

Literature Report


















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Super-resolution microscopy compatible fluorescent probes reveal endogenous glucagon-like peptide-1 receptor distribution and dynamics

Julia Ast ^{1,2}, Anastasia Arvaniti^{1,2}, Nicholas H.F. Fine ^{1,2}, Daniela Nasteska ^{1,2}, Fiona B. Ashford^{1,2}, Zania Stamatakis ³, Zsombor Koszegi^{1,2}, Andrea Bacon⁴, Ben J. Jones⁵, Maria A. Lucey⁵, Shugo Sasaki ⁶, Daniel I. Brierley ⁷, Benoit Hastoy ⁸, Alejandra Tomas⁹, Giuseppe D'Agostino ¹⁰, Frank Reimann ¹¹, Francis C. Lynn ⁶, Christopher A. Reissaus¹², Amelia K. Linnemann ¹², Elisa D'Este¹³, Davide Calebiro ^{1,2}, Stefan Trapp ⁷, Kai Johnsson ¹⁴, Tom Podewin ^{14*}, Johannes Broichhagen ^{14*} & David J. Hodson ^{1,2*}

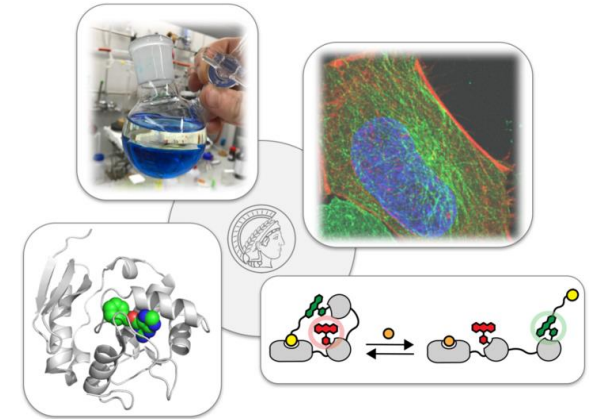


Tom Podewin



Johannes Broichhagen

Department of Chemical Biology
@ MPI for Medical Research



Development of semisynthetic fluorescent sensor proteins to measure key metabolites in living cells.
Development and application of methods for characterizing protein-protein interactions.
Generation of small molecules for controlling protein function in living cells.
Engineering of new protein functions for applications in functional proteomics.
Synthesis of new spectroscopic probes for applications in cell biology.
Mechanistic studies on drug candidates.

