Molecular Medicine

Podcast Transcript
Episode 20

Hello and thanks for downloading us. It is my pleasure to welcome you to the very first podcast for the biomed- Hello everyone welcome back to "Mollie Medcast," the podcast for the biomedical journal, *Molecular Medicine*. My name is Margot Puerta. I'm the Associate Editor here at *Molecular Medicine* and your host for this podcast episode. In this week's podcast: "Knee-Deep In Meniscal Degeneration," "Fanconi Anemia: Implications For Carcinogenesis," "LA And HBO Are Quite A Pair," and "Trying To Untangle Alzheimer's Disease."

Before we get on with that, let me remind you about what our goal here at *Molecular Medicine* is. Our mission is to publish novel work that's concerned with understanding the pathogenesis of disease at the molecular level, which may lead to the design of specific molecular tools for used for diagnosis, treatment and prevention. If you're interested in submitting a manuscript to the journal, please visit our website for information, www.molmed.org. Alright, so let's get started with the papers for this podcast. The first paper in this "Mollie Medcast" episode is:

Knee-Deep In Meniscal Degeneration
Menisci, which are located in your knee, are wedge-shaped half moon structures made of cartilage. Menisci can fail due to biomechanical or biochemical cues. And when they fail due to biochemical cues it is often attributed to osteoarthritis of the knee. The molecular events underpinning the pathogenesis of meniscal degeneration remain elusive. This paper is entitled, "Involvement of the p38 MAPK–NF-κB Signal Transduction Pathway and COX-2 in the Pathobiology of Meniscus Degeneration in Humans." In it, Dr. Papachristou and coauthors immunohistochemically examined several components believed to be involved in meniscal degeneration. They looked at the expression of p38 MAPK, its phosphorylated/activated form (p-p38), its target NF-κB, as well as COX-2 in ruptured menisci. Papachristou and colleagues also investigated the involvement of these molecules in meniscal degeneration development. The findings demonstrate increased expression of elements of the p38-NF-κB pathway and COX-2 in disintegrated fibrocartilage. This suggests a role for these molecules in the pathobiochemistry of meniscal degeneration and consequential rupture.

Fanconi Anemia: Implications For Carcinogenesis
Fanconi anemia is a genetic disorder that predisposes affected individuals to hematopoietic failure, birth defects, leukemia and squamous cell carcinoma of
the head, neck and cervix. Pre-cancerous legions are believed to trigger the DNA damage response. The title of the manuscript is, "Upregulated ATM Gene Expression and Activated DNA Crosslink-Induced Damage Response Checkpoint in Fanconi Anemia: Implications for Carcinogenesis." Dr. Yamamoto and colleagues focused on the DNA damage response in Fanconi anemia and its putative role as a checkpoint barrier to cancer. They describe a processing defect that leads to general DNA damage response upregulation and they suggest that cancer in Fanconi anemia may arise from a selection for cells that escape from a chronically activated DNA damage response checkpoint.

LA And HBO Are Quite A Pair
Non-healing ulceration is a serious complication of diabetes mellitus, conditions such as paralysis that inhibit movement, as well as aging. Wound healing is a complex process and chronic wounds arise from recurrent or chronic injuries but may also be the result of low levels of bacterial contamination. These injuries often fail to

heal because persistently elevated levels of proinflammatory cytokines lead to high concentrations of proteases, which in turn degrade growth factors and matrix metalloproteinase proteins (MMPs) essential to normal wound healing. Administration of hyperbaric oxygen (HBO) therapy and α-lipoic acid (LA) – has been used for the successful treatment of non-healing wounds by inhibiting reactive oxygen species and inflammatory mediators, and this accelerates ulcer regression. Dr. Renata Alleva and her colleagues evaluated the effect of α-lipoic acid on gene expression in chronic wound patients treated with hyperbaric oxygen therapy. The title of their manuscript is, "α-Lipoic Acid Modulates Extracellular Matrix and Angiogenesis Gene Expression in Non-Healing Wounds Treated with Hyperbaric Oxygen Therapy." Results show that α-lipoic acid supplementation in combination with hyperbaric oxygen therapy downregulated inflammatory cytokines and growth factors, in turn affecting expression of matrix metalloproteinase proteins, promoting the healing process.

If you are interested, the North Shore-LIJ Health System on Long Island (http://www.northshorelij.com) has over 1000 clinical research studies going on right now in a variety of diseases. So if you are interested in finding out more about this, you can call 516-562-4874 for information and ask for Ruth. That number again in case you need it is 516-562-4874.

And now for our March-April cover story:

Trying To Untangle Alzheimer's Disease

Alzheimer's disease (AD) increasingly affects the elderly population and now represents the third most common cause of death among aged adults. As the average life expectancy increases, the number of subjects with Alzheimer's disease is expected to rise almost exponentially, quadrupling by the year 2050. A complete understanding of the deleterious effects of amyloid is needed to understand the pathophysiology of Alzheimer's disease. Dr. Gregory Van Vickle and his colleagues used a combination of histological, immunohistochemical, biochemical and mass spectrometric methods to examine the structure and morphology of the amyloid species produced in a patient with a presenilin mutation. The paper title is, "Presenilin-1 280Glu□Ala Mutation Alters C-terminal APP Processing Yielding Longer Aβ Peptides: Implications for Alzheimer's Disease." Their results show increased amounts of CT99 and Aβ42 peptides as well as substantially longer Aβ peptides. These findings may lead to the design of therapeutic interventions for Alzheimer's disease.

That's it for this week's episode of "Mollie Medcast." You can find all these papers and many more on our website, www.molmed.org that's www.m-o-l-m-e-d.org. For questions or comments regarding this podcast, please send me an email at: margot@molmed.org. If you're taking a coffee break and have a moment, check out our podcast webpage www.molmed.org/podcast.You can play around with our frappr map and see where other *Molecular Medicine* readers are coming from. If you want, you can help us expand our community by adding your pin to the map. If you're not shy you can even include your picture.

This podcast is available on molmed.org and is up in iTunes. *Molecular Medicine* is published bimonthly by the Feinstein Institute for Medical Research. From Long Island, New York, this is margot@molmed.org, thanks for listening!

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