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**Supplemental information**

**Functional solubilization of the  $\beta_2$ -adrenoceptor  
using diisobutylene maleic acid**

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## Data S1.

ORF amino acid sequences for Twin-Strep-SNAP- $\beta_2$ AR and Twin-Strep-SNAP-A<sub>2A</sub>AR used in this study (relates to STAR methods/molecular biology)

Legend:

Signal peptide based on the 5HT3A receptor

Strep tag (TS)

SNAP tag

Linker

Human  $\beta_2$ AR

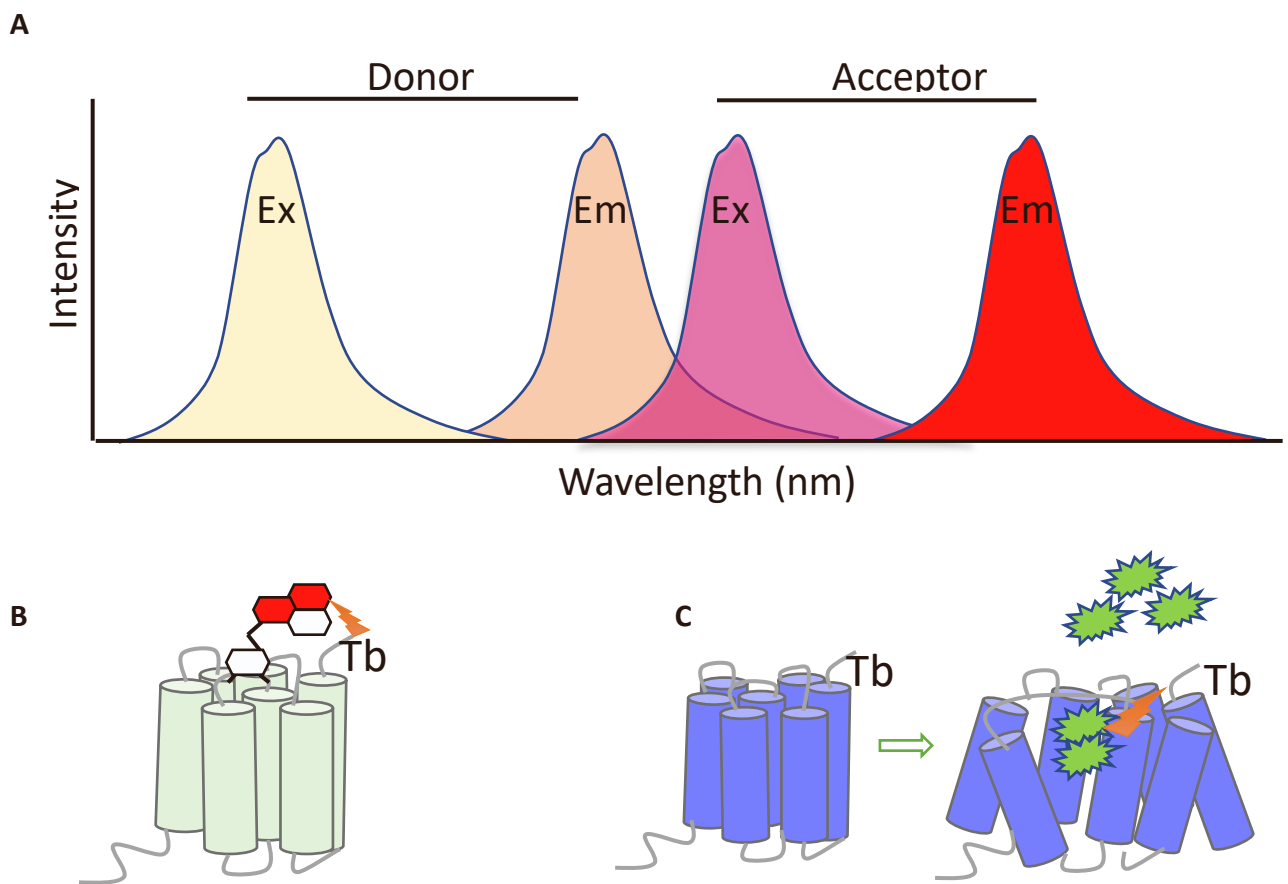
Human A<sub>2A</sub>

Amino acid sequence for Twin-Strep-SNAP- $\beta_2$ AR

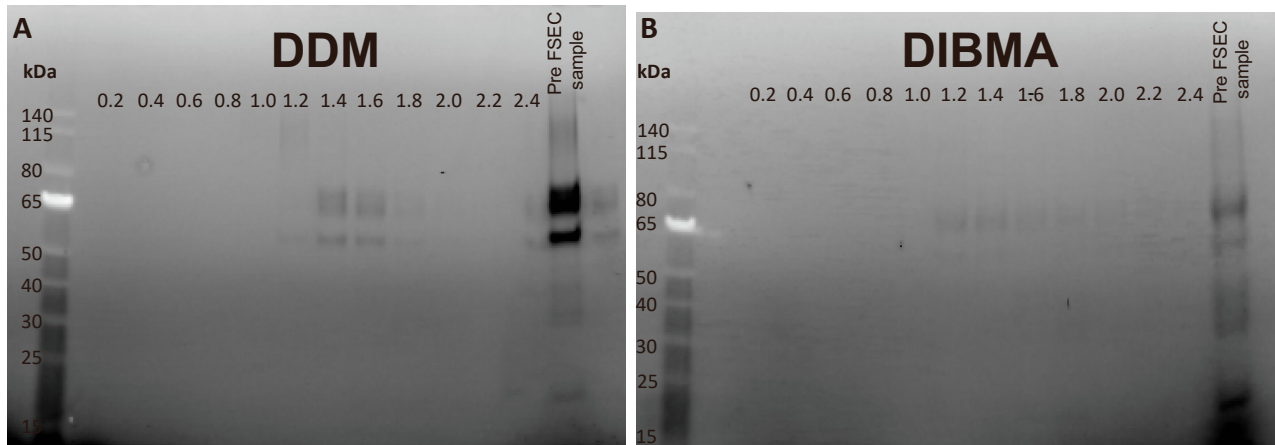
MRLCIPQVLLALFLSMLTGPGEKSASDI GAPAFKSVQTGEFTAAAGSAW**SH**PQ**FE**KGGGSGG  
GSGGSAW**SH**PQ**FE**KGGGSEDLMDKDC**EM**KRTTLD**S**PLGKLELSGCEQGLHRIIFLGKGTSA  
ADAVEVPAPAAVLGGPEPLMQATAWLNAYFHQPEAIEEFPVPALHHPV**F**Q**Q**ES**F**TRQVLWKL  
LKVV**K**FGEV**I**SYSHLAALAGNPAATAAVKTALSGNPV**P**IL**I**PCHR**V**VQGDLDVGGYEGGLAV  
