2002 Gene List for Melon

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Gene lists of melon have been published previously, the last one in 1998 (109, 17, 18, 93, 95, 96). They included different types of genes: disease and pest resistance genes, isozymes, leaf, stem, flower, fruit and seed characters.. The 2002 list includes a total number of 162 loci, QTLs for Cucumber Mosaic Virus resistance, ethylene production during fruit maturation and ovary and fruit shape, and one cytoplasmic mutant (*cyt-Yt*) (Table 1).

Genes have also been cloned in melon (mRNA or complete gene with eventually intron…). Only genes with complete sequences are listed in Table 2. Most of them are related to fruit maturation. About 50 partial clones, for instance Resistance Gene Homologues, are also available in databases.

Genetic maps using different types of molecular markers have been published (4, 12, 25, 26, 86, 92, 122). Linkages between isozymes (114) and between phenotypic mutants (94) have also been reported. These maps have been constructed using different melon genotypes as parents and some markers cannot be transferred easily from one map to another or are not polymorphic between all the parents (Table 3). There is not yet a reference saturated map of melon. Moreover very few phenotypic traits have been mapped.

Allelism tests have often not been performed, inflating the number of described genes. This is particularly clear for *Powdery mildew resistance* but also for many other traits. This could be because accessions previously described with this trait are not (or no more) available. It is strongly recommended to send seed samples along with reports of new genes to the melon gene curators. They should consult the lists and the rules of gene nomenclature for the *Cucurbitaceae* (110, 17) before proposing a gene name and symbol.

Table 1. Gene list of melon. In **bold characters** are the genes which are maintained by the curators or which are very common in collections (like *andromonoecious* or *white testa*). In light characters are genes which either have been apparently lost, are not yet maintained by curators, or have uncertain descriptions. In the second part of the table are QTL and in the third part one cytoplasmic factor.

Gene symbol		Character	LG[z]	References
Prefered	Synonym			
a	***M***	***andromonoecious*. Mostly staminate, fewer perfect flowers; on *A*_ plants, pistillate flowers have no stamens; epistatic to *g*.**	**4, II**	**103, 111, 121**
ab	-	*abrachiate*. Lacking lateral branches. Interacts with *a* and *g* (*e.g. ab ab a a G*_ plants produce only staminate flowers).		39
Ac	**-**	***Alternaria cucumerina* resistance (in MR-1).**		**116**
Aco-1	***Ac***	***Aconitase-1*. Isozyme variant with two alleles, each regulating one band, in PI 218071, PI 224769.**	**A**	**114**
Acp-1	*APS-1[1], Ap-1[1]*	*Acid phosphatase-1*. Isozyme variant with two codominant alleles, each regulating one band. The heterozygote has two bands.		36
Acp-2	***Acp-1***	***Acid phosphatase-2*. Isozyme variant with two alleles, each regulating one band, in PI 194057, PI 224786. Relationship with *Acp-1* is unknown.**		**114**
Acp-4	**-**	***Acid phosphatase-4*. Isozyme variant with two alleles, each regulating one band, in PI 183256, PI 224786. Relationship with *Acp-1* unknown,**		**114**

		different from *Acp-2*.		
Af	-	*Aulacophora foveicollis* resistance. Resistance to the red pumpkin beetle.		119
Ag	**-**	***Aphis gossypii* tolerance. Freedom of leaf curling following aphid infestation (in PI 414723).**		**11**
Ak-4	**-**	***Adenylate kinase*. Isozyme variant with two alleles, each regulating one band, in PI 169334.**		**114**
Ala	-	*Acute leaf apex*. Dominant over obtuse apex, linked with *Lobed* leaf. (*Ala* in Maine Rock, *ala* in PV Green).		43
alb	**-**	***albino*. White cotyledons, lethal mutant (in Trystorp).**		**5**
Al-1	Al_1	*Abscission layer-1*. One of two dominant genes for abscission layer formation. See *Al-2*. (*Al-1 Al-2* in C68, *al-1 al-2* in Pearl).		115
Al-2	A_{l2}	*Abscission layer-2*. One of two dominant genes for abscission layer formation. See *Al-1*.		115
Al-3		***Abscission layer-3*. One dominant gene for abscission layer formation (in PI 161375). Relationship with *Al-1* or *Al-2* is unknown.**	**VIII**	**91**
Al-4		***Abscission layer-4*. One dominant gene for abscission layer formation (in PI 161375). Relationship with *Al-1* or *Al-2* is unknown.**	**IX**	**91**
bd	-	*Brittle dwarf*. Rosette growth with thick leaf. Male fertile, female sterile (in TAM-Perlita45).		20
Bi	**-**	***Bitter*. Bitter seedling (common in honeydew or in Charentais type while most American cantaloupes are *bi*).**		**69**
Bif-1	*Bif*	*Bitter fruit-1*. Bitterness of tender fruit in wild melon. Relations with *Bi* are unknown.		88
Bif-2	-	*Bitter fruit-2*. One of two complementary independent genes for bitter taste in young fruit: *Bif-2_ Bif-3_* are bitter. (Relationships with *Bi* and *Bif-1* are unknown).		73
Bif-3	-	*Bitter fruit-3*. One of two complementary independent genes for bitter taste in young fruit: *Bif-2_ Bif-3_* are bitter. (Relationships with *Bi* and *Bif-1* are unknown).		73
cab-1	**-**	***cucurbit aphid borne* yellows virus resistance-*1*. One of two complementary independent genes for resistance to this polerovirus: *cab-1 cab-1 cab-2 cab-2* plants are resistant. (in PI 124112).**		**29**
cab-2	**-**	***cucurbit aphid borne* yellows virus resistance-*2*. One of two complementary independent genes for resistance to this polerovirus: *cab-1 cab-1 cab-2 cab-2* plants are resistant. (in PI 124112).**		**29**
cb	cb_1	*cucumber beetle* resistance. Interacts with *Bi*, the nonbitter *bi bi cb cb* being the more resistant (in C922-174-B).		84
cf	**-**	***cochleare folium*. Spoon-shaped leaf with upward curling of the leaf margins (spontaneous mutant in Galia).**		**68**
cl	-	*curled leaf*. Elongated leaves that curl upward and inward. Usually male and female sterile.		20
Cys	-	*Cucurbit Yellow Stunting* Disorder virus resistance. One dominant gene for resistance to this crinivirus in TGR-1551.		70
dc-1	-	*Dacus cucurbitae-1* resistance. One of two complementary recessive genes for resistance to the melon fruitfly. See *dc-2*.		112
dc-2	-	*Dacus cucurbitae-2* resistance. One of two complementary recessive genes for resistance to the melon fruitfly. See *dc-1*.		112
dl	**-**	***dissected leaf* (in URSS 4). Highly indented leaves.**	**10**	**31**
dl^v	***cl***	***dissected leaf Velich*. First described as *cut leaf* in Cantaloup de Bellegarde. Allelic to *dl*.**	**10**	**120**
dl-2	-	*dissected leaf-2*. First described as «hojas hendidas».		35
dlet	*dl*	*delayed lethal*. Reduced growth, necrotic lesions on leaves and premature death.		129
Ec	**-**	***Empty cavity*. Carpels are separated at fruit maturity leaving a cavity. *Ec* in PI 414723, *ec* in Védrantais.**	**III**	**90**

