

University of Kansas Medical Center Biomedical Research Training Program

Year-End Report
Fiscal Year 2005
July 1, 2004 - June 30, 2005

Paul Terranova, Ph.D., Program Director
Dianne Durham, Ph.D., Associate Program Director
Annie Zhu, Administrative Assistant

Fellowship Selection Committee:

James Calvet, Ph.D., Biochemistry & Molecular Biology, SOM
Norberto Gonzalez, M.D., Molecular & Integrative Physiology, SOM
Leslie Heckert, Ph.D., Molecular & Integrative Physiology, SOM
Rebecca Horvat, Ph.D., Pathology & Laboratory Medicine, SOM
Michael Parmely, Ph.D., Microbiology, Molecular Genetics & Immunology, SOM
Thomas Pazdernik, Ph.D., Pharmacology, Toxicology & Therapeutics, SOM
Lisa Stehno-Bittel, Ph.D., Physical Therapy & Rehabilitation Sciences, SAH
Gregory Vanden Heuvel, Ph.D., Anatomy & Cell Biology, SOM

Administrative Oversight: Joan S. Hunt, Ph.D., D.Sc., University Distinguished Professor,
Vice Chancellor for Research, KUMC

KUMC Biomedical Research Training Program FY 05

	<i>Page</i>
Table of Contents	2
Statement of Purpose	3
Assessments and Evaluations	4
A. Scholar Activity	4
B. Administrative Activity	5
C. Summary	6
<u>Table 1</u> : Scholars and Mentors	7
<u>Table 2</u> : Scholar Publications and Presentations	8
<u>Table 3</u> : Scholar Participation in Mentor Grants	9
<u>Table 4</u> : Budget	10
Individual Scholar Achievements	11

Statement of Purpose

The overall goal of the Training Program in Biomedical Research is to enhance the scientific research capability of faculty at the University of Kansas Medical Center. This program encourages the development of externally-funded grants including program projects, individual investigator-initiated grant applications, and training grants in focused biomedical research areas. The program is based on the highly successful Kansas Health Foundation Training Program in Cancer Research that was initiated at this institution in 1988.

The goals of this program are achieved primarily through the award of financial support to meritorious pre- and post-doctoral trainees in established research laboratories. Faculty from all schools within KUMC were invited to encourage their students to apply to the program. A Fellowship Selection Committee composed of members of the various schools within the Medical Center ranked the applications. The Fellowship Selection Committee members for FY05 were James Calvet, Ph.D., Biochemistry & Molecular Biology, SOM, Norberto Gonzalez, M.D., Molecular & Integrative Physiology, SOM, Leslie Heckert, Ph.D., Molecular & Integrative Physiology, SOM, Rebecca Horvat, Ph.D., Pathology & Laboratory Medicine, SOM, Michael Parmely, Ph.D., Microbiology, Molecular Genetics & Immunology, SOM, Thomas Pazdernik, Ph.D., Pharmacology, Toxicology & Therapeutics, SOM, Lisa Stehno-Bittel, Ph.D., Physical Therapy & Rehabilitation Sciences, SAH, and Gregory Vanden Heuvel, Ph.D., Anatomy & Cell Biology, SOM. The Committee also assessed plans and budgetary issues relative to the program as well as ranked pre- and post-doctoral applications for funding.

The program was administered by the Program Director, Paul Terranova, Ph.D., Department of Molecular & Integrative Physiology, Associate Program Director, Dianne Durham, Ph.D., Department of Otolaryngology, and an Administrative Assistant, Annie Zhu.

The Program Director reports to Joan S. Hunt, Ph.D., University Distinguished Professor, Vice Chancellor for Research, KUMC.

Assessments and Evaluations

Dossiers on each investigator and trainee regarding honors and awards, publications, research presentations and awards of external research support to be included in a yearly report are compiled. The following is the summary of the FY2005 support.

A. Scholar Activity

1. Selection of scholars: Sixteen outstanding scholars received support. They included seven predoctoral trainees and nine postdoctoral trainees, who worked with either senior or junior investigators in eight departments within the University of Kansas Medical Center. A list of scholars is shown in Table 1.

2. Academic productivity (Table 2): The scholars have published or in press 33 full length publications in peer-reviewed scientific journals, presented 33 abstracts to local, regional, national and international meetings, and made 53 meeting presentations. Eleven manuscripts have been submitted and 19 manuscripts are in preparation.

3. Annual Symposium: The Annual Symposium was led by Yvonne Wan, Ph.D., Professor in Department of Pharmacology, Toxicology and Therapeutics and was held on May 13, 2005. During a morning session each scholar gave a ten-minute presentation of their work in Lied Auditorium. At a noon time luncheon, the keynote speaker, Ming-Jer Tsai, Ph.D., Charles C. Bell Professor in the Department of Molecular and Cellular Biology at Baylor College of Medicine, Houston, Texas, presented a lecture that was entitled "Role of Steroid Receptor

Coactivator, SRC-3/AIB1, in Prostate Cancer.” The keynote lecture was held in Rieke Auditorium where approximately 200 participants attended.

4. Scholar participation in mentor grants (Table 3), scholar grant support, and scholar honors: 14 scholars participated in 4.2 million dollars of research. The research was funded mainly by NIH.

Internal Awards: *Ramsey McIntire*, predoctoral student in the Department of Anatomy & Cell Biology won 1st Place Presentation in Developmental and Reproductive Biology session & 1st Place Presentation in Graduate Student category at the Student Research Forum. She also won Sigma Xi student presentation award in year 2005.

External Awards: *Rohan Gandhi*, predoctoral student in the Department of Anatomy & Cell Biology won International Association for the Study of Pain Financial Aid Award; *Huairong Luo*, Ph.D., postdoctoral fellow in the Department of Pharmacology, Toxicology & Therapeutics won Junior Investigator Award at the Research Society on Alcoholism meeting, granted by the National Institute on Alcohol Abuse and Alcoholism; *Ramsey McIntire*, predoctoral student in the Department of Anatomy & Cell Biology won Marine Biological Laboratory Scholarship from the Burroughs Wellcome Fund for attendance at the MBL course, Frontiers in Reproduction; *Evan Zamir*, Ph.D., postdoctoral fellow, received a Predoctoral Fellowship from American Heart Association, and won Richard Skalak Best Paper Award from American Society of Mechanical Engineers.

Numerous students received travel awards, internally and externally funded, to support their expenses to national meetings.

B. Administrative Activity

Budget (Table 4): Expenditures for the year totaled \$254,547.73. Of this, 73.66% (\$187,505.68) was used for scholar stipends. Mentor allocations for miscellaneous expenses such as lab research supplies, travel, books, dues, etc. were 8.46% (\$21,545.21). The Annual Symposium cost was 2.30% of the budget (\$5,840.65) and 15.58% (\$39,656.19) was used for administrative and office expenses.

C. Summary

In summary, this program is meeting important needs of biomedical researchers at KUMC. The scholars are highly productive, producing significant numbers of excellent publications, contributing strongly to their mentors' research funding, and bringing in awards and honors of their own. Advisors are contributing importantly to new collaborative research initiatives. Administrative costs for this program remain less than 20% of the total budget.

Table 1 Scholars & Mentors

PREDOCTORAL SCHOLARS

Duric, Vanja

Gandhi, Rohan

Hout, David

Kaiser, Christina

Lei, Ning

McIntire, Ramsey

Richards, Toni

POSTDOCTORAL SCHOLARS

Alam, S.M. Khorshed

Huang, Zhixin L.

Krishnan, Harinivas H.

Liu, Hongzeng

Luo, Huai-rong

Sharma, Madhulika

Sun, Aijing

Yang, Lihua

Zamir, Evan A.

MENTORS

Kenneth McCarson, Ph.D.
Pharmacology, Toxicology & Therapeutics

Douglas Wright, Ph.D.
Anatomy & Cell Biology

Edward Stephens, Ph.D.
Anatomy & Cell Biology

Dianne Durham, Ph.D.
Anatomy & Cell Biology

Leslie Heckert, Ph.D.
Molecular & Integrative Physiology

Joan Hunt, Ph.D.
Anatomy & Cell Biology

Beth Levant, Ph.D.
Pharmacology, Toxicology & Therapeutics

MENTORS

Michael Soares, M.D.
Pathology & Laboratory Medicine

Glen Andrews, Ph.D.
Biochemistry & Molecular Biology

Bala Chandran, Ph.D.
Microbiology, Molecular Genetics & Immunology

Wen Liu, Ph.D.
Physical Therapy and Rehabilitation Sciences

Yvonne Wan, Ph.D.
Pharmacology, Toxicology & Therapeutics

Gregory Vanden Heuvel, Ph.D.
Anatomy & Cell Biology

Benyi Li, M.D., Ph.D.
Urology

Benyi Li, M.D., Ph.D.
Urology

Charles Little, Ph.D.
Anatomy & Cell Biology

Table 2 Scholar Publications and Presentations

<u>Scholar</u>	<u>Publications</u>				<u>Presentations</u>		
	<i>Published</i>	<i>In press</i>	<i>Submitted</i>	<i>In preparation</i>	<i>Abstract</i>	<i>Poster</i>	<i>Oral</i>
Alam, S.M. Khorshed		1	1		3	2	1
Duric, Vanja	1		2	2	3	2	3
Gandhi, Rohan	1			2	5		5
Hout, David	3	1	1		6	3	2
Huang, Zhixin L.	1			1			1
Kaiser, Christina	1		1	1		2	3
Krishnan, Harinivas H.	3		1		2		2
Lei, Ning				3	1		1
Liu, Hongzeng		1	1	2			1
Luo, Huai-rong	3	3	1		3	2	2
McIntire, Ramsey	3	4		2	8		8
Richards, Toni	1			1	1	1	3
Sharma, Madhulika	3		2	2		3	1
Sun, Aijing			1	3	1	1	1
Yang, Lihua	Left Last Fall						
Zamir, Evan A.	2	1					3
Total	22	11	11	19	33	16	37

Table 3 Scholar Participation in Mentor Grants

<i>Scholar</i>	<i>Mentor</i>	<i>Annual Direct Costs/FY05</i>
Alam, S.M. Khorshed	Soares, Michael	450,215
Duric, Vanja	McCarson, Kenneth	185,000
Gandhi, Rohan	Wright, Douglas	373,201
Hout, David	Stephens, Edward	225,000
Huang, Zhixin L.	Andrews, Glen	392,188
Kaiser, Christina	Durham, Dianne	184,000
Krishnan, Harinivas H.	Chandran, Bala	Mentor left KUMC in June 2005
Lei, Ning	Heckert, Leslie	505,943
Liu, Hongzeng	Liu, Wen	0
Luo, Huai-rong	Wan, Yvonne	379,103
McIntire, Ramsey	Hunt, Joan	239,792
Richards, Toni	Levant, Beth	310,000
Sharma, Madhulika	Vanden Heuvel, Gregory	242,250
Sun, Aijing	Li, Benyi	84,930
Yang, Lihua	Li, Benyi	Scholar left KUMC in Sept. 2004
Zamir, Evan A.	Little, Charles	611,147
	Total	4,182,769

Table 4 Budget

Salaries, Stipends & OOE (ROV01322)	Budget	Expenses
Grant Administration		\$15,499.71
Administrative Assistant		\$20,976.93
Scholar Stipends		\$187,505.68
Scholar Lab Supplies Allocation		\$9,537.66
Symposium		\$1,837.78
Office Expenses		\$1,552.65
Subtotal	\$241,008.08	\$236,910.41
Other Expenses (QX002530)		
Mentor Discretionary Funds		\$12,007.55
Symposium		\$4,002.87
Office Expenses		\$1,626.90
Subtotal	\$16,500.00	\$17,637.32
Total	\$257,508.08	\$254,547.73

