Pulmonary Arterial Hypertension is a progressive and devastating disease characterized by dysfunction and remodeling of the pulmonary vasculature, leading to increased pulmonary vascular resistance, compensatory right ventricular remodeling and eventually dilatation and heart failure. To find an effective treatment for Pulmonary Arterial Hypertension, animal models are used to simulate the disease.

In this thesis, Michiel Alexander de Raaf and colleagues describe and characterize the disease progression of the Sugen Hypoxia model, an animal model that simulates Pulmonary Arterial Hypertension and is induced by exposure to VEGF-inhibition and chronic hypoxia. The dependence of an intact serotonin pathway in this animal model was tested and chronic hypoxia was substituted by pneumonectomy to understand the interchangeability of the methodology. Several treatments, as histone deacetylase inhibitors, tyrosine kinase inhibitors and endothelin-1 receptor antagonists were tested and evaluated on their efficacy. As both lungs and heart use mutual pathways for disease progression as well as for compensatory remodeling against the disease, the treatment paradox ‘what might be beneficial for the lungs, could harm the right ventricle’ was evaluated.