2000-2001
SUMMARY OF SCHOLARLY ACTIVITIES
DEPARTMENT OF BIOCHEMISTRY AND MOLECULAR BIOLOGY

I. ARTICLES PUBLISHED IN BOOKS AND JOURNALS.

A. Full-length published articles.

N.N. Aronson, Jr. Glycosylasparaginase: Molecular Medicine. IN: T.E. Creighton (Ed) The Encyclopedia of Molecular Medicine. John Wiley & Sons, New York, NY, Vol. 2, pp. 1494-1496 (2001).

S. Barik. (1) Microarrays Beyond Reach, 15:4; and (2) On Humans and Other Species, 16:6. The Scientist (2001).

V. Bitko and S. Barik. An Endoplasmic Reticulum-Specific Stress-Activated Caspase (Caspase-12) Is Implicated in the Apoptosis of A549 Epithelial Cells by Respiratory Syncytial Virus. J. Cell Biochem. 80:(3)441-454 (2001).

D.A. Dean, G. Urban, I.V. Aragon, M. Swingle, B. Miller, S. Rusconi, M. Bueno, N.M. Dean, and R.E. Honkanen. Serine/Threonine Protein Phosphatase 5 (PP5) Participates in the Regulation of Glucocorticoid Receptor Nucleocytoplasmic Shuttling. BMC Cell Biology 2:(1)6 (2001).

S. Dobson, V. Bracchi, D. Chakrabarti, and S. Barik. Characterization of a Novel Serine/Threonine Protein Phosphatase (PfPPJ) From the Malaria Parasite, *Plasmodium falciparum*. Mol. Biochem. Parasitol. 115(1):29-39 (2001).

J.H. Heidecker, U.K. Nair, and J.D. Funkhouser. A HNF-3 Binding Element in the APN Promoter Is Required for High-level Lung Expression. IN: S. Mizutani, A.J. Turnek, S. Normura, and K. Ino, (Eds). Cell-Surface Aminopeptidases: Basic & Clinical Aspects. Elsevier, Amsterdam, pp. 345-349 (2001).

Honkanen, R.E. Glucocorticoid Receptor Agonist and Decreased PP5 Expression. 09/282,736. U.S. Patent # 6,235,891 (2001).

A. Hossain, S. Barik, and P. Kulkarni. Lack of Significant Morphological Differences Between Human X and Y Spermatozoa and Their Precursor Cells (Spermatids) Exposed to Different Prehybridization Treatments. J. Androl. (1)22:119-123 (2001).

M.G. Nair, M. Fayard, A. Amato, J. Lariccia, J. Mallett, S. Miles and R.L. Kisliuk. Metabolism Based Antifolate Drug Design MDAM and M-Trex. IN: S.K. Gupta (Ed.) Pharmacology and Therapeutics in New Millenium. Narosa Publishing House, New Delhi, India, pp. 204-212 (2001).

Å. Sjöholm, P-O. Berggren, and R.E. Honkanen . Effects of Second Messengers on Serine/Threonine Protein Phosphatases in Insulin-Secreting Cells. Biochem. Biophys. Res. Comm., 283(2):364-368 (2001).

G. Urban, T. Golden, I.V. Aragon, J.G. Scammell, N.M. Dean, and R.E. Honkanen. Identification of an Estrogen-inducible Phosphatase (PP5) That Converts MCF-7 Human Breast Carcinoma Cells into an Estrogen-Independent Phenotype When Expressed Constitutively. J. Biol. Chem. 276(29):27638-27646 (2001).

B. Articles in Press

S. Barik. Megaprimer PCR: The First Decade. PCR Cloning Protocols (2nd Edition), Humana Press, NJ (2001).

J.G. Dubuisson, W.S. Murph, S.R. Griffin, and J.W. Gaubatz. Cytosolic Enzymes That Activate the Cooked Meat Mutagen Metabolite N-Hydroxyamino-1-Methyl-6-Phenylimidazol[4,5,-b]Pyridine. (N-OP-PhIP). J. Nutr. Biochem. (2001).

T. Golden, N.M. Dean, and R.E. Honkanen. The Use of Antisense Oligonucleotides: Advantages, Controls and Cardiovascular Tissue. Microcirculation (2001).

M.G. Nair. Metabolically Inert Non-Classical Quinazoline-Based DHFR Inhibitors: Potent Anti-Microbial Agents. U.S. Provisional Patent (2001).

M.G. Nair. Tumor Selective Metabolically Inert Folate Analog Platinum Drug Conjugates. U.S. Provisional Patent (2001).

