MBL RUO LETTER

vol.1
Sep. 2017

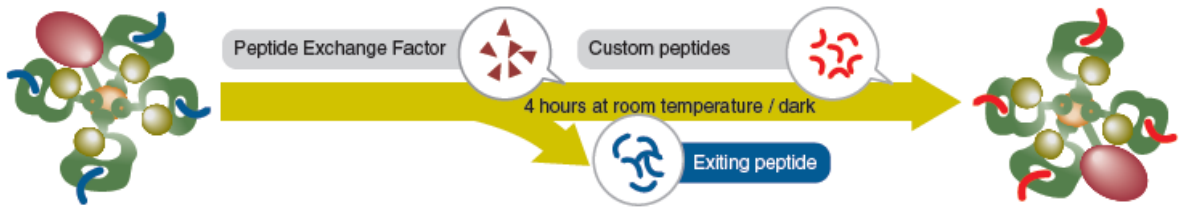
1. **Highlight Product : QuickSwitch™ Custom Tetramer Kits**
2. **Featured Product :**
   PCSK9 ELISA Kit & PCSK9-LDLR in vitro Binding Assay Kit
3. **Attended The 8th International Symposium on Autophagy**

Hi, my name is “AZ”! I am the cute MBL mascot character. You can remember me with my favorite red scarf!
Guess what I am? Well, I am nothing and I am everything! Sometime, I will become a DNA, and other time I will become cell. I can transform myself in to anything!!
My job is to advertise the great things about MBL!

Highlight Product :
QuickSwitch™ Custom Tetramer Kits

Kits for preparation of custom tetramers in the laboratory using our MBL's proprietary peptide exchange technology.

Principle of the peptide exchange reaction



The tetramer molecules in the kits are pre-bound with "exiting peptides" (shown in blue) to maintain structural integrity.

Exchange of the exiting peptides with custom peptides (shown in red) is initiated upon addition of the custom peptides and a peptide-exchange factor (reaction time is 4 hours).

The efficiency of peptide exchange depends on the sequence of the custom peptides.

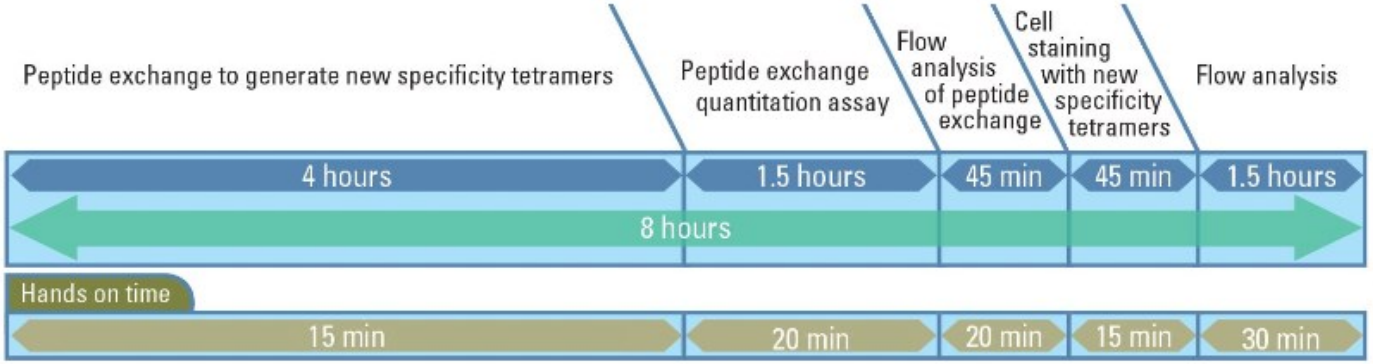
*QuickSwitch™ Quant Tetramer Kits contain reagents for determination of the peptide exchange efficiency.

Highlight Product :
QuickSwitch™ Custom Tetramer Kits

Features and benefits

- Prepare custom tetramers **in 4 hours**
- **No UV lamp** or special instrument required
- **Quantify** peptide exchange **efficiency** (Quant Tetramer Kits)
- Select ready-to-use tetramer in **PE, APC, or BV421**

Peptide exchange, quantification, cell staining, and flow cytometry analysis can all be performed in one day!



