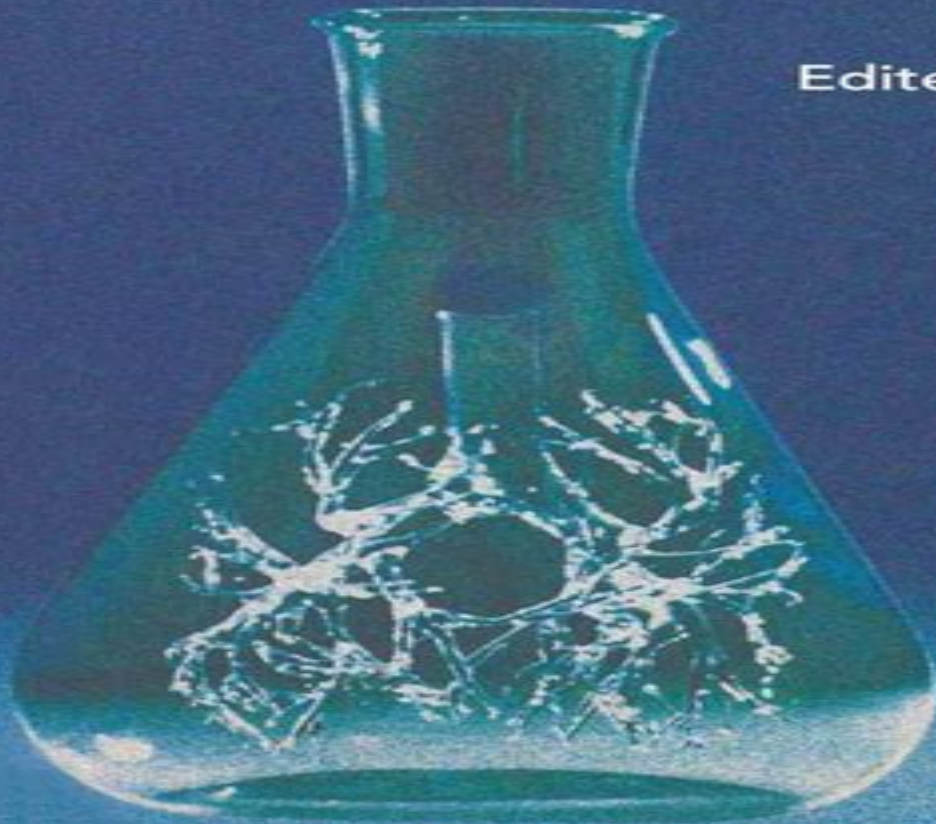


Methods in Pulmonary Research

Edited by S. Uhlig
A. E. Taylor



Birkhäuser

Methods In Pulmonary Research

Walter F. Ballinger



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Airways 1 Measurement of lung function in rodents in vivo Spontaneous respiration Pulmonary manoeuvres Material and equipment Lung function laboratory Methods Preparation and calibration Pulmonary function testing Examples for applications Discussion Troubleshooting References

2 The isolated perfused lung Advantages and disadvantages of perfused lungs Theoretical background Vascular resistance Respiratory mechanics Material and equipment Artificial thorax chamber and ventilation Perfusion Weight measurement Gas exchange Methods Surgery and setting up the lung Criteria for viability Cleaning the apparatus An example application Discussion Interpretation of the results Constant flow CFP versus constant pressure perfusion CPP Negative or positive pressure ventilation Choice of perfusate Recirculating versus non recirculating perfusion Additional experimental options Troubleshooting Final comments References

3 Lung explants Material and equipment Preparation of culture media Preparation of agarose Preparation of animals Preparation of explants Image acquisition Variations on this technique Applications Effects of bronchoconstriction Measurements of mucociliary clearance Measurements of pulmonary vasculature Long term explant culture techniques Investigations of protein and gene expression Troubleshooting Discussion Acknowledgements References

