

# Butyrl-Cholinesterase (BCHE) Atypic Variant (A209G) ToolSet™ for LightCycler™

Lyophilized ToolSet for PCR using the LightCycler™ Instrument. Licensed by Roche Diagnostics GmbH

**Order#: BCHE AV - 16**

1 ToolSet for 16 reactions

Store at 4°C, protected from light.  
Exposure to light may especially damage the OligoTool™ tube (vial with red cap).

For use with LightCycler-DNA Master Hybridization Probes, 10 x conc. (Roche Cat.No.: 2 015 102)

## 1. ToolSet contents

Vial	Label	Content	Quantity
			<b>BCHE AV - 16</b>
<b>1, Red cap</b>	<b>OligoTool</b>	- lyophilized oligos for PCR - contains mutation detection and anchor probe, primers	For 16 tests  Dissolved: 50 µL
<b>2, Green cap</b>	<b>Control</b>	- lyophilized heterozygous DNA	Dissolved: 20 µL
<b>3, Blue cap</b>	<b>Solvent</b>	- to dissolve OligoTool / Control	1000 µL of Solvent

Additional equipment and reagents required but not supplied :  
LightCycler-DNA Master Hybridization Probes, 10 x conc. Cat.No.: 2 015 102, including 25mM MgCl<sub>2</sub>; LightCycler instrument, LightCycler capillaries, DNA extraction materials

## 2. Introduction

### 2.1. Product overview

#### ToolSet description

The ToolSet is specifically designed for genotyping the A to G exchange at nucleotide position 209 of the BCHE gene equivalent to the Atypic Variant of BCHE (209G) by LightCycler PCR with Melting Curve Analysis. The primer pair and fluorescent detection and anchor probes have been optimized for specific amplification of targets and optimal genotype discrimination.

#### Control material

Heterozygous control DNA, lyophilized.

#### Storage of ToolSet and Solutions

Store at +4°C when lyophilized, protected from light.  
The unopened lyophilized ToolSet is stable at +4°C for 12 months from date of manufacture if protected from light. When dissolved store at +4°C for a maximum of 4 weeks, or at -20°C for longer periods (months), protected from light. Avoid freezing and thawing.

### 3. Preparation for LightCycler PCR

**Toolset preparation** Dissolve the content of the OligoTool tube (Red Cap) with 50 µl of Solvent.  
Dissolve the content of the Control tube (Green Cap) with 20 µl of Solvent.

1. Before opening tubes, centrifuge them quickly.
2. Add Solvent into OligoTool tube and Control tube as above.
3. Recap tubes, vortex gently.
4. Before opening tubes, centrifuge them quickly.
5. Proceed to Reaction Mix preparation.

**Primers ?** You don't have to add primers.  
**Probes ?** You don't have to add probes.

**Reaction Mix Preparation** For 1 (One) reaction, prepare the Reaction Mix as shown in the following table :

Reagent	µL
OligoTool BCHE AV -16 dissolved	2.8
Solvent BCHE AV -16	10.4
MgCl <sub>2</sub> 25 mM	0.8
Master Hybridization Probes 10x	2
Total Reaction Mix	16
+ Your DNA or Control BCHE AV -16	4
Grand Total	20

Use Master Hybridization Probes 10x and MgCl<sub>2</sub> 25 mM from Roche LightCycler-DNA Master Hybridization Probes, 10 x conc. (Roche Cat.No.: 2 015 102, including 25mM MgCl<sub>2</sub>).  
For multiple reactions, multiply the indicated volumes appropriately.

**Positive Control** Always run a positive control with the samples.  
Use the dissolved heterozygous Control BCHE AV - 16 DNA (Green Cap).

**Negative control** Always run a negative control with the samples. To prepare a negative control, replace the template DNA with Solvent (Blue Cap).

**Extraction of genomic DNA** You can use different Kits for DNA isolation, either with a manual method or with an automated system. The elution buffers should be salt-free. Example : Roche High Pure PCR Template Preparation Kit (Cat.No. 1 796 828)

**Application** The BCHE Atypic Variant ToolSet™ for LightCycler™ allows the detection of the single point mutation A209G which encodes the atypic variant of the BCHE gene. This variant is associated with increased sensitivity to muscle relaxants. More information is available in the *Genes* section at [www.Genes-4U.com](http://www.Genes-4U.com)

Note : This ToolSet was developed for use in life science research only.

Note : The BCHE K-Variant ToolSet uses the same time-temperature protocol. However, because of different signal intensities we do not recommend to perform the two tests in the same LightCycler run.

