley, and **L. Bruce Gladden**. Effect of epinephrine on net lactate uptake by contracting skeletal muscle. *Journal of Applied Physiology* 91:26352641, 2001.

50. Aschenbach, William G., Gregory L. Brower, Robert J. Talmadge, John L. Dobson, and **L. Bruce Gladden**. Effect of a myocardial volume overload on lactate transport in skeletal muscle sarcolemma vesicles. *American Journal of Physiology: Regulatory, Integrative, and Comparative Physiology* 281:R176-R186, 2001.

49. Fields, David A., G. Dennis Wilson, **L. Bruce Gladden**, Gary R. Hunter, David D. Pascoe, and Michael I. Goran. Comparison of the BOD POD with the four-compartment model in adult females. *Medicine & Science in Sports & Exercise* 33:1605-1610, 2001.

48. Grassi, Bruno, Michael C. Hogan, Kevin M. Kelley, William G. Aschenbach, Jason J.

Hamann, Ronald K. Evans, Robin E. Pattillo, and **L. Bruce Gladden**. Role of convective

O2 delivery in determining VO2 on-kinetics in canine muscle contracting at peak VO2. *Journal of Applied Physiology* 89:1293-1301, 2000.

47. Samaja, Michele, Sonia Allibardi, Giuseppina Milano, Gabriella Neri, Bruno Grassi, **L. Bruce Gladden**, and Michael C. Hogan. Differential depression of myocardial function and metabolism by lactate and H+. *American Journal of Physiology: Heart and Circulatory Physiology* 276:H3-H8, 1999.

46. Grassi, Bruno, **L. Bruce Gladden**, Creed M. Stary, Peter D. Wagner, and Michael C.

Hogan. Peripheral O2 diffusion does not affect VO2 on- kinetics in isolated *in situ* canine muscle. *Journal of Applied Physiology* 85:1404-1412, 1998.

45. Grassi, Bruno, **L. Bruce Gladden**, Michele Samaja, Creed M. Stary, and Michael C.

Hogan. Faster adjustment of O2 delivery does not affect VO2 on-kinetics in isolated *in situ* canine muscle. *Journal of Applied Physiology* 85:1394-1403, 1998.

44. Smith, Edith W., Michele S. Skelton, DuAnn E. Kremer, David D. Pascoe, and **L. Bruce Gladden**. Lactate distribution in the blood during steady-state exercise. *Medicine & Science in Sports & Exercise* 30:1424-1429, 1998.

43. Hogan, Michael C., **L. Bruce Gladden**, Bruno Grassi, Creed M. Stary, and Michele Samaja. Bioenergetics of contracting skeletal muscle after partial reduction of blood flow. *Journal of Applied Physiology* 84:1882-1888, 1998.

42. Skelton, Michele S., DuAnn E. Kremer, Edith W. Smith, and **L. Bruce Gladden**. Lactate influx into red blood cells from trained and untrained human subjects. *Medicine & Science in Sports & Exercise* 30:536-542, 1998.

41. Portington, Kevin J., David D. Pascoe, Michael J. Webster, Layne H. Anderson, Rodney R. Rutland, and L**. Bruce Gladden**. Effect of induced alkalosis on exhaustive leg press performance. *Medicine & Science in Sports & Exercise* 30:523-528, 1998.

40. Smith, Edith W., Michele S. Skelton, DuAnn E. Kremer, David D. Pascoe, and **L. Bruce Gladden**. Lactate distribution in the blood during progressive exercise. *Medicine & Science in Sports & Exercise* 29:654-660, 1997.

39. Skelton, Michele S., DuAnn E. Kremer, Edith W. Smith, and **L. Bruce Gladden**. Lactate influx into red blood cells of 'athletic' and 'non-athletic' species. *American Journal of Physiology: Regulatory, Integrative and Comparative Physiology* 268:R1121-R1128, 1995.

