Product Catalog

Ready-to-use molecular diagnostic tests





BIOREBA

BIOREBA AG & Qualiplante SAS

BIOREBA is the Swiss company that uses science and technology to develop and manufacture high quality diagnostic testing components, used to select healthy seeds and plants that increase crop yields on millions of farms worldwide. Our complete test solutions within the field of plant pathogen diagnostics are based on the technologies ELISA, Lateral Flow (AgriStrip) and PCR since 1982. Among the existing diagnostic in vitro technologies, we believe that the molecular diagnostics is one of the fastest growing fields. In response to this fact, BIOREBA has entered into a strategic alliance with Qualiplante SAS, France, a leading manufacturer of PCR diagnostic sets within the market of plant pathogen in vitro diagnostics.

The deep expertise of Qualiplante in development, validation and production of tests based on molecular technology is uniquely complementary to BIOREBA's philosophy in serving our customers with our established, validated and ready-touse antibody-tests.

Thanks to this alliance we offer our customers a wide range of testing methods for more than 100 plant pathogens. The strategic alliance allows both strategic partners to access the global market via the strong BIOREBA's distribution network and speeds up the process of new developments in order to best serve our customer's needs. Qualiplante SAS and BIOREBA AG share the same company values in terms of product quality, customer satisfaction and innovation for plant pathogen diagnostics.

We are focused upon two areas of development that are aimed to address the needs of a variety of customers, from those already engaged in molecular testing and running multiple tests daily, to those who may be just starting and whose throughput is lower for certain assays.

Our PCR Sets contain Master-Mix(es) already prepared and ready-to-use, Positive and Negative Controls. There is no need to optimize reaction conditions (e.g., the concentrations of primers, $MgCl_2$ or enzymes) or cycling parameters due to unique preoptimization and validation.



For product information for diagnostic tests, based on ELISA and Lateral Flow, please refer to BIOREBA product catalog or visit our website:

bioreba.com

Workflow benefits of our PCR tests

Feature	Benefit
Ready-to-use	Time and costs saving. All our master mixes are ready-to-use in liquid form. No need to resuspend the master mixes.
Optimized assays	No need to optimize reaction conditions (e.g., the concentrations of primers, MgCl ₂ or enzymes) or cycling parameters due to unique preoptimization and validation.
Validated assays (High sensitivity, high specificity, repeatability, reproducibility)	All our assays are validated. Criteria such as sensitivity, specificity, repeatability and reproducibility are crucial parameters for assay optimization. The User Guides provide the relevant information.
Lot-to-Lot Consistency	High level of testing reproducibility guaranteed due to defined quality release criteria.
Certificate of Analysis (CoA)	For each test-set and for each lot CoA are enclosed to delivery.
One-step-reactions	No additional manipulations by the user during the PCR reaction (exception: Addition of RT-Enzyme in End-Point RT-PCR, Taq-Man® RT-qPCR and SYBR®- Green RT-qPCR sets). Low risk of cross contamination.
Positive and negative control included	Standardized controls enable the user to control assay performance on each run. Results can be compared to the CoA. Assay reproducibility can be monitored between runs.
Multiplex (High specificity)	Some of our assays are multiplex, using different primer pairs to amplify multiple targets in one reaction with high specificity.
Reverse Transcriptase included	All our RT-PCR and RT-qPCR assays include reverse transcriptase.
Internal Control IC host gene or IC RNA included	For improved reliability of data analysis, some of our assays include internal controls (IC host gene or IC RNA). This control reaction shows that the DNA/RNA extraction worked and does not contain any inhibitory contaminants and that the PCR reaction performs as expected.
Long shelf life	In minimum 1-year from the date of delivery.

Our molecular Controls for improved reliability

Control	Description
Positive control	Positive amplification control: "Nucleic acid preparation" or "plasmid" containing the target sequence. Serves as sample for the PCR control reaction and shows how a "positive test sample" performs in the assay. Has to be tested separately (one reaction per run; like a sample).
Negative control	Negative amplification control: "Nucleic acid preparation" of healthy plant sam- ple. Serves as sample for the PCR control reaction and shows how a "negative test sample" performs in the assay. Has to be tested separately (one reaction per run; like a sample).
Internal control (IC host gene)	Positive amplification control: Master mixes include a control reaction (primers and probes) for a plant gene (host gene). Shows that the nucleic acid extraction and the PCR reaction worked properly for each individual sample.

