SHERNAN HOLTAN: My name is Shernan Holtan, MD. And I'm a fourth year hematology oncology fellow here at Mayo Clinic. Today we'll be discussing our review paper, which details some of the parallels between pregnancy and cancer. This review paper will be found in the November 2009 issue of *Mayo Clinic Proceedings.*

Both cancer cells and cells of the developing placenta have similarities in terms of the capacity for proliferation, invasion, angiogenesis, and immune modulation. It's this latter feature, immune modulation, that's most interesting to us and is the focus of some studies in our laboratory. Generally speaking, a Th1 bias means a pro-inflammatory response, whereas a Th2 bias means immunologic tolerance.

What's unique about both mid-gestation pregnancy and cancer is that they are both associated with Th2 polarity. However, in late gestation, a Th1 response is restored. This is in sharp contrast to what happens in the cancer patient, where a Th2 polarity really continues, and restoration of an effective inflammatory or anti-tumor response is very difficult.

There are many opportunities to study the unique parallels between pregnancy and cancer. Our particular focus is going to be on immune modulation that can occur both locally and systemically within a host. We're specifically focusing on parallels between pregnancy and metastatic melanoma.

But we do see that there are potential applications to a broad variety of malignancies as there is some degree of immune editing that occurs in most cancers. We hope to learn new ways of overcoming cancer associated tolerance by studying healthy pregnancies. And we also see potential applications for studying the reverse problem in the allogeneic stem cell transplant setting, where chronic and acute [INAUDIBLE] disease is a feared and very serious complication.

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