38. Hogan, Michael C., **L. Bruce Gladden**, Sadi Kurdak, and David C. Poole. L-(+)-lactate infusion into sub maximally working dog gastrocnemius: increased muscle [lactate] reduces tension development independent of pH. *Medicine & Science in Sports & Exercise* 27:371-377, 1995.

37. **Gladden, L. Bruce**, Robert E. Crawford, Michael J. Webster, and Peter W. Watt. Rapid tracer lactate influx into canine skeletal muscle. *Journal of Applied Physiology* 78:205211, 1995.

36. Watt, Peter W., **L. Bruce Gladden**, Harinder S. Hundal, and Robert E. Crawford. Effects of flow and contraction on lactate transport in the perfused rat hind limb.

*American Journal of Physiology: Endocrinology and Metabolism* 267:E7-E13, 1994.

35. **Gladden, L. Bruce**, Robert E. Crawford, and Michael J. Webster. Effect of lactate concentration and metabolic rate on net lactate uptake by canine skeletal muscle. *American Journal of Physiology: Regulatory, Integrative and Comparative Physiology* 35:R1095-R1101, 1994.

34. Poole, David C., **L. Bruce Gladden**, Sadi Kurdak, and Michael C. Hogan. L-(+)-Lactate

33. Webster, Michael J., Miriam N. Webster, Robert E. Crawford, and **L. Bruce Gladden**.

Effect of sodium bicarbonate ingestion on exhaustive resistance exercise performance. *Medicine & Science in Sports & Exercise* 25:960-965, 1993.

32. **Gladden, L. Bruce**, Robert E. Crawford and Michael J. Webster. Effect of blood flow on net lactate uptake during steady-level contractions in canine skeletal muscle. *Journal of Applied Physiology* 72(5):1826-1830, 1992.

31. **Gladden, L. Bruce**. Net lactate uptake during progressive steady-level contractions in canine skeletal muscle. *Journal of Applied Physiology* 71(2):514-520, 1991.

30. Morrow, John A., Ronald D. Fell and **L. Bruce Gladden**. Respiratory alkalosis: no effect on blood lactate decline or exercise performance. *European Journal of Applied Physiology and Occupational Physiology* 58:175-181, 1988.

29. **Gladden, L. Bruce**, J. W. Yates, Richard W. Stremel and Bryant A. Stamford. Gas exchange and lactate anaerobic thresholds: Inter- and intra-evaluator agreement. *Journal of Applied Physiology* 58:2082-2089, 1985.

28. Lambert, Charles R., **L. Bruce Gladden**, Wilmer W. Nichols and Carl J. Pepine. Effects of muscle contraction on pulsatile pressure-flow relations in femoral bed. *Journal of Applied Physiology* 58:1128-1135, 1985.

27. Fell, Ronald D., **L. Bruce Gladden**, Joseph M. Steffen and X. J. Musacchia. Fatigue and contraction of slow and fast muscles in hypokinetic/ hypo dynamic rats. *Journal of Applied Physiology* 58:65-69, 1985.

26. MacIntosh, Brian R., Wendell N. Stainsby and **L. Bruce Gladden**. Fatigue from incompletely fused tetanic contractions in skeletal muscle *in* *situ*. *Journal of Applied Physiology* 55:976-982, 1983.

25. Yates, J. W., **L. Bruce Gladden** and Mary K. Cresanta. Effects of prior dynamic leg exercise on static effort of the elbow flexors. *Journal of Applied Physiology* 55:891-896, 1983.

24. **Gladden, L. Bruce** and J. W. Yates. Lactic acid infusion in dogs: effects of varying infuscate pH. *Journal of Applied Physiology* 54:1254-1260, 1983.

23. Cummins, Thomas D. and **L. Bruce Gladden**. Responses to submaximal and maximal arm cycling above, at, and below heart level. *Medicine & Science in Sports & Exercise* 15:295-298, 1983.

