

StepOnePlus software 사용자 매뉴얼

FAS

이진영

목 차

1. Software 기본 설정
2. SYBR Green, Comparative Ct (ddCt) 설정
3. TaqMan, Comparative Ct (ddCt) 설정
4. TaqMan, Standard Curve 설정
5. TaqMan, SNP Genotyping 설정

(*해당 Application과 Chemistry는 예시일 뿐 실험 목적에 맞는 Chemistry로 사용하시면 됩니다.)

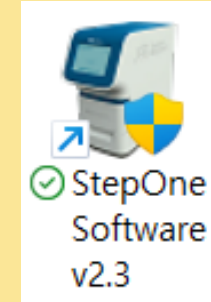
6. 결과 분석
7. Export

1

Software 기본 설정

<Software 사용 순서>

1. 장비와 연결된 PC 켜기
LOG IN: INSTR_ADMIN (PW: INSTR_ADMIN)
2. PC 화면이 켜지면 장비 전원 켜기 (장비 후면 스위치)
3. 장비 화면이 켜지면 소프트웨어 열기



<Software Download>

구글에 'StepOnePlus software' 검색, 또는
아래 Thermo Fisher 사이트에서 다운로드 가능
개인 컴퓨터에 설치하여 결과 분석 등에 사용 가능합니다.

<https://www.thermofisher.com/kr/ko/home/technical-resources/software-downloads/StepOne-and-StepOnePlus-Real-Time-PCR-System.html>

Set Up

Design Wizard



Advanced Setup



Template



Run

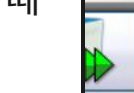
QuickStart



Remote Monitor



Experiment



Analyze

Analyze Experiment



Create Study



새로운 실험을 시작할 때
Advanced Setup

저장해 둔 template 파일을 열 때
Template

기기와 software의 연결상태

Disconnected

Setup – Experiment Properties



Home 화면에서 'Advanced setup'을 클릭했을 때 첫 화면입니다.

StepOne™ Software v2.3

File Edit Instrument Analysis Tools Help

New Experiment Open... Save Close Send Experiment to Instrument... Download Experiment from Instrument... Export... Print Report...

Experiment Menu << Experiment: **Untitled 1** Type: **Comparative Ct ($\Delta\Delta Ct$)** Reagents: **SYBR® Green Reagents** **START RUN** ?

Experiment Properties

Enter an experiment name, select the instrument type, select the type of experiment to set up, then select materials and methods for the PCR reactions and instrument run.

How do you want to identify this experiment?

Experiment Name: **1. 파일 제목 입력**

Barcode (Optional):

User Name (Optional):

Comments (Optional):

Which instrument are you using to run the experiment?

StepOnePlus™ Instrument (96 Wells) StepOne™ Instrument (48 Wells)

Set up, run, and analyze an experiment using a 4-color, 96-well system.

What type of experiment do you want to set up?

Quantitation - Standard Curve Quantitation - Relative Standard Curve Quantitation - Comparative Ct ($\Delta\Delta Ct$)

Melt Curve Genotyping Presence/Absence

Use a reference sample and an endogenous control to determine the relative quantity of target nucleic acid sequence in samples.

Home Untitled 1 x Disconnected

Setup – Experiment Properties

3. 진행할 실험 타입 (Application) 설정

to Instrument... Download Experiment from Instrument... Export... Print Report...

Type: **Comparative Ct ($\Delta\Delta Ct$)** Reagents: **SYBR® Green Reagents** **START RUN** ?

Experiment Properties

✓ StepOnePlus™ Instrument (96 Wells) StepOne™ Instrument (48 Wells)

Set up, run, and analyze an experiment using a 4-color, 96-well system.

What type of experiment do you want to set up?

Quantitation - Standard Curve Quantitation - Relative Standard Curve ✓ Quantitation - Comparative Ct ($\Delta\Delta Ct$)

Melt Curve Genotyping Presence/Absence

Use a reference sample and an endogenous control to determine the relative quantity of target nucleic acid sequence in samples.

정량 분석

- 절대 정량: Standard Curve
- 상대 정량: Relative Standard Curve, Comparative Ct

정성 분석: Melt Curve, Genotyping, Presence/Absence

Setup – Experiment Properties

4. 사용하는 Chemistry
TaqMan / SYBR Green 중 선택

Which reagents do you want to use to detect the target sequence?

TaqMan® Reagents ✓ SYBR® Green Reagents Other

The PCR reactions contain primers designed to amplify the target sequence and SYBR® Green I dye to detect double-stranded DNA.

Include Melt Curve

Which ramp speed do you want to use in the instrument run?

✓ Standard (~ 2 hours to complete a run) Fast (~ 40 minutes to complete a run)

For optimal results with the standard ramp speed, Applied Biosystems recommends using standard reagents for your PCR reactions.

5. 사용하는 Master Mix의 사양에 따라
Standard/Fast 중 선택

2 SYBR Green, Comparative Ct(ddCt) 설정

Setup – Experiment Properties



StepOne™ Software v2.3

File Edit Instrument Analysis Tools Help

New Experiment Open... Save Close Send Experiment to Instrument... Download Experiment from Instrument... Export... Print Report...

Experiment Menu << Experiment: **Untitled 1** Type: **Comparative Ct ($\Delta\Delta Ct$)** Reagents: **SYBR® Green Reagents** **START RUN** ?

Experiment Properties

StepOnePlus™ Instrument (96 Wells) StepOne™ Instrument (48 Wells)

Set up, run, and analyze an experiment using a 4-color, 96-well system.

• What type of experiment do you want to set up?

Quantitation - Standard Curve Quantitation - Relative Standard Curve Quantitation - Comparative Ct ($\Delta\Delta Ct$) Presence/Absence

Melt Curve Genotyping

Use a reference sample and an endogenous control to determine the relative quantity of target nucleic acid sequence in samples.

• Which reagents do you want to use to detect the target sequence?

TaqMan® Reagents SYBR® Green Reagents Presence/Absence

The PCR reactions contain primers designed to amplify the target sequence and SYBR® Green I dye to detect double-stranded DNA.

Include Melt Curve

• Which ramp speed do you want to use in the instrument run?

Standard (~ 2 hours to complete a run) Fast (~ 40 minutes to complete a run)

For optimal results with the standard ramp speed, Applied Biosystems recommends using standard reagents for your PCR reactions.

Home Untitled 1 x

Disconnected

진행할 실험 type: Comparative Ct
Chemistry: SYBR Green 선택

사용하는 Master Mix의 사양에 따라
Standard/Fast 중 선택

Setup - Plate Setup

StepOne™ Software v2.3

File Edit Instrument Analysis Tools Help

New Experiment Open... Save Close Send Experiment to Instrument... Download Experiment from Instrument... Export... Print Report...

Experiment Menu << Experiment: **Untitled 1** Type: **Comparative Ct ($\Delta\Delta Ct$)** Reagents: **SYBR® Green Reagents** **START RUN** ?

Setup

Experiment Properties

Plate Setup

Run Method

Reaction Setup

Materials List

Run

Analysis

Define Targets and Samples Assign Targets and Samples

Instructions: Define samples to test in the reaction plate.

Define Targets

Target 추가

Add New Target Add Saved Target Save Target Delete Target

Target Name	Reporter	Quencher	Color
Target 1	SYBR	None	
Target 2	SYBR	None	

Define Samples

Sample 추가

Add New Sample Add Saved Sample Save Sample Delete Sample

Sample Name	Color
Sample 1	
Sample 2	
Sample 3	

Define Biological Replicate Group

추가 기능

Instructions: For each biological replicate

Add Biological Group Delete Biological Group

Biological Group Name

- Save Target: 자주 쓰는 Target 저장
- Add Saved Target: 저장한 Target을 불러오기 할 수 있음
- Save Sample: 자주 쓰는 Sample 저장
- Add Saved Sample: 저장한 Sample을 불러오기 할 수 있음

Assign Targets and Samples

Home Untitled 1 x

Disconnected

Setup - Plate Setup

StepOne™ Software v2.3

File Edit Instrument Analysis Tools Help

New Experiment Open Save Close Send Experiment to Instrument Download Experiment from Instrument Export Print Report

Experiment Menu << Experiment: **Untitled 1** Type: **Comparative Ct ($\Delta\Delta Ct$)** Reagents: **SYBR® Green Reagents** **START RUN** ?

Setup Experiment Properties Plate Setup Run Method Reaction Setup Materials List Run Analysis

Define Targets and Samples **Assign Targets and Samples**

1. 'Assign Targets and samples'로 이동

Instructions:
To set up unknowns: Select wells, assign target(s), select "U" (Unknown) as the task for each target assignment, then assign a sample.
To set up negative controls: Select wells, assign target(s), then select "N" (Negative Control) as the task for each target assignment.

Assign target(s) to the selected wells.

Assign	Target	Task
<input checked="" type="checkbox"/>	Target 2	<input type="checkbox"/> U <input type="checkbox"/> N

Mixed U Unknown N Negative Control

Assign sample(s) to the selected wells.

Assign	Sample
<input type="checkbox"/>	Sample 1
<input type="checkbox"/>	Sample 2

Assign sample(s) of selected well(s) to biological group.

