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|  | **Education and Training**University of Michigan *BS in Biopsychology and Cognitive Sciences with Honors* (09/2000-04/2004)University of Cincinnati *PhD in Neuroscience* (09/2005-05/2011)University of Michigan, Internal Medicine, Postdoctoral Training (06/2011-06/2016) **Academic Appointments**University of Michigan, Internal Medicine, Research Investigator (07/2016- 08/2019) Indiana University, Pharmacology and Toxicology, Assistant Professor (09/2019- present)Indiana Biosciences Research Institute, Assistant Investigator (09/2019- present)  |
| .  | **Research Interests**-Understanding the neurocircuitry that induces the counterregulatory response to hypoglycemia-Elucidating the cellular and molecular mechanisms triggered by recurrent hypoglycemia that underlies hypoglycemia associated autonomic failure.-Revealing the neurocircuits that control energy expenditure, particularly those that influence thermogenesis.**Grants**1. **Present and Active**

American Diabetes Association Pathway Initiator Award, 17-INI-15, Targeting the VMN to understand hypoglycemia pathogenesis, PI: Jonathan N. Flak, 1/2017-12/2023, $1,625,000.IU CDMD Pilot and Feasibility Program, Identifying the downstream targets from the VMN in metabolic control, PI: Jonathan N. Flak, 6/2021-6/2022, $50,000 Lilly Research Award Program, Energy expenditure engagement by multi-receptor agonist via the CNS, PI:Jonathan N. Flak, 2/2021-1/2023, $264,0001. **Previous Grants**

Training program in Endocrinology and Metabolism, T32 DK 7245-35, PI: Richard Auchus, 07/2011-06/2012, Jonathan N. Flak, postdoctoral trainee, salary support.Training program in Basic and Translational Digestive Sciences, T32 DK 94775-1, PI: Chung Owyang, 07/2012-06/2013, Jonathan N. Flak, postdoctoral trainee, salary support.Ruth L. Kirschstein National Research Service Awards for Individual Postdoctoral Fellows, (NIDDK), F32 DK098833-01, Brainstem LepRb neurons in the control of metabolism, PI: Jonathan N. Flak, 07/2013-06/2014, $53,714.American Diabetes Association Mentored-Based Fellowship, PI: Martin G. Myers Jr., 07/2014-12/2015, salary support.American Diabetes Association Postdoctoral Fellowship Training Award, 1-16-PDF-036, Deciphering the neurocircuits that initiate counterregulation, PI: Jonathan N. Flak, 01/ 2016-08/2016, $183,372.National Institutes of Health Pathway to Independence (NIDDK) K99/R00 DK109115, Deciphering the neurocircuits that initiate counterregulation, PI: Jonathan N. Flak, 09/2016-12/2016, $761,282.Michigan Diabetes Research Center Pilot and Feasibility Grant, Uncovering the neurocircuitry that drives counterregulation downstream from the VMN, 1/2017-11/2018, $50,000.**Membership in Professional Societies**Ohio Miami Valley Chapter of the Society for Neuroscience (2006-2011)Society for Neuroscience (2007-present)Society for the Study of Ingestive Behavior (2010-2012)American Diabetes Association (2015-present)**Peer-Review Service**Physiology and Behavior (2008-present)International Journal of Developmental Neuroscience (2011-present)Behavioral Brain Research (2012-present)Journal of Biological Research (2012-present)European Journal of Neuroscience (2012- present)Annals of Behavioral Medicine (2013-present)Neurochemistry International (2015-present)Diabetes (2016-present)Diabetes Care (2016-present)Neuropeptides (2017-present)Molecular Metabolism (2018-present)International Journal of Molecular Science (2019-present)Brain Sciences (2019-present)Nutrients (2019- present)JCI Insight (2019-present)Cells (2020-present)Journal of Neuroendocrinology (2020-present)Research in Veterinary Science (2020-present)Healthcare (2020-present)Frontiers in Pharmacology (2021-present)American Diabetes Association Scientific Sessions