

## Lungs Help Regulate Clotting

Scientists from the Imperial College of London (ICL) may have uncovered a potential new way to regulate blood clotting, especially important for people with deep vein thromboses, blood clots in the legs, or hemophilia. The new research suggests that endothelial cells that line blood vessels in the lungs can regulate the formation of blood clots not only in the lungs but throughout the body. While it has been established for some time that the factor VIII (FVIII) protein necessary for blood clotting is manufactured in the liver, the discovery that the lungs play a role in the process is a fairly new area of investigation.

Investigators used microscopic and biochemical techniques to measure lung tissue and blood samples from patients at Imperial College Healthcare NHS Trust. They observed FVIII in the lung tissue and on the surface of blood vessel cells in the lungs. They also discovered that FVIII remains in the lungs with another key clotting protein, von Willebrand factor (VWF). VWF binds to FVIII, ensuring the protein's stability and function. Lastly, the research hints that the way in which the FVIII gene is decoded could be much more complex than once thought.

The findings of Claire Shovlin PhD and her team at the National Heart and Lung Institute at ICL, along with prior research on endothelial cells and clot formation, could form the basis for future research and new treatments that are more effective and produce fewer side effects. "Our study suggests that the blood vessels in the lung are playing a crucial role in altering how blood clots form in the body. This means it's really important for us to understand exactly how the behavior of the lung blood vessels might be affecting diseases where blood clotting is a factor," explained Shovlin. "Further research on how the lungs modify the clotting potential of the blood flowing through them could open up new avenues for treatments."

The study, "Endothelial Cell Processing and Alternatively Spliced Transcripts of Factor VIII: Potential Implications for Coagulation Cascades and Pulmonary Hypertension," was published online February 11, 2010, in the journal *PLoS ONE*. The Public Library of Science (PLOS) is a nonprofit organization of scientists and physicians committed to making the world's scientific and medical literature a freely available public resource.

Source: *Science Daily*, February 11, 2010