22. **Gladden, L. Bruce**, Wendell N. Stainsby and Brian R. MacIntosh. Norepinephrine

21. Stuart, M. Kelly, Edward T. Howley, **L. Bruce Gladden**, and Ronald H. Cox. Efficiency of trained subjects differing in maximal oxygen uptake and type of training. *Journal of Applied Physiology* 50:444-449, 1981.

20. Stainsby, Wendell N., **L. Bruce Gladden**, Jack K. Barclay and Brian A. Wilson. Exercise efficiency: validity of base-line subtraction. *Journal of Applied Physiology* 48:518-522, 1980.

19. Chapler, Christopher K., Wendell N. Stainsby and **L. Bruce Gladden**. Effect of changes in blood flow, norepinephrine and pH on oxygen uptake by resting skeletal muscle. *Canadian Journal of Physiology and Pharmacology* 58:93-96, 1980.

18. Lambert, Charles R., **L. Bruce Gladden**, and Wendell N. Stainsby. Length-dependent activation of *in situ* canine skeletal muscle. *American Journal of Physiology* 237:C38C42, 1979.

17. **Gladden, L. Bruce**, Brian R. MacIntosh and Wendell N. Stainsby. O2 uptake and developed tension during and after fatigue, curare block and ischemia. *Journal of Applied Physiology* 45:751-755, 1978.

16. **Gladden, L. Bruce** and Hugh G. Welch. Efficiency of anaerobic work. *Journal of Applied Physiology* 44:564-570, 1978.

15. **Gladden, L. Bruce** and Dennis Colacino. Physical and physiological characteristics of volleyball players and success in a national tournament. *Journal of Sports Medicine and Physical Fitness* 18:57-64, 1978.

14. Wilson, G. Dennis, **L. Bruce Gladden** and Hugh G. Welch. An inexpensive analyzer for measuring oxygen uptake. *Research Quarterly* 47:869-873, 1976.

### Editorials and Letters to the Editor (Scientific Journals)

13. Baggish, Aaron L., Brian J. Cole, **L. Bruce Gladden**, Mark R. Hutchinson, Margot Putukian, Steven D. Stovitz, and Thomas M. Best. Team physician, Team Subspecialist: A Potential Scientific Conflict of Interest? *Medicine & Science in Sports & Exercise* 51(3):393-394, 2019.

12. **Gladden, L. Bruce**. Editorial Note to Batterham and Hopkins Letter and Sainani Response. *Medicine & Science in Sports & Exercise* 51(3):601, 2018.

11. **Gladden, L. Bruce**. Editorial. Medicine & Science in Sports & Exercise 50(1):1-2, 2018.

10. **Gladden, L. Bruce**. The basic science of exercise fatigue. *Medicine & Science in Sports & Exercise* 48(11):2222-2223, 2016.

9. Wüst, Rob C.I., Bruno Grassi, Michael C. Hogan, Richard A. Howlett, **L. Bruce Gladden**, and Harry B. Rossiter. Implications of rapid early oxygen consumption in exercising skeletal muscle: the empirical, the theoretical, and the rational. *Journal of Physiology* 589(24):6245-6246, 2011.

8. Grassi, Bruno, **L. Bruce Gladden**, Michael C. Hogan, and Jerzy A. Zoladz. Letter to the

Editor. Reply to Borrani, Malatesta, and Candau. Is progressive recruitment of muscle fibers required for the development of the slow component of VO2 kinetics? *Journal of Applied Physiology* 106: 747, 2009.

7. **Gladden, L. Bruce**. Letter to the Editor. Point/Counterpoint: Lactic acid is/is not the only physicochemical contributor to the acidosis of exercise. *Journal of Applied Physiology* 105:364, 2008.

6. **Gladden, L. Bruce**. Letter to the Editor. Point/Counterpoint: The lactate paradox does/does not occur during exercise at high altitude. *Journal of Applied Physiology* 102:2405, 2007.

5. **Gladden, L. Bruce**, and Michael C. Hogan. Letter to the Editor. Point/Counterpoint: Lactic acid accumulation is an advantage/disadvantage during muscle activity. *Journal of Applied Physiology* 100:2100-2101, 2006.