Individual Scholar Achievements

Scholar: S.M. Khorshed Alam Mentor: Michael Soares

Manuscripts

Peer-reviewed publications

- *Published*

1. **Soares, M.J.** and Wolfe, M.W. (2004) Human embryonic stem cells ‘assemble’ and fulfill their developmental ‘destiny’. *Endocrinology* 145, 1514-1516
2. Ain, R. and **Soares, M.J.** (2004) Is the metrial gland really a gland? *Journal of Reproductive Immunology* 61, 129-131
3. **Soares, M.J.** (2004) The prolactin and growth hormone families: pregnancy-specific hormones/cytokines at the maternal-fetal interface. *Reproductive Biology & Endocrinology* 2, 51
4. Asano, N., Kondoh, M., Ebiara, C., Fujii, M., **Soares, M.J.**, Nakashima, E., Sato, M., and Watanabe, Y. (2004) Expression profiles of zinc transporters in rodent placental models. *Toxicology Letters* 154, 45-53
5. Ain, R., Trinh, M.-L., and **Soares, M.J.** (2004) Interleukin-11 signaling is required for the differentiation of natural killer cells at the maternal-fetal interface. *Developmental Dynamics* 231, 700-708
6. Ain, R., Dai, G., Dunmore, J.H., Godwin, A.R., and **Soares, M.J.** (2004) A prolactin family paralog regulates reproductive adaptations to a physiological stressor. *Proceedings of the National Academy of Sciences U.S.A.* 101, 16543-16548
7. Thadani, P.V., Strauss, J.F., Dey, S.K., Anderson, V.M., Audus, K.L., Coats, K.S., Cross, J.C., Erlebacher, A., Ganapathy, V., Linzer, D.I., Miller, R.K., Novak, D.A., Rapaka, R.S., Sadovsky, Y., Salafia, C.M., **Soares, M.J.**, and Unadkat, J. (2004) NIDA conference report on placental proteins, drug transport, and fetal development. *American Journal of Obstetrics and Gynecology* 191, 1858-1862
8. Rider, V., Potapova, T., Dai, G., and **Soares, M.J.** (2005) Stimulation of a rat uterine stromal cell line in culture reveals a molecular switch for endocrine-dependent differentiation. *Journal of Endocrinology* 184, 119-127

9. Ain, R., Canham, L.N., and **Soares, M.J.** (2005) Dexamethasone-induced intrauterine growth restriction impacts the placental prolactin family and the insulin-like growth factor-II/Akt signaling pathway. *Journal of Endocrinology* 185, 253-263
10. Berghorn, K.A., Clark, P.A., Encarnacion, B., DeRegis, C.J., Folger, J., Morasso, M.I., **Soares, M.J.**, Wolfe, M.W., and Roberson, M.S. (2005) Developmental expression of the homeobox protein Distal-less 3 and its relationship to progesterone production in mouse placenta. *Journal of Endocrinology* 186, 315-323

- ***In press***

1. Arroyo, J.A., Konno, T., Khalili, D., and **Soares, M.J.** (2005) A simple in vivo approach to investigate invasive trophoblast cells. *International Journal of Developmental Biology*
2. Sahgal, N., Canham, L.N., Konno, T., Wolfe, M.W., and **Soares, M.J.** (2005) Modulation of trophoblast stem cell and giant cell phenotypes: analyses using the Rcho-1 cell model. *Differentiation*
3. **Soares, M.J.**, **Alam, S.M.K.**, Konno, T., Bustamante, J., Ho-Chen, J.K., and Ain, R. (2005) The prolactin family and pregnancy. *Animal Science Journal*

- ***Submitted***

1. **Alam, S.M.K.**, Ain, R., Konno, T., Ho-Chen, J.K., and **Soares, M.J.** The rat prolactin gene family locus: species-specific gene family expansion
2. Ain, R. and **Soares, M.J.** Intrauterine fate of invasive trophoblast cells

Chapters/Symposium proceedings

1. Sahgal, N., Canham, L.N., Canham, B., and **Soares, M.J.** (2006) Rcho-1 trophoblast cells: a model for studying trophoblast differentiation. In: *Placenta and Trophoblast: Methods and Protocols, Vol. 1*. M.J. Soares and J.S. Hunt (eds), Humana Press, Totowa, New Jersey, pp. 159-178
2. Ain, R., Konno, T., Canham, L.N., and **Soares, M.J.** (2006) Phenotypic analysis of the placenta in the rat. In: *Placenta and Trophoblast: Methods and Protocols, Vol. 1*. M.J. Soares and J.S. Hunt (eds), Humana Press, Totowa, New Jersey, pp. 295-313
3. Müller, H., and **Soares, M.J.** (2006) Alkaline phosphatase fusion proteins as tags for identifying targets for placental ligands. In: *Placenta and Trophoblast: Methods and Protocols, Vol 2*. M.J. Soares and J.S. Hunt (eds), Humana Press, Totowa, New Jersey (in press)
4. Ho-Chen, J.K., Ain, R., Alt, A., Wood, J.G., Gonzalez, N.C., and **Soares, M.J.** (2006) Hypobaric-hypoxia as a tool to study pregnancy-dependent responses at the maternal-

fetal interface. In: *Placenta and Trophoblast: Methods and Protocols, Vol. 2*. M.J. Soares and J.S. Hunt (eds), Humana Press, Totowa, New Jersey (in press)

5. **Soares, M.J.** (2006) The prolactin family. In: *Endometrium-2*, J. Aplin, A. Fazleabas, S.R. Glasser, L. Giudice (eds), Taylor and Francis Publishers, London (in preparation)

Abstracts

1. Arroyo, J.A., Ain, R., and **Soares, M.J.** (2004) A simple in vivo approach to investigate the regulation of trophoblast cell invasion. *37th Annual Meeting of the Society for the Study of Reproduction*, Vancouver, British Columbia, Canada
2. Ho-Chen, J.K., Bustamante, J.J., and **Soares, M.J.** (2004) Trophoblast cell responses to restricted oxygen. *37th Annual Meeting of the Society for the Study of Reproduction*, Vancouver, British Columbia, Canada
3. Bustamante, J.J., Takahashi, T., Dai, G., and **Soares, M.J.** (2004) Prolactin-like protein-C binds to hepatocytes via a mechanism independent of the prolactin receptor. *37th Annual Meeting of the Society for the Study of Reproduction*, Vancouver, British Columbia, Canada
4. **Alam, S.M.K.**, Konno, T., Sahgal, N., Li, C., Lu, L., Canham, L.N., and **Soares, M.J.** (2004) Decidual cells produce a heparin-binding cytokine, prolactin-like protein-J: expression and biological targets. *37th Annual Meeting of the Society for the Study of Reproduction*, Vancouver, British Columbia, Canada
5. Ohboshi, S. and **Soares, M.J.** (2004) Phosphatidylinositol 3-kinase/Akt signaling pathway and 14-3-3 ligand interactions modulate the endocrine phenotype of trophoblast cells. *37th Annual Meeting of the Society for the Study of Reproduction*, Vancouver, British Columbia, Canada
6. Konno, T., **Alam, S.M.K.**, Dai, G., Lu, L., Wang, D., Dunmore, J., Godwin, A.R., and **Soares, M.J.** (2004) Decidual prolactin-related protein gene targeting: insights into expression and biological actions. *37th Annual Meeting of the Society for the Study of Reproduction*, Vancouver, British Columbia, Canada
7. Sahgal, N. and **Soares, M.J.** (2004) Gestationally dependent invasion of trophoblast into the maternal uterine mesometrial compartment is regulated by fetal signals. *37th Annual Meeting of the Society for the Study of Reproduction*, Vancouver, British Columbia, Canada
8. Ho-Chen, J.K. and **Soares, M.J.** (2005) Maternal adaptation to hypobaric hypoxia. *87th Annual Meeting of the Endocrine Society*, San Diego, CA
9. **Alam, S.M.K.**, Ain, R., Konno, T., and **Soares, M.J.** (2005) Identification of new members of the rat prolactin gene family. *87th Annual Meeting of the Endocrine Society*, San Diego, CA

10. Bustamante, J.J. and **Soares, M.J.** (2005) Pregnancy and lactation modulate hepatic and splenic growth and gene expression. *87th Annual Meeting of the Endocrine Society*, San Diego, CA

Presentations by scholar in FY05

- **Poster**

1. **Alam, S.M.K.**, Konno, T., Sahgal, N., Li, C., Lu, L., Canham, L.N., and **Soares, M.J.** (2004) *Decidual cells produce a heparin-binding cytokine, prolactin-like protein-J: expression and biological targets*. 37th Annual Meeting of the Society for the Study of Reproduction, Vancouver, British Columbia, Canada
2. **Alam, S.M.K.**, Ain, R., Konno, T., and **Soares, M.J.** (2005) *Identification of new members of the rat prolactin gene family*. 87th Annual Meeting of the Endocrine Society, San Diego, CA

- **Oral**

Alam, S.M.K., Konno, T., Dai, G., Godwin, A., and **Soares, M.J.** (2005) *Maternal adjustments to pregnancy in hypoxia: a role for decidual prolactin-related protein*. KUMC Biomedical Research Training Program Symposium, May 2005

Honors/Awards/Grants received by scholar in FY05

KUMC Biomedical Research Training Program Scholarship, \$16,000

List of mentor's grants in which the scholar participated in FY05

- **Funded**

1. NIH PO1-HD39878, Michael J. Soares, P.I., "Biology at the Maternal-Fetal Interface", \$3,318,645 (total direct cost), 4/1/2002-03/31/2007. Dr. Soares is Principal Investigator of Subproject No. I, "Decidual Signals in the Establishment of Pregnancy", \$839,158 (total direct cost) and Director of the "Administrative Core", \$247,941 (total direct cost), annual direct cost \$172,715, annual indirect cost \$86,358
2. NIH RO1-HD048861, Michael J. Soares, P.I., "Regulation of Pregnancy-Dependent Adaptations", \$1,162,500 (total direct cost), 7/20/2005-05/31/2010, annual direct cost \$277,500, annual indirect cost \$130,425

Applications for external funding to which the scholar made a direct contribution in FY05

- **Funded**

NIH RO1-HD048861, Michael J. Soares, P.I., "Regulation of Pregnancy-Dependent Adaptations", \$1,162,500 (total direct cost), 7/20/2005-05/31/2010, annual direct cost \$277,500, annual indirect cost \$130,425

Scholar: Vanja Duric

Mentor: Kenneth McCarson

Manuscripts

Peer-reviewed publications

- *Published*

1. **Duric, V.** and **McCarson, K.E.** Hippocampal neurokinin-1 receptor and brain-derived neurotrophic factor gene expression is decreased in rat models of pain and stress. *Neuroscience* 133 (2005) 999-1006.
2. Wright, D.E., Ryals, J.M., **McCarson, K.E.**, and Christianson, J.A. Diabetes-induced expression of activating transcription factor 3 in mouse primary sensory neurons. *Journal of the Peripheral Nervous System* 9 (2004) 242-54.
3. Taylor, B.K. and **McCarson, K.E.** Neurokinin-1 receptor gene expression in the mouse dorsal horn increases with neuropathic pain. *Journal of Pain* 5 (2004) 71-6.
4. Allen, A.L. and **McCarson, K.E.** Estrogen increases nociception-evoked brain-derived neurotrophic factor gene expression in the female rat. *Neuroendocrinology* 81 (2005)193-199.
5. Winter, M.K. and **McCarson, K.E.** G-protein activation by neurokinin-1 receptors is dynamically regulated during persistent nociception. *J Pharmacol Exp Ther.* 2005 Jun 28; [Epub ahead of print]

- *Submitted*

1. **Duric, V.** and **McCarson, K.E.** Biomolecular markers of affective component of pain: Inflammatory nociception reduces hippocampal neurogenesis and expression of brain-derived neurotrophic factor and neurokinin-1 receptor genes. *Journal of Neuroscience.*
2. **McCarson, K.E.**, **Duric, V.**, Reisman, S.A., Winter, M., and Enna, S.J. GABA_B receptor function and subunit expression in the rat spinal cord as indicators of stress and the antinociceptive response to antidepressants. *Brain Research.*
3. Allen, A. and **McCarson, K.E.** Sex differences in hyperalgesia and the regulation of nociception-evoked brain-derived neurotrophic factor and neurokinin-1 receptor gene expression by estrogen. *European Journal of Neuroscience.*
4. Jegathesan, J., Levant, B., Winter, M.K., **McCarson, K.E.**, Clancy, R.L., and Pierce, J.D. Detection of dopamine receptors in the rat diaphragm. *Histochemistry and Cytochemistry.*

5. Allen, A.L. and **McCarson, K.E.** Nociception-evoked brain-derived neurotrophic factor (BDNF) and neurokinin-1 (NK-1) receptor gene expression in the rat brain. *Brain Research*.
- ***In preparation***
 1. **Duric, V.** and **McCarson, K.E.** Differences in modulation of neurokinin-1 (NK-1) receptor and brain-derived neurotrophic factor (BDNF) gene expression in rat nociceptive sensory vs. affective systems during inflammatory pain.
 2. **Duric, V.** and **McCarson, K.E.** Effects of analgesic or antidepressant pretreatments on the hippocampal neurokinin-1 (NK-1) receptor and brain-derived neurotrophic factor (BDNF) gene expression in rat models of inflammatory pain.
 3. Allen, A.L. and **McCarson, K.E.** Estrogen increases nociception-evoked brain-derived neurotrophic factor (BDNF) and neurokinin-1 (NK-1) receptor gene expression in the rat brain.
 4. Allen, A.L. and **McCarson, K.E.** Estrogen increases neurokinin-1 receptor and phosphorylated cyclic-amp response element binding protein levels during inflammatory nociception in the rat.
 5. Allen, A.L. and **McCarson, K.E.** Estrogen modulates G-protein coupling of neurokinin-1 receptors during inflammatory nociception.
 6. Rook, J.M., Smith, P.G., Long, T.D., and **McCarson, K.E.** Topical morphine delays cutaneous wound healing.
 7. Winter, M.K., Gordon, S., and **McCarson, K.E.** Effects of intrathecal paclitaxel on formalin-induced nociception in the rat.

