Mohamed E. El Halawani
Professor

Appointment 78% Research, 17% Teaching, 5% Service

Research Area Poultry Endocrinology

Appointment History

1985-present	Professor
1983-1985	Associate Professor
1981-1983	Assistant Professor

Graduate Program Affiliations

Animal Sciences – Senior Member
Conservation Biology – Senior Member

Professional and Honorary Societies

Member, Poultry Science Association
Member, Society for the Study of Reproduction
Member, American Association for the Advancement of Science
Member, American Society of Zoologists

Five Most Significant Publications

El Halawani, M.E., J.L. Silsby, and I. Rozenboim. 1995. Increased egg production by active immunization against vasoactive intestinal peptide in the turkey (*Meleagris gallopavo*). *Biol. Reprod.* 52: 179-183.

Youngren, O.M., G.R. Pitts, R.E. Phillips, and M.E. El Halawani. 1995. The stimulatory and inhibitory effects of dopamine on prolactin secretion in the turkey. *Gen. Comp. Endocrinol.* 98: 111-117.

This is the first of a series of papers that clearly show that dopamine is the principle neurotransmitter regulating the VIP/PRL system in birds.

El Halawani, M.E., J.L. Silsby, and L.J. Mauro. 1990. Vasoactive intestinal peptide (VIP) is a hupothalamic prolactin releasing neuropeptide in the turkey (*Meleagris gallopavo)*. *Gen. Comp. Endocrinol.* 78:66-73.

Unlike mammals which regulate their prolactin by several releasing factors, we established vasoactive intestinal peptide as the turkey prolactin releasing factor. Now is called the avian PRF.

Porter, T.E., B.M. Hargis, J.L. Silsby, and M.E. El Halawani. 1989. Differential steroid production between theca interna and theca externa cells: A three-cell model for follicular steroidogenesis in avian species. *Endocrinology* 125: 109-116

Unlike mammals, granulose cells of the avian follicle synthesis progesterone which is transported to theca interna for the synthesis of testosterone which in turn transported to the theca externa for the production of estrogen.

El Halawani, M.E., J.L. Silsby, E.J. Behnke, and S.C. Fehrer. 1986. Hormonal induction of incubation behavior in ovariectomized female turkeys (*Meleagris gallopavo*). *Biol. Reprod.* 35: 59-67.

Characterized the hormonal basis for the induction of incubation behavior (broodiness).

Refereed Journal Publications and Book Chapters (Last Five Years)

Authored or co-authored 24 papers in peer-reviewed journals and 2 book chapters.

Chaiseha, Y., O.M. Youngren, and **M.E. El Halawani**. 2004. Expression of vasoactive intestinal peptide receptor messenger RNA in the hypothalamus and pituitary throughout the turkey reproductive cycle. *Biol. Reprod.* 70: 535-542.

Kang, S.W., L.C. Gazzillo, S. You, E.A. Wong, and **M.E. El Halawani**. 2004. Localization of a VIP response element (VRE) in the proximal promoter of the turkey prolactin gene. *Gen. Comp. Endocrinol.* 138:157-165.

Rozenboim, I., N. Mobarky, R. Heiblum, Y. Chaiseha, S.W. Kang, I. Biran, A. Rosenstrauch, D. Sklan, and **M.E. El Halawani**. 2004. The role of prolactin in reproductive failure associated with heat stress in the domestic turkey. *Biol. Reprod.*, Jun 16 (Epub ahead of print).

Al Kahtane, A., Y. Chaiseha, and **M. El Halawani**. 2003. Dopaminergic regulation of avian prolactin gene transcription. *J. Mol. Endocrinol.* 31:185-196.

Bhatt, R., O. Youngren, S. Kang, and **M. El Halawani**. 2003. Dopamine infusion into the third ventricle increases gene expression of hypothalamic vasoactive intestinal peptide and pituitary prolactin and luteinizing hormone b-subunit in the turkey. *Gen. Comp. Endocrinol*. 130(1): 41-47.

Lohmus, M., L.F. Sundstrom, **M. El Halawani**, and B. Silverin. 2003. Leptin depresses food intake in great tits (Parusmajor). *Gen. Comp. Endocrinol. 131:57-61.*

Rozenboim, I., R. Huisinga, O. Halevy, and **M.E. EI Halawani**. 2003. Effect of embryonic hotostimulation on post-hatch growth of turkey poults. *Poultry Sci*. 82:1181-1187

Rozenboim, I., A. Navot, N. Snapir, A. Rosenstrauch, **M.E. El Halawani**, G. Gvaryahu, and A. Degen. 2003. Methods for collecting semen from the ostrich (struthio camelus) and some of its quantitative and qualitative characteristics. *British Poultry Sci.* 44: 607-611.

Yupaporn, C., O. Youngren, K. Al-Zailaie, and **M. EI Halawani**. 2003. Expression of D1 and D2 Dopamine receptors in the hypothalamus and pituitary during the turkey reproductive cycle: colocalization with vasoactive intestinal peptide. *Neuroendocrinology.* 610(2):59-73.