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Editor: Nitric oxide and muscle VO2 kinetics. *Journal of Physiology* 573:567-568, 2006.

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**Gladden**. Nitrite Infusion Does Not Alter Isolated Canine Muscle Oxidative Metabolism *In Situ* during Hypoxia with Normal Convective O2 Delivery. *The FASEB Journal* 31(1): Supplement, 710.11, 2017.

166. Ferguson, Brian S., James R. McDonald, Francesca Mowry, Yi Sun, Letizia Rasica, Simone Porcelli, Michael C. Hogan, Bruno Grassi, and **L. Bruce Gladden**. Effects of hypoxia with matched convective O2 delivery on fatigue and O2 on-kinetics in canine skeletal muscle *in situ*. *The FASEB Journal* 30(1): Supplement, 761.14, 2016.

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158. Goodwin, Matthew L., Andrés Hernández, Nicola Lai, Marco E. Cabrera, and **L. Bruce**

**Gladden**. VO2 on-kinetics in isolated canine muscle *in situ* during slowed convective O2 delivery. *Medicine & Science in Sports & Exercise* 41:S348, 2009.

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**Bruce Gladden**. Accumulated oxygen deficit and VO2max plateau on a continuous incremental test. *Medicine & Science in Sports & Exercise* 38:S508, 2006.

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127. Hogan, Michael C., **L. Bruce Gladden**, Bruno Grassi, Creed Stary, and Miki Samaja. Relationship between oxygen uptake and force production in contracting muscle after blood flow reduction. *Medicine & Science in Sports & Exercise* 29(5) Supplement: S26, 1997.

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Canine gastrocnemius muscle in situ: VO2max. *Medicine & Science in Sports & Exercise* 28(5) Supplement: S62, 1996.

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122. **Gladden, L. Bruce**, Edith W. Smith, and Michele S. Skelton. Lactate distribution in blood during passive and active recovery after intense exercise. *Medicine & Science in Sports & Exercise* 26(5) Supplement: S35, 1994.

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118. Webster, Michael J., Miriam N. Webster, Robert E. Crawford, and **L. Bruce Gladden**.

Effect of sodium bicarbonate ingestion on exhaustive resistance exercise performance.

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117. Poole, David C., **L. Bruce Gladden**, Sadi Kurdak, Andrea Podolsky and Michael C.

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114. **Gladden, L. Bruce**, Robert E. Crawford, Michael J. Webster and Peter W. Watt.

Effect of lactate transport inhibitors on unidirectional lactate influx into skeletal muscle. *The Physiologist* 35:212, 1992.

113. **Gladden, L. Bruce**, Peter W. Watt, Michael J. Webster and Robert E. Crawford. L (+) Lactate transport in perfused dog skeletal muscle. *Medicine & Science in Sports & Exercise* 24(5) Supplement: S108, 1992.

112. Crawford, Robert E., Michael J. Webster and **L. Bruce Gladden**. Lactate uptake by skeletal muscle: metabolic rate and lactate concentration. *Medicine & Science in Sports & Exercise* 24(5) Supplement: S108, 1992.

111. Webster, Michael J., Robert E. Crawford, Miriam N. Webster and **L. Bruce Gladden**. Effects of sodium bicarbonate administration on pH and buffer capacity in different muscle fiber types. *Medicine & Science in Sports & Exercise* 24(5) Supplement: S48, 1992.

110. **Gladden, L. Bruce**, Robert E. Crawford and Michael J. Webster. Blood lactate concentration and lactate uptake by contracting canine skeletal muscle. *Medicine & Science in Sports & Exercise* 23(4) Supplement: S36, 1991.

109. Watt, Peter W., **L. Bruce Gladden**, Harinder S. Hundal, Robert E. Crawford and Michael J. Rennie. Lactate transport in perfused skeletal muscle: effects of flow rate, contraction, and transport inhibitors. *The FASEB Journal* 5:A1725, 1991.

