BIOGRAPHICAL SKETCH

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NAME: John E. Hall, Ph.D.

eRA COMMONS USER NAME (credential, e.g., agency login): johnehall

POSITION TITLE: Arthur C. Guyton Professor & Chair; Director, Mississippi Center for Obesity Research

EDUCATION/TRAINING *(Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable. Add/delete rows as necessary.)*

INSTITUTION AND LOCATION	DEGREE *(if applicable)*	Completion Date MM/YYYY	FIELD OF STUDY
Kent State University, Kent, OH	B.S.	1964-68	Biology & Chemistry
U.S. Army, Engineering School, Ft. Belvoir, VA		1968-70	Electronics/Engineering
Michigan State University, E. Lansing, MI	Ph.D.	1970-74	Physiology
University of Mississippi Medical Center	Postdoc	1974-76	Physiology

A. Personal Statement

My major research contributions have been in the general fields of obesity and metabolic disorders, cardiovascular and renal diseases, mechanisms of hypertension and target organ injury. Recent research in our lab has focused on heart failure, obesity and cardiorenal injury, central nervous system mechanisms of obesity-induced hypertension, and how the molecular signaling pathways that regulate appetite, energy expenditure and sympathetic activity are altered in obesity. Our lab uses genetic, molecular, and integrative physiological approaches in our research studies and we have extensive experience in cardiovascular and metabolic phenotyping. I currently serve as PI of a NHLBI-funded Program Project grant and a NIGMS-funded Center for Biomedical Research Excellence (COBRE) grant. I also serve as core leader for the Professional Development Core of the Mississippi Center for Clinical and Translational Research. I have mentored over 150 postdoctoral fellows, graduate students, medical students and undergraduate students. At least 7 of my trainees have become chairs/directors of departments, one is dean of Graduate Studies at UMMC, and many are highly productive researchers at academic institutions.

B. Positions and Honors

Professional Experience

1976-79	Assistant Professor, Physiology Department, University of Mississippi Medical Center
1979-82	Assoc. Prof., Physiology Dept., Univ of Mississippi Med. Ctr.
1980-93	Director of Graduate Program, Physiol. Dept., Univ. of Mississippi Med. Ctr.
1982-88	Professor, Physiology Dept., Univ. of Mississippi Med. Ctr.
1989-Present	Arthur C. Guyton Professor and Chair, Physiology Dept., Univ. of Mississippi Med. Ctr.
1996-2008	Founding Director, Center of Excellence in Cardiovascular-Renal Research
2005-2013	Associate Vice Chancellor for Research
2013-Present	Founding Director, Mississippi Center for Obesity Research

Honors, Professional Society Leadership, Editorships (Selected)

1979	Ernest G. Spivey Research Award, American Heart Association (AHA)
1984	Harry Goldblatt Award, Council for High Blood Pressure. Research, AHA
1988	The First Annual Young Scholar Award, The American Society of Hypertension
1990-1996	Associate Editor, Am. J. Physiol.: Regulatory, Integrative, and Comparative Physiol.
1990-1994	NIH Cardiovascular and Renal Study Section Member
1991-1994	Chair, Water and Electrolyte Homeostasis Section, American Physiological Society
1991, 1997-2003	Executive Council, The American Physiology Society
1992	Lewis K. Dahl Award, American Heart Association
1993-1996	Frederick A.P. Barnard Distinguished Professor, University of Mississippi

