

BIOSKETCH

NAME BOURQUE, Charles William	<u>POSITIONS</u>		
	James McGill Professor	Department of Neurology & Neurosurgery, McGill University	
eRA COMMONS USER NAME N/A	Associate Member	Department of Physiology, McGill University	
	Senior Scientist	Research Institute of the MUHC	

EDUCATION/TRAINING (Begin with baccalaureate or other initial professional education, such as nursing, and include postdoctoral training.)

INSTITUTION AND LOCATION	DEGREE	YEAR(s)	FIELD OF STUDY
University of Ottawa, Canada	B.Sc. (Hons)	1976-1980	Biology
McGill University, Canada	Ph.D.	1980-1984	Physiology
Marine Biological Laboratory, Woods Hole, USA	Certificate	1984	Biophysics
University of London, London, England	Postdoctoral	1984-1987	Pharmacology

A. Personal Statement

I am interested in the mechanisms responsible for central detection of circulating sodium, fluid osmolality and core body temperature. Our work examines how information detected by thermo- and osmo-sensitive neurons interacts with the brain's central clock to regulate thirst and vasopressin release. Our work aims to define how changes in cellular and synaptic properties affect homeostatic functions in response to high salt intake and disease states that affecting cardiovascular function and/or fluid homeostasis.

Selected Honors (2013-2023):

2013	<i>J Erlanger Distinguished Lecturer</i>	American Physiological Society (EB 2013 meeting)
2013	<i>Lecture Jacques Benoit</i>	Société de Neuroendocrinologie (France)
2016	<i>Fellow</i>	Royal Society of Canada
2016	<i>Award of Excellence</i>	John J. Day M.D. Legacy
2016	<i>Stevenson Lecturer</i>	University of Western Ontario – Phys/Pharm Research Day
2018-2025	<i>Distinguished James McGill Professor</i>	McGill University
2019	<i>Fellow</i>	Canadian Academy of Health Sciences
2024	<i>Mortyn Jones Memorial Medal</i>	British Society for Neuroendocrinology

Administrative positions in scientific Societies:

1994-1997	<i>Councillor</i>	Canadian Physiological Society - Executive Committee
1996-1999	<i>Member</i>	Canadian Association for Neuroscience - Board of Directors
2013-2017	<i>Councillor</i>	Canadian Association for Neuroscience – Board of Directors
2017-	<i>Member</i>	Canadian Association for Neuroscience – Advocacy committee
2019-2020	<i>Vice-President</i>	Canadian Association for Neuroscience
2020-2021	<i>President</i>	Canadian Association for Neuroscience
2021-2022	<i>Chair</i>	Nominations Committee, Canadian Association for Neuroscience

Editorial Boards:

1998-present	Member of the Editorial Board	<i>Journal of Neuroendocrinology</i>
2000-2003	Member of the Editorial Board	<i>Journal of Physiology</i>
2014-present	Member of the Editorial Board	<i>Journal of Neurophysiology</i>

Peer-Review positions past 6 years

2018	CIHR	Member	Molecular and Cellular Neurosciences Panel (NSB)
2018	CIHR	Scientific Officer	Molecular and Cellular Neurosciences Panel (NSB)
2019-20	CIHR	Chair	Molecular and Cellular Neurosciences Panel (NSB)

Citations According to Google Scholar, our work has been **cited >13,000 times.**
H-index = 65; 32 papers cited >100 times.

Invited Oral Presentations : **188**

Publications

Peer-reviewed publications (*denotes Trainee):