Kang, S.W., S. You, E.A. Wong, and **M.E. El Halawani**. 2002. Transfectionefficiency normalization using the β-Lactamase Gene of the pGL3 Luciferase vector in primary anterior pituitary cells. *Bio. Techniques* 33: 326-330.

Kang, SW., O.M. Youngren, and **M.E. El Halawani**. 2002. Influence of VIP on prolactinemia in turkey anterior pituitary cells: Role of cAMP second messenger in VIP induced prolactin gene expression. *Reg. Pep.* 109: 39-44.

Youngren, 0., Y. Chaiseha, S. Whiting, S. Kang, and **M. E. Halawani**. 2002. Regulation of prolactin secretion by dopamine at the level of the hypothalamus in the turkey. *Neuroendocrinology* 543: 185-192.

Ahn, J., S. You, H. Kim, Y. Chaiseha, and **M. El Halawani**. 2001. Effects of active immunization with inhibin α subunit on reproductive characteristics of turkey hens. *Biol. Reprod.* 65: 1594-1600.

Ahn, J., S. You, H. Kim, D.N. Foster, and **M.E. El Halawani**. 2001. Molecular cloning and expression of turkey inhibin-α and –βA subunits. *Poultry Sci.* 80:1690-1694.

Farnell, M.B., **M. El Halawani**, S. You, A.P. McElroy, B.M. Hargis, and D.J. Caldwell. 2001. *In vivo* biologic effects of recombinant-turkey interferon-gamma in neonatal leghorn chicks: protection against Salmonella *enteritidis* organ invasion. *Avian Dis. 4*5(2): 473-478.

Gahali, K., **M. El Halawani**, and I. Rosenboim. 2001. Photo stimulated Prolactin release in the turkey hen: Effect of ovariectomy and environmental temperature. *Gen. Comp. Endocrinol*. 124: 166-172.

You, S., C. Hsu, H. Kim, Y. Kho, Y. Choi, **M. El Halawani**, J. Farris, and D. Foster. 2001. Molecular cloning and analysis of the turkey vasoactive intestinal peptide receptor. *Gen. Comp. Endocrinol.* 124: 53-65.

Bluhm, C., I. Rozenboim, J. Silsby, and **M. El Halawani**. 2000. Sex related differences in the effects of late winter pairing and activity and seasonal influences on neuroendocrinology and gonadal development of mallards. *Gen. Comp. Endocrinol*. 118:310-321.

El Halawani, M.E., S.E. Whiting, J.L. Silsby, G.R. Pitts, and Y. Chaiseha. 2000. Active immunization with vasoactive intestinal peptide in turkey hens. *Poultry Sci.* 79:349-354.

Pitts, G.R., S. You**,** D.N. Foster, and **M.E. El Halawani**. 2000. Evidence for multiple prolactin receptor transcripts in the turkey. *Poultry Sci*. 79:355-362.

Yoo, S.-J., S. You, H. Kim, S.-C. Kim, Y.-J. Choi, **M.E. El Halawani**, J. Farris, and D.N. Foster. 2000. Molecular cloning and characterization of alternatively spliced transcripts of the turkey pituitary adenylate cyclase activating polypeptide. *Gen. Comp. Endocrinol.* 120: 326-335.

You, S., **M.E. El Halawani**, and D.N. Foster. 2000. Three different turkey luteinizing hormone receptor (tLH-R) isoforms I: Characterization of alternatively-spliced tLH-R isoforms and their regulated expression in diverse tissues. *Biol. Reprod.* 62:108-116.

You, S., C-C. Hsu, **M.E. El Halawani**, and D.N. Foster. 2000. Three different turkey luteinizing hormone receptor (tLH-R) isoforms II: Characterization of differentially-regulated tLH-R isoforms in the ovary. *Biol. Reprod*. 62:117-124.

Book chapters:

El Halawani, M.E., O.M. Youngren, and Y. Chaiseha. 2001. Neuroendocrinology of prolactin regulation in the domestic turkey. *In:* Avian Endocrinology. A. Dawson and C.M. Chaturvedi (Eds.), Narosa Publishing House, New Delhi, India. pp. 233-244.

Porter, T.E. and **M.E. El Halawani**. 2001. Regulation of lactotrophs and prolactin secretion in non-mammalian vertebrates. *In:* Prolactin. N. Horseman (Ed.), Kluwer Academic Publishers, Boston, MA. pp. 63-79.

Awards

Gamma Sigma Delta Award of Merit, 2000.

Proceedings and Invited Lectures (8)

8th International Symposium on Avian Endocrinology (ISAE) 2004, Phoenix Arizona, USA.

El Halawani, M.E. and Y. Chaiseha. 2003. Broodiness in turkey breeder hens. Proc. Int. Symp. Turkey Reprod. October, North Carolina, U.S.A.