Assign	Biological Group
--------	------------------

Select relative quantitation set

Reference Sample: Sample 1

Wells: 6 Unknown 3 Negative Control 87 Empty

View Plate Layout View Well Table

Select Wells With: - Select Item - - Select Item -

Show in Wells View Legend Enable VeriFlex™ Block

	1	2	3	4	5	6	7	8	9	10	11	12
A	<input type="checkbox"/> U Target 1	<input type="checkbox"/> U Target 1	<input type="checkbox"/> U Target 1									
B	<input type="checkbox"/> Sample 1	<input type="checkbox"/> Sample 1	<input type="checkbox"/> Sample 1									
C												
D	<input type="checkbox"/> N Target 2	<input type="checkbox"/> N Target 2	<input type="checkbox"/> N Target 2									
E												
F												

2. Well 지정 (드래그 후 target, sample 클릭)

3. Negative control 입력 (해당 well 드래그 후 Task에서 N으로 변경)

Home Untitled 1 x

Disconnected

Setup - Plate Setup

StepOne™ Software v2.3

File Edit Instrument Analysis Tools Help

New Experiment Open... Save Close Send Experiment to Instrument... Download Experiment from Instrument... Export... Print Report...

Experiment: **Untitled 1** Type: **Comparative Ct ($\Delta\Delta Ct$)** Reagents: **SYBR® Green Reagents** **START RUN** ?

Define Targets and Samples Assign Targets and Samples

Instructions: To set up unknowns: Select wells, assign target(s), select "U" (Unknown) as the task for each target assignment, then assign a sample.
To set up negative controls: Select wells, assign target(s), then select "N" (Negative Control) as the task for each target assignment.

Mixed U Unknown N Negative Control

Assign sample(s) to the selected wells.

Assign	Sample
<input type="checkbox"/>	Sample 1
<input type="checkbox"/>	Sample 2

Assign sample(s) of selected well(s) to biological group.

Assign	Biological Group
--------	------------------

Select relative quantitation settings.

Reference Sample: Sample 1
Endogenous Control: Target 1

Select the dye to use as the passive reference

ROX

View Plate Layout View Well Table

Select Wells With: - Select Item - - Select Item -

Show in Wells View Legend Enable VeriFlex™ Block

	1	2	3	4	5	6	7	8	9	10	11	12
A	U Target 1	U Target 1	U Target 1									
B	Sample 1 U Target 2	Sample 1 U Target 2	Sample 1 U Target 2									
C												
D	N Target 2	N Target 2	N Target 2									
E												
F												
G												
H												
We												

87 Empty

Home Untitled 1 x

4. 하기 내용 입력

- **Reference Sample:** 상대 정량의 비교 기준이 되는 sample 선택
- **Endogenous control:** Housekeeping gene 선택
- **Passive Reference:** Master Mix에 포함되어 있는 dye 선택

Setup – Run Method



StepOne™ Software v2.3

File Edit Instrument Analysis Tools Help

New Experiment Open Save Close Send Experiment to Instrument... Download Experiment from Instrument... Export... Print Report...

Experiment Menu << Experiment: **Untitled 1** Type: **Comparative Ct ($\Delta\Delta Ct$)** Reagents: **SYBR® Green Reagents** **START RUN** ?

Setup
Experiment Properties
Plate Setup
Run Method
Reaction Setup
Materials List

Run
Analysis

Run Method

Review the reaction volume and the thermal profile for the default run method. If n

Graphical View Tabular View

Reaction Volume Per Well: 20 μ L

Add Stage Add Step Delete Selected Undo "Delete" (nothing to Redo) Collect Data Open Run Method Save Run Method ... Revert to Defaults

Holding Stage Cycling Stage Melt Curve Stage

Number of Cycles: 40
Enable AutoDelta
Starting Cycle: 1

Continuous Step and Hold

100% 95.0 °C 10:00 100% 95.0 °C 00:15 100% 60.0 °C 01:00 100% 95.0 °C 00:15 100% 60.0 °C 01:00 100% 95.0 °C 00:15 +0.3 °C

Step 1 Step 1 Step 2

Legend
Data Collection On Data Collection Off AutoDelta On AutoDelta Off

Home Untitled 1 x

Disconnected

실험 Reaction Volume 입력
(96 well, 0.1 ml block의 경우 권장 volume 20 ul, /10-30 ul 실험 가능)

사용하는 Master Mix의 User guide에 맞춰 각 step 별 시간, 온도, Cycle 수 설정

SYBR Green 실험의 경우 PCR stage와 Melt curve stage 마지막 step에 Data collection 켜져있는지 확인

Setup – Run Method

StepOne™ Software v2.3

File Edit Instrument Analysis Tools Help

New Experiment Open Save Close Send Experiment to Instrument... Download Experiment from Instrument... Export... Print Report...

Experiment Menu << Experiment: **Untitled 1** Type: **Comparative Ct ($\Delta\Delta Ct$)** Reagents: **SYBR® Green Reagents** **START RUN** ?

Setup
Experiment Properties
Plate Setup
Run Method
Reaction Setup
Mat
R
Analysis

Run Method

Graphical View Tabular View

Reaction Volume Per Well: 20 μ L

Add Stage Add Step Delete Selected

Save Run Method ... Revert to Defaults

Holding Stage Cycling Stage Melt Curve Stage

Number of Cycles: 40
 Enable AutoDelta
Starting Cycle: 1

Continuous Step and Hold

95.0 °C 00:15
100%
60.0 °C 01:00
95.0 °C 00:15
100%
60.0 °C 01:00
95.0 °C 00:15
+0.3 °C

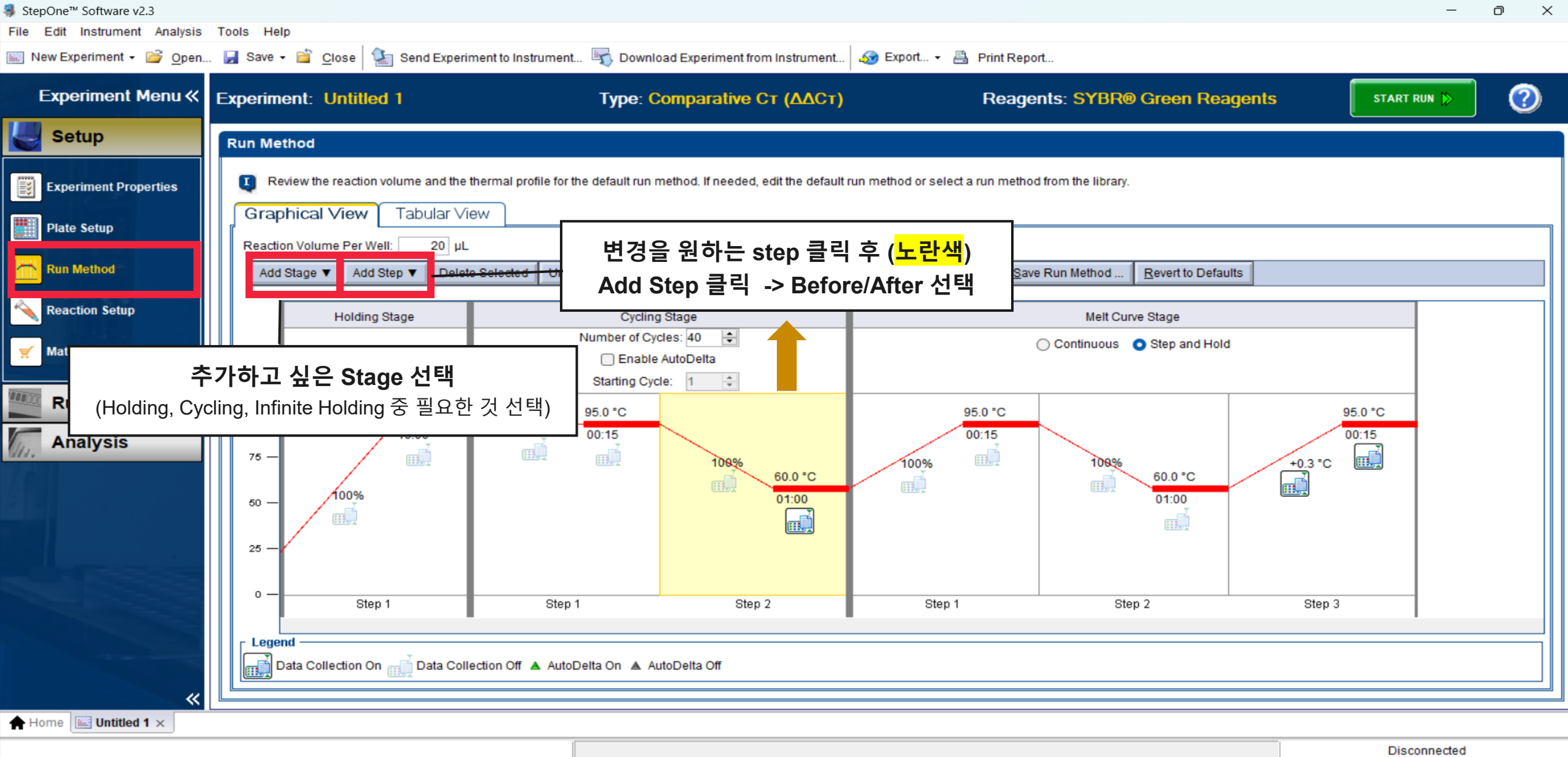
Step 1 Step 1 Step 2 Step 1 Step 2 Step 3

Legend
Data Collection On Data Collection Off AutoDelta On AutoDelta Off

Home Untitled 1 x Disconnected

변경을 원하는 step 클릭 후 (노란색)
Add Step 클릭 -> Before/After 선택

추가하고 싶은 Stage 선택
(Holding, Cycling, Infinite Holding 중 필요한 것 선택)