- 1) *SALGADO-MOZO, S., *THIROUIN, Z.S., *WYROSDIC, J.C., GARCÍA-HERNÁNDEZ, U., **BOURQUE, C.W.** (2023) NaX channel is a physiological [Na⁺] detector in oxytocin and vasopressin releasing magnocellular neurosecretory cells of the rat supraoptic nucleus. *J. Neuroscience* 43:8306-8316.
- 2) *THIROUIN, Z.S. and **BOURQUE, C.W.** (2023) Sex-specific differences in the circadian pattern of action potential firing by rat suprachiasmatic nucleus vasopressin neurons. *J Neuroendocrinology* 35: e13273.
- 3) *SUDBURY, J.R., *ZAEZER, C., *TRUDEL, E., *BUMAGIN, A. and **BOURQUE, C.W.** (2022) Synaptic control of rat magnocellular neurosecretory cells by warm-sensing neurons in the organum vasculosum lamina terminalis. *J. Neuroendocrinology* 34: e13214..
- 4) *THIROUIN, Z.S. and **BOURQUE, C.W.** (2021) Mechanism and function of phasic firing in vasopressin-releasing magnocellular neurosecretory cells. *J Neuroendocrinology* 33:e13048.
- 5) *LEVI, D.L., *WYROSDIC, J.C., HICKS, A.I., ANDRADE, M.A., TONEY, G.M., PRAGER-KHOUTORSKY, M. and **BOURQUE, C.W.** (2020) High dietary salt amplifies osmoresponsiveness in vasopressin-releasing neurons. *Cell Reports* 34:108866.
- 6) *GIZOWSKI, C. and **BOURQUE, C.W.** (2020) Sodium regulates clock time and output via an excitatory GABAergic pathway. *Nature* 583, 421-424.
- 7) SALMON, CK., PRIBIAG, H., *GIZOWSKI, C., FARMER, W.T., CAMERON, S., JONES, E.V., MAHADEVAN, V., **BOURQUE, C.W.**, STELLWAGEN, D., WOODIN, M.A. and MURAI, K.K. (2020). Depolarizing GABA Transmission Restrains Activity-Dependent Glutamatergic Synapse Formation in the Developing Hippocampal Circuit. *Front Cell Neurosci* 14:36.
- 8) *CIURA, S., *PRAGER-KHOUTORSKY, M., *THIROUIN, Z.S., *WYROSDIC, J.C., OLSON, J.E., LIEDTKE, W. and **BOURQUE, C.W.** (2018) Trpv4 Mediates Hypotonic Inhibition of Central Osmosensory Neurons via Taurine Gliotransmission. *Cell Reports* 23, 2245-2253.
- 9) *ZAEZER, C., *GIZOWSKI, C., SALMON, C., MURAI, K.K. and **BOURQUE, C.W.** (2018) Detection of activity-dependent vasopressin release from neuronal dendrites and axon terminals using sniffer cells. *J. Neurophysiol.* 120. 1386-96.
- 10) *GIZOWSKI, C., *ZAEZER, C. and **BOURQUE, C.W.** (2018) Activation of organum vasculosum neurons and water intake in mice by vasopressin neurons in the suprachiasmatic nucleus. *J. Neuroendocrinol.* doi: 10.1111/jne.12577..
- 11) *GIZOWSKI, C. and **BOURQUE, C.W.** (2018) The neural basis of homeostatic and anticipatory thirst. *Nat. Rev. Nephrol.* 14, 11-25.
- 12) *GIZOWSKI, C., *TRUDEL, E. and **BOURQUE, C.W.** (2017) Central and peripheral roles of vasopressin in the circadian defense of body hydration. *Best Pract Res. Clin Endocrinol Metab.* 31, 535-546.