Abstract (2021)**Teaching**Mackenzie Lind (Undergraduate Pre-med Student) (2010)Mark Germani (Honors Pre-med Student) (2012-2014)Maja Joosten (Visiting MD/PhD Student from the Netherlands) (2013-2014)Jamie Sacksner (Undergraduate Pre-med Student) (2015-2017)Ahsan Ansari (Undergraduate Engineering Student) (2016-2019)Nandan Kodur (Undergraduate Pre-med Student) (2018-2019)Postdoctoral Research Training Program for Medical Fellows (UMHS) (2012-2019)Postdoctoral Short Course on College Teaching in Science and Engineering (2015)Selected Topics Course on Obesity and Metabolism (Wayne State University) (2017-2019) |
|  | Neuroscience and Behavior (Indiana University SOM) (2020-present)Rashmita Basu (IU SOM Pharmacology and Toxicology Graduate Student) (2020-present)Diabetes and Obesity (Indiana University Biochemistry) (2020-present)Diabetes Pharmacology (Indiana University SOM) (2021-present)PBL Pilot (Indiana University SOM) (2020) |
|  | **Bibliography***Peer-Reviewed Journals and Publications*1. *Manikkam M.,* Thompson R.C., Herkimer C., **Flak J. (5/7),** Padmanabhan V. *Developmental programming: Impact of prenatal testosterone excess on pre- and postnatal gonadotropin regulation in sheep.* Biology of Reproduction (2006); 78: 648-660. [I ran several experiments, analyzed data, and many radioimmunoassays]
2. *Herman J.P.,* **Flak J.,** Jankord R. *Chronic stress plasticity in the hypothalamic paraventricular nucleus.* Review. Progress in Brain Research (2007); 170: 353-364. [I wrote a section and helped revise the final version]
3. *Roberts E.K.*, **Flak J.N.**, Ye W., Padmanabhan V, Lee TM. [*Juvenile rank can predict male-typical adult mating behavior in female sheep treated prenatally with testosterone*](http://www.ncbi.nlm.nih.gov/pubmed/19122184?ordinalpos=1&itool=EntrezSystem2.PEntrez.Pubmed.Pubmed_ResultsPanel.Pubmed_DefaultReportPanel.Pubmed_RVDocSum)*.* Biology of Reproduction (2009); 80: 737-742. [I ran several experiments and analyzed data as part of my senior honors thesis]
4. ***Flak J.N****.,* Ostrander M.M., Mueller N.K., Tasker J.G., Herman J.P. *Chronic stress-induced neurotransmitter plasticity in the PVN.* Journal of Comparative Neurology (2009); 517: 156-165. [I designed all of the experiments, collected and analyzed the data, and wrote the manuscript with the help of my co-authors]
5. *Ostrander M.M.,* Ulrich-Lai Y.M., Choi D.C., **Flak J.N.,** Richtand N.M., Herman J.P. *Chronic stress produces enduring decreases in novel stress-evoked c-fos mRNA expression.* Stress (2009); 12(6):469-77 [I collected in situ hybridization data and analyzed the data, and revised the manuscript]
6. *Jankord R.J.,* Zhang R., **Flak J.N.,** Solomon M.B., Albertz J., Herman J.P. *Stress activation of IL-6 neurons in the hypothalamus.* American Journal of Physiology: Regulatory, Integrative and Comparative Physiology (2010); 299(1): 343-51. [I assisted in blood collection and microscopy, and revised the manuscript]
7. *Zhang R.,* Jankord R., **Flak J.N**., Solomon M.B., D’Alessio D.A., Herman J.P. *Role of Glucocorticoids in Tuning Hindbrain Stress Integration.* Journal of Neuroscience (2010); 30(44): 14907-14. [I assisted in blood collection, microscopy, and revised the manuscript]
8. *Solomon M.B.,* Jankord R.J., **Flak J.N.,** Herman J.P. *Chronic stress, energy balance, and adiposity in female rats.* Physiology and Behavior (2010); 102(1): 84-90. [I assisted in blood and organ collection, experimental design, and I revised the manuscript]
9. Jankord R.J., Solomon M.B., Albertz J., **Flak J.N.,** Zhang R., Herman J.P. *Stress vulnerability during adolescent development in rats.* Endocrinology (2010); 152(2): 629-38. [I assisted in rodent stress exposure, blood and organ collection, and I revised the manuscript]