## Plus 19 other Published Abstracts = #s 90-108

### Presentations/Lectures Invited Presentations/Lectures

89. **L. Bruce Gladden.** Introduction to symposium, Is Mitochondrial Respiration a Limiting Factor of Oxidative Metabolism? An Integrated Approach to Exercise. Invited presentation; Integrative Physiology of Exercise meeting in San Diego, CA, September 5-8, 2018.

88. **L. Bruce Gladden.** Is There a Role for O2 in Lactate Metabolism during Exercise? Invited presentation; Division of Respiratory Critical Care Physiology and Medicine, David Geffen School of Medicine, Harbor-UCLA Medical Center, Los Angeles, CA, September 4, 2018.

87. Does ATP Release from Red Blood Cells Play a Role in Exercise

Blood Flow? Invited Pre-Conference Tutorial presentation for SEACSM Rapid Research Race; SEACSM annual meeting in Greenville, SC, February 16-18, 2017.

86. **L. Bruce Gladden**. Town Hall Discussion for Trainees. Invited Tutorial participation with Scott Powers and Peter Wagner at SEACSM annual meeting in Greenville, SC, February 16-18, 2017.

85. **L. Bruce Gladden**. Lactate in Health and Disease, invited lecture as part of Sixth Annual Texas A & M Health & Kinesiology Distinguished Lecture Series, in College Station, TX, April 7-8, 2015.

84. **L. Bruce Gladden**. Blood Lactate: Practical Applications to Basic Mechanisms. Departments of Physiology and Human Movement Sciences at Vrije Universiteit Amsterdam, Amsterdam, The Netherlands, October 24, 2013.

83. **L. Bruce Gladden**. Blood Lactate: From the Practical to the Mechanistic. University of Utah School of Medicine, Department of Orthopaedics Grand Rounds, September 17, 2013.

82. **L. Bruce Gladden**. Lactate and Cancer. Sarcoma Research in Progress Group at University of Utah School of Medicine, Department of Orthopaedics, September 16, 2013.

81. **L. Bruce Gladden**. The Dynamics of Skeletal Muscle Bioenergetics. Invited speaker as part of symposium on” Exercise Induced Activation of Bioenergetic Pathways in Skeletal Muscle.” Annual meeting of the American College of Sports Medicine, San Francisco, CA, May 29-June 2, 2012.

80. **L. Bruce Gladden**. Cancer Therapy: A New Role for Lactate? Department of Health and Human Performance Distinguished Scholar Lecture at Virginia Commonwealth University, Richmond, VA, April 7, 2011.

79. **L. Bruce Gladden**. Surprises on the trail of O2 and lactate. Outstanding Exercise Science Alumni Award Lecture, University of Tennessee, Knoxville, April 16, 2010.

78. **L. Bruce Gladden**. Lactate as a primary metabolite in physiology. Warburg Seminar, University Medical Center Groningen, The Netherlands, January 22, 2010.

77. **L. Bruce Gladden**. O2 delivery and O2 uptake on-kinetics in isolated whole muscle *in situ*. Seminar for Japanese Respiration Society, Niigata, Japan, September 17, 2009.

76. **L. Bruce Gladden**. Why does lactate increase during exercise? Seminar for Department of Sports Medicine for Health Promotion, Tokyo Medical University, Tokyo, Japan, September 14, 2009.

75. **L. Bruce Gladden**. Lactate Metabolism: Recent Perspectives. Seminar for Department of Health, Leisure, and Exercise Science, Appalachian State University, Boone, North Carolina, April 2, 2007.

74. **L. Bruce Gladden**. Lactate Metabolism in Skeletal Muscle. Invited Symposium participant for Ed Howley Retirement, Department of Exercise, Sport, and Leisure Studies, University of Tennessee, Knoxville, Tennessee, March 30, 2007.

73. **L. Bruce Gladden**. Presentation and consultation on lactate metabolism, Metabasis Therapeutics, La Jolla, CA, April 12-13, 2007.