Setup

Run

Amplification Plot

Melt Curve

Temperature Plot

Run Method

Notification Settings

Run Status

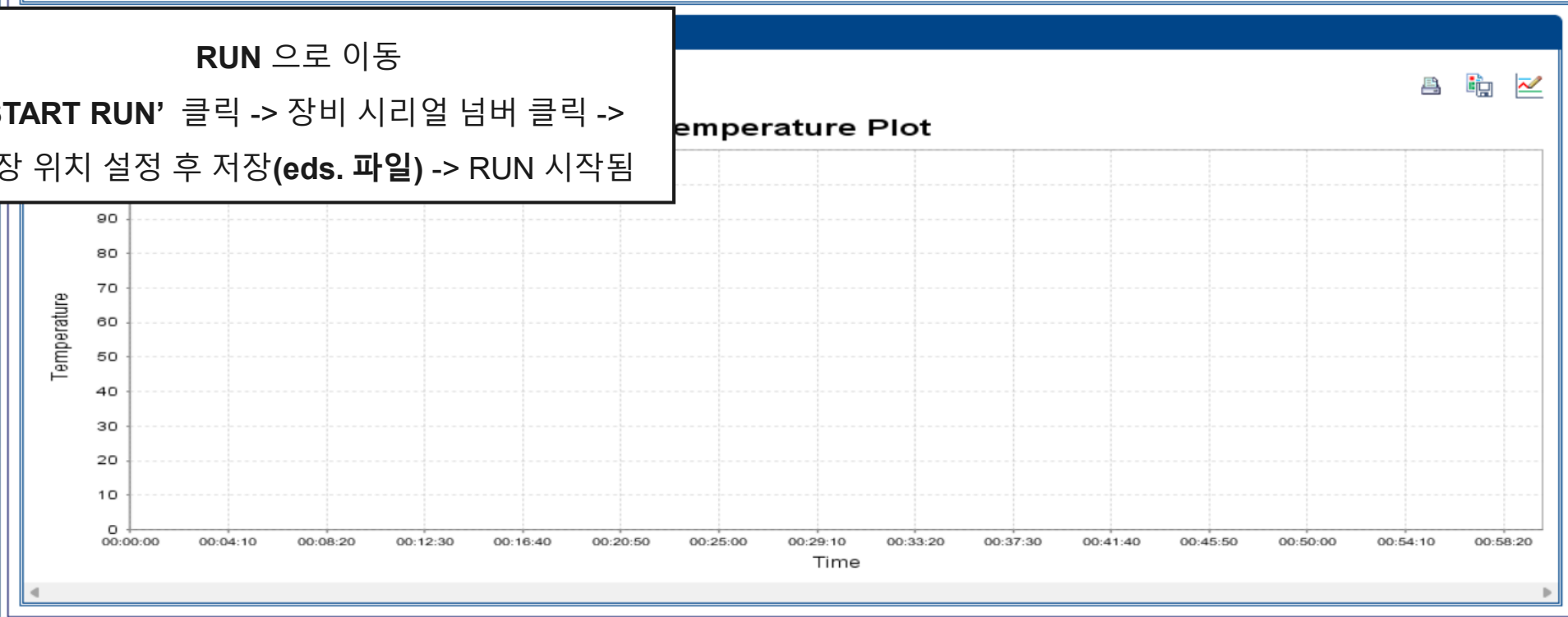
START RUN ▶

Run Status: Not Started








Instrument Status:  **Disconnected**

 **Enable Notifications**

RUN 으로 이동
'START RUN' 클릭 -> 장비 시리얼 넘버 클릭 ->
저장 위치 설정 후 저장(**eds. 파일**) -> RUN 시작됨



Current Temperatures

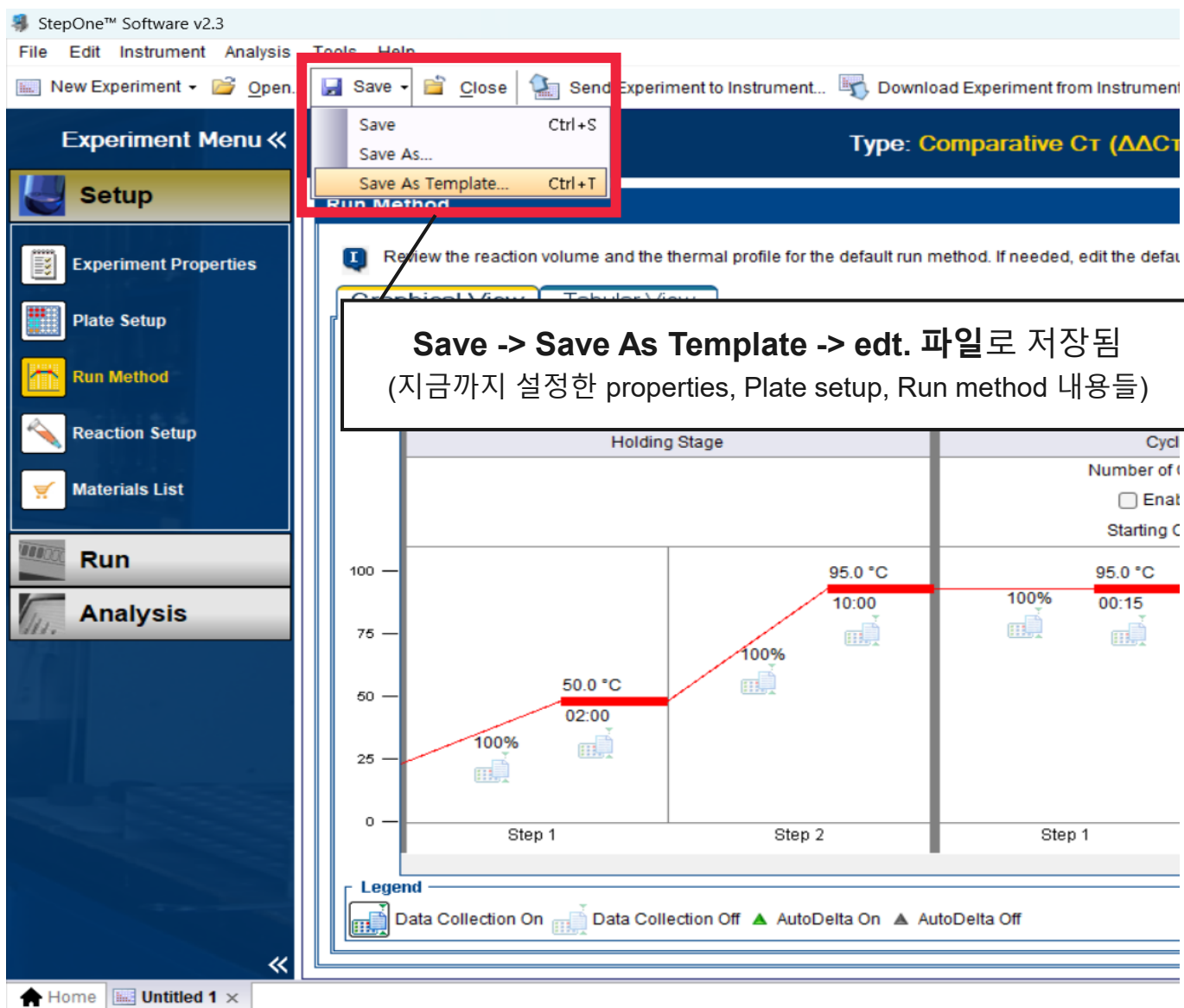
-  Cover
-  Zone 1 Sample
..... Block
-  Zone 2 Sample
..... Block
-  Zone 3 Sample
..... Block
-  Zone 4 Sample
..... Block
-  Zone 5 Sample
..... Block
-  Zone 6 Sample
..... Block

Temperature Plot

View **1 Hour** ▾

Fixed View

Template 파일 저장



StepOne™ Software v2.3

File Edit Instrument Analysis Tools Help

New Experiment Open Save Close Send Experiment to Instrument... Download Experiment from Instrument

Save Ctrl+S
Save As...
Save As Template... Ctrl+T

Experiment Menu <<

Setup

Experiment Properties
Plate Setup
Run Method
Reaction Setup
Materials List

Run
Analysis

Type: Comparative Cr ($\Delta\Delta C_T$)

Run Method

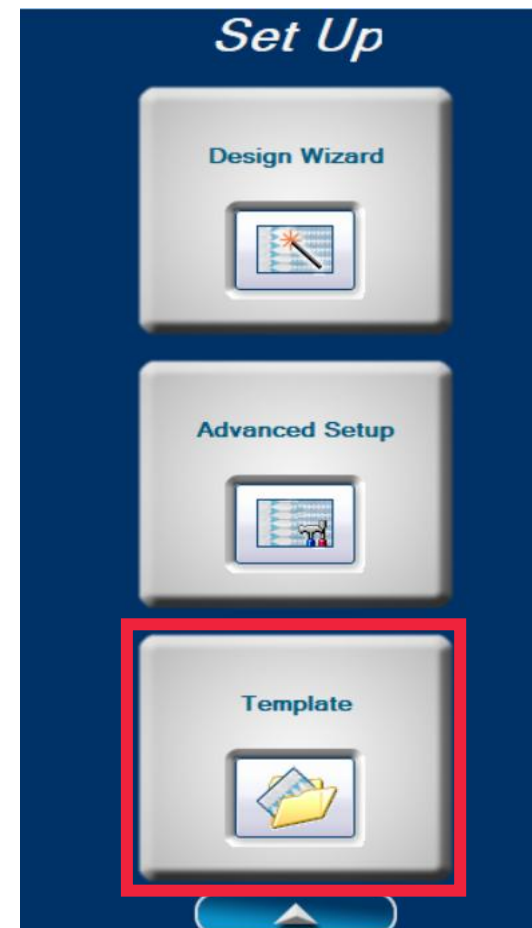
Review the reaction volume and the thermal profile for the default run method. If needed, edit the default run method.