10. ***Flak J.N.,*** Jankord R. J., Solomon M.B., Krause E.G., Herman J.P. *Opposing effects of chronic stress and weight restriction on cardiovascular, neuroendocrine, and metabolic function.* Physiology and Behavior (2011); 104(2): 228-34. [I designed all of the experiments, collected and analyzed the data, and wrote the manuscript with the help of my co-authors]
11. *Krause E.G.,* de Kloet A.D., **Flak J.N.,** Smeltzer, M., Solomon M.B., Evanson N.K., Jankord R., Woods S.C., Sakai R.R., Herman J.P. *Hydration state controls stress responsiveness and social behavior.* Journal of Neuroscience (2011); 31(14): 5470-6. [I assisted in experimental design, microscopy, blood collection, and revised the manuscript]
12. *Krause E.G.,* de Kloet A.D., Scott K.A., **Flak J.N. (4/12),** Sakai R.R. *Blood-borne angiotensin II acts in the brain to influence behavioral and endocrine responses to psychogenic stress.* Journal of Neuroscience (2011); 31(42): 15009-15. [I assisted in experimental design, microscopy, blood collection, and revised the manuscript]
13. ***Flak J.N.,*** Solomon M.B., Jankord R., Krause E.G., Herman J.P. *Identification of Chronic Stress Activated Regions Reveals a Potential Recruited Circuit in Rat Brain.* European Journal of Neuroscience (2012); 36 (4): 2547-55. [I designed all of the experiments, collected and analyzed the data, and wrote the manuscript with the help of my co-authors]
14. *McKlveen J.M.*, Myers B., **Flak J.N.,** Bundzikova J., Solomon M.B., Seroogy K.B., Herman J.P. *Role of prefrontal cortex glucocorticoid receptors in stress and emotion.* Biological Psychiatry (2013); 74 (9): 672-9. [I assisted with experimental design, microscopy, blood and organ collection, and revised the manuscript]
15. *Solomon M.B.,* Wulsin A.C., Rice T., **Flak J.N. (7/9),** Ulrich-Lai Y., Herman J.P. *The selective glucocorticoid receptor antagonist CORT 108297 decreases neuroendocrine stress responses and immobility in the forced swim test.* Hormones and Behavior (2014); 65 (4): 363-71.[I assisted in experimental design, blood collection, behavioral analyses, and revised the manuscript]
16. ***Flak J.N.,*** Solomon M.B., McKlveen J.M., Myers B., Jankord R.J., Krause E.G., Herman J.P. *Role of paraventricular nucleus-projecting norepinephrine/epinephrine neurons in acute and chronic stress.* European Journal of Neuroscience (2014); 39 (11): 1903-11. [I designed all of the experiments, collected and analyzed the data, and wrote the manuscript with the help of my co-authors]
17. ***Flak J.N*.,** Patterson C.M., Garfield A.S., D’Agostino G., Goforth P.B., Sutton A.K., Malec P.A., Wong J.M., Germani M., Jones J.C., Rajala M., Satin L., Rhodes C.J., Olson D.P., Kennedy R.T., Heisler L.K., Myers M.G. Jr. *Leptin-inhibited PBN neurons enhance responses to hypoglycemia in negative energy balance.* Nature Neuroscience (2014); 17 (12): 1744-50. [I designed all of the experiments, collected and analyzed the data, and wrote the manuscript with the help of my co-authors]
18. *Garfield A.S.,* Shah B.P., Madara J.C., **Flak J. (7/11),** Heisler L.K. *A parabrachial-hypothalamic cholecystokinin neurocircuit controls counterregulatory responses to hypoglycemia.* Cell Metabolism (2014); 20 (6): 1030-7. [I assisted in experimental design and revised the manuscript]
19. *De Kloet, A.D.,* Krause, E.G., Solomon, M.B., **Flak, J.N. (4/11),** Herman, J.P. *Adipocyte glucocorticoid receptors mediate fat-to-brain signaling.* Psychoneuroendocrinology (2015); 56: 110-9. [I assisted in experimental design, blood and organ collection, western blot analyses, and revised the manuscript]
20. *Solomon M.B.,* Loftspring M., de Kloet A.D., **Flak J.N. (7/14),** Herman J.P. *Neuroendocrine function after hypothalamic depletion of glucocorticoid receptors in male and female mice.* Endocrinology (2015); 156 (8): 2843-53. [I assisted in experimental design, blood and organ collection, and revised the manuscript]