Who will/might use it?

Researchers who...

- have many candidate peptides for MHC tetramer
- want to get the result using MHC tetramer
- have limited budget

QuickSwitch™ VS MHC custom tetramer

After the synthesis between allele and peptide is clarified using QuickSwitch™, we recommend the customer our “MHC custom tetramer producing service” for large volume & high quality MHC tetramer!

Products information

*QuickSwitch™ Quant Tetramer Kits contain reagents for the determination of peptide exchange efficiency.

Code No.	Product name	Size
TB-7300-K1	QuickSwitch™ Quant HLA-A*02:01 Tetramer Kit-PE	25 µg
TB-7300-K2	QuickSwitch™ Quant HLA-A*02:01 Tetramer Kit-APC	25 µg
TB-7300-K4	QuickSwitch™ Quant HLA-A*02:01 Tetramer Kit-BV421	25 µg
TB-7400-K1	QuickSwitch™ Quant H-2Kb Tetramer Kit-PE	25 µg
TB-7400-K2	QuickSwitch™ Quant H-2Kb Tetramer Kit-APC	25 µg
TB-7400-K4	QuickSwitch™ Quant H-2Kb Tetramer Kit-BV421	25 µg

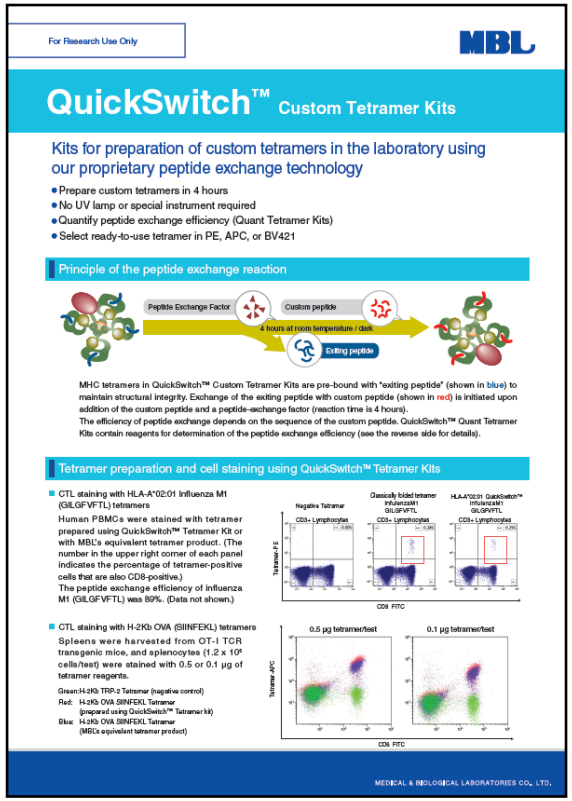
*QuickSwitch™ Tetramer Kits do not include these reagents.

Code No.	Product name	Size
TB-7301-K1	QuickSwitch™ HLA-A*02:01 Tetramer Kit-PE	25 µg
TB-7301-K2	QuickSwitch™ HLA-A*02:01 Tetramer Kit-APC	25 µg
TB-7301-K4	QuickSwitch™ HLA-A*02:01 Tetramer Kit-BV421	25 µg
TB-7401-K1	QuickSwitch™ H-2Kb Tetramer Kit-PE	25 µg
TB-7401-K2	QuickSwitch™ H-2Kb Tetramer Kit-APC	25 µg
TB-7401-K4	QuickSwitch™ H-2Kb Tetramer Kit-BV421	25 µg

- When using the standard protocol, each kit is sufficient for custom tetramers for 10 different peptide sequences. Each peptide sequence requires approximately 2.5 µg of tetramer molecules. The amount of custom tetramers to use for staining T cells in PBMCs needs to be determined for each peptide sequence.

