## **Contents**

Pr	reface	1
Ca	ontributors	i
1	for Viral Metagenomics	
2	Small RNA Isolation from Tissues of Grapevine and Woody Plants	. 27
3	Double-Stranded RNA-Enriched Preparations to Identify Viroids by Next-Generation Sequencing	37
4	Viral Double-Stranded RNAs (dsRNAs) from Plants: Alternative Nucleic Acid Substrates for High-Throughput Sequencing	45
5	Workup of Human Blood Samples for Deep Sequencing of HIV-1 Genomes  Marion Cornelissen, Astrid Gall, Antoinette van der Kuyl, Chris Wymant,  François Blanquart, Christophe Fraser, and Ben Berkhout	55
6	Monolith Chromatography as Sample Preparation Step in Virome Studies of Water Samples	63
7	Viral Metagenomics Approaches for High-Resolution Screening of Multiplexed Arthropod and Plant Viral Communities	77
8	Different Approaches to Discover Mycovirus Associated to Marine Organisms Luca Nerva, Giovanna C. Varese, and Massimo Turina	97
9	Use of siRNAs for Diagnosis of Viruses Associated to Woody Plants in Nurseries and Stock Collections	115
10	The Use of High-Throughput Sequencing for the Study and Diagnosis of Plant Viruses and Viroids in Pollen	131

11	High-Resolution Screening of Viral Communities and Identification of New Pathogens in Fish Using Next-Generation Sequencing	151
12	Metagenomic Analyses of the Viruses Detected in Mycorrhizal Fungi and Their Host Orchid	161
	Hanako Shimura, Chikara Masuta, and Yasunori Koda	
13	DNA Multiple Sequence Alignment Guided by Protein Domains: The MSA-PAD 2.0 Method	173
	Bachir Balech, Alfonso Monaco, Michele Perniola, Monica Santamaria, Giacinto Donvito, Saverio Vicario, Giorgio Maggi, and Graziano Pesole	
14	From Whole-Genome Shotgun Sequencing to Viral Community Profiling: The ViromeScan Tool Simone Rampelli and Silvia Turroni	181
15	Shannon Entropy to Evaluate Substitution Rate Variation Among Viral Nucleotide Positions in Datasets of Viral siRNAs	187
16	Insect Virus Discovery by Metagenomic and Cell Culture-Based Approaches Finny S. Varghese and Ronald P. van Rij	197
Ind	ex	215