1994-2003	Executive Council, AHA Council for High Blood Pressure Research
1994-2001	Executive Council, American Society of Hypertension
1996-2002	Editor-in-Chief, *Am. J. Physiol.: Regulatory, Integrative, and Comparative Physiol.*
1996	Special Research Achievement Award, American Heart Assoc., MS
1996-2006	Billy S. Guyton Distinguished Professor, University of Mississippi
1996-2002	Chair-Elect, Chair, Past-Chair, Council for High Blood Pressure Research, AHA
1997-2000	Chair of the Section Advisory Committee, American Physiological Society
1998	Robert Tigerstedt Award for Research Excellence, International Society of Hypertension
1998	Ernest H. Starling Distinguished Lectureship and Award, American Physiological Society
2000-2003	President-Elect, President, Past-President, American Physiological Society
2000-2001	Chair, Committee of Scientific Councils, Science Advisory and Coordinating Committee,
2000	National Board of Directors, AHA
2000	Burroughs Welcome Fund Professor in Basic Medical Sciences
2000	Richard Bright Award, American Society of Hypertension
2001-2003	President, Inter-American Society of Hypertension
2002-2010	Executive Council, International Society of Hypertension
2002-2012	Editor-in-Chief, *Hypertension*, American Heart Association
2002	Novartis Award for Hypertension Research, Council for High Blood Pressure Research, AHA
2003	Lifetime Achievement Award, COSEHC
2005	Executive Council, Treasurer, International Union of Physiological Sciences
2005-2006	Carl G. Evers “All Star” Professor, selected by medical students of UMMC
2005	A. Ross McIntyre Award, University of Nebraska
2005	Distinguished Achievement Award, AHA, Council for High Blood Pressure Research
2006	British Medical Association Book Competition Award, Basic and Clinical Sciences, for Textbook of Medical Physiology
2007	Inducted into Norman C. Nelson Order for teaching excellence UMMC
2006	Mayerson-DiLuzio Memorial Lecture, Tulane School of Medicine
2007	Presidential Lecture, Canadian Society of Hypertension
2009	Lifetime Achievement Award, Inter-American Society of Hypertension
2010	James O. Davis Distinguished Lecture, University of Missouri at Columbia, College of Medicine
2010	Joseph Dvorkin Memorial Lecture, University of Alberta Cardiovascular Research Centre
2012	Excellence Award and inducted into Mississippi Innovators Hall of Fame
2012	International Society of Hypertension Franz Volhard Award for Outstanding Research
2013	Doctor Honoris Causa, Grigore T. Popa Universitatea De Medicina Si Farmacie, Romania
2013	Sir George Pickering Lecture, British Hypertension Society
2013	Kent State University Distinguished Alumnus Award and Hall of Fame
2014	Southeastern Conference Professor of the Year Award
2014	International Society of Hypertension Distinguished Member Award
2015	Joy Goodwin Distinguished Lectureship, Auburn University
2015	John D. Bower M.D. Distinguished Lectureship, University of Virginia School of Medicine
2015	Visitante Ilustre de Facultad de Medicina de la Universidad Nacional de Tucuman, Argentina
2015	Award of Meritorious Achievement of the American Heart Association
2015-2016	Carl G. Evers “All Star” Professor, selected by medical students of UMMC
2015	Distinguished Service Award, Association of Chairs of Departments of Physiology
2016	Scholar Award, Distinguished Lecture Series, Texas A & M University
2016	Thomas G. Muldoon Memorial Lectureship, Medical College of Georgia, Augusta University
2016	The Clifford V. and Drusilla R. Harding Lecture, Oakland University
2016	Ray G. Daggs Award for distinguished long-term service to the science of physiology, American Physiological Society
2016-2017	Carl G. Evers Basic Science Professor of the Year, selected by medical students of University of Mississippi Medical Center
2019	Arthur C. Guyton Award and Lecture, Association of Chairs of Departments of Physiology

C. Contributions to Science (selected from >600 publications and 24 books)

Intrarenal actions of angiotensin II (Ang II) in regulating renal sodium reabsorption and blood pressure. Our studies were among the first to demonstrate the importance of the direct i*ntrarenal* actions of Ang II in

regulating renal sodium reabsorption, feedback regulation of glomerular filtration rate, and long-term blood pressure. These studies also first demonstrated the powerful role of the renin-angiotensin system in controlling salt-sensitivity of blood pressure.

1. Hall JE, Guyton AC, Jackson TE, Coleman TG, Lohmeier TE, Trippodo NC. Control of glomerular filtration rate by renin-angiotensin system. Am J Physiol 1977; 233: F366-372.
2. Hall JE, Guyton AC, Smith Jr MJ, Coleman TG. Chronic blockade of angiotensin II formation during sodium deprivation. Am J Physiol 1979; 237: F424-432.
3. Hall JE, Guyton AC, Smith Jr MJ, Coleman TG. Blood pressure and renal function during chronic changes in sodium intake: role of angiotensin. Am J Physiol 1980; 239: F271-F280.
4. Hall JE. Control of sodium excretion by angiotensin: intrarenal mechanisms and blood pressure regulation. Am J Physiol 1986; 250: R960-R972.
5. Hall JE, Granger JP, Jones DW, Hall ME. Pathophysiology of hypertension. In: Hurst's The Heart, 14th ed., Eds. V. Fuster, R.Harrington, J Narula, Z. Eapen. McGraw-Hill Medical, New York. 2017; pp. 720-750.