Abstracts

1. **Duric, V.** and **McCarson, K.E.** Effects of inflammatory pain on neurogenesis in the rat hippocampus. *SFN Abstracts* (2004). Society for Neuroscience Annual Meeting, San Diego, California, October 2004.
2. Winter, M.K. and **McCarson, K.E.** Neurokinin-1 receptor (NK-1) gene expression and function in limbic regions of the rat brain are decreased following peripheral inflammatory nociception. *SFN Abstracts* (2004). Society for Neuroscience Annual Meeting, San Diego, California, October 2004.
3. **McCarson, K.E.** and Rook, J.M. Cutaneous wound healing in the rat is delayed by local blockade of neurokinin-1 receptor activation *SFN Abstracts* (2004). Society for Neuroscience Annual Meeting, San Diego, California, October 2004.
4. Allen, A.L. and **McCarson, K.E.** Estrogen potentiates the basal and nociception-evoked expression of brain-derived neurotrophic factor (BDNF) and the neurokinin-1

- (NK-1) receptor in sensory systems. *SFN Abstracts* (2004). Society for Neuroscience Annual Meeting, San Diego, California, October 2004.
5. Reisman, S., Sands, S.A., **McCarson, K.E.**, and Enna, S.J. Effect of antidepressants on GABAB subunit expression and receptor function in rat spinal cord. *FASEB Journal* (2005).
 6. **Duric, V.** and **McCarson, K.E.** Effects of analgesic or antidepressant pretreatments on the hippocampal neurokinin-1 (NK-1) receptor and brain-derived neurotrophic factor (BDNF) gene expression in rat models of inflammatory pain. *SFN Abstracts* (2005). Society for Neuroscience Annual Meeting, Washington, D.C., November 2005.
 7. Belanus, S.J., **Duric, V.**, **McCarson, K.E.**, and Enna, S.J. Evidence that GABAB(1a) may influence cell function independent of its role as a GABAB receptor subunit. *SFN Abstracts* (2005). Society for Neuroscience Annual Meeting, Washington, D.C., November 2005.
 8. Rook, J.M. and **McCarson, K.E.** Regulation of neurokinin-1 receptor gene expression in the amygdalo-hippocampal transition zone (AHi) following peripheral inflammation. *SFN Abstracts* (2005). Society for Neuroscience Annual Meeting, Washington, D.C., November 2005.
 9. Winter, M.K., Gordon, S.B., and **McCarson, K.E.** Intrathecal paclitaxel administration blocks NK-1 receptor internalization and enhances formalin-evoked hyperalgesia. *SFN Abstracts* (2005). Society for Neuroscience Annual Meeting, Washington, D.C., November 2005.
 10. Allen, A.L. and **McCarson, K.E.** Estrogen Increases Neurokinin-1 Receptor (NK-1) Protein and G-Protein Activation in the Amygdala During Persistent Inflammation *SFN Abstracts* (2005). Society for Neuroscience Annual Meeting, Washington, D.C., November 2005.

Presentations by scholar in FY05

- **Poster**

1. **Duric, V.** and **McCarson, K.E.** *Effects of inflammatory pain on neurogenesis in the rat hippocampus.* Midwest Pain Interest Group Annual Meeting, Minneapolis, Minnesota, May 2005.
2. **Duric, V.** and **McCarson, K.E.** *Effects of inflammatory pain on neurogenesis in the rat hippocampus.* Society for Neuroscience Annual Meeting, San Diego, California, October 2004.

- **Oral**

1. *Biomolecular Markers of the Affective Component of Pain*. KUMC Biomedical Research Training Program Symposium, University of Kansas Medical Center, Kansas City, Kansas, May 2005.
2. *Biomolecular Markers of the Affective Component of Pain*. Student Research Forum, University of Kansas Medical Center, Kansas City, Kansas, April 2005.
3. *Biochemical Markers of the Affective Component of Pain*. Pharmacology Department Student Seminar, University of Kansas Medical Center, Kansas City, Kansas, November 2004.

Honors/Awards/Grants received by scholar in FY05

1. Continuing Medical Education Activity: Pain Mechanisms, From Molecular to Treatments. George Wilcox, Ph.D. (Course Director), University of Minnesota, Minneapolis, MN (in collaboration with Karolinska Institute, Sweden), May 16-20, 2005
2. 2004 KUMC Biomedical Research Training Program (\$9,000): University of Kansas Medical Center, Kansas City, Kansas
3. 2004 Society for Neuroscience Chapters/Eli Lilly Graduate Student Travel Award (\$750): San Diego, California
4. 2004 Student Travel Award (\$550): University of Kansas Medical Center

List of mentor's grants in which the scholar participated in FY05

- **Funded**

1. NIDA 5R01DA12505-01A1, Kenneth McCarson, P.I., "Nociceptive sensory regulation of neurokinin receptor function," current year direct cost \$150,000, current year indirect cost \$75,000, total direct cost \$775,000, total indirect cost \$375,000, no-cost extension into 2006
2. KUEA-Ernst N. Lied Foundation Pilot Grant, S.J. Enna, P.I., Kenneth E. McCarson, Co-P.I., "Pharmacology of Neuropathic pain," current year (extended): 09/1/04-08/31/05, current year direct cost \$35,000

Applications for external funding to which the scholar made a direct contribution in FY05

- **Submitted**

1P01HD52949-01 (NICHD) Director: Peter G. Smith, "Estrogen and neural pathways in female pain syndromes," first year 04/01/06-03/31/07, first year direct cost \$749,989, first year total cost \$1,102,484, total project 04/01/06-03/31/11, total direct cost \$3,981,796, total cost \$5,853,240; Subproject 4: Kenneth E. McCarson, P.I., "CNS sites

where estrogen modulates hyperalgesia”, first year 07/01/06-06/31/07, first year direct cost \$161,222, total project 07/01/06-06/31/11, total direct cost \$855,946

- **In preparation**

Competing continuation: 6R01DA12505-01A1 (NIDA) Kenneth E. McCarron, P.I., “Nociceptive sensory regulation of neurokinin receptor function,” first year 07/01/06-06/31/07, first year direct cost \$225,000, total project 07/01/06-06/31/11, total direct cost \$1,125,000

Scholar: Rohan Gandhi

Mentor: Doug Wright

Manuscripts

Peer-reviewed publications

- *Published*

1. **Wright, D.E.**, J.M. Ryals, K.E. McC Carson, and J.A. Christianson. (2004) Diabetes-induced expression of activating transcription factor 3 in mouse primary sensory neurons. *J. Periph. Nerv. Syst.* 9:242–254.
2. **Gandhi, R.**, J.M. Ryals, and **D.E. Wright**. (2004) Neurotrophin-3 reverses chronic mechanical hyperalgesia induced by intramuscular acid injection. *J. Neurosci.* 24(42):9405-13.
3. Taylor, M.D., A.S. Holdeman, S. Weltmer, J.M. Ryals, and **D.E. Wright**. (2005) Modulation of the response of injured spindle afferents by muscle-derived neurotrophin-3. *Exp. Neurol.* 191:211-222.

- *Submitted*

1. Knudson-Baldwin, A.K., J. Ryals, and **D.E. Wright**. Diabetes-induced abnormalities in DRG gene expression. *Diabetes*.
2. Christianson, J.A. and **D.E. Wright**. NGF and NT-3 treatments improve select aspects of cutaneous large-fiber diabetic neuropathy in mice. *Diabetologia*.

- *In preparation*

1. **Gandhi, R.**, S. Smittkamp, L. Grantham, J. Ryals, and **D.E. Wright**. Neurotrophin-3 expression skeletal muscle: potential regulation of multiple sensory fibers.
2. Johnson, M., S. Smittkamp, J. Ryals, M.T. Taylor, and **D.E. Wright**. Expression of Par4 in primary sensory neurons.
3. Taylor, M.D., J.J.A. Arends, M.F. Jacquin, and **D.E. Wright**. Autonomous neurotrophic regulation of cranial proprioceptors by muscle-derived neurotrophin-3.
4. Taylor, M.D., Z. Baquet, A.S. Holdeman, K. Jones, and **D.E. Wright**. Aberrant proprioceptive function due to a targeted introduction of a lox allele into the NT-3 gene.
5. **Wright, D.E.**, M. Arnett, J. Persson, and J. Ryals. Diabetes-induced nociceptive deficits in *Lepr^{db}* null mutant mice.

6. **Wright, D.E.** and J. Ryals. Genetic influences on diabetes-induced nociceptive deficits in mice.
7. **Gandhi, R.**, A. Ting, J. Ryals, and **D.E. Wright**. Estrogen treatment prevents chronic mechanical hyperalgesia induced by intramuscular acid injection.
8. Johnson, M., J. Ryals, and **D.E. Wright**. Diabetes-induced sensory loss results in reduced spinal cord activation in mice.

Abstracts

1. **Gandhi, R.**, J.M. Ryals, M.D. Taylor, **D.E. Wright**. Neuroprotective Actions of NT-3 in Acid Induced Tactile Hyperalgesia. Society for Neuroscience 34th Annual Meeting, San Diego, California, USA. Oct 2004. (Abstract# 859.6).
2. **Gandhi, R.**, J.M. Ryals, S.E. Smittkamp, **D.E. Wright**. Neurotrophin-3 Expression by Smooth Muscle in Small Arterioles: Potential Regulation of Vascular A-delta Sensory Fibers. 11th World Congress on Pain, Sydney, Australia. Aug 2005. (Abstract# P133-110).
3. **Gandhi, R.**, S.E. Smittkamp, J.M. Ryals, **D.E. Wright**. Antinociceptive Actions of Neurotrophin-3 in an Acid-induced Model of Secondary Hyperalgesia. Society for Neuroscience 35th Annual Meeting, Washington D.C., USA. Nov 2005.
4. **Gandhi, R.**, A. Ting, J.M. Ryals, P.G. Smith, **D.E. Wright**. Estrogen Replacement Attenuates Acid-induced Secondary. Society for Neuroscience 35th Annual Meeting, Washington D.C., USA. Nov 2005.
5. Smittkamp, S.E., J.M. Ryals, M.D. Taylor, **R. Gandhi**, and **D.E. Wright**. Role of Muscle Afferent Input in Restless Legs Syndrome. Society for Neuroscience 35th Annual Meeting, Washington D.C., USA. Nov 2005.

Presentations by scholar in FY05

- **Oral**

1. *Neuroprotective Actions of NT-3 in an Acid-induced Model of Pain: Behavioral and Anatomical Evidence.* KUMC Department of Anatomy & Cell Biology Seminar Series, Kansas City, Kansas, USA. Oct 2004.
2. *Antinociceptive Actions of NT-3 in Acid induced Tactile Hyperalgesia* Neuroscience Graduate Program Seminar series, Kansas City, Kansas, USA. Feb 2005.
3. *To Hurt or Not to Hurt - That is the Question: Antinociceptive Actions of Neurotrophin-3.* KUMC Student Research Forum, Kansas City, Kansas, USA. Apr 2005.

