

# H23年度3年実習レポート図一覽

平成23年10月4日から13日にかけて、齊藤担当の実習「DNA塩基配列の決定とタンパク質相互作用の解析」が行われました。

実習では3つの目標達成を目指しました。

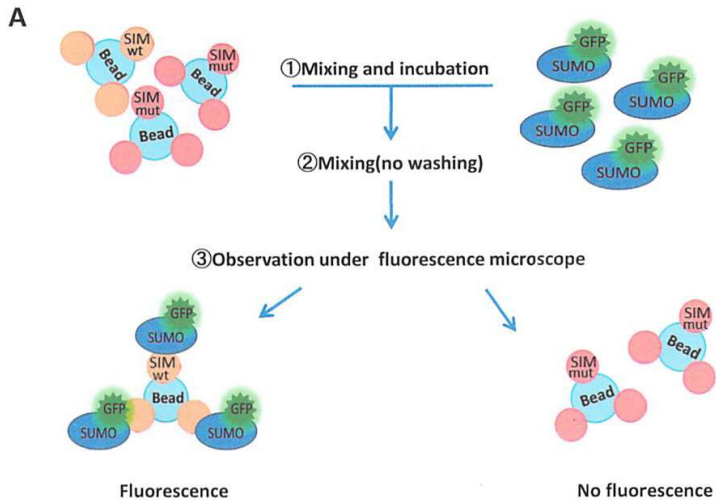
- 1：DNA塩基配列の決定法の原理を学び、実際に塩基配列を解析する
- 2：タンパク質の相互作用の解析の原理を学び、Bead halo法を経験する
- 3：英語でレポートを作成する

1と2の目標達成は実習期間中にお互いで確認しました。

さて、以下に、皆さんから提出してもらったレポートの図を公開します。お互いの図を比較しながら、皆さんが目標3も達成したことをお互いに確認しましょう。

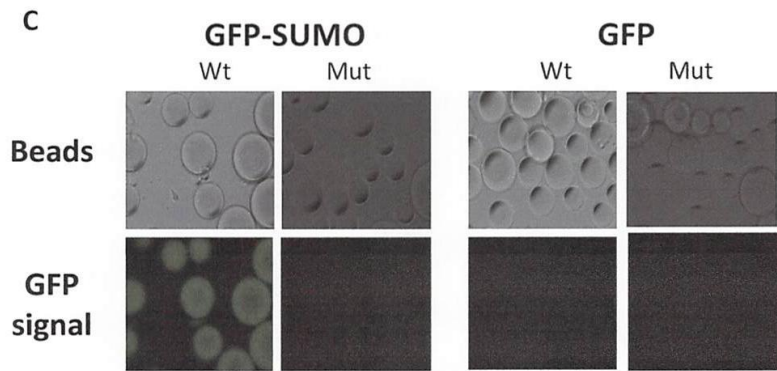
実習とレポート作成、大変ご苦労様でした。 齊藤 寿仁

PS：皆さんの図がそれぞれ異なって、どれ一つ同じものが無いことには驚きました。どれも大変上手に、見やすくまとまっていました。



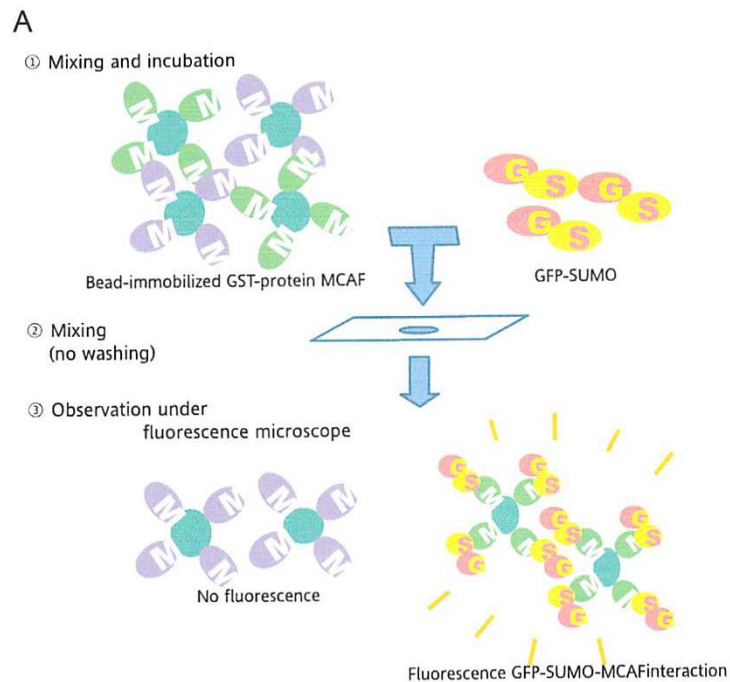
**B**

GST-MCAF1-SIM(Wt) GVIDLTMDDEE  
 GST-MCAF1-SIM(Mut) GVAHLTMDDEE

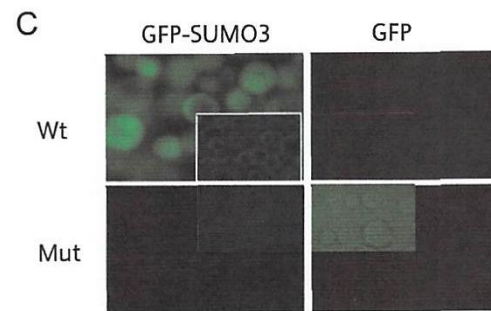


**Fig Legend**

A Schematic representation of the procedure for the real-time SUMO binding assay.  
 B Comparison of sequence of amino acid between SIMwt and SIMmut.  
 C Bacterial lysate containing GFP-SUMO(1<sup>st</sup> and 2<sup>nd</sup> columns) or GFP (3<sup>rd</sup> and 4<sup>th</sup> columns).  
 Lower panels show the phase-contrast images of the Sepharose beads.  
 A GFP signal localized to the beads indicates a positive SUMO-SIM interaction(upper panel).



**B** GST-MCAF1-SIM<sub>wt</sub> (GVAHLTMDDEE)  
 GST-MCAF1-SIM<sub>mut</sub> (GVDLTMDDEE)

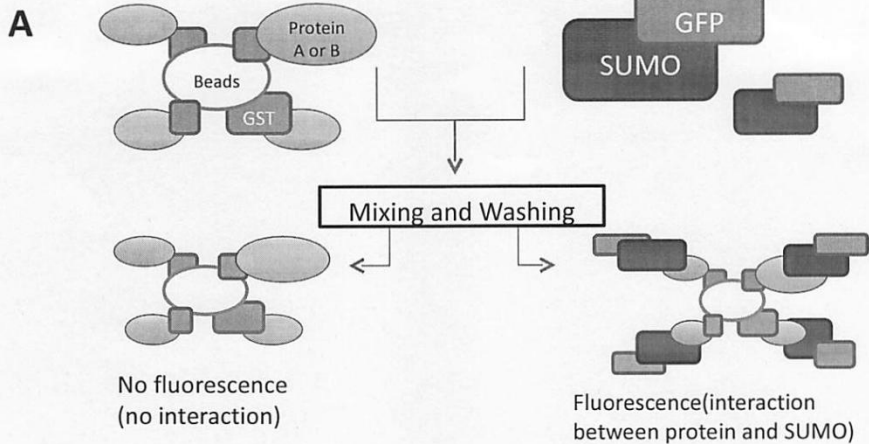


**Fig.1. Detection of SUMO-SIM Interaction by Real-Time SUMO Binding Assay.**

A, Schematic representation of the procedure for the real-time SUMO binding assay.  
 B, Comparison of sequence of amino acids between the GST-MCAF1-SIM<sub>wt</sub> and the GST-MCAF1-SIM<sub>mut</sub>.  
 C, Bacterial lysate containing GFP-SUMO-3 or GFP was mixed with bead-immobilized GST-MCAF1-SIM<sub>wt</sub> or the bead-immobilized GST-MCAF1-SIM<sub>mut</sub>. A GFP signal localized to the beads indicates a positive SUMO-SIM interaction. Smaller panels show the phase-contrast images of the Sepharose beads.

Aさん: バランスがよく、Cの図がモノクロなのも落ち着いた感じでいいですね。

Aさん: わかりやすいです。Cの図も他の人にはないレイアウトで印象的です。



**B**

MCAF1-965-975 WT EFGV IDLTMDDEE  
MCAF1-965-975 mut EFGV AH L T M D D E E

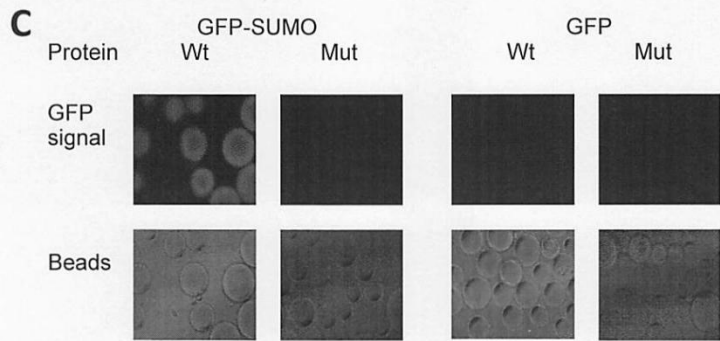
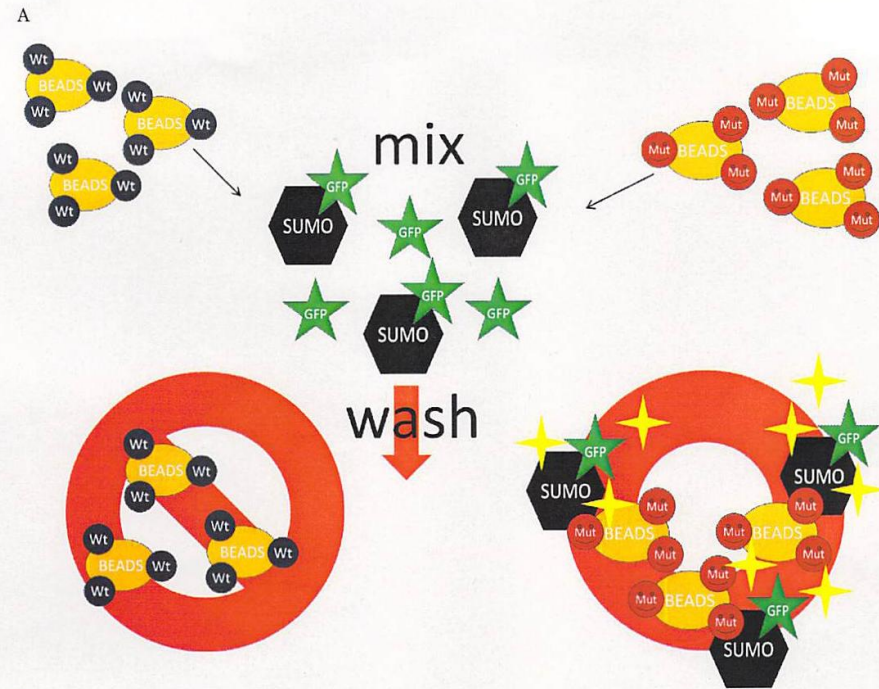


