

GENE MANAGEMENT SYSTEM

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ICIS Workshop 2008

GEMS CATALOG

- Search Facility
- Add Records
- Modify Records

GEMS CATALOG

RM* Marker Name Allele Name Primer Marker Type

MARKER DETECTOR	
RM1	
RM105	
▶ RM11	
RM118	
RM124	
RM125	
RM133	
RM144	
RM152	
RM154	
RM161	
RM162	
RM171	
RM178	
RM19	
RM215	
RM237	
RM25	
RM259	
RM271	
RM277	
RM283	
RM284	
RM287	
RM307	

MARKER DETAIL FOR MARKER DETECTOR ID: 4

Marker Detector: RM11 User's ID:

Marker Type: SSR Location:

Forward Primer: tctcctctccccgatc Date: 20080103

Reverse Primer: atagcgggcgaggcttag Reference:

Name Status: Preferred

MOLECULAR VARIANTS OF RM11

mvid	chromosome	molecular variant name	status	motype	weight
378	1	130	0	0	
381	1	140	0	0	
386	1	123	0	0	
388	1	119	0	0	
389	1	142	0	0	
390	1	121	0	0	
393	1	138	0	0	

MARKER DETECTOR PROTOCOL INFORMATION

Protocol: PCR Recipe PCR Condition Gel Recipe electrophoresis

2

Chemical	Initial Concentration	Volume
DNA		3
H2O		3.75
Buffer		1
MgCl2		1
dNTPs		1

SEARCH FACILITY

- Marker Name
- Allele
- Primer
- Marker Type

Gene Management System

iso* Marker Name Allele Name Primer Marker Type

MARKER DETECTOR

▶ acp1
adh1
amp1
amp2
amp3
amp4
cat1
enP1
est1
est2
est5

MARKER DETAIL FOR MARKER DETECTOR ID: 2971

Marker Detector	acp1	User's ID	
Marker Type	isozyme	Location	
Forward Primer		Date	
Reverse Primer		Reference	
Name Status			

MOLECULAR VARIANTS OF acp1

mvid	chromosome	molecular variant name	status	mvtype	weight

ADD MARKER DETECTOR

GEMS CATALOG

SEARCH Marker Name Allele Name Primer Marker Type

MARKER DETECTOR

RM1
RM105
▶ RM11
RM118
RM124
RM125
RM133
RM144
RM152
RM154
RM161
RM162
RM171
RM178
RM19
RM215
RM237
RM25
RM259
RM271
RM277
RM283
RM284
RM287
RM307

MARKER DETAIL FOR MARKER DETECTOR ID: 4

Marker Detector: RM11 User's ID: 0
 Marker Type: SSR Location: 0
 Forward Primer: atagcggggcaggcttag Date: 20090103
 Reverse Primer: atagcggggcaggcttag Reference: 0
 Name Status: Preferred

MOLECULAR VARIATION

mvid	chromosome
378	
381	
386	
388	
389	
390	
393	

MARKER DETECTOR

Protocol: PCR R

2

Add New Marker Name

Marker Detector Name:

Marker Type: SSR

Marker/Locus Name:

Forward Primer:

Reverse Primer:

Marker Name Type:

Name Status: Preferred

Reference:

Condition ID:

Add Marker Cancel

Ch:
 DN:
 H2:
 Buffer: 1
 MgCl2:
 dNTPs: 1

ADD MARKER SYNONYM

The screenshot displays the GEMS CATALOG application. On the left is a 'MARKER DETECTOR' list with RM11 selected. The main area shows 'MARKER DETAIL FOR MARKER DETECTOR ID: 4' with fields for Marker Detector (RM11), Marker Type (SSR), Forward Primer (tctcctctcccccgatc), Reverse Primer (atagcgggcgaggcttag), Name Status (Preferred), User's ID (0), Location (0), Date (20080103), and Reference (0). Below this is the 'MOLECULAR VARIANTS OF RM11' section, which is highlighted with a red box. An 'Add Synonym' dialog box is open over this section, containing fields for Marker Detector ID (4), Marker Detector Name (RM11), and a blank field for the Synonym. The dialog has 'Add Synonym' and 'Cancel' buttons. A red arrow points from the 'MARKER DETECTOR' list to the 'Add Synonym' dialog.

