



RESEARCH HISTOLOGY CORE

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STAFF

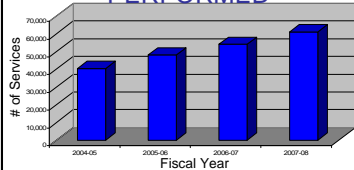


Kenneth S. R. Tung, M.D., Director
Sheri VanHoose, MLT (NCA), Lab Manager
Joyce Nash, Lab Specialist Senior
Virginia Rublanes, B.S. Medical Technologist

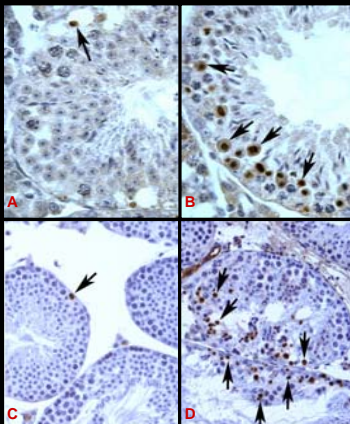
SERVICE AND ANNUAL WORKLOAD (2006-7)

Embed tissue in paraffin	14,000 blocks
Paraffin sections	25,000 slides
Frozen sections	6,000 slides
Hematoxylin and eosin stain	11,000 slides
Special stains	500 slides

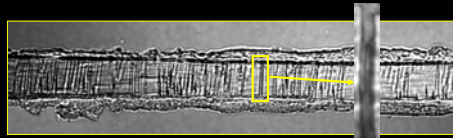
RESEARCH HISTOLOGY CORE SERVICES PERFORMED



INCREASED APOPTOTIC CELLS IN ISCHEMIA REPERFUSION AND BLOCKADE OF PHAGOCYTOSIS OF APOPTOTIC MALE GERM



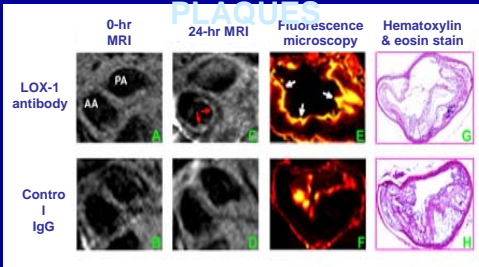
DEMONSTRATION OF GAP JUNCTION FORMATION BETWEEN ENDOTHELIAL CELLS AND SMOOTH MUSCLES IN CO-CULTURE SEPARATED BY A FILTER



Study was based on frozen sections of a filter with endothelial cells grown on the top and smooth muscle cells grown on the bottom. (Contributor: Brant Isakson)

Publications:
 *Isakson BE, Duling B. *Circ Res.* 2005 97:44-51, 2005.
 *Rigueron XF, Isakson BE, Duling BR. *Hypertension.* 48:804-11, 2006.
 *Isakson BE, Ramos SI, Duling B. *Circ Res.* 100:246-54, 2007.

IN VIVO MOLECULAR IMAGING OF ATHEROSCLEROTIC PLAQUES



Magnetic Resonance Detection Of Labeled Antibody To Oxidized LDL Receptor LOX-1 In Vivo. Aortic atherosclerotic plaques were induced in LDLR^{-/-} mice on atherogenic diet. The plaques were probed by liposomes decorated with anti-LOX-1 antibody linked to gadolinium and Dil fluorescence markers.

(A-D): MRI at 7.0T after iv injection of 150 µl of LOX-1 antibody probes consistently detected strong post-contrast signal on atherosclerotic plaques at 24 hr (red arrows in C).
 (E-E): Frozen sections studied by fluorescence microscopy localize the fluorescent probes on aortic wall (In Frame E, white arrows indicate LOX-1 antibody binding to atherosclerotic plaques as yellow fluorescence).
 (G,H): Comparable atherosclerotic lesions present in experimental and control mice by histology and hematoxylin and eosin stain.

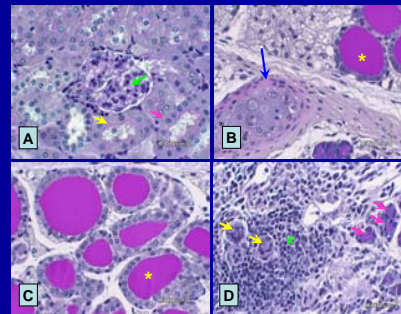
Dr. Dayuan Li, Cardiology Division of Internal Medicine Department (Contributors: Drs. Alexander Kilbanov, Christopher M Kramer, Roy J Rene, David K Glover, George A Beller, Craig H Meyer)

Apoptotic cells in testes shown in Bouin-fixed, paraffin-embedded histology sections stained by apostain. (Contributor: Jeffrey Lysiak)

- A) Control testis; arrow points to rare apoptotic germ cells.
- B) Testis 24 hrs post ischemia-reperfusion injury (testicular torsion) showing many apoptotic germ cells.
- C) Interstitial microinjection of testis with saline; few apoptotic cells.
- D) Interstitial microinjection of testis with a peptide that blocks engulfment of apoptotic cells by Sertoli cells (TSR1 peptide from the Ravichandran lab).