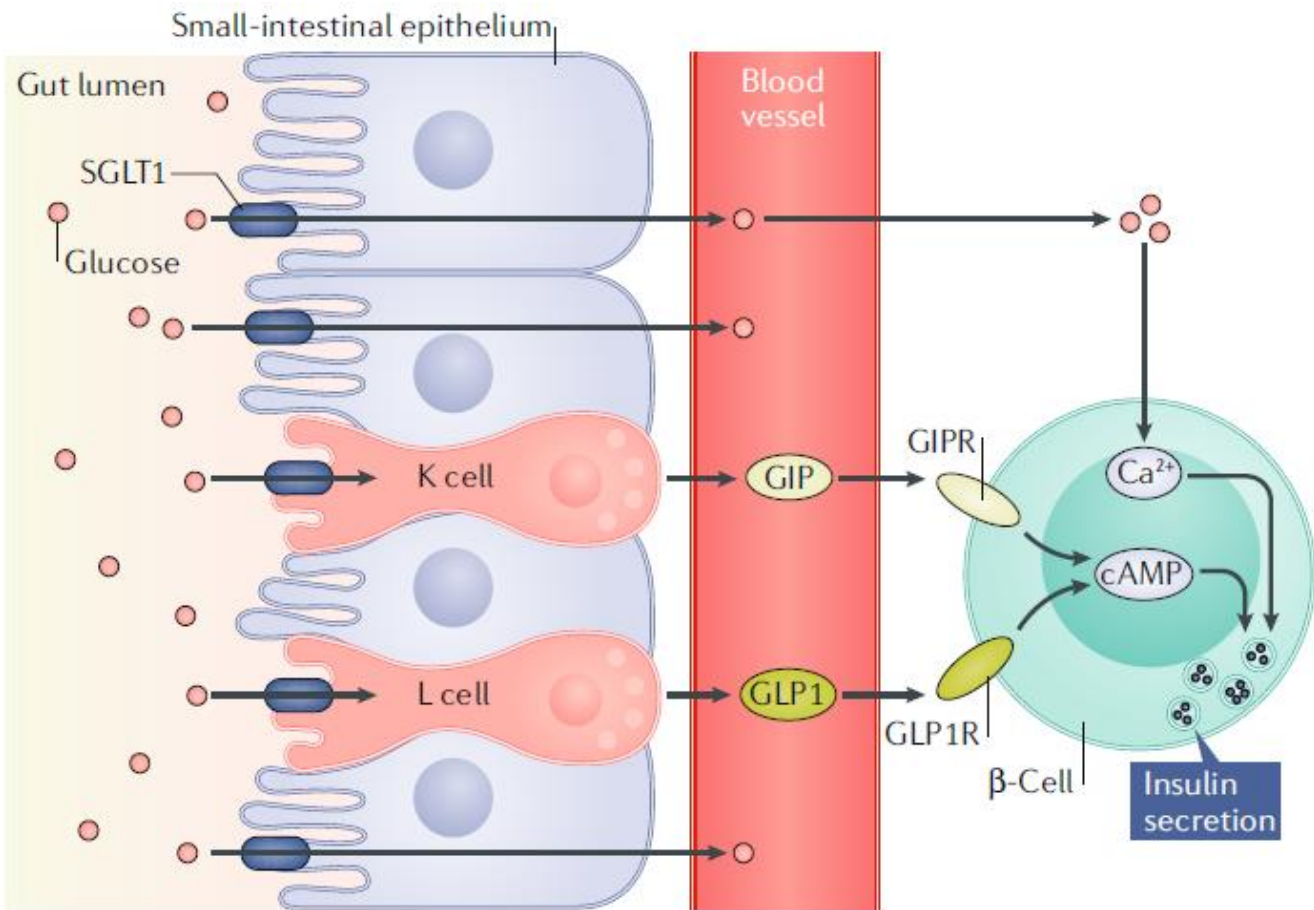


David J. Hodson

Institute of Metabolism and Systems Research @ University of Birmingham

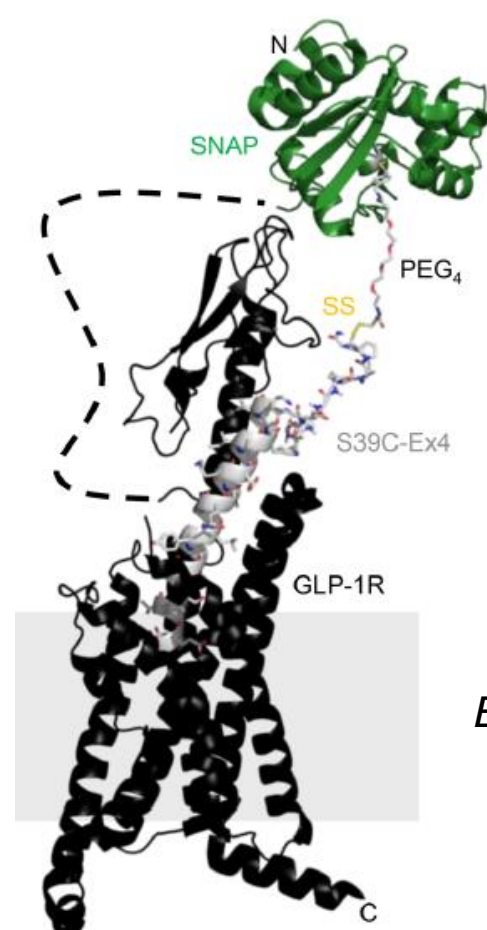
Research revolves around the use of sophisticated imaging modalities (e.g. high-speed multibeam, two-photon, super-resolution), combined with chemical biology, recombinant technologies and genetic manipulation, to interrogate and decipher the population basis for hormone secretion from endocrine tissues in situ and in vivo.

GLP1R :胰高血糖素样肽-1受体

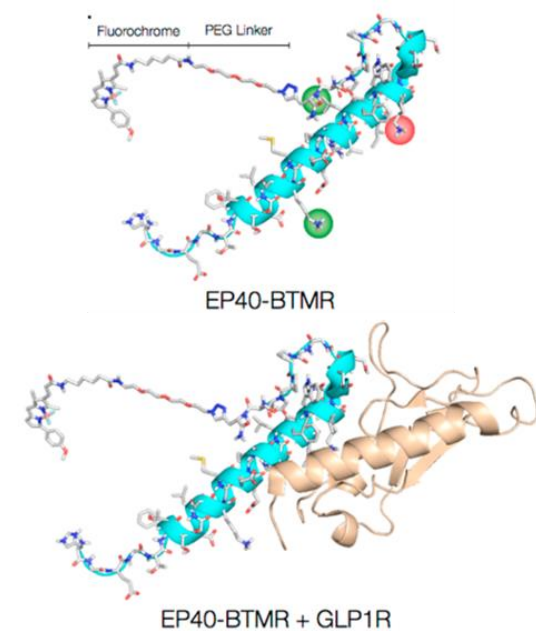


Nat. Rev. Endocrinol. 2019, 15, 226–237.

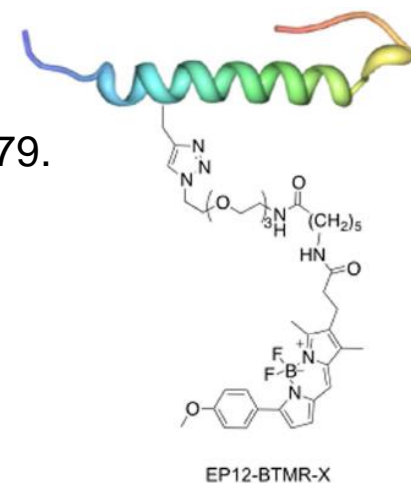
Exendin4: GLP1类似物



ACS Cent. Sci. 2018, 4, 166–179.



Bioconjug. Chem. 2013, 25, 171–177.



Sci.Rep. 2015, 5, 13681₄

LUXendin系列探针的设计

Exendin4 (9-39) H₂N- D LSKQM EEEAV RLFIE WLKNG GPSSG APPPS -NH₂
 S39C_Ex4 (9-39) H₂N- D LSKQM EEEAV RLFIE WLKNG GPSSG APPPC -NH₂

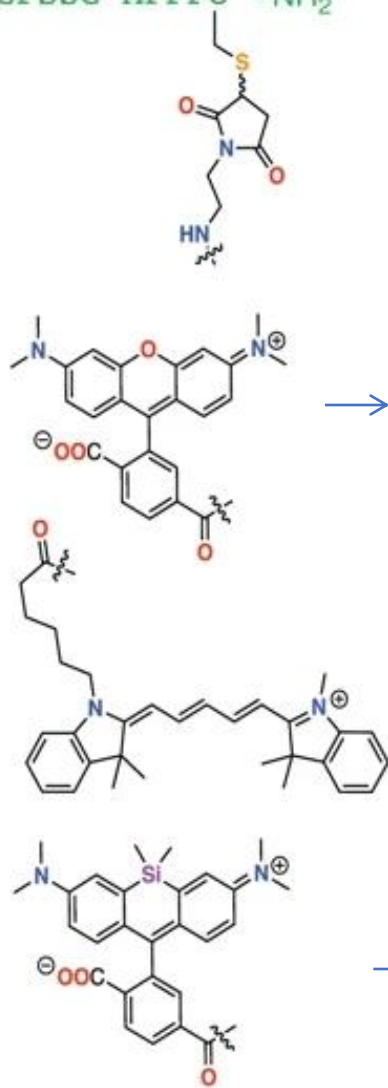
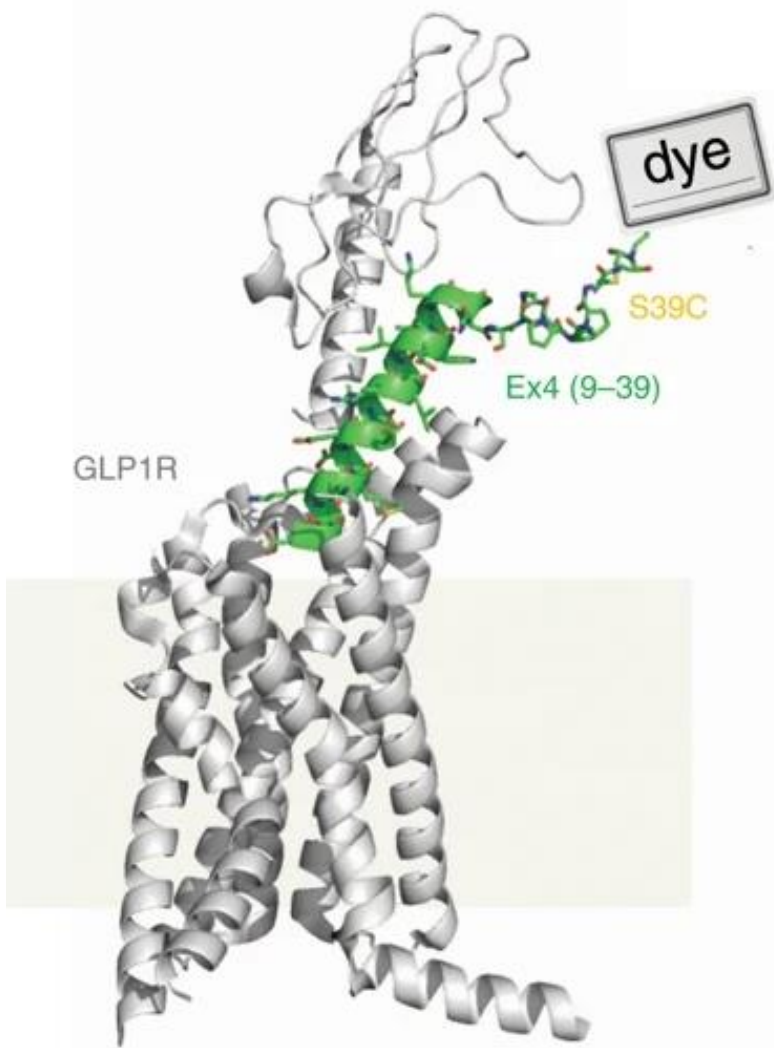


Table 1 Spectral properties of GLP1R labeling probes.