72. **L. Bruce Gladden**. A ‘lactatic’ perspective on metabolism. American College of Sports

Medicine Conference on Integrative Physiology of Exercise, Indianapolis, IN, September 27-30, 2006. Also organized symposium on “Current Trends in Lactate Metabolism.

71. **L. Bruce Gladden**. Blood lactate: An indicator of training and/or overtraining? Third Annual Diabetes Technology Meeting, San Francisco, CA, November 6-8, 2003.

70. **L. Bruce Gladden**. Net lactate uptake: roles of metabolic rate and epinephrine. Symposium presentation at 50th Annual Meeting of the American College of Sports Medicine, San Francisco, CA, May 28-31, 2003.

69. Seminar at University of Milano, Milano, Italy, April 15, 2003. Lactate Threshold: Underlying Mechanisms.

68. **L. Bruce Gladden**. Confessions of a lactic acidologist. Lecture at 28th Annual Meeting of Southeast Chapter of American College of Sports Medicine, Charlotte, NC, January 27-29, 2000 as a consequence of being selected the Year 2000 Henry J. Montoye Scholar.

67. **L. Bruce Gladden**. Central Alabama Sports Medicine, Fall meeting; October 8, 1998. Limits to Exercise Performance.

66. **L. Bruce Gladden**. Seminar at Vanderbilt University Department of Molecular Physiology and Biophysics, July 27, 1998. Lactate uptake by contracting skeletal muscle.

65. **L. Bruce Gladden**. Why does [lactate] increase during exercise? New insights into an old issue. Presented at June 26, 1997 Seminario di Fisiologia Dell’Esercizio, in Milano, Italy at Instituto di Tecnologie Biomediche Avanzate, Consiglio Nazionale Delle Ricerche and Dipartimento Scienze e Tecnologie Biomediche, Universita di Milano.

64. **L. Bruce Gladden**. Lactate Transport Across the Sarcolemma. Symposium at University of Florida, Gainesville, entitled Advances in Respiratory and Locomotor Muscle Biology III: Effects of Exercise, September 7-8, 1995.

63. **L. Bruce Gladden**. Anaerobic Threshold: Mechanisms. Basic Science Lecture at February, 1995 annual meeting of Southeast Chapter of American College of Sports Medicine, Lexington, Kentucky.

62. **L. Bruce Gladden**. Lactate Transport in Blood. Seminar for Department of Nutrition, Food and Movement Science, Florida State University, Tallahassee, Florida, December 2, 1994.

61. **L. Bruce Gladden**. Lactate Uptake by Contracting Skeletal Muscle. Presented to Department of Physiology, School of Medicine, University of South Carolina, Columbia, South Carolina, March 21, 1994.

60. **L. Bruce Gladden**. Blood Lactate Response to Exercise: The Lactate Threshold. Presented to Department of Exercise Science, University of South Carolina, Columbia, South Carolina, March 21, 1994.

59. **L. Bruce Gladden**. Lactate Transport in Red Blood Cells. Presented at Symposium at University of Florida, Gainesville, entitled Advances in Respiratory and Locomotor Muscle Biology II: Effects of Exercise, November 18-19, 1993.

58. **L. Bruce Gladden**. The Metabolism of Lactic Acid. Presented at The Fourth Annual Colloquia on Applied Science in Sports Medicine, presented by Fondren Orthopedic Group, April 23-24, 1993, Houston, Texas.

57. **L. Bruce Gladden**. Net Lactate Uptake by Skeletal Muscle: Metabolic Rate, Blood Flow, Concentration, and Transport. Presented at Symposium at University of Florida, Gainesville, entitled Advances in Locomotor and Respiratory Muscle Biology: Effects of Acute and Chronic Exercise, November 21-22, 1991.

56. **L. Bruce Gladden**. Anaerobic Threshold: A Review. The Glaxo Lecture. Presented at

Special Symposium on Oxygen Transport During Exercise: Issues and Future Directions. Louisiana State University, Baton Rouge, Louisiana. November 19-20, 1987.

