smoking had no effect on the expression levels of Wnt-5 and -7, Fzd-4 and -10, and Pdgfra (encoding wingless proteins 5 and 7, frizzled receptors 4 and 10 and platelet-derived growth factor, respectively) and expression of Dkk1 (encoding dikkopf) was not detected. For an overview of the effects of maternal smoking during pregnancy on the Wnt pathway in the lung tissue of offspring, see figure 2 in the online supplement.

To our knowledge, this is the first report showing that maternal smoking during pregnancy decreases the expression of several genes involved in Wnt signalling in offspring. We propose that this relates to lung development as follows. Foxa2 decreases alveolarisation and increases goblet cell hyperplasia when conditionally deleted from epithelial cells.2 Interestingly, we have previously shown increased house dust mite-induced goblet cell hyperplasia in offspring from smoking mothers,7 which could have been caused by decreased Foxa2 expression. Furthermore, epidermal growth factor, β-catenin and the downstream Wnt target gene Fn1 were also shown to be involved in branching morphogenesis of the fetal lung.6,8,9 In addition, Fzd-7 is important in neovessel formation,6 while Pdgfra is involved in both neovessel formation and alveolarisation.7 Together, these findings provide a plausible argument for the effects of maternal smoking during pregnancy on Wnt-β-catenin signalling in the lungs of neonatal offspring. This may contribute to impaired lung development and an increased risk of developing asthma later in life. Moreover, Wnt signalling is involved in many other developmental processes that may thus be affected by maternal smoking during pregnancy. The relationship between defects in Wnt signalling and morphological/functional outcomes in lung tissue from offspring should therefore be investigated in more detail.

**Circulating endothelial stem cells are not decreased in pulmonary emphysema or COPD**

Previous studies have suggested a role for an increased apoptosis of the endothelial cells in the pulmonary capillaries of the alveolar septa in the pathogenesis of human pulmonary emphysema.1 In animal models, circulating endothelial stem cells, characterised by the concomitant expression of CD34+ and CD133 and vascular endothelial growth factor receptor 2 (VEGF-R2), may contribute to the repair of lung damage.2 However, it is unknown if a decrease in the blood of these stem cells contributes to the pathogenesis of pulmonary emphysema in humans. The aim of our study was to investigate by flow cytometry the number of total (CD34+) and endothelial stem (triple positive for CD34+/CD133/VEGF-R2) cells in the peripheral venous blood of current and former smokers of similar age, with or without pulmonary emphysema. All the recruited subjects were free from concomitant diseases or drugs able to interfere with the number of circulating stem cells. Venous blood samples were obtained from 37 subjects (mean (SD) age 66.8 (1.4) years, 25M/12F, mean (SD) 33.11 (3.2) pack-years, 12 current and 25 ex-smokers). All former smokers had stopped smoking for more than 1 year. Twenty-two subjects (59.5%) had chronic obstructive pulmonary disease (COPD) according to the criteria of the Global Initiative for Chronic Obstructive Lung Disease guidelines3 (mean post-bronchodilator forced expiratory volume in

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**REFERENCES**


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**Figure 1** Relative gene expression in lung tissue of offspring from non-smoking mothers (open symbols) and smoking mothers (closed symbols). Data were normalised to GAPDH in order to correct for differences in input using the formula ∆Ct = Ct(GAPDH) – Ct(gene of interest). The relative expression levels were calculated by $2^{-\Delta\Delta Ct}$ and levels are given relative to the non-smoking mother group. Medians from non-smoking mother group = 1.

*p<0.05, **p<0.01.
The possibility of a germinative cell tumour was considered so performed as previously described.5 Brie

a revealed dullness in the lower two-thirds of the left hemithorax. A 2-year-old boy presented with fever, dry cough and dyspnoea presentimg with respiratory

The mean (SD) HRCT score was 1.7 (0.4). Blood sampling and showed a heterogeneous mass in the anterior

emphysema was determined using high-

resolution CT (HRCT) scans of the chest with density mask and the National Emphysema Treatment Trial Research Group score (0–4).4 The mean (SD) HRCT score was 1.7 (0.4). Blood sampling and flow cytometry were performed as previously described.5 Briefly, quantification of peripheral blood CD34+ cells was performed with double labelling with FITC-anti-CD45 and phycocerythrin-anti-CD34 monoclonal antibodies (Becton Dickinson, Milan, Italy) on a FACSCalibur flow cytometer (Becton Dickinson) according to standardised procedures. Enumeration of endothelial stem cells was performed as CD34+ cells and the absolute number of circulating endothelial stem cells was expressed as a percentage of the total number of circulating stem cells (CD34+) of circulating stem cells, and high-

expressed as a percentage of the total number

pulmonary emphysema.

The presence and the severity of pulmonary

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expressed as a percentage of the total number

expression of vascular endothelial growth factor and vascular endothelial growth factor receptor 2 in emphysema. Am J Respir Crit Care Med 2001;163:737–44.


Images in Thorax

Massive thymic hyperplasia presenting with respiratory insufficiency in a 2-year-old child

A 2-year-old boy presented with fever, dry cough and dyspnoea for 3 days. Breath sounds were absent and thoracic percussion revealed dullness in the lower two-thirds of the left hemithorax. A chest x-ray showed almost complete opacification of these areas (figure 1). The boy was successfully treated with antibiotics for lower airways infection but tachypnoea persisted and the x-ray showed no change after 6 weeks. A CT scan was performed and showed a heterogeneous mass in the anterior mediastinum, predominantly on the left side, occupying most of the left hemithorax. This lesion showed areas of lower attenuation interspersed with areas of soft tissue attenuation (figure 2). The possibility of a germinative cell tumour was considered so α-fetoprotein and β-human chorionic gonadotropin were measured but were found to be within normal limits. A percu-
Circulating endothelial stem cells are not decreased in pulmonary emphysema or COPD

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