4. *Neuroprotective Actions of NT-3 in Acid-induced Secondary Hyperalgesia*. Pain Interest Group Meeting, Minneapolis, Minnesota, USA. May 2005.
5. *To Hurt or Not to Hurt - That is the Question: Antinociceptive Actions of Neurotrophin-3*. KUMC Biomedical Research Training Program, Kansas City, Kansas, USA. May 2005.

Honors/Awards/Grants received by scholar in FY05

1. KUMC Graduate Student Travel Award recipient, Oct 2004
2. KUMC Biomedical Research Training Program, Oct 2004
3. Co-chair elect, 2005 KUMC Student Research Forum, Aug 2004 – Apr 2005
4. International Association for the Study of Pain Financial Aid Award, Aug 2005

List of mentor's grants in which the scholar participated in FY05

- **Funded**

1. NIDCR, PO1 DE07734-15, M. Jacquin (P.I., Wash. Univ.), 5/00-5/05, "Mechanisms of Damage Induced Trigeminal Reorganization", D.E. Wright, Project 2: current year direct cost \$56,782, current year indirect cost \$26,688, total cost \$400,282; D.E. Wright, Core B, current year direct cost \$43,919, current year indirect cost \$20,641, total cost \$332,248
2. NINDS, RO1NS43314, D.E. Wright, P.I., "Biology of GDNF in Diabetic Neuropathy", 1/03-12/07, current year direct cost \$237,500, current year indirect cost \$78,138, total direct cost \$1,187,500, total indirect cost \$402,802
3. K-INBRE Pilot Grant, D.E. Wright, P.I., "Peripheral Contribution to Restless Legs Syndrome," 09/05- 05/06, direct cost \$35,000

Applications for external funding to which the scholar made a direct contribution in FY05

- **Submitted**

1. NINDS, R21, D.E. Wright, P.I., "Peripheral Contribution to Restless Legs Syndrome," 1/06-12/07, total cost \$450,000
2. NIH, PPG, P. Smith, P.I., "Estrogen Effects in Female Pain Syndromes," total direct cost \$3,981,796, total cost \$5,853,240

Scholar: David Hout

Mentor: Edward Stephens

Manuscripts

Peer-reviewed publications

- *Published*

1. Gomez, L.M., Pacyniak, E., Flick, M., **Hout, D.R.**, Gomez, M.L., Nerrienet, E., Ayouba, A., Santiago, M.L., Hahn, B.H., and **Stephens, E.B.** 2005. Vpu-mediated CD4 down-regulation and degradation is conserved among highly divergent SIV(cpz) strains. *Virology* 335(1):46-60.
2. Pacyniak, E., Gomez, M.L., Gomez, L.M., Mulcahy, E.R., Jackson, M., **Hout, D.R.**, Wisdom, B.J., and **Stephens, E.B.** 2005. Identification of a Region within the Cytoplasmic Domain of the Subtype B Vpu Protein of Human Immunodeficiency Virus Type I (HIV-1) That is Responsible for Retention in the Golgi Complex and Its Absence in the Vpu Protein from a Subtype C HIV-1. *AIDS Research and Human Retroviruses* 21: 379-394.
3. **Hout, D.R.**, Gomez, M.L., Pacyniak, E., Gomez, L.M., Inbody, S.H., Mulcahy, E.R., Culley, N., Pinson, D.M., Powers, M.F., Wong, S.W., and **Stephens, E.B.** 2005. Scrambling of the Amino Acids within the Transmembrane Domain of Vpu Results in a Simian-Human Immunodeficiency Virus (SHIV_{TM}) that is Less Pathogenic for Pig-Tailed Macaques. *Virology* 339:56-69.

- *In press*

Hout, D.R., Gomez, M.L., Pacyniak, E., Gomez, L.M., Inbody, S.H., Mulcahy, E.R., Culley, N., Pinson, D.M., Powers, M.F., Wong, S.W., and **Stephens, E.B.** 2005. Substitution of the Transmembrane Domain of Vpu in Simian-Human Immunodeficiency Virus (SHIV_{KU1bMC33}) with that of M2 of Influenza A Results in a Virus that is Sensitive to Inhibitors of the M2 Ion Channel and is Pathogenic for Pig-Tailed Macaques. *Virology*.

- *Submitted*

Hout, D.R., Pacyniak, E., Gomez, L.M., Miller, J.-M., Hill, M.S., and **Stephens, E.B.** 2005. A Single Amino Acid Substitution within the Transmembrane Domain of the Human Immunodeficiency Virus Type 1 Vpu Protein Renders Simian-Human Immunodeficiency Virus (SHIV_{KU-1bMC33}) Susceptible to Rimantadine. *Virology*.

Abstracts

1. Pacyniak, E., **Hout, D.R.**, Gomez, M.L., Gomez, L.M., and **Stephens, E.B.** The human immunodeficiency virus type 1 (HIV-1) subtype B Vpu protein is capable of intermolecular interactions with the HIV-1 subtype C Vpu and restricting the intracellular transport to the cell plasma membrane. Keystone Symposium on HIV Pathogenesis in Banff, Canada, April, 2005.
2. **Hout, D.R.**, Gomez, M.L., Gomez, L.M., Pacyniak, E., Mulcahy, E.R., Inbody, S.H., and **Stephens, E.B.** Scrambling of the Amino Acids within the Transmembrane Domain of Vpu Results in a Simian-Human Immunodeficiency Virus (SHIV_{TM}) that is Less Pathogenic for Pig-Tailed Macaques. Keystone Symposium on HIV Pathogenesis in Banff, Canada, April, 2005.
3. **Hout, D.R.**, Gomez, M.L., Gomez, L.M., Pacyniak, E., Mulcahy, E.R., Inbody, S.H., and **Stephens, E.B.** Substitution of the Transmembrane Domain of Vpu in Simian-Human Immunodeficiency Virus (SHIV_{KU1bMC33}) with that of M2 of Influenza A Results in a Virus that is Sensitive to Inhibitors of the M2 Ion Channel and is Pathogenic for Pig-Tailed Macaques. Keystone Symposium on HIV Pathogenesis in Banff, Canada, April, 2005.
4. Pacyniak, E., **Hout, D.R.**, Gomez, M.L., Gomez, L.M., and **Stephens, E.B.** Intermolecular interactions of the subtype B and C Vpu proteins result in the restriction of the intracellular transport of the subtype C Vpu to the cell plasma membrane. Cold Spring Harbor Symposium on Retroviruses, Cold Spring Harbor Laboratory, May 24-29, 2005.
5. **Hout, D.R.**, Gomez, M.L., Gomez, L.M., Pacyniak, E., Mulcahy, E.R., Inbody, S.H., and **Stephens, E.B.** The transmembrane domain of Vpu contributes to the pathogenicity of the simian human immunodeficiency virus (SHIV_{ku-1bmc33}) in pig-tailed macaques. Cold Spring Harbor Symposium on Retroviruses, Cold Spring Harbor Laboratory, May 24-29, 2005.
6. **Hout, D.R.**, Gomez, M.L., Gomez, L.M., Pacyniak, E., Mulcahy, E.R., Inbody, S.H., and **Stephens, E.B.** Substitution of the viroporin of the Vpu in simian-human immunodeficiency virus with that of M2 of influenza a results in a virus that is sensitive to inhibitors of the M2 ion channel and is pathogenic for pig-tailed macaques. Cold Spring Harbor Symposium on Retroviruses, Cold Spring Harbor Laboratory, May 24-29, 2005.

Scholar presentations in FY05

- **Poster**

1. **Hout, D.R.**, Gomez, M.L., Gomez, L.M., Pacyniak, E., Mulcahy, E.R., Inbody, S.H., and **Stephens, E.B.** *Substitution of the viroporin of the Vpu in simian-human immunodeficiency virus with that of M2 of influenza a results in a virus that is sensitive to*

inhibitors of the M2 ion channel and is pathogenic for pig-tailed macaque. Molecular Mechanisms of HIV Pathogenesis (X7) Banff, British Columbia April 15, 2005

2. **Hout, D.R.**, Gomez, M.L., Pacyniak, E., Gomez, L.M., Inbody, S.H., Mulcahy, E.R., and **Stephens, E.B.** *Scrambling of the Amino Acids within the Transmembrane Domain of Vpu Results in a Simian-Human Immunodeficiency Virus (SHIV_{TM}) that is Less Pathogenic for Pig-Tailed Macaques.* Molecular Mechanisms of HIV Pathogenesis (X7) Banff, British Columbia April 15, 2005
3. **Hout, D.R.**, Gomez, M.L., Pacyniak, E., Gomez, L.M., Inbody, S.H., Mulcahy, E.R., and **Stephens, E.B.** *Scrambling of the Amino Acids within the Transmembrane Domain of Vpu Results in a Simian-Human Immunodeficiency Virus (SHIV_{TM}) that is Less Pathogenic for Pig-Tailed Macaques.* Cold Spring Harbor Laboratory Retrovirus Meeting May 28, 2005

- **Oral**

1. **Hout, D.R.**, Gomez, M.L., Pacyniak, E., Gomez, L.M., Inbody, S.H., Mulcahy, E.R., and **Stephens, E.B.** *Scrambling of the Amino Acids within the Transmembrane Domain of Vpu Results in a Simian-Human Immunodeficiency Virus (SHIV_{TM}) that is Less Pathogenic for Pig-Tailed Macaques.* Student Research Forum University of Kansas Medical Center April 7-8, 2005
2. **Hout, D.R.**, Gomez, M.L., Gomez, L.M., Pacyniak, E., Mulcahy, E.R., Inbody, S.H., and **Stephens, E.B.** *Substitution of the Viroporin of the Vpu in Simian-Human Immunodeficiency Virus with that of M2 of Influenza A Results in a Virus that is Sensitive to Inhibitors of the M2 Ion Channel and is Pathogenic for Pig-Tailed Macaques.* KUMC Biomedical Research Training Program Symposium, May 2005

Honors/Awards/Grants received by scholar in FY05

1. Travel Grants KUMC May 2005
2. Training in Biomedical Research Fellowship KUMC 2004-2005

List of mentor's grants in which the scholar participated in FY05

- **Funded**

NIH AI051981, Edward B. Stephens, P.I., "The Vpu Protein in HIV-1 Pathogenesis," 5/1/02 to 4/30/06, current year direct cost \$225,000, current year indirect cost \$112,500, total direct cost \$900,000, total indirect cost \$450,000

- **Submitted**

NIH AI R01AI067002-A1, Edward B. Stephens, P.I., “Targeted Antivirals Against the HIV-1 Vpu Protein,” 4/1/06 to 3/31/11, \$1,250,000 direct costs

Applications for external funding to which the scholar made a direct contribution in FY05

- **Funded**

NIH AI051981, Edward B. Stephens, P.I., “The Vpu Protein in HIV-1 Pathogenesis,” 5/1/02 to 4/30/06, current year direct cost \$225,000, current year indirect cost \$112,500, total direct cost \$900,000, total indirect cost \$450,000

- **Submitted**

NIH AI R01AI067002-A1, Edward B. Stephens, P.I., “Targeted Antivirals Against the HIV-1 Vpu Protein,” 4/1/06 to 3/31/11, \$1,250,000 direct costs

Scholar: Zhixin L. Huang

Mentor: Glen Andrews

Manuscripts

Peer-reviewed publications

- ***Published***

1. Dufner-Beattie, J., **Huang, J.L.**, Geiser, J., Xu, W., and **Andrews, G.K.**, Generation and Characterization of Mice Lacking the Zinc Uptake Transporter ZIP3. *Mol. Cell. Biol.*, 25: 5607-5615, 2005.
2. Potter, B.M., Knudsen, N.A., Feng, L.S., Matskevich, V.A., Wilson, J.A., **Andrews, G.K.**, and Laity, J.H., NMR assignment of the six zinc fingers of MTF-1 in the free and DNA bound states. *Journal of Biomolecular NMR*, 32: 94, 2005.
3. Potter, B.M., Feng, L., Parasuram, P., Matskevich, V.A., Wilson, J.A., **Andrews, G.K.**, and Laity, J.H., The six zinc fingers of metal-response element-binding transcription factor-1 form stable and quasi-ordered structures with relatively small differences in zinc affinities. *J. Biol. Chem.* 280: 28529-28540, 2005.