MARKER DETECTOR

RM1
RM105
▶ RM11
RM118
RM124
RM125
RM133
RM144
RM152
RM154
RM161
RM162
RM171
RM178
RM19
RM215
RM237
RM25
RM259
RM271
RM277
RM283
RM284
RM287
RM307

MARKER DETAIL FOR MARKER DETECTOR ID: 4

Marker Detector: RM11 User's ID: 0
 Marker Type: SSR Location: 0
 Forward Primer: tctcctctcccccgatc Date: 20080103
 Reverse Primer: atagcgggcgaggcttag Reference: 0
 Name Status: Preferred

MOLECULAR VARIANTS OF RM11

Add Synonym

Marker Detector ID: 4
 Marker Detector Name: RM11
 Synonym:

Add Synonym Cancel

MARKER DETECTOR 2

Chemical	Initial Concentration	Volume
DNA		3
H2O		3.75
Buffer		1
MgCl2		
dNTPs		1

MARKER BATCH LOAD

The screenshot shows the GEMS CATALOG software interface. On the left, a list of marker detectors is visible, with RM11 selected. The main panel displays details for RM11, including its Marker Type (SSR), Forward and Reverse Primers, and Name Status (Preferred). Below this, a table of Molecular Variants is shown. A file selection dialog box is open in the foreground, displaying the contents of the 'SQ004351V02 (C:) \ icis08' directory. The file 'batch_load_marker' is highlighted in blue, and a red box surrounds it. A red arrow points from this file to the 'MARKER DETECTOR' list in the background application. The dialog box also shows other files like 'GEMSOR', 'IRIS-GEMS_0.03', and 'Molecular_Marker_Laboratory_Workflow'.

MARKER DETECTOR	Marker Detector	Marker Type	Forward Primer	Reverse Primer	Name Status
RM1	RM11	SSR	tctctcttcccgatc	atagcggcgggcctt	Preferred
RM105					
RM11					
RM118					
RM124					
RM125					
RM133					
RM144					
RM152					
RM154					
RM161					
RM162					
RM171					
RM178					
RM19					
RM215					
RM237					
RM25					
RM259					
RM271					
RM277					
RM283					
RM284					
RM287					
RM307					

mvid	chromosome	molecular variant
378	1	100
381	1	140
386	1	123
388	1	119
389	1	142
390	1	121
397	1	138

Chemical	
DNA	
H2O	
Buffer	1
MgCl2	1
dNTPs	1

MARKER BATCH LOAD

The screenshot displays the GEMS CATALOG software interface. The main window shows a list of markers on the left and a detail view for marker ID 21165 on the right. A Notepad window titled 'batch_load_marker - Notepad' is open in the foreground, displaying a table of marker data for batch loading.

GEMS CATALOG - MARKER DETECTOR

MARKER DETECTOR	MARKER DETAIL FOR MARKER DETECTOR ID: 21165
ABC	Marker Detector: ABC, User's ID: 0
XYZ	Marker Type: SSR, Location: 0
RM8022	Forward Primer: AATCCAGATGTGCGCCAACC, Date: 20080302
RM1349	
RM5896	
new mar	
SSR1	
RM28823	
RM28809	
RM28807	
RM28805	
RM28800	
RM28795	
RM28792	
RM28788	
RM28787	
RM28785	
RM28781	
RM28775	
RM28774	
RM28773	
RM28764	
RM28761	
RM28750	
RM28749	

batch_load_marker - Notepad

Marker	Protocol	Chromosome	Position_CM	Motif	Forward_Primer	Reverse_Primer	Min_allele	Max_allele
XYZ	Protocol_Sub1	1	385	AGAT	AATCCAGATGTGCGCCAACC	GAGTGAAGCCAGCTCCTCAACC	22315	22374
ABC	Protocol_Sub1	1	300	AGAT	AATCCAGATGTGCGCCAACC	GAGTGAAGCCAGCTCCTCAACC	22315	22374