KEWLLAHEGHRLGK**P**GL**P**AG**T**MG**Q**PG**N**GS**A**FL**L**AP**N**GS**H**AP**D**HD**V**T**Q**Q**R**DE**V**W**V**GM**G**I**V**M  
SLIVLAI**V**FG**N**VL**V**ITAI**A**K**F**ER**L**Q**T**V**T**NY**F**ITSLACADL**V**MGLAV**V**PF**G**AA**H**IL**M**K**M**W**T**FG  
N**F**W**C**EF**W**TS**I**D**V**LC**V**T**A**SI**E**TL**C**VI**A**DR**Y**FA**I**TS**P**FK**Y**Q**S**LL**T**KN**K**AR**V**I**I**LM**V**W**I**VS**G**LT  
S**F**LP**I**Q**M**H**W**Y**R**ATH**Q**E**A**IN**C**Y**A**NET**C**CD**F**FT**N**Q**A**Y**A**I**A**SS**I**VS**F**Y**V**PL**V**IM**V**F**V**Y**S**RV**F**Q**E**A  
K**R**Q**L**Q**K**ID**K**SE**G**RF**H**V**Q**NLS**Q**VE**Q**D**G**RT**G**H**L**RR**S**SK**F**CL**K**E**H**K**A**L**K**TL**G**I**M**GT**F**TL**C**W**L**P  
F**F**IV**N**I**V**H**V**I**Q**DN**L**IR**K**EV**Y**ILL**N**W**I**GY**V**NS**G**FN**P**LI**Y**CR**S**PD**F**RI**A**F**Q**ELL**C**LR**R**SS**L**K**A**Y  
G**N**GY**S**SN**G**NT**G**E**Q**SG**Y**H**V**E**Q**E**K**EN**K**LL**C**ED**L**PG**T**ED**F**V**G**H**Q**GT**V**PS**D**N**I**DS**Q**GR**N**C**S**T**N**DSL  
L\*