ech	**-**	***exaggerated curvature of the hook*. Triple response of seedlings germinating in darkness in presence of ethylene. *ech* in PI 161375, *Ech* in Védrantais.**	**I**	**91**
f	**-**	***flava*. Chlorophyl deficient mutant. Growth rate reduced (in K 2005).**	**8**	**100**
fas	**-**	***fasciated* stem (in Vilmorin 104).**		**40**
Fdp-1	**-**	***Fructose diphosphate-1*. Isozyme variant with two alleles, each regulating one band, in PI 218071, PI 224688.**		**114**
Fdp-2	**-**	***Fructose diphosphate-2*. Isozyme variant with two alleles, each regulating one band, in PI 204691, PI 183256.**		**114**
fe	**-**	***fe* (iron) inefficient mutant. Chlorotic leaves with green veins. Turns green when adding iron in the nutrient solution.**		**83**
Fn	**-**	***Flaccida necrosis*. Semi-dominant gene for wilting and necrosis with F pathotype of Zucchini Yellow Mosaic Virus (*Fn* in Doublon, *fn* in Védrantais).**	**2, V**	**108**
Fom-1	***Fom*$_1$**	***Fusarium oxysporum melonis* resistance. Resistance to races 0 and 2 and susceptibility to races 1 and 1,2 of Fusarium wilt (*Fom-1* in Doublon, *fom-1* in Charentais T).**	**5, IX**	**107**
Fom-2	***Fom*$_{1,2}$**	***Fusarium oxysporum melonis* resistance. Resistance to races 0 and 1 and susceptibility to races 2 and 1,2 of Fusarium wilt. (*Fom-2* in CM 17187, *fom-2* in CharentaisT).**	**6, XI**	**107**
Fom-3	**-**	***Fusarium oxysporum melonis* resistance. Same phenotype as *Fom-1* but segregates independently from *Fom-1*. (*Fom-3* in Perlita FR, *fom-3* in CharentaisT).**		**130**
G	**-**	***gynomonoecious*. Mostly pistillate, fewer perfect flowers. Epistatic to *a a A_ G_* monoecious; *A_ g g* gynoecious; *a a G_* andromonoecious; *a a g g* hermaphrodite.**		**103**
gf	**-**	***green flesh* color. Recessive to salmon. (*gf* in honeydew, *Gf* in Smiths' Perfect cantaloupe).**	**IX**	**51**
gl	**-**	***glabrous*. Trichomes lacking (in Arizona glA).**	**3**	**38**
gp	-	*green petals*. Corolla leaf like in color and venation.		79
Gpi	**-**	***Glucosephosphate isomerase*. Isozyme variant with two alleles, each regulating one band, in PI 179680.**		**114**
Gs	-	*Gelatinous sheath* around the seeds. Dominant to absence of gelatinous sheath.		41
gyc	**-**	***greenish yellow corolla*.**		**128**
gy	***n, M***	**gynoecious. Interacts with *a* and *g* to produce stable gynoecious plants (*A_ g g gy gy*) (in WI 998).**		**60, 62**
h	**-**	***halo* cotyledons. Yellow halo on the cotyledons, later turning green.**	**4, II**	**82**
Idh	**-**	***Isocitrate dehydrogenase*. Isozyme variant with two alleles, each regulating one band, in PI 218070, PI 224688.**	**A**	**114**
Imy	-	*Interveinal mottling and yellowing* resistance. Resistance to a complex of viruses in PI 378062.		49
jf	-	*juicy flesh*. Segregates discretely in a monogenic ratio in segregating generations.		13
L	-	*Lobed* leaf. Dominant on non lobed, linked with *Acute leaf apex*. (*L* in Maine Rock, *l* in P.V. Green).		43
lmi	**-**	***long mainstem internode*. Affects internode length of the main stem but not of the lateral ones (in 48764).**	**8**	**74**
Liy	**-**	***Lettuce infectious yellows* virus resistance. One dominant gene for resistance to this crinivirus in PI 313970.**		**75**

Lt	**-**	***Liriomyza trifolii* (leafminer) resistance (in Nantais Oblong).**		**28**
M-Pc-5	-	*Modifier of Pc-5*. Gene *Pc-5* for downy mildew resistance (see *Pc-5*) is dominant in presence of *M-Pc-5*, recessive in the absence of *M-Pc-5*.		2
Mc	**-**	***Mycosphaerella citrullina* resistance. High degree of resistance to gummy stem blight (in PI 140471).**		**104**
Mc-2	*Mc*^{i}	*Mycosphaerella citrullina* resistance-2. Moderate degree of resistance to gummy stem blight (in C-1 and C-8.)		104
Mc-3	-	*Mycosphaerella citrullina* resistance-3. High level of resistance to gummy stem blight in PI 157082, independent from *Mc*.		131
Mc-4	-	*Mycosphaerella citrullina* resistance-4. High level of resistance to gummy stem blight in PI 511890. Relationships with *Mc* and *Mc-3* unknown.		131
Mca	-	*Macrocalyx*. Large, leaf like structure of the sepals in staminate and hermaphrodite flowers (*Mca* in makuwa, *mca* in Annamalai).		42
Mdh-2	**-**	***Malate dehydrogenase-2*. Isozyme variant with two alleles, each regulating one band, in PI 224688, PI 224769.**	**B**	**114**
Mdh-4	**-**	***Malate dehydrogenase-4*. Isozyme variant with two alleles, each regulating one band, in PI 218070, PI 179923.**	**B**	**114**
Mdh-5	**-**	***Malate dehydrogenase-5*. Isozyme variant with two alleles, each regulating one band, in PI 179923, PI 180283.**	**B**	**114**
Mdh-6	**-**	***Malate dehydrogenase-6*. Isozyme variant with two alleles, each regulating one band, in P 179923, PI 180283.**	**B**	**114**
Me	-	*Mealy* flesh texture. Dominant to crisp flesh. (*Me* in *C. callosus*, *me* in makuwa).		41
Me-2	**-**	***Mealy* flesh texture-2 (in PI 414723).**		**90**
Mpi-1	**-**	***Mannosephosphate isomerase-1*. Isozyme variant with two alleles, each regulating one band, in PI 183257, PI 204691.**	**A**	**114**
Mpi-2	**-**	***Mannosephosphate isomerase-2*. Isozyme variant with two alleles, each regulating one band, in PI 183257, PI 204691.**	**A**	**114**
ms-1	***ms*^{1}**	***male sterile-1*. Indehiscent anthers with empty pollen walls in tetrad stage.**	**3**	**8**
ms-2	***ms*^{2}**	***male sterile-2*. Anthers indehiscent, containing mostly empty pollen walls, growth rate reduced.**	**6, XI**	**10**
ms-3	***ms-L***	***male sterile-3*. Waxy and translucent indehiscent anthers, containing two types of empty pollen sacs.**	**12**	**77**
ms-4	**-**	***male sterile-4*. Small indehiscent anthers. First male flowers abort at bud stage (in Bulgaria 7).**	**9**	**71**
ms-5	**-**	***male sterile-5*. Small indehiscent anthers. Empty pollen (in Jivaro, Fox).**	**13**	**67**
Mt	-	*Mottled* rind pattern. Dominant to uniform color. Epistatic with *Y* (not expressed in *Y_*) and *st* (*Mt_ st st* and *Mt_ St_* mottled; *mt mt st st* striped, *mt mt St_* uniform). (*Mt* in Annamalai, *mt* in makuwa).		41
Mt-2	**-**	***Mottled* rind pattern (in PI 161375). Relationship with *Mt* unknown.**	**II**	**90**
Mu	-	*Musky* flavour (olfactory). Dominant on mild flavor (*Mu* in *C. melo callosus*, *mu* in makuwa or Annamalai).		41
Mvd	-	*Melon vine decline* resistance. Semi-dominant gene for partial resistance to *Acremonium cucurbitacearum* and *Monosporascus cannonballus* (in Pat 81 *agrestis* melon).		52
My	-	*Melon yellows* virus resistance. Semi-dominant gene, in Nagata Kin Makuwa, for partial resistance to this crinivirus.		37, 81
n	**-**	***nectarless*. Nectaries lacking in all flowers (in 40099).**		**6**
Nm	**-**	***Necrosis* with *Morocco* strains of Watermelon Mosaic Virus, a potyvirus (*Nm* in Védrantais, *nm* in Ouzbèque).**		**105**
nsv	**-**	**Melon *necrotic spot virus* resistance. One recessive gene for resistance tothis carmovirus in Gulfstream, Planters Jumbo.**	**7, XII**	**19**
O	**-**	***Oval* fruit shape. Dominant to round; associated with *a*.**		**121**

