

# CME Exam and Evaluation (1 CME credit)

To receive CME credits, read the CME article in this issue, indicate the correct responses and complete the requested information below. The form is also available in electronic format at [www.erj.ersjournals.com/current.shtml](http://www.erj.ersjournals.com/current.shtml). To return the form, you can either:  
➤ use this form and return it completed to ERSJ Ltd, 442 Glossop Road, Sheffield, S10 2PX, UK.  
➤ save the electronic form as a Word document and send it by e-mail to [info@ersj.org.uk](mailto:info@ersj.org.uk)  
Certificates will be emailed to the address filled in below. Please allow 4 weeks for processing.

## 1. Applicant personal details.

ERS Membership No. (if known): ..... Date of Birth (DD/MM/YYYY): .....  
Family Name: ..... First Name: .....  
Mailing Address: .....  
Postal Code: ..... City: ..... Country: .....  
Telephone: + ..... Fax: + .....  
E-mail: .....

## 2. Educational questions. Answer by marking the correct answer.

### 1. Which of the following statements is/are true? Hypoxic pulmonary vasoconstriction (HPV):

Is a physiological response to alveolar hypoxia in order to match ventilation to perfusion and maintain arterial oxygenation.  Is solely dependent on pulmonary arterial  $PO_2$ .  Occurs only in humans at high altitude.  Is primarily a physiological response of the capillary-venous compartment of the pulmonary vasculature.

### 2. Which of the following statements is/are not true? Pulmonary arterial smooth muscle cells:

Are thought to be the sensor and effector cells of hypoxic pulmonary vasoconstriction.  Respond only to severe hypoxia ( $O_2 < 1\%$ ) within hours of exposure.  React with membrane depolarisation to hypoxia.  Increase intracellular calcium as response to hypoxia.

### 3. Which membrane channels are suggested to be important in HPV?

Voltage dependent potassium channels (Kv channels).  Voltage dependent calcium channels (L-type  $Ca^{2+}$  channels).  Store operated and receptor operated calcium channels (e.g. TRP channels).  All of the above.

### 4. Which cellular organelles/proteins are thought to be primary oxygen sensors of HPV?

L-type  $Ca^{2+}$  channels.  Mitochondria and/or NADPH oxidase.  Endoplasmic reticulum.  HIF-1 $\alpha$ .

### 5. Which concept(s) is/are the most contrarily debated in HPV?

Increased mitochondrial OS production at mitochondrial Complex III and/or NADPH oxidases mediate HPV.  Decreased ROS production derived from mitochondria and/or NADPH oxidases results in Kv channel inhibition, membrane depolarisation and vasoconstriction.  Spatial and temporal regulation of ROS metabolism may cause the discrepant theories.  HPV is caused by activation of BNP receptors.