Save -> Save As Template -> edt. 파일로 저장됨
(지금까지 설정한 properties, Plate setup, Run method 내용들)

Step	Temperature (°C)	Time	Percentage
Step 1	25.0	00:00	100%
Step 1	50.0	02:00	100%
Step 2	95.0	10:00	100%
Step 1	95.0	00:15	100%

Legend
Data Collection On Data Collection Off AutoDelta On AutoDelta Off

Home Untitled 1 x



Set Up

Design Wizard

Advanced Setup

Template

Home -> Template 오픈하여 간편하게 실험 가능

3 TaqMan, Comparative Ct(ddCt) 설정

Setup – Experiment Properties



StepOne™ Software v2.3

File Edit Instrument Analysis Tools Help

New Experiment Open... Save Close Send Experiment to Instrument... Download Experiment from Instrument... Export... Print Report...

Experiment Menu << Experiment: **Untitled 1** Type: **Comparative Ct ($\Delta\Delta Ct$)** Reagents: **TaqMan® Reagents** **START RUN** ?

Experiment Properties

• Which instrument are you using to run the experiment?

StepOnePlus™ Instrument (96 Wells) StepOne™ Instrument (48 Wells)

Set up, run, and analyze an experiment using a 4-color, 96-well system.

• What type of experiment do you want to set up?

Quantitation - Standard Curve Quantitation - Relative Standard Curve Quantitation - Comparative Ct ($\Delta\Delta Ct$) Presence/Absence

Melt Curve Genotyping

Use a reference sample and an endogenous control to determine the relative quantity of target nucleic acid sequence in samples.

• Which reagents do you want to use to detect the target sequence?

TaqMan® Reagents SYBR® Green Reagents

... and a TaqMan® probe designed to detect amplification of the target sequence

• Which ramp speed do you want to use in the instrument run?

Standard (~ 2 hours to complete a run) Fast (~ 40 minutes to complete a run)

For optimal results with the Fast ramp speed, Applied Biosystems recommends using Fast reagents for your PCR reactions.

진행할 실험 type: Comparative Ct
Chemistry: TaqMan 선택

사용하는 Master Mix의 사양에 따라
Standard/Fast 중 선택

Home Untitled 1 x Disconnected

Setup - Plate Setup



StepOne™ Software v2.3

File Edit Instrument Analysis Tools Help

New Experiment Open Save Close Send Experiment to Instrument Download Experiment from Instrument Export Print Report

Experiment: **Untitled 1** Type: **Comparative Ct ($\Delta\Delta Ct$)** Reagents: **TaqMan® Reagents** **START RUN**

Setup

- Experiment Properties
- Plate Setup**
- Run Method
- Reaction Setup
- Materials List

Run

Analysis

Define Targets and Samples Assign Targets and Samples

Instructions: Define samples to test in the reaction plate.

Define Targets

Add New Target Add Saved Target Save Target Delete Target

Target Name	Reporter	Quencher	Color
Target 1	FAM	NFQ-MGB	Blue
Target 2	FAM	NFQ-MGB	Green
	FAM		
	JOE		
	NED		
	ROX		
	SYBR		
	TAMRA		
	VIC		

Define Samples

Add New Sample Add Saved Sample Save Sample Delete Sample

Sample Name	Color
Sample 1	Blue
Sample 2	Green
Sample 3	Yellow

Instructions: For each biological replicate group, click Add Biological Group, then define the biological group.

Add Biological Group Delete Biological Group

Biological Group Name	Color	Comments

Assign Targets and Samples

Target 추가

Sample 추가

Reporter, Quencher 선택

Home Untitled 1 x

Disconnected

Setup – Run Method

StepOne™ Software v2.3

File Edit Instrument Analysis Tools Help

New Experiment Open... Save Close Send Experiment to Instrument... Download Experiment from Instrument... Export... Print Report...

Experiment Menu << Experiment: **Untitled 1** Type: **Comparative Ct ($\Delta\Delta Ct$)** Reagents: **TaqMan® Reagents** **START RUN** ?

Setup

- Experiment Properties
- Plate Setup
- Run Method**
- Reaction Setup
- Materials List

Run

Analysis

Run Method

Review the reaction volume and the thermal profile for the default run method. If n

Graphical View Tabular View

Reaction Volume Per Well: 20 μ L

Add Stage Add Step Delete Selected (nothing to Undo) (nothing to Redo) Collect Data Open Run Method Save Run Method... Revert to Defaults

Holding Stage

Cycling Stage

Number of Cycles: 40

Enable AutoDelta

Starting Cycle: 1

95.0 °C 10:00

95.0 °C 00:15

60.0 °C 01:00

100%

100%

100%

Step 1 Step 2 Step 1 Step 2

Legend

Data Collection On Data Collection Off AutoDelta On AutoDelta Off

Home Untitled 1 x Disconnected

실험 Reaction Volume 입력
(96 well, 0.1 ml block의 경우 권장 volume 20 ul, /10-30 ul 실험 가능)

사용하는 Master Mix의 User guide에 맞춰
각 step 별 시간, 온도, Cycle 수 설정

PCR stage 마지막 step에
Data collection 켜져있는지 확인

4 Standard curve 설정

Setup – Experiment Properties



StepOne™ Software v2.3

File Edit Instrument Analysis Tools Help

New Experiment Open... Save Close Send Experiment to Instrument... Download Experiment from Instrument... Export... Print Report...

Experiment Menu << Experiment: **Untitled 1** Type: **Standard Curve** Reagents: **TaqMan® Reagents** **START RUN** ?

Experiment Properties

• Which instrument are you using to run the experiment?

StepOnePlus™ Instrument (96 Wells) StepOne™ Instrument (48 Wells)

Set up, run, and analyze an experiment using a 4-color, 96-well system.

• What type of experiment do you want to set up?

Quantitation - Standard Curve Quantitation - Relative Standard Curve Genotyping Melt Curve

Use standards to determine the absolute quantity of target nucleic acid sequence in samples.

• Which reagents do you want to use to detect the target sequence?

TaqMan® Reagents SYBR® Green Reagents Other

The PCR reactions contain primers designed to amplify the target sequence and a TaqMan® probe designed to detect amplification of the target sequence.

• Which ramp speed do you want to use in the instrument run?

Standard (~ 2 hours to complete a run) Fast (~ 40 minutes to complete a run)

For optimal results with the Fast ramp speed, Applied Biosystems recommends using Fast reagents for your PCR reactions.

진행할 실험 type: Quantitation – Standard Curve
Chemistry: TaqMan 또는 SYBR 선택

사용하는 Master Mix의 사양에 따라 Standard/Fast 중 선택

Home Untitled 1 x

Setup - Plate Setup (수동 입력 방법)

StepOne™ Software v2.3

File Edit Instrument Analysis Tools Help

New Experiment Open Save Close Send Experiment to Instrument... Download Experiment from Instrument... Export Print Report...

Experiment Menu << Experiment: **Untitled 1** Type: **Standard Curve** Reagents: **TaqMan® Reagents** **START RUN** ?

Setup

Experiment Properties

Plate Setup

Run Method

Reaction Setup

Materials List

Run

Analysis

Define Targets and Samples **Assign Targets and Samples**

1. 'Assign Targets and samples'로 이동

Instructions: To set up standards: Click "Define and Set Up Standards."
To set up unknowns: Select wells, assign target(s), select "U" (Unknown) as the task for each target assignment, then assign a sample.
To set up negative controls: Select wells, assign target(s), then select "N" (Negative Control) as the task for each target assignment.

Assign target(s) to the selected wells.

Assign	Target	Task	Quantity
<input checked="" type="checkbox"/>	Target 1	<input type="checkbox"/> U <input checked="" type="checkbox"/> S <input type="checkbox"/> N	10000.0

* Mixed U Unknown S Standard N Negative Control

View Plate Layout View Well Table

Select Wells With: - Select Item - - Select Item -

Show in Wells View Legend Enable VeriFlex™ Block

	1	2	3	4	5	6	7	8	9	10	11	12
A	<input checked="" type="checkbox"/> S Target...	<input checked="" type="checkbox"/> S Target...	<input checked="" type="checkbox"/> S Target...									
B	<input checked="" type="checkbox"/> S Target...	<input checked="" type="checkbox"/> S Target...	<input checked="" type="checkbox"/> S Target...									
C	<input checked="" type="checkbox"/> S Target...	<input checked="" type="checkbox"/> S Target...	<input checked="" type="checkbox"/> S Target...									
D	<input checked="" type="checkbox"/> S Target...	<input checked="" type="checkbox"/> S Target...	<input checked="" type="checkbox"/> S Target...									
E	<input checked="" type="checkbox"/> S Target...	<input checked="" type="checkbox"/> S Target...	<input checked="" type="checkbox"/> S Target...									
F												
G												
H												

Wells: U 0 Unknown S 15 Standard N 0 Negative Control **81 Empty**

2. Target well 드래그, 지정 Task - S로 입력 Quantity에 standard sample copy 수 또는 농도 적어주기 (단위 없음)

Setup - Plate Setup (수동 입력 방법)

StepOne™ Software v2.3

File Edit Instrument Analysis Tools Help

New Experiment Open Save Close Send Experiment to Instrument... Download Experiment from Instrument... Export Print Report...

