WINSTON A ANDERSON -

Education

B.S., Zoology, Howard University (1961)

Ph.D., Brown University (1966)

Teaching

Senior Seminar (493)

Advanced Cytology (416)

Research

Mechanisms of action of estrogen

Reproductive Biology

Awards, Grants and Service

Howard Hughes Medical Institute Professor (2006-Present)

American Society for Cell Biology

Society for Repoductive Biology HHMI Laboratory Training for Undergraduates

MIRT grant from NIH

Research Detailed:

The Laboratory of Cellular and Reproductive Biology is a multidisciplinary laboratory in which students and faculty are engaged in research in the following topics:

Mechanism of action of estrogen; synthesis of estrogen-induced peroxidase as a marker for estrogen action in estrogen-dependent breast tumors and normal uterine endometrium; immunocytochemical localization of oncogene and signal transduction proteins in estrogen-dependent and independent breast cancer cell lines; growth of hormone-dependent tumors in athymic nude mice; binding and signal transduction induced by human chorionic gonadotropin (hCG) in corpus luteal cells; localization of enzymes and DNA in mitochondria of corpus luteum after hCG treatment; immunocytochemical localization of apoptotic proteins in cultured cell lines; androgen-induced synthesis of bone growth factors; synthesis and utilization of blood substitutes (stroma free hemoglobin); internalization of trypanosomes in to macrophages in vitro; binding of malarial parasites to cultured endothelial cells.

The Laboratory is fully equipped to perform most modern cell and molecular biology techniques, including: transmission electron microscopy; microscopy; videomicroscopy; immunocytochemistry; autoradiography; ultracentrifugation; scintillation counting; HPLC; electrophoresis; PCR research, etc. Students collaborate with faculty in the Laboratory of Cellular Biology and Embryology (Eckberg), Endocrine Laboratory (Hollis), and the Cancer Center Laboratory (Asseffa). Research in this laboratory is supported by a NSF RO1 sub-contract with Brown University. Students also collaborate with scientists at the NIH, Johns Hopkins, Brown University, University of Pittsburgh, University of Illinois at Chicago.

Training: this laboratory has produced six of the eight Doctorates graduated from the Department of Biology since 1988. Graduates are gainfully employed or pursuing postdoctoral studies at research-intensive universities. The Laboratory accommodates 4 predoctoral trainees currently. To enter this laboratory students must have undergraduate courses in cell biology.

Dr. Anderson is primarily interested in the global laboratory experience for minority students. Through a MIRT grant from the NIH, undergraduate and predoctoral students receive research training in cell and molecular biology at outstanding foreign research sites, including laboratories at the Karolinska, Paris, Lausanne, Lyon, Munich, Milan, Sienna, Chiba in Japan, and Ethiopia, Ghana, Mali, Cameroons, and the Eastern Cape of South Africa. This program is co-sponsored by the Leadership Alliance program at Brown University.

Under the Professor for the Future Program, minority students at HBCUs with terminal Masters degrees, are given opportunities to pursue the Ph.D. at Howard and other mainstream universities in the Leadership Alliance (23 universities including 8 Ivy schools).

Students are encouraged to pursue summer research and training through the Summer Research Opportunities Program (SROP) at the University of Illinois School of Medicine at Chicago, and the Gateways to the Future program at Cornell Medical School. Students and faculty are also encouraged to conduct research and take courses in cell, development and molecular biology at the Marine Biological Laboratory, Woods Hole, Mass.

Selected Publications

Daniel A. Oyugi, Folahan O. Ayorinde, Ayele Gugssa, Adrian Allen, Ernest B. Izevbigie,

Broderick Eribo, and Winston A. Anderson, 2011. Biological activity and mass spectrometric

analysis of Vernonia amygdalina fractions. J. Biosci. Tech. 2(3) 287-304.

Anderson WA, Banerjee U, Drennan CL, Elgin SC, Epstein IR, Handelsman J, Hatfull GF, Losick R, O'Dowd DK, Olivera BM, Strobel SA, Walker GC, Warner IM. Science education. Changing the culture of science education at research universities. Science. 2011 Jan 14;331(6014):152-3.

Nana O. Wilson , Fatou K. Ceesay , Samuel A. Obed , Andrew A. Adjei , Richard K. Gyasi ,

Patricia Rodney ,Yassa Ndjakani , Winston A. Anderson , Naomi W. Lucchi , and Jonathan K.