- ***In preparation***

Huang, J.L., Dufner-Beattie, J., and **Andrews, G.K.**, Developmental Expression and Regulation of Mouse ZIP Genes in the Intestine

Presentations by scholar in FY05

- **Oral**

Role of ZIP3 in cellular zinc homeostasis. KUMC Biomedical Research Training Program Symposium, May 13, 2005.

Honors/Awards/Grants received by scholar in FY05

KUMC Biomedical Research Training Program Scholarship: \$16,000

List of mentor's grants in which the scholar participated in FY05

- **Funded**

1. NIDDK R01DK59369, Glen Andrews, P.I., "Mechanisms of Mammalian Zinc Homeostasis," 4/15/02-2/28/07, current year direct cost \$192,188, current year indirect cost \$76,407, total direct cost \$940,627, total indirect cost \$377,815
2. NIDDK R01DK063975, Glen Andrews, P.I., "A Mouse Model of Acrodermatitis Enteropathica," 4/01/03-1/31/08, current year direct cost \$200,000, current year indirect cost \$74,248, total direct cost \$1,000,000, total indirect cost \$381,698

Applications for external funding to which the scholar made a direct contribution in FY05

None

Scholar: Christina Kaiser

Mentor: Dianne Durham

Manuscripts

Peer-reviewed publications

- *Published*

1. Smittkamp, S.E. and **Durham, D.** Contributions of age, cochlear integrity, and auditory environment to avian cochlear nucleus metabolism. *Hearing Research*, 195: 79-89, 2004.
2. Lichtenhan, J.T., Chertoff, M.E., Smittkamp, S.E., **Durham, D.** and Girod, D.A. Predicting severity of cochlear hair cell damage in adult chickens using DPOAE input-output functions. *Hearing Research*, 201:109-120, 2005.
3. Smittkamp, S.E. and **Durham, D.** Effect of cochlear integrity on cochlear nucleus neuron glucose metabolism in aged adult broiler chickens. *Hearing Research*, 202:209-221, 2005.
4. **Kaiser, C.L.**, Girod, D.A. and **Durham, D.** Breed-dependent susceptibility to acute sound exposure in young chickens. *Hearing Research*, 203:101-111, 2005.
5. Smittkamp, S.E., Girod, D.A. and **Durham, D.** Role of cochlear integrity in cochlear nucleus glucose metabolism and neuron number after cochlea removal in aging broiler chickens. *Hearing Research*, 204:48-59, 2005.
6. Imig, T.J. and **Durham, D.** Effect of unilateral noise exposure on the tonotopic distribution of spontaneous activity in the cochlear nucleus and inferior colliculus of the rat. *J.Comp. Neurol.*, 490:391-413, 2005.

- *Submitted*

Kaiser, C.L., Girod, D.A. and **Durham, D.** 2005. Effects of acute noise damage on oxidative metabolism in chick cochlear nucleus. *In revision for Brain Research.*

- *In preparation*

Kaiser, C.L., Girod, D.A. and **Durham, D.** 2005. Breed differences in apoptotic death and mitotic replacement of cochlear hair cells in young chickens following acute sound exposure. *In preparation for submission to the Journal of Comparative Neurology.*

Scholar presentations

- **Poster**

1. **Kaiser, C.L.**, Girod, D.A. and **Durham, D.** 2005. *Breed differences in mitotic activity in young chickens following acute sound exposure.* Association for Research in Otolaryngology Abstracts: 833. Annual Midwinter Meeting, February 19-24, 2005.
2. **Kaiser, C.L.**, Girod, D.A. and **Durham, D.** 2005. *Breed differences in apoptotic cochlear hair cell death in young chickens following acute sound exposure.* Society for Neuroscience Abstracts: 850.14. Annual Meeting, November 12-16, 2005.

- **Oral**

1. **Kaiser, C.L.** and **Durham, D.** *Apoptotic death and mitotic replacement of cochlear hair cells in young chickens following acute sound exposure.* KUMC Biomedical Research Training Program Symposium, May 2005.
2. *Effects of Acute Noise Exposure on the Auditory System of Young Chickens.* MRRC Neuroscience Seminar, April 2005.
3. **Kaiser, C.L.**, Girod, D.A. and **Durham, D.** *Mitotic replacement of cochlear hair cells in young chickens following acute sound exposure.* KUMC Student Research Forum.

Honors/Awards/Grants received by scholar in FY05

1. KUMC Biomedical Research Training Program, 2004-2005, Predoctoral scholar support: \$11,000
2. Society for Neuroscience/Eli Lilly Graduate Travel Scholarship, 2005, Travel scholarship support: \$750
3. KUMC Graduate Student Travel Scholarship, 01/01/05, Travel scholarship support: \$550

List of mentor's grants in which the scholar participated in FY05

- **Funded**

NIDCD RO1DC01589, Dianne Durham, P.I., Doug Girod, M.D, Co-P.I., "Cellular Processes of Central Auditory Neuronal Death", 12/01/99-11/30/05, current year direct cost \$184,000, current year indirect cost \$86,840, total direct cost \$891,036, total indirect costs \$441,170

- **Submitted**

Competing renewal, NIDCD RO1DC01589, Dianne Durham, P.I., Doug Girod, M.D., Co-Investigator, "Cellular Processes of Central Auditory Neuronal Death." 04/01/06-03/31/11, total direct cost \$1,250,000, indirect cost \$587,500

Applications for external funding to which the scholar made a direct contribution in FY05

- **Funded**

NIDCD RO1DC01589, Dianne Durham, P.I., Doug Girod, M.D, Co-P.I., "Cellular Processes of Central Auditory Neuronal Death", 12/01/99-11/30/05, current year direct cost \$184,000, current year indirect cost \$86,840, total direct cost \$891,036, total indirect costs \$441,170

- **Submitted**

1. Competing renewal, NIDCD RO1DC01589, Dianne Durham, P.I., Doug Girod, M.D., Co-Investigator, "Cellular Processes of Central Auditory Neuronal Death." 04/01/06 – 03/31/11, total direct cost \$1,250,000, indirect cost \$587,500
2. Ruth L. Kirschstein National Research Service Award (NRSA), NIDCD, "Inhibition of Gentamicin-Induced Cochlear Hair Cell Death," Christina L. Kaiser, Applicant; Douglas A. Cotanche, Sponsor. Total project period 01/01/06-12/31/09

Scholar: Harinivas H. Krishnan Mentor: Bala Chandran

**input from scholar only, mentor left KUMC in June 2005*

Manuscripts

Peer-reviewed publications

- ***Published***

1. Naranatt, P.P., **Krishnan, H.H.**, Smith, M.S., and **Chandran, B.** 2005. Kaposi's sarcoma-associated herpesvirus (KSHV/HHV-8) modulates the Microtubule Dynamics via RhoA-GTP-Diaphenous-2 Signaling and Utilizes the Dynein Motors to deliver its DNA to the Nucleus. *J. Virology*. 79. 1191-1206.
2. Walia, N-S., **Krishnan, H.H.**, Naranatt, P.P., Zeng, L., Smith, M.S., and **Chandran, B.** 2005. ERK1/2 and MEK1/2 induced by Kaposi's Sarcoma Associated Herpesvirus (KSHV/HHV-8) early during infection of target cells are essential for the expression of viral genes and for the establishment of infection. *J. Virology*. 79. 10308-10329.
3. **Krishnan, H.H.**, Walia, N-S., Zeng, L., Gao, S.J., and **Chandran, B.** 2005. Envelope glycoprotein gB of Kaposi's sarcoma Associated Herpesvirus (KSHV/HHV-8) is essential for egress from infected cells. *J. Virology*. 79. 10952-10967.

- ***Submitted***

Krishnan, H.H., Walia, N-S., Streblov, D.N., Naranatt, P.P., and **Chandran, B.** 2005. Focal Adhesion Kinase (FAK) is critical for kaposi's Sarcoma Associated Herpesvirus (KSHV-HHV-8) entry into the target cells.

Abstracts

1. **Krishnan, H.H.**, Walia, N-S., Zeng, L., and **Chandran, B.** KSHV envelope glycoprotein gB is essential for virus egress and entry. 7th international workshop on KSHV and related agents, University of California, Santa Cruz, Aug 21-25, 2004.
2. Walia, N-S., **Krishnan, H.H.**, Naranatt, P.P., Zeng, L., and **Chandran, B.** Kaposi's Sarcoma associated herpesvirus (KSHV/HHB-8) manipulates the host cell signaling early during infection to create an appropriate environment for infection. ASM Conference on Signal transduction in viral systems, Savannah, Georgia, December 1-4, 2004.

Presentations by scholar in FY05

- **Oral**

1. *Role of FAK and Pyk2 in KSHV/HHV-8 infection.* KUMC Biomedical Research Training Program Symposium, May 2005
2. *Kaposi's sarcoma associated herpesvirus (KSHV-HHV-8) infection of primary cells: An inside look at the early events.* Microbiology Department seminar series, April, 2005

Honors/Awards/Grants received by scholar in FY05

KUMC Biomedical Research Training Program, \$16,000

Scholar: Ning Lei

Mentor: Leslie Heckert

Manuscripts

Peer-reviewed publications

- *Published*

1. Hermann, B.P. and **Heckert, L.L.** (2005) Silencing of *Fshr* occurs through a conserved, hypersensitive site in the first intron. *Molecular Endocrinology* 19:2112-2131
2. Karpova, T., Presley, J., Manimaran, R.R., Scherrer, S.P., Tejada, L., Peterson, K.R., and **Heckert, L.L.** (2005) A *Ftz-F1*-containing yeast artificial chromosome recapitulates expression of steroidogenic factor 1 *in vivo*. *Molecular Endocrinology* 19:2549-2563

- *Submitted*

Hermann, B.P., Hornbaker, K.I., Maran, R.R.M., and **Heckert, L.L.** (2005) Distal regulatory elements are required for *Fshr* expression, *in vivo*.

- *In preparation*

1. **Lei, N.**, Rice, D., and **Heckert, L.L.** Sexual dimorphic expression of *Dmrt1* occurs in supporting cells but not in germ cells during mouse gonadogenesis.
2. **Lei, N.**, Hornbaker, K., and **Heckert, L.L.** A regulatory region within the promoter of *Dmrt1* restricts expression to the testicular somatic cells during mouse prepubertal development.
3. **Lei, N.** and **Heckert, L.L.** Forced expression of *Dmrt1* does not induce testis differentiation in the XX Gonad.
4. Karpova, T. and **Heckert, L.L.** Incomplete rescue of SF-1-null mice reveals gender differences in transcriptional control of the *Ftz-f1* locus.
5. Hermann, B.P. and **Heckert, L.L.** The *Usf* transcription factors are not essential for *Fshr* and SF-1 expression.

