

July 2006

## CURRICULUM VITAE

### Cushman, Samuel Wright

#### Personal

Born: October 2, 1941  
Bryn Mawr, Pennsylvania

#### Education

A.B. June, 1963, Bowdoin College, Brunswick, Maine

Major: Chemistry  
Minor: Mathematics  
Advisor: Dr. Samuel Kamerling  
Honors Thesis: See Bibliography

Ph.D. June, 1969, The Rockefeller University, New York, New York

Fields of Study: Physiological Chemistry and Cell Biology  
Thesis: See Bibliography

#### Academic Honors

James Bowdoin Scholar, Bowdoin College, 1960, 1961, 1962, 1963  
P.W. Meserve Chemistry Prize, Bowdoin College, 1962  
Undergraduate Research Fellowship, Bowdoin College, 1962-1963  
Phi Beta Kappa, Bowdoin College, 1962, 1963  
American Institute of Chemists Student Medal, Bowdoin College, 1963  
S. I. Kimball Prize for Excellence in the Natural Sciences, Bowdoin College, 1963  
Simple Honors in Chemistry, Bowdoin College, 1963  
*Magna cum Laude*, Bowdoin College, 1963  
Graduate Fellowship, The Rockefeller University, 1963-1969  
Postdoctoral Fellowship, NIH, declined  
Postdoctoral Fellowship, American Center Society, 1969-1971  
Special Fellowship, NIH, declined  
Research and Development Award, American Diabetes Association, 1972-1974  
Merit Pay Cash Award for Outstanding Performance, NIADDK, NIH, 1981, 1982, 1984  
Public Health Service Superior Service Award, NIADDK, NIH, 1984  
Merit Pay Cash Award for Outstanding Performance, NIDDK, NIH, 1985, 1986, 1987, 1988, 1989, 1990, 1991, 1992, 1993, 1994, 1995, 1996

Rachmiel Levine Plenary Lecture, 14th International Diabetes Federation Congress, 1991  
Honorary Doctor of Medicine, University of Gothenburg, Gothenburg, Sweden, 1992  
Rachmiel Levine Visiting Professorship, City of Hope Medical Center, 1996  
Fellow, American Association for the Advancement of Science, 2000  
Banting Medal for Scientific Achievement, American Diabetes Association, 2002

Appointments:

Laboratory Instructor, Summer Institute for High School Chemistry Teachers, Bowdoin College, 1962  
Undergraduate Tutor and Teaching Assistant, Bowdoin College, 1962, 1963  
Undergraduate Research Fellow, Bowdoin College, 1962-1963,  
Mentor: Dr. Samuel Kamerling  
Graduate Fellow, The Rockefeller University, 1963-1969,  
Mentor: Dr. Martin A. Rizack  
Research Assistant, Institut de Biochimie Clinique, Medical School of the University of Geneva, 1969-1971, Mentors: Drs. Albert E. Renold and Bernard Jeanrenaud  
Research Associate (with rank of Assistant Professor), Department of Medicine, Dartmouth Medical School, 1971-1973,  
Mentor: Dr. Lester B. Salans  
Assistant Professor, Department of Medicine, Dartmouth Medical School, 1973-1978  
Adjunct Assistant Professor, Department of Medicine, Dartmouth Medical School, 1978-1981  
Adjunct Assistant Professor, Department of Biochemistry, Dartmouth Medical School, 1973-1981  
Associate Chief, Cellular Metabolism and Obesity Section, National Institute of Arthritis, Diabetes, Digestive and Kidney Diseases, National Institutes of Health, 1976-1982  
Chief, Cellular Metabolism and Obesity Section, National Institute of Arthritis, Diabetes, and Digestive and Kidney Diseases, National Institutes of Health, 1982-1984  
Visiting Professor, Unité de Recherches sur la Physiopathologie de la Nutrition (INSERM U. 177), Institut Biomédical des Cordeliers, Paris, August, 1984  
Chief, Experimental Diabetes, Metabolism, and Nutrition Section (formerly Cellular Metabolism and Obesity Section), Diabetes Branch (moved from Molecular, Cellular, and Nutritional Endocrinology Branch in 1991), National Institute of Diabetes and Digestive and Kidney Diseases, National Institutes of Health, 1985-present

Visiting Professor, School of Biology and Biochemistry, University of Bath, March-August, 1996