Org-1	-	*Organogenic* response for *in vitro* shoot regeneration. Partially dominant. Interacts with an additive model with *Org-2*.		80
Org-2	-	*Organogenic* response for *in vitro* shoot regeneration. Partially dominant. Interacts with an additive model with *Org-1*.		80
p	**-**	***pentamerous*. Five carpels and stamens; recessive to trimerous (in Casaba).**	**XII**	**111**
Pa	**-**	***Pale* green foliage. *Pa Pa* plants are white (lethal); *Pa pa* are yellow (in 30567).**	**3**	**76**
Pc-1	**-**	***Pseudoperonospora cubensis* resistance. One of two complementary incompletely dominant genes for downy mildew resistance (in PI 124111). See *Pc-2*.**		**16, 117**
Pc-2	**-**	***Pseudoperonospora cubensis* resistance. One of two complementary incompletely dominant genes for downy mildew resistance (in PI 124111). See *Pc-1*.**		**16, 117**
Pc-3	**-**	***Pseudoperonospora cubensis* resistance. Partial resistance to downy mildew (in PI 414723).**		**33**
Pc-4	**-**	***Pseudoperonospora cubensis* resistance. One of two complementary genes for downy mildew resistance in PI 124112. Interacts with *Pc-1* or *Pc-2*.**		**63**
Pc-5	-	*Pseudoperonospora cubensis* resistance. One gene in Line 5-4-2-1 which interacts with *M-Pc-5* in the susceptible line K15-6 (*Pc-5* is dominant in presence of *M-Pc-5*, recessive in the absence of *M-Pc-5*).		2
Pep-gl	**-**	***Peptidase with glycyl-leucine*. Isozyme variant with two alleles, each regulating one band, in PI 218070.**	**B**	**114**
Pep-la	**-**	***Peptidase with leucyl-alanine*. Isozyme variant with two alleles, each regulating one band, in PI 183256.**		**114**
Pep-pap	**-**	***Peptidase with phenylalanyl-proline*. Isozyme variant with two alleles, each regulating one band, in PI 183256.**		**114**
Pgd-1	*6-PGDH-2*[1] *Pgd-2*[1]	*Phosphoglucodehydrogenase-1*. Isozyme variant with two alleles, each regulating one band.The heterozygote has one intermediate band.		36
6-Pgd-2	**-**	***6-Phosphogluconate dehydrogenase*. Isozyme variant with two alleles, each regulating one band, in PI 161375, Védrantais. Relationship with *Pgd-1* is unknown.**	**IX**	**4**
Pgd-3	***Pgd***	***6-Phosphogluconate dehydrogenase*. Isozyme variant with two alleles, each regulating one band, in PI 218070. Relationship with *Pgd-1* and *6-Pgd-2* is unknown.**	**A**	**114**
Pgi-1	*PGI-1*[1]	*Phosphoglucoisomerase-1*. Isozyme variant with two alleles, each regulating two bands. The heterozygote has three bands.		36
Pgi-2	*PGI-2*[1]	*Phosphoglucoisomerase-2*. Isozyme variant with two alleles, each regulating two bands. The heterozygote has three bands.		36
Pgm-1	*PGM-2*[1] *Pgm-2*[1]	*Phosphoglucomutase-1*. Isozyme variant with two alleles, each regulating two bands. The heterozygotes has three bands.		36
Pgm-2	***Pgm***	***Phosphoglucomutase*. Isozyme variant with two alleles, each regulating one band, in PI 218070, PI 179923. Relationship with *Pgm-1* is unknown.**	**A**	**114**
pH	**-**	***pH*(acidity) of the mature fruit flesh.Low pH value in PI 14723 dominant to high pH value in Dulce**	**VIII**	**25**
pin	**-**	***pine-seed* shape (in PI 161375).**	**III**	**92**
Pm-1	***Pm*[1] *Pm-A ?***	***Powdery mildew* resistance-1. Resistance to race 1 of *Sphaerotheca fuliginea* (in PMR 45).**		**55**
Pm-2	***Pm*[2] *Pm-C ?***	***Powdery mildew* resistance-2. Interacts with *Pm-1*. Resistance to race 2 of *Sphaerotheca fuliginea* (in PMR 5 with *Pm-1*).**		**9**
Pm-3	***Pm*[3]**	***Powdery mildew* resistance-3. Resistance to race 1 of *Sphaerotheca fuliginea* (in PI 124111).**	**7**	**47, 48**
Pm-4	***Pm*[4]**	***Powdery mildew* resistance-4. Resistance to *Sphaerotheca fuliginea* (in**		**47, 48**

		PI 124112).		
Pm-5	***Pm*^{5}**	***Powdery mildew* resistance-5. Resistance to *Sphaerotheca fuliginea* (in PI 124112).**		**47, 48**
Pm-6	**-**	***Powdery mildew* resistance-6. Resistance to *Sphaerotheca fuliginea* race 2 (in PI 124111).**		**61**
Pm-7	**-**	***Powdery mildew* resistance-7. Resistance to *Sphaerotheca fuliginea* race 1 (in PI 414723).**		**1**
Pm-E	**-**	***Powdery mildew* resistance-E. Interacts with *Pm-C* in PMR5 for *Erysiphe cichoracearum* resistance.**		**34**
Pm-F	**-**	***Powdery mildew* resistance-F. Interacts with *Pm-G* in PI 124112 for *Erysiphe cichoracearum* resistance.**		**34**
Pm-G	**-**	***Powdery mildew* resistance-G. Interacts with *Pm-F* in PI 124112 for *Erysiphe cichoracearum* resistance.**		**34**
Pm-H	**-**	***Powdery mildew* resistance-H. Resistance to *Erysiphe cichoracearum* and susceptibility to *Sphaerotheca fuliginea* (in Nantais oblong).**		**34**
Pm-w	***Pm-B ?***	***Powdery mildew* resistance in WMR 29. Resistance to *Sphaerotheca fuliginea race 2.***	**2, V**	**94**
Pm-x	**-**	***Powdery mildew* resistance in PI 414723. Resistance to *Sphaerotheca fuliginea.***	**4, II**	**94**
Pm-y	**-**	***Powdery mildew* resistance in VA 435. Resistance to *Sphaerotheca fuliginea***	**7, XII**	**94**
***Prv*^{1}**	***Wmv***	***Papaya Ringspot virus* resistance. Resistance to W strain of this potyvirus (formerly Watermelon Mosaic Virus 1) (in B 66-5, WMR 29, derived from PI 180280). Dominant to *Prv*^{2}.**	**5, IX**	**98, 123**
***Prv*^{2}**	**-**	***Papaya Ringspot virus* resistance. Allele at the same locus as *Prv*^{1} but different reaction with some strains of the virus (in 72-025 derived from PI 180283). Recessive to *Prv*^{1}.**	**5, IX**	**57, 98**
Prv-2	**-**	***Papaya Ringspot virus* resistance-2 (in PI 124112). Relationship with *Prv* is unknown.**		**78**
Px-1	*PRX-1*^{1}	*Peroxidase-1*. Isozyme variant with two codominant alleles, each regulating a cluster of four adjacent bands. The heterozygote has five bands.		36
Px-2	*Px*$_{2A}$ *Prx2*	*Peroxidase-2*. Isozyme variant with two codominant alleles, each regulating a cluster of three adjacent bands. The heterozygote has 4 bands.		14, 22
r	**-**	***red* stem. Red pigment under epidermis of stems, especially at nodes; tan seed color (in PI 157083).**	**3**	**7, 76**
ri	-	*ridge*. Ridged fruit surface, recessive to ridgeless. (*ri* in C68, *Ri* in Pearl).		115
s	-	*sutures*. Presence of vein tracts on the fruit (« sutures »); recessive to ribless.		3
s-2	**-**	***sutures-2* on the fruit rind (in PI 161375). Relationship with *s* is unknown.**	**XI**	**90**
Sfl	*S*	*Subtended floral leaf*. The floral leaf bearing the hermaphrodite flowers is sessile, small and encloses the flower. (*Sfl* in makuwa, *sfl* in Annamalai).		42
si-1	***b***	***short internode-1*. Extremely compact plant habit (bush type) (in UC Topmark bush).**	**1**	**27**
si-2	**-**	***short internode-2*. Short internodes from 'birdnest' melon (in Persia 202).**		**87**
si-3	**-**	***short internode-3*. Short internodes in Maindwarf.**		**64**
Skdh-1	-	*Shikimate dehydrogenase-1*. Isozyme variant with two codominant alleles, each regulating one band. The heterozygote has three bands.		14, 44
slb	*sb*	*short lateral branching*. Reduction of the elongation of the lateral branches, in LB.		85
So	-	*Sour* taste. Dominant to sweet.		65
So-2	**-**	***Sour* taste-2 (in PI 414723). Relationship with *So* is unknown.**		**90**