	Dye	λ_{Ex} (nm)	λ_{Em} (nm)	ϵ^a (M ⁻¹ cm ⁻¹)	Φ
LUXendin555	TMR	555	579	84,000	0.31
LUXendin645	Cy5	645	664	250,000	0.22
LUXendin651	SiR	651	669	100,000	0.43

Maximal excitation and emission wavelengths, and quantum yields were acquired using probes dissolved at 10 μ M in PBS, pH 7.4 at 21 °C
^aFor maleimide-conjugated fluorophores

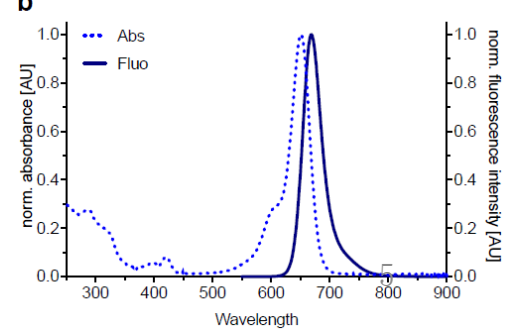
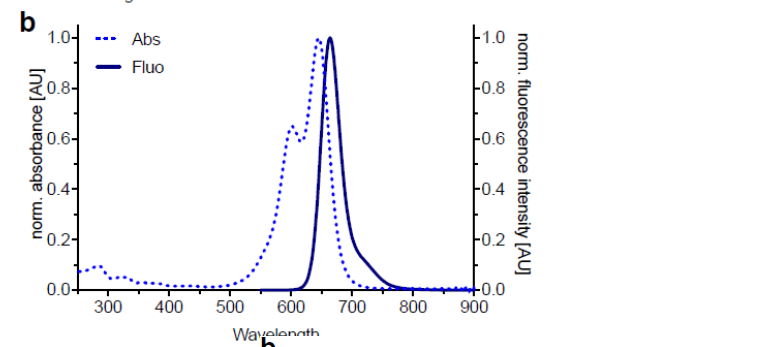
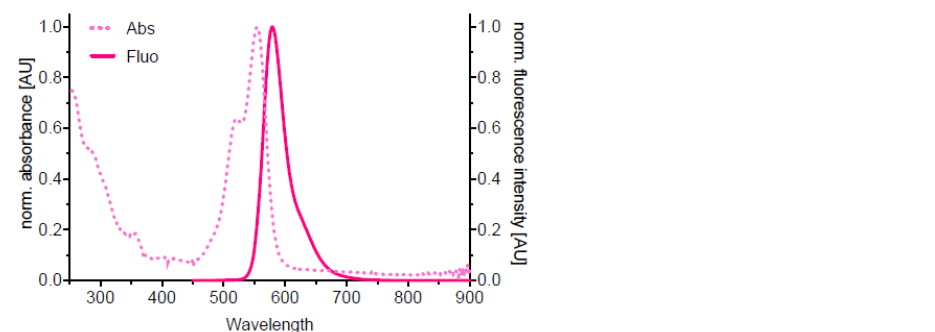


Fig. 1 Sequence and structure of LUXendin555, LUXendin645, and LUXendin651.

LUXendin645在细胞和组织中标记GLP1R

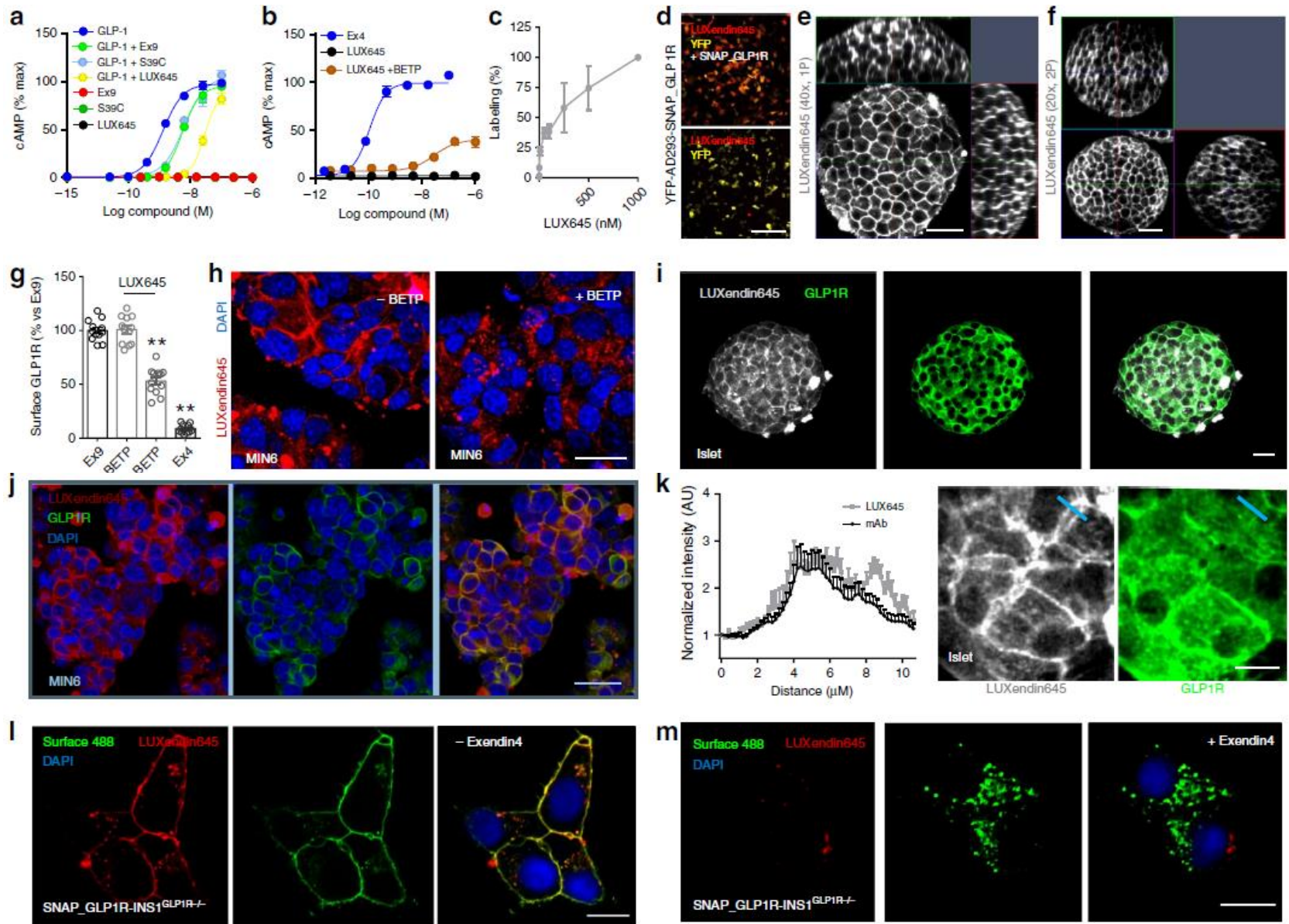


Fig. 2 LUXendin645 binding, signaling, and labeling.

