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Articles & Issues をクリックすると、出版前論文、最新号、バックナンバーをお読みいただけます。



The screenshot shows the homepage of the journal 'Respiratory Investigation'. A blue navigation menu is overlaid on the left side, containing the following items: 'Articles & Issues' (with a dropdown arrow), 'Articles In Press', 'Current Issue', and 'Past Issues'. Two red arrows originate from the 'Articles & Issues' menu item: one points to the 'Articles & Issues' link in the journal's main navigation bar, and the other points to the 'Articles & Issues' dropdown menu itself. The main website content includes a search bar, a welcome message, a 'Current Issue' section for March 2012, Vol. 50, No. 1, and a 'Journal Access' section.

## Article in Press:

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## Current Issue:

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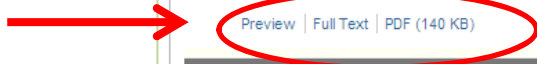
## Past Issue:

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論文の一覧が表示されます。

### Current Issue の例

お読みにになりたい論文の  
Abstract,  
Full Text (HTML形式),  
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#### Articles & Issues

Current Issue

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Decade: 2010-2019  
Year: 2012  
Issue: Vol 50 | No. 1 | March 2012 | Pages 1-32

4 Articles: 1 [Search Within This Issue](#)

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##### Editorial

Article Title	Author(s)	Pages
<input type="checkbox"/> <a href="#">The launch of <i>Respiratory Investigation</i> and its scope</a> 19 March 2012 <a href="#">Preview</a>   <a href="#">Full Text</a>   <a href="#">PDF (140 KB)</a>	Toshihiro Nukiwa	1-2