sp	-	*spherical* fruit shape. Recessive to obtuse; dominance incomplete.		3, 72
spk	**-**	***speckled* fruit epidermis (*spk* in PI 161375 or PI 414723, *Spk* in Védrantais).**	**VII**	**92**
st	-	*striped* epicarp. Recessive to non-striped.		46
st-2	***st***	***striped epicarp-2*. Present in Dulce, recessive to non-striped in PI 414723. Relationship with *st* is unknown.**	**XI**	**25**
v	**-**	***virescent*. Pale cream cotyledons and hypocotyls; yellow green foliage (mainly young leaves).**	**11**	**50**
v-2	**-**	***virescent-2*.**		**32**
v-3	**-**	***virescent-3*. White cotyledons which turn green, light green young leaves which are normal when they are older.**		**101**
Vat	**-**	***Virus aphid transmission* resistance. Resistance to the transmission of several viruses by *Aphis gossypii* (in PI 161375).**	**2, V**	**97**
w	**-**	***white* color of mature fruit. Recessive to dark green fruit skin. (*w* in honeydew, *W* in Smiths' Perfect cantaloupe).**		**51**
wf	**-**	***white flesh*. Recessive to salmon. *Wf* epistatic to *Gf_*.**		**15, 53**
Wi	-	White color of *immature* fruit. Dominant to green.		65
Wmr	**-**	***Watermelon Mosaic virus 2* (potyvirus) resistance (in PI 414723).**	**II**	**45**
Wt	**-**	***White testa*. Dominant to yellow or tan seed coat color.**		**46**
Wt-2	**-**	***White testa-2* (in PI 414723). Relationship with *Wt* unknown.**	**IV**	**90**
Y	**-**	***Yellow* epicarp. Dominant to white fruit skin.**		**46**
yg	**-**	***yellow green* leaves. Reduced chlorophyll content.**	**6, XI**	**124**
yg^{W}	***lg***	***yellow green Weslaco*. First described as *light green* in a cross Dulce x TAM-Uvalde. Allelic to *yg*.**		**21**
yv	**-**	***yellow virescence*. Pale cotyledons; yellow green young leaves and tendrils; bright and yellow petals and yellow stigma; etiolated; older leaves becoming green.**	**1**	**127**
yv-2	***yv-X***	***yellow virescence-2*. Young leaves yellow green, old leaves normal green.**	**5, IX**	**102**
Zym	***Zym-1***	***Zucchini Yellow Mosaic* virus resistance. Resistance to pathotype 0 of this potyvirus (in PI 414723).**	**4, II**	**99**
Zym-2	**-**	***Zucchini Yellow Mosaic* potyvirus resistance. One of three complementary genes (see *Zym* and *Zym-3*) for resistance to this potyvirus (in PI 414723).**		**24**
Zym-3	**-**	***Zucchini Yellow Mosaic* potyvirus resistance. One of three complementary genes (see *Zym* and *Zym-2*) for resistance to this potyvirus (in PI 414723).**		**24**
		Quantitative Trait Loci (QTLs)		
cmv	-	*cucumber mosaic virus* resistance. Three recessive genes have been described in the cross Freemans's cucumber x Noy Amid. Seven QTLs are involved in resistance to three different strains of this cucumovirus in the cross Védrantais x PI 161375.		30, 58
eth		*ethylene* production in fruit (climacteric crisis). Four QTLs described in the cross Védrantais x PI 161375.		91
fl	-	*fruit length*. Four QTL described in the cross Védrantais x PI 161375 and 4 QTLs in the cross Védrantais x PI 414723, one is common to both crosses.		89
fs	-	*fruit shape* (ratio fruit length/fruit width). Six QTL described in the cross Védrantais x PI 161375 and 2 QTLs in the cross Védrantais x PI 414723, which are common to both crosses.		89
fw	-	*fruit width*. Five QTL described in the cross Védrantais x PI 161375 and 1 QTLs in the cross Védrantais x PI 414723.		89
ovl	-	*ovary length*. Six QTL described in the cross Védrantais x PI 161375.		89
ovs	-	*ovary shape* (ratio ovary length/ovary width). Six QTL described in the cross Védrantais x PI 161375.		89
ovw	-	*ovary width*. Eight QTL described in the cross Védrantais x PI 161375.		89

		Cytoplasmic Factors	
cyt-Yt	-	*cytoplasmic yellow tip*. Chlorophyll deficient mutant with yellow young leaves, turning green when becoming older. Maternally inherited	106

[z] Linkage group to which this gene belongs: Letters correspond to (114), arabic numbers to (94) and roman numbers to (92). See Table 3.

Table 2. List of cloned genes in melon and their putative function. Sequences can be submitted directly to databases or can be published in journals (Ref.). A few genes have been mapped (Linkage Groups).

Gene symbol	**Gene accession**	**(Putative) Function**	**Submitted by**	**LG[z]**	**Ref.**
Cm-AAT	AB075227	Alcohol acetyltransferase GeAAT	Ishimaru M.		
Cm-AAT2	AF468022	Putative alcohol acyltransferase (AT2)	El Yahyaoui F. *et al*		
Cm-ACO1	X95551	1-aminocyclopropane-1-carboxylate (ACC) oxidase 1	Lasserre E. *et al*	V	66
Cm-ACO2	X95552	1-aminocyclopropane-1-carboxylate (ACC) oxidase 2	Lasserre E. *et al*	VIII	66
Cm-ACO3	X95553	1-aminocyclopropane-1-carboxylate (ACC) oxidase 3	Lasserre E. *et al*		66
Cm-ACS1	AB025906	1-aminocyclopropane-1-carboxylate (ACC) synthase 1	Yamamoto M. *et al*	XI	126
Cm-ACS1	AB032935	1-aminocyclopropane-1-carboxylate (ACC) synthase	Shiomi S. *et al*	XI	
Cm-ACS2	D86242	1-aminocyclopropane-1-carboxylate (ACC) synthase 2	Ishiki Y. *et al*		54
Cm-ACS2	AB032936	1-aminocyclopropane-1-carboxylate (ACC) synthase 2	Shiomi S. *et al*		
Cm-AGPP-mlf2	AF030383 AF030384	ADP-glucose pyrophosphorylase large subunit (mlf2)	Park S.-W. *et al*		
Cm-AGPP-msf1	AF030382	ADP-glucose pyrophosphorylase small subunit (msf1)	Park S.-W. *et al*		
Cm-AmT1	AY066012	Aminotransferase 1	Taler D. *et al*		
Cm-AmT2	AF461048	Aminotransferase 2	Taler D. *et al*		
Cm-AO1	AF233593	Ascorbate oxidase AO1	Sanmartin M. *et al*		