21. ***Flak J.N.,*** Myers M.G. Jr. *CNS mechanisms of leptin action.* Review.Molecular Endocrinology (2015); 30 (1): 3-12. [I wrote the manuscript with revisions from my co-author]
22. *Rosario W.*, Singh I., Wautlet A., **Flak J. (5/12)**, Myers M.G. Jr, Rhodes C.J. *The brain to pancreatic islet neuronal map reveals differential glucose regulation from distinct hypothalamic regions.* Diabetes (2016); 65(9):2711-23. [I provided technical assistance and revised the manuscript]
23. ***Flak J.N.*** *A role for leptin-regulated neurocircuitry in subordination stress.* Physiology and Behavior. (2016); S0031-9384(16)30633-3. [I solely wrote the review]
24. ***Flak J.N.,*** Arble D., Pan W., Patterson C.M., Lanigan T., Sacksner J., Joosten M., Morgan D., Allison M.B., Hayes J., Feldman E., Seeley R.J., Olson D.P., Rahmouni K., Myers M.G. Jr. *A leptin-regulated neural circuit that modulates glucose mobilization in response to noxious stimuli.* Journal of Clinical Investigation (2017); 127(8): 3103-3113. [I designed all of the experiments, collected and analyzed the data, and wrote the manuscript with the help of my co-authors]
25. *Scott K.A.,* de Kloet A.D., Smeltzer M.D., **Flak J.N. (5/9)**, Tamashiro K.L.K., Sakai R.R. *Susceptibility or resilience? Prenatal stress predisposes male rats to social subordination, but facilitates adaptation to subordinate status.* Physiology and Behavior (2017); 178: 117-125.[I assisted in experimental design, blood and organ collection, and revised the manuscript]
26. *Meek T.H.,* Matsen M.E., Faber C.L., **Flak J.N. (8/10),** Myers M.G. Jr., Morton G.J. *In uncontrolled diabetes, hyperglucagonemia and ketosis result from deficient leptin action in the parabrachial nucleus.* Endocrinology (2018); 159(4):1860-1872. [I assisted in experimental design, utilization of a mouse model, and revised the manuscript]
27. *Pan W.,* Adams J., Allison M.B., **Flak J.N. (5/11),** Olson D.P., Myers M.G. Jr. *Essential role for hypothalamic calcitonin receptor-expressing neurons in the control of food intake by leptin.* Endocrinology (2018); 159(4):1585-1594. [I assisted in running immunohistochemical analyses and revised the manuscript]
28. ***Flak J.N.,***Goforth P.B., Dell’Orco J., Sabatini P.V., Li C., Bozadjieva N., Sorenson M., Valenta A., Cras-Meneur C., Ansari A., Sacksner J., Kodur N., Sandoval D., Kennedy R.T., Olson D.P., Myers M.G. Jr. *Ventromedial hypothalamic nucleus neuronal subset regulates blood glucose independently of insulin.* Journal of Clinical Investigation (2020); 130(6): 2943-2952. [I designed all of the experiments, collected and analyzed the data, and wrote the manuscript with the help of my co-authors]
29. *Cheng W.,* Gonzalez I., Pan W., **Flak J.N. (15/22)**, Blouet C., Myers M.G. Jr. *Calcitonin receptor neurons in the mouse nucleus tractus solitarius control energy balance via non-aversive suppression of feeding.* Cell Metabolism (2020); 31(2): 301-312. [I helped with some protocols and experimental design. I also provided feedback on the writing]
30. *Bozadjieva N.,* Ross R.A., Johnson D.Q., Haggerty D.L., Atwood B., Lowell B.B., **Flak J.N.** *The role of mediobasal hypothalamic PACAP in the control of body weight and metabolism.* Endocrinology (2021); 162(4). [I designed all of the experiments, collected and analyzed the data, and wrote the manuscript with the help of my co-authors]

*Non-Peer-Reviewed Publications*1. *The effect of prenatal testosterone on female social dominance in sheep.* Senior Honors Thesis. University of Michigan (2004).
2. *Chronic stress, neurotransmitter plasticity, and body weight.* Ph.D. Dissertation. University of Cincinnati (2012).