International Symposium on Turkey Reproduction 2003, North Carolina, USA.

Society for the Study of Reproduction (SSR) Symposium on Neuroendocrinology of Farm Animals, sponsored by USDA, NRI, Vancouver, Canada.

Plenary lecture, The VII International Symposium on Avian Endocrinology, India, 2000.

Clyde Eby Memorial Lecture at North Carolina State University, 2000.

World Poultry Congress, Canada, 2000.

El Halawani, M.E. and Y. Chaiseha. 2000. Control of broodiness in turkey hens. Proceedings for the XXI World's Poultry Congress, Montreal, Canada. 1-7.

Funding (Last Five Years) – $2,065,753

USDA. Modulation of fertility by monoamines in the domestic turkey. 2004-07 $385,314.

BARD, USDA. Environmental factors affecting the decline in reproductive efficiency of turkey hens: Mediation by vasoactive intestinal peptide. 2003-06 $167,000.

Minnesota Turkey Research and Promotion Council. Light spectrum requirement to maximizing breeder hen turkey egg production. 2003-05 $42,900.

Willmar Poultry Company. Enhanced meat production by embryonic monochromatic light stimulation in turkeys. 2000-05 $51,636.

Willmar Poultry Company. Body weight regulation in turkeys: Role of leptin and myostatin. 1998-05 $66,060.

Willmar Poultry Company. Development of vasoactive intestinal peptide-based vaccine to abolish broody behavior in turkey hen flocks. 1995-05 $372,000.

Midwest Poultry Consortium. Molting of turkey hens. 2003-04 $30,178.

Willmar Poultry Company. Molting of turkey hens. 2003-04 $10,265.

Willmar Poultry Company. Increased skeletal muscle mass by maternal passive immunization against myostatin in the turkey. 2002-04 $108,406.

Minnesota Turkey Research and Promotion Council. Influence of light intensity & wavelength on breeder hen reproductive performance. 2001-04 $118,400.

USDA. Modulation of reproductive efficiency by prolactin in the domestic turkey. 2000-03 $190,000.

Willmar Poultry Company. Role of the eyes in the reproductive life cycle of breeder turkeys. 2000-02 $16,200.

BARD, USDA. Hot temperature stress and turkey reproduction. 1998-01 $176,600.

USDA. Modulation of reproductive efficiency by prolactin in the domestic turkey. 1997-00 $243,294.

Minnesota Turkey Research and Promotion Council. Influence of light intensity and wavelength on breeder hen reproductive performance. 1998-99 $35,000.

Minnesota Turkey Research and Promotion Council. Application of recombinant turkey interferon-gamma to enhance turkey immune system. 1997-99 $22,500.

Minnesota Turkey Research and Promotion Council. Improved feed efficiency of heavy turkeys. 1996-99 $30,000.

Dissertations and Theses (Last Five Years)

Name	Program	Degree	Thesis Title
Jaeyong Ahn	Animal Sciences	M.S.	Cloning and biological effects of inhibin alpha in turkey hens.
Abdullah A. Alkahtane	Animal Sciences	Ph.D.	Transcriptional regulation of prolactin gene by vasoactive intestinal peptide and dopamine in cultured turkey pituitary cells: Role of Ca2+/PKC signaling pathway.
Khaled A. Al Zailaie	Animal Sciences	Ph.D.	Neuroanatomical relationship between hypothalamic dopamine and vasoactive intestinal peptide in the regulation of prolactin: Immunocytochemical and tract-tracing studies.
Ronit S. Kulick	Animal Physiology	M.S.	The relative importance of vasoactive intestinal peptide and peptide histidine isoleucine as physiological regulators of prolactin in the domestic turkey.
Seong Wook Kang	Animal Sciences	Ph.D.	Molecular regulation of prolactin gene expression by vasoactive intestinal peptide (VIP) in the domestic turkey.

Graduate Student and Post-doctoral Supervision - Current Advisees

Thomas Bakken	M.S.	Animal Sciences
Seong Wook Kang	Post-doc	Animal Sciences
Aree Thayananuphat	Ph.D.	Animal Sciences

Courses Taught (Last Five Years)

Designator	Name	Cr	% Effort	Term	Years
AnSc 4501	Principles of Farm Animal Env	3	100%	Spring	2000-2004
AnSc 2301	Systemic Physiology	4	20%	Fall	2000-02

Service

Scientific Program committee member, 2004 International Symposium on Avian Endocrinology
Member, Turkey Breeder Hen Committee.
Grant reviewer: NSF, USDA, BARD, National Science and Engineering Research Council of Canada (NSERC), International Foundation for Science (IFS).
Reviewer: *J. Neuroendocrinology, Gen. Comp. Endocrinol. Neuroendocrinology, Biol. Reprod., Poultry Sci., Domestic Animal Endocrinology, Cell and Tissue Research, Animal Biotech., Science.*

Service to National and Regional Research Committees

Representative S-285 Committee (Reproductive Performance in Turkeys).