LUXendin645标记GLP1R的特异性

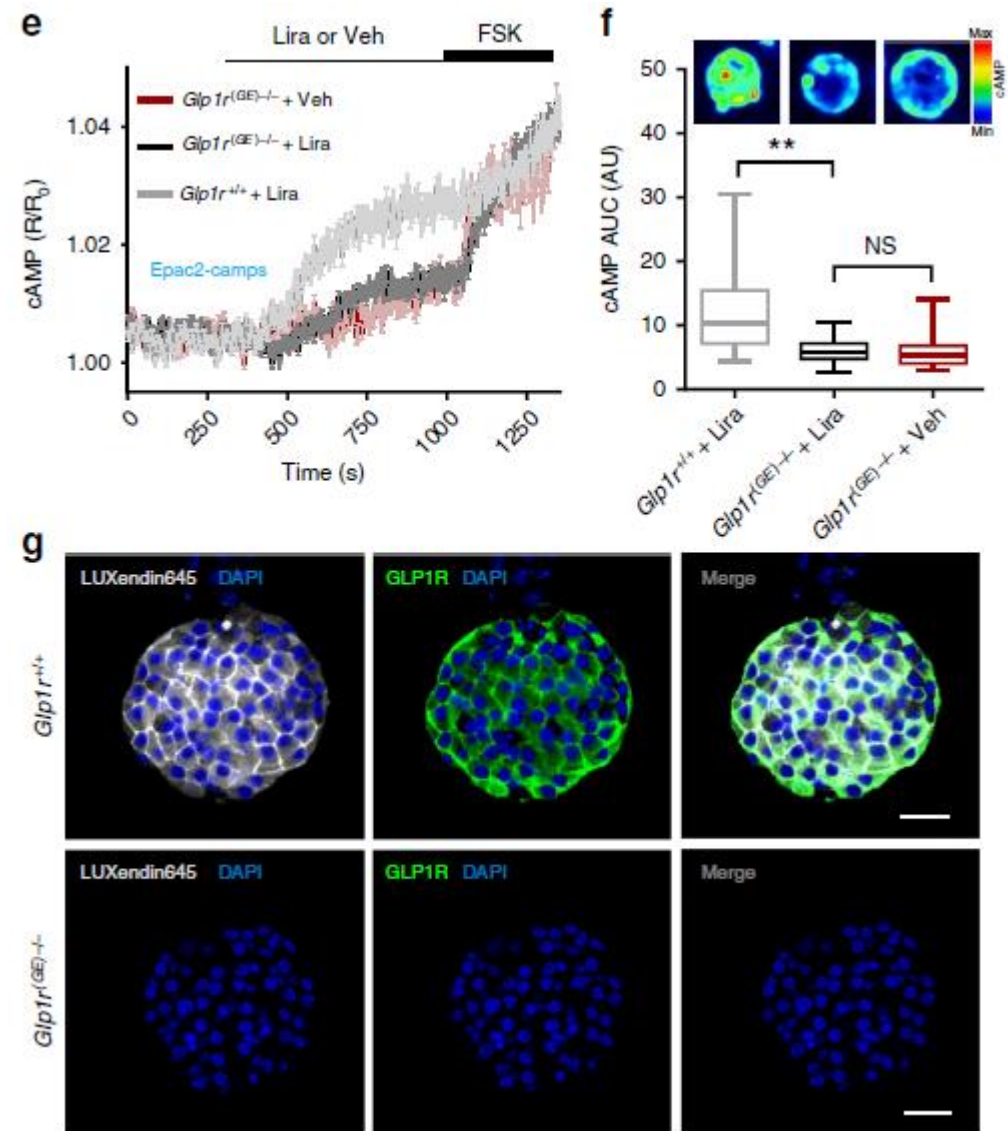
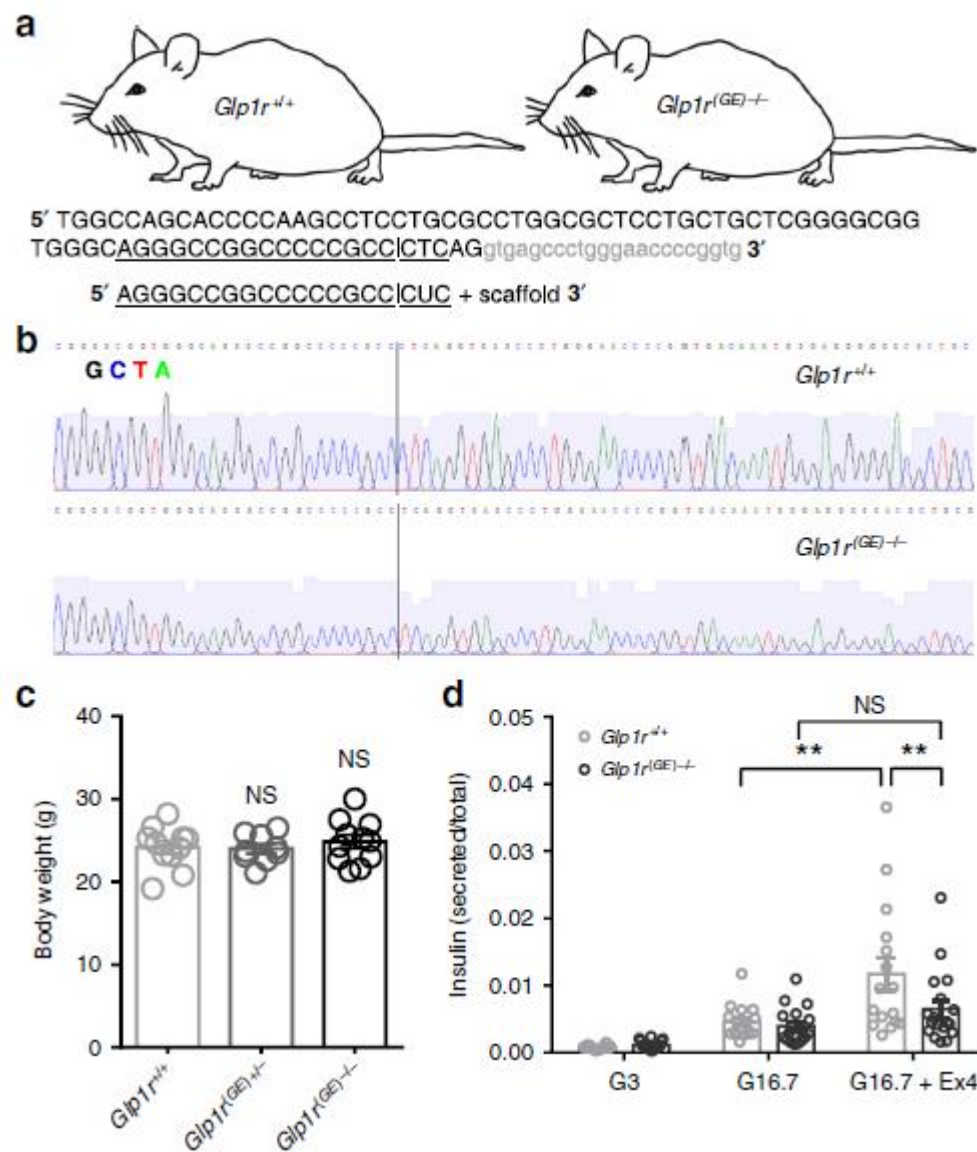


