

scientific endeavors



James Olcese

A project is born

College of Medicine researcher James Olcese is a step closer to demonstrating there's a better way to treat common and serious health issues related to pregnancy.

When a pregnant Tallahassee woman exhibiting characteristic late-term contractions was admitted to Tallahassee Memorial Hospital late one Sunday evening in April, she represented the quantum leap from bench to bedside for Olcese's research.

"No pun intended, it was a baby step," Olcese said, describing what her arrival meant in his two-year quest to involve pregnant humans in his project.

Large or small, it's part of a necessary evolution in discovering safer, more effective methods to treat women experiencing preterm labor. Scientists are puzzled by the worldwide increase in the incidence of preterm labor – and early birth.

As reported in the Summer 2009 issue of FSU MED, Olcese has made significant discoveries strongly suggesting that melatonin, a hormone produced naturally in the brain, could stem the increase in preterm birth. It also could provide a better, safer way to induce labor when medically necessary.

First, he needed to see whether his theory about melatonin proved true when human mothers-to-be were included in the

research. Reaching that stage wasn't easy, but Olcese's first human subject arrived in timely fashion – on his 58th birthday.

The study also serves as one of the early projects in a College of Medicine-Tallahassee Memorial Hospital research partnership.

It has long been understood that the body produces more melatonin at night and that humans tend to give birth at night. Using that as the basis for his theory, Olcese developed a way to safely measure the link between uterine contractions and melatonin.

His team measures contractions through the night, but also interrupts the process during one stretch by using a large computer-monitor-sized lamp shining full-spectrum light.

"It gives off about the same amount of light as you'd experience on a summer's day outside. For someone in the middle of the night, it's a bright stimulus," Olcese said.

In that first case, and in several subsequent cases involving women in late-term pregnancy, Olcese's findings support his theory. When exposed to the light, his human subjects have shown a marked decrease in melatonin production. They've also shown a parallel reduction in uterine contractions.

"The project goal is to assess whether the uterine contractions during late-term pregnancy are influenced by changes in secretion of melatonin," Olcese said.

"Our idea is, if we can understand what allows for greater contractions at night, this gives us insight into the hormonal mechanism behind labor.

"We can use that information to develop ways of helping women either in inducing labor or, conversely, mechanisms that would prevent or slow the contractions a month or two earlier in the pregnancy."

In this case, indeed, the light bulb represents an idea well-conceived.