Amino acid sequence for Twin-Strep-SNAP-A<sub>2A</sub>

MRLCIPQVLLALFLSMLTGPGEKSASDI GAPAFKSVQTGEFTAAAGSAW**SH**PQ**FE**KGGGSGG  
GSGGSAW**SH**PQ**FE**KGGGSEDLMDKDC**EM**KRTTLD**S**PLGKLELSGCEQGLHRIIFLGKGTSA  
ADAVEVPAPAAVLGGPEPLMQATAWLNAYFHQPEAIEEFPVPALHHPV**F**Q**Q**ES**F**TRQVLWKL  
LKVV**K**FGEV**I**SYSHLAALAGNPAATAAVKTALSGNPV**P**IL**I**PCHR**V**VQGDLDVGGYEGGLAV  
KEWLLAHEGHRLGK**P**GL**P**AG**T**P**I**MG**S**SV**Y**IT**V**EL**A**I**A**VL**A**IL**G**N**V**L**V**C**W**AV**L**NS**N**L**Q**N**V**T  
NY**F**V**V**SL**A**AD**I**AV**G**V**L**A**I**PF**A**IT**I**ST**G**FC**A**ACH**G**CL**F**I**A**CF**V**L**V**LT**Q**SS**I**F**S**LL**A**I**A**ID**R**Y  
I**A**IR**I**PL**R**Y**N**GL**V**T**G**TR**A**K**G**I**I**A**I**C**W**VL**S**FA**I**GL**T**P**M**L**G**W**N**NC**G**Q**P**KE**G**KN**H**S**Q**GC**G**E**G**Q**V**A  
CL**F**ED**V**VP**M**NY**M**V**Y**FN**F**AC**V**LV**P**LL**L**ML**G**V**Y**LR**I**FL**A**ARR**Q**L**K**Q**M**ES**Q**PL**P**GER**A**R**S**T**L**Q**K**  
E**V**HA**A**K**S**L**A**I**I**V**G**L**F**AL**C**WL**P**L**H**I**I**NC**F**TF**F**CP**D**C**S**H**A**PL**W**LM**Y**L**A**I**V**LS**H**T**N**SV**V**NP**F**I**Y**A  
Y**R**I**R**E**F**R**Q**T**F**R**K**I**I**R**S**H**V**LR**Q**Q**E**PF**K**AA**G**TS**A**RV**L**AA**H**GS**D**GE**Q**V**S**LR**L**NG**H**PP**G**V**W**ANG**S**A  
P**H**P**E**RR**P**NG**Y**AL**G**LV**S**GG**S**A**Q**ES**Q**NT**G**LP**D**VEL**L**S**H**EL**K**GV**C**PE**P**P**L**DD**P**LA**Q**D**G**AG**V**S\*



**Supplementary figure 1: A summary of Förster Resonance Energy Transfer and its application in this study, A)** FRET occurs when the emission spectra of a donor fluorophore overlaps with the excitation spectra of an acceptor fluorophore therefore exciting the acceptor fluorophore when the pair are in close proximity **B)** Time resolved FRET between Lumi4-terbium of the N terminus of the  $\beta_2$ AR and fluorescent propranolol was used to measure ligand binding, figures 2-3. **C)** Time resolved FRET between Lumi4-terbium on the N terminus of the  $\beta_2$ AR and F-L L-cysteine dye, which bound the cysteines exposed upon unfolding of the core of the  $\beta_2$ AR was used to measure thermostability, Figure 4.



**Supplementary figure 2:** Confirmation of FSEC fractions (figure 1C) by in gel fluorescence (cy2). Representative example of n=3.