Experiment: **Untitled 1** Type: **Standard Curve** Reagents: **TaqMan® Reagents** **START RUN**

Experiment Menu << **Setup** Experiment Properties **Plate Setup** Run Method Reaction Setup Materials List

Define Targets and Samples **Assign Targets and Samples**

Instructions:
To set up standards: Click "Define and Set Up Standards."
To set up unknowns: Select wells, assign target(s), select "U" (Unknown) as the task for each target assignment, then assign a sample.
To set up negative controls: Select wells, assign target(s), then select "N" (Negative Control) as the task for each target assignment.

Assign target(s) to the selected wells.

Assign	Target	Task	Quantity
<input checked="" type="checkbox"/>	Target 1	U S N	

* Mixed **U** Unknown **S** Standard **N** Negative Control

View Plate Layout **View Well Table**

Select Wells With: - Select Item - - Select Item -

Show in Wells View Legend Enable VeriFlex™ Block

	1	2	3	4	5	6	7	8	9	10	11	12
A	S Targe...	S Targe...	S Targe...		U Sample 1	U Sample 1	U Sample 1					
B	S Targe...	S Targe...	S Targe...		U Sample 2	U Sample 2	U Sample 2					
C	S Targe...	S Targe...	S Targe...		U Sample 3	U Sample 3	U Sample 3					
D	S Targe...	S Targe...	S Targe...									
E	S Targe...	S Targe...	S Targe...		N Targe...	N Targe...	N Targe...					
F												
G												
H												

Wells: **U** 9 Unknown **S** 15 Standard **N** 3 Negative Control 69 Empty

3. Unknown sample: Target, Sample 입력 - U 선택
4. Negative control: Target Task - N 선택

Assign Sample

Assign	Sample
<input type="checkbox"/>	Sample 2
<input type="checkbox"/>	Sample 3

Assign sample(s) of selected well(s) to biological group.

Assign	Biological Group
--------	------------------

Home Untitled 1 x

Disconnected

Setup - Plate Setup (자동 입력 방법)

Target 아래에 'Define and Set Up Standards' 클릭

Define the standard curve = Required

- * # of Points: 5 (5 Recommended)
- * # of Replicates: 3 (3 Recommended)
- * Starting Quantity: 1.0 (Enter the highest or lowest standard quantity for the standard curve.)
- * Serial Factor: 1:5 (Select a value from 1:10 to 10×)

5 Points X 3 Replicates = 15 Required Wells

Assign sample(s) to the selected wells.

15 Required Wells / 15 Selected Wells
A1,A2,A3,A4,A5,A6,A7,A8,A9,A10,A11,A12,B1,B2,B3

Arrange standards in: Columns Rows

Apply

**최소 5 point
최소 3반복
Standard sample 중 가장 높은 Quantity 입력
Standard sample 희석 비율 선택**

**세로 (Column) 또는 가로(Rows)로
자동 Well 지정 해 줌**

**'Apply'하면
실제 well에 지정됨**

Assign target(s) to the selected wells.

Assign	Target	Task	Quantity
<input checked="" type="checkbox"/>	Target 1	U S N	

* Mixed U Unknown S Standard N Negative Control

Define and Set Up Standards

Assign sample(s) to the selected wells.

최소 5 point
최소 3반복
Standard sample 중 가장 높은 Quantity 입력
Standard sample 희석 비율 선택

세로 (Column) 또는 가로(Rows)로
자동 Well 지정 해 줌

'Apply'하면
실제 well에 지정됨

96 Empty

Disconnected

5 TaqMan, SNP Genotyping 설정

Setup – Experiment Properties



StepOne™ Software v2.3

File Edit Instrument Analysis Tools Help

New Experiment Open... Save Close Send Experiment to Instrument... Download Experiment from Instrument... Export... Print Report...

Experiment Menu << Experiment: **Untitled 1** Type: **Genotyping** Reagents: **TaqMan® Reagents** **START RUN** ?

Setup

- Experiment Properties
- Plate Setup
- Run Method
- Reaction Setup
- Materials List

Run

Analysis

Experiment Properties

• Which instrument are you using to run the experiment?

StepOnePlus™ Instrument (96 Wells) StepOne™ Instrument (48 Wells)

Set up, run, and analyze an experiment using a 4-color, 96-well system.

• What type of experiment do you want to set up?

Quantitation - Standard Curve Quantitation - Relative Standard Curve Quantitation - Comparative C_t ($\Delta\Delta C_t$)

Melt Curve **Genotyping** Presence/Absence

Detect single nucleotide polymorphism variants of a target nucleic acid sequence in samples.

• Which reagents do you want to use to detect the target sequence?

TaqMan® Reagents Other

Use a PCR master mix, primers designed to amplify the target sequence and a TaqMan® probe designed to detect amplification of the target sequence.

• Which ramp speed do you want to use in the instrument run?

Standard (~ 2 hours to complete a run) Fast (~ 40 minutes to complete a run)

For optimal results with the standard ramp speed, Applied Biosystems recommends using standard reagents for your PCR reactions.

Home Untitled 1 x Disconnected

진행할 실험 type: Genotyping
Chemistry: TaqMan 만 가능

사용하는 Master Mix의 사양에 따라
Standard/Fast 중 선택

Setup - Plate Setup

StepOne™ Software v2.3

File Edit Instrument Analysis Tools Help

New Experiment Open Save Close Send Experiment to Instrument Download Experiment from Instrument Export Print Report

Experiment: **Untitled 1** Type: **Genotyping** Reagents: **TaqMan® Reagents** **START RUN**

Instructions: Define the SNP assays and samples for this experiment, then assign them to wells in the plate. For each SNP assay assignment, select a task.

Assign SNP Assay(s) to the Selected Wells.

Create New SNP Assay Add Saved SNP Assay Edit

View Plate Layout View Well Table

Select Wells With: - Select Item - - Select Item -

Show in Wells View Legend Enable VeriFlex™ Block

Edit SNP Assay

Make changes below, then click "OK" to save your changes to the library. Click "Reset Fields" to undo all your changes. *= Required

SNP Assay Name: SNP Assay 1 Color: [Red] Assay ID: []

Allele 1 Name or Base(s): Allele 1 Color: [Green] Reporter: VIC Quencher: NFQ-MGB

Allele 2 Name or Base(s): Allele 2 Color: [Yellow] Reporter: FAM Quencher: NFQ-MGB

Comments: []

Reset Fields OK Cancel

	5	6	7	8
	P SNP As..	P SNP As..	P SNP As..	
	P SNP As..	P SNP As..	P SNP As..	
	P SNP As..	P SNP As..	P SNP As..	

Wells: U 9 Unknown N 3 Negative Control P 9 Positive Control 75 Empty

Create New Assay나 Edit을 통해 Allele 1/2 각각의 Reporter/Quencher dye 입력

Setup - Plate Setup

StepOne™ Software v2.3

File Edit Instrument Analysis Tools Help

New Experiment Open Save Close Send Experiment to Instrument Download Experiment from Instrument Export Print Report

Experiment Menu << Experiment: **Untitled 1** Type: **Genotyping** Reagents: **TaqMan® Reagents** **START RUN** ?

Setup

Experiment Properties

Plate Setup

Run Method

Reaction Setup

Materials List

Run

Instructions: Define the SNP assays and samples for this experiment, then assign them to wells in the plate. For each SNP assay assignment, select a task.

Assign SNP Assay(s) to the Selected Wells.

Create New SNP Assay Add Saved SNP Assay Edit

Assign	SNP Assay	Allele 1/Allele 2 Reporter	Task
<input checked="" type="checkbox"/>	SNP Assay 1	VIC/FAM	Positive Control Allele 1/Allele 1

Assign Sample to the Selected Wells.

Add New Sample Add Saved Sample Save Sample Delete Sample

Assign	Sample	Color
--------	--------	-------

View Plate Layout View Well Table

Select Wells With: - Select Item - - Select Item -

Show in Wells View Legend Enable VeriFlex™ Block

	1	2	3	4	5	6	7	8
A	Sample 1 U SNP As..	Sample 1 U SNP As..	Sample 1 U SNP As..		P SNP As..	P SNP As..	P SNP As..	
B	Sample 2 U SNP As..	Sample 2 U SNP As..	Sample 2 U SNP As..		P SNP As..	P SNP As..	P SNP As..	
C	Sample 3 U SNP As..	Sample 3 U SNP As..	Sample 3 U SNP As..		P SNP As..	P SNP As..	P SNP As..	
D								

Wells: U 9 Unknown N 3 Negative Control P 9 Positive Control 75 Empty

Sample, Task 지정

Target Task에서 Negative control, Positive control Allele 1/Allele 2 지정

Genotyping 실험 시 주의사항

- Task: 1/1, 1/2, 2/2 - 각각의 control이 필요합니다.

Select the dye to use as the passive reference.

