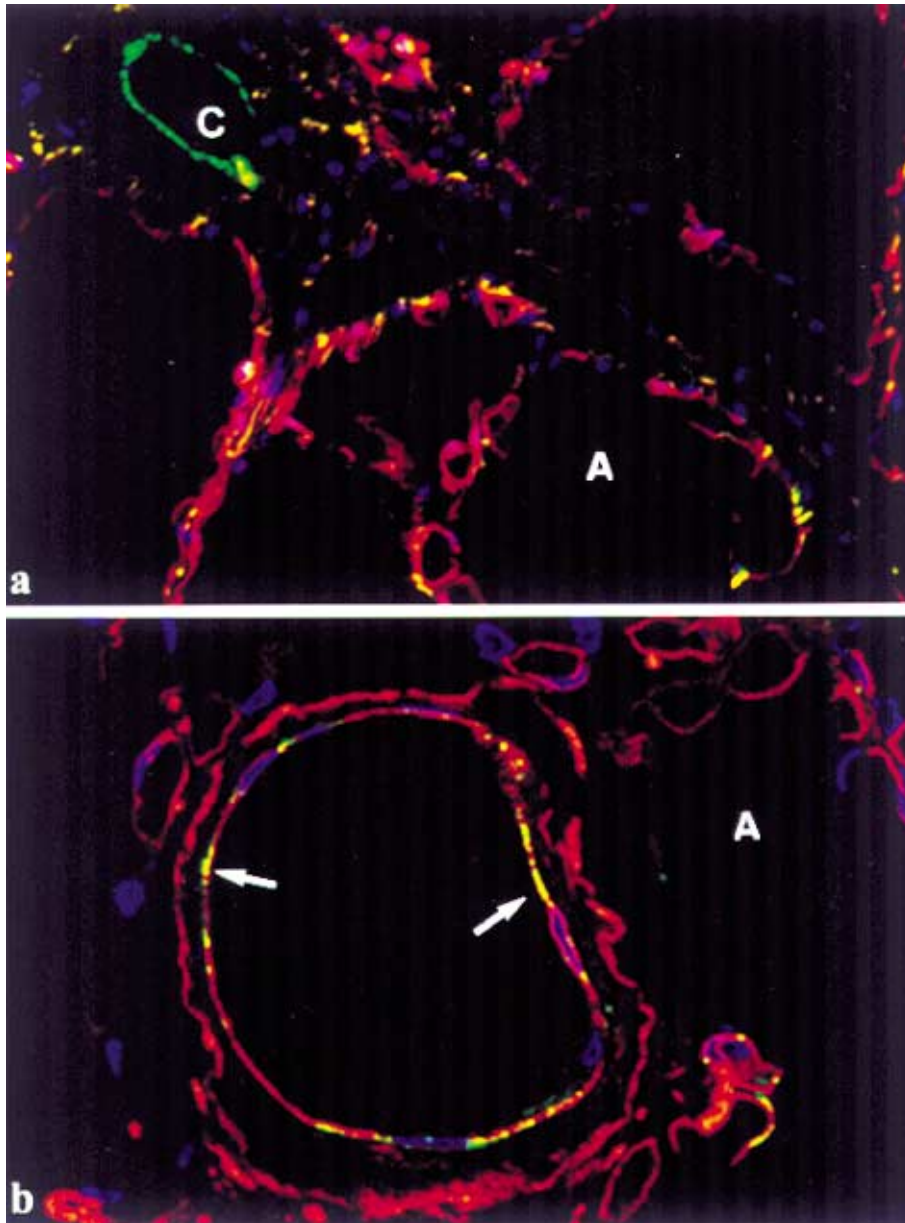


Photogravure

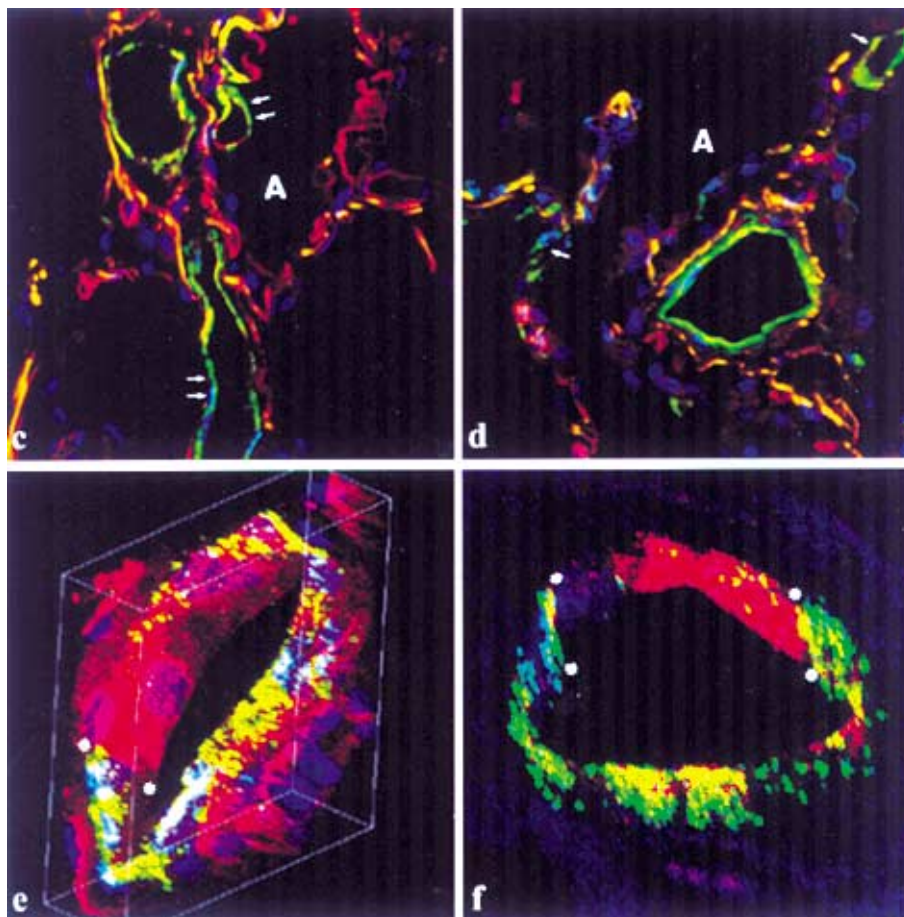
Unique Distribution of von Willebrand Factor and Thrombomodulin in
Endothelial Cells of Human Pulmonary Microvessels

Enjing Jin and Oichi Kawanami

Department of Molecular Pathology, Institute of Gerontology



Confocal laser scanning microscopy revealed the unique distribution of von Willebrand factor (vWf) and thrombomodulin (TM) in microvascular endothelial cells of the human lung. In dual immunofluorescence technique, vWf and TM were labeled by FITC (green) and Texas red, respectively. Cell nucleus was stained by TOTO 3 (blue) (See page 118-125 of this journal)



Distribution of vWf and TM in the endothelial cells of normal microvessels

Figure a: The microvessel endothelial cells located in interlobular connective tissue septum (C) showed vWf-reaction (green) alone. Plasma membranes of alveolar (A) capillary endothelium showed red linear fluorescence for TM.

Figure b: Endothelial cell lining of a microvessel located at the border (J-zone) between alveolar (A) and connective tissue (C)-zones showed a mosaic-like pattern of vWf (arrows) and TM.

Distribution patterns in capillary endothelium of alveolar walls with neoplastic cell invasion of primary adenocarcinoma