Highlight Product :
QuickSwitch™ Custom Tetramer Kits

Sales promotion material


For Research Use Only

MBL

QuickSwitch™ Custom Tetramer Kits

Kits for preparation of custom tetramers in the laboratory using our proprietary peptide exchange technology

- Prepare custom tetramers in 4 hours
- No UV lamp or special instrument required
- Quantify peptide exchange efficiency (Quant Tetramer Kits)
- Select ready-to-use tetramer in PE, APC, or BV421

Principle of the peptide exchange reaction

MHC tetramers in QuickSwitch™ Custom Tetramer Kits are pre-bound with "exiting peptide" (shown in blue) to maintain structural integrity. Exchange of the exiting peptide with custom peptide (shown in red) is initiated upon addition of the custom peptide and a peptide-exchange factor (reaction time is 4 hours).
The efficiency of peptide exchange depends on the sequence of the custom peptide. QuickSwitch™ Quant Tetramer Kits contain reagents for determination of the peptide exchange efficiency (see the reverse side for details).

Tetramer preparation and cell staining using QuickSwitch™ Tetramer Kits

- CTL staining with HLA-A*02:01 Influenza M1 (GILGFVFTL) tetramers

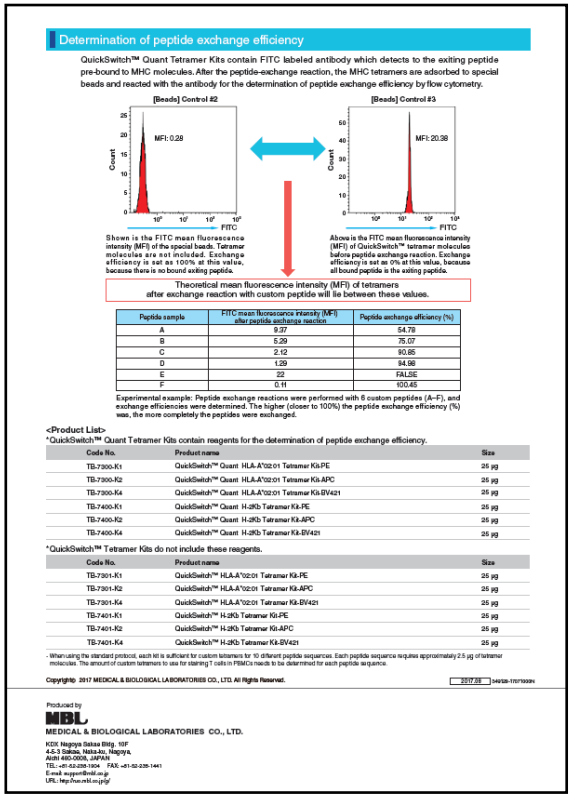
Human PBMCs were stained with tetramer prepared using QuickSwitch™ Tetramer Kit or with MBL's equivalent tetramer product. (The number in the upper right corner of each panel indicates the percentage of tetramer-positive cells that are also CD8-positive.)
The peptide exchange efficiency of influenza M1 (GILGFVFTL) was 89%. (Data not shown.)

- CTL staining with H-2Kb OVA (SIINFEKL) tetramers

Spleens were harvested from OT-I TCR transgenic mice, and splenocytes (1.2 x 10⁶ cells/test) were stained with 0.5 or 0.1 µg of tetramer reagents.

Green: H-2Kb TRP-2 Tetramer (negative control)
Red: H-2Kb OVA SIINFEKL Tetramer (prepared using QuickSwitch™ Tetramer kit)
Blue: H-2Kb OVA SIINFEKL Tetramer (MBL's equivalent tetramer product)

MEDICAL & BIOLOGICAL LABORATORIES CO., LTD.


Determination of peptide exchange efficiency

QuickSwitch™ Quant Tetramer Kits contain FITC labeled antibody which detects to the exiting peptide pre-bound to MHC molecules. After the peptide-exchange reaction, the MHC tetramers are adsorbed to special beads and reacted with the antibody for the determination of peptide exchange efficiency by flow cytometry.