Fig. 3 LUXendin645 is highly specific for the GLP1R.

LUXendin645突出标记弱GLP1R表达

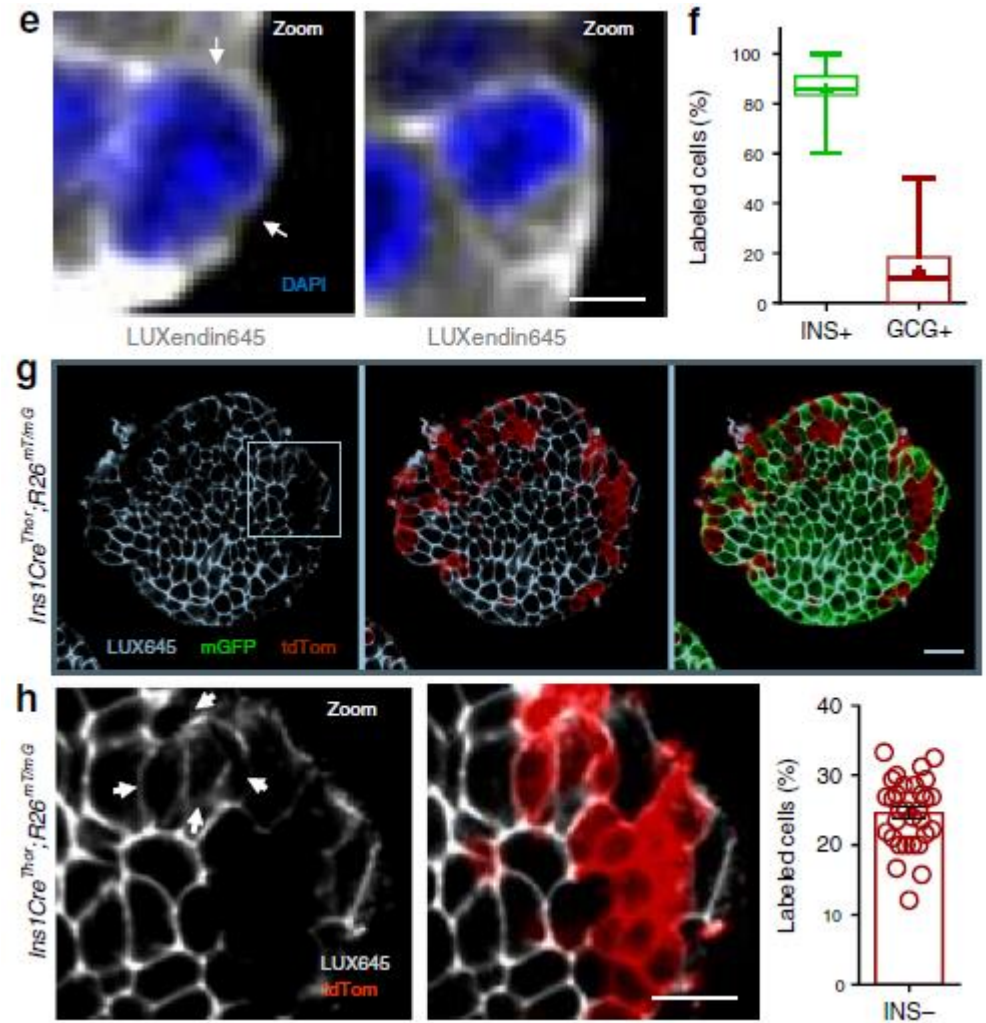
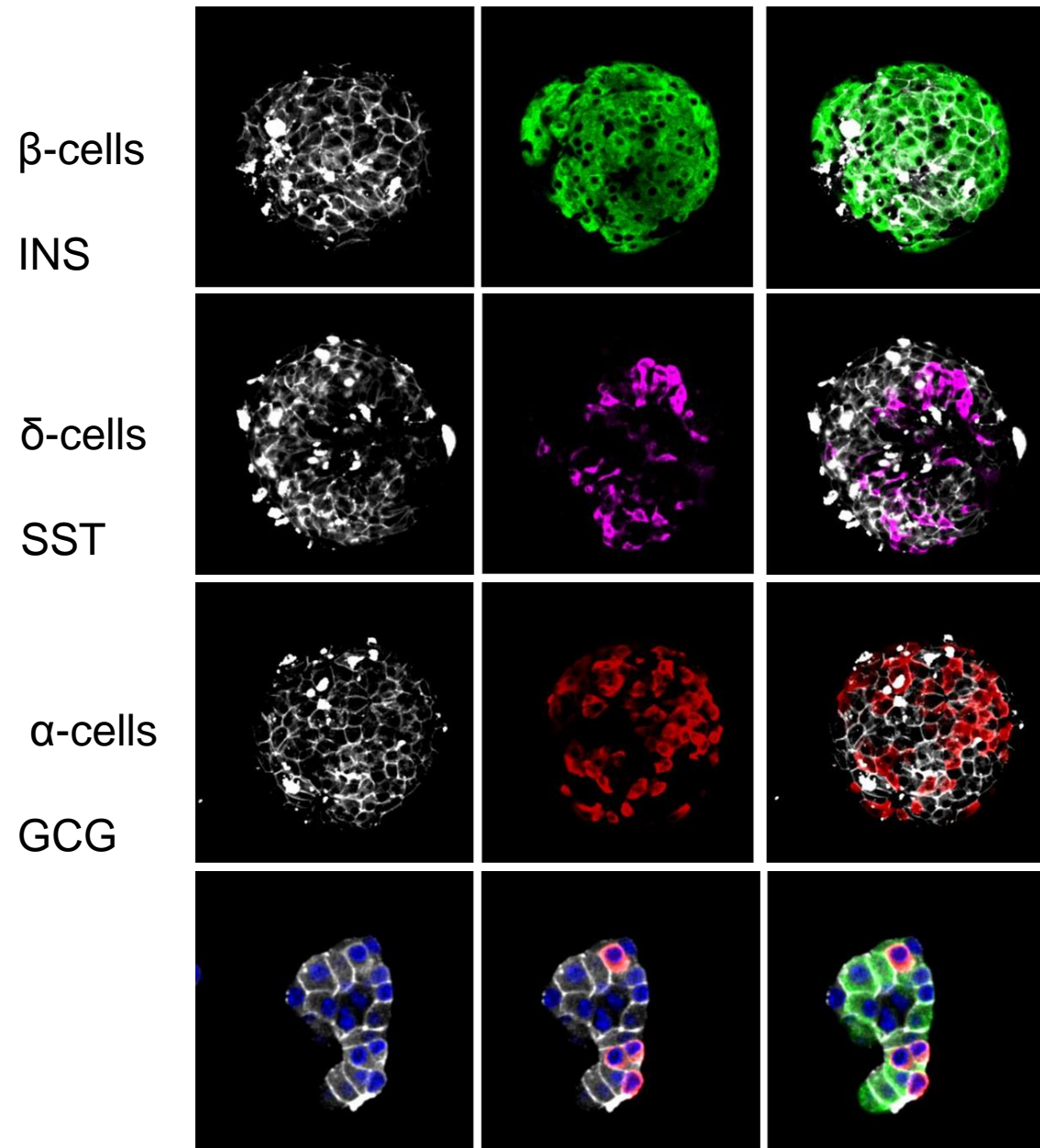