PCR methods used for BIOREBA PCR tests, powered by Qualiplante and by BIOREBA

Classical PCR methods

		Components included in the sets	Available set formats (No of reactions)
End-Point PCR			
digital imaging densitometry	End-Point PCR is the "classical" PCR method, whereby the DNA is detected after comple- tion of PCR amplification. The presence or absence of the corres- ponding DNA product is determined by gel electrophoresis using staining of separated DNA fragments with a fluorescent dye, and to visualize DNA bands.	Direct Master Mix Positive Control Negative Control	24 96
End-Point RT-PCR			
	End-Point RT-PCR is the "classical" PCR me- thod using RNA as starting material. In a one- step reaction first, the RNA is reverse trans- cribed (RT) into cDNA, then the amplified cDNA is detected after completion of PCR amplification. The presence or absence of the corresponding by gel electrophoresis using staining of separated escent dye, and digital imaging densitometry to	Direct Master Mix Reverse Transcriptase Positive Control Negative Control	24 96
Nested End-Point PCR	Nested End-Point PCR is based on the "classical" End-Point PCR method. Nested End-Point PCR reaction involves two distinct sets of primers used in two successive PCR runs. In the second PCR, a target within the first PCR product is amplified. This method allows to reduce non-specific binding and in parallel to run more total cycles the corresponding DNA product is determined a normal End-Point PCR.	Direct Master Mix Nested Master Mix Positive Control Negative Control	24 96
Two-Step End Point RT-PCR	2		
	The Two-Step End-Point RT-PCR is based on the End-Point RT-PCR method using RNA as starting material. The difference is based on the fact that the overall reaction is split into two separate reaction steps (Two-Step). In a first step the RNA is reverse transcribed (RT) into cDNA. In a second step, the cDNA is	RT Master Mix Reverse Transcriptase Direct Master Mix Positive Control 1 Positive Control 2 Negative Control	24 96

amplified and analyzed as described above in "End-Point PCR".

Real time PCR (qPCR) methods

	Taq-Man [®] qPCR
PCR methods	
PCR	quencher to the 3' end. During PC away and is decoupled from the c rescence intensity, which is propo

Taq-Man[®] qPCR is a PCR method, whereby the amplified DNA is measured in real-time after each amplification cycle using fluorescent Taq-Man[®] probes.

Taq-Man[®] probes are oligonucleotides, specific to the target DNA sequence, that have a fluorescent probe attached to the 5' end and a

quencher to the 3' end. During PCR amplification the fluorophore will be cleaved away and is decoupled from the quencher. This leads to a strong increase of fluorescence intensity, which is proportional to the specific target DNA amplification. The fluorescence is directly measured and quantified in the real-time thermocycler. Distinct fluorophores can be used to detect multiple targets (Multiplex).

Taq-Man[®] RT-qPCR



Taq-Man[®] RT-qPCR uses RNA as starting material. In a one-step reaction, the RNA is reverse transcribed (RT) into cDNA, then the cDNA is amplified during the same reaction and the fluorescence of Taq-Man[®] probes is directly measured and quantified in the real-time thermocycler.

SYBR®-Green qPCR



SYBR®-Green qPCR is a PCR method, whereby the amplified DNA is measured in real-time after each amplification cycle using the fluorescent dye SYBR®-Green.

SYBR®-Green binds only to double-stranded DNA. When SYBR®-Green binds to the double-stranded DNA of the PCR products, it emits

fluorescence. This leads to a strong increase in intensity of fluorescence, which is proportional to the specific target DNA amplification. Since SYBR®-Green is not able to bind to single-stranded DNA, the fluorescence signal fast and rapidly decreases during the DNA denaturation step which allows a melting curve analysis.

SYBR®-Green RT-qPCR



SYBR®-Green RT-qPCR uses RNA as starting material. In a one-step reaction first, the RNA is reverse transcribed (RT) into cDNA, then the cDNA is amplified during the same reaction and the fluorescence of bound SYBR®-Green dye is directly measured and quantified in the real-time thermocycler. Direct Master Mix24Reverse Transcriptase96Positive Control100Negative Control100

Available set formats

24 *

192 **

24 *

192 **

24

96

96 */**

96 */**

(No of reactions)