Shown is the FITC mean fluorescence intensity (MFI) of the special beads. Tetramer molecules are not included. Exchange efficiency is set as 100% at this value, because there is no bound exiting peptide.

Above is the FITC mean fluorescence intensity (MFI) of QuickSwitch™ tetramer molecules before peptide exchange reaction. Exchange efficiency is set as 0% at this value, because all bound peptide is the exiting peptide.

Theoretical mean fluorescence intensity (MFI) of tetramers after exchange reaction with custom peptide will lie between these values.

Peptide sample	FITC-mean fluorescence intensity (MFI) after peptide exchange reaction	Peptide exchange efficiency (%)
A	9.27	54.78
B	5.29	75.07
C	2.12	90.85
D	1.29	94.98
E	22	FALSE
F	0.11	100.45

Experimental example: Peptide exchange reactions were performed with 6 custom peptides (A–F), and exchange efficiencies were determined. The higher (closer to 100%) the peptide exchange efficiency (%) was, the more completely the peptides were exchanged.

<Product List>

*QuickSwitch™ Quant Tetramer Kits contain reagents for the determination of peptide exchange efficiency.

Code No.	Product name	Size
TB-7300-K1	QuickSwitch™ Quant HLA-A*02:01 Tetramer Kit-PE	25 µg
TB-7300-K2	QuickSwitch™ Quant HLA-A*02:01 Tetramer Kit-APC	25 µg
TB-7300-K4	QuickSwitch™ Quant HLA-A*02:01 Tetramer Kit-BV421	25 µg
TB-7400-K1	QuickSwitch™ Quant H-2Kb Tetramer Kit-PE	25 µg
TB-7400-K2	QuickSwitch™ Quant H-2Kb Tetramer Kit-APC	25 µg
TB-7400-K4	QuickSwitch™ Quant H-2Kb Tetramer Kit-BV421	25 µg

*QuickSwitch™ Tetramer Kits do not include these reagents.

Code No.	Product name	Size
TB-7301-K1	QuickSwitch™ HLA-A*02:01 Tetramer Kit-PE	25 µg
TB-7301-K2	QuickSwitch™ HLA-A*02:01 Tetramer Kit-APC	25 µg
TB-7301-K4	QuickSwitch™ HLA-A*02:01 Tetramer Kit-BV421	25 µg
TB-7401-K1	QuickSwitch™ H-2Kb Tetramer Kit-PE	25 µg
TB-7401-K2	QuickSwitch™ H-2Kb Tetramer Kit-APC	25 µg
TB-7401-K4	QuickSwitch™ H-2Kb Tetramer Kit-BV421	25 µg

- When using the standard protocol, each kit is sufficient for custom tetramers for 10 different peptide sequences. Each peptide sequence requires approximately 2.5 µg of tetramer molecules. The amount of custom tetramers to use for staining T cells in PBMCs needs to be determined for each peptide sequence.

2017.08

Produced by
MBL
MEDICAL & BIOLOGICAL LABORATORIES CO., LTD.
KOK Nagoya Sakae Bldg. 10F
4-5-3 Sakae, Naka-ku, Nagoya,
Aichi 460-0008, JAPAN
TEL: +81-52-238-1904 FAX: +81-52-238-1441
E-mail: support@mbl.co.jp
URL: http://ruo.mbl.co.jp/e/

We prepared leaflet on August. Ask us for the editable PDF file!

http://ruo.mbl.co.jp/bio/e/literature/pdf/349129Quickswitch.pdf

Review of MHC tetramer

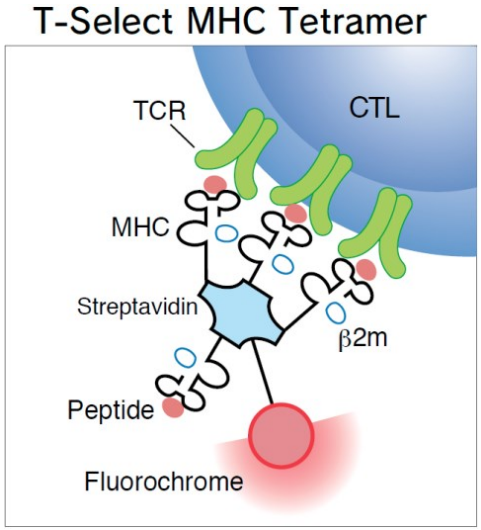
What is MHC tetramer?