- 13) *GIZOWSKI, C. and **BOURQUE, C.W.** (2017) Neurons that drive and quench thirst. *Science* 357, 1092-1093.
- 14) *PRAGER-KHOUTORSKY, M, *CHOE, K.Y., *LEVI, D.I., BOURQUE, C.W. (2017) Role of Vasopressin in Rat Models of Salt-Dependent Hypertension. *Curr Hypertens Rep.* 19, doi: 10.1007/s11906-017-0741-2.
- 15) *GIZOWSKI, C., *ZAELZER, C. and **BOURQUE, C.W.** (2016) Clock-driven vasopressin neurotransmission mediates anticipatory thirst prior to sleep. *Nature* 537, 685-688.
- 16) KHOUTORSKY, A., SORGE, R.E., *PRAGER-KHOUTORSKY, M., PAWLOWSKI, S.A., LONGO, G., MEHDI JAFARNEJAD, S., TAHMASEBI, S., MARTIN, L., PITCHER, M.H., GKOGKAS, C.G., SHARIF-NAEINI, R., RIBEIRO-DA-SILVA, R., **BOURQUE, C.W.**, CERVERO, F., MOGIL, J.S. and SONENBERG, N. (2016) eIF2alpha phosphorylation controls thermal nociception. *Proc. Nat. Acad. Sci. USA* 113, 11949-11954.
- 17) DJOGO, T., ROBINS, S.C., KRYZSKAYA, D., SCHNEIDER, S. LIU, X., MINGAY, A., GILLON, C., STORCH, K.-F., BOEHM, U., **BOURQUE, C.W.**, STROH, T., DIMOU, L. and KOKOEV, M.V. (2016) Adult NG2-glia are required for median eminence-mediated leptin sensing and body weight control. *Cell Metabolism* 23, 797-810.
- 18) *CHOE, K.Y., *PRAGER-KHOUTORSKY, M., FARMER, W.T., MURAI, K.K. and **BOURQUE, C.W.** (2016) Effects of salt loading on the morphology of astrocytes in the ventral glia limitans of the rat supraoptic nucleus. *J. Neuroendocrinol.* doi: 10.1111/jne.12372.
- 19) *CHOE, K.Y., *TRUDEL, E. and **BOURQUE, C.W.** (2016) Effects of salt loading on the regulation of rat hypothalamic magnocellular neurosecretory cells by ionotropic gaba and glycine receptors. *J Neuroendocrinol.* doi: 10.1111/jne.12370.
- 20) FARMER, W.T., ABRAHAMSSON, T., CHIERZI, S., LUI, C., *ZAELZER, C., JONES, E.V., PONROY BALLY, B., CHEN, G.G., THÉROUX, J.-F., PENG, J., **BOURQUE, C.W.**, CHARRON, F., ERNST, C., SJÖSTRÖM, J. and MURAI, K.K. (2016) Neurons diversify astrocytes in the adult brain through sonic hedgehog signalling. *Science* 351, 849-854.
- 21) *ZAELZER, C., *HUA, P., *PRAGER-KHOUTORSKY, M., *CIURA, S., *VOISIN, D.L., LIEDTKE, W., **BOURQUE, C.W.** (2015) ΔN-TRPV1: A Molecular Co-detector of Body Temperature and Osmotic Stress. *Cell Reports* 13, 23-30.
- 22) *STARE, J., *SIAMI, S., *TRUDEL, E., *PRAGER-KHOUTORSKY, M., SHARSHAR, T., **BOURQUE, C.W.** (2015) Effects of Peritoneal Sepsis on Rat Central Osmoregulatory Neurons Mediating Thirst and Vasopressin Release. *J. Neurosci.* 35, 12188-197.