Fig. 4 LUXendin645 reveals GLP1R expression in a subpopulation of α -cells.

LUX651和LUX645允许对GLP1R进行纳米级检测

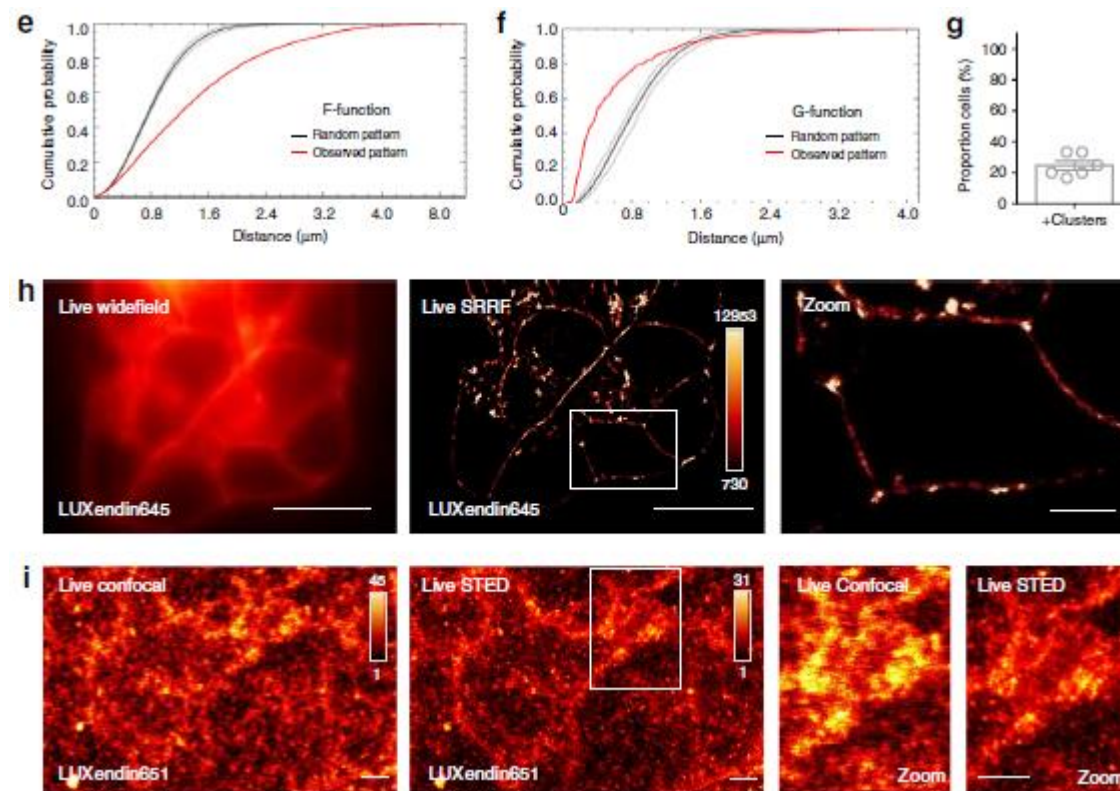
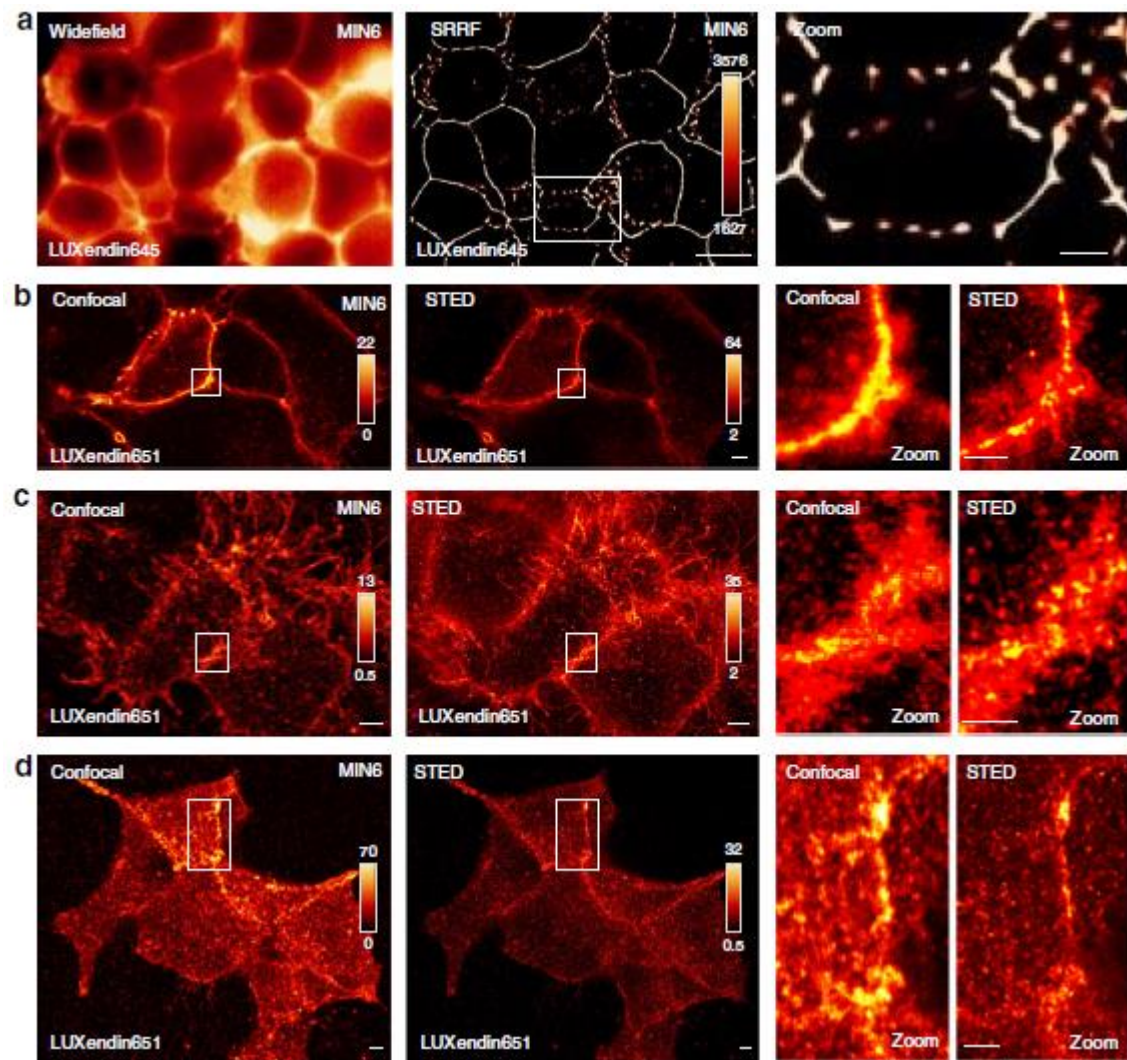