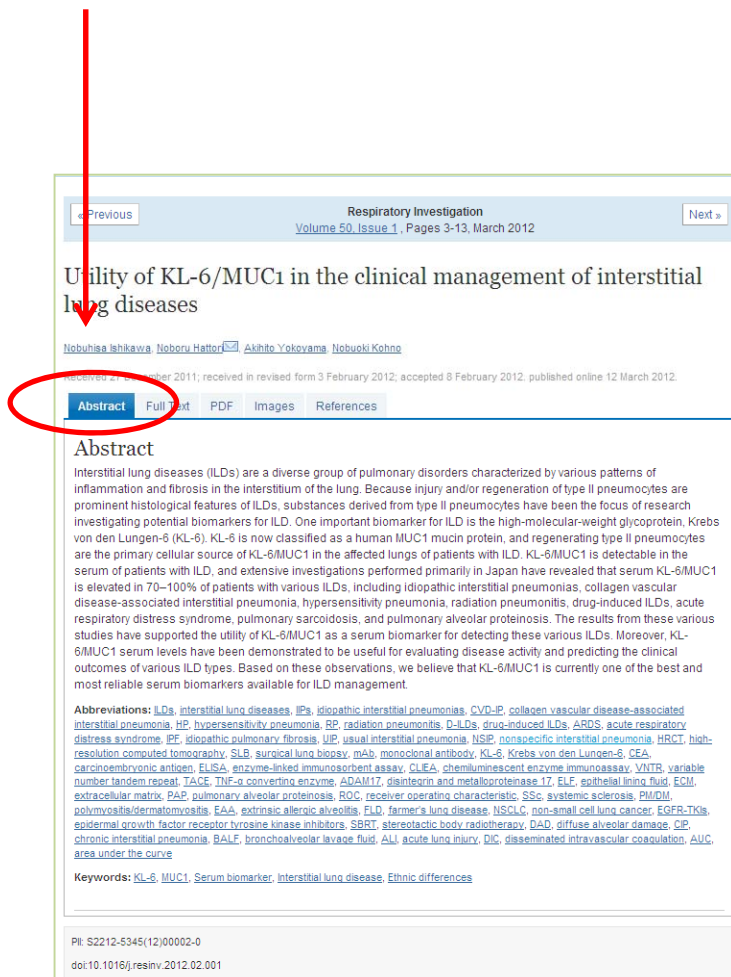
##### Reviews

Article Title	Author(s)	Pages
<input type="checkbox"/> <a href="#">Utility of KL-6/MUC1 in the clinical management of interstitial lung diseases</a> 12 March 2012 <a href="#">Preview</a>   <a href="#">Abstract</a>   <a href="#">Full Text</a>   <a href="#">PDF (500 KB)</a>	Nobuhisa Ishikawa, Noboru Hattori, Akihito Yokoyama, Nobuaki Kohno	3-13

##### Original articles

Article Title	Author(s)	Pages
<input type="checkbox"/> <a href="#">Nationwide survey on the 2005 Guidelines for the Management of Community-Acquired Adult Pneumonia: Validation of severity assessment</a> 22 March 2012 <a href="#">Preview</a>   <a href="#">Abstract</a>   <a href="#">Full Text</a>   <a href="#">PDF (236 KB)</a>	Akira Watanabe, Hajime Goto, Shigeru Kohno, Toshiharu Matsushima, <a href="#">et al.</a>	14-22
<input type="checkbox"/> <a href="#">Nationwide survey on the 2005 Guidelines for the Management of Community-Acquired Adult Pneumonia: Validation of differentiation between bacterial pneumonia and atypical pneumonia</a> 26 March 2012 <a href="#">Preview</a>   <a href="#">Abstract</a>   <a href="#">Full Text</a>   <a href="#">PDF (391 KB)</a>	Akira Watanabe, Hajime Goto, Shigeru Kohno, Toshiharu Matsushima, <a href="#">et al.</a>	23-32

Abstract が表示されます。



Respiratory Investigation  
Volume 50, Issue 1, Pages 3-13, March 2012

## Utility of KL-6/MUC1 in the clinical management of interstitial lung diseases

Nobuhisa Ishikawa, Noboru Hattori, Akihito Yokoyama, Nobuaki Kohno

Received 27 December 2011; received in revised form 3 February 2012; accepted 8 February 2012; published online 12 March 2012.