- 23) *PRAGER-KHOUTORSKY, M. and **BOURQUE, C.W.** (2015) Anatomical organization of the rat organum vasculosum laminae terminalis. *Am. J. Physiol.* 309, R324-337.
- 24) *PRAGER-KHOUTORSKY, M. and **BOURQUE, C.W.** (2015) Mechanical basis of osmosensory transduction in magnocellular neurosecretory neurons of the rat supraoptic nucleus. *J. Neuroendocrinol.* 27, 507-515.
- 25) *CHOE, K.Y., HAN, S.Y., GAUB, P., SHELL, B., *VOISIN, D.L., KNAPP, B.A., BARKER, P.A., BROWN, C.H., CUNNINGHAM, J.T., **BOURQUE, C.W.** (2015) High Salt Intake Increases Blood Pressure via BDNF-Mediated Downregulation of KCC2 and Impaired Baroreflex Inhibition of Vasopressin Neurons. *Neuron* 85, 549-560.
- 26) *GAGNON, A., *WALSH, M., *OKUDA, T., *CHOE, K.Y., *ZAELZER, C., **BOURQUE, C.W.** (2014) Modulation of spike clustering by NMDA receptors and neuropeptides in rat supraoptic nucleus neurons. *J. Physiol.* 592, 4177-4186.
- 27) *PRAGER-KHOUTORSKY, M., KHOUTORSKY, A., **BOURQUE, C.W.** (2014) Unique interwoven microtubule scaffold mediates osmosensory transduction via physical interaction with TRPV1. *Neuron* 83, 866-878.
- 28) *STACHNIAK, T., *TRUDEL, E. and **BOURQUE, C.W.** (2014) Cell specific retrograde signals mediate antiparallel effects of angiotensin II on osmoreceptor afferents to vasopressin and oxytocin neurons. *Cell Reports* 8, 355-362.
- 29) ROBINS, S.C., *TRUDEL, E., ROTONDI, O., LIU, X., DJOGO, T., KRYZSKAYA, D., **BOURQUE, C.W.**, KOKOEV, M.V. (2013) Evidence for NG2-glia Derived, Adult-Born Functional Neurons in the Hypothalamus. *PLoS One* 8, e78236.
- 30) *SUDBURY, J.R., **BOURQUE, C.W.** (2013) Dynamic and permissive roles of TRPV1 and TRPV4 channels for thermosensation in mouse supraoptic magnocellular neurosecretory neurons. *J. Neurosci.* 33, 17160-5.
- 31) *CHOE, K.Y., OLSON, J.E. and **BOURQUE, C.W.** (2012). Taurine release by astrocytes modulates osmosensitive glycine receptor tone and excitability in the adult supraoptic nucleus. *J. Neurosci.* 32, 12518-27.
- 32) CHIERZI, S., *STACHNIAK, T., *TRUDEL, E., **BOURQUE, C.W.** and MURAI, K.K. (2012). Activity maintains structural plasticity of mossy fiber terminals in the hippocampus. *Mol. Cell. Neurosci.* 50, 260-271.
- 33) **BOURQUE, C.W.**, GUILAK, F and LIEDTKE, W.B. (2012). A TRP that makes us feel hyper. *J. Physiol.* 590, 1779-80.