Chapters/Symposium proceedings

Hermann, B.P. and **Heckert, L.L.** (2005) Transcriptional regulation of the FSH receptor: new perspectives. *Mol. Cellular Endocrinology* (in press)

Abstracts

1. Hermann, B. and **Heckert, L.** A cell-specific repressor identified by comparative sequence analysis and DNase I hypersensitivity mapping of the *Fsh-receptor* gene locus. 86th Annual Meeting of the Endocrine Society. June 16-19, 2004 New Orleans, LA
2. **Lei, N.** and **Heckert, L.L.** Identification of the testis-specific regulatory region of the *Dmrt1* gene *in vivo*. 86th Annual Meeting of the Endocrine Society. June 16-19, 2004 New Orleans, LA
3. Karpova T. et al, Different phenotypes in *sf-1* null mice rescued with *ftz-f1-yac* transgenes of different sizes. The 37th Annual meeting of the Society for the Study of Reproduction. Aug 1-4, 2004 Vancouver, BC
4. Hermann, B., Rice, D., and **Heckert, L.** *Usf1* and *Usf2* are not required for *Fshr* or *Sf-1* expression *in vivo*. The 37th Annual meeting of the Society for the Study of Reproduction. Aug 1-4, 2004 Vancouver, BC

Presentations by scholar in FY05

- **Oral**

Sexually dimorphic expression of Dmrt1 occurs in supporting cells but not germ cells during mouse gonadogenesis. KUMC Biomedical Research Training Program Symposium, May, 2005

Honors/Awards/Grants received by scholar in FY05

KUMC Biomedical Research Training Program, \$11,000

List of mentor's grants in which the scholar participated in FY05

- **Funded**

1. NIH/NICHD R01HD41056, Leslie L. Heckert, P.I., "Hormonal and cell-specific regulation of *Dmrt1*." 08/01/02-7/31/07, current year direct cost \$202,500, current year indirect cost \$101,250, total direct cost \$1,102,500, total indirect cost \$506,250
2. NIH/DHHS, 5U54 HD033994, Paul Terranova, Center for Reproductive Sciences, 4/1/2001-3/31/2006, current year direct cost \$156,171, current year indirect cost \$78,085, total direct cost \$857,861, total indirect cost \$428,930
3. National Aeronautics & Space Administration, NNA04CC54A, Joseph Tash, P.I., L. Heckert, J. Wood, A. Ronka and C. Wade, Co-P.I.s, "Negative impacts of altered Gravity on Male mammalian reproductive Capacity", 3/1/2004-2/28/2007, current year direct cost \$147,272, current year indirect cost \$69,219, total costs \$1,048,047

- **Submitted**

1. Leslie Heckert, NIH, Regulation and function of steroidogenic factor 1, 07/01/2006-06/30/2011, current period direct: \$250,000
2. Paul Terranova, NIH, Center for Reproductive Sciences, 04/01/2006-03/31/2011, current direct cost: \$1,000,000
3. Leslie Heckert, NIH, Gonadal expression of FSH receptor, 07/01/2006-06/30/2011, current direct cost: \$200,000

Applications for external funding to which the scholar made a direct contribution in FY05

- **Funded**

NIH/NICHD R01HD41056, Leslie L. Heckert, P.I., "Hormonal and cell-specific regulation of Dmrt1." 08/01/02-7/31/07, current year direct cost \$202,500, current year indirect cost \$101,250, total direct cost \$1,102,500, total indirect cost \$506,250

Scholar: Hongzeng Liu

Mentor: Wen Liu

Manuscripts

Peer-reviewed publications

- *In press*

McIntire K, Asher M, Burton D, **Liu H**, **Liu W**. Measurement reliability for trunk rotational strength and symmetry in healthy young adults. *The Spine Journal*.

- *Submitted*

Sun C, Mukherjee M, **Liu H**, Redford J, **Liu W**. Combined treatments of electro-acupuncture and strengthening exercise may be beneficial for spastic fingers and wrist in post-stroke patient: a case report. *Alternative Medicine*.

- *In preparation*

1. **Liu H**, **Liu W**, and Jernigan S. Identification of muscle properties on human knee joint.
2. **Liu H**, **Liu W**, and Tsao Yihhaur. Detection of arousal level under different intensities of stimulation in virtual environments.

Presentations by scholar in FY05

- **Oral**

Development of a Virtual Reality Augmented Training program for Stroke Rehabilitation. Biomedical Symposium, May 13, 2005

Honors/Awards/Grants received by scholar in FY05

The KUMC Biomedical Research Training Program Scholarship

List of mentor's grants in which the scholar participated in FY05

- **In preparation**

NIH, "Development of an effective technique in motor training for stroke patients under an optimal arousal level"

Applications for external funding to which the scholar made a direct contribution in FY05

- **Submitted**
 1. **Hongzeng Liu**, Development and reliability of a virtual reality technique for regulating arousal level in stroke rehabilitation, American Heart Association.
 2. **Hongzeng Liu**, Use of virtual reality in regulation of stroke patients' arousal level during robot-assisted motor training, Burroughs Wellcome Fund.

Scholar: Huai-rong Luo

Mentor: Yvonne Wan

Manuscripts

Peer-reviewed publications

- **Published**

1. Dai G and **Wan YJ**. Animal models of xenobiotic receptors. *Curr Drug Metab*, 2005; 6(4):341-55.
2. **Luo HR**, Israel Y, Tu GC, Eriksson CJP, and Zhang YP. Genetic polymorphism of aldehyde dehydrogenase in Chinese: gender, age, culture, and genotypes of ALDH2. *Biochemical Genetics*, 2005; 43(5-6):223-7.
3. **Luo HR**, Aloumanis V, Lin KM, Gurwitz D, and **Wan YJ**. Polymorphisms of CYP2C19 and CYP2D6 in Israeli ethnic groups. *American Journal of Pharmacogenomics*, 2004; 4(6): 395-401.
4. *Zhang YW, ***Luo HR**, and Zhang YP. Evolution of the length variations of thymidylate synthase enhancer region (TSER) in primates. *Gene*, 2004; 338: 47-54. (*equal contribution)

- **In press**

1. Dai G, Chou N, He L, Gyamfi M, Mendy A, Slitt A, Klaassen C, and **Wan YJ**. RXRalpha Regulates the Expression of Glutathione S-Transferase Genes and Modulates Acetaminophen-Glutathione Conjugation in Mouse Liver. *Molecular Pharmacology*.
2. **Luo HR**, Gaedigk A, Aloumanis V, and **Wan YJ**. Identification of CYP2D6 impaired functional alleles in Mexican Americans. *European Journal of Clinical Pharmacology*.
3. **Luo HR**, Konishi T, Tsuang J, and **Wan YJ**. Comparison of alcohol drinking behaviors and associated problems in benders versus non-benders among Mexican American men who drink excessively. *Addictive Disorders and Their Treatment*.
4. **Luo HR**, Hou ZF, Wu J, Zhang YP, and **Wan YJ**. Evolution of the DRD2 gene haplotype and its association with alcoholism in Mexican Americans. *Alcohol*.

- **Submitted**

Luo HR, Poland RE, Lin KM, and **Wan YJ**. 2005. Genetic polymorphism of CYP2C19 in Mexican Americans: an investigative and comparative Study. *Clinical Pharmacology and Therapeutics*.

Abstracts

1. **Luo HR**, Hou ZF, Wu J, Zhang YP, and **Wan YJ**. 2005. Association of the *DRD2* gene haplotype with alcoholism in Mexican Americans. *Alcoholism: Clinical and Experimental Research*, 29(5): 765.
2. **Luo HR** and **Wan YJ**. 2005. Comparison of alcohol drinking behaviors and associated problems in binge versus non-binge drinkers among Mexican American men. *Alcoholism: Clinical and Experimental Research*, 29(5): 174.
3. **Luo HR** and **Wan YJ**. 2005. Genetic risk factors for alcoholism in Mexican Americans. The 6th Biomedical Research Training Program Annual Symposium, University of Kansas Medical Center, Kansas City, Kansas, and Abstract No: 11.

Presentations by scholar in FY05

• Poster

1. **Luo HR**, Hou ZF, Wu J, Zhang YP, and **Wan YJ**. 2005. *Evolution of the DRD2 gene haplotype and its association with alcoholism in Mexican Americans*. Annual Scientific Meeting of the Research Society on Alcoholism, June 25-30th, 2005, Santa Barbara, California, Poster No: 26.
2. Luo HR, Konishi T, Tsuang J, and Wan YJ. 2005. *Comparison of alcohol drinking behaviors and associated problems between Mexican American benders and non-benders*. Annual Scientific Meeting of the Research Society on Alcoholism, June 25-30th, 2005, Santa Barbara, California, Poster No: 174.

• Oral

1. *Genetic risk factors for alcoholism in Mexican Americans*. The 6th Biomedical Research Training Program Annual Symposium, University of Kansas Medical Center. May 13, 2005, Kansas City, KS
2. *The DRD2 gene haplotype is associated with alcoholism in Mexican Americans*. Post-Doctoral Fellow and Research Assistant Professor Research Day, Department of Pharmacology and Toxicology, University of Kansas Medical Center, December 10th, 2004, Kansas City, KS

Honors/Awards/Grants received by scholar in FY05

1. 2005 Junior Investigator Award, Research Society on Alcoholism meeting, Santa Barbara, CA, U.S., granted by the National Institute on Alcohol Abuse and Alcoholism. The amount of support was \$950.
2. July 2004-June 2005 Biomedical Training Program Award, University of Kansas Medical Center, Kansas City, KS, US. The amount of support was \$12,000.

List of mentor's grants in which the scholar participated in FY05

- **Funded**

1. NIH/NIAAA, R01AA12081-05A1, Yu-Jui Yvonne Wan, "Alcohol Pharmacogenetics in Mexican Americans," 09/16/04-05/31/09, current year direct cost \$250,000, current year indirect cost \$103,400, total direct cost \$1,250,000, total indirect cost \$517,000
2. NIH/NIMH, R01 MH62421, PI: Keh-Ming Lin, "Ethnic Variations in Antidepressant Response," 9/01/03-6/30/06, current year direct cost \$97,458, current year indirect cost \$45,805
3. UC/Tobacco-Related Disease Research Program, 10RT-0021, PI: Michael Smith, "Transdermal Nicotine for Smokers with Schizophrenia," 07/01/01-06/30/05, current year direct cost \$31,645, current year indirect cost \$14,873

Applications for external funding to which the scholar made a direct contribution in FY05

- **In preparation**

Huai-Rong Luo, Philip Morris External Research Program, Submission deadline: October 1st, 2005, \$40,000 per annum and 8% institutional indirect costs

Scholar: Ramsey McIntire

Mentor: Joan Hunt

Manuscripts

Peer-reviewed publications

- **Published**

1. **McIntire, R.H.**, P.J. Morales, M.G. Petroff, M. Colonna, and **J.S. Hunt**. 2004. Recombinant HLA-G5 and -G6 Drive U937 Myelomonocytic Cell Production of TGF- β 1. *J. Leuk. Biol.* 76: 1220-1228.
2. **McIntire, R.H.**, and **J.S. Hunt**. 2005. Antigen Presenting Cells and HLA-G—A Review. *Placenta*. 26S: S104-S109.
3. **Hunt, J.S.**, M.G. Petroff, **R.H. McIntire**, and C. Ober. 2005. HLA-G and immune tolerance in pregnancy. *FASEB J.* May; 19(7):681-93.
4. Nicolae, D., N.J. Cox, L.A. Lester, D. Schneider, Z. Tan, C. Billstrand, S. Kuldane, J. Donfack, P. Kogut, N.M. Patel, J. Goodenbour, T. Howard, R. Wolf, G.H. Koppelman, S.R. White, R. Parry, D.S. Postma, D. Meyers, E.R. Bleeker, **J.S. Hunt**, J. Solway, and C. Ober. 2005. Fine mapping and positional candidate studies identify HLA-G as an asthma susceptibility gene on chromosome 6p21. *Am. J. Human Genet.* 76:349-357.

- **In press**

1. Ka, H., and **J.S. Hunt**. 2005. FLICE-inhibitory protein: expression and regulation in early and late gestation human placentas. *Placenta*.
2. **Hunt, J.S.**, D. Langat, **R.H. McIntire**, and P. Morales. 2005. The immunology of human pregnancy: an overview. *Reprod. Biol. Endocrinol.*
3. Petroff, M.G., **J.S. Hunt**, and L. Holets. 2005. Trophoblast B7-H1 is differentially expressed across gestation: influence of oxygen concentration. *Am. J. Pathol.*

- **Submitted**

1. Langat, D.K., J.S. Platt, O. Tawfik, A.T. Fazleabas, and **J.S. Hunt**. Differential expression of human leukocyte antigen-G (HLA-G) messenger RNAs and proteins in normal human prostate and prostatic tumors. *Am. J. Pathol.*
2. Young, A.M., J.S. Platt, **J.S. Hunt**, and K.L. Audus. The use of calcein AM to elucidate efflux transporter function in BeWo cells.

- ***In preparation***

1. **McIntire, R.H.**, and **J.S. Hunt**. 2005. The Decidual Environment is Critical to the Programming of Decidual Macrophages. *Biol. Reprod.*
2. **McIntire, R.H.**, J.S. Platt, and **J.S. Hunt**. 2005. Potential Targets for Human Leukocyte Antigens in the Uterus and Placenta. *Am. J. Pathol.*
3. Gill, R.M., N. Coleman, and **J.S. Hunt**. 2005. Differential expression of LIGHT and its receptors in early gestation human placentas. *Placenta*.