MHC Tetramers can be used for direct detection of antigen-specific T cells.

Monitoring of antigen-specific T-cell immune responses is thought to be the most important and relevant outcome of anti-tumor or anti-viral responses for the development of vaccines and therapies.

Available as ready-to-use reagents conjugated to fluorochrome*.
*FITC, PE, and APC.

Appropriate sample types: whole blood, isolated peripheral blood mononuclear cells (PBMCs) , and expanded cell lines



Review of MHC tetramer

Key words which can be target of MHC tetramer

- Cancer Immunology
- Immune checkpoint
- Infection
- Immune cell therapy
- Autoimmune diseases

Line of products

Check our web site for MHC tetramers.
http://ruo.mbl.co.jp/bio/g/product/allergy-Immunology/mhctetramer.html

If you cannot find the right MHC tetramer, you have two choices!

1. QuickSwitch™ Custom Tetramer Kits
For researchers who has many candidate peptides for MHC tetramer or limited budget

2. MHC custom tetramer producing service
For researchers who has few candidate peptides for MHC tetramer and need large volume & high quality MHC tetramer

PCSK9 is now a popular research & therapy target.
Because drug companies developed antibody drug to PCSK9.

What is PCSK9?

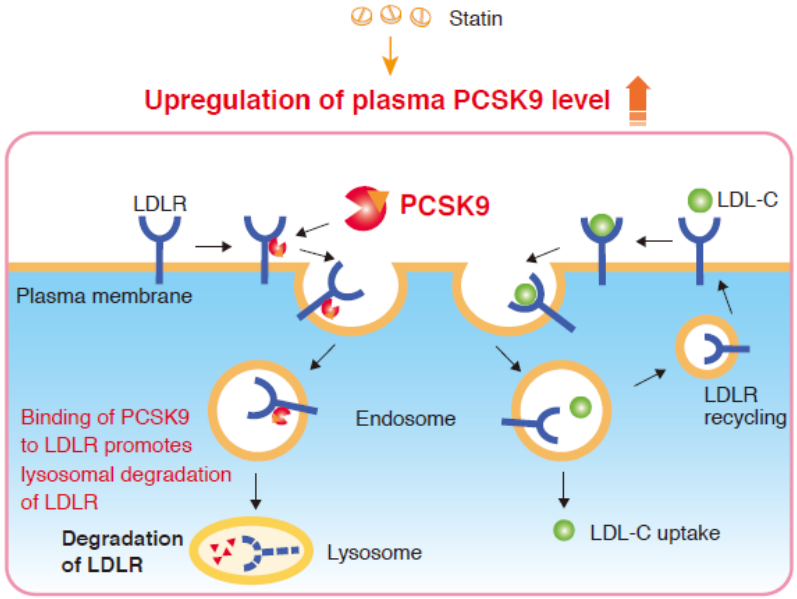
PCSK9 is a 692-residue extracellular protein expressed primarily in the kidneys, liver and intestine representing the 9th member of the secretory subtilase family.

The secreted form of PCSK9 binds directly to the LDLR and results in degradation of the receptor.

Medicines for hypercholesterolemia including statin are reported to increase the level of circulating PCSK9.

Antibody drugs to PCSK9 were released.

PCSK9 is now a popular research & therapy target.