- 34) *TRUDEL, E and **BOURQUE, C.W.** (2012). Circadian modulation of osmoregulated firing in rat supraoptic nucleus neurons. *J. Neuroendocrinol.* 24, 577-586.
- 35) *CIURA, S. LIEDTKE, W and **BOURQUE, C.W.** (2011) Hypertonicity-sensing in organum vasculosum lamina terminalis neurons: a mechanical process involving trpv1 but not trpv4. *J. Neurosci.* 31, 14669-76.
- 36) *SUDBURY JR, *CIURA S, *SHARIF-NAEINI R and **BOURQUE, C.W.** (2010) Osmotic and thermal control of magnocellular neurosecretory neurons--role of an N-terminal variant of trpv1. *Eur. J. Neurosci.* 32, 2022-2230.
- 37) ZHAN Y, MELIAN N, PANTOJA M, HAINES N, RUOHOLA-BAKER H, **BOURQUE, C.W.**, RAO, Y and CARBONETTO S. (2010) Dystroglycan and Mitochondrial Ribosomal Protein L34 Regulate Differentiation in the Drosophila Eye. *PLoS One* 5, e10488.
- 38) *TRUDEL, E. and **BOURQUE, C.W.** (2010) Central clock excites vasopressin neurons by waking osmosensory afferents during late sleep. *Nature Neurosci.* 13, 467-474.
- 39) *PRAGER-KHOUTORSKY, M and **BOURQUE, C.W.** (2010). Osmosensation in vasopressin neurons: changing actin density to optimize function. *Trends Neurosci.* 33, 76-83.
- 40) *ZHANG, Z. and **BOURQUE, C.W.** (2008) Amplification of Transducer Gain by Angiotensin II-Mediated Enhancement of Cortical Actin Density in Osmosensory Neurons. *J. Neurosci.* 28, 9536-9544.
- 41) **BOURQUE, C.W.** (2008) Central mechanisms of osmosensation and systemic osmoregulation. *Nat. Rev. Neurosci.* 9, 519-531.
- 42) *SHARIF-NAEINI, R, *CIURA, S, *STACHNIAK, TJ, *TRUDEL E, **BOURQUE CW.** (2008) Neurophysiology of supraoptic neurons in C57/BL mice studied in three acute in vitro preparations. *Prog. Brain. Res.* 170, 229-242.
- 43) *SHARIF NAEINI, R., *CIURA, S. and **BOURQUE, C.W.** (2008). Trpv1 gene required for thermosensory transduction and anticipatory secretion from vasopressin neurons during hyperthermia. *Neuron* 58, 179-185.
- 44) *SHARIF NAEINI, R., *CIURA, S., *ZHANG, Z. and **BOURQUE, C.W.** (2008) Contribution of trpv channels to osmosensory transduction, thirst and vasopressin release. *Kidney Int.* 73, 811-815.
- 45) *TAHVILDARI, B, ALONSO, A., **BOURQUE, C.W.** (2008) Ionic basis of "On" and "Off" Persistent Activity in Layer III Lateral Entorhinal Cortical Principal Neurons. *J. Neurophysiol.* 99, 2006-2011.
- 46) *BROWN, C.H., SCOTT, V., LUDWIG, M., LENG, G., **BOURQUE, C.W.** (2007) Somatodendritic dynorphin release: orchestrating activity patterns of vasopressin neurons. *Biochem. Soc. Trans.* 35, 1236-1242.
- 47) *KHAWAJA, F.A., ALONSO, A., **BOURQUE, C.W.** (2007) Ca(2+)-dependent K(+) currents and spike-frequency adaptation in medial entorhinal cortex layer II stellate cells. *Hippocampus* 17, 1143-1148.
- 48) *ELLIS, L.D., KRAHE, R., **BOURQUE, C.W.**, DUNN, R.J., CHACRON, M.J. (2007) Muscarinic receptors control frequency tuning through the downregulation of an a-type potassium current. *J. Neurophysiol.* 98, 1526-1537.
- 49) *ZHANG, Z., *KINDRAT, A.N., *SHARIF-NAEINI, R and **BOURQUE, C.W.** (2007). Actin filaments mediate mechanical gating during osmosensory transduction in rat supraoptic nucleus neurons. *J. Neurosci.* 27, 4008-4013.
- 50) **BOURQUE, C.W.**, *CIURA, S., *TRUDEL, E., *STACHNIAK, T.E.J. and *SHARIF NAEINI, R. (2007) Neurophysiological characterisation of osmosensitive neurons. *Exp. Physiol.* 92, 499-505.
- 51) *SHARIF NAEINI, R., *CIURA S and **BOURQUE, C.W.** (2006) TRPVs: ion channels that make you thirsty! *Med. Sci.* (Paris) 22, 1035-1037.
- 52) *CIURA, S. and **BOURQUE, C.W.** (2006). Transient receptor potential vanilloid 1 is required for intrinsic osmoreception in organum vasculosum lamina terminalis neurons and for normal thirst responses to systemic hyperosmolality. *J. Neurosci.* 26, 9069-9075.
- 53) PANATIER, A., *GENTLES, S.J, **BOURQUE, C.W.** and OLIET, S.H.R. (2006). Activity-dependent synaptic plasticity in the supraoptic nucleus of the hypothalamus. *J. Physiol.* 573, 711-721.
- 54) *CHAKFE, Y., *ZHANG, Z. and **BOURQUE, C.W.** (2006). Interleukin-1beta directly excites isolated rat supraoptic neurons via upregulation of the osmosensory cation current. *Am. J. Physiol.* 290, R1183-R1190.
- 55) *STACHNIAK, T.J. and **BOURQUE, C.W.** (2006). Visually guided whole cell patch clamp of mouse supraoptic nucleus neurons in cultured and acute conditions. *Am. J. Physiol.* 291, 68-R76.
- 56) *BROWN, C.H., LENG, G, LUDWIG, M. and **BOURQUE, C.W.** (2006). Endogenous activation of supraoptic nucleus {kappa}-opioid receptors terminates spontaneous phasic bursts in rat magnocellular neurosecretory cells. *J. Neurophysiol.* 95, 3232-3244.