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### Abstract

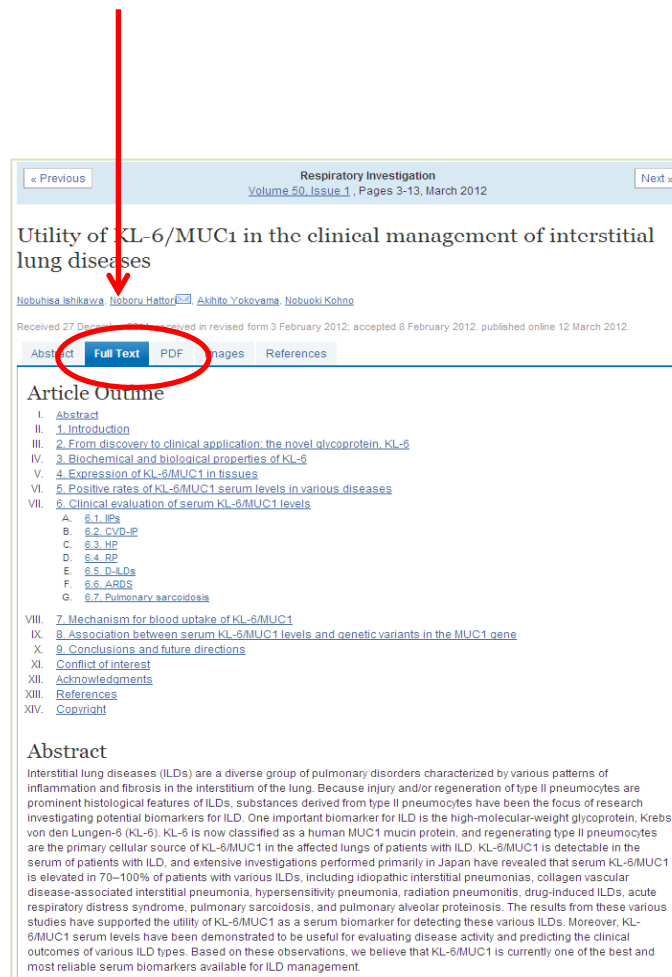
Interstitial lung diseases (ILDs) are a diverse group of pulmonary disorders characterized by various patterns of inflammation and fibrosis in the interstitium of the lung. Because injury and/or regeneration of type II pneumocytes are prominent histological features of ILDs, substances derived from type II pneumocytes have been the focus of research investigating potential biomarkers for ILD. One important biomarker for ILD is the high-molecular-weight glycoprotein, Krebs von den Lungen-6 (KL-6). KL-6 is now classified as a human MUC1 mucin protein, and regenerating type II pneumocytes are the primary cellular source of KL-6/MUC1 in the affected lungs of patients with ILD. KL-6/MUC1 is detectable in the serum of patients with ILD, and extensive investigations performed primarily in Japan have revealed that serum KL-6/MUC1 is elevated in 70–100% of patients with various ILDs, including idiopathic interstitial pneumonias, collagen vascular disease-associated interstitial pneumonia, hypersensitivity pneumonia, radiation pneumonitis, drug-induced ILDs, acute respiratory distress syndrome, pulmonary sarcoidosis, and pulmonary alveolar proteinosis. The results from these various studies have supported the utility of KL-6/MUC1 as a serum biomarker for detecting these various ILDs. Moreover, KL-6/MUC1 serum levels have been demonstrated to be useful for evaluating disease activity and predicting the clinical outcomes of various ILD types. Based on these observations, we believe that KL-6/MUC1 is currently one of the best and most reliable serum biomarkers available for ILD management.

**Abbreviations:** ILDs, interstitial lung diseases; IPs, idiopathic interstitial pneumonias; CVD-IP, collagen vascular disease-associated interstitial pneumonia; HP, hypersensitivity pneumonia; RP, radiation pneumonitis; D-ILDs, drug-induced ILDs; ARDS, acute respiratory distress syndrome; IPF, idiopathic pulmonary fibrosis; UIP, usual interstitial pneumonia; NSIP, non-specific interstitial pneumonia; HRCT, high-resolution computed tomography; SLB, surgical lung biopsy; mAb, monoclonal antibody; KL-6, Krebs von den Lungen-6; SEA, sarcocentrin-like antigen; ELISA, enzyme-linked immunosorbent assay; CLEA, chemiluminescent enzyme immunoassay; VITR, variable number tandem repeat; TACE, TNF- $\alpha$  converting enzyme; ADAM17, disintegrin and metalloproteinase-17; ELF, epithelial lining fluid; ECM, extracellular matrix; PAP, pulmonary alveolar proteinosis; ROC, receiver operating characteristic; SSC, systemic sclerosis; PM/DJ, polymyositis/dermatomyositis; EAA, extrinsic allergic alveolitis; FLD, farmer's lung disease; NSCLC, non-small cell lung cancer; EGFR-TKIs, epidermal growth factor receptor tyrosine kinase inhibitors; SBRT, stereotactic body radiotherapy; DAD, diffuse alveolar damage; COP, chronic interstitial pneumonia; BALF, bronchoalveolar lavage fluid; ALI, acute lung injury; DIC, disseminated intravascular coagulation; AUC, area under the curve.