Visiting Professor, Institute of Biochemistry, University of Cologne, February, 2000

Visiting Professor, Department of Medicine, University of Gothenburg, March, 2001

Research Grants

General Research Support Grant, Dartmouth Medical School, 1971-1972

American Diabetes Association Research Grant, 1972-1974

General Research Support Grant, Dartmouth Medical School, 1974

Weight Watchers Foundation Research Grant, 1974-1977

National Institutes of Health Research Grant (Temporary Principal Investigator), 1974-1975

National Institutes of Health Research Grant, declined due to move to NIADDK/NIH in 1976

Kroc Foundation Research Grant, 1980-1981

Upjohn Research Grant, 1982

Pfizer Research Grant, 1988

Diabetes Research and Education Foundation Research Grant, 1991

Hoffman-La Roche Research Grant, 1992-1993

American Diabetes Association, Mentor-based Postdoctoral Fellowship Award, 1992-1996, 1997-2000

Professional Societies

American Association for the Advancement of Science

American Diabetes Association

American Society for Biochemistry and Molecular Biology

American Society for Cell Biology

The Biochemical Society (Great Britain)

The Endocrine Society

European Association for the Study of Diabetes

North American Association for the Study of Obesity

Journals and Grant Agencies

Editorial Boards:

Diabetes, 1984-1986

American Journal of Physiology: Endocrinology and Metabolism, 1982-1987

Molecular and Cellular Endocrinology, 1991-1994

Adipocytes 2004-present

Editorial Advisor:

Biochemical Journal, 1984-1987

Grant Review

Committees:

American Diabetes Association, 1986-1988

Juvenile Diabetes Foundation International, 1988-1992

Ad Hoc Reviewer:

Journals:

Analytical Biochemistry  
Biochemical and Biophysical Research Communications  
Biochemistry  
Biochimica et Biophysica Acta  
Diabetologia  
Endocrinology  
Experimental Cell Research  
FEBS Letters  
Hormone and Metabolic Research  
The Journal of Biological Chemistry  
Journal of Cellular Physiology  
The Journal of Clinical Investigation  
Journal of Lipid Research  
Life Sciences  
Metabolism  
Molecular and Cellular Endocrinology  
Proceedings of the National Academy of Sciences, U.S.A.  
Science  
Nature

Grant Agencies:

Australian Research Grant Scheme  
The Kroc Foundation  
Juvenile Diabetes Foundation  
Medical Research Council of Canada  
National Institutes of Health  
National Science Foundation  
Veterans Administration

Administrative

Responsibilities:

President-elect, President, Assembly of Scientists, National Institute of Diabetes and Digestive and Kidney Diseases, National Institutes of Health, 1986, 1987  
Chairperson, Animal Care and Use Committee, National Institute of Diabetes and Digestive and Kidney Diseases, National Institutes of Health, 1988-present  
Representative to NIH Building 10A Animal Care and Use Facility Users Committee and NIH Animal Research Advisory Committee, National Institute of Diabetes and Digestive and Kidney Diseases, National Institutes of Health, 1988-present  
Member, Committee on Scientific and Medical Programs, American Diabetes Association, 1989-1991

Chairperson, Scientific Sessions Meeting Committee, American Diabetes Association, 1991-1992  
Deputy Ombudsman for Animal Affairs, National Institutes of Health, 1993-1996  
Chairperson, NIH Building 10A Animal Care and Use Facility Users Committee, 1994-present