Cm-AO3	Y10226	Ascorbate oxidase AO3	Pateraki I. *et al*		
Cm-AO4	AF233594	Ascorbate oxidase AO4	Sanmartin M. *et al*		
Cm-AOS	AF081954	Allene oxide synthase (AOS)	Tijet N. *et al*		
Cm-ASR1	AF426403 AF426404	Abscisic acid response protein (Asr1)	Hong S.-H. *et al*		
Cm-CCM	D32206	Cucumisin (serine protease)	Yamagata H. *et al*		125
Cm-CHI1	AF241266	Chitinase 1	Zou X. *et al*		
Cm-CHI2	AF241267 AF241538	Chitinase 2	Zou X. *et al*		
Cm-E8	AB071820	Regulator of ethylene synthesis, similar to *Le-E8*	Fujimori A. *et al*		
Cm-EIL1	AB063191	Transcription factor Ethylene Insensitive 1 for At-EIN3-like protein	Sato T. *et al*		
Cm-EIL2	AB063192	Transcription factor Ethylene Insensitive 2 for At-EIN3-like protein	Sato T. *et al*		
Cm-ERS1	AF037368	Putative ethylene receptor ERS1	Sato Nara K. *et al*	I	113
Cm-ERS1	AB049128	Ethylene receptor ERS1	Furukawa H.		
Cm-ETR1	AF054806	Putative ethylene receptor (ETR1)	Sato Nara K. *et al*		113
Cm-ETR1	AB052228	Ethylene receptor (ETR1)	Furukawa H.		
Cm-GAS1	AY077642	Galactinol synthase (GAS1)	Volk G.M. *et al*		
Cm-GAS2	AY077641	Galactinol synthase (GAS2)	Volk G.M. *et al*		
Cm-GLD	AF252339	L-galactono-1,4-lactone dehydrogenase	Pateraki I. and Kanellis A.K.		
Cm-HMG-CoA	AB021862	3-hydroxy-3-methylglutaryl coenzyme A reductase	Kato-Emori S. *et al*		59
Cm-HPL	AF081955	Fatty acid 9-hydroperoxide lyase (HPL)	Tijet N. *et al*		118
Cm-ITS1	AF006802	Internal Transcribed Spacer 1	Jobst J. *et al*		56
Cm-ITS2	AF013333	Internal Transcribed Spacer 2	Jobst J. *et al*		56
Cm-Lec17	AF520577	17 kDa phloem lectin (Lec17)	Dinant S. *et al*		
Cm-Lec17-1	AF517156	17 kDa phloem lectin Lec17-	Dinant S. *et al*		

		1	
Cm-Lec17-3	AF517157	17 kDa phloem lectin Lec17-3 mRNA	Dinant S. *et al*
Cm-Lec26	AF517154	26 kDa phloem lectin (Lec26)	Dinant S. *et al*
Cm-MPP	AF297643	Mitochondrial processing peptidase beta subunit	He C. *et al*
Cm-PG1	AF062465	Polygalacturonase precursor (MPG1)	Hadfield K.A. *et al*
Cm-PG2	AF062466	Polygalacturonase precursor (MPG2)	Hadfield K.A. *et al*
Cm-PG3	AF062467	Polygalacturonase precursor (MPG3)	Hadfield K.A. *et al*
Cm-ProETR1	E51774	Promoter of melon ethylene receptor	Ezura H. *et al* Patent JP 2001037484-A 14 13-FEB-2001
Cm-PSY1	Z37543	Phytoene synthase	Karvouni Z. *et al*
Cm-TCTP	AF230211	Translationally controlled tumor protein-related protein	Gomez-Lim M.A. *et al*

[z] Linkage group to which this gene belongs according to 92.

Table 3. Genes and QTLs localization and correspondance between linkage groups using common markers such as phenotypic traits or molecular markers (mainly SSR according to 23).

94[z]	4[z]	122[z]	114[z]	12[z]	86[z]	92[z]	25[z]	Genes	QTLs
1	-	-	-	-	-	-	-	*si-1, yv*	
2	2+ K	-	-	6	4	V	-	*Cm-ACO1, Fn, Pm-w, Vat*	*fl5.1, fw5.2*
3	-	-	-	-	-	-		*gl, ms-1, Pa, r*	
4	D	-	-	3	8	II	IV	*a, h, mt-2, Pm-x, Zym*	*cmv2.1, cmv2.2, eth2.1, fl2.1, fs2.1, fs2.2, fw2.1, ovl2.1, ovl2.2, ovs2.1, ovs2.2, ovw2.1*
5	5	-	-	11	7	IX	II	*Al-4, Fom-1, gf, 6-Pgd2, Prv, yv-2*	*cmv9.1, fw9.1, ovl9.1, ovs9.1*
-	-	-	A	-	-	-	-	*Aco-1, Idh, Mpi-1, Mpi-2, Pgd-3, Pgm-2*	
6	6	III	-	1	5	XI	III	*Cm-ACS1, Fom-2, ms-2, s-2, yg*	*eth11.1, fs11.1*
7	7	-	-	3	11	XII	-	*nsv, p, Pm-Y*	*cmv12.1, cmv12.2, fs12.1, fw12.1, ovs12.1, ovw12.1*
8	-	-	-	-	-	-	-	*f, lmi*	
9	-	-	-	-	-	-	-	*dl*	
10	-	-	-	-	-	-	-	*ms-3*	

11	-	-	-	-	-	-	-	*ms-4*	
12	-	-	-	-	-	-	-	*ms-5*	
13	-	-	-	-	-	-	-	*V*	
-	C	-	-	10	10	IV	-	*Wt-2*	*fl4.1, fw4.1, ovl4.1*
-	E	-	-	3+8+13 (+17?)	1	VIII	I	*Al-3, Cm-ACO2, pH*	*cmv8.1, fl8.1, fl8.2, fs8.1, fs8.2, ovl8.1, ovs8.1, ovs8.2, ovw8.1*
-	F	-	-	-	3	VII	VI	*Spk*	*fw7.1, ovl7.1, ovs7.1*
-	G	-	-	3+12	6	I	VIII	*ech, Cm-ERS1*	*eth1.1, fl1.1, fs1.1, ovs1.1*
-	J	-	-	-	2	III	V	*Cm-ACS5, Ec, pin*	*cmv3.1, cmv3.2, eth3.1*
-	-	-	B	-	-	-	-	*Mdh-2, Mdh-4, Mdh-5, Mdh-6, Pep-gl*	
-	A	-	-	4+7	9	X	-		*ovw10.1*
-	B	-	-	9	12	VI	-		*fl6.1*

N.B. If *6-Pgd-2* (4) and *Pgd-3* (114) correspond to the same locus, which is probable but not yet demonstrated, lines 5 and 6 of this table can be merged.
[z] Bibliographical references

!

Literature cited

1. Anagnostou, K., M. Jahn and R. Perl-Treves. 2000. Inheritance and linkage analysis of resistance to zucchini yellow mosaic virus, watermelon mosaic virus, papaya ringspot virus and powdery mildew in melon. Euphytica 116:265-270.
2. Angelov, D. and L. Krasteva. 2000. Dominant inheritance of downy mildew resistance in melons. *in* Proceedings of Cucurbitaceae 2000 (Ed. Katzir, N. and H.S. Paris), 19-23/03/2000, Ma'ale Ha Hamisha (ISR). 273-275.
3. Bains, M.S. and U.S. Kang. 1963. Inheritance of some flower and fruit characters in muskmelon. Indian J Genet Pl Breed 23:101-106.
4. Baudracco-Arnas, S. and M. Pitrat. 1996. A genetic map of melon (*Cucumis melo* L.) with RFLP, RAPD, isozyme, disease resistance and morphological markers. Theor Appl Genet 93:57-64.
5. Besombes, D., N. Giovinazzo, C. Olivier, C. Dogimont and M. Pitrat. 1999. Description and inheritance of an *albino* mutant in melon. Cucurbit Genet Coop Rep 22:14-15.
6. Bohn, G.W. 1961. Inheritance and origin of nectarless muskmelon. J Hered 52:233-237.
7. Bohn, G.W. 1968. A red stem pigment in muskmelon. Veg Improv Newslet 10:107.
8. Bohn, G.W. and T.W. Whitaker. 1949. A gene for male sterility in the muskmelon (*Cucumis melo* L.). Proc Amer Soc Hortic Sci 53:309-314.
9. Bohn, G.W. and T.W. Whitaker. 1964. Genetics of resistance to powdery mildew race 2 in muskmelon. Phytopathology 54:587-591.
10. Bohn, G.W. and J.A. Principe. 1964. A second male-sterility gene in the muskmelon. J Hered 55:211-215.
11. Bohn, G.W., A.N. Kishaba, J.A. Principe and H.H. Toba. 1973. Tolerance to melon aphid in *Cucumis melo* L. J Amer Soc Hort Sci 98:37-40.
12. Brotman, Y., L. Silberstein, I. Kovalski, J. Klingler, G. Thompson, N. Katzir and R. Perl-Treves. 2000. Linkage groups of *Cucumis melo*, including resistance gene homologues and known genes. *in* Proceedings of Cucurbitaceae 2000 (Ed. Katzir, N. and H.S. Paris), 19-23/03/2000, Ma'ale Ha Hamisha (ISR). 441-448.
13. Chadha, M.L., K.S. Nandpuri and S. Singh. 1972. Inheritance of some fruit characters in muskmelon. Indian J Horticult 29:58-62.
14. Chen, F.C., C.H. Hsiao, Y.M. Chang and H.W. Li. 1990. Isozyme variation in *Cucumis melo* L. I. Peroxidase and shikimate dehydrogenase variation in four melon varieties and its application for F1 hybrid identification. J Agric Res China 39:182-189.
15. Clayberg, C.D. 1992. Interaction and linkage tests of flesh color genes in *Cucumis melo* L. Cucurbit Genet Coop Rep 15:53.
16. Cohen, Y., S. Cohen, H. Eyal and C.E. Thomas. 1985. Inheritance of resistance to downy mildew in *Cucumis melo* PI 124111. Cucurbit Genet Coop Rep 8:36-38.