Figures c and d: Alveolar capillary lumina became dilatated and alveolar fibrosis progressed under neoplastic cell invasion. These microvessel endothelial cells were positive for vWf (small arrows) and often showed mosaic-like patterns with TM (top center of figure c). TM-reactive capillary endothelium remained in the alveolar walls which had no neoplastic cell invasion (right upper corner of figure c)

Figures e and f: 3 D-images of J-zone microvessels are clearly indicative of alternative distribution of vWf and TM. Linear lack of coloration (* *) is suggestive of the area of intercellular junction between adjacent endothelial cells.

解説：二重蛍光抗体法を用い，正常，および原発性肺腺癌組織の微小血管内皮細胞における von Willebrand factor (vWf)(FITC 緑に標識) と thrombomodulin (TM)(Texas red 赤に標識) の分布，そして細胞核を TOTO 3 (青) にて標識し，レーザー共焦点顕微鏡により分析した．正常肺の微小血管内皮細胞は結合織内 (C-zone) では vWf-dominant type であり，肺胞 (A-zone) では TM-dominant type に現れ，C-zone が A-zone に対面する部位 (J-zone) では，vWf (矢印) と TM (赤) がモザイク状パターンを呈した．一方，癌細胞の浸潤により，肺胞毛細血管内皮細胞は壁の線維化とともに TM を失い，vWf 陽性反応を獲得した．その結果，内皮細胞はモザイク状パターンを経て vWf-dominant type (小矢印) に転換した．J-zone の小静脈は三次元的分析により TM と vWf 陽性部位が交互に出現した．赤と緑の境界の無染色領域 (* *) は細胞間接合部に相当することが分かる．

Reference

Kawanami O, et al: Heterogeneous distribution of thrombomodulin and von Willebrand factor in endothelial cells in the human pulmonary microvessels. J Nippon Med Sch 2000; 67: 117 - 124.