MARKER DETECTOR PROTOCOL INFORMATION

Chemical	Initial Concentration	Volume

MARKER BATCH LOAD

- Marker Sheet included in ICIS workbook

The screenshot shows a Microsoft Excel spreadsheet titled "GEMS_SSR_Template". The spreadsheet contains a table of marker data. The columns are labeled as follows:

- Marker**: Identifier for the marker.
- Protocol**: Name of the protocol used.
- Chrom**: Chromosome number.
- Position_cM**: Position on the chromosome in centimorgans.
- Motif**: The DNA motif for the marker.
- Forward_Primer**: The sequence of the forward primer.
- Reverse_Primer**: The sequence of the reverse primer.
- Min_allele**: Minimum number of alleles.
- Max_allele**: Maximum number of alleles.
- Accession**: Accession number for the marker.
- GenBar**: GenBank accession number.

Row 17 is highlighted, showing the following data:

Marker	Protocol	Chrom	Position_cM	Motif	Forward_Primer	Reverse_Primer	Min_allele	Max_allele	Accession	GenBar
17	RM207	ProtocolName	2	191.2	(CT)25	caacctcctcgtaacgcc	caacctcctcgtaacgcc	71	139	AF344028

DELETE MARKER

The screenshot shows the GEMS CATALOG application interface. On the left, a list of marker detectors is displayed, with 'RM11' selected. The main panel shows the details for 'MARKER DETECTOR ID: 4', including fields for Marker Detector (RM11), Marker Type (SSR), Forward Primer (tctcctttccccgatc), Reverse Primer (atagcgggcgaggcttag), Name Status (Preferred), User's ID (0), Location (0), Date (20080103), and Reference (0). A 'DELETE RECORD' dialog box is overlaid on the interface, asking 'Delete 'RM11' from GEMS_MARKER_DETECTOR table?' with 'Yes' and 'No' buttons. A red box highlights the dialog, and a red arrow points from the 'RM11' entry in the marker detector list to the dialog.

MARKER DETECTOR

RM1
RM105
RM11
RM118
RM124
RM125
RM133
RM144
RM152
RM154
RM161
RM162
RM171
RM178
RM19
RM215
RM237
RM25
RM259
RM271
RM277
RM283
RM284
RM287
RM307

MARKER DETAIL FOR MARKER DETECTOR ID: 4

Marker Detector	RM11	User's ID	0
Marker Type	SSR	Location	0
Forward Primer	tctcctttccccgatc	Date	20080103
Reverse Primer	atagcgggcgaggcttag	Reference	0
Name Status	Preferred		

DELETE RECORD

Delete 'RM11' from GEMS_MARKER_DETECTOR table?

Yes No

MARKER DETECTOR PROTOCOL

Chemical	Initial Concentration	Volume
DNA		3
H2O		3.75
Buffer		1
MgCl2		
dNTPs		1

ADD MOLECULAR VARIANT

The screenshot displays the GEMS CATALOG software interface. The main window shows a list of marker detectors on the left and detailed information for marker RM11 in the center. A dialog box titled 'Add New Molecular Variant' is open, allowing for the entry of a new molecular variant. A red box highlights the dialog box, and a red arrow points from the 'MOLECULAR VARIANTS OF RM11' table to the 'Molecular Variant ID' field in the dialog.

MARKER DETECTOR

RM1
RM105
RM11
RM118
RM124
RM125
RM133
RM144
RM152
RM154
RM161
RM162
RM171
RM178
RM19
RM215
RM237
RM25
RM259
RM271
RM277
RM283
RM284
RM287
RM307

MARKER DETAIL FOR MARKER DETECTOR ID: 11

Marker Detector: RM11
 Marker Type: SSR
 Forward Primer: tctcctctcccccgatc
 Reverse Primer: atagcggcgaggcttag
 Name Status: Preferred

MOLECULAR VARIANTS OF RM11

mvid	chromosome	molecular variant name	status
378	1	130	
381	1	140	
386	1	123	
388	1	113	
389	1	142	
390	1	121	
393	1	138	