Components included

Direct Master Mix */**

Primers/Probes Mix **

Nuclease Free Water **

Direct Master Mix */**

Positive Control *

Negative Control * Primers/Probes/IC Mix **

Direct Master Mix

Positive Control

Negative Control

Reverse Transcriptase */**

Nuclease Free Water **

Positive Control *

Negative Control *

in the sets

* included in the sets, powered by Qualiplante ** included in the sets, powered by Bioreba

PCR macroarray



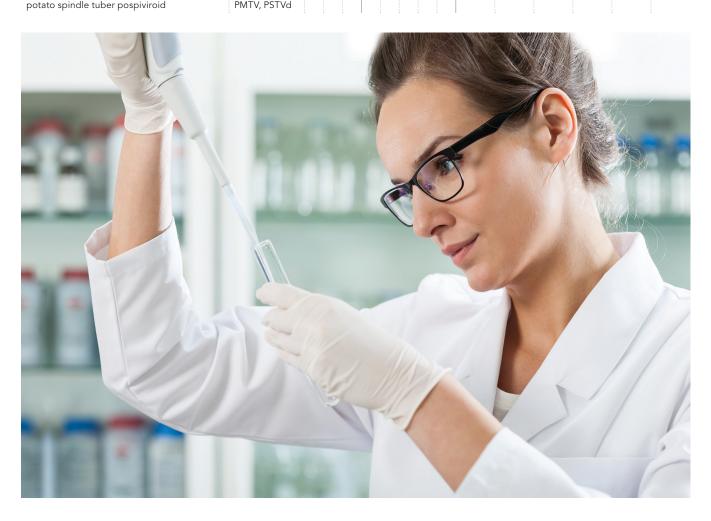
The PCR macroarray potato virus kit is a diagnostic method for the detection of eight potato viral pathogens: PVA, PVM, PVS, PVX, PVY (O- and N-type), PLRV, PMTV and PSTVd in one single reaction. The complete kit includes macroarray strips and all reagents needed to extract RNA, to perform the RT-PCR reaction and hybridization reaction. It is optimized for pools of up to 10 dormant tuber samples. Due to multiplexing, it is cost effective and easy to use. The clearly visible color change of the hybridization positions enables convenient result evaluation by eye. To perform an assay, less than 5 hours are required.

Ordering information

Ordering information

The following products are developed and validated by BIOREBA:

PCR tests by BIOREBA			PCR method Additional info								Part number								
Pathogen	Abbr.	PCR macroarray	Taq-Man® qPCR	Taq-Man® RT-qPCR	Positive and Negative Control	Multiplex	RT /Reverse Transcriptase)	Internal Control (IC host gene)	Internal Control (IC RNA)	96 Assays set	192 Assays set	96 Assays kit (including rapid extraction, pool size of up to 10 tuber samples)	96 Assays kit (including rapid extraction, pool size of up to 25 tuber samples)	192 Assays kit (including rapid extraction, pool size of up to 10 tuber samples)	192 Assays kit (including rapid extraction, pool size of up to 25 tuber samples)				
Grapevine											i								
Virus																			
Grapevine red blotch virus	GRBV		•		•			•		879600	879200								
Potato																			
Virus & Viroid					•••••						••••••		••••••	••••••					
Potato virus A & Potato virus M	PVA/PVM			•	•		•		•	849600	849200	849610	849625	849210	849225				
Potato virus Y & Potato leafroll virus	PLRV/PVY			•	•		٠		٠	839600	839200	839610	839625	839210	839225				
Potato viruses A, M, S, X, Y (O- and N-type), potato leafroll virus, potato mop-top virus, potato spindle tuber pospiviroid	PVA, PVM, PVS, PVX, PVY, PLRV, PMTV, PSTVd	•			•	•	•	•				820032		820026					



The following products are developed and validated by Qualiplante:

	Real	time l	PCR (c	PCR)	A	dditio	nal in	fo	Part number					
Abbr	End Point PCR	End Point RT-PCR	Two-Step End Point RT-PCR	Nested End Point PCR	Taq-Man® qPCR	Taq-Man® RT-qPCR	SYBR®-Green qPCR	SYBR®-Green RT-qPCR	Positive and Negative Controls	Multiplex	RT (Reverse Transcriptase)	Internal Control (IC)	24 Assays	96 Assays
			:				:							;
		•••••	•••••	•••••	•••••	•••••	•••••	•••••			•••••	•••••	•••••	
Xfast				•					•				7XfastP2	7XfastP9
Xfast					•				•	•		٠	7Xfastq2	7Xfastq9
	i	i	i	÷	l		à	i			i	÷	l	
Uniphy				٠					•				7UniphP2	7UniphP9
Uniphy					•				•				7Uniphq2	7Uniphq9
					•				•				7ICq2	7ICq9
i	.	i		÷	L		÷	i			••••••	÷	L	
		•••••	•••••	•••••			•••••							
AgVit AgTum	•								•	•			7AgVitP2	7AgVitP9
		•••••	·····	******		•••••	*	•			*	*		
Botr				٠					•				7Botr-P2	7Botr-P9
BN					•				•	•		•	7BNq2	7BNq9
FD					•				•	•		•	7FDq2	7FDq9
FD BN				•					•	•			7FDBN-P2	7FDBN-P9
FD BN					•				•	•		•	7FDBN-q2	7FDBN-q
													[
7VV.woRT	•								•	•		•	77VVP2w	77VVP9
7VV			•						•	•	•	•	77VVP2	77VVP9
GFkV						•			•		•		7GFkV-q2	7GFkV-q9
GFLV						•			•		•		7GFLV-q2	7GFLV-q9
GLRaV-1						•			•		•		7GLRa1q2	7GLRa1q9
GLRaV-1								•	•				7GLRa1S2	7GLRa1S9
GLRaV-2						•			•		•		7GLRa2q2	7GLRa2q9
GLRaV-3						•			•		•		7GLRa3q2	7GLRa3q9
GLRaV-3								•	•				7GLRa3S2	7GLRa3S9
GRBaV	•								•				7GRBaVP2	7GRBaVP
GRBaV							•		•				7GRBaVS2	7GRBaVS
GVA						•			•		•		7GVAq2	7GVAq9
GVB						•			•		•		7GVBq2	7GVBq9
GPGV		•							•		٠		7GPGV-P2	7GPGV-P9
	Xfast Uniphy Uniphy Uniphy Botr Botr Botr BN FD FD BN FD BN FD BN FD BN GFkV GFkV GLRaV-1 GLRaV-2 GLRaV-3 GRBaV GVA GVB	Xfast Xfast Xfast Xfast Xfast Xfast Xfast Xfast Uniphy I Diphy I Botr I Botr I FD I FD I FD BN I GFLV I GFLV I GLRaV-1 I GLRaV-3 G GRBAV I GVA GVA	KiastKiastXfast	XfastXfastImage: set of the set	Xfast • Xfast • Uniphy • Uniphy • MayVit • AgVit • AgTum • Botr • Botr • Botr • FD • FD BN • FD BN • FD BN • FURATION • GFLV • GFLV • GLRaV-1 • GLRaV-3 • GRBAV • GVA GVA GVB •	Xfast X <td>Xfast X X X X Xfast I I I I Xfast I I I I Viniphy I I I I Uniphy I I I I Uniphy I I I I Botr I I I I BN I I I I FD I I I I FD BN I I I I FD BN I I I I TVV.woRT I I I I GFkV I I I I GLRaV-1 I I I I GRBaV I I I I GVB I I I I</td> <td>Xfast Number Numer Number Number</td> <td>Xfast X N<td>Abbr. No. 1 <th< td=""><td>Abbr. Name Name</td><td>Abbr. Image: Second Second</td><td>Abbr. No. <th< td=""><td>Abbr. Yfast <th< td=""></th<></td></th<></td></th<></td></td>	Xfast X X X X Xfast I I I I Xfast I I I I Viniphy I I I I Uniphy I I I I Uniphy I I I I Botr I I I I BN I I I I FD I I I I FD BN I I I I FD BN I I I I TVV.woRT I I I I GFkV I I I I GLRaV-1 I I I I GRBaV I I I I GVB I I I I	Xfast Number Numer Number Number	Xfast X N <td>Abbr. No. 1 <th< td=""><td>Abbr. Name Name</td><td>Abbr. Image: Second Second</td><td>Abbr. No. <th< td=""><td>Abbr. Yfast <th< td=""></th<></td></th<></td></th<></td>	Abbr. No. 1 No. 1 <th< td=""><td>Abbr. Name Name</td><td>Abbr. Image: Second Second</td><td>Abbr. No. <th< td=""><td>Abbr. Yfast <th< td=""></th<></td></th<></td></th<>	Abbr. Name Name	Abbr. Image: Second	Abbr. No. No. <th< td=""><td>Abbr. Yfast <th< td=""></th<></td></th<>	Abbr. Yfast Yfast <th< td=""></th<>