Key words which can be target of PCSK9

- LDL cholesterol
- Familial hypercholesterolemia
- Drug screening
- Metabolism
- Arterial sclerosis

Products information

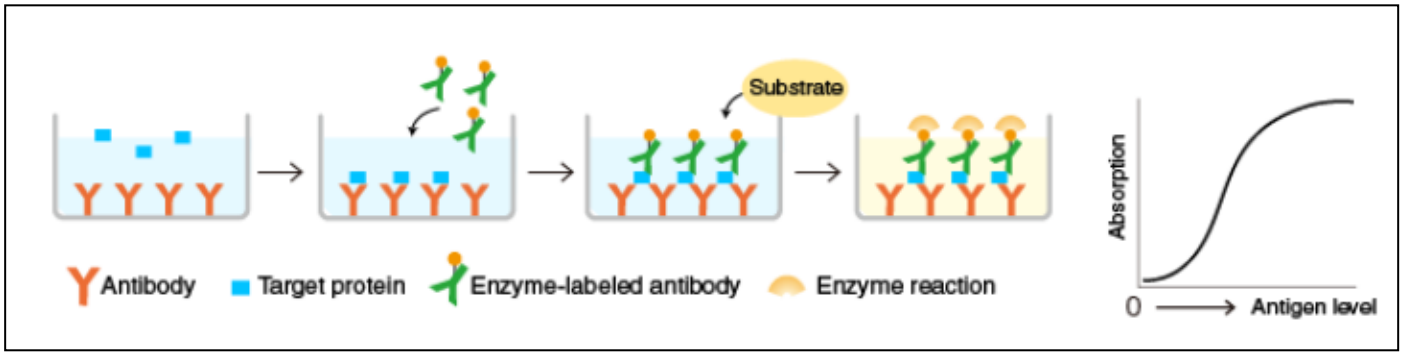
Code No.	Product Name New	Size
CY-8078	CircuLex Mouse/Rat PCSK9 ELISA Kit	96 assays
CY-8079	CircuLex Human PCSK9 ELISA Kit	96 assays
CY-8150	CircuLex PCSK9-LDLR *in vitro* Binding Assay Kit	96 assays
CY-8153	CircuLex Human PCSK9 Functional Assay Kit	96 assays

NEW

*For PCSK9-related antibodies & proteins, please visit our web site.
http://ruo.mbl.co.jp/bio/g/sch/A/?kw=pcsk9
http://ruo.mbl.co.jp/bio/g/sch/?types=2&kw=pcsk9

Featured Product :
PCSK9 ELISA Kit & PCSK9-LDLR in vitro Binding Assay Kit

Human PCSK9 ELISA Kit (#CY-8079)
Mouse/Rat PCSK9 ELISA Kit (#CY-8078)

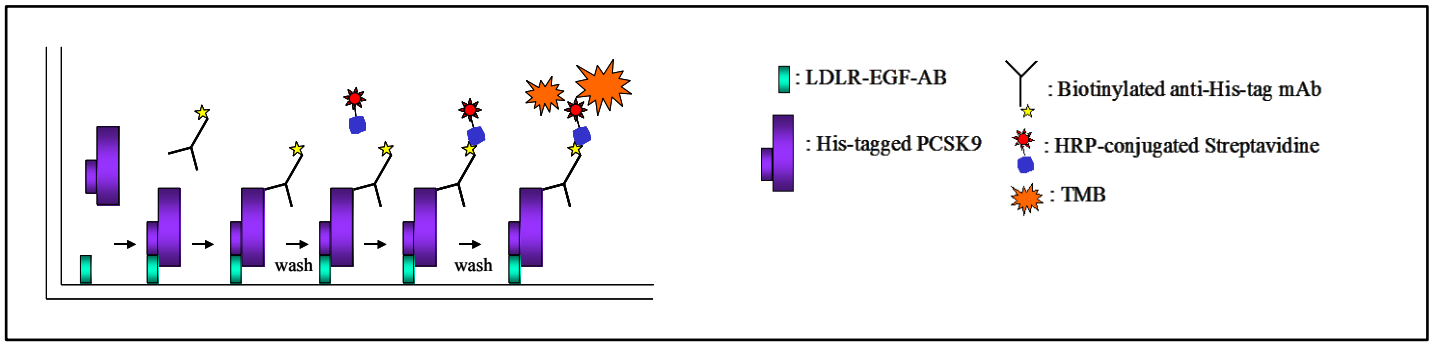


-Used for the quantitative measurement of Human PCSK9 **in serum or plasma.**
-The quantity of serum PCSK9 level or plasma PCSK9 level can be evaluated.