MARKER DETECTOR PROTOCOL INFORMATION

Protocol: PCR Recipe | PCR Condition | Gel Recipe | electrophoresis

2

Chemical	Initial Concentration	Volume
DNA		3
H2O		3.75
Buffer		1
MgCl2		1
dNTPs		1

Add New Molecular Variant

MarkerDetector ID: 21164
 Molecular Variant ID: 1470
 Chromosome:
 Position:
 MV Name:
 MV Type:
 Molecular Weight: 0
 Local MVID: 0
 Reference: 0

Buttons: Add MV, Cancel

ADD MV SYNONYM

GEMS CATALOG

SEARCH Marker Name Allele Name

MARKER DETECTOR

RM1
RM105
▶ RM11
RM118
RM124
RM125
RM133
RM144
RM152
RM154
RM161
RM162
RM171
RM178
RM19
RM215
RM237
RM25
RM259
RM271
RM277
RM283
RM284
RM287
RM307

MARKER DETAIL FOR MARKER DETECTOR ID: 4

Marker Detector: RM11
 Marker Type: SSR
 Forward Primer: tctcctctcccccgatc
 Reverse Primer: atagcgggagggcttag
 Name Status: Preferred

MOLECULAR VARIANTS OF RM11

mvid	chromosome	molecular variant name	status
378	1	130	
381	1	140	
386	1	123	
388	1	119	
389	1	142	
390	1	121	
393	1	138	

New Synonym : 130

MarkerDetector ID: 4
 Molecular Variant ID: 378
 Chromosome:
 Position:
 MV Name: RM11_130
 MV Type: allele
 Molecular Weight: 130
 Local MVID: 0
 Reference: 0

Add MV Cancel

MARKER DETECTOR PROTOCOL INFORMATION

Protocol: PCR Recipe | PCR Condition | Gel Recipe | electrophoresis

2

Chemical	Initial Concentration	Volume
DNA		3
H2O		3.75
Buffer		1
MgCl2		
dNTPs		1

DELETE MV RECORD

The screenshot displays the GEMS CATALOG application window. The main interface is divided into several sections:

- SEARCH:** A search bar with the text "Rm*" and a "SEARCH" button. Radio buttons are present for "Marker Name", "Allele Name", "Primer", and "Marker Type".
- MARKER DETECTOR:** A list of marker IDs including RM1, RM105, RM111, RM118, RM124, RM125, RM133, RM144, RM152, RM154, RM161, RM162, RM171, RM178, RM19, RM215, RM237, RM25, RM259, RM271, RM277, RM283, RM284, RM287, and RM307.
- MARKER DETAIL FOR MARKER DETECTOR ID: 2:** A form showing details for marker RM1, including Marker Type (SSR), Forward Primer (gcgaa), Reverse Primer (gcgagg), and Name Status.
- MOLECULAR VARIANTS:** A table with columns "mvid", "chromosome", and "role". It contains several rows of data. A red arrow points to the "S" button at the bottom of this table.
- MARKER DETECTOR PROTOCOL INFORMATION:** A section with tabs for "Protocol", "PCR Recipe", "PCR Condition", "Gel Recipe", and "electrophoresis". It includes a table with columns "Chemical", "Initial Concentration", and "Volume".

A "DELETE RECORD" dialog box is overlaid on the interface, containing the text "Delete 'RM1_110' from GEMS_MV table?" and two buttons: "Yes" and "No". The dialog box is highlighted with a red border.