II. PUBLISHED ABSTRACTS

A. Amato, J. Mallett, M. Fayard, R. Mukerjee, N. Ahamad, S. Miles, R.L. Kisliuk, and M.G. Nair. Metabolically Inert Non-classical Quinaazoline-Based Inhibitors of Dihydrofolate Reductase. Proc. Am. Assoc. Cancer Res. 42:293 (1575) (2001).

V. Bitko and S. Barik. Respiratory Syncytial Virus (RSV) Infection Causes Apoptosis of Lung Epithelial Cells Via a Cytoplasmic Pathway Dependent on Caspase-3 and Uncoupled From NF-Kappa B Activation. Proc. Am. Soc. Virl. 19th Mtg., p.157 (2000).

J.W. Gaubatz, J.G. Dubuisson, R. Southard, and D.L. Dyess. Effects of Resveratrol in Cooked Food Mutagen Activation by Human Mammary Gland Epithelial Cells and Enzymes. FASEB J. 15:A287 (2001).

J.W. Gaubatz, W.S. Murph, Jr., and J. Dubuisson. Metabolism of Heterocyclic Amines by Mammalian Enzymes: Mutagen Activation. FASEB J. 15:A238 (2001).

R.E. Honkanen, I.V. Aragon, G.Urban, T.A. Golden, J.G. Scammell, and N.M. Dean Identification of an Estrogen Responsive Protein Phosphatase That Is Critical for Human Breast Carcinoma Cell Growth and Converts MCF-7 Human Breast Carcinoma Cells From an Estrogen-Dependent to an Estrogen-Independent Phenotype When Over Expressed. Am. Assoc. Cancer Res., Molecular Biology and New Therapeutic Strategies: Cancer Research in the 21th Century AACR Proc., B0:3 (2001).

R.E. Honkanen, T.Golden, I.V. Aragon, G. Urban, T.A. Golden, J.G. Scammell, and N.M. Dean Identification of an Estrogen Responsive Protein Phosphatase (PP5) That Aids Human Cell Growth and Affords Estrogen-Dependent Cells With the Ability to Proliferate Without Estrogen. 11th Int. Conf., Second Messengers and Phosphoproteins, 6:23 (2001).

L. Liu, S. Queener, and M.G. Nair. Anti-*Pneumocystis carinni* and Anti-Tumor Activity of Certain Pteridine-Based Metabolically Inert Inhibitors of Dihydrofolate Reductase. Proc. Am.. Assoc. Cancer Res. 42:293 (#1576) (2001).

J. Mallett, A. Amato, M. Fayard, S. Baliga, T. Russell, K. Marziarz, M. Ratnam, and M.G. Nair. Folate Receptor Mediated Anticancer Drug Targeting. Proc. Am. Assoc. Cancer Res. 42:137 (#740) (2001).

M.G. Nair, J. Mallett, A. Amato, M. Fayard, S. Baliga, T. Russell, K. Marziarz, and M. Ratnam. Folate Receptor Binders: Binding of Folate and Pteroate Analogs to FR and Frβ. Proc. Am. Assoc. Cancer Res. 42:376 (#2024) (2001).

M.G. Nair and R.L. Kisliuk. Metabolism Blocked Antifolates, 3: Enantiomers of 4'-Methylene-5,8-10-Trideazamminopterin (M-Trex). Proc. Am. Assoc. Cancer Res. 42:294 (#1583) (2001).

III. BOOKS PUBLISHED

None.

IV. PRESENTATIONS

N.N. Aronson, Jr. Unique Reaction of Family 18 Lysosomal Chitobiase: Comparison to *S. marcescens* Chitinase A. Centre National de la Recherche Scienftifique, Marseille, France (2001).

S. Barik. Signaling Pathways in Host-Pathogen Interaction, ViroPharma, Inc., Philadelphia, PA (2000).

S. Barik. Functional Genomics of Host-Pathogen Interaction. University of Alabama at Birmingham, Birmingham, AL (2001).

S. Barik. Common Pathways of Interaction Between Mammalian Cells and Pathogens: From Virus to Gingivalis to Protozoa. Kyushu Dental College, Narita, Japan (2001).

R.E. Honkanen. An Estrogen Responsive Phosphatase That Converts Human Breast Carcinoma Cells From an Estrogen-Dependent to an Estrogen-Independent Phenotype. Marshal Flight Center (NASA), Huntsville, AL (2001).