**Keywords:** KL-6, MUC1, Serum biomarker, interstitial lung disease, Ethnic differences

Pii: S2212-5345(12)00002-0  
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Full Text (HTML 形式) が表示されます。



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[Abstract](#) [Full Text](#) [PDF](#) [Images](#) [References](#)

### Article Outline

- I. Abstract
- II. 1. Introduction
- III. 2. From discovery to clinical application: the novel glycoprotein KL-6
- IV. 3. Biochemical and biological properties of KL-6
- V. 4. Expression of KL-6/MUC1 in tissues
- VI. 5. Positive rates of KL-6/MUC1 serum levels in various diseases
- VII. 6. Clinical evaluation of serum KL-6/MUC1 levels
  - A. 6.1. IPs
  - B. 6.2. CVD-IP
  - C. 6.3. HP
  - D. 6.4. RP
  - E. 6.5. DJLs
  - F. 6.6. ARDS
  - G. 6.7. Pulmonary sarcoidosis
- VIII. 7. Mechanism for blood uptake of KL-6/MUC1
- IX. 8. Association between serum KL-6/MUC1 levels and genetic variants in the MUC1 gene
- X. 9. Conclusions and future directions
- XI. Conflict of interest
- XII. Acknowledgments
- XIII. References
- XIV. Copyright

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Interstitial lung diseases (ILDs) are a diverse group of pulmonary disorders characterized by various patterns of inflammation and fibrosis in the interstitium of the lung. Because injury and/or regeneration of type II pneumocytes are prominent histological features of ILDs, substances derived from type II pneumocytes have been the focus of research investigating potential biomarkers for ILD. One important biomarker for ILD is the high-molecular-weight glycoprotein, Krebs von den Lungen-6 (KL-6). KL-6 is now classified as a human MUC1 mucin protein, and regenerating type II pneumocytes are the primary cellular source of KL-6/MUC1 in the affected lungs of patients with ILD. KL-6/MUC1 is detectable in the serum of patients with ILD, and extensive investigations performed primarily in Japan have revealed that serum KL-6/MUC1 is elevated in 70–100% of patients with various ILDs, including idiopathic interstitial pneumonias, collagen vascular disease-associated interstitial pneumonia, hypersensitivity pneumonia, radiation pneumonitis, drug-induced ILDs, acute respiratory distress syndrome, pulmonary sarcoidosis, and pulmonary alveolar proteinosis. The results from these various studies have supported the utility of KL-6/MUC1 as a serum biomarker for detecting these various ILDs. Moreover, KL-6/MUC1 serum levels have been demonstrated to be useful for evaluating disease activity and predicting the clinical outcomes of various ILD types. Based on these observations, we believe that KL-6/MUC1 is currently one of the best and most reliable serum biomarkers available for ILD management.

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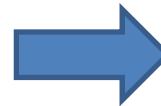
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## Review

### Utility of KL-6/MUC1 in the clinical management of interstitial lung diseases

Nobuhisa Ishikawa<sup>a</sup>, Noboru Hattori<sup>a\*</sup>, Akihito Yokoyama<sup>b</sup>, Nobuaki Kohno<sup>b</sup>

<sup>a</sup>Department of Molecular and Internal Medicine, Graduate School of Medical Science, Hiroshima University, 1-3-1 Kasumi, Minami-ku, Hiroshima 734-8551, Japan  
<sup>b</sup>Department of Hematology and Respiratory Medicine, Kochi Medical School, Kochi University, Kohku Ono-cho, Nishiku City, Kochi 782-8505, Japan

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doi:10.1016/j.resinv.2012.02.001

論文に掲載されているImageが表示されます。

The screenshot shows the article page for "Utility of KL-6/MUC1 in the clinical management of interstitial lung diseases". The "Images" tab is highlighted with a red circle. A red arrow points from the text above to this tab. Below the article content, there is a thumbnail image of a diagram. A blue arrow points from the text below to the "Download to PowerPoint" link.

Respiratory Investigation  
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Abstract Full Text PDF **Images** References

(a) Structure of MUC1. MUC1 is a large glycoprotein that contains 3 domains: (1) a cytoplasmic tail, (2) a single transmembrane region, and (3) an extracellular domain. The extracellular region contains

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PII: S2212-5345(12)00002-0  
doi: 10.1016/j.resinv.2012.02.001

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CrossRef
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