

List of Abbreviations	<i>i</i>
Abstract	v
Resumen	vii
Resum	xi
General introduction	2
1. Cucurbitaceae family	1
1.1. Economic importance	1
1.2. Main crop limitations.....	3
1.2.1. Pests	3
1.2.2. Viral infections	4
1.2.2.1. Watermelon mosaic virus.	6
1.2.2.2. Cucurbit yellow stunting disorder virus.	8
1.2.3. Fungal infections	10
1.2.3.1. Cucurbits powdery mildew	11
2. Breeding melons resistant to WMV, CYSDV and CPM	13
2.1. Melon genetic variability	13
2.1.1. Melon resistance sources against viruses	15
2.1.1.1. Melon resistance sources against WMV	16
2.1.1.2. Melon resistance sources against CYSDV	17
2.1.2. Melon resistance sources against powdery mildew.	18
2.1.3. Melon breeding and its effects on fruit quality	23
2.1.3.1. Fruit morphology.	24
2.1.3.2. External fruit characteristics.	25
2.1.3.3. Internal fruit characteristics.	25
2.1.3.4. Fruit ripening.	26
2.1.3.5. Sugars and organic acids profile.	27
2.1.3.6. VOCs.	28
2.2. Genetic and genomic tools for melon breeding.	29
2.2.1. Genomic resources.	29
2.2.2. SNPs genotyping methods.	32
2.2.3. Mapping populations and QTL analysis.	33
2.2.4. Reverse genetics platforms.	34
2.2.5. Transcriptomic analysis.	35
2.2.6. Genetic engineering and genome editing: transgenics and CRISPR/Cas9.....	37
Objectives	39
Results	41

Chapter 1. Incidence and genetic diversity of cucurbit viruses in the Spanish Mediterranean area	43
Abstract	41
1. Introduction	42
2. Materials and methods	45
3. Results	48
4. Discussion	67
Supplementary material	73
References	92
Chapter 2. Melon genome regions associated with TGR-1551 derived resistance to cucurbit yellow stunting disorder virus.	95
Abstract	96
1. Introduction	96
2. Results	99
3. Materials and Methods	114
4. Conclusions	117
Supplementary Materials	118
References	122
Chapter 3. Insights into the early transcriptomic response against Watermelon mosaic virus in melon	125
Abstract	126
1. Introduction	127
2. Results	128
3. Discussion	147
4. Conclusions	154
5. Methods	154
Supplementary materials	159
References	164
Chapter 4. Advanced genetic studies on powdery mildew resistance in TGR-1551	175
Abstract	176
1. Introduction	176
2. Results	179
3. Discussion	190
4. Materials and Methods	196
5. Conclusions	200
Supplementary materials	200
References	211

Chapter 5. Breeding quality melons derived from the multiresistant accession TGR-1551.

.....	218
Abstract	219
1. Introduction	219
2. Results and discussion	221
3. Conclusions.....	246
4. Materials and methods	246
Supplementary materials	251
References	278
General discussion	282
Conclusions	294
General references	297