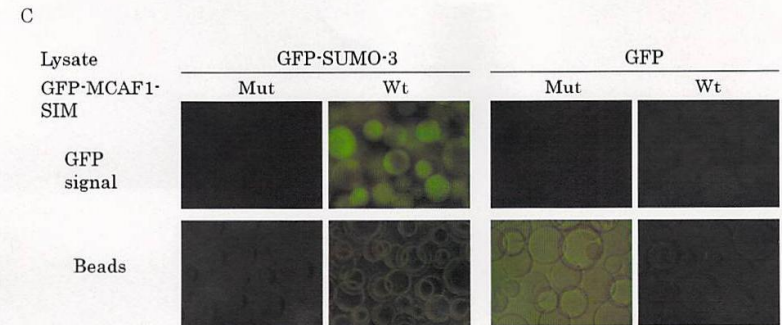
Fig1: Detection of SUMO-SIM Interaction by Real Time SUMO Binding Assay.  
 A, Schematic representation of the procedure for the real time SUMO binding assay.  
 B, The entire amino acid sequences of MCAF1-SIM(Wt) and MCAF1-SIM(Mut) fused to GST are shown. The position of the mutations (I to A, D to H) are underlined. Indicated on the right are aliquots of immobilized GST-MCAF1-SIM(Wt) and GST-MCAF1-SIM(Mut).  
 C, Bacterial lysate containing of GFP-SUMO-3 or GFP was mixed with bead immobilized GST-MCAF1-SIM(Wt) or the bead immobilized GST-MCAF1-SIM(Mut). An aliquot of recombinant GFP-SUMO-3 or GFP resolved by PBS is shown. A GFP signal localized to the beads indicates a positive SUMO-SIM interaction (upper panel). Lower panels show the phase-contrast images of the Glutathione sepharose beads.

Fig.1



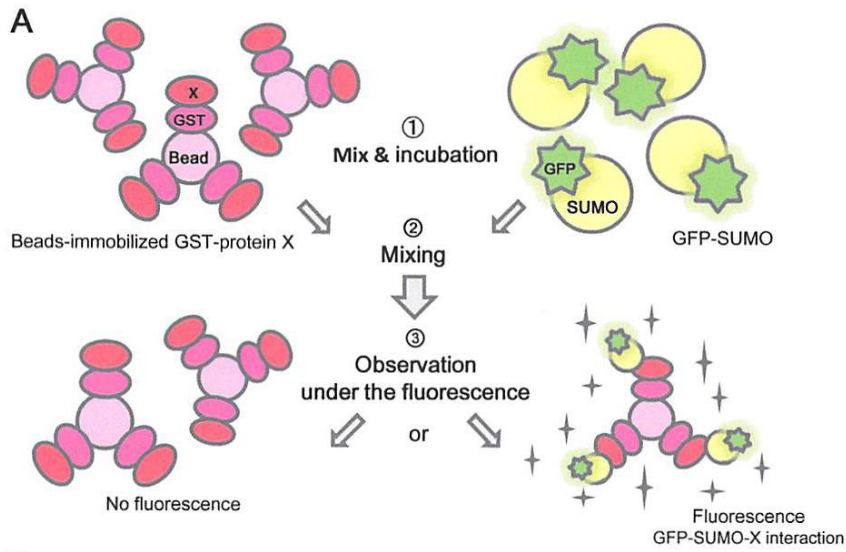
**B**

GST-MCAF1-SIM<sub>wt</sub> (G V I D L T M D D E E)  
 GST-MCAF1-SIM<sub>mut</sub> (G V A H L T M D D E E)



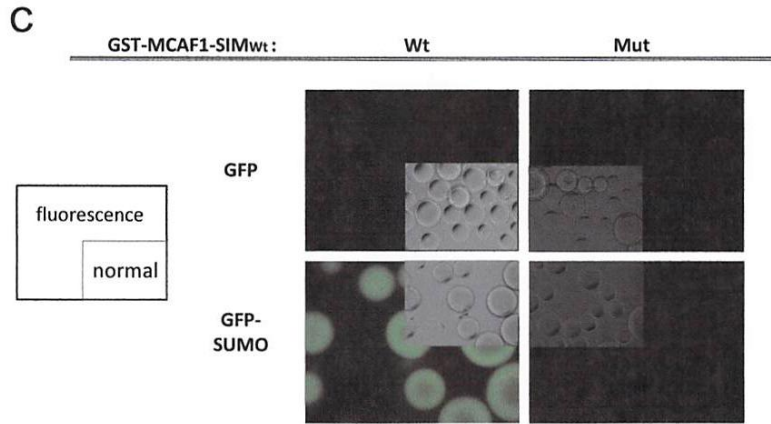
Eさん: コントラストがきれいです。とても見やすく仕上がっています。

Hさん: かなりのインパクトです(特にAは)。ただ、Fig. Legendが無いのが残念です。

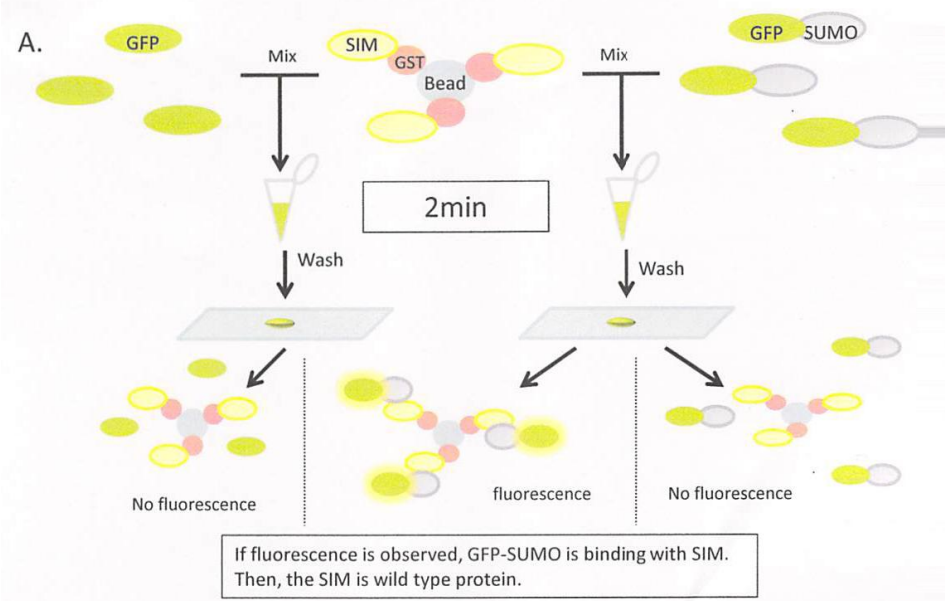


**B**

GST-MCAF1-SIM<sub>wt</sub> -----GVIDLTMDDEE-----  
 GST-MCAF1-SIM<sub>Mut</sub> -----GVAHLTMDEE-----

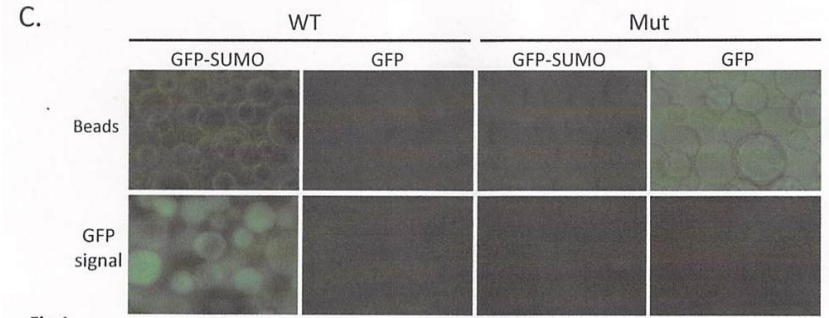


**Fig.1** Detection of SUMO-SIM Interaction by Real-Time SUMO Binding Assay.  
 A: Schematic representation of the procedure for the real-time SUMO binding assay. B: Comparison of sequence of amino acids between the GST-MCAF1-SIM<sub>wt</sub> and GST-MCAF1-SIM<sub>Mut</sub>. The position of the mutation (I to A and D to H) is underlined. C: Bacterial lysate containing of GFP-SUMO or GFP was mixed with bead-immobilized GST-MCAF1-SIM<sub>wt</sub> or the bead-immobilized GST-MCAF1-SIM<sub>Mut</sub>. A GFP-SUMO localized to the beads indicates a positive SUMO-SIM interaction.