*Abstracts*1. *Astapova O.I.,* Herkimer C., Olton P.R., Lee J.S., **Flak J.,** Padmanabhan V. *Developmental Programming: Defects in preovulatory estradiol rise and gonadotropin surge**dynamics in prenatal testosterone-treated ewes are not programmed by androgenic action of testosterone.* Society for the Study of Reproduction Annual Meeting (2006: Omaha, Nebraska)
2. ***Flak J.N.,*** Ostrander M.M., Mueller N.K., Herman J.P. *Chronic stress-induced neurotransmitter plasticity within the hypothalamic paraventricular nucleus.* Society for Neuroscience Annual Meeting (2007: San Diego, CA)
3. ***Flak J.N.,*** Ostrander M.M., Jankord R, Solomon M, Herman JP. *Limbic glucocorticoid receptor expression during the recovery from chronic stress.* Society for Neuroscience Annual Meeting (2008: Washington DC)
4. ***Flak J.N*.,** Ostrander M.M., Jones A., Jones K., Herman J.P. *Altered arginine vasopressin and glucocorticoid receptor mRNA during the recovery of chronic stress.* American Neuroendocrine Society Meeting (2008: San Rafael, CA)
5. *Solomon M.B.,* Jankord R., **Flak J.N.,** Herman J.P. *Exposure to high fat diet but not chronic stress increases symptoms of the metabolic syndrome and impairs estrous cyclicity in females.* American Neuroendocrine Society Meeting (2008: San Rafael, CA)
6. *Krause E.G.,* ***Flak J.N.***, Jones K., Sakai R.R., Herman J.P. *Weight loss is a mediator of cardiovascular and behavioral responses to stress.* Society for the Study of Ingestive Behavior Annual Meeting (2009: Portland, OR)
7. ***Flak J.N.*,** Krause E.G., Jankord R., Jones K., Herman J.P. *Opposing effects of chronic stress and reductions in weight gain on neuroendocrine and cardiovascular responses.* Society for Neuroscience Annual Meeting (2009: Chicago, IL)
8. *Zhang R.*, Jankord R., Ulrich-Lai Y., Solomon M., **Flak J.N.**, Herman J.P. *Stress-triggered activation of gene expression in NTS: catacholeminergic and GLP-1 system, facilitation versus habituation.* Society for Neuroscience Annual Meeting (2009: Chicago, IL)
9. *Levine N.*, O’Malley J.A., **Flak J.N.**, Herman J.P., Steece-Collier K. *Thin-tissue golgi impregnation: a method that allows multiple post-mortem analyses on a single subject.* Society for Neuroscience Annual Meeting (2009: Chicago, IL)
10. ***Flak J.N.,*** Krause E.G., Jankord R.J., Solomon M.B., Herman J.P. *Chronic stress, body weight, and cardiovascular function.* Society for the Study of Ingestive Behavior Annual Meeting (2010: Pittsburgh, PA)
11. ***Flak J.N.,*** Krause E.G., Jankord R.J., Solomon M.B., Herman J.P. *Chronic stress recruitment of neural circuitry regulating the HPA axis.* Neurobiology of Stress Workshop (2010: Boulder, CO)
12. *de Kloet A.D.,* **Flak, J.N.,** Jankord R., Woods S.C., Herman J.P., Sakai R.R., Krause E.G. *Acute osmotic dehydration activates oxytocin-containing neurons and attenuates the hypothalamic-pituitary-adrenal axis response to psychogenic stress.* Neurobiology of Stress Workshop (2010: Boulder, CO)
13. *Scott K.A.,* de Kloet A.D., Krause E.G., Smeltzer M.D., **Flak J.N.,** Sakai R.R. *Effects of prenatal stress on adult stress responsivity and vulnerability.* Neurobiology of Stress Workshop, (2010: Boulder, CO)
14. *McKlveen J.M.,* **Flak J.N.,** Jones K.R., Packard B.A., Seroogy K., Herman J.P. *Lentiviral-mediated knockdown of the glucocorticoid receptor in vitro and in vivo.* Society for Neuroscience Annual meeting (2010: San Diego, CA)
15. *de Kloet A.D.,* Krause E.G., Solomon M.B., **Flak J.N.,** Scott K.A., Ulrich-Lai Y.M., Sakai R.R., Seeley R.J., Herman J.P., Woods S.C. *The role of the adipocyte glucocorticoid receptor in energy metabolism and HPA axis regulation.* Society for the Study of Ingestive Behavior Annual meeting (2011: Clearwater, FL)
16. *Krause E.G.,* De Kloet A.D., **Flak J.N.,** Smeltzer M.D., Solomon M.B., Evanson N.K., Woods S.C., Sakai R.R., Herman J.P. *Hydration state controls stress responsiveness and social behavior.* Society for the Study of Ingestive Behavior Annual meeting (2011: Clearwater, FL)
17. *McKlveen J.M.,* Myers B., **Flak J.N.,** Bundzikova J., Solomon M.B., Seroogy K.B., Herman J.P. *Glucocorticoid receptors in the prelimbic and infralimbic cortices differentially regulate neuroendocrine and behavioral responses to acute and chronic stress.* Society for Neuroscience Annual meeting (2012: New Orleans, LA)
18. ***Flak J.N.,***Patterson C.M., Sutton, A., Olson D.P., Tozer A., Heisler L.K., Myers M.G. Jr. *Leptin action via lPBN and PAG controls energy balance and glucose homeostasis.* Keystone Meeting on the Neuronal Control of Appetite, Metabolism, and Weight (2013: Banff, Alberta)
19. ***Flak J.N*.,** Patterson C.M., Garfield A.S., D’Agostino G., Goforth P.B., Sutton A.K., Malec P.A., Wong J.M., Germani M., Jones J.C., Rajala M., Satin L., Rhodes C.J., Olson D.P., Kennedy R.T., Heisler L.K., Myers M.G. Jr. *Leptin-inhibited PBN neurons enhance responses to hypoglycemia in negative energy balance.* Society for Neuroscience Annual Meeting (2014: Washington D.C.)