ROX

6

결과 분석

Set Up


Design Wizard



Advanced Setup



Template



Run

QuickStart



Remote Monitor



Run Experiment



Analyze

Analyze Experiment



Create Study



실험 결과 확인

Analysis – Amplification plot



StepOne™ Software v2.3

File Edit Instrument Analysis Tools Help

New Experiment Open Save Close Send Experiment to Instrument Download Experiment from Instrument Export Print Report

Experiment Menu << Experiment: **Untitled** Type: **Comparative Ct ($\Delta\Delta Ct$)** Reagents: **TaqMan® Reagents** Analyze Analysis Settings

Amplification Plot

Plot Settings

Plot Type: ΔRn vs Cycle Graph Type: **Linear** Plot Color: Well

Amplification Plot

ΔRn

Cycle

Legend: B C D E F

Options

Target: All Threshold: Auto Auto Baseline

Show: Threshold Baseline Start: Well Target Baseline End: Well Target

View Plate Layout **View Well Table**

Select Wells With: - Select

Show in Wells View Legend

	1	2	3	4	7	8
A	U GAPDH Ct: 25.65	U GAPDH Ct: 25.71	U GAPDH Ct: 25.77		N GAPDH Ct: Undeter	N ND1 Ct: 27.19
B	U GAPDH Ct: 30.99	U GAPDH Ct: 30.89	U GAPDH Ct: 30.8		N GAPDH Ct: Undeter	N ND1 Ct: Undeter
C	U GAPDH Ct: 27.95	U GAPDH Ct: 27.74	U GAPDH Ct: 28.09		N GAPDH Ct: Undeter	N ND1 Ct: Undeter
D						
E						
F						
W	Sample HCT118 U GAPDH Ct: 30.89 U ND1 Ct: 17.69 Target Ct value					

36 Empty

Graph type 변경:
Log / Linear

Threshold, Baseline
확인 및 변경

Table 형식으로도 확인 가능

Well
확대/축소

Well에서 확인 가능한 정보

Analysis Summary: Total Wells in Plate: 48 Wells Set Up: 12 Wells Omitted Manually: 0

Wells Flagged: 0 Wells Omitted by Analysis: 0 Samples Used: 3 Targets Used: 2

Home Untitled 1 x 241025.edx x

Disconnected

Analysis – QC summary

File Edit Instrument Analysis Tools Help

New Experiment Open Save Close Send Experiment to Instrument Download Experiment from Instrument

Experiment Menu << Experiment: **Relative Standard Curve E...** Type: **Relative Standard Curve**

QC Summary

Flag Summary

Total Wells:	48	Processed Wells:	48	Manually Omitted Wells:	0	Targets Used:	2
Wells Set Up:	48	Flagged Wells:	4	Analysis Omitted Wells:	0	Samples Used:	2

Flag Details

Flag	Name	Frequency	Wells
AMPNC	Amplification in negative control	0	
BADROX	Bad passive reference signal	0	
OFFSCALE	Fluorescence is offscale	0	
HIGHSD	High standard deviation in replicate group	3	D7, D8, E1
NOAMP	No amplification	0	
NOISE	Noise higher than others in plate	0	
SPIKE	Noise spikes	0	
NOSIGNAL	No signal in well	0	
OUTLIERRG	Outlier in replicate group	1	D1
EXPFAIL	Exponential algorithm failed	0	
BLFAIL	Baseline algorithm failed	0	

Flag: HIGHSD—High standard deviation in replicate group
Flag Detail: The CT standard deviation for the replicate group exceeds the flag setting.
Flag Criteria: CT standard deviation > 0.5
Flagged Wells: D7, D8, E1
[View HIGHSD Troubleshooting Information](#)

Analysis Summary: Total Wells in Plate: 48 Wells Set Up: 48 Wells Omitted Manually: 0 Wells Flagged: 4 Wells Omitted by Analysis: 0 Samples Used: 2 Targets Used: 2

자주 발생하는 QC flag

- HIGHSD: 반복 실험 well끼리 Ct값의 차이가 0.5이상 날 경우
- MTP: Melting curve에서 peak 여러 개 생길 경우
- AMPNC: Negative control에서 Ct값이 35 미만일 경우
- NOAMP: sample에서 증폭이 일어나지 않은 경우



Analysis – Gene Expression (ddCt)

StepOne™ Software v2.3

File Edit Instrument Analysis Tools Help

New Experiment Open... Save Close Send Experiment to Instrument... Download Experiment from Instrument... Export... Print Report...

Experiment Menu << Experiment: **Untitled** Type: **Comparative Ct ($\Delta\Delta Ct$)** Reagents: **TaqMan® Reagents** Analyze Analysis Settings ?

Setup

Run

Analysis

- Amplification Plot
- Gene Expression**
- Multicomponent Plot
- Raw Data Plot
- QC Summary
- Multiple Plots View

Gene Expression

Plot Settings
 Plot Type: RQ vs Sample Graph Type: Linear Orientation: Vertical Bars
 Save current settings as the default

RQ vs Sample

Sample

Legend: GAPDH (blue), ND1 (green)

View Technical Replicates View Biological Groups

Show In Table ▾

#	Omit	Sample	Target	Ct Mean	ΔCt Mean	ΔCt SE	$\Delta\Delta Ct$	RQ
1	<input type="checkbox"/>	SW480	GAPDH	25.713				
2	<input type="checkbox"/>	SW480	ND1	18.077	-7.636	0.025	0	1
3	<input type="checkbox"/>	HCT116	GAPDH	30.893				
4	<input type="checkbox"/>	HCT116	ND1	17.673	-13.22	0.039	-5.584	47.98
5	<input type="checkbox"/>	293 T	GAPDH	27.928				
6	<input type="checkbox"/>	293 T	ND1	17.225	-10.703	0.103	-3.068	8.384

Select relative quantitation settings.

Reference Sample:

Endogenous Control:

Select the dye to use as the passive reference

(좌) 설정한 위 내용을 바탕으로 계산된 Gene Expression 그래프
 (우) 실험 결과 수치적으로 확인가능

결과 분석 – Melt Curve Plot (SYBR Green)



StepOne™ Software v2.3

File Edit Instrument Analysis Tools Help

New Experiment Open Save Close Send Experiment to Instrument Download Experiment from Instrument Export Print Report

Experiment Menu << Experiment: **SYBR Example** Type: **Standard Curve** Reagents: **SYBR® Green Reagents** Analyze Analysis Settings ?

Setup

Run

Analysis

Amplification Plot

Standard Curve

Melt Curve

Multicomponent Plot

Raw Data Plot

QC Summary

Multiple Plots View

Melt Curve

Plot Settings

Plot Derivative Reporter Target All Color Well

Save current settings as the default

Melt Curve

Legend: A B C D E F

View Plate Layout View Well Table

Select Wells With: - Select Item - - Select Item -

Show in Wells View Legend

	1	2	3	4	5	6	7	8
A	Sample 1 U RnaseP Ct: 24.89	Sample 1 U RnaseP Ct: 24.82	Sample 1 U RnaseP Ct: 24.77	Sample 1 U RnaseP Ct: 24.8	Sample 1 U RnaseP Ct: 24.8	Sample 1 U RnaseP Ct: 24.81	Sample 1 U RnaseP Ct: 24.78	Sample 1 U RnaseP Ct: 24.72

- SYBR Green 실험에만 나오는 결과 tab

- 실험자가 원하는 product만 증폭이 잘 됐는지 확인 가능

Troubleshooting

- Peak가 2개 이상 발생하는 경우, 메인 피크 외의 불필요한 peak의 위치를 통해 문제점 파악

Wells: U 48 Unknown S 0 Standard N 0 Negative Control 0 Empty

Analysis Summary: Total Wells in Plate: 48 Wells Set Up: 48 Wells Omitted Manually: 0 Wells Flagged: 0 Wells Omitted by Analysis: 0 Samples Used: 1 Targets Used: 1

Home Untitled 1 x 96-Well Genot...ng Example.eds x Relative Stan...ve Example.eds x Standard Curve Example.eds x SYBR Example.eds x

결과 분석 – Standard Curve



StepOne™ Software v2.3

File Edit Instrument Analysis Tools Help

New Experiment Open Save Close Send Experiment to Instrument Download Experiment from Instrument Export Print Report

Experiment Menu << Experiment: **Standard Curve Example** Type: **Standard Curve** Reagents: **TaqMan® Reagents** Analyze Analysis Settings ?

Setup

Run

Analysis

- Amplification Plot
- Standard Curve**
- Multicomponent Plot
- Raw Data Plot
- QC Summary
- Multiple Plots View

Standard Curve

Plot Settings
 Target: RNase P Plot Color: Default
 Save current settings as the default

Standard Curve

Target: RNase P Slope: -3.477 Y-Inter: 40.768 R^2 : 0.999 Eff%: 93.912

Legend: ■ Standard ■ Unknown ■ Unknown (Flagged)

View Plate Layout View Well Table

Select Wells With: - Select Item - - Select Item -

Show in Wells View Legend

	1	2	3	4	5	6	7	8
A	N RNase P Ct: Undeter...	N RNase P Ct: Undeter...	N RNase P Ct: Undeter...	U RNase P Ct: 2.48E3 Ct: 28.96	U RNase P Ct: 2.7E3 Ct: 28.84	U RNase P Ct: 2.47E3 Ct: 28.97	U RNase P Ct: 4.77E3 Ct: 27.98	U RNase P Ct: 4.8E3 Ct: 27.97
B	U RNase P Ct: 4.92E3 Ct: 27.93	S RNase P Ct: 1E4 Ct: 26.87	S RNase P Ct: 1E4 Ct: 26.83	S RNase P Ct: 1E4 Ct: 26.87	S RNase P Ct: 5E3 Ct: 27.84	S RNase P Ct: 5E3 Ct: 27.91	S RNase P Ct: 5E3 Ct: 27.93	S RNase P Ct: 2.5E3 Ct: 28.97
C	S RNase P Ct: 2.5E3 Ct: 29.01	S RNase P Ct: 2.5E3 Ct: 28.97	S RNase P Ct: 1.25E3 Ct: 29.94	S RNase P Ct: 1.25E3 Ct: 29.97	S RNase P Ct: 1.25E3 Ct: 30.05	S RNase P Ct: 625 Ct: 31.05	S RNase P Ct: 625 Ct: 31.05	S RNase P Ct: 625 Ct: 31.04
E								

Wells: U 6 Unknown S 15 Standard N 3 Negative Control 24 Empty

Analysis Summary: Total Wells in Plate: 48 Wells Set Up: 24 Wells Omitted Manually: 0 Wells Flagged: 0 Wells Omitted by Analysis: 0 Samples Used: 2 Targets Used: 1

Standard curve 그래프 위에서
 각각 Standard sample의 위치 (dot) 파악 가능

그래프 정보 확인 가능
 (R^2 , Eff% 확인 필요)

결과 분석 – SNP Genotyping



StepOne™ Software v2.3

File Edit Instrument Analysis Tools Help

New Experiment Open Save Close Send Experiment to Instrument Download Experiment from Instrument Export Print Report

Experiment Menu << Experiment: **96-Well Genotyping Example** Type: **Genotyping** Reagents: **TaqMan® Reagents** Analyze Analysis Settings ?