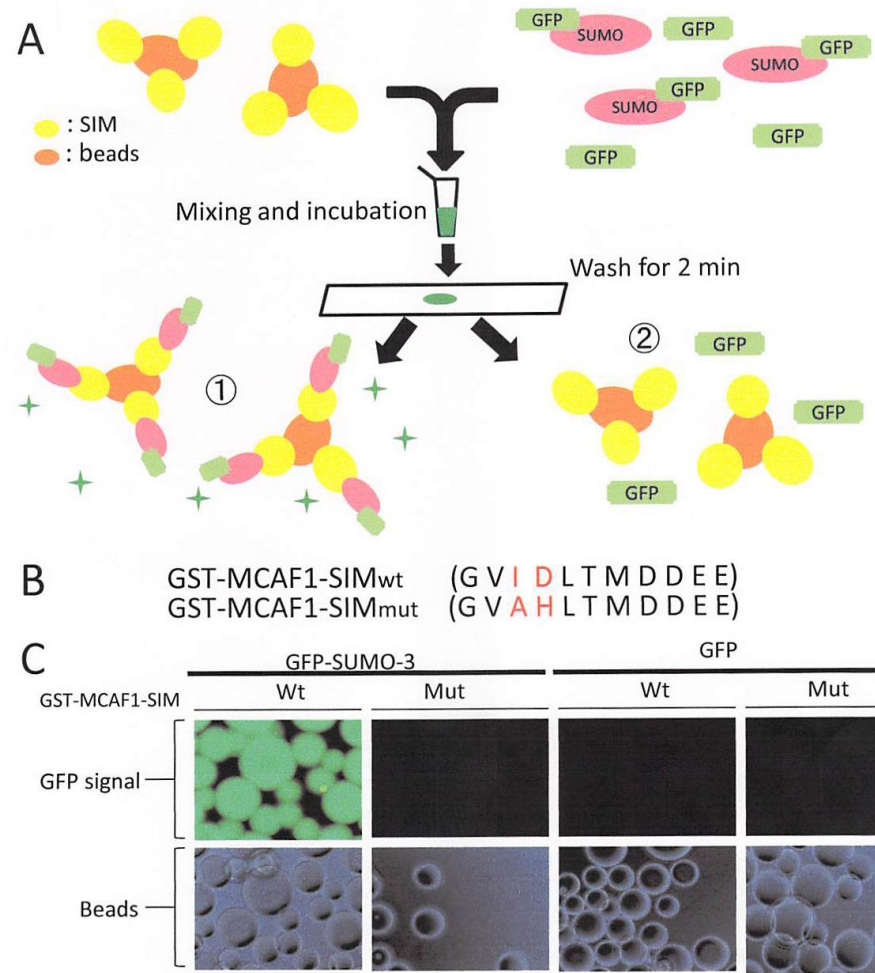
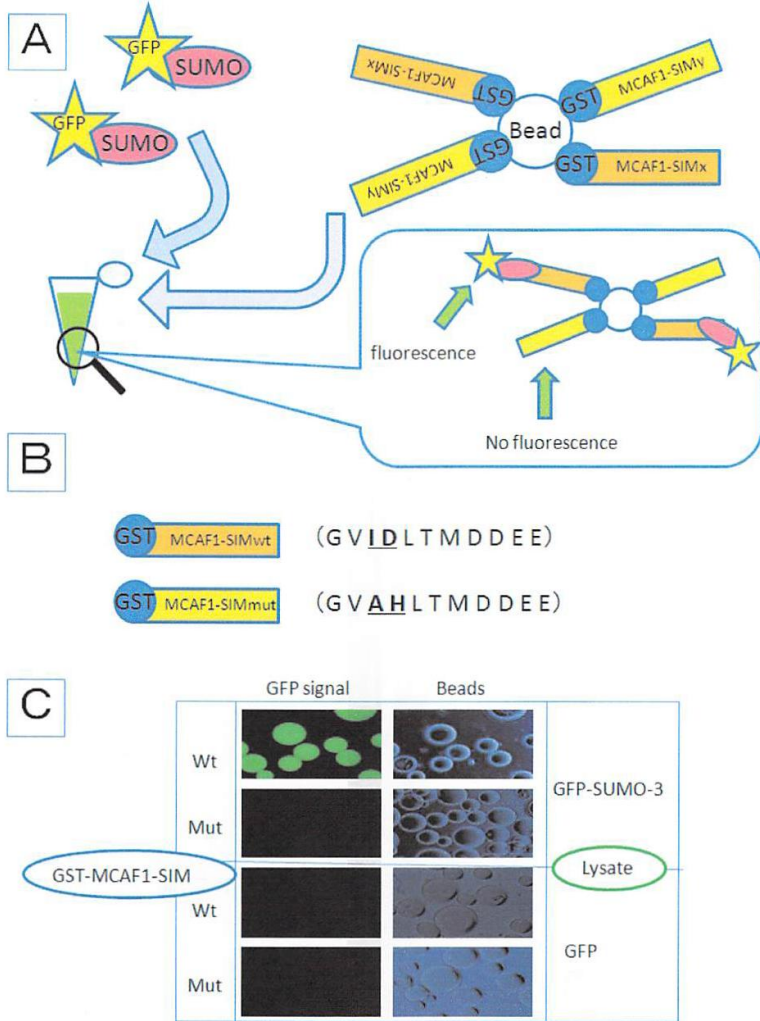
**B.**

Sample A : (wt) ...FGVIDLTHDDEE\* → I (isoleucine) → A (alanine)  
 Sample B : (mut) ...FGVAHLTHDDEE\* → D (aspartic acid) → H (histidine)



**Fig.1**  
 A, Schematic representation of the bead halo assay. B, Amino acids sequences of DNA sample A and B decided by the result of DNA sequence. The position of the mutation (I to A, D to H) is red. The right of figure B shows mutational amino acid. C, The micrographs showing the result of the bead halo assay. The 4 pictures of left side are beads immobilized GST-SIM<sub>wt</sub>. The others are beads immobilized GST-SIM<sub>Mut</sub>. The 2 pictures of left side in 4 pictures are beads contained GFP-SUMO and the others are beads contained GFP. The beads immobilized GST-SIM<sub>wt</sub> (the left of lower panel) only showed fluorescence.

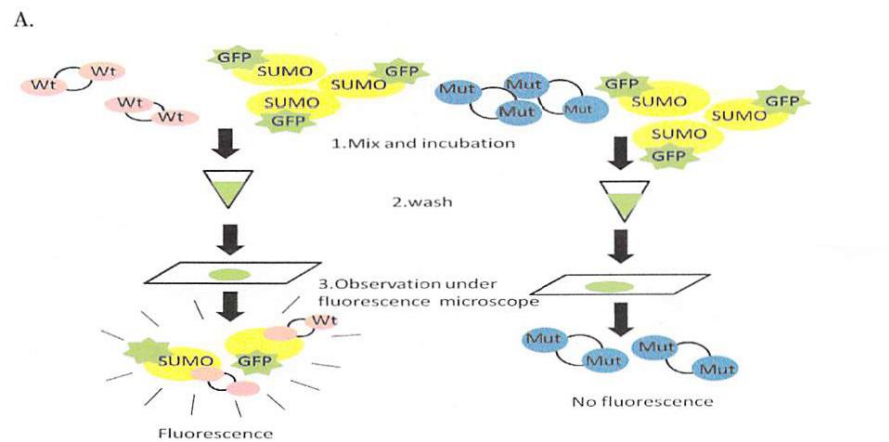
Kさん: AとBでは色の違いを上手に使ってます。Kさん: 結果を詳しく、わかりやすく示してくれ  
 Cの見せ方にも工夫がありますね。 Kさん: 結果を詳しく、わかりやすく示してくれ  
 ています。よくまとまっています。



**Fig1 A:** Schematic representation of the procedure for the real-time SUMO binding assay. Observation under fluorescence microscope, GFP combined with SUMO show fluorescence(1) but GFP uncombined with SUMO is not shown(2). **B:** The amino acid sequences of MCAF1-SIMwt and MCAF1-SIMmut fused to GST are shown. The position of the mutation (I to A, D to H) are shown red. **C:** A GFP signal localized to the beads indicates a positive SUMO-SIM interaction in upper panels. Lower panels show the phase-contrast images of the Sepharose beads.

Mさん: 見せ方にずいぶん工夫がありますね。全体のバランスもいいです。

Mさん: ピンクを基調に見やすい図に仕上がっています。



B.

GST-MCAF1-SIMwt (G V I D L T M D D E E)

GST-MCAF1-SIMmut (G V A H L T M D D E E)

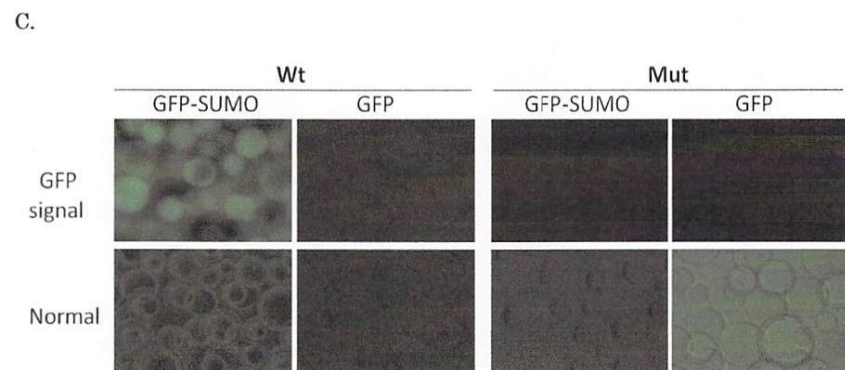
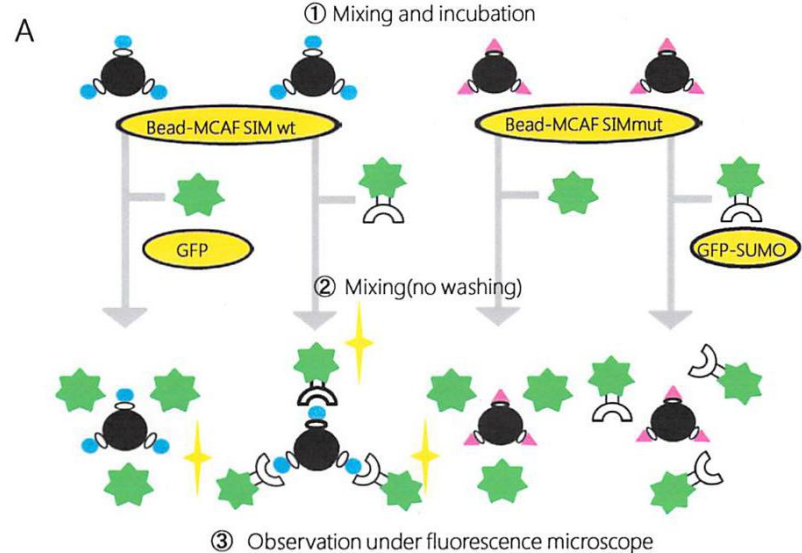


Fig1.

A: Schematic representation of the procedure for the real-time SUMO binding assay. B: The entire amino acid sequences of MCAF1-SIMwt and MCAF1-SIMmut fused to GST are shown. The position of the mutation (I to A and D to H) is underlined. C: Bacterial lysate containing GFP-SUMO or GFP was mixed with bead-immobilized GST-MCAF1-SIMwt or the bead-immobilized GST-MCAF1-SIMmut. A GFP signal localized to the beads indicates a positive SUMO-SIM interaction (upper panel). Lower panels show the phase-contrast images of the Sepharose beads.



B.