Stiles, 2011. Intermittent Preventive Treatment with Sulfadoxine-Pyrimethamine against

Malaria and Anemia in Pregnant Women. Am. J. Trop. Med. Hyg., 85(1):12-21.

Allen AD, Anderson WA, Ayorinde FO, Eribo BE. Biosynthesis and characterization of copolymer poly(3HB-co-3HV) from saponified Jatropha curcas oil by Pseudomonas oleovorans. J Ind Microbiol Biotechnol. 2010 Aug;37(8):849-56.

Perot, Terry, Gugssa, Ayele, Eckberg, William, Ahluwalia, Balwant, Baccetti, Baccio and

Anderson, Winston. 2010. Does actomyosin supplement the axoneme in mammalian sperm.

International J. Biology 2: 29-34.

Wanga, J., W.R. Eckberg and W.A. Anderson. 2001. Ultrastructural differentiation of cardiomyocytes of the zebrafish during the 8-26-somite stages. J. Submicroscop. Cytol. Pathol. 33,275-287.

Balan, K.V., V.W. Hollis, W.R. Eckberg, F. Ayorinde, J.D. Karkera, J.H. Wyche and W.A. Anderson. 2001. Cathepsin B and complement C3 are major comigrants in the estrogen-induced peroxidase fraction of rat uterine fluid. J. Submicroscop. Cytol. Pathol. 33,221-230.

Mohamood, A.S., Gyles, P., Balan, K.B., Hollis, V.W., Eckberg, W.R., Asseffa, A., Han, Z., Wyche, J.H., and Anderson, W.A. 1997. Estrogen Receptor, Growth Factor Receptor and Protooncogene Protein Activities and Possible Signal Transduction Crosstalk in Estrogen Depenedent and Independent Breast Cancer Cell Lines, J. Submicroscop. Cytol. Pathol. 29, 1-17.

Eckberg, W.R. and Winston A. Anderson, 1996. The Initiation of Development in Chaetopterus, In, Progress in Developmental Biology (Ed. J.R.Colier), Vol. VIII in Reproductive Biology of Invertebrates (Eds. K.G. Adiyodi and R.D. Adiyodi), Wiley. (invited review)

Eckberg, W.R. and Winston A. Anderson, 1995. Cytoskeleton, Cellular Signals, and Cytoplasmic Localization in Chaetopterus Embryos In, Role of the Cytoskeleton in Early Development (Ed. D.G. Capco). Vol. 31 In Current Topics in Developmental Biology, pp 5-39

Millis, R., Barber, J.D., Anderson, W.A. and Dehkordi, O. 1995. Effects of stroma-free hemoglobin and perfluorochemical combination on ultrastructure and function of the isolated rat kidney. Renal Failure 17: 675-687

Bhattacharyya, N., Ramsammy, R., Eatman, E., Hollis, V.W., and Anderson, W.A. 1994. Protooncogene, growth factor, growth factor receptor, and estrogen and progesterone receptor gene expression in the immature rat uterus after treatment with estrogen and Tamoxifen. J. Submicroscopic Cytol. & Pathol. 26: 147-162.

Anderson, W.A., Matsumoto, L.H., Melo, A., Wyche, J.H., Perotti, M.E. and Ryan, R.J. 1988. Replication of mitochondrial DNA in the gonadotropin-primed corpus luteum of the rat. J. Submicrosc. Cytol. Pathol. 20: 477-489.

Millis, R.M., Barber, J.D., Anderson, W.A., Toussaint, R-M., Baker, F.W., Hackley, B.E. 1992. Amelioration of nephrotoxicity associated with synthetic oxygen transport media. J. Natl. Med. Assoc. 84: 773-777.

MacManaway, M.E., Eckberg, W.R. and Anderson, W.A. 1987. Characterization and hormonal regulation of casein kinase II activity in heterotransplanted human breast tumors in nude mice. Exptl. Clin. Endocrinol. 90: 313-323.

Perotti, M.E., Robinson, T.J., Murray, S., Ryan, R.J., Wyche, J.H., Eckberg, W.R. and Anderson, W.A. 1987. Interactions of gonadotropins with corpus luteum membranes. XI. Internalization of 125I-hCG in the rat. Cellular and Molecular Biol. 33: 247-264.

Anderson, W.A., Gabriel, B.W., Nerurkar, S.G., Wyche, J.H., Yates, P.E. and Hanker, J.S. 1986. Peroxidases induced in rat by estrogen administration II. Cytochemical and biochemical heterogenity. J. Submicroscopic Cytol. 18: 683-690.