Role of renal-pressure natriuresis in long-term control of blood pressure and in hypertension. Our laboratory was the first to experimentally demonstrate that the kidney's ability to excrete salt and water, via renal-pressure natriuresis, plays a crucial role in long-term control of blood pressure and in maintaining salt and water balance in several forms of hypertension.

1. Hall JE, Granger JP, Hester RL, Coleman TG, Smith Jr MJ, Cross RB. Mechanisms of "escape" from sodium retention during angiotensin II hypertension. Am J Physiol 1984; 246: F627-F634.
2. Hall JE, Granger JP, Smith Jr MR, Premen AJ. Role of renal hemodynamics and arterial pressure in aldosterone "escape". Hypertension 1984; 6 (Suppl. I): I183-I192.
3. Hall JE, Mizelle HL, Hildebrandt DA, Brands MW. Abnormal pressure natriuresis: A cause or a consequence of hypertension? Hypertension 1990; 15: 547-559.
4. Hall JE, Granger JP, do Carmo JM, da Silva AA, Dubinion J, George E, Hamza S, Speed J, Hall ME. Hypertension: physiology and pathophysiology. Comprehensive Physiology 2012; 2: 2393-2442.
5. Hall JE. Kidney dysfunction, rather than non-renal vascular dysfunction, mediates salt-induced hypertension. Circulation 2016; 133: 894-907.

Mechanisms of obesity-induced hypertension and target organ injury. Our research demonstrated a key role for abnormal kidney function caused by intrarenal and perirenal fat, activation of mineralocorticoid receptors, and activation of the sympathetic nervous system in causing obesity-induced hypertension. We also demonstrated that obesity is associated with glomerular hyperfiltration, mitochondrial and endoplasmic reticulum dysfunction, renal injury and cardiac dysfunction even before development of severe hypertension and diabetes.

1. Hall JE. The kidney, obesity, and hypertension. Hypertension 2003; 41: 625-633.
2. Hall JE, do Carmo JM, da Silva AA, Wang Z, Hall ME. Obesity-induced hypertension: interaction of neurohumoral and renal mechanisms. Circulation Res 2015; 116: 991-1006.
3. Munusamy S, do Carmo JM, Hosler JP, Hall JE. Obesity-induced changes in kidney mitochondrial and endoplasmic reticulum in the presence or absence of leptin. Am J Physiol: Renal 2015; 309: F731-F743.
4. Wang Z, do Carmo JM, da Silva AA, Aberdein N, Hall JE. Synergistic interaction of hypertension and diabetes in promoting kidney injury and the role of endoplasmic reticulum stress. Hypertension 2017; 69: 879-891
5. Hall JE, do Carmo JM, da Silva AA, Wang Z, Hall ME. Obesity, kidney dysfunction and hypertension: Mechanistic links. Nature Reviews Nephrology 2019; 15: 367-385
6. Mouton AJ, Li X, Hall ME, Hall JE. Obesity, hypertension and cardiac dysfunction: novel roles of immunometabolism in macrophage activation and inflammation. Circulation Research 2020; 126: 789-806. PMID: 32163341

Role of leptin in linking excess adiposity with sympathetic activation and hypertension. Our lab discovered that increases in leptin, a hormone secreted by fat cells, cause chronic increases in blood pressure, providing a partial explanation for why obesity causes hypertension. Moreover, we demonstrated that leptin-induced hypertension is due to sympathetic activation. We also used genetic engineering methods to determine how fat cells communicate with the brain to differentially regulate metabolic and cardiovascular functions.

1. Shek EW, Brands MW, Hall JE. Chronic leptin infusion increases arterial pressure. Hypertension 1998; 31: 409-414.
2. Hall JE, daSilva AA, doCarmo JM, Dubinion J, Hamza S, Munusamy S, Smith G, Stec D. Obesity-induced hypertension: role of sympathetic nervous system, leptin and melanocortins. J Biol Chem 2010; 285: 17271-17276.

