

Molecular Medicine

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Associate Editor
The Feinstein Institute for Medical Research
Manhasset, NY, USA

Mollie Medcast

Episode 17 Transcript: Malaria Associated Anemia, Hereditary Hemochromatosis, Antiinflammatory Strategies

Hello and thanks for downloading us! Welcome back to “Mollie Medcast,” the podcast for the biomedical journal, *Molecular Medicine*. This is Margot Gallowitsch-Puerta. I’m the Associate Editor here at *Molecular Medicine* and your host for this podcast episode.

In this week’s podcast: “Malaria-Associated Anemia Won’t Take A Complement,” “Misbehaving Mitochondria,” and “Can Antiinflammatory Strategies Combat Insulin Resistance?”

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 concerned with understanding the pathogenesis of disease at the molecular level, which may lead to the design of specific molecular tools for diagnosis, treatment and prevention. Our journal was introduced in 1994 to serve as a forum through which scientists and researchers could communicate recent discoveries to a multi-disciplinary, international audience interested in understanding and curing disease.

Stay tuned at the end of the podcast for an announcement about the Molecular Medicine: Applying Current and Emerging Technologies symposium, taking place at the end of March.

Alright, so let’s get started with the papers for this podcast. The first paper in this “Mollie Medcast” episode is:

Malaria-Associated Anemia Won’t Take A Complement

Plasmodium falciparum is an intracellular human parasite transmitted by the *Anopheles* mosquito. *P. falciparum* malaria causes 1-2 million deaths per year, many occurring as a result of complications such as severe anemia and cerebral malaria. The parasite can directly mediate erythrocyte destruction, but the degree of anemia observed in severe cases cannot be explained solely by this phenomenon. Moreover, the lifespan of uninfected erythrocytes is decreased in infected persons suggesting that soluble factors influence erythrocyte survival. In this work, Dr. Owuor investigated the complement regulatory protein machinery of red cells in children with severe malaria-associated anemia or SMA. The data indicate that deficiencies in complement regulator proteins in erythrocytes of children with SMA translate into declines in the immune complex binding capacity and increases in complement susceptibility. These results in conjunction with differences observed between children with SMA and cerebral anemia suggest that losses in complement receptor 1 and CD55 contribute to increased destruction of erythrocytes in children with SMA. Future investigation into this mechanism of action may lead to additional therapeutic targets for use in malaria-associated anemia.

Misbehaving Mitochondria

Hereditary hemochromatosis is a common autosomal recessive disorder of iron metabolism. Patients with hereditary hemochromatosis accumulate large quantities of iron and often have diabetes, although this pathogenesis is not well understood. Mitochondria play a crucial role in apoptosis and glucose-stimulated insulin secretion. Dr. Hani Jouihan and colleagues used a combination of knockout mice and molecular techniques to test their hypothesis that increased levels of iron may result in mitochondrial dysfunction. Their paper is entitled, “Iron-Mediated Inhibition Of Mitochondrial Manganese Uptake Mediates Mitochondrial Dysfunction In A Mouse Model Of Hemochromatosis.” Their data suggest that a novel mechanism of iron-induced cellular dysfunction in mitochondria, namely altered uptake of transition metals such as manganese, may play a role in

the onset of hereditary hemochromatosis and may also represent a therapeutic target for this disease.

And last in our line-up for this week we have a review article, its by Drs. Tilg and Moschen.

Can Antiinflammatory Strategies Combat Insulin Resistance?

The number of obese and overweight individuals has risen dramatically over the last two decades. Insulin resistance is the key primary defect underlying the development of type 2 diabetes, and it plays an essential role in this and other obesity-related diseases. Insulin resistance has also frequently been associated with a state of low-grade inflammation and is assumed to contribute to its development. In this review, Drs. Tilg and Moschen summarize the link between inflammation, anti-inflammatory strategies and insulin resistance.

Now I want to tell you a little bit about a symposium that's taking place at the end of March. It's called,

Molecular Medicine: Applying Current and Emerging Technologies

This new educational symposium will be at the Buena Vista Palace in the Walt Disney World Resort®. It will provide and overview of the current and emerging technologies that are changing the patterns of medical practice and moving us towards personalized medicine. Focuses include infections disease, hem/onc, pharmacogenomics and genetics. In conjunction with the symposium's director, Dr. Shahla Masood, we here at *Molecular Medicine* will produce a special focus issue featuring short reviews written by meeting attendees. We look forward to this partnership with the University of Florida and we hope to see you there!

That's it for this week's episode of "Mollie Medcast." You can find 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.

This podcast is available on molmed.org and is up on also up in iTunes. *Molecular Medicine* is published bi-monthly by the Feinstein Institute for Medical Research.

From Long Island, New York, this is margot@molmed.org, thanks for listening!

Written and Produced by Margot Gallowitsch-Puerta
Associate Editor, *Molecular Medicine*

Music: Opuzz.com

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