## BIBLIOGRAPHY

### Cushman, Samuel Wright

#### Publications

1. Cushman, S. W. A Study of Enzymatic Debridement of Third-degree Burn Eschar Using Bromelain. Honors Thesis in Chemistry, Bowdoin College (refer to Klein, Gerold K.V. J. Maine Med. Assoc. 55:169, 1964, 1963.
2. Marglin, A., and S. W. Cushman. A Biological Activity of the A-chain of Insulin and the Inactivity of a Synthetic Analogue Containing an Intact Intra-chain Disulfide Bridge. Biochem. Biophys. Res. Commun. 29:710-716, 1967.
3. Cushman, S. W. Hormonal Effects on the Ultrastructure and Metabolism of Isolated Adipose Cells. Doctoral Thesis, The Rockefeller University, 1969.
4. Cushman, S. W. Structure-function Relationships on the Adipose Cell. I. Ultrastructure of the Isolated Adipose Cell. J. Cell Biol. 46:326-341, 1970.
5. Cushman, S. W. Structure-function Relationships in the Adipose Cell. II. Pinocytosis and Factors Influencing its Activity in the Isolated Adipose Cell. J. Cell. Biol. 46:342-353, 1970.
6. Cushman, S. W., and M. A. Rizack. Structure-function Relationships in the Adipose Cell. III. Effects of Bovine Serum Albumin on the Metabolism of Glucose and the Release on Non-esterified Fatty Acids and Glycerol by the Isolated Adipose Cell. J. Cell Biol. 46:354-361, 1970.
7. Cushman, S. W. Pinocytic Activity in the Isolated Adipose Cell. Horm. Metab. Res. Suppl. 2:162-166, 1970.
8. Cushman, S. W., J. J. Heindel, and B. Jeanrenaud. Cell-associated Non-esterified Fatty Acid Levels and their Alteration during Lipolysis in the Isolated Mouse Adipose Cell. J. Lipid Res. 14:632-642, 1973.
9. Salans, L. B., S. W. Cushman, and R. E. Weisman. Studies on Human Adipose Tissue: Adipose Cell Size and Number in Nonobese and Obese Patients. J. Clin. Invest. 52:929-941, 1973.

10. Heindel, J. J., S. W. Cushman, and B. Jeanrenaud. Cell Associated Fatty Acid Levels and Energy-requiring Processes in Mouse Adipocytes. Amer. J. Physiol. 226:16-24, 1974.
11. Salans, L. B., and S. W. Cushman. Hormones and Adipocytes: Factors Influencing the Metabolic Effects of Insulin and Adrenaline. In: Obesity. Eds. W. L. Burland, P. D. Samuel, and J. Yudkin. Churchill Livingstone, London, 1974. pp. 204-216.
12. Salans, L. B., G. A. Bray, S. W. Cushman, E. Danforth, Jr., J. A. Glennon, E. S. Horton, and E. A. H. Sims. Glucose Metabolism and the Response to Insulin by Human Adipose Tissue in Spontaneous and Experimental Obesity: Effects of Dietary Composition and Adipose Cell Size. J. Clin. Invest. 53:848-856, 1974.
13. Salans, L. B., and S. W. Cushman. Cellular Consequences of Obesity. In: Obesity in Perspective. DHEW 75-708, 1976. pp. 245-251.
14. Salans, L. B., and S. W. Cushman. The Roles of Adiposity and Diet in the Carbohydrate and Lipid Metabolic Abnormalities of Obesity. In: Vol. II, Advances in Modern Nutrition. Diabetes, Obesity and Vascular Disease: Metabolic and Molecular Interrelationships. Eds. H. M. Katzen and R. J. Mahler. Hemisphere Publishing Corporation, Washington, D. C., 1978. pp. 267-301.
15. Cushman, S. W., and L. B. Salans. Determination of Adipose Cell Size and Number in Suspensions of Isolated Rat and Human Adipose Cells. J. Lipid Res. 19:269-273, 1978.
16. Foley, J. E., S. W. Cushman, and L. B. Salans. Glucose Transport in Isolate Rat Adipocytes with Measurements of L-arabinose Uptake. Amer. J. Physiol. 234:E112-E119, 1978.
17. Salans, L. B., J. E. Foley, and S. W. Cushman. The Adipose Cell and Insulin Resistance. In: Recent Advances in Obesity Research: II. Proceedings of the 2nd International Congress of Obesity. Ed. G. E. Bray. Technomic Publishing Company, Westport, CT, 1978. pp. 183-189.
18. Wardzala, L. J., S. W. Cushman, and L. B. Salans. Mechanism of Insulin Action on Glucose Transport in the Isolated Rat Adipose Cell. Enhancement of the Number of Functional Transport Systems. J. Biol. Chem. 253:8002-8005, 1978.
19. Cushman, S. W., M. J. Zarnowski, A. J. Franzusoff, and L. B. Salans. Alterations in Glucose Metabolism and Its Stimulation by Insulin in Isolated Adipose Cells during the Development of Genetic Obesity in the Zucker Fatty Rat (a Preliminary Report). Metabolism 27(Suppl.2): 1930-1940, 1978.
20. Foley, J. E., S. W. Cushman, and L. B. Salans. Intracellular Glucose Concentration in Small and Large Rat Adipose Cells. Amer. J. Physiol. 238:E180-E185, 1980.