Featured Product :
PCSK9 ELISA Kit & PCSK9-LDLR in vitro Binding Assay Kit

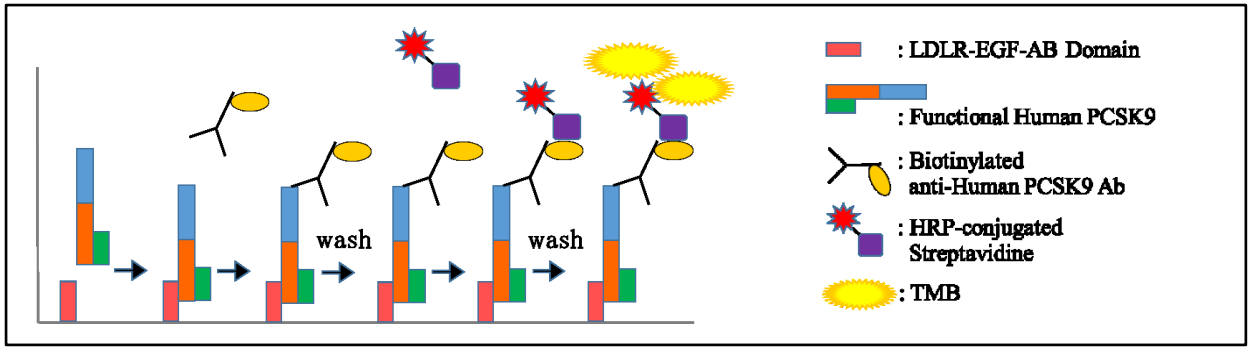
PCSK9-LDLR in vitro Binding Assay Kit (#CY-8150)

-Primarily designed to screen inhibitors of PCSK9-LDLR interaction in vitro.
-Can be used for screening inhibitors of PCSK9 (recombinant, his-tagged)-LDLR interaction in vitro



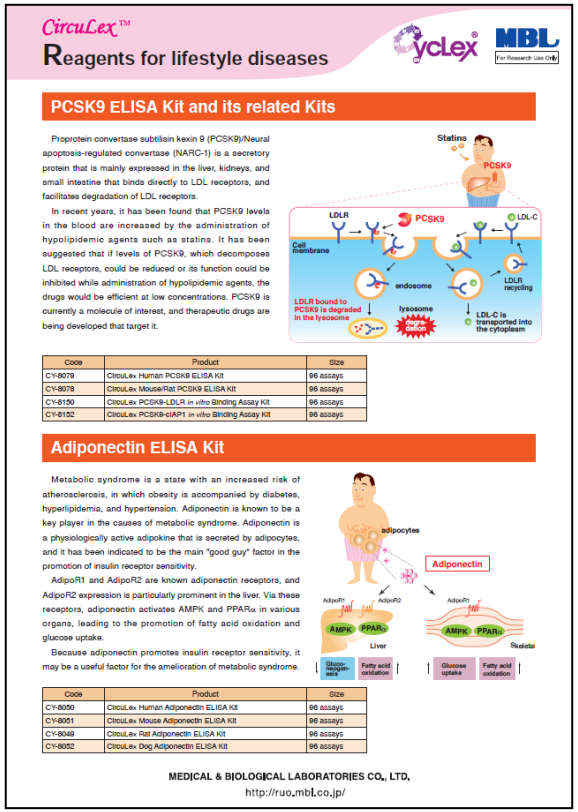
Human PCSK9 Functional Assay Kit (#CY-8153) NEW