MCAF1-SIM wt (G V I D L T M D D E E)

MCAF1-SIM mut (G V A H L T M D D E E)

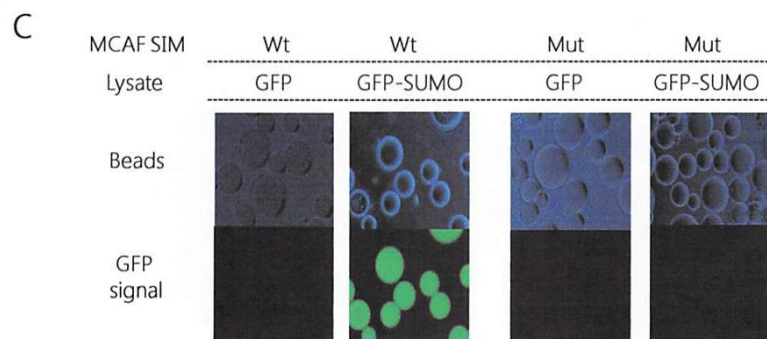
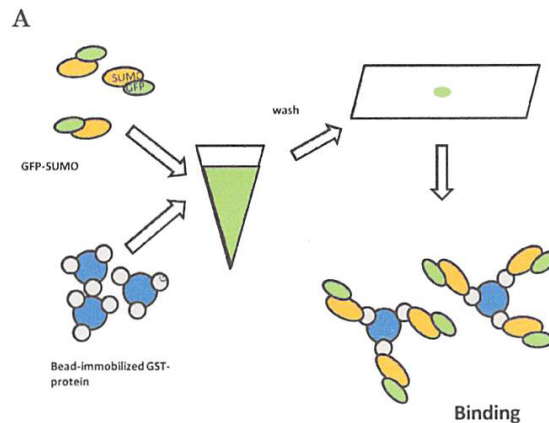
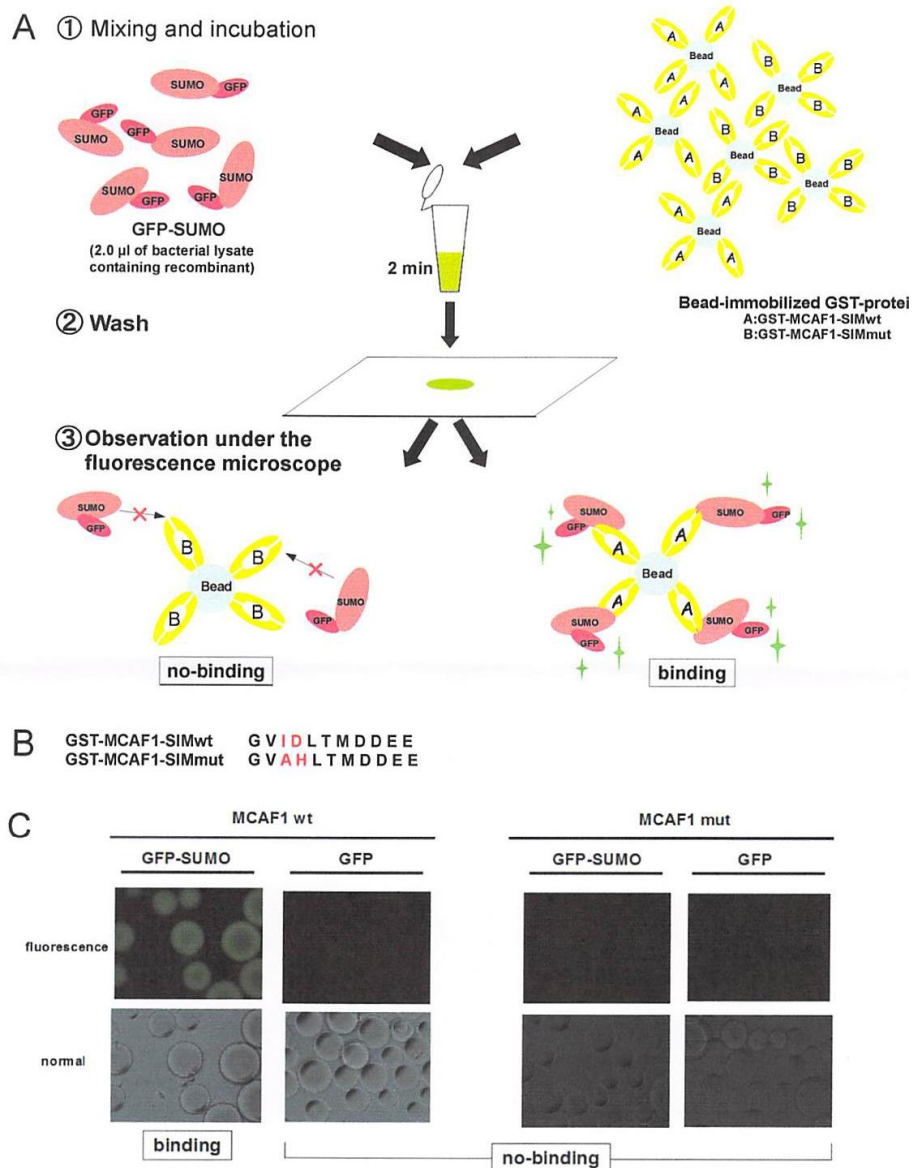


Fig 1. Deletion of SUMO-SIM Interaction by Real-Time SUMO Binding Assay.

- A. Schematic representation of the procedure for the real-time SUMO binding assay.  
 B. The entire amino acid sequences of MCAF1-SIMwt and MCAF1-SIMmut fused to GST are shown. Upper lane is sequence of amino acids of the wild type. Lower lane is that of the mutated. The position of the mutation (I to A and D to H) is red.  
 C. GFP-SUMO or GFP was mixed with bead-immobilized GST-MCAF1-SIMwt or the bead-immobilized GST-MCAF1-SIMmut. A GFP signal localized to the beads indicates a positive SUMO-SIM interaction (upper panel). Lower panels show the phase-contrast images of the Sepharose beads.

Nさん: 反応系が見やすく描かれています。バランスもとてもいいと思います。

Nさん: Aの図が幾何学的ですね。全体としてまとまりもいいです。



**B**

WT (EFGVIDLTMDDEE)

Mut (EFGVAHLTMDDEE)

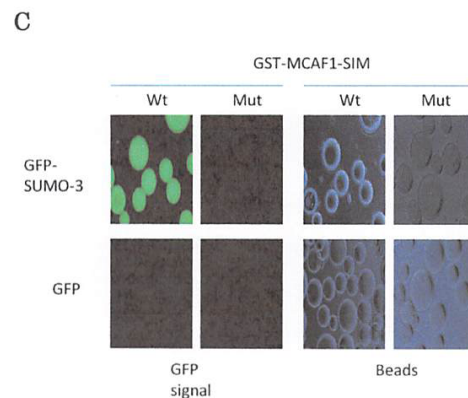


Fig.1 Detection of SUMO-SIM Interaction by Real-Time SUMO Binding Assay

A : Schematic representation of the procedure for the real-time SUMO binding assay.

B : The entire amino acid sequences of MCAF1-SIMwt and MCAF1-SIMmut fused to GST are shown.

C : Bacterial lysate containing GFP-SUMO-3 or GFP was mixed with bead-immobilized GST-MCAF1-SIMwt or the bead-immobilized GST-MCAF1-SIMmut.

Fig.1. Detection of SUMO-SIM Interaction by Real-Time SUMO Binding Assay.

Rさん: Aの図を丁寧に書いてくださいました。分かりやすいと思います。

Uさん: すっきりとした図で、わかりやすくまとめています。

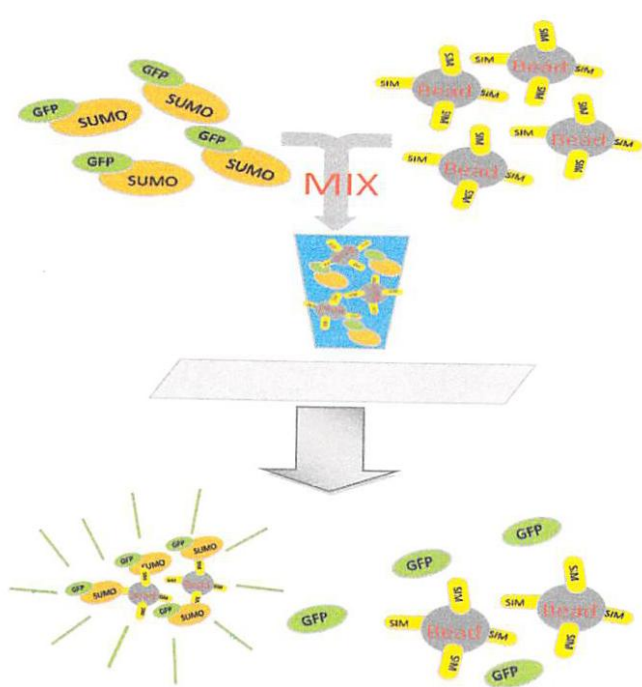


Fig.2

SIM<sub>WT</sub> EFGVAHLTMDDEE a

SIM<sub>Mut</sub> EFGVIDLTMDDEE b

Fig1

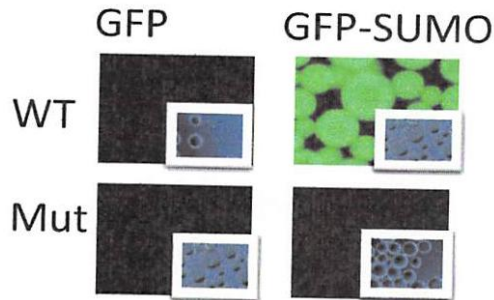
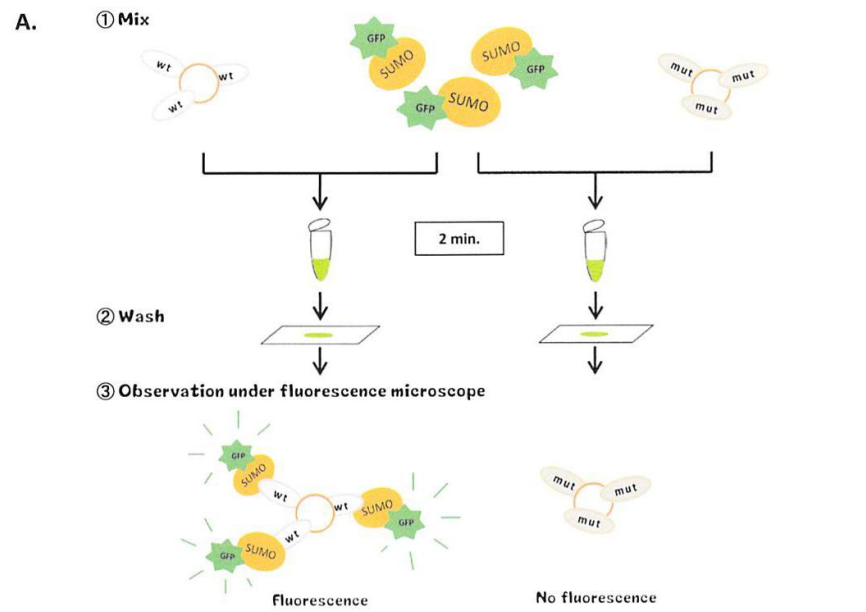


Fig3

Yさん: Aの図でMixingの画を丁寧に書いてくださいました。分かりやすいです。Legendは?