## 4. LightCycler Settings and Experimental Protocol

### Denaturation

Cycle Program Data	Value
Cycles	1
Analysis Mode	None
Temperature Targets	<b>Segment 1</b>
Target Temperature (°C)	95
Incubation time (s)	60
Temperature Transition Rate (°/s)	20
Secondary Target Temperature (°C)	0
Step Size (°C)	0
Step Delay (Cycles)	0
Acquisition Mode	None

### Amplification

Cycle Program Data	Value		
Cycles	50		
Analysis Mode	None		
Temperature Targets	<b>Segment 1</b>	<b>Segment 2</b>	<b>Segment 3</b>
Target Temperature (°C)	95	55	72
Incubation time (s)	1	10	12
Temperature Transition Rate (°/s)	20	20	5.0
Secondary Target Temperature (°C)	0	0	0
Step Size (°C)	0	0	0
Step Delay (Cycles)	0	0	0
Acquisition Mode	None	Single	None

### Melting Curve Analysis

Cycle Program Data	Value		
Cycles	1		
Analysis Mode	Melting Curves		
Temperature Targets	<b>Segment 1</b>	<b>Segment 2</b>	<b>Segment 3</b>
Target Temperature (°C)	95	40	80
Incubation time (s)	30	60	0
Temperature Transition Rate (°/s)	20	20	0.1
Secondary Target Temperature (°C)	0	0	0
Step Size (°C)	0	0	0
Step Delay (Cycles)	0	0	0
Acquisition Mode	None	None	Continuous

### Cooling

Cycle Program Data	Value
Cycles	1
Analysis Mode	None
Temperature Targets	<b>Segment 1</b>
Target Temperature (°C)	40
Incubation time (s)	30
Temperature Transition Rate (°/s)	20
Secondary Target Temperature (°C)	0
Step Size (°C)	0
Step Delay (Cycles)	0
Acquisition Mode	None

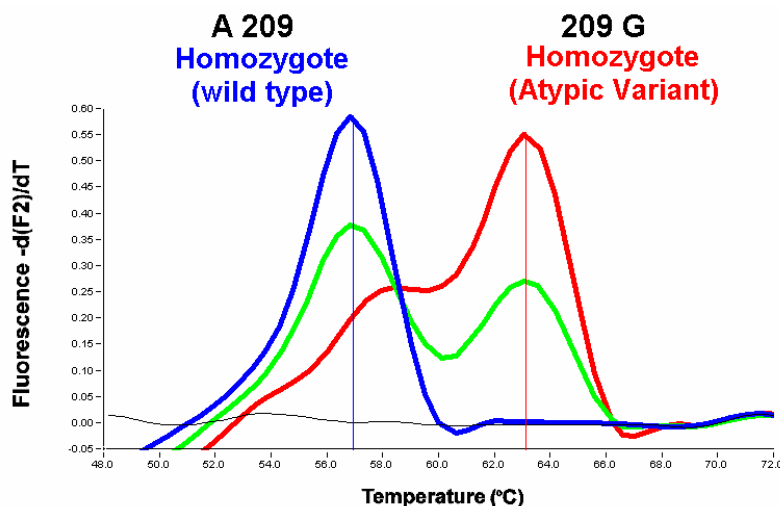
### Fluorescence display mode

Use preferably F2 with color compensation, or F2/F1 without color compensation.  
 Use automatic gain setting with LC program 3.5. Use gains: F1=1; F2=15 for earlier versions of the LC program.

## 5. Typical results

### Introduction

Use the Melting Curve program to genotype the human genomic DNA research samples. The melting peaks allow discrimination between the homozygous (wild type or mutant) and the heterozygous samples. Figure 1 shows a typical result obtained with the BCHE atypic Variant ToolSet™ for LightCycler™ :



**Figure 1 : Melting curve analysis of the three possible genotypes of BCHE at nucleotide 209.**

**BLUE** : Homozygote for A209 (wild type), **RED** : Homozygous for 209G (Atypic Variant),  
**GREEN** : The Heterozygote Control contained in the ToolSet, Control BCHE AV - 16.  
Conditions : Color compensation and Digital Filter enabled, Calculation Method : Polynomial  
**Blue Cursor** :  $T_m = 57.0\text{ }^{\circ}\text{C}$  , **Red Cursor** :  $T_m = 63.1\text{ }^{\circ}\text{C}$ .

**Note** : The values for the respective melting temperatures may vary for +/- 2.5 °C between different experiments. The Delta T between the melting peaks for different genotypes may vary +/- 0.5 °C. The BCHE AV ToolSet™ has been developed for and validated with the LightCycler™ and its original accessory materials and reagents. Performance of the ToolSet with other instruments, accessories and reagents has not been validated by Genes-4U.

## 7. Notices to Purchaser

### Licenses and Trademarks, Prohibition of Resale

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