Fig. 5: LUXendin651 and LUXendin645 allow nanoscopic detection of GLP1R.

LUX645和LUX651标记单个GLP1R分子

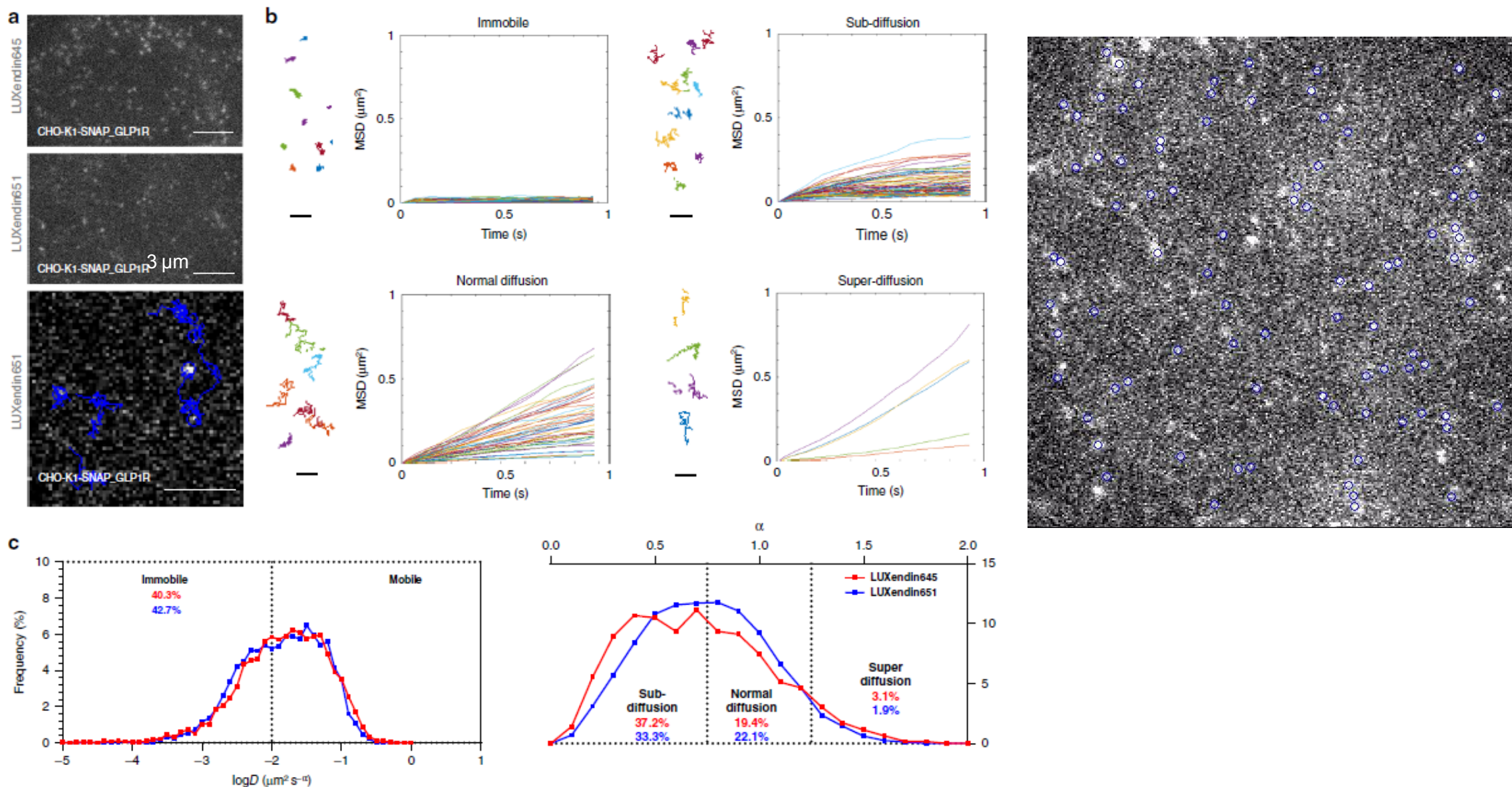


Fig. 6: LUXendin645 and LUXendin651 allow single molecule GLP1R imaging.