B. GST-MCAF1-SIM<sub>wt</sub> : ... EFGVIDLTMDDEE ...  
 GST-MCAF1-SIM<sub>mut</sub> : ... EFGVAHLTMDDEE ...  
 I (Isoleucine) → A (Alanine)  
 D (Aspartic acid) → H (Histidine)

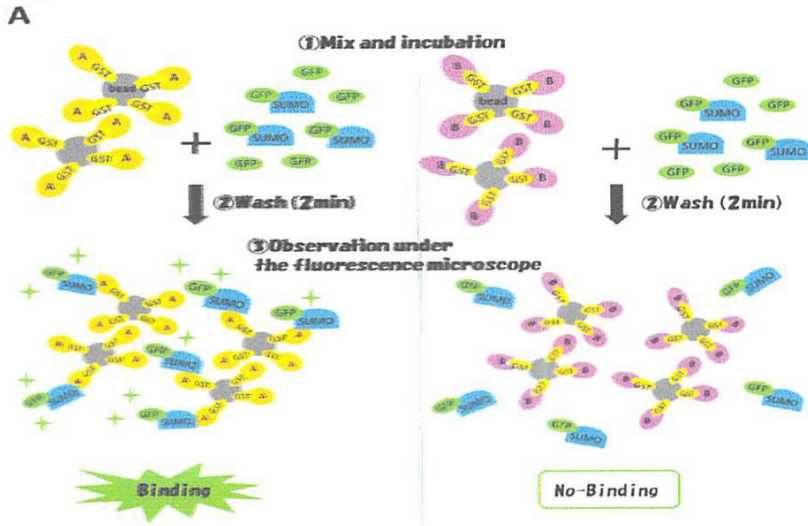
C. GST-MCAF1-SIM :

	Wt		Mut	
GFP-SUMO :	+	-	+	-
GFP :	-	+	-	+
GFP signal				
Beads				

Fig. 1. Detection of Protein Interaction between SUMO and SIM using a Bead Halo Assay.  
 A: Schematic representation of the procedure for the bead halo assay. The SIM-containing proteins are expressed as a recombinant GST-fusion proteins. Here GST-fusion protein are shown as wt(wild type) or mut(mutant). GST-fusion proteins are immobilized on the surface of the beads. GST-MCAF1-SIM<sub>wt</sub> protein interacts with SUMO, its fluorescence can be detected under the fluorescence microscope.  
 B: A part of amino acid sequences of GST-MCAF1-SIM<sub>wt</sub> and GST-MCAF1-SIM<sub>mut</sub> are shown. The position of the mutation (I to A, D to H) is underlined and changed the color. The mutation of amino acid is picked out on the right.  
 C: Bacterial lysate containing GFP or GFP-SUMO was mixed with bead-immobilized GST-MCAF1-SIM<sub>wt</sub> or GST-MCAF1-SIM<sub>mut</sub>. Upper panels show a GFP signal. The signal localized to the beads indicates positive protein interaction between SUMO and SIM. Lower panels show the position of the beads in the phase-contrast images.

Yさん: 全体が丁寧に描かれています。アミノ酸の情報も入れてくれました。

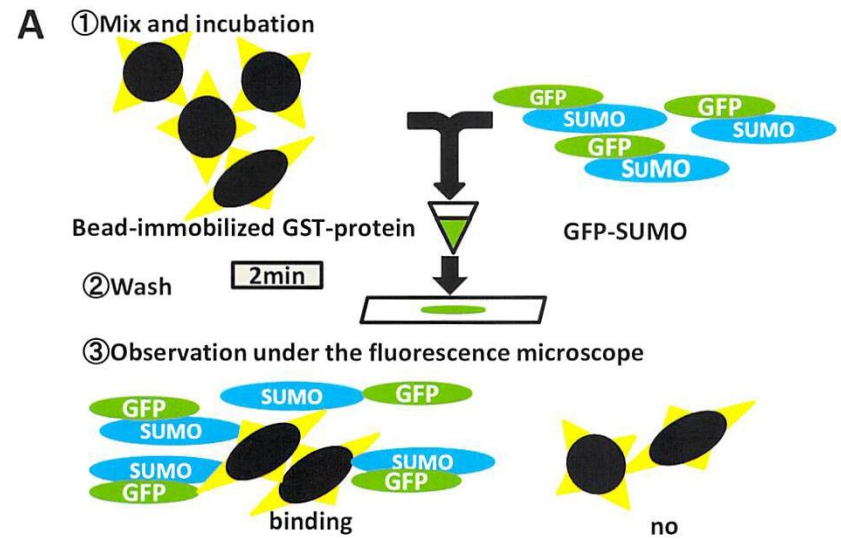




**B**

A : GST-MCAF1-SIM wt    ---GV **I**D L T M D D E E ---

B : GST-MCAF1-SIM mut    ---GV **A**H L T M D D E E ---



**B**

GST-MCAF1-SIMwt (G V **I** D L T M D D E E)

GST-MCAF1-SIMmut (G V **A** H L T M D D E E)

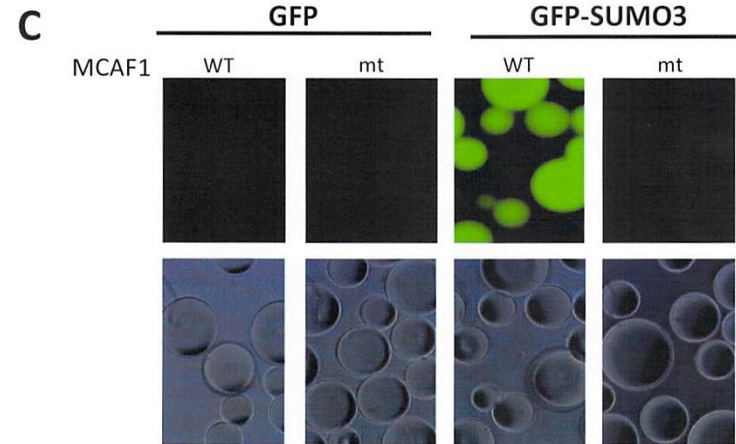
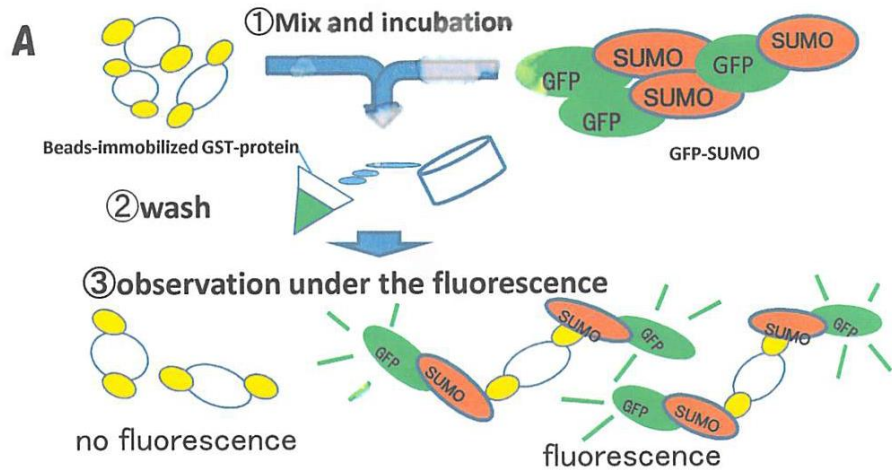


Fig.1. Detection of SUMO-SIM Interaction by Real-Time SUMO Binding Assay. A, Schematic representation of the procedure for the real-time SUMO binding assay. B, The entire amino acid sequences of MCAF1-SIMwt and MCAF1-SIMmt fused to GST are shown. The position of the mutation (I to A and D to H) is red. C, Bacterial lysate containing 0.01mg/ml of GFP-SUMO-3 or GFP was mixed with bead immobilized GST-MCAF1-SIMwt or the bead-immobilized GST-MCAF1-SIMmt. A GFP signal located to the beads indicates a positive SUMO-SIM interaction. Lower panels show the phase-contrast images of the Sepharose beads.

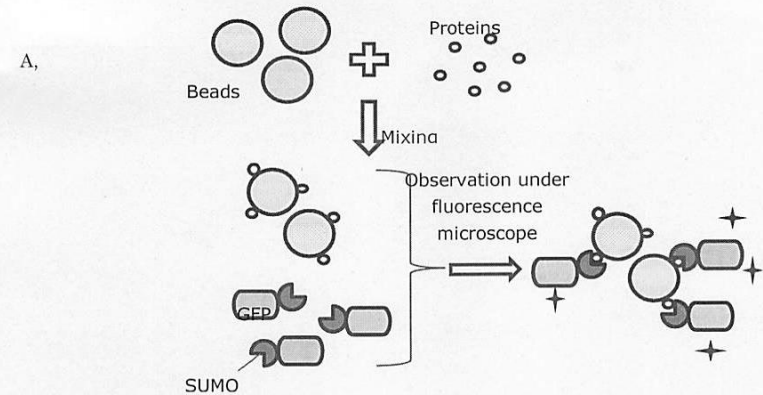
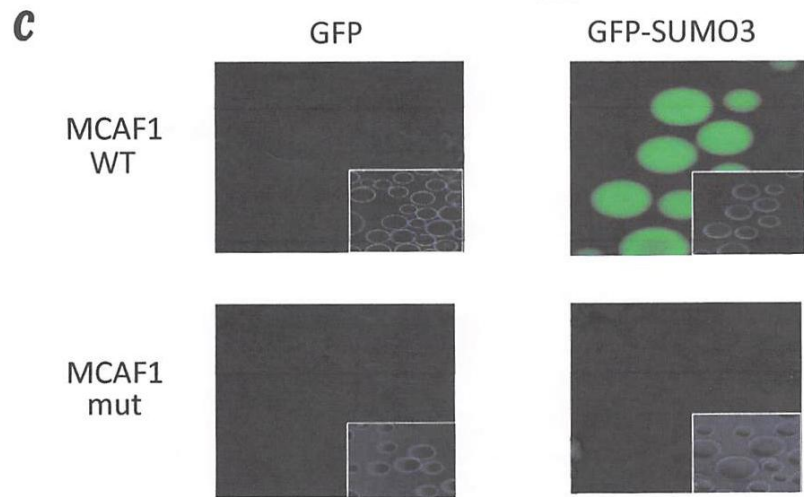
Yさん:Cに工夫が見られます。A, Bも上手にまとめられていますね。

Fさん、全体が明るく見えますね。Cの写真も綺麗です。



**B**

GST-MCAF1-SIM<sub>wt</sub>                      ---GVIDLTMDDEE---  
 GST-MCAF1-SIM<sub>mut</sub>                    ---GVAHLTMDDEE---



**B.**

GST-MCAF1-SIM Wt    G V I D L T M D D E E  
 GST-MCAF1-SIM Mut   G V A H L T M D D E E

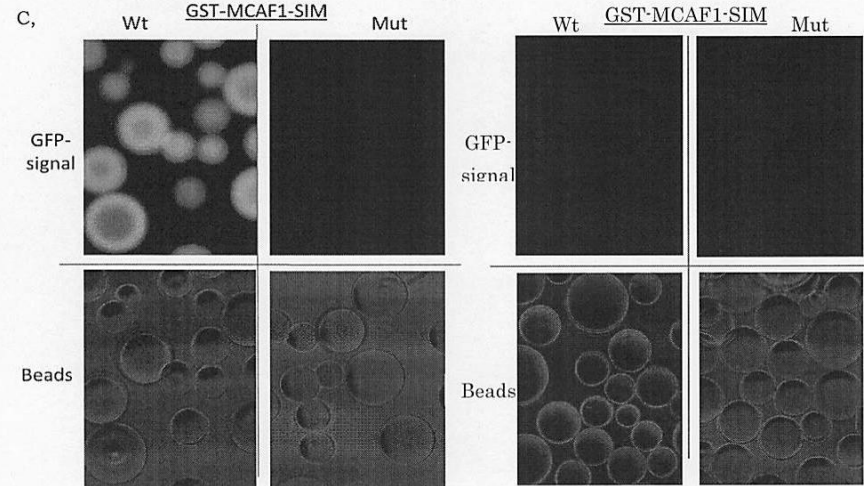


Fig. Detection of SUMO-SIM Interaction by Real-Time SUMO Binding Assay

A, Schematic representation of the procedure for the real-time SUMO binding assay.