21. Cushman, S. W., and L. J. Wardzala. Potential Mechanism of Insulin Action on Glucose Transport in the Isolated Rat Adipose Cell. Apparent Translocation of Intracellular Transport Systems to the Plasma Membrane. J. Biol. Chem. 255:4758-4762, 1980.
22. Cushman, S. W., D. Noda, and L. B. Salans. Adipose Cell Size-function Relationships: Insulin Binding and Degradation. Amer. J. Physiol. 240:E166-E174, 1981.
23. Salans, L. B., J. E. Foley, L. J. Wardzala, and S. W. Cushman. Effects of Dietary Composition on Glucose Metabolism in Rat Adipose Cells. Amer. J. Physiol. 240:E175-E183, 1981.
24. Karnieli, E., M. J. Zarnowski, P. J. Hissin, I. A. Simpson, L. B. Salans, and S. W. Cushman. Insulin-stimulated Translocation of Glucose Transport Systems in the Isolated Rat Adipose Cell. Time Course, Reversal, Insulin Concentration-dependency and Relationship to Glucose Transport Activity. J. Biol. Chem. 256:4772-4777, 1981.
25. Cushman, S. W., L. J. Wardzala, E. Karnieli, P. J. Hissin, I. A. Simpson, and L. B. Salans. Regulation of Glucose Transport by Insulin. Reversible Translocation of Intracellular Glucose Transport Systems to the Plasma Membrane. In: Recent Advances in Obesity: III. Eds. P. Bjorntorp, M. Cairella, and A. N. Howard. John Libbey, London, 1981. pp. 273-277.
26. Karnieli, E., P. J. Hissin, I. A. Simpson, L. B. Salans, and S. W. Cushman. A Possible Mechanism of Insulin Resistance in the Rat Adipose Cell in Streptozotocin-induced Diabetes Mellitus. Depletion of Intracellular Glucose Transport Systems. J. Clin. Invest. 68:811-814, 1981.
27. Cushman, S. W., P. J. Hissin, L. J. Wardzala, J. E. Foley, I. A. Simpson, E. Karnieli, and L. B. Salans. Mechanism of Insulin Resistance in the Adipose Cell in the Aging Rat Model of Obesity. Biochem. Soc. Trans. 9:518-522, 1981.
28. Wheeler, T. J., I. A. Simpson, D. C. Sogin, P. C. Hinkle, and S. W. Cushman. Detection of the Rat Adipose Cell Glucose Transporter with Antibody against the Human Red Cell Glucose Transporter. Biochem. Biophys. Res. Comm. 105:89-95, 1982.
29. Hissin, P. J., E. Karnieli, I. A. Simpson, L. B. Salans, and S. W. Cushman. A Possible Mechanism of Insulin Resistance in the Rat Adipose Cell with High Fat/Low Carbohydrate Feeding. Depletion of Intracellular Glucose Transport Systems. Diabetes 31:589-592, 1982.
30. Hissin, P. J., J. E. Foley, L. J. Wardzala, E. Karnieli, I. A. Simpson, L. B. Salans, and S. W. Cushman. Mechanism of Insulin Resistant Glucose Transport Activity in the Enlarged Adipose Cell of the Aged, Obese Rat. Relative Depletion of Intracellular Glucose Transport Systems. J. Clin. Invest. 70:780-790, 1982.



