

4th World Congress on Cell Science & Stem Cell Research June 24-26, 2014 Valencia Conference Centre, Valencia, Spain

Human amnion epithelial stem cell therapy to correct acute liver failure and metabolic liver diseases

Roberto Gramignoli Karolinska University Hospital, Sweden

Our group has been promoting the translation of hepatocyte transplant technology from the bench to the clinic for the last 20 years. However, a severe shortage of useful liver tissues limits a wider application of this cellular therapy. Stem cell sources for hepatocyte transplants are needed. We previously reported that amnion epithelial cells (hAEC) from term human placenta express surface markers and genes characteristic of pluripotent stem cells. hAECs are not tumorigenic and have anti-inflammatory and immunomodulatory properties. During the last years we investigated the differentiation of hAEC *in vitro* and in vivo. Following transplant in mouse livers, we found human cells expressing mature liver genes including CYP450, phase II, hepatic transporter and nuclear hormone receptor genes at levels comparable to normal adult human liver. We evaluated the efficacy of hAEC to correct acute liver failure (ALF) on animal lethally treated with D-galactosamine. We measured level of correction in two different models of metabolic liver diseases: intermediate Maple Syrup Urine Disease (iMSUD) and Phenylketonuria (Pahenu2) after infusion of hAEC. These successful results obtained in these pre-clinical studies have motivated translation to cGMP isolation and banking of hAEC at our Institutet for cellular therapies and a phase II clinical trial is starting.

Biography

Roberto Gramignoli has completed his Post-graduate studies in Medical Genetics and PhD from University of Milan and Milan-Bicocca (Italy), respectively. He spent several years performing Postdoctoral studies in Dr. Strom laboratory at University of Pittsburgh and has been active member of the team that has conducted clinical hepatocyte transplants in Pittsburgh. In 2012, he moved to Karolinska Institute where he is primary focused on amnion epithelial cell isolation and transplantation. He has published more than 25 papers in peer reviewed journals and serving as an editorial board member of several journals.

rgramignoli@yahoo.com