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The cancer hypothesis of pulmonary arterial hypertension: are polyamines the new Warburg?

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Polyamine metabolism is a new target in pulmonary arterial hypertension also under development in cancer research https://bit.ly/2YnD17o

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Since the identification of elevated anaerobic glycolysis in pulmonary vascular cells from patients with pulmonary hypertension (PH) led to comparisons with the Warburg effect in cancers, PH has joined the list of cardiovascular and respiratory disorders with a metabolic component to their pathology. Insulin resistance is common and associated with poor outcomes [1], and questions over the importance of prevalent metabolic syndrome remain [2]. Development of libraries of metabolites characterised with high throughput chromatography-mass spectrometry methods has facilitated the screening of large numbers of metabolites in disease tissue samples. The association of alterations in multiple classes of active and breakdown products of metabolism (modified nucleosides, energy metabolites including several long-chain acylcarnitines and tryptophan metabolites in particular) with disease severity [3], survival [4] and right ventricular function [5] has thus been well documented. Therapeutic strategies targeting this are so far in early stages, with one study trialling dichloroacetate to correct glycolytic flux essentially negative, though a *post hoc* analysis suggested the possibility that genetically susceptible individuals may have shown benefit [6].

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