B, The entire amino acid sequences of MCAF1-SIMWt and MCAF1-SIMMut fused to GST are shown. The position of the mutation (I to A and D to H) is underlined. Note that equal amounts of GST-MCAF1-SIMWt and GST-MCAF1-SIMMut, to be used for the assay in B, were immobilized on the beads.

C, Bacterial lysate containing 0.01 mg/ml of GFP-SUMO-3 (1<sup>st</sup> and 2<sup>nd</sup> columns) or GFP (3<sup>rd</sup> and 4<sup>th</sup> columns) was mixed with bead-immobilized GST-MCAF1-SIMWt or the bead-immobilized GST-MCAF1-SIMMut (2<sup>nd</sup> and 4<sup>th</sup> columns). A GFP signal localized to the beads indicates a positive SUMO-SIM interaction (upper panel). Lower panels show the phase-contrast images of the Sepharose beads.

Kさん、手際良く図とレポートを作成してくれました。  
 図Cのinsetのビーズの写真がgoodです。

Sさん、図Aのビーズとタンパク質のバランスがいい  
 です。濃淡のコントラストでよくまとまっています。

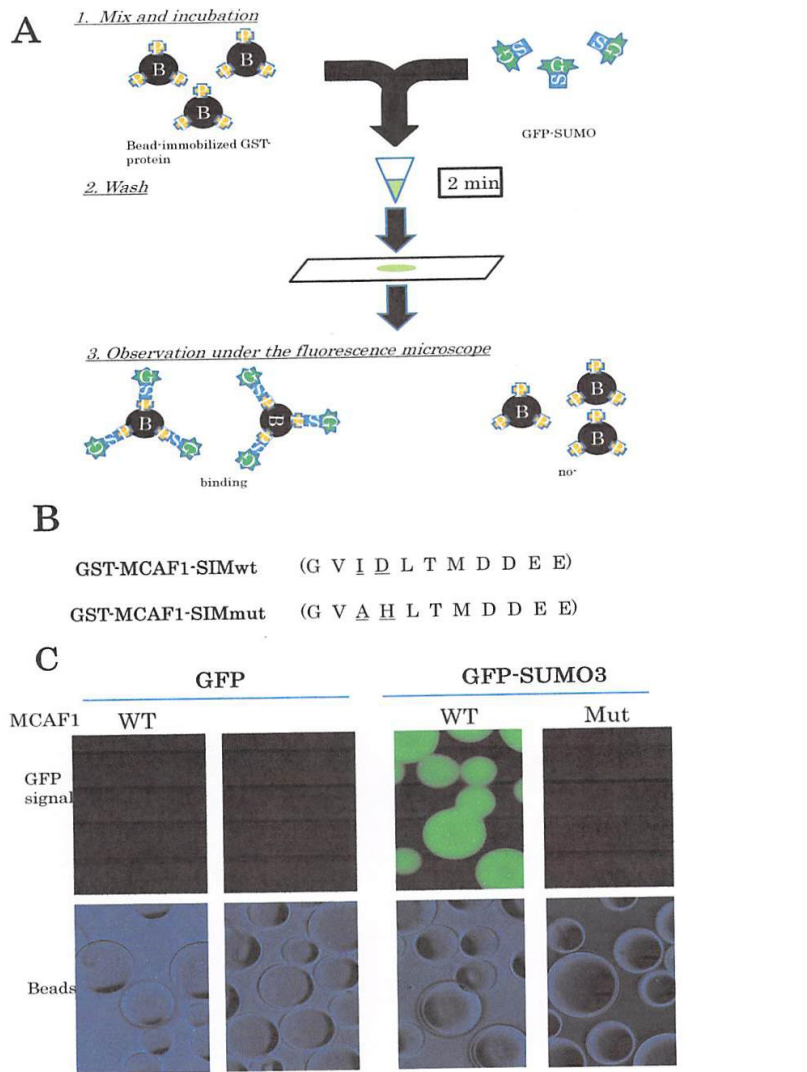


Fig. 1. Detection of SUMO-SIM Interaction by Real-Time SUMO Binding Assay.

A, Schematic representation of the procedure for the real-time SUMO binding assay. B, The entire amino acid sequences of MCAF1-SIM<sub>wt</sub> and MCAF1-SIM<sub>mut</sub> fused to GST are shown. The position of the mutation (I to A and D to H) is underlined. Indicated on the right are aliquots of immobilized GST-MCAF1-SIM<sub>wt</sub> and GST-MCAF1-SIM<sub>mut</sub>, to be used for the assay in B, were immobilized on the beads. C, A GFP signal localized to the beads indicates a positive SUMO-SIM interaction (upper panel). Lower panels show the phase-contrast images of the Sepharose beads.

Tさん、とても見やすい図です。GFPタンパク質やSUMOをGとSであらわしたのは言い工夫ですね。

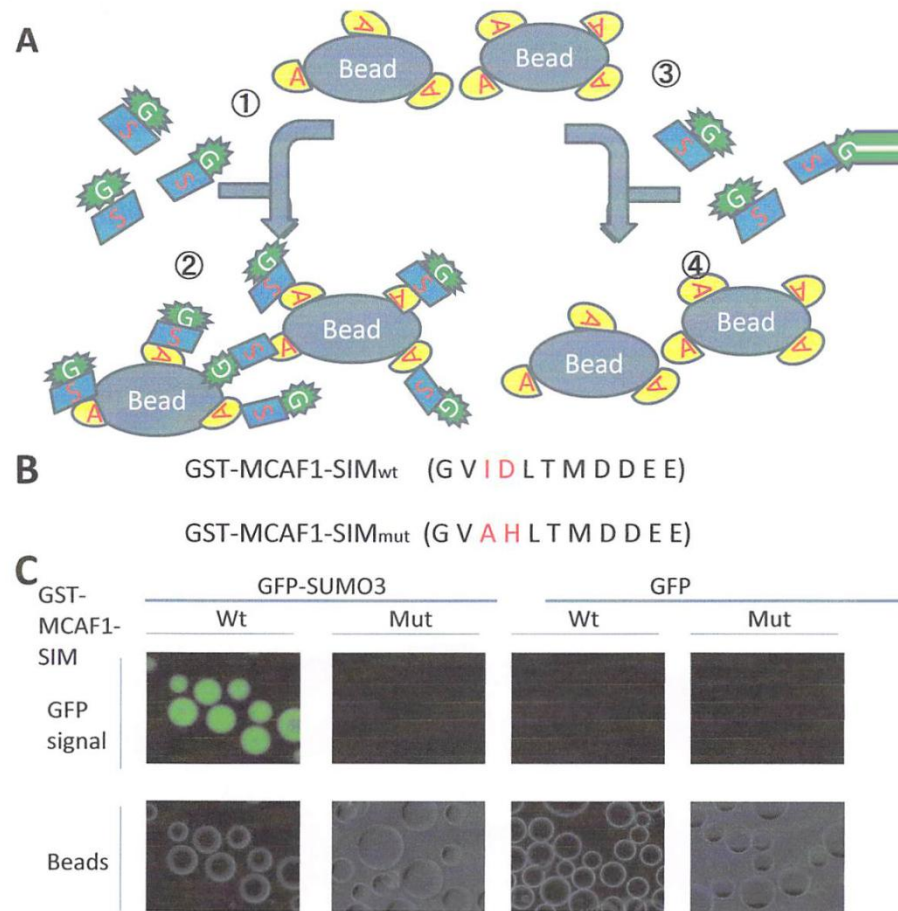


Fig. A, SUMO indicates an interaction to be to protein A (it is SIM this time) combined with the bead (1), and GFP combined with SUMO by joining together show fluorescence (2). Since it does not join together unless protein A and SUMO show an interaction (3), fluorescence is not shown (4). B, The amino acid which constitutes the protein of a wild type and a mutant type shows the variation of arrangement. C, The SUMO-SIM interaction using bead halo assay.

Tさん、図Aが力強いですね。おそらく矢印が聞いているのでしょう。変異アミノ酸を朱色にした工夫は分かりやすいです。

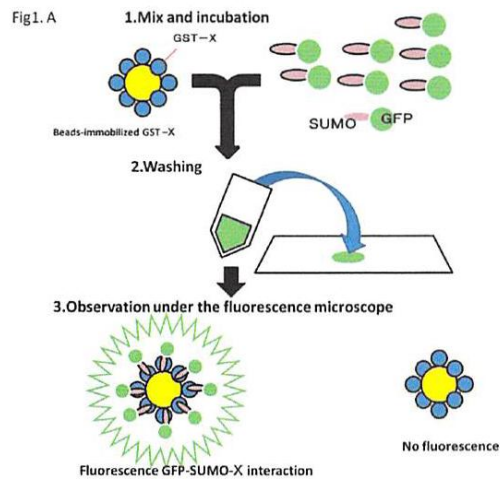


Fig1. B

GST-MCAF1-SIM wt ( KSDLVPRGSPEFGVIDLTMDDEE )  
 GST-MCAF1-SIM mut ( KSDLVPRGSPEFGVAHLTMDDEE )

GST-MCAF1-SIM wt  
 TCGGATCTGGTCCGCGTGGATCCCCGGAATTCGGTGCATTGATCTCACAATGGATGATGAAGAGTGA  
 GST-MCAF1-SIM mut  
 TCGGATCTGGTCCGCGTGGATCCCCGGAATTCGGTGCGCACATCTCACAATGGATGATGAAGAGTGA

Fig. C

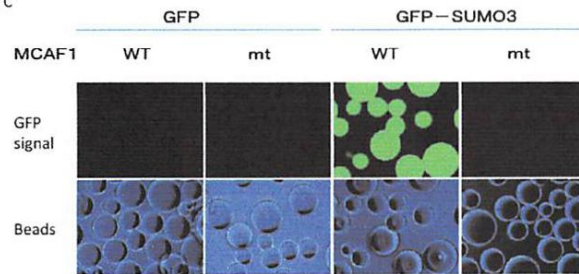


Fig.1

A. Detection of SUMO-SIM Interaction by Bead Halo assay.

B. The entire amino acid and nucleic acid sequences of MCAF1-SIM<sub>wt</sub> and MCAF1-SIM<sub>mut</sub> fused to GST are shown. The position of the mutations (I to A) (D to H) are underlined.