31. Wang, C.-C, O. Sonne, J. A. Hedo, S. W. Cushman, and I. A. Simpson. Insulin-induced Internalization of the Insulin Receptor in the Isolated Rat Adipose Cell. Detection of the Internalized 138-kilodalton Receptor Subunit Using a Photoaffinity I<sup>125</sup>-insulin. J. Biol.Chem. 258:5129-5134, 1983.
32. Cushman, S. W., L. J. Wardzala, P. J. Hissin, E. Karnieli, I. A. Simpson, and L. B. Salans. Mechanism of Insulin Resistant Glucose Transport in the Isolated Rat Adipose Cell. In: The Adipocyte and Obesity: Cellular and Molecular Mechanisms. Eds. A. Angel, C. H. Hollenberg, and D. A. K. Roncari. Raven Press, New York, 1983. pp. 105-111.
33. Cushman, S. W., L. J. Wardzala, I. A. Simpson, E. Karnieli, P. J. Hissin, T. J. Wheeler, P. C. Hinkle, and L. B. Salans. Insulin-induced Translocation of Intracellular Glucose Transporter to the Plasma Membrane in the Isolated Rat Adipose Cell. Horm. Cell Regul. 7:73-84, 1983.
34. Horuk, R., M. Rodbell, S. W. Cushman, and L. J. Wardzala. Proposed Mechanism of Insulin-resistant Glucose Transport in the Isolated Guinea Pig Adipocyte. Small Intracellular Pool of Glucose Transporters. J. Biol. Chem. 258:7425-7429, 1983.
35. Simpson, I. A., D. R. Yver, P. J. Hissin, L. J. Wardzala, E. Karnieli, L. B. Salans, and S. W. Cushman. Insulin-stimulated Translocation of Glucose Transporters in the Isolated Rat Adipose Cell: Characterization of Subcellular Fractions. Biochem.Biophys. Acta 763:393-407, 1983.
36. Simpson, I. A., J. A. Hedo, and S. W. Cushman. Insulin-induced Internalization of the Insulin Receptor in the Isolated Rat Adipose Cell. Detection of Both Major Receptor Subunits following their Biosynthetic Labeling in Culture. Diabetes 33:13-18, 1984.
37. Horuk, R., M. Rodbell, S. W. Cushman, and I. A. Simpson. Identification and Characterization of the Rat Adipocyte Glucose Transporter by Photoaffinity Crosslinking. FEBS Lett. 164:261-266, 1983.
38. Cushman, S. W., L. J. Wardzala, I. A. Simpson, E. Karnieli, P. J. Hissin, T. J. Wheeler, P. C. Hinkle, and L. B. Salans. Insulin-induced Translocation of Intracellular Glucose Transporters in the Isolated Rat Adipose Cell. Fed. Proc. 43:2251-2255, 1984.
39. Wardzala, L. J., I. A. Simpson, M. M. Rechler, and S. W. Cushman. Potential Mechanism of the Stimulatory Action of Insulin on Insulin-like Growth Factor II Binding to the Isolated Rat Adipose Cell. Apparent Redistribution of Receptors Cycling between a Large Intracellular Pool and the Plasma Membrane. J. Biol.Chem. 259:8378-8383, 1984.
40. Karnieli, E., P. J. Hissin, I. A. Simpson, L. J. Wardzala, J. E. Foley, L. B. Salans, and S. W. Cushman. Postreceptor Insulin Resistance in the Rat Adipose Cell: Depletion of

- Intracellular Glucose Transport Systems. In: Lessons from Animal Diabetes. Ed. E. Shafrir. John Libbey, London, 1984. pp. 227-234.
41. Salans, L. B., L. J. Wardzala, I. A. Simpson, E. Karnieli, P. J. Hissin, and S. W. Cushman. Mechanisms of Insulin Resistance. In: Frontiers in Diabetes. Vol. 4. Diabetes Mellitus: Etiopathogenesis and Metabolic Aspects. Eds. F. Belfiore, D. J. Galton, and G. M. Reaven. Krager, Basel, 1984. pp. 69-76.
  42. Simpson, I. A., E. Karnieli, P. J. Hissin, U. Smith, and S. W. Cushman. Mechanism of Insulin's Stimulatory Action on glucose Transport in the Isolated Rat Adipose Cell. Proc. Soc. Gen. Physiol. 39:43-55, 1985.
  43. Simpson, I. A., and S. W. Cushman. Hexose Transport Regulation by Insulin in the Isolated Rat Adipose Cell. In: Molecular Basis for Insulin Action. Ed. M. P. Czech. Plenum Publishing Co., New York, 1985. pp. 399-422.
  44. Simpson, I. A., and S. W. Cushman. Regulation of Glucose Transporter and Hormone Receptor Cycling by Insulin in the Rat Adipose Cell. In: Current Topics in Membranes and Transport. Membrane Protein Biosynthesis and Turnover. Eds. P. A. Knauf and J. C. Cook. Academic Press, New York, 1985. pp. 459-503.
  45. Wardzala, L. J., M. Hirshman, E. Pofcher, E. D. Horton, P. M. Mead, S. W. Cushman, and E. S. Horton. Regulation of Glucose Utilization in Adipose Cells and Muscle Following Long-term Experimental Hyperinsulinemia in Rats. J. Clin. Invest. 76:460-469, 1985.
  46. Cushman, S. W., and I. A. Simpson. Integral Membrane Protein Translocations in the Mechanism of Insulin Action. Biochem. Soc. Symp. 50:127-149, 1985.
  47. Kahn, B. B., and S. W. Cushman. Subcellular Translocation of Glucose Transporters: Role in Insulin Action and Its Perturbation in Altered Metabolic States. Diab. Metab. Rev. 1:203-227, 1985.
  48. Horuk, R., S. Matthaei, J. M. Olefsky, D. L. Baly, S. W. Cushman, and I. A. Simpson. Biochemical and Functional Heterogeneity of Rat Adipocyte Glucose Transporters. J. Biol. Chem. 261:1823-1828, 1986.
  49. Simpson, I. A., and S. W. Cushman. Mechanism of Insulin's Stimulatory Action on Glucose Transport. In: Biochemical Actions of Hormones. Vol. 13. Ed. G. Litwack. Academic Press, New York, 1986. pp. 1-31.
  50. Simpson, I. A., and S. W. Cushman. Hormonal Regulation of Mammalian Glucose Transport. Annu. Rev. Biochem. 55:1059-1089, 1986.