17. Committee, C.G.L. 1982. Update of cucurbit gene list and nomenclature rules. Cucurbit Genet Coop Rep 5:62-66.
18. Committee, C.G.L. 1986. Gene list for muskmelon (*Cucumis melo* L.). Cucurbit Genet Coop Rep 9:111-120.
19. Coudriet, D.L., A.N. Kishaba and G.W. Bohn. 1981. Inheritance of resistance to muskmelon necrotic spot virus in a melon aphid resistant breeding lines of muskmelon. J Amer Soc Hort Sci 106:789-791.
20. Cox, E.L. 1985. Three new seedling marker mutants in *Cucumis melo*. HortScience 20:657 (Abstr.).
21. Cox, E.L. and K.E. Harding. 1986. Linkage relationships of the light green mutant in cantaloupe. HortScience 21:940 (Abstr.).
22. Dane, F. 1983. Cucurbit. *in* Isozymes in plant genetics and breeding, part B (Ed. Tanksley, S.D. and T.J. Orton), Elsevier Science Publication, Amsterdam (NL). 369-390.
23. Danin-Poleg, Y., N. Reis, G. Tzuri and N. Katzir. 2001. Development and characterization of microsatellite markers in *Cucumis*. Theor Appl Genet 102:61-72.
24. Danin-Poleg, Y., H.S. Paris, S. Cohen, H.D. Rabinowitch and Z. Karchi. 1997. Oligogenic inheritance of resistance to zucchini yellow mosaic virus in melons. Euphytica 93:331-337.
25. Danin-Poleg, Y., Y. Tadmor, G. Tzuri, N. Reis, J. Hirschberg and N. Katzir. 2002. Construction of a genetic map of melon with molecular markers and horticultural traits, and localization of genes associated with ZYMV resistance. Euphytica 125:373-384.
26. Danin-Poleg, Y., N. Reis, S. Baudracco-Arnas, M. Pitrat, J.E. Staub, M. Oliver, P. Arús, C.M. de Vicente and N. Katzir. 2000. Simple Sequence Repeats in *Cucumis* mapping and map merging. Genome 43:963-974.
27. Denna, D.W. 1962. A study of the genetic, morphological and physiological basis for the bush and vine habit of several cucurbits. *Thesis* Cornell University, Ithaka (N.Y., U.S.A.). pp.
28.Dogimont, C., D. Bordat, C. Pages, N. Boissot and M. Pitrat. 1999. One dominant gene conferring the resistance to the leafminer *Liriomyza trifolii* (Burgess) Diptera: Agromyzidae in melon (*Cucumis melo* L.). Euphytica 105:63-67.
29. Dogimont, C., A. Bussemakers, J. Martin, S. Slama, H. Lecoq and M. Pitrat. 1997. Two complementary recessive genes conferring resistance to Cucurbit Aphid Borne Yellows Luteovirus in an Indian melon line (*Cucumis melo* L.). Euphytica 96:391-395.
30. Dogimont, C., L. Lecomte, C. Périn, A. Thabuis, H. Lecoq and M. Pitrat. 2000. Identification of QTLs contributing to resistance to different strains of cucumber mosaic cucumovirus in melon. *in* Cucurbitaceae 2000, VIIth EUCARPIA Meeting on Cucurbit Genetics and Breeding (Ed. Katzir, N. and H. Paris), 19-23/03/2000, Ma'ale Hahamisha (ISR). 391-398.
31. Dyutin, K.E. 1967. (A spontaneous melon mutant with dissected leaves) (in Russian). Genetica 9:179-180.
32. Dyutin, K.E. 1979. (Inheritance of yellow-green coloration of the young leaves in melon) (in Russian). Tsitologia i genetika 13:407-408.
33. Epinat, C. and M. Pitrat. 1989. Inheritance of resistance of three lines of muskmelon (*Cucumis melo*) to downy mildew (*Pseudoperonospora cubensis*). *in* 'Cucurbitaceae 89' (Ed. Thomas, C.E.), 29/11-02/12/1998, Charleston (USA). 133-135.
34. Epinat, C., M. Pitrat and F. Bertrand. 1993. Genetic analysis of resistance of five melon lines to powdery mildews. Euphytica 65:135-144.
35. Esquinas Alcazar, J.T. 1975. 'Hojas hendidas', a nuevo mutante en *Cucumis melo* L. Inst Nac Investig Agrar Ser: Prod Veget 5:93-103.
36. Esquinas Alcazar, J.T. 1981. Allozyme variation and relationships among Spanish land races of *Cucumis melo* L. Kulturpflanze 29:337-352.
37. Esteva, J. and F. Nuez. 1992. Tolerance to a whitefly-transmitted virus causing muskmelon yellows disease in Spain. Theor Appl Genet 84:693-697.
38. Foster, R.E. 1963. Glabrous, a new seedling marker in muskmelon. J Hered 54:113-114.
39. Foster, R.E. and W.T. Bond. 1967. Abrachiate, an androecious mutant muskmelon. J Hered 58:13-14.
40. Gabillard, D. and M. Pitrat. 1988. A fasciated mutant in *Cucumis melo*. Cucurbit Genet Coop Rep 11:37-38.
41. Ganesan, J. 1988. Genetic studies on certain characters of economic importance in muskmelon (*Cucumis melo* L.). *Thesis* Annamalai University (India), 254 pp.
42. Ganesan, J. and C.N. Sambandam. 1979. Inheritance of certain qualitative characters in muskmelon (*Cucumis melo* L.). Annamalai Univ Agric Res Annals 9:41-44.
43. Ganesan, J. and C.N. Sambandam. 1985. Inheritance of leaf shape in muskmelon (*Cucumis melo* L.) I. A qualitative approach. Annamalai Univ Agric Res Annals 12:53-58.
44. Gang, T. and J. Lee. 1998. Isozyme analysis and its application for purity test of F1 hybrid seeds in melons. J Korean Soc Horticult Sci 39:266-272.