- 57) *SHARIF NAEINI, R., WITTY, M.-F., SEGUELA, P. and **BOURQUE, C.W.** (2006). An N-terminal variant of Trpv1 channel is required for osmosensory transduction. *Nature Neurosci.* 9, 93-98.
- 58) *ZHANG, Z. and **BOURQUE C.W.** (2006). Calcium permeability and flux through osmosensory transduction channels of isolated rat supraoptic nucleus neurons. *Eur. J. Neurosci.* 23, 1491-1500.
- 59) *BROWN, C.H. and **BOURQUE, C.W.** (2006). Mechanisms of rhythmogenesis: insights from hypothalamic vasopressin neurons. *Trends Neurosci.* 29, 108-115.
- 60) *GHAMARI-LANGROUDI, M. and **BOURQUE, C.W.** (2004). Muscarinic modulation of slow after-hyperpolarisation and burst firing in rat supraoptic neurones. *J. Neurosci.* 24, 7718-7726.
- 61) *BROWN, C.H., BULL, P.M. and **BOURQUE, C.W.** (2004). Phasic bursts in rat magnocellular neurosecretory cells are not intrinsically regenerative in vivo. *Eur. J. Neurosci.* 19, 2977-2983.
- 62) *BROWN, C.H. and **BOURQUE, C.W.** (2004). Autocrine feedback inhibition of plateau potentials terminates phasic bursts in magnocellular neurosecretory cells. *J. Physiol.* 557, 949-960.
- 63) *ZHANG, Z. and **BOURQUE, C.W.** (2003). Osmometry in osmosensory neurons. *Nature Neurosci.* 6, 1021-1022.
- 64) *TRUDEL, E. and **BOURQUE, C.W.** (2003). A rat brain slice preserving synaptic connections between neurons of the suprachiasmatic nucleus, organum vasculosum lamina terminalis and supraoptic nucleus. *J. Neurosci. Methods.* 128, 67-77.
- 65) BUSS, R.R., **BOURQUE, C.W.** and DRAPEAU, P. (2003). Membrane properties related to the firing behavior of zebrafish motoneurons. *J. Neurophysiol.* 89, 657-664.
- 66) **BOURQUE, C.W.** , *VOISIN, D.L. and *CHAKFE, Y. (2002). Stretch-inactivated cation channels: cellular targets for modulation of osmosensitivity in supraoptic neurons. *Prog. Brain Res.* 139, 85-94.
- 67) *GHAMARI-LANGROUDI, M. and **BOURQUE, C.W.** (2002). Flufenamic acid blocks depolarising afterpotentials and phasic firing in rat supraoptic neurones. *J. Physiol.* 545, 537-542.
- 68) *VOISIN, D.L. and **BOURQUE, C.W.** (2002). Integration of CSF sodium and osmotic pressure in vasopressin neurons. *Trends Neurosci.* 25, 199-205.
- 69) *CHAKFE, Y. and **BOURQUE, C. W.** (2001). Peptidergic excitation of supraoptic nucleus neurons: Involvement of stretch-inactivated cation channels. *Exp. Neurol.* 171, 210-218.
- 70) *FISHER, T.E. and **BOURQUE, C.W.** (2001). Calcium channels and secretion in neurons and neuroendocrine cells. *Prog. Biophys. Mol. Biol.* 77, 269-303.
- 71) *GHAMARI-LANGROUDI, M. and **BOURQUE, C.W.** (2001). Ionic basis of the caesium-induced depolarisation in rat supraoptic nucleus neurones. *J. Physiol.* 536, 797-808.
- 72) **BOURQUE, C.W.** and *RICHARD, D. (2001). Axonal projections from the organum vasculosum lamina terminalis to the supraoptic nucleus: functional analysis and presynaptic modulation. *Clin. Exp. Pharm. Physiol.* 28, 570-574.
- 73) **BOURQUE, C.W.** and *CHAKFE, Y. (2000). Does a stretch-inactivated cation channel integrate osmotic and peptidergic signals? *Nature Neurosci.* 3, 847-848.
- 74) *GHAMARI-LANGROUDI, M. and **BOURQUE, C.W.** (2000). Excitatory role of the hyperpolarization-activated inward current in phasic and tonic firing of rat supraoptic neurons. *J. Neurosci.* 20, 4855-4863.
- 75) *CHAKFE, Y. and **BOURQUE, C.W.** (2000). Excitatory peptides and osmotic pressure modulate mechanosensitive cation channels in concert. *Nature Neurosci.* 3, 572-579.
- 76) *BROWN, C.H., *GHAMARI-LANGROUDI, M., LENG, G. and **BOURQUE, C.W.** (1999). κ -Opioid receptor activation inhibits post-spike depolarizing after-potentials in rat supraoptic nucleus neurones in vitro. *J. Neuroendocrinol.* 11, 825-828.
- 77) *VOISIN, D.L., CHAKFE, Y. and **BOURQUE, C.W.** (1999). Coincident detection of CSF Na^+ and osmotic pressure in osmoregulatory neurons of the supraoptic nucleus. *Neuron* 24, 453-460.
- 78) **BOURQUE, C.W.** (1998). Osmoregulation of vasopressin neurons: A synergy of intrinsic and synaptic processes. *Prog. Brain Res.* 119, 59-76.
- 79) *FISHER, T.E., *VOISIN, D.L. and **BOURQUE, C.W.** (1998). Different A-type K^+ current density influences excitability of vasopressin and oxytocin neurons of the rat hypothalamus. *J. Physiol.* 511, 423-432.
- 80) *GHAMARI-LANGROUDI, M. and **BOURQUE, C.W.** (1998). Cesium blocks depolarizing afterpotentials and phasic firing in rat magnocellular neurosecretory cells. *J. Physiol.* 510, 165-175.