55. **L. Bruce Gladden**. Lactate Metabolism and Metabolic Rate. Presented at Special Symposium on Oxygen Transport During Exercise: Issues and Future Directions. Louisiana State University, Baton Rouge, Louisiana. November 19-20, 1987.

54. **L. Bruce Gladden**. Current 'Anaerobic Threshold' Controversies. Presented at August, 1984 American Physiological Society meeting. Lexington, Kentucky. Also organized Refresher Course on "Anaerobic Threshold".

53. Laboratory Methods in Measurement of Gas Exchange during

Exercise. Presented at Winter, 1983 meeting of Southeast Chapter of American College of Sports Medicine. Gainesville, Florida.

52. **L. Bruce Gladden**. Preparing for Gas Exchange Measurements. Presented at Winter, 1981 meeting of Southeast Chapter of American College of Sports Medicine. Charleston, South Carolina.

## Plus 51 other Presentations/Lectures = #s 1-51

### Grants and Contracts

I was Principal Investigator on all items listed unless otherwise noted. Dollar amounts are direct costs.

### Funded Grants

Auburn University PAIR Grant; A Mobile Mitochondria Laboratory (AU MitoMobile) to Lead the World in Measuring Bioenergetics in Natural Settings; 01/01/2019 – 01/01/2022. Co-I. $636,941

Editorial Grant-in-Aid; American College of Sports Medicine. 2013-present. $232,000.

Auburn University Intramural Grant Program Level 1 grant. “Lactate-Protected Hypoglycemia as a Potential Cancer Therapy,” 01/2011. $4,000.

College of Education Seed Grant “Lactate Preservation of Function during Hypoglycemia for Potential Cancer Treatment,” 01/2010. $2,500.

NATO International Scientific Exchange Programmes, Cooperative Science and Technology

Sub-Programme, Collaborative Linkage Grant. “Skeletal muscle VO2 kinetics: from basic physiology to exercise performance,” 09/2002 – 09/2004. Co-PI with Dr. Bruno Grassi,

ITBA, National Research Council, Segrate, Milano, Italy, and Dr. Jerzy Zoladz, Department of Muscle Physiology, Institute of Human Physiology, AWF-Krakow (University Academy of Physical Education), Krakow, Poland. $18,450.

NATO International Scientific Exchange Programmes. “Factors limiting muscle O2 uptake on kinetics”, 06/1998 – 09/2001. Co-PI with Dr. Bruno Grassi, ITBA, National Research Council, Segrate, Milano, Italy. $6,000.

National Institutes of Health. "Regulation of Lactate Transport and Metabolism", 04/01/1995 – 03/31/1999. $767,858.

National Institutes of Health. "Factors Determining Lactate Uptake By Skeletal Muscle", 09/16/1989 – 08/31/1993. $306,541.

Public Health Service. "DHHS/Public Health Service/Small Instrumentation Grant", 09/01/1991 – 08/21/1992. $5,000.

National Science Foundation/Kentucky EPSCoR. "Acid-Base Status and Muscle Fatigue", 10/1986 – 10/1989. $100,457.

University Louisville Office of the Provost. Faculty Development Mini Grant. "Physiology: New Developments in the Study of Muscle and Exercise", 04/1985. $862.

Kentucky Heart Association. "O2 Uptake Kinetics with Variations in O2 Delivery", 07/1982 – 06/1983. $8,400.

University of Louisville Graduate Research Council. "EMG Power Spectral Density Changes Following Respiratory Alkalosis and Acidosis", 1982/83. Co-I. $2,000.

University of Louisville Graduate Research Council. "Effect of Trans-membrane H+ Gradient on Lactate Distribution Ratio", 1982/83. $2,000.

Kentucky Heart Association. "Catecholamines, Arm Work and the Anaerobic Threshold", 07/1981 – 06/1982. $11,270.

University of Louisville Graduate Research Council. "Lactate Uptake and Metabolic Rate in Canine Skeletal Muscle", 1980/81. $2,000