45. Gilbert, R.Z., M.M. Kyle, H.M. Munger and S.M. Gray. 1994. Inheritance of resistance to watermelon mosaic virus in *Cucumis melo* L. HortScience 29:107-110.
46. Hagiwara, T. and K. Kamimura. 1936. Cross-breeding experiments in *Cucumis melo*. Tokyo Horticul School Pub
47. Harwood, R.R. and D. Markarian. 1968. The inheritance for resistance to powdery mildew in the cantaloupe variety Seminole. J Hered 59:126-130.
48. Harwood, R.R. and D. Markarian. 1968. A genetic survey of resistance to powdery mildew in muskmelon. J Hered 59:213-217.
49. Hassan, A.A., M.M. Merghany, K.A. Abdel-Ati, A.M. Abdel-Salam and Y.M. Ahmed. 1998. Inheritance of resistance to interveinal mottling and yellowing disease in cucurbits. Egypt J Horticult 25:209-224.
50. Hoffman, J.C. and P.E. Nugent. 1973. Inheritance of a virescent mutant of muskmelon. J Hered 64:311-312.
51. Hughes, M.B. 1948. The inheritance of two characters of *Cucumis melo* and their interrelationship. Proc Amer Soc Hortic Sci 52:399-402.
52. Iglesias, A., B. Picó and F. Nuez. 2000. A temporal genetic analysis of disease resistance genes: resistance to melon vine decline derived from *Cucumis melo* var. *agrestis*. Plant Breeding 119:329-334.
53. Iman, M.K., M.A. Abo-Bakr and H.Y. Hanna. 1972. Inheritance of some economic characters in crosses between sweet melon and snake cucumber. I. Inheritance of qualitative characters. Assiut J Agricult Sci 3:363-380.
54. Ishiki, Y., A. Oda, Y. Yaegashi, Y. Orihara, T. Arai, T. Hirabayashi, H. Nakagawa and T. Sato. 2000. Cloning of an auxin-responsive 1-aminocyclopropane-1-carboxylate synthase gene (CMe-ACS2) from melon and the expression of ACS genes in etiolated melon seedlings and melon fruits. Pl Science 159:173-181.
55. Jagger, I.C., T.W. Whitaker and D.R. Porter. 1938. Inheritance in *Cucumis melo* of resistance to powdery mildew (*Erysiphe cichoracearum*). Phytopathology 28:761.
56. Jobst, J., K. King and V. Hemleben. 1998. Molecular evolution of the internal transcribed spacers (ITS1 and ITS2) and phylogenetic relationships among species of the family Cucurbitaceae. Mol Phytogenet Evol 9:204-219.
57. Kaan, J.F. 1973. Recherches sur la résistance du melon aux maladies, notamment à la mosaïque de la pastèque et au *Pseudoperonospora*, appliquées au type variétal "Cantaloup Charentais". *in* EUCARPIA meeting on melon (Ed. Risser, G.), June 19-22, 1973, Avignon (FRA). 41-49.
58. Karchi, Z., S. Cohen and A. Govers. 1975. Inheritance of resistance to Cucumber Mosaic Virus in melons. Phytopathology 65:479-481.
59. Kato-Emori, S., K. Higashi, K. Hosoya, T. Kobayashi and H. Ezura. 2001. Cloning and characterization of the gene encoding 3-hydroxy-3-methylglutaryl coenzyme A reductase in melon (*Cucumis melo* L. *reticulatus*). Mol Genet Genom 265:135-142.
60. Kenigsbuch, D. and Y. Cohen. 1987. Inheritance of gynoecious sex type in muskmelon. Cucurbit Genet Coop Rep 10:47-48.
61. Kenigsbuch, D. and Y. Cohen. 1989. Independent inheritance of resistance to race 1 and race 2 of *Sphaerotheca fuliginea* in muskmelon. Plant Disease 73:206-208.
62. Kenigsbuch, D. and Y. Cohen. 1990. The inheritance of gynoecy in muskmelon. Genome 33:317-327.
63. Kenigsbuch, D. and Y. Cohen. 1992. Inheritance of resistance to downy mildew in *Cucumis melo* PI 124112 and commonality of resistance genes with PI 124111F. Plant Disease 76:615-617.
64. Knavel, D.E. 1990. Inheritance of a short internode mutant of 'Mainstream' muskmelon. HortScience 25:1274-1275.
65. Kubicki, B. 1962. Inheritance of some characters in muskmelons (*Cucumis melo*). Genet Polonica 3:265-274.
66. Lasserre, E., T. Bouquin, J.A. Hernandez, J. Bull, J.C. Pech and C. Balagué. 1996. Structure and expression of three genes encoding ACC oxidase homologs from melon (*Cucumis melo* L.). Mol Gen Genet 251:81-90.
67. Lecouviour, M., M. Pitrat and G. Risser. 1990. A fifth gene for male sterility in *Cucumis melo*. Cucurbit Genet Coop Rep 13:34-35.
68. Lecouviour, M., M. Pitrat, C. Olivier and M. Ricard. 1995. *Cochleare folium*, a mutant with spoon shaped leaf in melon. Cucurbit Genet Coop Rep 18:37.
69. Lee, C.W. and J. Janick. 1978. Inheritance of seedling bitterness in *Cucumis melo*. HortScience 13:193-194.
70. López-Sesé, A.I. and M.L. Gómez-Guillamón. 2000. Resistance to Cucurbit Yellowing Stunting Disorder Virus (CYSDV) in *Cucumis melo* L. HortScience 35:110-113.
71. Lozanov, P. 1983. Selekcija na mazkosterilni roditelski komponenti za ulesnjavana na proizvodstvoto na hibridni semena ot papesi. Dokl. na parva naucna konferencija po genetika i selekapa, Razgrad.
72. Lumsden, D. 1914. Mendelism in melons. New Hampshire Agric Exper Sta Bull 172:58pp.
73. Ma, D., L. Sun, Y.H. Liu, Y. Zhang and H. Liu. 1997. A genetic model of bitter taste in young fruits of melon. Cucurbit Genet Coop Rep 20:27-29.
74. McCreight, J.D. 1983. A long internode mutant in muskmelon . Cucurbit Genet Coop Rep 6:45.

75. McCreight, J.D . 2000. Inheritance of resistance to Lettuce Infectious Yellows virus in melon. HortScience 35:1118-1120.
76. McCreight, J.D. and G.W. Bohn. 1979. Descriptions, genetics and independent assortment of red stem and pale in muskmelon (*Cucumis melo* L.). J Amer Soc Hort Sci 104:721-723.
77. McCreight, J.D. and G.W. Elmstrom. 1984. A third male-sterile gene in muskmelon. HortScience 19:268-270.
78. McCreight, J.D. and P. Fashing-Burdette. 1996. Resistance of PI 124112 and 'Eldorado-300' melons (*Cucumis melo* L.) to papaya ringspot virus watermelon strain. *in* Cucurbits toward 2000. VIth EUCARPIA meeting on Cucurbit Genetics and Breeding (Ed. Gómez-Guillamón, M.L., C. Soria, J. Cuartero, J.A. Torès and R. Fernandez-Munoz), 28-30/05/1996, Málaga (ESP). 298-301.
79. Mockaitis, J.M. and A. Kivilaan. 1965. A green corolla mutant in *Cucumis melo* L. Naturwissenschaften 52:434.
80. Molina, R.V. and F. Nuez. 1996. The inheritance of organogenic response in melon. Plant Cell Tissue Organ Cult 46:251-256.
81. Nuez, F., B. Picó, A. Iglesias, J. Esteva and M. Juarez. 1999. Genetics of melon yellows virus resistance derived from *Cucumis melo* spp. *agrestis*. Eur J Plant Pathol 105:453-464.
82. Nugent, P.E. and J.C. Hoffman. 1974. Inheritance of the halo cotyledon mutant in muskmelon. J Hered 65:315-316.
83. Nugent, P.E. and H.S. Bhella. 1988. A new chlorotic mutant of muskmelon. HortScience 23:379-381.
84. Nugent, P.E., F.P.J. Cuthbert and J.C. Hoffman. 1984. Two genes for cucumber beetle resistance in muskmelon. J Amer Soc Hort Sci 109:756-759.
85. Ohara, T., A. Kojima, T. Wako and D. Ishiuchi. 2001. Inheritance of suppressed-branching in melon and its association with some other morphological characters. J Japan Soc Hort Sci 70:341-345.
86. Oliver, J.L., J. Garcia-Mas, M. Cardús, N. Pueyo, A.I. López-Sesé, M. Arroyo, H. Gómez-Paniagua, P. Arús and C.M. de Vicente. 2001 Construction of a reference linkage map of melon. Genome 44:836-845.
87. Paris, H.S., H. Nerson and Z. Karchi. 1984. Genetics of internode length in melons. J Hered 75:403-406.
88. Parthasarathy, V.A. and C.N. Sambandam. 1981. Inheritance in Indian melons. Indian J Genet Pl Breed 41:114-117.
89. Périn, C., L.S. Hagen, N. Giovinazzo, D. Besombes, C. Dogimont and M. Pitrat. 2002. Genetic control of fruit shape acts prior to anthesis in melon (*Cucumis melo* L.). Mol Genet Genom 266:933-941.
90. Périn, C., C. Dogimont, N. Giovinazzo, D. Besombes, L. Guitton, L. Hagen and M. Pitrat. 1999. Genetic control and linkages of some fruit characters in melon. Cucurbit Genet Coop Rep 22:16-18.
91. Périn, C., M.C. Gomez-Jimenez, L. Hagen, C. Dogimont, J.C. Pech, A. Latché, M. Pitrat and J.M. Lelièvre. 2002. Molecular and genetic characterisation of a non-climacteric phenotype in melon reveals two loci conferring altered ethylene response in fruit. Plant Physiol 129:300-309.
92. Périn, C., L.S. Hagen, V. de Conto, N. Katzir, Y. Danin-Poleg, V. Portnoy, S. Baudracco-Arnas, J. Chadoeuf, C. Dogimont and M. Pitrat. 2002. A reference map of *Cucumis melo* based on two recombinant inbred line populations. Theor Appl Genet 104:1017-1034.
93. Pitrat, M. 1990. Gene list for *Cucumis melo* L. Cucurbit Genet Coop Rep 13:58-68.
94. Pitrat, M. 1991. Linkage groups in *Cucumis melo* L. J Hered 82:406-411.
95. Pitrat, M. 1994. Gene list for *Cucumis melo* L. Cucurbit Genet Coop Rep 17:135-147.
96. Pitrat, M. 1998. 1998 Gene list for melon. Cucurbit Genet Coop Rep 21:69-81.
97. Pitrat, M. and H. Lecoq. 1980. Inheritance of resistance to cucumber mosaic virus transmission by *Aphis gossypii* in *Cucumis melo*. Phytopathology 70:958-961.
98. Pitrat, M. and H. Lecoq. 1983. Two alleles for Watermelon Mosaic Virus 1 resistance in melon. Cucurbit Genet Coop Rep 6:52-53.
99. Pitrat, M. and H. Lecoq. 1984. Inheritance of Zucchini Yellow Mosaic Virus resistance in *Cucumis melo* L. Euphytica 33:57-61.
100. Pitrat, M., C. Ferrière and M. Ricard. 1986. *Flava*, a chlorophyll deficient mutant in muskmelon. Cucurbit Genet Coop Rep 9:67.
101. Pitrat, M., C. Olivier and M. Ricard. 1995. A virescent mutant in melon. Cucurbit Genet Coop Rep 18:37.
102. Pitrat, M., G. Risser, C. Ferrière, C. Olivier and M. Ricard. 1991. Two virescent mutants in melon (*Cucumis melo*). Cucurbit Genet Coop Rep 14:45.
103. Poole, C.F. and P.C. Grimball. 1939. Inheritance of new sex forms in *Cucumis melo* L. J Hered 30:21-25.
104. Prasad, K. and J.D. Norton. 1967. Inheritance of resistance to *Mycosphaerella citrullina* in muskmelon. Proc Amer Soc Hortic Sci 91:396-400.
105. Quiot-Douine, L., H. Lecoq, J.B. Quiot, M. Pitrat and G. Labonne. 1988. Evidence for a biological and serological variability in a potyvirus infecting cucurbit: the papaya ringspot virus (PRSV). *in* EUCARPIA meeting 'Cucurbitaceae 88' (Ed. Risser, G. and M. Pitrat), 31/05-02/06/1998, Avignon (FRA). 35-42.