PROTOCOL FUNCTIONS

The screenshot displays a hierarchical protocol structure with four levels of detail:

- Level 1:** "MARKER DETECTOR PROTOCOL INFORMATION" with tabs for Protocol, PCR Recipe, PCR Condition, Gel Recipe, and electrophoresis. The "PCR Recipe" tab is selected.
- Level 2:** "MARKER DETECTOR PROTOCOL INFORMATION" with tabs for Protocol, PCR Recipe, PCR Condition, Gel Recipe, and electrophoresis. The "PCR Condition" tab is selected.
- Level 3:** "MARKER DETECTOR PROTOCOL INFORMATION" with tabs for Protocol, PCR Recipe, PCR Condition, Gel Recipe, and electrophoresis. The "Gel Recipe" tab is selected, showing a table with columns: Chemical, Initial Concentration, and Volume.
- Level 4:** "MARKER DETECTOR PROTOCOL INFORMATION" with tabs for Protocol, PCR Recipe, PCR Condition, Gel Recipe, and electrophoresis. The "electrophoresis" tab is selected, showing a table with columns: Method, Property, Value, and Scale.

Labels on the right side of the image identify the selected tabs in each window:

- PCR Recipe
- PCR Condition
- Gel Recipe
- electrophoresis

Method	Property	Value	Scale
Method	Method Name	manual	-
Gel Type	Gel Name	PAGE non-denaturing	-
Running Condition	Voltage	100	V
Running Condition	Current		A

GEMS LIST

SEARCH

SEARCH RESULT

MDID	MARKER NAME	MARKER TYPE
2	RM1	SSR
3	RM105	SSR
4	RM11	SSR
5	RM118	SSR
6	RM124	SSR
7	RM125	SSR
8	RM133	SSR
9	RM144	SSR
10	RM152	SSR
11	RM154	SSR
12	RM161	SSR
13	RM162	SSR
14	RM171	SSR
15	RM178	SSR
16	RM19	SSR
17	RM215	SSR

GEMS LIST

mdid	marker
------	--------

Click to ADD to List

Click to Remove from List

RESULTS

Marker Details

Molecular Variants

VIEW REPORT

GEMS LIST

The screenshot displays the GEMS LIST application window. The main content area is titled "List of Markers with Molecular Variant" and shows details for marker RM1. A red box highlights this main content area. Below the details is a table of molecular variants. To the right, a smaller window shows a table with columns "mdid" and "marker", listing RM1 and RM105. A red arrow points from the "VIEW REPORT" button to the "Molecular Variants" checkbox. A red box highlights the checkboxes for "Marker Details" and "Molecular Variants".

List of Markers with Molecular Variant

MDID : 2
 MARKERNAME : RM1
 MARKER TYPE : SSR
 FORWARD PRIMER : gggaaaccaatgaaaa
 REVERSE PRIMER : ggtgttgacctgac
 MIN ALLELE : 0
 MAX ALLELE : 0

MOLECULAR VARIANT NAM	MVID
134	265
136	255
140	284
124	283
122	281
112	279
128	277
102	301
152	273
158	272
126	270
104	264
120	243
98	250
133	353
114	310
96	259
146	316
144	315
86	361
142	305
92	340
116	303
106	253
10	266
...	...

GEMS LIST

mdid	marker
2	RM1
3	RM105

VIEW REPORT

- Marker Details
- Molecular Variants

ICIS Workbook GEMS tools

Microsoft Excel - GEMS_SSR_Template

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Study Setup Utilities Add-ins Help

N16

	A	B	C	D	E	F	G	H	I	J	K	L	M
1	PRIMER	GENOTYPE	ACC_ID	ALLELE_ID	ALLELE	SIZE	HEIGHT	VOLUME	ALLELE_ID	ALLELE	SIZE	HEIGHT	VOLUME
2				ALLELE1	ALLELE1	ALLELE1	ALLELE1	ALLELE1	ALLELE2	ALLELE2	ALLELE2	ALLELE2	ALLELE2
3	2796	R17	Swarna	417794	1	165					170		
4	2796	R17	IR49830	61149	2	185							
5	2316	R13	Swarna	417794	3	125			41	120			
6	2316	R13	IR49830	61149	4	130							
7	2360	R17	Swarna	417794	5	180							
8	2360	R17	IR49830	61149	6	160							
9	2371	R18	Swarna	417794	7	160							
10	2371	R18	IR49830	61149									
11	2441	R24	Swarna	417794									
12	2441	R24	IR49830	61149									
13	19	R25	Swarna	417794									
14	19	R25	IR49830	61149									
15	2794	R60	Swarna	417794									
16	2794	R60	IR49830	61149									
17	2799	R72	Swarna	417794									
18	2799	R72	IR49830	61149									
19	2807	R85	Swarna	417794									

ICIS Workbook - Get GEMS Info

IRIS international rice information system - the world's rice biology repository

This tool extracts GEMS IDs from the GEMS database.