20. ***Flak J.N.,*** Patterson C.M., Joosten M., Olson D.P., Myers M.G. Jr. *Convergence of leptin and noxious stimuli in regulating an autonomic PAG*🡪*PBN*🡪*VMN circuit*. Keystone Meeting on the Neuronal Control of Appetite, Metabolism, and Weight (2015: Snowbird, UT)
21. ***Flak J.N.,*** Patterson C.M., Arble, D., Joosten M., Olson D.P., Rahmouni K., Seeley, R., Myers M.G. Jr. *Convergence of leptin and noxious stimuli in regulating an autonomic PAG*🡪*PBN*🡪*VMN circuit*. Novo Nordisk Meeting on Nutrient and Metabolite Sensing (2015: Copenhagen, Denmark)
22. ***Flak J.N.,***Arble, D., Patterson C.M., Sacksner J., Joosten M., Olson D.P., Rahmouni, K., Seeley R.J., Myers M.G. Jr. *A leptin-responsive brainstem circuit that modulates sympathetic responses to noxious stimuli.* American Diabetes Association Meeting (2016: New Orleans, LA)
23. *Arble, D.,* **Flak J.N.,** Myers M.G.Jr., Polotsky V., Schwartz A., Sandoval D., Seeley R.J. *Beyond body weight: How impaired leptin signaling can affect sleep disordered breathing.* Society for Research on Biological Rhythms (2016: Palm Harbor, FL)
24. ***Flak J.N.,*** Sacksner J., Ansari A., Goforth P., Gong X.Q., Layne R., Heisler L.K., Elias C., Sandoval D., Seeley R.J., Olson D.P., Myers M.G. Jr. *Identification of VMNCckbr neurons as crucial mediators of the counter-regulatory response to hypoglycemia.* Keystone Meeting on the Central Control of Energy Homeostasis (2017: Copenhagen, Denmark)
25. *Cheng W.,* Pan W., **Flak J.N.,** Roelofs K., Sandoval D., Olson D.P., Myers M.G. Jr. *Divergent roles in the control of food intake for leptin receptor (LepR) and calcitonin receptor (CalcR) neurons of the nucleus of the solitary tract* *(NTS).* American Diabetes Association Meeting (2017: San Diego, CA)
26. ***Flak J.N.,*** Sacksner J., Ansari A., Goforth P., Li, C., Heisler L.K., Elias C., Sandoval D., Seeley R.J., Olson D.P., Myers M.G. Jr. *Identification of VMNCckbr neurons as crucial mediators of the counter-regulatory response to hypoglycemia.* American Diabetes Association Meeting (2018: Orlando, Fl)
27. *Ross R.A.,* Lowell, B.B., ***Flak J.N.*** Pacap from the Ventromedial Hypothalamic Nucleus is necessary for both energy balance and glucose homeostasis. Society for Neuroscience Meeting. (2018: San Diego, CA)
28. *Bozadjievea N.,* Ross R.A., Lowell B.B., ***Flak J.N.*** Pacap from the Ventromedial Hypothalamic Nucleus controls both energy balance and glucose homeostasis. American Diabetes Association Meeting. (2019: San Francisco, CA)
29. *Bozadjievea N.,* Ross R.A., Johnson D.Q., Lowell B.B., ***Flak J.N.*** PACAP from the Ventromedial Hypothalamic Nucleus Controls Energy Expenditure. American Diabetes Association Meeting. (2020: Chicago, IL)
30. *Johnson D.Q.,* Basu R., ***Flak J.N*.** Mediobasala hypothalamic PACAP is essential for energy balance by stimulating energy expenditure. American Diabetes Association Meeting (2021: Washington D.C.)
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