106. Ray, D.T. and J.D. McCreight. 1996. Yellow-tip: a cytoplasmically inherited trait in melon (*Cucumis melo* L. J Hered 87:245-247.
107. Risser, G. 1973. Étude de l'hérédité de la résistance du melon (*Cucumis melo*) aux races 1 et 2 de *Fusarium oxysporum* f.sp. *melonis*. Ann Amélior Plantes 23:259-263.
108. Risser, G., M. Pitrat, H. Lecoq and J.C. Rode. 1981. Sensibilité variétale du melon au virus du rabougrissement jaune du melon et à sa transmission par *Aphis gossypii* Glov. Hérédité de la réaction de flétrissement. agronomie 1:835-838.
109. Robinson, R.W. 1979. New genes for the Cucurbitaceae. Cucurbit Genet Coop Rep 2:49-53.
110. Robinson, R.W., H.M. Munger, T.W. Whitaker and G.W. Bohn. 1976. Genes of the cultivated Cucurbitaceae. HortScience 11:554-568.
111. Rosa, J.T. 1928. The inheritance of flower types in *Cucumis* and *Citrullus*. Hilgardia 3:233-250.
112. Sambandam, C.N. and S. Chelliah. 1972. *Cucumis callosus* (Rottl.) Logn., a valuable material for resistance breeding in muskmelons. *in* 3rd International Symposium Sub-tropical Horticulture (Ed. 63-68.
113. Sato-Nara, K., K.I. Yuhashi, K. Higashi, K. Hosoya, M. Kubota and H. Ezura. 1999. Stage- and tissue-specific expression of ethylene receptor homolog genes during fruit development in muskmelon. Plant Physiol 119:321-329.
114. Staub, J.E., V. Meglic and J.D. McCreight. 1998. Inheritance and linkage relationships of melon (*Cucumis melo* L.) isozymes. J Amer Soc Hort Sci 123:264-272.
115. Takada, K., K. Kanazawa and K. Takatuka. 1975. Studies on the breeding of melon for resistance to powdery mildew. II. Inheritance of resistance to powdery mildew and correlation of resistance to other characters. Bull Veg Ornamental Crops Res Stn A2:11-31.
116. Thomas, C.E., J.D. McCreight and E.L. Jourdain. 1990. Inheritance of resistance to *Alternaria cucumerina* in *Cucumis melo* line MR-1. Plant Disease 74:868-870.
117. Thomas, C.E., Y. Cohen, J.D. McCreight, E.L. Jourdain and S. Cohen. 1988. Inheritance of resistance to downy mildew in *Cucumis melo*. Plant Disease 72:33-35.
118. Tijet, N., C. Schneider, B.L. Muller and A.R. Brash. 2001. Biogenesis of volatile aldehydes from fatty acid hydroperoxides: molecular cloning of a hydroperoxide lyase (CYP74C) with specificity for both the 9- and 13-hydroperoxides of linoleic and linolenic acids. Arch. Biochem. Biophys. 386:281-289.
119. Vashistha, R.N. and B. Choudhury. 1974. Inheritance of resistance to red pumpkin beetle in muskmelon. Sabrao J 6:95-97.
120. Velich, I. and I. Fulop. 1970. A new muskmelon type of cut leaf character. Zoldsegtermesztes 4:107-112.
121. Wall, J.R. 1967. Correlated inheritance of sex expression and fruit shape in *Cucumis*. Euphytica 16:199-208.
122. Wang, Y.H., C.E. Thomas and R.A. Dean. 1997. A genetic map of melon (*Cucumis melo* L.) based on amplified fragment length polymorphism (AFLP) markers. Theor Appl Genet 95:791-797.
123. Webb, R.E. 1979. Inheritance of resistance to watermelon mosaic virus in *Cucumis melo* L. HortScience 14:265-266.
124. Whitaker, T.W. 1952. Genetic and chlorophyll studies of a yellow-green mutant in muskmelon. Plant Physiol 27:263-268.
125. Yamagata, H., T. Masuzawa, Y. Nagaoka, T. Ohnishi and T. Iwasaki. 1994. Cucumisin, a serine protease from melon fruits, shares structural homology with subtilisin and is generated from a large precursor. J Biol Chem 269:32725-32731.
126. Yamamoto, M., H. Asama, H. Nakagawa, T. Hirabayashi and T. Sato. 1999. Nucleotide sequence of a wound- and ripening-related 1-aminocyclopropane-1- carboxylate synthase gene (CMe-ACS1, Accession No. AB025906) in melon (*Cucumis melo* L. cv. AMS) (PGR99-128). Plant Physiol 121:311.
127. Zink, F.W. 1977. Linkage of virescent foliage and plant growth habit in muskmelon. J Amer Soc Hort Sci 102:613-615.
128. Zink, F.W. 1986. Inheritance of a greenish-yellow corolla mutant in muskmelon. J Hered 77:363.
129. Zink, F.W. 1990. Inheritance of a delayed lethal mutant in muskmelon. J Hered 81:210-211.
130. Zink, F.W. and W.D. Gubler. 1985. Inheritance of resistance in muskmelon to Fusarium wilt. J Amer Soc Hort Sci 110:600-604.
131. Zuniga, T.L., J.P. Jantz, T.A. Zitter and M.K. Jahn. 1999. Monogenic dominant resistance to gummy stem blight in two melon (*Cucumis melo*) accessions. Plant Disease 83:1105-1107.