Setup

Run

Analysis

- Allelic Discrimination Plot
- Amplification Plot
- Multicomponent Plot
- Raw Data Plot
- QC Summary
- Multiple Plots View

Allelic Discrimination Plot

Plot Settings

SNP Assay: SNP Assay 1 Apply Call: Allele 1/Allele 1

Plot Type: Cartesian

Allelic Discrimination Plot

Legend

- Homozygous Allele 1/Allele 1
- Homozygous Allele 2/Allele 2
- Heterozygous Allele 1/Allele 2
- x Undetermined

View Plate Layout View Well Table

Select Wells With: - Select Item - - Select Item -

Show in Wells View Legend

	1	2	3	4	5	6	7	8	9	10	11	12
A	U SNP.	U SNP.	U SNP.	U SNP.	U SNP.	U SNP.	U SNP.	U SNP.	U SNP.	U SNP.	U SNP.	U SNP.
B	N SNP.	N SNP.	N SNP.	N SNP.	N SNP.	N SNP.	U SNP.	U SNP.	U SNP.	U SNP.	U SNP.	U SNP.
C	U SNP.	U SNP.	U SNP.	U SNP.	U SNP.	U SNP.	N SNP.	N SNP.	N SNP.	N SNP.	N SNP.	N SNP.
D	U SNP.	U SNP.	U SNP.	U SNP.	U SNP.	U SNP.	U SNP.	U SNP.	U SNP.	U SNP.	U SNP.	U SNP.
E	U SNP.	U SNP.	U SNP.	U SNP.	U SNP.	U SNP.	U SNP.	U SNP.	U SNP.	U SNP.	U SNP.	U SNP.
F	U SNP.	U SNP.	U SNP.	U SNP.	U SNP.	U SNP.	U SNP.	U SNP.	U SNP.	U SNP.	U SNP.	U SNP.
G	U SNP.	U SNP.	U SNP.	U SNP.	U SNP.	U SNP.	U SNP.	U SNP.	U SNP.	U SNP.	U SNP.	U SNP.
H	U SNP.	U SNP.	U SNP.	U SNP.	U SNP.	U SNP.	U SNP.	U SNP.	U SNP.	U SNP.	U SNP.	U SNP.

Wells: U 72 Unknown N 24 Negative Control P 0 Positive Control 0 Empty

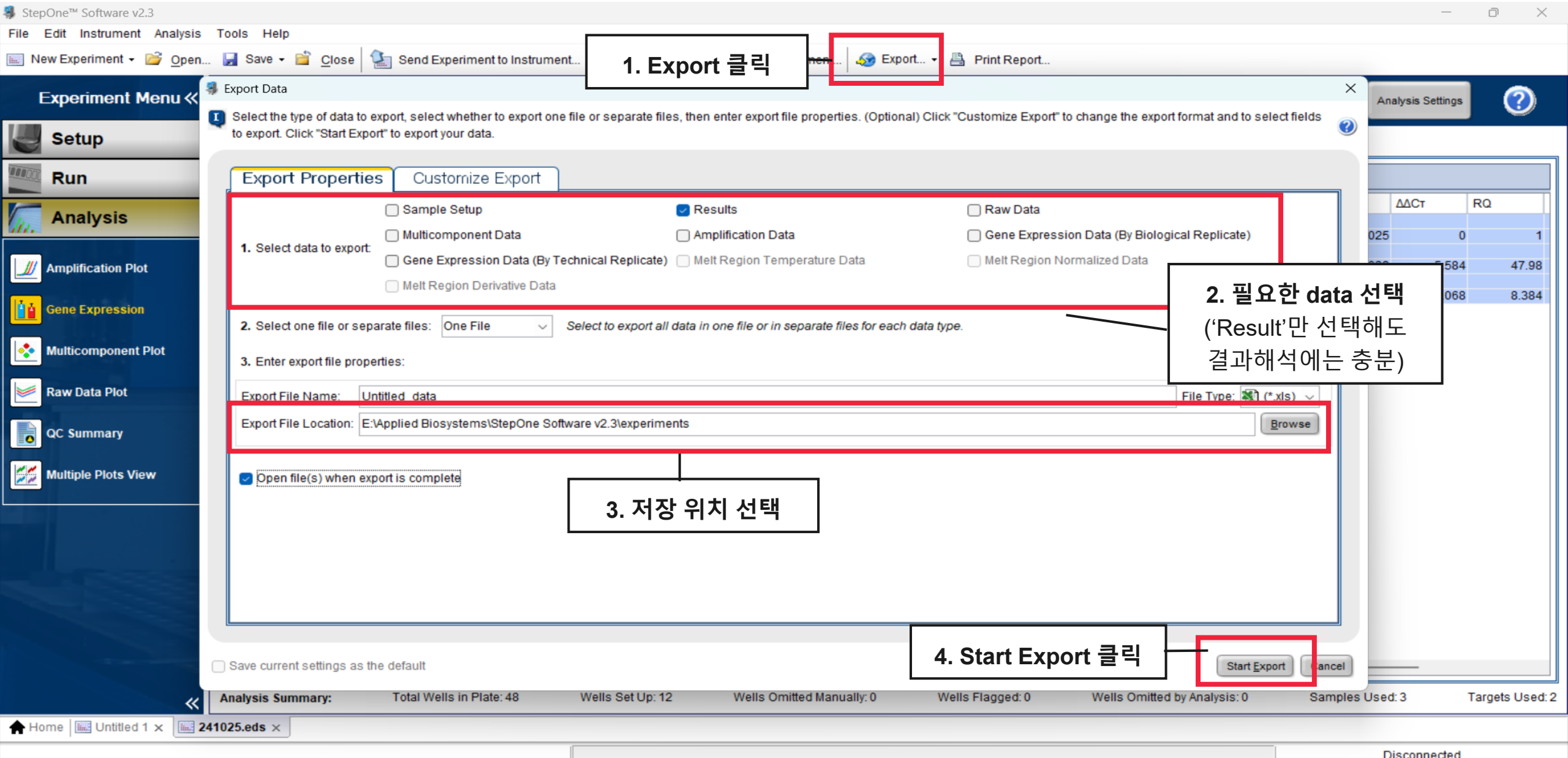
해당 샘플이 어디 위치하는지 확인

가능

Analysis Summary: Total Wells in Plate: 96 Wells Set Up: 96 Wells Omitted Manually: 0 Wells Flagged: 0 Wells Omitted by Analysis: 0 Samples Used: 0 SNP Assays Used: 1

7 Export

Export - Excel



StepOne™ Software v2.3

File Edit Instrument Analysis Tools Help

New Experiment Open Save Close Send Experiment to Instrument... Export... Print Report...

1. Export 클릭

Export Data

Select the type of data to export, select whether to export one file or separate files, then enter export file properties. (Optional) Click "Customize Export" to change the export format and to select fields to export. Click "Start Export" to export your data.

Export Properties Customize Export

1. Select data to export:

- Sample Setup
- Results
- Raw Data
- Multicomponent Data
- Amplification Data
- Gene Expression Data (By Biological Replicate)
- Gene Expression Data (By Technical Replicate)
- Melt Region Temperature Data
- Melt Region Normalized Data
- Melt Region Derivative Data

2. Select one file or separate files: One File Select to export all data in one file or in separate files for each data type.

