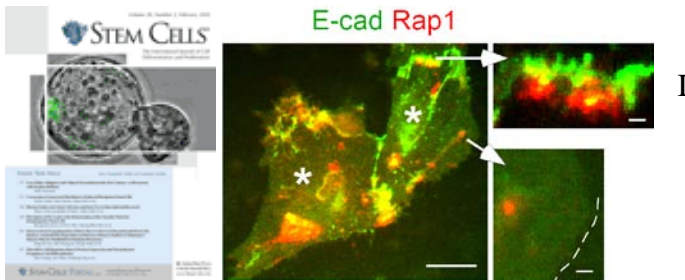


BMI researchers have found the mystery of fragile human ES cells

Scientists at BMI have found the decade-old mystery of why human embryonic stem cells are so difficult to culture in the laboratory. The research is published in the *Stem Cells* journal (<http://www.stemcells.com/view/0/index.html>) and was one of the most downloaded papers in February 2010.



Human embryonic stem cells (hESCs) can give rise to almost any type of cell present in the adult body. They represent an important tool in the field of regenerative medicine with the prospect of providing cures for various diseases. However, the mechanisms underlying hESC self-renewal (unlimited dividing) remain incompletely understood. Questions such as why single hESCs exhibit ~100-fold lower self-renewal capacity/cloning efficiency than single mouse embryonic stem cells remain unanswered. Recently, Dr. Wang's laboratory at BMI provides the first demonstration that adhesion molecule E-cadherin is an important player in hESC self-renewal. A unique interplay between small G-protein Rap1 and E-cadherin along the endocytic recycling pathway serves as a timely and efficient mechanism to regulate hESC self-renewal (*Stem Cells 2010. 28: 247-257*).