51. Haspel, H. C., E. W. Wilk, M. J. Birnbaum, S. W. Cushman, and O. M. Rosen. Glucose Deprivation and Hexose Transporter Polypeptides of Murine Fibroblasts. J. Biol. Chem. 261:6778-6789, 1986.
52. Cushman, S. W., I. A. Simpson, and U. Smith. Insulin-induced Integral Membrane Protein Translocations and their Counterregulation by Lipolytic and Antilipolytic Hormones. In: Mechanisms of Insulin Action. Eds. P. Belfrage, J. Donnér, and P. Strålfors. Elsevier, Amsterdam, 1986. pp. 181-210.
53. Joost, H. G., T. M. Weber, S. W. Cushman, and I. A. Simpson. Insulin-stimulated Glucose Transport in Rat Adipose Cells. Modulation of Transporter Intrinsic Activity by Isoproterenol and Adenosine. J. Biol. Chem. 261:10033-10036, 1986.
54. Abbot, W. G. H., P. Thuillez, B. V. Howard, P. H. Bennett, L. B. Salans, S. W. Cushman, G. M. Reaven, and J. E. Foley. Body Composition, Adipocyte Size, Free Fatty Acid Concentration and Glucose Tolerance in Children of Diabetic Pregnancies. Diabetes 35:1077-1080, 1986.
55. Kahn, B. B., and S. W. Cushman. Cell Biology of Insulin's Stimulatory Action on Glucose Transport and Its Perturbation in Altered Metabolic States. Ann. New York Acad. Sci. 488:356-368, 1986.
56. Kuroda, M., R. C. Honnor, S. W. Cushman, C. Londos, and I. A. Simpson. Regulation of Insulin-stimulated Glucose Transport in the Isolated Rat Adipocyte. cAMP- independent Effects of Lipolytic and Antilipolytic Agents. J. Biol. Chem. 262:245-253, 1987.
57. Kahn, B. B., E. S. Horton, and S. W. Cushman. Mechanism for Enhanced Glucose Transport Response to Insulin in Adipose Cells from Chronically Hyperinsulinemic Rats. Increased Translocation of Glucose Transporters from an Enlarged Intracellular Pool. J. Clin. Invest. 79:853-858, 1987.
58. Kahn, B. B., and S. W. Cushman. Mechanism for Markedly Hyperresponsive Insulin-stimulated Glucose Transport Activity in Adipose Cells from Insulin-treated Streptozotocin Diabetic Rats. Evidence for Increased Glucose Transporter Intrinsic Activity. J. Biol. Chem. 262:5118-5124, 1987.
59. Joost, H. G., T. M. Weber, S. W. Cushman, and I. A. Simpson. Activity and Phosphorylation State of Glucose Transporters in Plasma Membranes from Insulin, Isoproterenol-, and Phorbol Ester-treated Rat Adipose Cells. J. Biol. Chem. 262:11261-11267, 1987.
60. Joost, H. G., T. M. Weber, and S. W. Cushman. Qualitative and Quantitative Comparison of Glucose Transport Activity and Glucose Transporter Concentration in Rat Adipose Cell Plasma Membranes in the Basal and Insulin-stimulated States. Biochem. J. 249:155-161, 1988.

