

## New mediator of smoking recruits

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Current research suggests that smoking increases the production of osteopontin in the lungs, which contributes to the development of smoking-related lung disease. The related report by Prasse et al, "Essential role of osteopontin in smoking-related interstitial lung diseases," appears in the May 2009 issue of *The American Journal of Pathology*.

Nearly one billion people worldwide smoke [tobacco](#) products. Long-term exposure to compounds found in smoke can lead to both cardiovascular and [lung disease](#). Although lung exposure to [cigarette smoke](#) leads to immune cell recruitment and tissue fibrosis, how cigarette smoke causes these changes is largely unknown.

To determine if osteopontin, a molecule that attracts immune cells, mediates cell recruitment in smokers, Prasse et al compared osteopontin levels from smokers with different types of lung diseases, healthy smokers, and healthy non-smokers. They found high levels of osteopontin expression in patients with interstitial lung disease, whereas healthy smokers had lower levels, and healthy non-smokers produced no osteopontin. Osteopontin expression could be stimulated directly by nicotine treatment. In addition, expressing osteopontin in rat lung resulted in recruitment of [immune cells](#), resulting in symptoms similar to smoking-related interstitial lung diseases. These results indicate that osteopontin may be pathogenic in smoking-initiated lung disease.

The article from Prasse et al "suggest[s] that chronic nicotine stimulation induced by cigarette smoking promotes macrophage and Langerhans cell

accumulation in the lung via an increase in [osteopontin production]." Osteopontin and cellular receptors for nicotine may therefore be new targets for treating smoking related lung disease.

More information: Prasse A, Stahl M, Schulz G, Kayser G, Qang L, Ask K, Yalcintepe J, Kirschbaum A, Bargagli E, Zissel G, Kolb M, Müller-Quernheim J, Weiss JM, Renkl AC: Essential role of osteopontin in smoking-related interstitial lung diseases. Am J Pathol 2009 174: 1683-1691

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