Chapters/Symposium proceedings

1. **McIntire, R.H.**, M.G. Petroff, T.A. Phillips, and **J.S. Hunt**. 2005. In Vitro Models for Studying Human Uterine and Placental Macrophages. In *Placental and Trophoblast Methods and Protocols*, M.J. Soares and J.S. Hunt, eds. Humana Press Inc., Totowa, NJ. (*In press*)
2. **Hunt, J.S.**, **R.H. McIntire**, and M.G. Petroff. 2006. Immunobiology of Human Pregnancy. In *Knobil and Neill's Physiology of Reproduction, Third Edition*, J.D. Neill ed. Elsevier Inc., San Diego, CA. Chapter 52. (*In press*)
3. **Hunt, J.S.**, and **R.H. McIntire**. 2006. Inflammatory cells and cytokine production. In *Inflammation and Pregnancy*, D.M. Peebles and L. Myatt, eds. Parthenon Publishing, New York, NY. (*In press*)
4. Petroff, M.G., and **J.S. Hunt**. 2005. Immunity at the maternal-fetal interface. In *Mucosal Immunology, Third Edition*. J. Mestecky, M.E. Lamm, W. Strober, J. Bienenstock, J.R. McGhee, and L. Mayer, Eds. Academic Press, NY. Chapter 101, PP 1735-1745.
5. Petroff, M.G., T.A. Phillips, H. Ka, J.L. Pace, and **J.S. Hunt**. 2006. Isolation and culture of term human trophoblast cells. In *Placental and Trophoblast Methods and Protocols*, M.J. Soares and J.S. Hunt, Eds. Humana Press, Totowa, NJ. (*In press*)
6. Langat, D.K., A.T. Fazleabas, and **J.S. Hunt**. 2006. Methods for evaluating histocompatibility antigen gene expression in the baboon. In *Placental and Trophoblast Methods and Protocols*, M.J. Soares and J.S. Hunt, Eds. Humana Press, Totowa, NJ. (*In press*)
7. Pace, J.L., P.J. Morales, T.A. Phillips, and **J.S. Hunt**. 2006. Analysis of the soluble isoforms of HLA-G: mRNAs and proteins. In *Placental and Trophoblast Methods and Protocols*, M.J. Soares and J.S. Hunt, Eds. Humana Press, Totowa, NJ. (*In press*)

Abstracts

Please see presentations section below

Presentations by scholar in FY05

- **Oral**

1. **Ramsey H.M.**, and **J.S. Hunt**. *Responses Induced in Macrophages Following Recognition of Soluble HLA-G*. International Congress of Immunology Satellite Workshop: Face-offs in Reproductive Immunology, Montreal, Quebec, Canada, July 2004
2. **Ramsey H.M.**, and **J.S. Hunt**. *Decidual Macrophage Encounters with Soluble HLA-G*. Placenta Association of the Americas Conference Workshop: Establishing the Maternal-Fetal Interface, Autocrine and Paracrine Events, Asilomar, CA, USA, September 2004
3. **Ramsey H.M.**, P.J. Morales, M.G. Petroff, and **J.S. Hunt**. *Recombinant Soluble HLA-G Drives Mononuclear Phagocytes into an Immune-Suppressive Mode*. Placenta Association of the Americas Conference: Signaling and the Placenta, Asilomar, CA, USA, September 2004
4. **Ramsey H.M.**, P.J. Morales, M.G. Petroff, and **J.S. Hunt**. *Recombinant Soluble HLA-G Drives Mononuclear Phagocytes into an Immune-Suppressive Mode*. Gilbert S. Greenwald Symposium on Reproduction, October 2004
5. **Ramsey H.M.**, J.S. Platt, and **J.S. Hunt**. *Cell-Specific and Gestational Stage-Dependent Expression of Inhibitory Receptors for HLA-G at the Maternal-Fetal Interface*. KUMC Student Research Forum, Kansas City, KS, USA, April 2005
6. **Ramsey H.M.**, J.S. Platt, and **J.S. Hunt**. *Cell-Specific and Gestational Stage-Dependent Expression of Inhibitory Receptors for HLA-G at the Maternal-Fetal Interface*. KUMC Sigma Xi seminar series, April 2005
7. **Ramsey H.M.**, J.S. Platt, and **J.S. Hunt**. *Cell-Specific and Gestational Stage-Dependent Expression of Inhibitory Receptors for HLA-G at the Maternal-Fetal Interface*. KUMC Biomedical Research Training Symposium, May 2005
8. **Ramsey H.M.**, and **J.S. Hunt**. *Immunobiology of Human Pregnancy: HLA-G and Its Inhibitory Receptors*. Donald C. Johnson Seminar Series in Reproductive Biology, KUMC, Kansas City, KS, USA, May 2005

Honors/Awards/Grants received by scholar in FY05

1. KUMC Biomedical Research Training Program, 2004-2005
2. KUMC Graduate Student Travel Scholarship (awarded 2), 2004-2005
3. Y.W. (Charlie) Loke Travel Award (Podium presentation, Placenta Association of the Americas Conference, September 2004), 2004

4. KUMC Student Research Forum, 1st Place Presentation in Developmental and Reproductive Biology session, 2005
5. KUMC Student Research Forum, 1st Place Presentation, Graduate Student category, 2005
6. Sigma Xi student presentation award, 2005
7. Marine Biological Laboratory Scholarship from the Burroughs Wellcome Fund (For attendance at the MBL course, Frontiers in Reproduction, May-June 2005), 2005

List of mentor's grants in which the scholar participated in FY05

- **Funded**

NIH P01 HD39878, "Biology at the Maternal-Fetal Interface" (M.J. Soares, P.I. and Director, J.S. Hunt, Associate Director) 12-01-01/11-30-06; Project III, "Class I MHC Gene Expression by Human Trophoblast Cells"; J.S. Hunt, P.I., direct cost for current year \$180,137, indirect cost for current year \$90,068, total direct cost \$901,009, total indirect cost \$450,504; and Core B, J.S. Hunt, Director, direct cost for current year \$59,655, indirect cost for current year \$29,828, total direct cost \$298,382, total indirect cost \$149,191

Applications for external funding to which the scholar made a direct contribution in FY05

- **Submitted**

1. NIH 1 PO1 HD049480-01, "HLA-G at the Maternal-Fetal Interface", \$5,990,887 total costs requested, 07-01-06/06-30-11. J. S. Hunt, P.I.
2. NIH 1 RO1 HD050750-01, "HLA-G Isoforms and the Maternal-Fetal Relationship", \$1,297,150 total costs requested, 07-01-06 – 06-30-10, J.S. Hunt, P.I.
3. NIH U54 Reproductive Sciences Center Grant; \$1,124,250 (direct costs, year 1); 04-23-06/03-31-11; P.F. Terranova, P.I., J.S. Hunt, Director, Cell and Tissue Culture Core

Scholar: Toni Richards

Mentor: Beth Levant

Manuscripts

Peer-reviewed publications

- **Published**

1. Wu X, Chen J, Ji M, Varady J, **Levant B**, Wang S. (2004) Design, synthesis and evaluation of hexahydribenz[*f*]-isoquinolines as a novel class of dopamine 3 receptor ligands. *Bioorg. Med. Chem. Lett.* 24:117-130.
2. Ahlgren-Beckendorf JA, **Levant B**. (2004) Signaling mechanisms of the D₃ dopamine receptor. *J. Recept. Sig. Trans.* 24:1-14.
3. **Richards TL**, Pazdernik TL, **Levant B**. (2005) Altered quinpirole-induced local cerebral glucose utilization in anterior cortical regions in rats after sensitization to quinpirole. *Brain Res.* 1042:53-61.
4. Ding K, Chen J, Ji M, Wu X, Varady J, **Levant B**, Wang S. (2005) Enantiomerically pure hexahydro-pyrazinoquinolines as potent and selective dopamine 3 subtype receptor ligands. *J. Med. Chem.* 48:3171-3181.

- **In press**

Ji M, Chen J, Wu J, Varady J, **Levant B**, Wang S. (2005) Design, synthesis, and structure-activity relationship studies of hexahydropyrazinoquinolines as a novel class of dopamine receptor 3 (D₃) ligands. *Bioorg. Med. Chem. Lett.*

- **Submitted**

1. Jagathesan J, **Levant B**, Winter M, McCarson KE, Clancy RD, Pierce JD. Detection of dopamine receptor subtypes in the rat diaphragm. (submitted to *J. Muscle Res. Cell. Motil.*).
2. **Levant B**, Radel JD, Carlson SE. Reduced brain DHA content after a single reproductive cycle in female rats fed a diet deficient in n-3 polyunsaturated fatty acids. (submitted to *Biol. Psychiatr.*).
3. **Levant B**, Crane JF, Carlson SE. Sub-chronic treatment with antipsychotic drugs does not alter brain phospholipid fatty acid composition in rats. (submitted to *Prog. Neuropsychopharmacol. Biol. Psychiatr.*).

4. Chen J, Ding K, **Levant B**, Wang S. Design of novel hexahydropyrazinoquinolines as potent and selective dopamine D3 receptor ligand with improved solubility. (submitted to *Bioorg. Med. Chem. Lett.*).

- ***In preparation***

Richards TL, Pazdernik TL, **Levant B**. (2005) Clorgyline-induced modification of behavioral sensitization to quinpirole: effects on local cerebral glucose utilization.

Abstracts

1. Miller CC, **Levant B**, Radel JD, Carlson SE. (2004) Decreased brain DHA during development alters sucrose drinking in adult male rats. *Brain Uptake and Utilization of Fatty Acids, Lipids and Lipoproteins Meeting*, Bethesda, MD, October 7-9, 2004.
2. **Levant B**, Radel JD, Carlson SE. (2004) Reduced brain DHA content after a single reproductive cycle in female rats on a diet deficient in α -linolenic acid. *Brain Uptake and Utilization of Fatty Acids, Lipids and Lipoproteins Meeting*, Bethesda, MD, October 7-9, 2004.
3. **Levant B**, Radel JD, Carlson SE. (2004) Reduced brain DHA content after a single reproductive cycle in female rats on a diet deficient in α -linolenic acid. *Soc. Neurosci. Abst.* 34:570.14, San Diego, CA, Oct. 23-27, 2004.
4. **Richards TL**, Pazdernik TL, **Levant B**. (2004) Differences in quinpirole-induced local cerebral glucose utilization in anterior cortical brain areas in drug-naïve and quinpirole-sensitized rats. *Soc. Neurosci. Abst.* 34:803.15, San Diego, CA, Oct. 23-27, 2004.
5. Witkin JM, **Levant B**, Zapata A, Kaminski R, Dijkstra D, Akunne H, Peters S, Shannon H, Gasior M. (2004) Dopamine D₃ receptors may regulate dopaminergic toxicity. *Neuropsychopharmacology* 29, suppl. 1:S18. San Juan, PR, Dec. 2004.

Presentations by scholar in FY05

- **Poster**

Richards TL, Pazdernik TL, **Levant B**. (2004) *Differences in quinpirole-induced local cerebral glucose utilization in anterior cortical brain areas in drug-naïve and quinpirole-sensitized rats.* Soc. Neurosci. Abst. 34:803.15, San Diego, CA, Oct. 23-27, 2004.

- **Oral**

1. *Anatomical Substrates of Behavioral Sensitization to Quinpirole.* Department of Pharmacology Seminar, November 9, 2004.
2. *Evidence for Altered Anterior Cortical Neuronal Activity in Behavioral Sensitization.* SRF, April 7, 2005.

3. *Evidence for Altered Anterior Cortical Neuronal Activity in Behavioral Sensitization.*
KUMC Biomedical Research Training Program Symposium, May 13, 2005.