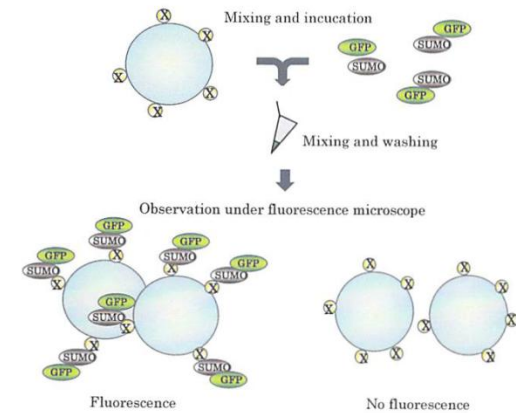
The protein of the mutation (TD to AH)

C. Bacterial lysate containing GFP-SUMO-3 or GFP was mixed with bead-immobilized GST-MCAF1-SIM<sub>wt</sub> or bead-immobilized GST-MCAF1-SIM<sub>mut</sub>.

A GFP signal localized to the beads indicates a positive SUMO-SIM interaction (upper panel).

Lower panels show the phase-contrast images of the Sepharose beads.

A



B

GST-MCAF1-SIM<sub>wt</sub> ( G V I D L T M D D E E )  
 GST-MCAF1-SIM<sub>mut</sub> ( G V A H L T M D D E E )

C

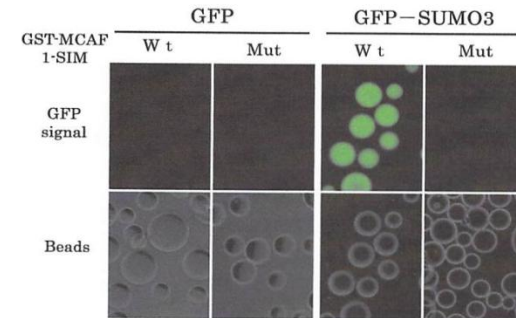


Fig.1

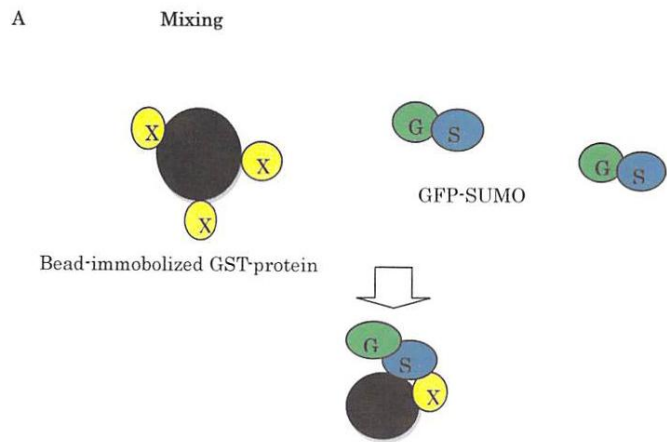
A. Schematic representation of the procedure for the bead halo assay.

B. The entire amino acid sequences of MCAF1-SIM<sub>wt</sub> and MCAF1-SIM<sub>mut</sub> fused to GST are shown. The position of the mutations (I to A) (D to H) are underlined.

C. Bacterial lysate containing GFP-SUMO-3 or GFP was mixed with bead-immobilized GST-MCAF1-SIM<sub>wt</sub> or the bead-immobilized GST-MCAF1-SIM<sub>mut</sub>. A GFP signal localized to the beads indicates a positive SUMO-SIM interaction (upper panel). Lower panels show the phase-contrast images of the Sepharose beads.

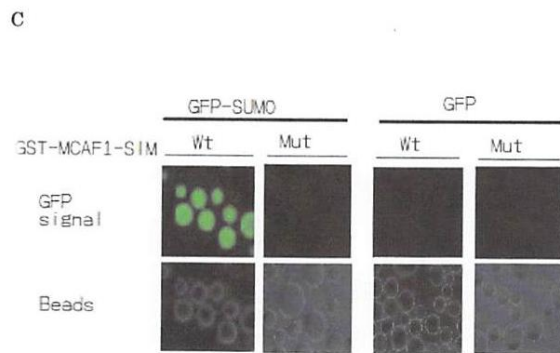
Aさん、図Aの結合状態が分かりやすく描かれています。  
 DNA塩基配列も示されて、手堅い感じにまとまっています。

Mさん、ビーズが本物っぽくていい感じですね。大変見やすいです。



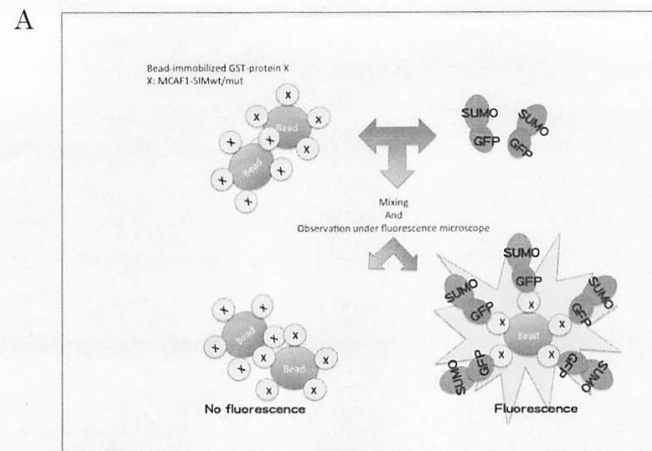
**B**

SIM<sub>wt</sub> (GVIDLTMDDEE)  
 SIM<sub>mut</sub> (GVAHLTMDDEE)



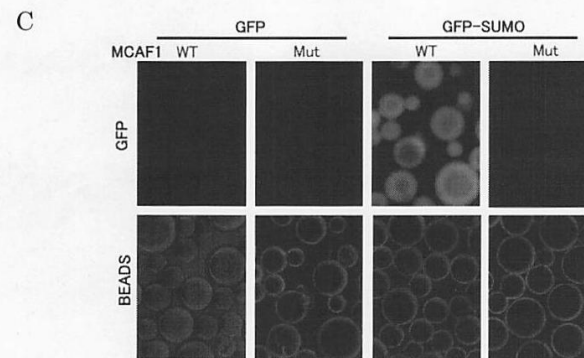
**Fig.1.** Detection of SUMO-SIM Interaction by Real-Time SUMO Binding Assay.

A, Schematic representation of the procedure for the real-time SUMO binding assay. B, The entire amino acid sequences of MCAF1-SIM<sub>wt</sub> and MCAF1-SIM<sub>mut</sub> fused to GST are shown. The position of the mutation is underlined. Indicated on the right are aliquots of immobilized GST-MCAF1-SIM<sub>wt/mut</sub>, as analyzed by SDS-PAGE and stained with Coomassie Brilliant blue(CBB). Note that equal amounts of GST-MCAF1-SIM<sub>wt/mut</sub> to be used for the assay in B, were immobilized on the on the beads. C, Bacterial lysate containing GFP-SUMO-3 or GFP was mixed with bead-immobilized GST-MCAF-SIM<sub>wt/mut</sub>. An aliquot of recombinant GFP-SUMO-3 or GFP resolved by SDS-PAGE and stained with CBB is shown. A GFP signal localized to the beads indicates a positive SUMO-SIM interaction. Lower panels show the phase-contrast images of the Sepharose beads.



**B**

GST-MCAF1-SIMwt GVIDLTMDDEE  
 GST-MCAF1-SIMmut GVAHLTMDDEE

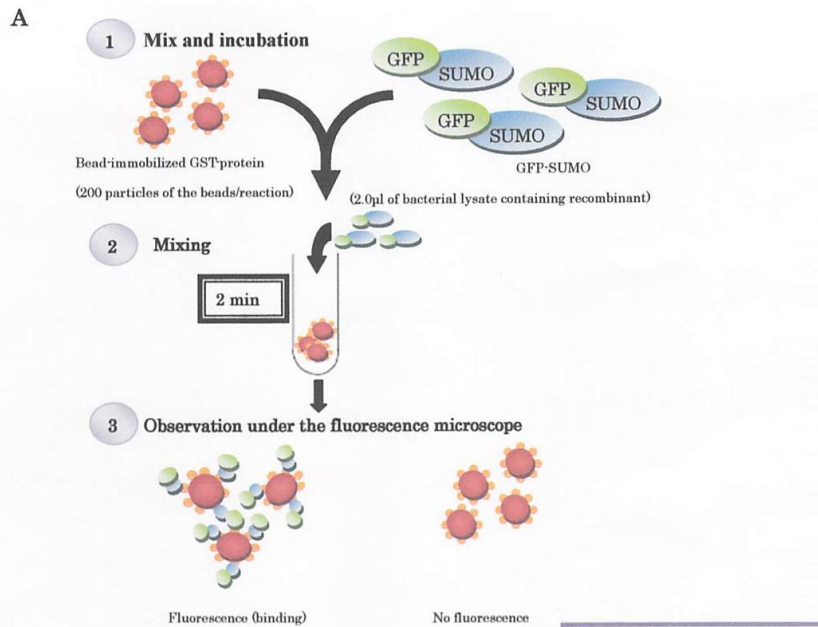


**Fig.1.** Detection of SUMO-SIM Interaction by Bead Halo Assay.

A, Schema shown the procedure for the bead halo method. B, The entire amino acid sequences of MCAF1-SIMwt and MCAF1-SIMmut fused to GST are shown. Shaded letters shows the position of the mutation occurred. C, Fluorescence microscope images are shown the detection of GFP-SUMO-SIM interaction. A GFP signal localized to the beads indicates a positive SUMO-SIM interaction. The images in the second row show the phase-contrast images of the sepharose beads.