4 Tracheal preparations Methods Guinea pig tracheal preparations Immersion techniques Tracheal chain Spirally cut trachea Zig zag tracheal strip Tracheal tube preparations Superfusion techniques Electrically stimulated trachea Epithelium denuded trachea Conclusion References

Vessels 5 Intravital microscopy Airway circulation Materials and equipment Microscope Video equipment Peripheral equipment Ventilation Solutions Methods Surgery Experimental procedure Species differences Discussion References

6 The bronchial circulation Importance and role of the bronchial circulation Postobstructive pulmonary vasculopathy POPV and principles of the techniques Material and equipment Production of POPV in dogs rats and guinea pigs Ligation of the left main pulmonary artery In situ perfused LLL preparation Morphological assessment of the bronchial and pulmonary vasculature using light microscopy and morphometry Methods Surgical ligation of the left main pulmonary artery in dogs rats and guinea pigs Canine model Rat and guinea pig model In situ perfused LLL preparation to measure pulmonary and bronchial vascular flows pressures and resistances using modified AO and VO and bronchial vascular micropuncture Procedure for the in situ perfused LLL preparation AO and VO measurements Modified in situ perfused LLL preparation for bronchial collateral vascular pressure measurements by micropuncture Morphological assessment of the bronchial and pulmonary vasculature using light microscopy and morphometry Measurement of pulmonary vascular medial thickness and muscularization in lungs injected with pigmented gelatin barium mixtures Fixation and preparation Morphometry Assessment of proliferation in the bronchial vasculature Bronchial vessel number per airway Assessment of bronchial vascular endothelial proliferation using bromodeoxyuridine BrdU labeling Discussion and troubleshooting Production of POPV In situ perfused left lower lobar preparation

Morphological assessment of the bronchial and pulmonary vasculature Acknowledgements References 7 Segmental vascular resistance and compliance from vascular occlusion Methods The lumped parameter RCR model The continuous RC distribution More distributed lumped parameter models The 3C4R model The 3C2R model Arterial occlusion in vivo Acknowledgements References Edema 8 Experimental and clinical measurement of pulmonary Methods in Medical Research ,1966 **Research Awards Index** , **Research Grants Index** National Institutes of Health (U.S.). Division of Research Grants,1970 **Studies from the Rockefeller Institute for Medical Research** ,1928 Consists chiefly of reprints from various medical journals *Research Methods in Surgery* Walter F. Ballinger,1964 **Studies from the Rockefeller Institute for Medical Research** Rockefeller Institute for Medical Research,1912 Energy Research Abstracts ,1977 Semiannual with semiannual and annual indexes References to all scientific and technical literature coming from DOE its laboratories energy centers and contractors Includes all works deriving from DOE other related government sponsored information and foreign nonnuclear information Arranged under 39 categories e g Biomedical sciences basic studies Biomedical sciences applied studies Health and safety and Fusion energy Entry gives bibliographical information and abstract Corporate author subject report number indexes **The Journal of Medical Research** ,1910 **Journal of Medical Research** ,1913 *The methods of microscopical research [by J.E. Ady and A.C. Cole]. An intr. essay to Studies in microscopical science, ed. by A.C. Cole, vol. 2* John Ernest Ady,1884 New York Court of Appeals. Records and Briefs. New York (State)., **The Journal of Medical Research** Boston Society of Medical Sciences,1913 **Physical Techniques in Biological Research: Special methods** Gerald Oster,Arthur Wagg Pollister,William L. Nastuk,1955 Medical Journal of Australia ,1917 *American Review of Tuberculosis and Pulmonary Diseases* ,1922 Includes Abstracts section previously issued separately **Annual Report of the Division of Laboratories and Research** New York (State). Department of Health. Division of Laboratories and Research,1927 **On the Formulation of Methods of Experimentation in Animal Production** National Research Council (U.S.). Committee on Animal Nutrition,1923 *Notes - Municipal Reference and Research Center* Municipal Reference and Research Center (New York, N.Y.),1918 *Collected Papers from the Research Laboratory* Parke, Davis & Company. Research Laboratory,1913

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