3. do Carmo JM, da Silva AA, Wang Z, Freeman NJ, Alsheik A, Adi A, Hall JE. Regulation of blood pressure, appetite and glucose by leptin after inactivation of insulin receptor substrate 2 signaling in the entire brain or in POMC neurons. Hypertension 2016; 67: 378-386.
4. da Silva AA, Hall JE, Moak SP, Browning J, Houghton H, do Carmo JM. Role of autonomic nervous system in chronic CNS-mediated antidiabetic action of leptin. Am J Physiol: Endocrinology and Metabolism 2017; 312: E420-E428.
5. do Carmo JM, da Silva AA, Freeman JN, Wang Z, Moak S, Stec DE, Hall JE. Role of neuronal suppressor of cytokine signaling 3 (SOCS3) in modulating chronic cardiovascular and metabolic actions of leptin. Hypertension 2018; 71: 1248-1257.
6. do Carmo JM, da Silva AA, Gava FN, Moak SP, Dai X, Hall JE. Impact of leptin deficiency compared to neuron specific leptin receptor deletion on cardiometabolic regulation. Am J Physiol: Regulatory, Integrative and Comparative Physiology 2019; 317: R552-R562

Role of central nervous system proopiomelanocortin system in long-term blood pressure regulation and hypertension. We discovered that chronic melanocortin 4 receptor (MC4R) activation causes hypertension via sympathetic activation and that leptin-induced hypertension is mediated through stimulation of proopiomelanocortin neurons and subsequent activation of MC4R.

1. Kuo, J.J., A.A. Silva, and J.E. Hall. Hypothalamic melanocortin receptors and chronic regulation of arterial pressure and renal function. Hypertension 41: 768-774, 2003.
2. daSilva AA, do Carmo JM, Freeman JN, Tallam LS, Hall JE. A functional melanocortin system is required for CNS mediated chronic antidiabetic and cardiovascular actions of leptin. Diabetes 2009; 58: 1749-1756.
3. do Carmo JM, da Silva AA, Cai Z, Dubinion JH, Hall JE. Control of arterial pressure, appetite and glucose by leptin in mice lacking leptin receptors in POMC neurons. Hypertension 2011; 57: 918-926.
4. Aberdein N, Dambrino RJ, do Carmo JM, Wang Z, Mitchell LE, Drummond HA, Hall JE. Role of PTP1B in POMC neurons during chronic high fat diet: Sex differences in regulation of liver lipids and glucose tolerance. Am J Physiol: Regulatory, Integrative and Comparative Physiology. 2018; 314: R478-R488.
5. da Silva AA, Freeman JN, Hall JE, do Carmo JM. Control of appetite, blood glucose and blood pressure during chronic melanocortin-4 receptor activation in normoglycemic and diabetic NPY deficient mice Am J Physiol: Regulatory, Integrative and Comparative Physiology 2018; 314: R533-R539.

Published Work Listed in MyBibliography:
https://www.ncbi.nlm.nih.gov/myncbi/john.hall.1/bibliography/public/

D. Ongoing Research Support

PO1 HL51971 (JE Hall, PI) 08/01/89 - 05/31/21
NIH/NHLBI Cardiovascular Dynamics and their Control
The major long-term goal of this project is to develop a quantitative analysis of circulatory dynamics and related control systems, including the kidneys, sympathetic nervous system and endocrine systems.
Role: Principal Investigator

P20 GM 104357 (JE Hall, PI) 09/05/13 – 04/30/23
NIH/NIGM Cardiorenal and Metabolic Diseases Research Center
This grant supports a Center of Biomedical Research Excellence focused on obesity, cardiovascular, renal and metabolic diseases.
Role: Principal Investigator

U54 GM115428 (JG Wilson, PI) 08/18/16 - 07/31/21
NIH/NIGMS Mississippi Center for Clinical and Translational Research
Role: JE Hall, co-investigator, Professional Development Core Leader

R01 DK121411 (JM do Carmo, PI) 09/19/19 - 07/31/22
NIH/NIDDK Long-term consequences of parental obesity on developmental programming of cardiorenal diseases in offspring.
Role: JE Hall, co-investigator

R01 DK121748 (DE Stec, PI) 04/01/20-01/31/24
NIH/NIDDK Integrative Role of Bilirubin on Obesity
Role: JE Hall, co-investigator