Mさん、要点がはっきりしていて見やすいですね。

Aさん、結合状態の画が印象的ですね。変異のポイントをしっかり示しているのもいいですね。



**B**

GST-MCAF1-SIM<sub>wt</sub> [G V I D L T M D D E E ]

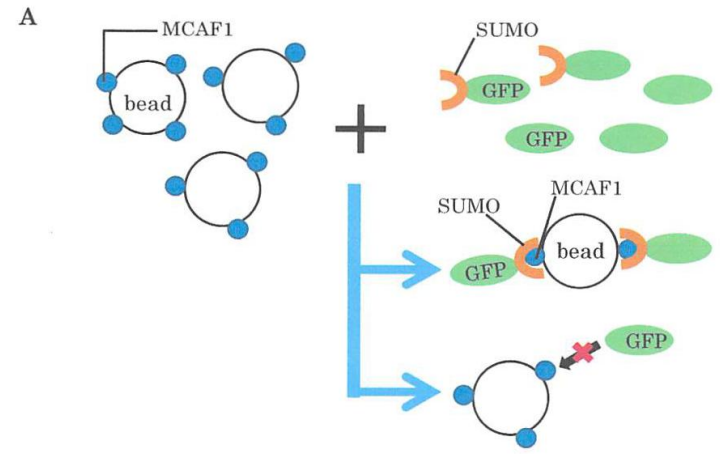
GST-MCAF1-SIM<sub>mut</sub> [G V A H L T M D D E E ]

G:Glycine T:Threonine  
 V:Valine M:Methionine  
 I:Isoleucine E:Glutamic acid  
 D:Aspartic acid A:Alanine  
 L:Leucine H:Histidine

**C**

	GFP-SUMO		GFP	
	WT	Mut	WT	Mut
GFP signal				
Beads				

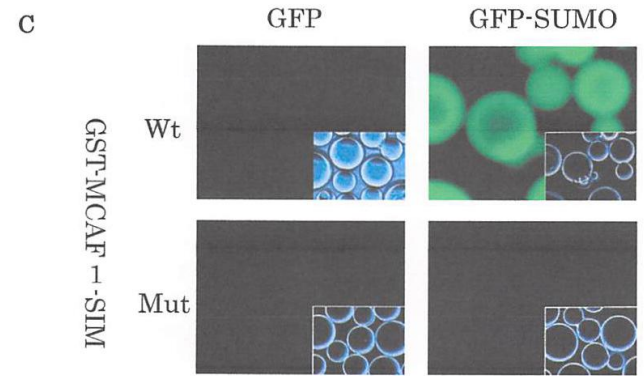
**Fig.1 Detection of SUMO-SIM Interaction by Bead Halo Assay.**  
 A: Schematic representation of the procedure for the bead halo assay.  
 B: The entire amino acid sequences of GST-MCAF1-SIM<sub>wt</sub> and GST-MCAF1-SIM<sub>mut</sub> fused to GST are shown. The position of mutation (I to A and D to H) is underlined.  
 C: GFP-SUMO or GFP was mixed with bead-immobilized GST-MCAF1-SIM<sub>wt</sub> or the bead-immobilized GST-MCAF1-SIM<sub>mut</sub>.



**B**

GST-MCAF1-SIM<sub>wt</sub> → . . . G V A H L T M D D E E . . .

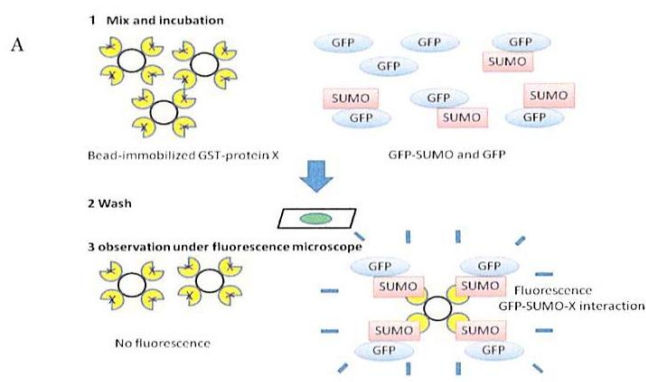
GST-MCAF1-SIM<sub>mut</sub> → . . . G V I D L T M D D E E . . .



**Fig.1. Detection of SUMO-SIM Interaction by Real-Time SUMO Binding Assay.**  
 A, Schematic representation of the procedure for the real-time SUMO binding assay. B, The entire amino acid sequences of MCAF1-SIM<sub>wt</sub> and MCAF1-SIM<sub>mut</sub> fused to GST are shown. Positions of the mutation (I to A, D to H) are underlined. Note that equal amounts of GST-MCAF1-SIM<sub>wt</sub> and GST-MCAF1-SIM<sub>mut</sub>, to be used for the assay in B, were immobilized on the beads. C, Bacterial lysate containing 0.01 mg/ml of GFP-SUMO (two columns of right) or GFP (two columns of left) was mixed with bead-immobilized GST-MCAF1-SIM<sub>wt</sub> (upper two columns) or the bead-immobilized GST-MCAF1-SIM<sub>mut</sub> (lower two columns). A GFP signal localized to the beads indicates a positive SUMO-SIM interaction (upper right column). The panel of the lower right corner of each column shows the phase-contrast images of the Sepharose beads.

Sさん、アミノ酸を示しているのが特徴ですね。画が凝ってますね。見やすく仕上がってます。

Aさん、青を基調として、図も写真も見やすいですね。



**B**

GST-MCAF1-SIMwt (G V I D L T M D D E E)  
 GST-MCAF1-SIMmut (G V A H L T M D D E E)

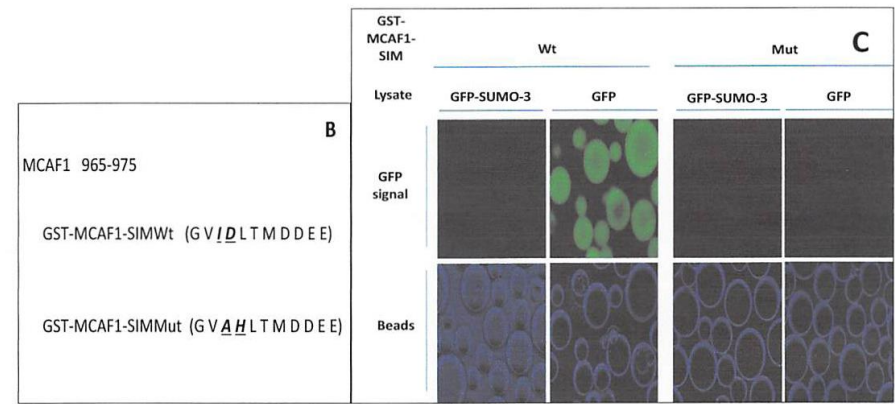
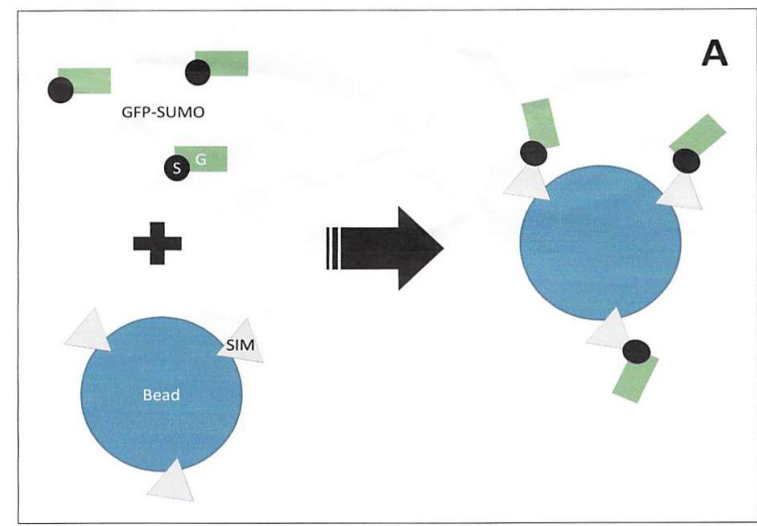
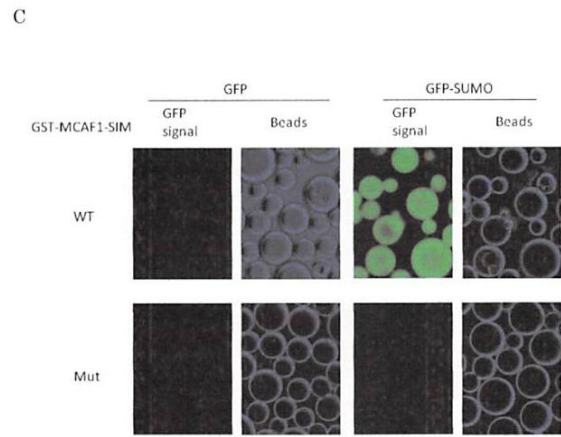


Fig1. Investigation of SUMO-SIM Interaction by Beads Halo Assay.  
 A, Schematic representation of the procedure for beads halo assay.  
 B, The entire amino acid sequences of MCAF1-SIM<sub>wt</sub> and MCAF1-SIM<sub>mut</sub> fused to GST are shown. The position of the mutation (I to A and D to H) are underlined.  
 C, Bacterial lysate containing 0.01 mg/ml of GFP-SUMO-3 (1<sup>st</sup> and 3<sup>rd</sup> columns) or GFP (2<sup>nd</sup> and 4<sup>th</sup> columns) was mixed with bead-immobilized GST-MCAF1-SIM<sub>wt</sub> (1<sup>st</sup> and 2<sup>nd</sup> columns) or GST-MCAF1-SIM<sub>mut</sub> (3<sup>rd</sup> and 4<sup>th</sup> columns). An aliquot of recombinant GFP-SUMO-3 or GFP resolved by SDS-PAGE and stained with CBB is shown. A GFP signal localized to the beads indicates a positive SUMO-SIM interaction (upper panels). Lower panels show the phase-contrast images of the Sepharose beads.

Fig.1. Detection of SUMO-SIM Interaction by Real-Time SUMO Binding Assay.  
 A, Schematic representation of the procedure for the real-time SUMO binding assay. B, The entire amino acid sequences of MCAF1-SIM<sub>wt</sub> and MCAF1-SIM<sub>mut</sub> fused to GST are shown. The position of the mutation (ID to AH) is underlined. C, Bacterial lysate containing GFP-SUMO or GFP was mixed with bead-immobilized GST-MCAF1-SIM<sub>wt</sub> or the bead-immobilized GST-MCAF1-SIM<sub>mut</sub>. A GFP signal localized to the beads indicates a positive SUMO-SIM interaction (upper panel). Lower panels show the phase-contrast images of the Sepharose beads.

Yさん、シンプルな図で、ビーズが大きく描かれているところが写実的です。BとCの並べ方も工夫が見られます。

Mさん、やわらかな色調で、見やすいですね。全体のバランスもいいです。