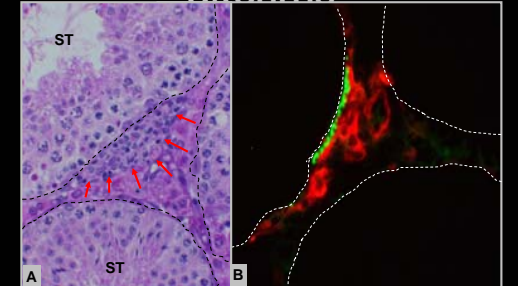
Publications:
 • Lysiak JJ, Zheng S, Woodson R, Turner TT *Biol Reprod* 2001 65:718-725
 • Lysiak JJ, Turner SD, Nguyen OA, Singbartl K, Ley K, Turner TT, et al *Cell Tissue Res* 2007 328:411-419.
 • Lysiak JJ in collaboration with Daeho Park and Kodi Ravichandran (C and D).

PERIODIC ACID SCHIFF STAIN (PAS)



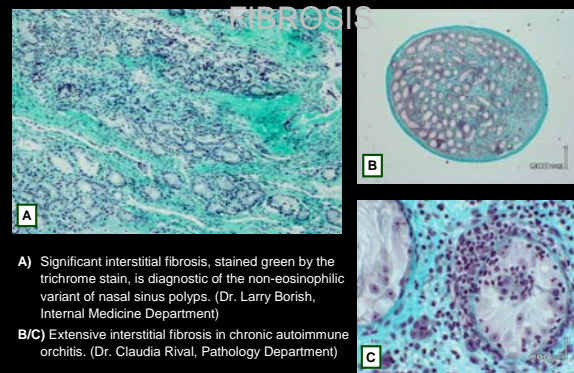
- A) Kidney: PAS stain marks the glomerular basement membrane (green arrow), the tubular basement membrane (red arrow), and the brush border of proximal convoluted tubule (yellow arrow).
- B/C) Newly formed cartilage (B, blue arrow) and thyroid colloid (B and C, yellow asterisks) stain positively with the PAS stain.
- D) Autoimmune tracheal adenitis: PAS+ mucus secretion is detected in normal, uninvolved glands (red arrows), but is absent in glands (yellow arrows) associated with inflammatory cells (green asterisk).

CO-LOCALIZATION OF IMMUNE COMPLEX AND DENDRITIC CELLS IN AUTOIMMUNE ORCHITIS



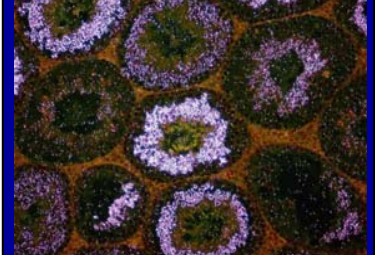
- A) Red arrows indicate unique clusters of T cells and innate cells (dendritic cells, macrophages) on the seminiferous tubules (ST) at the pre-clinical stage of autoimmune orchitis (hematoxylin and eosin stain).
- B) Testis autoantigen and autoantibody also form immune complexes on the surface of seminiferous tubules (outlined white) - detectable as "granular" patches of complement C3d+ deposition (green fluorescence). Juxtaposed against the immune complex deposits are CD11c+ dendritic cells (red fluorescence).

TRICHROME STAIN FOR TISSUE FIBROSIS



- A) Significant interstitial fibrosis, stained green by the trichrome stain, is diagnostic of the non-eosinophilic variant of nasal sinus polyps. (Dr. Larry Borish, Internal Medicine Department)
- B/C) Extensive interstitial fibrosis in chronic autoimmune orchitis. (Dr. Claudia Rival, Pathology Department)

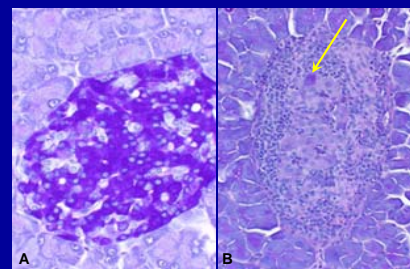
IN SITU HYBRIDIZATION DOCUMENTS STAGE-SPECIFIC EXPRESSION OF MURING SP10 mRNA IN MALE HAPLOID TESTICULAR GERM CELLS



Contributor: Mark Stoler

Publications:
 • Reddi P, Castillo J, Klotz K, Flickinger C, Herr J. *Gene.* 147(2):189-95, 1994.
 • Reddi PP, Neaby-Hansen S, Aguonik I, Tsai JY, Silver LM, Flickinger CJ, Herr JC. *Biol Reprod.* 63:873-81, 1995.

THE ALDEHYDE FUSCIN STAIN IDENTIFIES INSULIN-SECRETING BETA CELLS IN PANCREATIC ISLETS



- A) Insulin-producing beta cells of normal pancreatic islets stain deep purple with the aldehyde fuscine stain.
- B) Pancreas of non-obese diabetic mice with glycosuria has invasive insulinitis and depletion of aldehyde fuscine-positive beta cells (arrow points to a residual beta cell).

MISSION STATEMENT

The Research Histology Core supports all research projects that depend on tissue sections of high quality. The core prepares a large number of paraffin and frozen tissue sections for over 80 investigators of essentially all research disciplines at UVA. Most tissue sections are used for routine H and E histological sections, prepared by the core. Other tissue sections are used in more sophisticated studies by investigators, as illustrated here.

Prepared by: Karen Wheeler