

Differentiating 2012). this exchange transpires at the air- blood

[Environment](#), [Air](#)



Differentiating Between Pulmonary and Bronchial Circulation Amanda

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between Pulmonary and Bronchial Circulation Pulmonary circulation, which includes the right side of the heart, pulmonary artery, pulmonary capillaries, and the pulmonary veins, supports the function of gas exchange of the lungs (Grossman & Porth, 2014). The right side of the heart gives the pulmonary artery deoxygenated blood (Grossman & Porth, 2014).

The pulmonary artery then splits into the left and right pulmonary arteries and then splits again into pulmonary capillaries (Grossman & Porth, 2014). Pulmonary circulation brings the blood into close contact with the thin-walled alveoli by way of capillary beds, therefore gas exchange can occur (Osiro et al., 2012). This exchange transpires at the air-blood barrier where the removal of CO₂, the waste product of metabolism, and the addition of oxygen take place (Osiro et al., 2012).

Pulmonary veins return the newly oxygenated blood to the left atrium, where the process repeats (Grossman & Porth, 2014). Functionally, bronchial circulation differs from pulmonary circulation. Bronchial circulation delivers blood to the conducting airways and to the terminal bronchioles, without excluding “nerves, lymph nodes, visceral pleura, and the walls of larger pulmonary vessels” (Wagner, 2006, para. 1). The components of the conducting airways include “nasal passages, mouth and pharynx, larynx, trachea, bronchi, and bronchioles” (Grossman & Porth, 2014, p.

900). The other function of bronchial circulation moistens the new air traveling through the conducting airways (Grossman & Porth, 2014).

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Bronchial circulation provides nutrients and oxygen to the cells that make up the lungs (Osiro et al., 2012). The thoracic aorta and bronchial arteries make it possible for oxygenated blood to enter the major bronchi and lungs (Grossman & Porth, 2014).

These continue to split off and carry the blood to the bronchial capillaries which in turn drain into the bronchial veins (Grossman & Porth, 2014). This deoxygenated blood in the bronchial veins empty into either the vena cava or pulmonary veins, resulting in the dilution of oxygenated blood. According to Grossman & Porth (2014), "the bronchial blood vessels are the only ones that can undergo angiogenesis and develop collateral circulation" occurring when pulmonary circulation is either impaired or completely absent, such as an obstruction in blood flow.

The bronchial arteries have the capability to not only regenerate but also dilate to supply both lungs with blood (Osiro et al., 2012). This phenomenon persists until pulmonary circulation is reestablished (Grossman & Porth, 2014). Both pulmonary and bronchial circulation are very important to respiratory status. Pulmonary circulation allows gas exchange to occur while bronchial circulation delivers nutrients and oxygen to the cells that form the lungs, along with transporting waste products away from them (Grossman & Porth, 2014). If pulmonary circulation became obstructed, bronchial circulation takes over while pulmonary circulation recovers - both are vital to support health and well-being.

References Grossman, S. C., & Porth, C. M. (2014). Porth's pathophysiology: Concepts of altered health states (9th ed.). Philadelphia, PA: WoltersKluwer Health/Lippincott Williams & Wilkins.

Osiro, S., Wear, C., Hudson, R., Ma, X., Aurada, A., Michalek, M.

, & Loukas, M. (2012, May 3). A friend to the airways: A review of the emerging clinical importance of the bronchial arterial circulation. *Surgical and Radiologic Anatomy: SRA*, 34(9), 791-798.

<https://doi.org/10.1007/s00276-012-0974-3> Wagner, E. M.

(2006). Bronchial circulation. Retrieved from <https://doi-org.db07.lincweb.org/10.1016/B0-12-370879-6/00503-2>