Contents

1 1	Xylem and Phloem Differentiation in Perspective P. B. Gahan (With 7 Figures)
1.1	Introduction
1.2	Procambium Initiation in Embryos 6
1.3	General Mechanisms of Programming
1.4	Quiescent Center
1.5	Quantal Mitosis and Differentiation
1.6	Multiple Gene Copies and Xylogenesis
1.7	Procambium to Cambium
1.8	Maintenance and Extension of the Vascular System
2	Hormonal Aspects of Vascular Differentiation L. W. ROBERTS (With 2 Figures)
2.1	Some Characteristics of Plant Hormones
2.1	Auxins
2.2	Cytokinins
2.4	Gibberellins
2.5	Ethylene
2.6	Polyamines
2.7	Inhibitors
2.8	Summary
3	Vascular Differentiation Within the Plant R. Aloni (With 11 Figures)
3.1	Major Problems
3.1.1	In Vivo Versus In Vitro Systems
3.1.2	The Difficulty of Observing the Phloem
3.1.3	Primary Phloem Structure and the Zero-Day Control 41
3.2	Control of Vascular Differentiation by Auxin Flow
3.3	Role of Cytokinin in Vascular Differentiation
3.4	Relation Between Phloem and Xylem Differentiation 47
3.5	Graniferous Tracheary Elements
3.6	Control of Conduit Size and Density 50
3.7	Sites of Xylem Initiation and Rates of Maturation in Relation to
	Conduction
3.8	Role of Gibberellin and the Control of Fiber Differentiation 54



А	Contents
3.9 3.10	Transfer Cells
4	Evidence from Wound Responses and Tissue Cultures L. W. ROBERTS (With 8 Figures)
4.1	Rationale for Using Wounds and Tissue Cultures to Study Vascular
4.2 4.3 4.4 4.5 4.6 4.7 4.8 4.9	Differentiation
5	Physical Factors, Hormones, and Differentiation L. W. Roberts (With 1 Figure)
5.1	Identification of the Physical Factors Influencing Vascular Differentiation
5.2	Temperature
5.3	Water
5.4	Light
5.5	Gases
5.6	Mechanical Stress
5.7	Acidity
Epilo	gue
Refer	rences
Appe	ndix: Abbreviations
Subje	ect Index