Specify the marker name column in the Observation
Choose an item from the list.

Marker Name: PRIMER

Register new names automatically

OK Cancel

ICIS Workbook GEMS tools

The screenshot displays the 'Microsoft Excel - GEMS_SSR_Template' window. The spreadsheet contains data for various markers and alleles. A red box highlights the 'ALLELE_ID' column (column E). A context menu is open over this column, showing the following options:

- Import Genotype Data
- Get Marker ID
- Get Allele ID
- Add New Property Group

A red arrow points from the 'Get Allele ID' option to the highlighted 'ALLELE_ID' column.

	A	B	C	D	E	F	G	H	I	J	K	L	M
1	PRIMER_ID	PRIMER	GENOTYPE	ACC_G	ALLELE_ID	ALLELE	SIZE	HEIGHT	VOLUME	ALLELE_ID	ALLELE	SIZE	HEIGHT
2					ALLELE1	ALLELE1	ALLELE1	ALLELE1	ALLELE1	ALLELE2	ALLELE2	ALLELE2	ALLELE2
3	2796	RM7	Swarna	417794	1	165				40	170		
4	2796	RM7	IR49830	61149	2	185							
5	2316	RM13	Swarna	417794	3	125							
6	2316	RM13	IR49830	61149	4	130							
7	2360	RM17	Swarna	417794	5	180							
8	2360	RM17	IR49830	61149	6	160							
9	2371	RM18	Swarna	417794	7	160							
10	2371	RM18	IR49830	61149	8	145							
11	2441	RM24	Swarna	417794	9	160							
12	2441	RM24	IR49830	61149	10	130							
13	19	RM25	Swarna	417794	11	130							
14	19	RM25	IR49830	61149	12	120							
15	2794	RM60	Swarna	417794	13	170							
16	2794	RM60	IR49830	61149	14	160							
17	2799	RM72	Swarna	417794	15	155							
18	2799	RM72	IR49830	61149	16	170							
19	2607	RM85	Swarna	417794	17	105							

ICIS Workbook GEMS tools

Microsoft Excel - GEMS_SSR_Template

File Edit View Insert Format Tools Data Window Help Adobe PDF ICISworkbook

Study Setup Utilities Add-ins Help

E19

	A	B	C	D	E
1	PCR Recipe				
2	chemical	Volume	scale	Initial Concentration	scale
3	DNA	3	µL		ng/µl
4	H2O	3.75	µL		
5	Buffer	1	µL	10 X	
6	MgCl2		µL	10	mM
7	dNTPs	1	µL	1	mM
8	Taq	0.25	µL	4	U/µl
9	primer_Reverse	0.5		5	µM
10	primer_forward	0.5		5	µM
11	M13		mL		
12					
13	PCR Condition				
14	Method	Property	Value	Scale	
15	Initial denaturation	temperature	94	C	
16	Initial denaturation	duration	5:00	minute	
17	Initial denaturation	cycle	1		
18	Denaturation	temperature	94	C	
19	Denaturation	duration	01:00	minute	
20	Denaturation	cycle	35		
21	Annealing	temperature	55		
22	Annealing	duration	01:00	minute	
23	Annealing	cycle	35		
24	Elongation	temperature	72		
25	Elongation	duration	01:30	minute	
26	Elongation	cycle	35		
27	Final Elongation	temperature	72	C	
28	Final Elongation	duration	7:00	minute	
29	Final Elongation	cycle	1		
30	PCR cycle				
31					
32	Electrophoresis				
33	Method	Property	Value	Scale	
34	PCR reaction	Volume	2	µl	
35	Buffer concentration	Volume		1 X	
36	Method	Method Name	manual		

NUM