

# Contents

## **Part I Origin, Evolution and Diversification of Climbers**

- 1 Climbers: Evolution and Diversification in Angiosperm ..... 3**  
Shiwali Sharma and Anwar Shahzad

## **Part II Climbers as Medicine and Conservation Challenges**

- 2 Biodiversity Conservation with Special Reference to Medicinal Climbers: Present Scenario, Challenges, Strategies, and Policies ..... 23**  
Shiwali Sharma and Rekha Arya
- 3 Medicinal Importance of Climbers Used in Unani System of Medicine ..... 65**  
M.A. Kalam and Ghufra Ahmad
- 4 Climber Plants: Medicinal Importance and Conservation Strategies..... 101**  
Muzamil Ali, Tasiu Isah, Dipti, and A. Mujib

## **Part III Plant Tissue Culture: A Rapid and Most Reliable Approach for Plant Diversity Conservation**

- 5 Plant Tissue Culture: Profile of Pioneers..... 141**  
Anwar Shahzad, Vikas Yadav, and Zishan Ahmad
- 6 Micropropagation: A Boon for Conservation of Valuable Vines and Lianas ..... 163**  
Shiwali Sharma, Anwar Shahzad, Rakhshanda Akhtar, and Anamica Upadhyay
- 7 Somatic Embryogenesis: A Valuable Strategy for Phyto-Climbing Diversity Conservation ..... 195**  
Anwar Shahzad, Shiwali Sharma, and Saeed A. Siddiqui

<b>8</b>	<b>A Biotechnological Perspective Towards Improvement of <i>Decalepis hamiltonii</i>: Potential Applications of Its Tubers and Bioactive Compounds of Nutraceuticals for Value Addition .....</b>	<b>217</b>
	Matam Pradeep, Kamireddy Kiran, and Parvatam Giridhar	
<b>9</b>	<b><i>Tylophora indica</i> (Burm. f.) Merrill: Medicinal Uses, Propagation, and Replenishment.....</b>	<b>239</b>
	Anwar Shahzad, Anamica Upadhyay, Shiwali Sharma, and Taiba Saeed	
<b>10</b>	<b>In Vitro Strategies for the Conservation of Some Medicinal and Horticultural Climbers.....</b>	<b>259</b>
	T. Dennis Thomas and Yoichiro Hoshino	
<b>Part IV Synthetic Seed: A New Horizon for Conservation and Transportation of Germplasm</b>		
<b>11</b>	<b>Advancement in Encapsulation Techniques for Conservation of Climbers.....</b>	<b>293</b>
	Arjumend Shaheen and Anwar Shahzad	
<b>Part V Metabolic Engineering and Synthetic Biology for Bioactive Compounds and Their Improvement</b>		
<b>12</b>	<b>Secondary Metabolite Enhancement in Medicinal Climbers Through the Intervention of Abiotic and Biotic Elicitors.....</b>	<b>311</b>
	Anwar Shahzad and Rakhshanda Akhtar	
<b>Part VI Genetic Transformations: A Desired Approach for Quality Improvement</b>		
<b>13</b>	<b>Basic Principles Behind Genetic Transformation in Plants .....</b>	<b>327</b>
	Taiba Saeed and Anwar Shahzad	
<b>14</b>	<b>Genetic Transformation for Quality Improvement in Ornamental Climbers.....</b>	<b>351</b>
	Gaurav Singh, Mrinalini Srivastava, and Pratibha Misra	
<b>15</b>	<b>Advances in Molecular Approaches for the Integrative Genetic Transformation of Highly Important Climbers .....</b>	<b>367</b>
	Taiba Saeed and Anwar Shahzad	
<b>Part VII Molecular Marker Approaches: Quality Assessment and Authentication for Medicinal Value</b>		
<b>16</b>	<b>Molecular Markers and Their Application in Plant Biotechnology .....</b>	<b>389</b>
	Shahina Parveen, Anwar Shahzad, and Vikas Yadav	

<b>17</b>	<b>Application of Molecular Markers in Medicinal Climbers.....</b>	<b>415</b>
	Shahina Parveen and Anwar Shahzad	
 <b>Part VIII Selective Protocols for In Vitro Propagation and Secondary Metabolite Production</b>		
<b>18</b>	<b>Selective Protocols for In Vitro Propagation and Secondary Metabolite Production .....</b>	<b>429</b>
	Y.K. Bansal and A.J. Bharati	
<b>19</b>	<b>In Vitro Protocols for Ornamental Climbers.....</b>	<b>449</b>
	Arjumend Shaheen and Anwar Shahzad	
<b>20</b>	<b>Contribution of Biotechnological Tools in the Enhancement of Secondary Metabolites in Selected Medicinal Climbers.....</b>	<b>465</b>
	Mrinalini Srivastava, Gaurav Singh, and Pratibha Misra	
	<b>Index.....</b>	<b>487</b>

Biotechnological strategies for the conservation of  
medicinal and ornamental climbers

Shahzad, A.; Sharma, S.; Siddiqui, S.A. (Eds.)

2016, XIV, 506 p. 25 illus., 1 illus. in color., Hardcover

ISBN: 978-3-319-19287-1