61. Weber, T. M., H. G. Joost, I. A. Simpson, and S. W. Cushman. Methods for Assessment of Glucose Transport Activity and the Number of Glucose Transporters in Isolated Rat Adipose Cells and Membrane Fractions. In: Receptor Biochemistry and Methodology. Vol. 12B. Eds. C. R. Kahn and L. C. Harrison. Alan R. Liss, New York, 1988. pp. 171-187.
62. Weber, T. M., S. DiPaolo, H. G. Joost, S. W. Cushman, and I. A. Simpson. Subcellular Distribution of Insulin Receptor Tyrosine Kinase Activity in Rat Adipose Cells. In: Insulin Action and Diabetes. Eds. H. J. Goren, M. D. Hollenberg, and D. A. K. Roncari. Raven Press, New York, 1988. pp. 151-156.
63. Joost, H. G., T. M. Weber, I. A. Simpson, and S. W. Cushman. Phosphorylation State and Intrinsic Activity of Glucose Transporters in Plasma Membranes from Insulin-, Isoproterenol- and Phorbol Ester-treated Rat Adipose Cells. In: Insulin Action and Diabetes. Eds. H. J. Goren, M. D. Hollenberg, and D. A. K. Roncari. Raven Press, New York, 1988. pp. 157-162.
64. Kahn, B. B., I. A. Simpson, and S. W. Cushman. Divergent Mechanisms for the Insulin Resistant and Hyperresponsive Glucose Transport in Adipose Cells from Fasted and Refed Rats. Alterations in Both Glucose Transporter Number and Intrinsic Activity. J. Clin. Invest. 82:691-699, 1988.
65. Appell, K. C., I. A. Simpson, and S. W. Cushman. Characterization of the Stimulatory Action of Insulin-like Growth Factor II Binding to the Isolated Rat Adipose Cell. Differences in the Mechanism of Insulin Action on IGF-II Receptors and Glucose Transporters. J. Biol. Chem. 263:10824-10829, 1988.
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67. Kahn, B. B., S. W. Cushman, and J. S. Flier. Regulation of Glucose Transporter Specific mRNA Abundance in Rat Adipose Cells with Fasting and Refeeding. Implications for in vivo Control of Glucose Transporter Number. J. Clin. Invest. 83:199-204, 1989.
68. Jones, T. L., and S. W. Cushman. Acute Effects of Cycloheximide on the Translocation of Glucose Transporters in Rat Adipose Cells. J. Biol. Chem. 264:7874-7877, 1989.
69. Kahn, B. B., M. J. Charron, H. F. Lodish, S. W. Cushman, and J. S. Flier. Differential Regulation of Two Glucose Transporters in Adipose Cells from Diabetic and Insulin-treated Diabetic Rats. J. Clin. Invest. 84:404-411, 1989.
70. Kahn, B. B., and S. W. Cushman. Cell Biology of Insulin Action on Glucose Transport and Its Perturbation in Diabetes Mellitus. In: Diabetes Mellitus: Pathophysiology and

- Therapy. Eds. W. Creutzfeldt and P. Lefebvre. Springer-Verlag, Heidelberg, 1989. pp. 94-106.
71. Kahn, B. B., and S. W. Cushman. Perturbed Glucose Transport in Diabetes Mellitus. In: Non-insulin-dependent Diabetes Mellitus: A Satellite Symposium of the International Diabetes Foundation. Eds. D. Cameron, S. Colagiuri, L. Hédning et al. Excerpta Medica, Amsterdam, 1989. pp. 155-165.
  72. Kahn, B. B., and S. W. Cushman. Glucose Transport in Diabetes. In: Frontiers of Diabetes Research: Current Trends in Non-insulin-dependent Diabetes Mellitus. Eds. K. G. M. M. Alberti and R. S. Mazze. Excerpta Medica, Amsterdam, 1989. pp. 155-165.
  73. Simpson, I. A., S. W. Cushman, J. J. Egan, A. D. Habberfield, C. Londos, H. Nishimura, and J. Saltis. Hormonal Regulation of Glucose Transport in Rat Adipose Cells. Biochem. Soc. Trans. 18:1133-1135, 1990.
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