- 81) **BOURQUE, C.W.**, *KIRKPATRICK, K and *JARVIS, C.R. (1998). Extrinsic modulation of spike afterpotentials in rat hypothalamoneurohypophyseal neurons. *Cell. Mol. Neurobiol.* 18, 3-12.
- 82) *PAPAS, S. and **BOURQUE, C.W.** (1997). Galanin inhibits continuous and phasic firing in rat hypothalamic magnocellular neurosecretory cells. *J. Neurosci.* 15, 6048-6056.
- 83) **BOURQUE, C.W.** and *OLIET, S.H.R. (1997). Osmoreceptors in the central nervous system. *Ann. Rev. Physiol.* 59, 601-619.
- 84) NIELSEN, S., NAGELHUS, E.A., AMIRY-MOGHADDAM, M., **BOURQUE, C.W.**, AGRE, P. and OTTERSEN, O.P. (1997). Specialized membrane domains for water transport in glial cells: High resolution immunogold cytochemistry of Aquaporin-4 in rat brain. *J. Neurosci.* 17, 171-180.
- 85) *RICHARD, D. and **BOURQUE, C.W.** (1996). Atrial natriuretic peptide modulates synaptic transmission from osmoreceptor afferents to the supraoptic nucleus. *J. Neurosci.* 16, 7526-7532.
- 86) *FISHER, T.E. and **BOURQUE, C.W.** (1996). Calcium channel subtypes in the somata and axon terminals of the magnocellular neurosecretory cells of the rat supraoptic nucleus. *Trends Neurosci.* 19, 440-444.
- 87) *KIRKPATRICK, K. and **BOURQUE, C.W.** (1996). Activity-dependence and functional role of the apamin-sensitive K⁺ current in rat supraoptic neurones *in vitro*. *J. Physiol.* 494, 389-398.
- 88) *OLIET, S.H.R. and **BOURQUE, C.W.** (1996). Gadolinium uncouples mechanical detection and osmoreceptor potential in supraoptic neurons. *Neuron* 16, 175- 181.
- 89) *HIRUMA, H. and **BOURQUE, C.W.** (1995). P₂ purinoceptor-mediated depolarization of rat supraoptic neurosecretory cells *in vitro*. *J. Physiol.* 489, 805-811.
- 90) *OLIET, S.H.R., PLOTSKY, P.M. and **BOURQUE, C.W.** (1995). Effects of activin-A on neurons acutely isolated from the rat supraoptic nucleus. *Neuroendocrinology* 7, 661-663.
- 91) *FISHER, T.E. and **BOURQUE, C.W.** (1995). Distinct w-agatoxin-sensitive calcium currents in somata and axon terminals of rat supraoptic neurones. *J. Physiol.* 489, 383-388.
- 92) *FISHER, T.E. and **BOURQUE, C.W.** (1995). Voltage gated calcium currents in the magnocellular neurosecretory cells of the rat supraoptic nucleus. *J. Physiol.* 486, 571-580.
- 93) *RICHARD, D. and **BOURQUE, C.W.** (1995). Synaptic regulation of rat supraoptic nucleus neurones during osmotic stimulation of the organum vasculosum lamina terminalis *in vitro*. *J. Physiol.* 489, 567-577.
- 94) *KIRKPATRICK, K. and **BOURQUE, C.W.** (1995). Effects of neuropeptides on rat supraoptic nucleus neurones *in vitro*. *J. Physiol.* 482, 373-381.
- 95) **BOURQUE, C.W.**, *OLIET, S.H.R. and *RICHARD, D. (1994). Osmoreceptors, osmoreception and osmoregulation. *Front. Neuroendocrinol.* 15: 231-274.
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