R.E. Honkanen. Identification and Characterization of an Estrogen Responsive Protein Phosphatase (PP5) That Aids Human Cell Growth and Affords Estrogen-Dependent Cells With the Ability to Proliferate Without Estrogen. Janssen/Rigel Protein Phosphatase Mini-Symposium, San Francisco, CA (2001).

R.E. Honkanen. An Estrogen Responsive Protein Phosphatase That Converts MCF-7 Human Breast Carcinoma Cells From an Estrogen-Dependent to an Estrogen-Independent Phenotype. Am. Assoc. Cancer Res.; Molecular Biology and New Therapeutic Strategies: Cancer Research in the 21th Century. Maui, HI (2001).

R.E. Honkanen. Identification of an Estrogen Responsive Protein Phosphatase (PP5) That Aids Human Cell Growth and Affords Estrogen-Dependent Cells With the Ability of Proliferate Without Estrogen. 11th Int. Conf., Second Messengers and Phosphoproteins, Melbourne, Australia (2001).

M.G. Nair. Metabolism Blocked Antifolates, 3: Enantiomers of 4'-Methylene-5,8-10-Trideazamminopterin (M-Trex). 92nd Annual Meeting American Association for Cancer Research, New Orleans, LA (2001).

V. NATIONAL PROFESSIONAL RECOGNITION.

Biochemistry faculty participated on a number of national committees this past year. Dr. S. Barik was a reviewer for several journals: *BioTechniques, Journal of Virology*, and *Biochemical Pharmacology*. Dr. Jane Funkhouser served as an Ad hoc reviewer for the NIH Lung Biology & Pathology Study Section; Dr. James Gaubatz reviewed postdoctoral fellowship grants for the National Institutes of Health, Division of Research Grants Study Section, and was a Member of the National Scientific Council of the American Federation for Aging Research. Dr. Richard Honkanen is a member of the American Society for Biochemistry and Molecular Biology, the American Association for the Advancement of Science, the Association for Research in Vision and Ophthalmology, the International Society on Toxicology, the American Association for Cancer Research, and the American Heart Association. Dr. Aronson is President-elect of the Association of Medical and Graduate Departments of Biochemistry and served as a representative on the National Caucus of Basic Biomedical Science Chairs.

VI. BRIEF SUMMARY OF DEPARTMENT ACTIVITIES AND PROGRESS.

Biochemistry Graduate students achieved excellent progress in the 2000-2001 academic year. Mark Swingle (R. Honkanen's laboratory) was awarded a 3-year predoctoral fellowship from NASA. Lauren Amable (Central Florida), and Sonya Urnaway (West Florida) are our new biochemistry Ph.D. graduate students for Fall 2001.

Two medical students completed summer research projects in Biochemistry. David Cherry a second-year student made an oral presentation"Caspase-Dependent Apoptosis of Gum Epithelial Cells Infected with *Porphyromonas gingivalis,"* based on work with Dr. S. Barik; Suzanne Hicks, a first-year student, spoke on "Aberrant Mitotic Spindle Formation in A549 Cells Treated With Cantharidin and Okadaic Acid," from studies done with Dr. R. Honkanen. Sean W. Dobson defended his Ph.D. dissertation in March 2001. His title was "Characterization of the Protein Phosphatases of Plasmodium Falciparum With Emphasis on PFPPJ and the Inhibitor Protein ARP." Dr. Dobson did his studies under the direction of Dr. Sailen Barik. Dr. Vira Bitko, a Postdoctoral Fellow in Dr. Sailen Barik's laboratory, received a three-year National Research Service Award from NIH entitled "Role of ER Stress in RNA Virus-Induced Apoptosis."

The Biochemistry Department spent a significant effort trying to recruit a new faculty member in the area of cancer research. Currently, the position remains open. A number of Biochemistry faculty are involved in patents and other aspects of university/industry collaborations. Dr. Honkanen continues work on antisense RNA drugs directed at regulating protein phosphatases with ISIS Pharmaceuticals in Carlsbad, California. Dr. Honkanen is also working with NASA on several projects involving protein phosphatases. Several of Dr. Honkanen's patents have now been licensed for development by pharmaceutical companies.

Educational efforts and accomplishments of the Biochemistry faculty were recognized by the College of Medicine graduating class of 2000. Dr. Roger Lane and Dr. Richard Honkanen were honored for excellence in teaching at the Senior Honors Convocation. The Class of 2001 awarded Dr. Roger Lane with the Best Basic Science Professor award. The Medical Alumni Association presented Dr. Roger Lane with the Distinguished Service Award at the annual Medical Alumni Retreat held at Orange Beach this past spring.