		Clas	lassical PCR Real time PCR (qPCR) Additional							nal in	fo	Part	Part number	
Pathogen	Abbr.	End Point PCR	End Point RT-PCR	Nested End Point PCR	Taq-Man [®] qPCR	Taq-Man [®] RT-qPCR	SYBR®-Green qPCR	SYBR®-Green RT-qPCR	Positive and Negative Controls	Multiplex	RT (Reverse Transcriptase)	Internal Control (IC)	24 Assays	96 Assays
Fruit Trees & Small Fruits	2									à				`
Bacteria	••••••		•••••		•••••	•••••		••••••		•••••		•••••	••••••	••••
Erwinia amylovora	Ea				•				•				7Eaq2	7Eaq9
Pseudomonas syringae pv. actinidiae (Rees-George)		•							•				7PSAP2	7PSAP9
Pseudomonas syringae pv. actinidiae (Recs George)	PSA	•							•	•			7PSAP2g	7PSAP9g
·····	PSA						•		•	-			7PSAF2g 7PSAS2	7PSAF9g 7PSAS9
Pseudomonas syringae pv. actinidiae (Galleli)	PSA				l		•	l	•				7PSAS2g	7PSAS9g
Phytoplasma	AL 14/5												7.1	
Almond witches'broom	AlmWB			•					•				7AlmWBP2	7AlmWBP9
Almond witches'broom	AlmWB						•		•				7AlmWBS2	7AlmWBS9
Apple Proliferation Group	AP			•					•				7APP2	7APP9
Viroid					,									
Citrus exocortis viroid	CEVd							•	•		•		7CEVd-S2	7CEVd-S9
Citrus cachexia viroid	HSVd							•	٠		•		7HSVd-S2	7HSVd-S9
Virus	*****		•••••				*****			•••••				
Apple mosaic virus	ApMV		٠						٠		٠		7ApMV-P2	7ApMV-P9
Apple stem pitting virus	ASPV		•						•		٠		7ASPV-P2	7ASPV-P9
Cherry leaf roll virus	CLRV		•						•		•		7CLRV-P2	7CLRV-P9
Citrus tristeza virus	CTV		•					•••••	•		•		7CTVP2	7CTVP9
Citrus tristeza virus	CTV					٠			•		•		7CTVq2	7CTVq9
	PDV												+*	
Prunus dwarf virus			•						•		•		7PDVP2	7PDVP9
Prunus necrotic ringspot virus	PNRSV		•						•		•		7PNRSVP2	7PNRSVP9
Plum pox virus	PPV		•						•		•		7PPVP2	7PPVP9
Plum pox virus	PPV					•			•		•		7PPVq2	7PPVq9
Ornamentals														
Bacteria	••••••		•••••		•••••		•••••	••••••		•••••			••••••	
Xanthomonas axonopodis pv. dieffenbachiae														
Patented primers CIRAD Licence	Xad			•					•				7XadP2	7XadP9
Vegetables														
Bacteria	••••••	••••	•••••		•••••		•••••	••••••		•••••		•••••	••••••	
Clavibacter michiganensis subsp.	-													
michiganensis Pseudomonas corrugata & Pseudomonas medi-	Cmm	•							•				7CmmP2	7CmmP9
terranea	Pcorr	•							٠	•			7PcorrP2	7PcorrP9
Ralstonia solanacearum	Rsol				•				•				7Rsol-q2	7Rsol-q9
Xanthomonas axonopodis pv. allii														
Patented primers CIRAD Licence	Хаа			•					•				7XaaP2	7XaaP9
Funghi	N4								-				714- 50	714 50
Monosporascus cannonballus	Monocano	•			l			l	•				7Mncn-P2	7Mncn-P9
Viroid					r			······						
Potato spindle tuber viroid	PSTVd				l	•		I	•		•		7PSTVdq2	7PSTVdq9
Virus	•						••••••	······					r	
Cucumber mosaic virus	CMV	٠							•				7CMVP2	7CMVP9
General Potyvirus	PotyV	•							•				7PotyVP2	7PotyVP9
Pepino mosaic virus	PepMV		•						٠		•		7PepMVP2	7PepMVP9
Pepino mosaic virus	PepMV					٠			٠		٠		7PepMVq2	7PepMVq9
Tomato infectious chlorosis virus	TICV					٠			•		٠		7TICV-q2	7TICV-q9
								j					7ToCV-q2	7ToCV-q9

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