

## The extracellular serine protease, HABP2, is a novel regulator of human lung cancer growth and metastasis

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This lecture will address the identification and characterization of the extracellular serine protease, HABP2, in lung cancer progression. Lung cancer is a devastating disease with limited treatment options. Many lung cancers have changes in their microenvironment including upregulation of the extracellular matrix glycosaminoglycan, hyaluronan (HA), which we and others have demonstrated can regulate the activity of HABP2. We have utilized a variety of techniques to study HABP2 oncogenic potential including immunohistochemical analysis on lung cancer patient samples using anti-HABP2 antibody. Stable control, shRNA and HABP2 overexpressing human lung adenocarcinoma cells were evaluated using immunoblot analysis, proliferation, invasion and urokinase plasminogen activator (uPA) activation assays with or without high molecular weight HA (HMW-HA) or low molecular weight HA (LMW-HA). In human lung cancer xenograft models, primary tumor growth rates and lung metastasis were analyzed using consecutive tumor volume measurements and nestin immunoreactivity in nude mouse lungs. Our results indicate that HABP2 expression is increased in several subtypes of non-small cell lung cancer patient samples. Further, HABP2 overexpression of HABP2 in human lung adenocarcinoma cells increased primary tumor growth rates in nude mice by ~4 fold and lung metastasis by ~10 fold compared to vector control cells (n=5 per condition). Our data suggests a possible direct effect of HABP2 on uPA activation and lung cancer progression. Our observations suggest that exploration of HABP2 in non-small cell lung carcinoma merits further study both as a diagnostic and therapeutic option.

## **Biography**

Patrick A Singleton received his BSc degree from Niagara University, Niagara Falls, New York, USA and his PhD from the University of Miami, Miami, Florida, USA in 2003. He was a Post-Doctoral Fellow at the University of California, San Francisco (UCSF), Johns Hopkins University (Baltimore, Maryland, USA) and the University of Chicago (Chicago, Illinois, USA) from 2003-2006. He became an Instructor of Medicine at the University of Chicago in 2006 and an Assistant Professor of Medicine at the University of Chicago in 2009. His major areas of research are related to vascular integrity in acute lung injury and lung cancer. He currently holds a Scientist Development Grant from the American Heart Association, a Biomedical Research Grant from the American Lung Association and an NHLBI R01 grant from the NIH. He is an author in over 50 peer reviewed papers. He is a member of several Special Emphasis Panels for the NIH and also a manuscript reviewer and editor for numerous major journals.

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