Honors/Awards/Grants received by scholar in FY05

KUMC Biomedical Research Training Program Scholarship: \$11,000

List of mentor's grants in which the scholar participated in FY05

- **Funded**

1. NIH R01MH067938, B. Levant, P.I., "Brain DHA, Dopamine, and Behavior: Roles in ADHD," 9/30/04-6/30/07, current year direct cost \$135,000, current year indirect cost \$63,450, total direct cost \$405,000, total indirect cost \$190,350
2. NIH R01MH071599, B. Levant, P.I., "Brain LC-PUFAs and Maternal Mental Health," 9/15/04-6/30/07, current year direct cost \$175,000, current year indirect cost \$68,828, total direct cost \$475,000, total indirect cost \$209,828

- **Submitted**

1. National Institute on Drug Addition, "Design, Synthesis and Characterization of Dopamine Receptor 3 Ligands". 12/1/2005-11/30/2010
2. National Institute of Child Health and Human Development, "Kansas BIRCWH Career Development Program in Women's Health". 10/1/2005-09/30/2010.
3. NIH COBRE, "Nuclear Receptors in Liver Health and Disease". 8/1/05 – 7/31/10

Applications for external funding to which the scholar made a direct contribution in FY05

None

Scholar: Madhulika Sharma

Mentor: Gregory Vanden Heuvel

Manuscripts

Peer-reviewed publications

- *Published*

1. **Sharma M**, Fopma A, Brantley JG, and **Vanden Heuvel GB**. Co-expression of Cux-1 and Notch signaling pathway components during kidney development. *Dev Dyn*. 2004 Dec; 231(4):828-38.
2. **Sharma M**, Brantely JG, Alcalay N, Zhou J, Maser RL, and **Vanden Heuvel GB**. Differential expression of cux-1 and p21 in polycystic kidneys from PKD null and cpk mice. *Kid Int*. 2005 Feb 67(2): 432
3. **Vanden Heuvel GB**, Brantley JG, Alcalay NI, **Sharma M**, Kemeny G, Warolin J, Ledford AW, and Pinson DM. Hepatomegaly in Transgenic mice expressing the Homeobox gene Cux-1. *Mol. Carcinog*. 2005 43 (1) 18-30

- *Submitted*

1. **Sharma M**, Brantley JG, Chapman B, and **Vanden Heuvel GB**. Modulation of Cell Cycle Regulation in Mesangial Cells from Cux-1 Transgenic mice. *Kidney International*.
2. Alcalay NI, Brantley JG, **Sharma M**, Gooch J, and **Vanden Heuvel GB**. Ectopic Expression of the Homeobox Gene Cux-1 Rescues Metanephric Growth Inhibition by Cyclosporin A. *Developmental Dynamics*.

- *In preparation*

1. **Sharma M** and **Vanden Heuvel GB**. Regulation of the Homeobox gene Cux-1 during kidney development. (Invited Review article).
2. Alcalay NI, **Sharma M**, Maser R, Powell A, Baas J, Chapman B, Zhou J, Brantley JG, and **Vanden Heuvel GB**. Deletion of a cathepsin-L processing site in Cux-1 results in downregulation of p27kip1 and exacerbates Polycystic Kidney Disease progression.

Scholar presentations in FY05

- **Poster**

1. **Sharma M, Brantley JG, Vanden Heuvel GB.** *Co-expression and interaction of Cux-1 with the groucho homologue TLE-4.* (renal week 2004 from October 29 to November 1 at ASN) . JASN vol 15, 2004
2. **Sharma M, Brantley JG, Ryals JM, Vanden Heuvel GB.** *Increased proliferation and apoptosis of mesangial cells isolated from Cux-1 transgenic mice.* (renal week 2004 from October 29 to November 1 at ASN). JASN vol 15, 2004
3. Alcalay NI, Brantley JG, **Sharma M**, Magenheimer BS, Calvet JP, **Vanden Heuvel GB.** *Ectopic expression of homeobox gene Cux-1 rescues metanephric growth inhibition by cyclosporine A.* (renal week 2004). JASN vol 15, 2004

- **Oral**

Sharma M, Brantley JG, and Vanden Heuvel GB. *Co-Expression and Interaction of Cux-1 with the Groucho Homologue TLE-4.* The 6th Biomedical Research Training Program Annual Symposium, University of Kansas Medical Center, May 13, 2005

Honors/Awards/Grants received by scholar in FY05

1. Kansas University Biomedical research training Scholarship, \$16,000
2. Awarded \$400 travel grant to attend American Society of Nephrology meeting to be held in Philadelphia on 9th-12 November, 2005

List of mentor's grants in which the scholar participated in FY05

1. NIH/NIDDK RO1 DK58377, G.B. Vanden Heuvel, P.I., "Cux-1 and cell cycle regulation in kidney development," 9/1/01-8/31/06, current year direct cost \$148,750, current year indirect cost \$74,375, total direct cost \$743,750, total direct cost \$361,250
2. Polycystic Kidney Disease Foundation Grant (84a2r), G.B. Vanden Heuvel, P.I., "Cux-1 and Cell Cycle Regulation in Polycystic Kidney Disease," 1/1/04-12/31/05, current year direct cost \$58,500, current year indirect cost \$6,500, total direct cost \$117,000, total direct cost \$13,000
3. K-INBRE Pilot Award, G.B. Vanden Heuvel, P.I., "Cux-1 and the Notch Signaling Pathway," 1/1/05-12/31/05, direct cost \$35,000

Applications for external funding to which the scholar made a direct contribution in FY05

None

Scholar: Aijing Sun

Mentor: Benyi Li

Manuscripts

Peer-reviewed publications

- *Submitted*

Benyi Li and **Aijing Sun**. Androgen receptor-mediated survival in prostate cancer. (a minireview article) Manuscript submitted to Journal of Urology, September 2005

- *In preparation*

1. **Aijing Sun**, Ilanchezian Shanmugam, Yan Hong, Masaru Fukuda, J. Brantley Thrasher, and **Benyi Li**. GSK-3beta inhibitor disrupts DNA replication and suppress tumor growth in prostate cancer.
2. **Aijing Sun**, Hyewon Youn, Yan Hong, J. Brantley Thrasher, and **Benyi Li**. Akt promotes androgen-independent tumor growth in prostate cancer.
3. Hyewon Youn, **Aijing Sun**, Yan Hong, J. Brantley Thrasher, and **Benyi Li**. G-proteins modulation of androgen signaling via a membrane-bound androgen receptor.

Abstracts

Aijing Sun and **Benyi Li**. AR silencing induces apoptosis in prostate cancer cell. Keystone Symposium, Monterey, CA, Feb. 2005

Presentations by scholar in FY05

- **Poster**

Aijing Sun and **Benyi Li**. *AR silencing induces apoptosis in prostate cancer cell.* Keystone Symposium, Monterey, CA, Feb 2005

- **Oral**

Aijing Sun and **Benyi Li**. *Small-Interfering RNA-Induced Androgen Receptor Silencing Leads to Apoptotic Cell Death in Prostate Cancer.* KUMC Biomedical Research Training Program Symposium May 2005

Honors/Awards/Grants received by scholar in FY05

List of mentor's grants in which the scholar participated in FY05

• **Funded**

1. KUMC Lied Foundation Pilot Program, Benyi Li, P.I., "Shp-2 in TRAIL sensitivity," 2/2005-2/2006, direct cost \$34,930
2. NIH COBRE (Kansas State) First Award, 1P20 RR15563, Benyi Li, P.I., "The role of SHP-2 in GSK-3beta inhibitor-induced TRAIL sensitization," 04/2005-06/2006, total cost: \$50,000

• **Submitted**

NIH R01, "Signaling cascades in androgen receptor transactivation," direct cost asked \$1,000,000. July 2005.

• **In preparation**

NIH R01, "GSK-3beta in DNA replication," planning to submit in Nov 2005

Applications for external funding to which the scholar made a direct contribution in FY05

• **Submitted**

NIH R01, Signaling cascades in androgen receptor transactivation, direct cost asked \$1,000,000. July 2005.

• **In preparation**

NIH R01, GSK-3beta in DNA replication, planning to submit in Nov 2005

Scholar: Evan A. Zamir

Mentor: Charles Little

Manuscripts

Peer-reviewed publications

- **Published**

1. Filla, MB, Czirik, A, **Zamir, EA, Little, CD**, Chevront, TJ, and Rongish, BJ (2004). Dynamic Imaging of Cell, Extracellular Matrix, and Tissue Movements during Avian Vertebral Axis Patterning. *Birth Defects Research (Part C)*, 72, 267-276.
2. **Zamir, EA**, Czirik, A, Rongish, BJ, and **Little, CD** (2005). A Digital Image-Based Method for Computational Tissue Fate Mapping during Early Avian Morphogenesis. *Annals of Biomedical Engineering*, 33, 854-865.

Chapters/Symposium proceedings

Zamir, EA, Rupp, P, and **Little CD**. Studying in vivo dynamics of vasculogenesis using time-lapse computational imaging, to appear in *Frontiers in Angiogenesis*, ed. Reza Furough, Springer.

Presentations by scholar in FY05

- **Oral**

1. **Zamir, EA**, Czirik, A, Rongish, BJ, and **Little, CD** (2005). *Dynamic computational analysis of cells and ECM during vessel formation de novo*. Gordon Research Conference on Elastin and Elastic Fibers, Waterville Valley, NH.
2. **Zamir, EA**, Czirik, A, Rongish, BJ, and **Little, CD** (2005). *A Digital Image Based Method for Computational Tissue Fate Mapping during Early Avian Morphogenesis*. Summer Bioengineering Conference of the American Society of Mechanical Engineers, Vail, CO.
3. **Zamir, EA**, Czirik, A, Rongish, BJ, and **Little, CD** (2005). *Image-Based Computational Analysis of Vascular Network Deformations during Early Avian Morphogenesis*. Presented as a *Presley-Zeiss Postdoctoral Award Presentation Finalist* at the Annual FASEB Meeting, San Diego, CA.

Honors/Awards/Grants received by scholar in FY05

1. AHA Postdoctoral Fellowship, 0520126Z, E. Zamir, D.Sc. P.I., "In vivo biomechanics of avian vasculogenesis," 1/1/05-12/31/06, Total: \$83,000.

2. KUMC Biomedical Training Program Grant, \$16,000.
3. Richard Skalak Best Paper Award, American Society of Mechanical Engineers, 2005.

List of mentor's grants in which the scholar participated in FY05

- **Funded**

1. G. Harold and Leila Y. Mathers Charitable Foundation, Little, C.D., P.I., "Vascular Pattern Analysis: a Systems Approach," 01/01/03-12/31/04, current year direct cost \$155,520, current year indirect cost \$15,552, total direct cost \$311,040, total direct cost \$31,104
2. G. Harold and Leila Y. Mathers Charitable Foundation, Little, C.D., P.I., "Vertebrate Axis Formation: A systems approach," 03/01/05-2/28/08, current year direct cost \$154,275, current year indirect cost \$15,428, total direct cost \$462,825, total direct cost \$46,284
3. NIH R01 "Computational Biology of Vascular Cell Behavior," 8/1/02-7/31/07, current year direct cost \$259,852, current year indirect cost \$104,664, total direct cost \$1,300,176, total direct cost \$548,778

- **Submitted**

NIH R01, Little, C.D., P.I., "BCST- Formulation of an comprehensive wide-field, time-lapse imaging system," \$475,000 total direct cost request over three years.

Applications for external funding to which the scholar made a direct contribution in FY05

- **Funded**

1. G. Harold and Leila Y. Mathers Charitable Foundation, Little, C.D., P.I., "Vascular Pattern Analysis: a Systems Approach," 01/01/03-12/31/04, current year direct cost \$155,520, current year indirect cost \$15,552, total direct cost \$311,040, total direct cost \$31,104
2. G. Harold and Leila Y. Mathers Charitable Foundation, Little, C.D., P.I., "Vertebrate Axis Formation: A systems approach," 03/01/05-2/28/08, current year direct cost \$154,275, current year indirect cost \$15,428, total direct cost \$462,825, total direct cost \$46,284
3. NIH R01 "Computational Biology of Vascular Cell Behavior," 8/1/02-7/31/07, current year direct cost \$259,852, current year indirect cost \$104,664, total direct cost \$1,300,176, total direct cost \$548,778
4. AHA Postdoctoral Fellowship, 0520126Z, Zamir, Evan, D.Sc., P.I., "In vivo biomechanics of avian vasculogenesis." The award begins January 1, 2005, and has been approved for funding: 1/1/05 - 12/31/05, Total: \$83,000

- **Submitted**

1. NIH R01, Little, C.D., P.I., "BCST- Formulation of an comprehensive wide-field, time-lapse imaging system," \$475,000 total direct cost request over three years.
2. NIH Kirchstein-NRSA Postdoctoral Fellowship application (not funded).