3. Enter export file properties:

Export File Name: Untitled_data File Type: *.xls (*xls)

Export File Location: E:\Applied Biosystems\StepOne Software v2.3\experiments Browse

Open file(s) when export is complete

2. 필요한 data 선택 ('Result'만 선택해도 결과해석에는 충분)

3. 저장 위치 선택

4. Start Export 클릭

Save current settings as the default

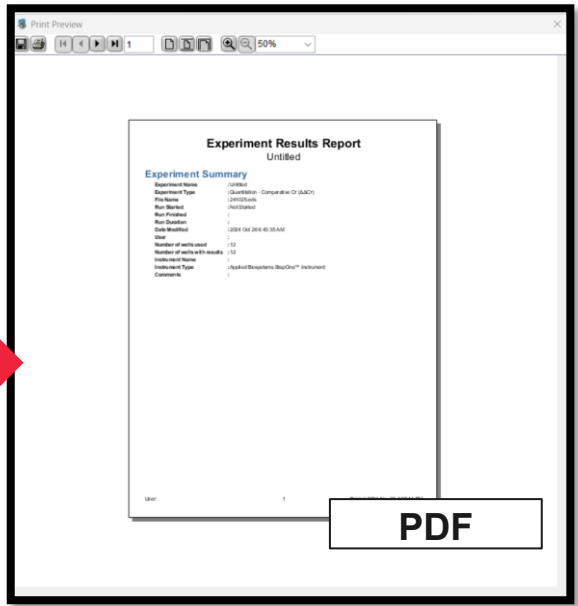
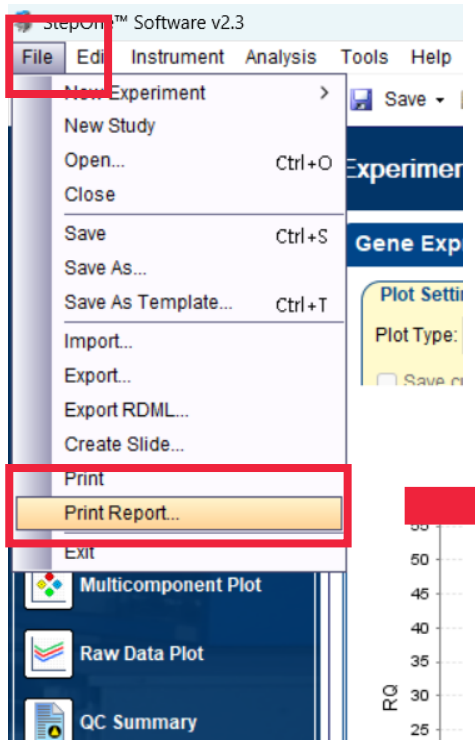
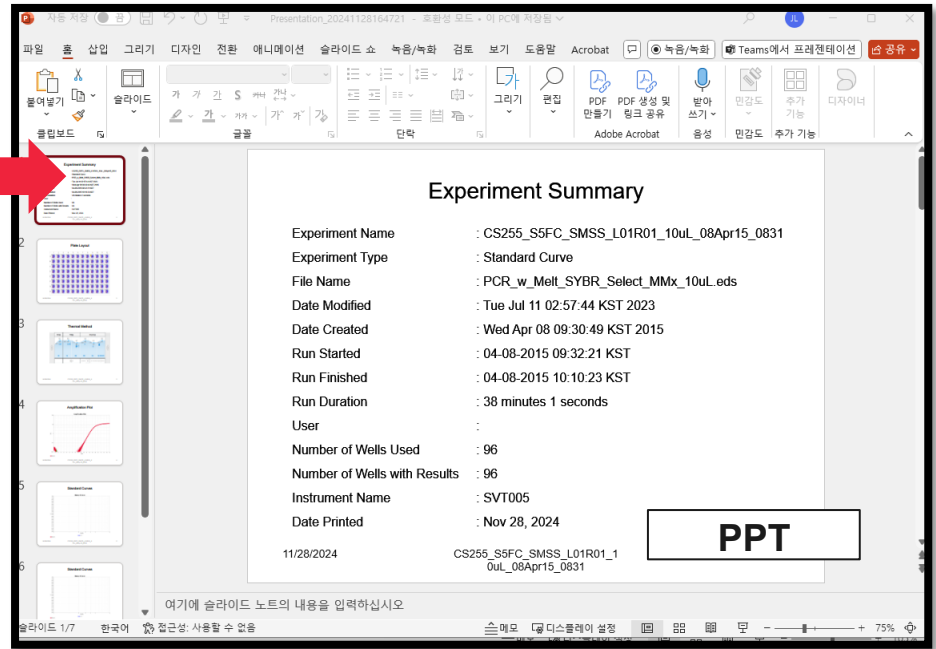
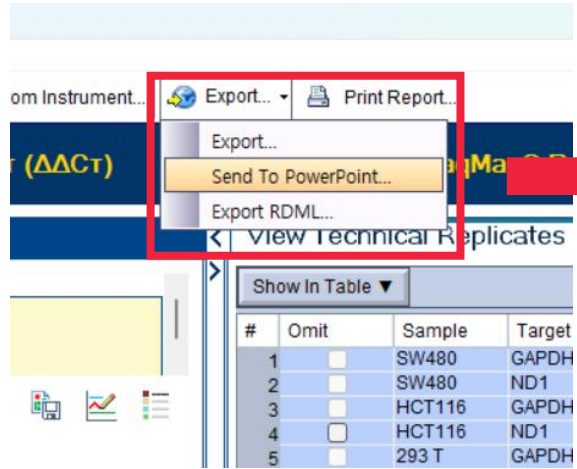
Start Export Cancel

Analysis Summary: Total Wells in Plate: 48 Wells Set Up: 12 Wells Omitted Manually: 0 Wells Flagged: 0 Wells Omitted by Analysis: 0 Samples Used: 3 Targets Used: 2

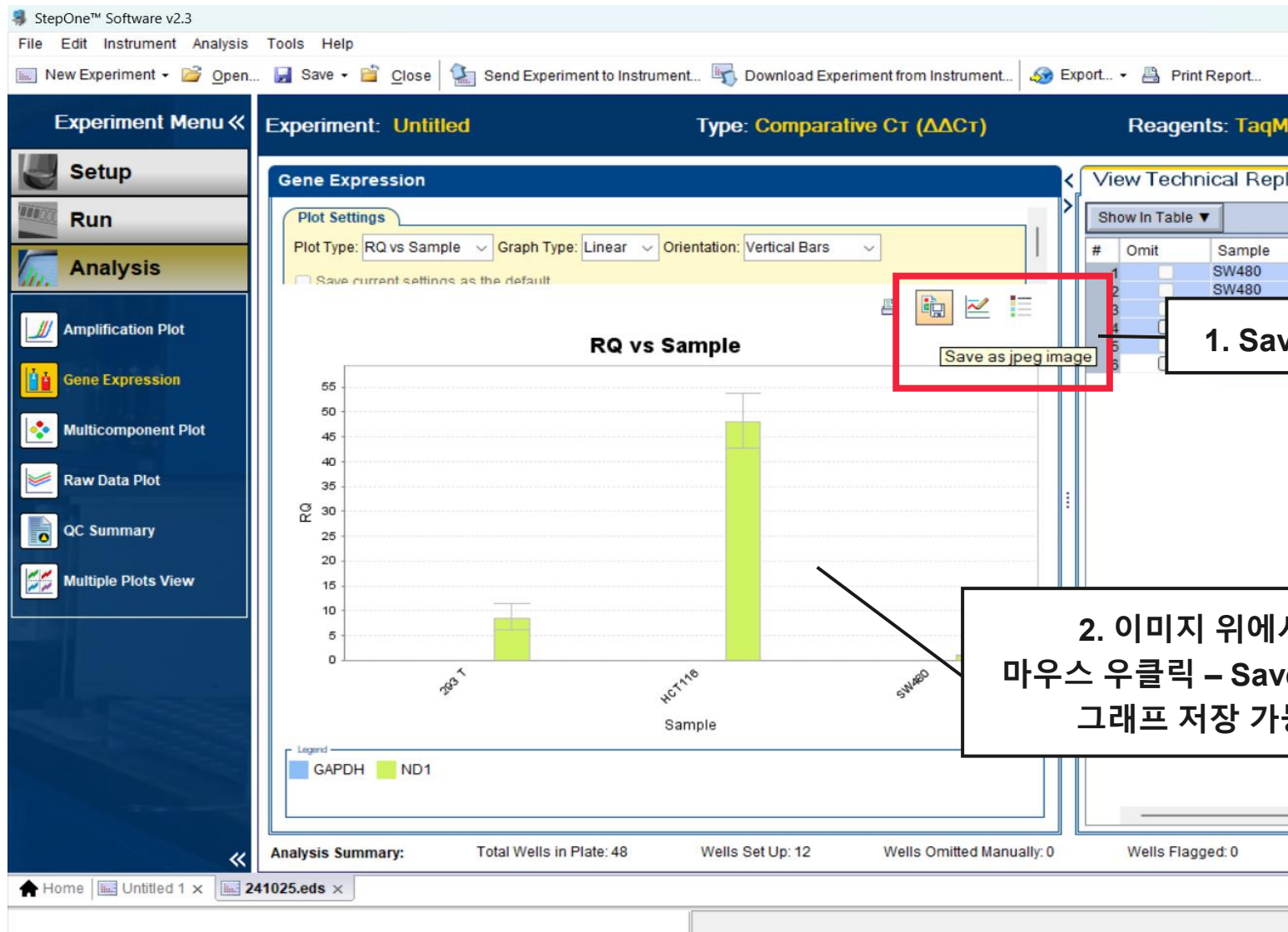
	$\Delta\Delta Ct$	RQ
025	0	1
584	47.98	
068	8.384	

Home Untitled 1 x 241025.eds x Disconnected

Export – PPT/PDF



Export – Graph download



The screenshot shows the StepOne™ Software v2.3 interface. The main window displays a bar graph titled "RQ vs Sample" with the y-axis labeled "RQ" ranging from 0 to 55. The x-axis is labeled "Sample" and includes categories "202 T", "HG116", and "SW480". A legend at the bottom left identifies "GAPDH" (blue) and "ND1" (green). The "ND1" series is shown as green bars with error bars. A red box highlights a "Save as jpeg image" button in the top right corner of the graph area.

1. Save 버튼으로 그래프 저장

2. 이미지 위에서
마우스 우클릭 – Save as 로
그래프 저장 가능

#	Omit	Sample
1		SW480
2		SW480
3		SW480
4		SW480
5		SW480
6		SW480
7		SW480
8		SW480
9		SW480
10		SW480
11		SW480
12		SW480

Analysis Summary: Total Wells in Plate: 48 Wells Set Up: 12 Wells Omitted Manually: 0 Wells Flagged: 0

Thank you for your attention