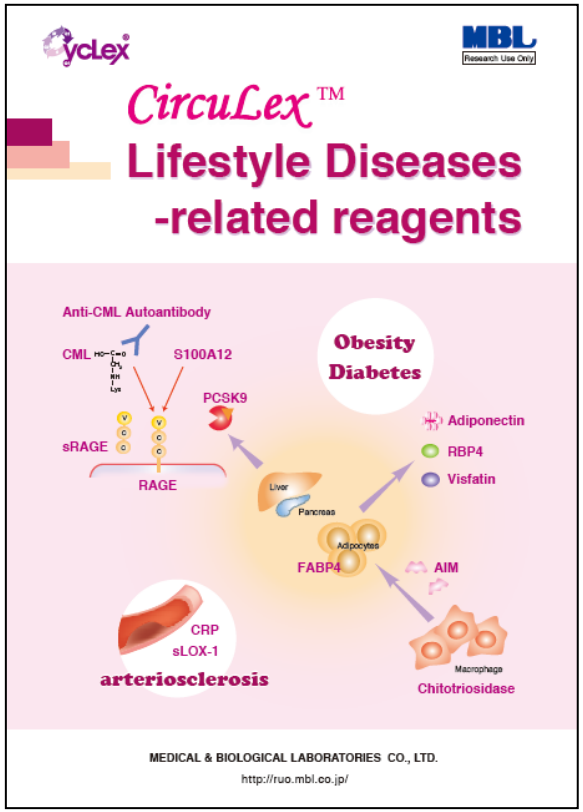
-Primarily designed for the semi-quantitative in vitro measurement of functionally active of PCSK9 in serum and plasma, which is capable of binding to LDLR.
-The assay system of #CY-8153 also uses binding between LDLR and PCSK9.
-PCSK9 which can be used in this kit is **not only recombinant but also native (derived from serum or plasma).**
*This is the biggest difference between #CY-8150 and #CY-8153.



Featured Product :
PCSK9 ELISA Kit & PCSK9-LDLR in vitro Binding Assay Kit

Sales promotion materials





We have brochure and catalog.
Ask us for the editable PDF files!

*English promotion material for #CY-8150 is not prepared yet because it was launched on March 2017.

http://ruo.mbl.co.jp/bio/e/literature/pdf/146147cyclex_metabolic_eng.pdf

http://ruo.mbl.co.jp/bio/e/literature/pdf/144260CircuLex_Lifestyle_Diseases_related_reagents.pdf

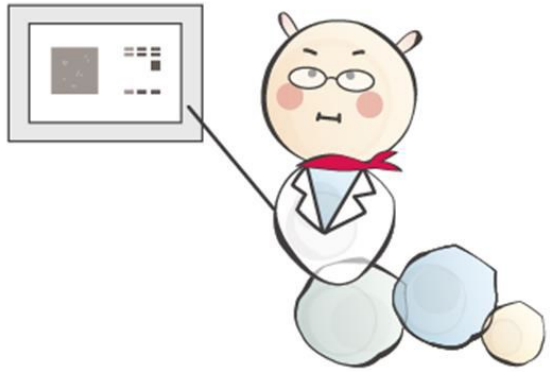
Featured Product :
PCSK9 ELISA Kit & PCSK9-LDLR in vitro Binding Assay Kit

For the detailed information of citations of our PCSK9 related kits,
Please visit our web site!

Human PCSK9 ELISA Kit (#CY-8079) / Mouse/Rat PCSK9 ELISA Kit (#CY-8078)
http://ruo.mbl.co.jp/bio/g/dtl/P/?pcd=CY-8079
http://ruo.mbl.co.jp/bio/g/dtl/P/?pcd=CY-8078

PCSK9-LDLR in vitro Binding Assay Kit (#CY-8150)
http://ruo.mbl.co.jp/bio/g/dtl/P/?pcd=CY-8150

Human PCSK9 Functional Assay Kit (#CY-8153)
http://ruo.mbl.co.jp/bio/g/dtl/P/?pcd=CY-8153



Attended The 8th International Symposium on Autophagy

Had visitors from all over the world!

Our NEW product, Phospho-p62 ELISA Kits and pMitophagy drawn the researchers attention!! Want to know more about this kit? Fell free to ask us.

2017 was held in Nara, JAPAN!
You can see wild deer in right in front of the building.