LUX645 允许脑部GLP1靶点的可视化

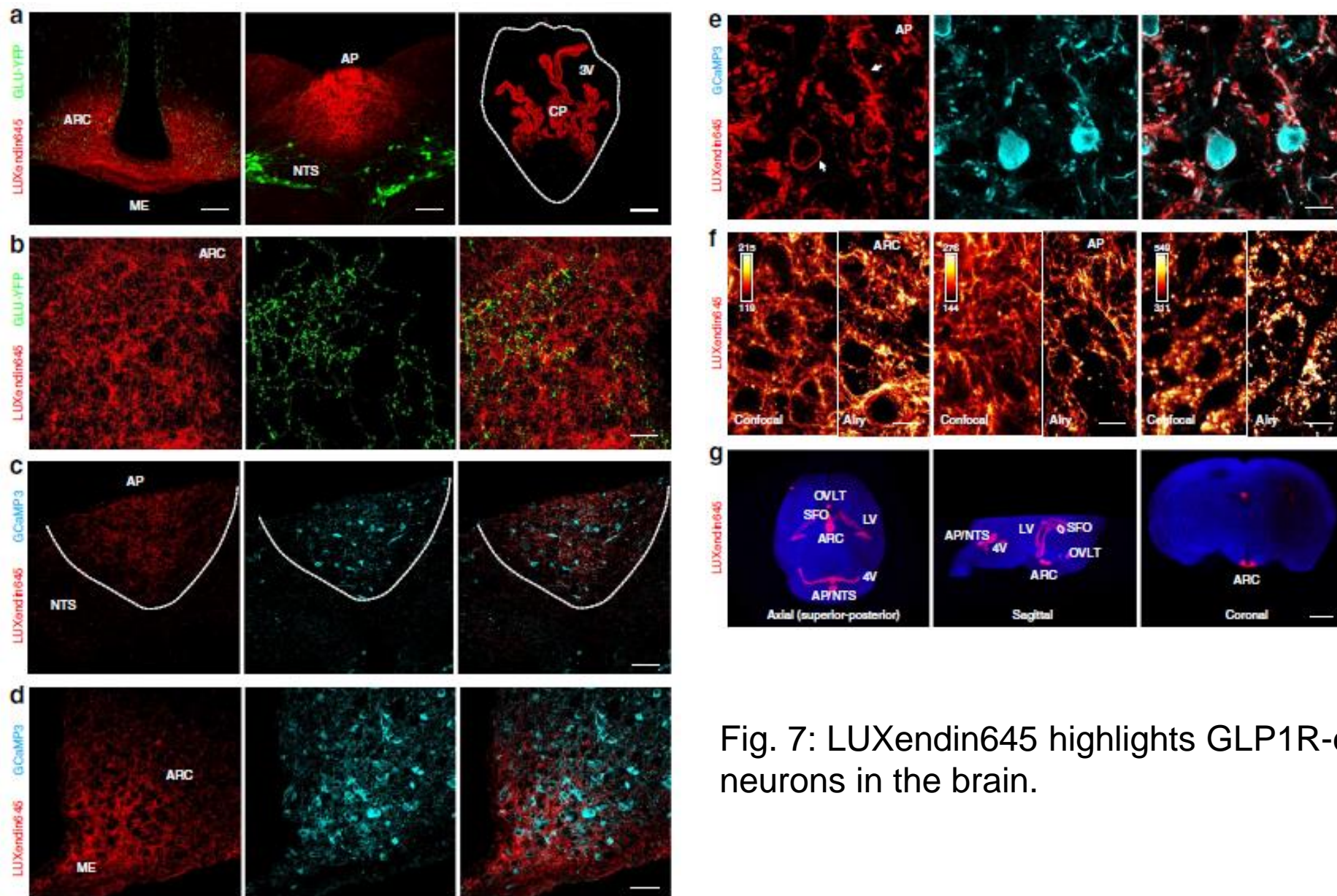


Fig. 7: LUXendin645 highlights GLP1R-expressing neurons in the brain.

LUX645标记hESC衍生的β细胞中的GLP1R

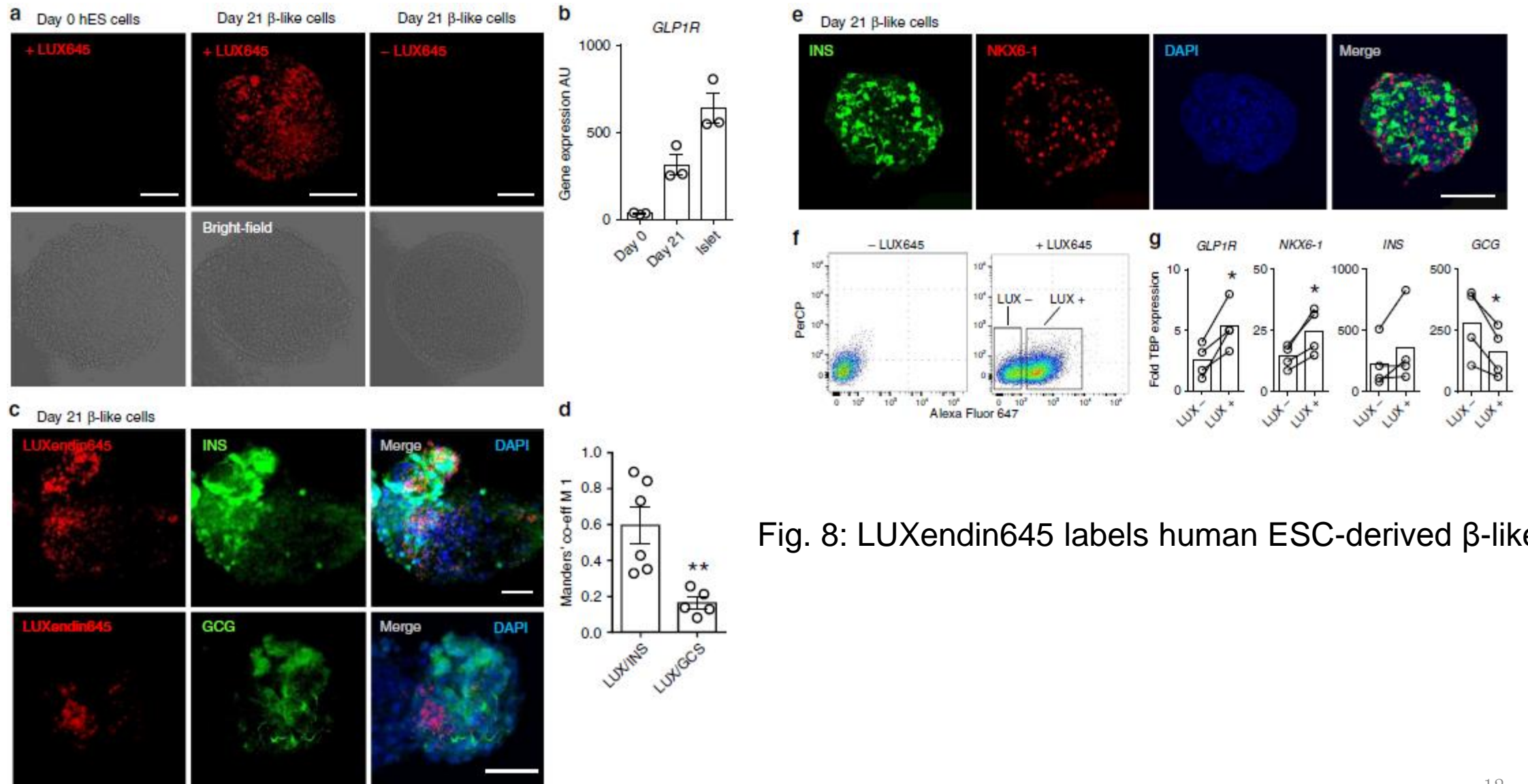


Fig. 8: LUXendin645 labels human ESC-derived β-like cells.

LUX555标记活体胰岛

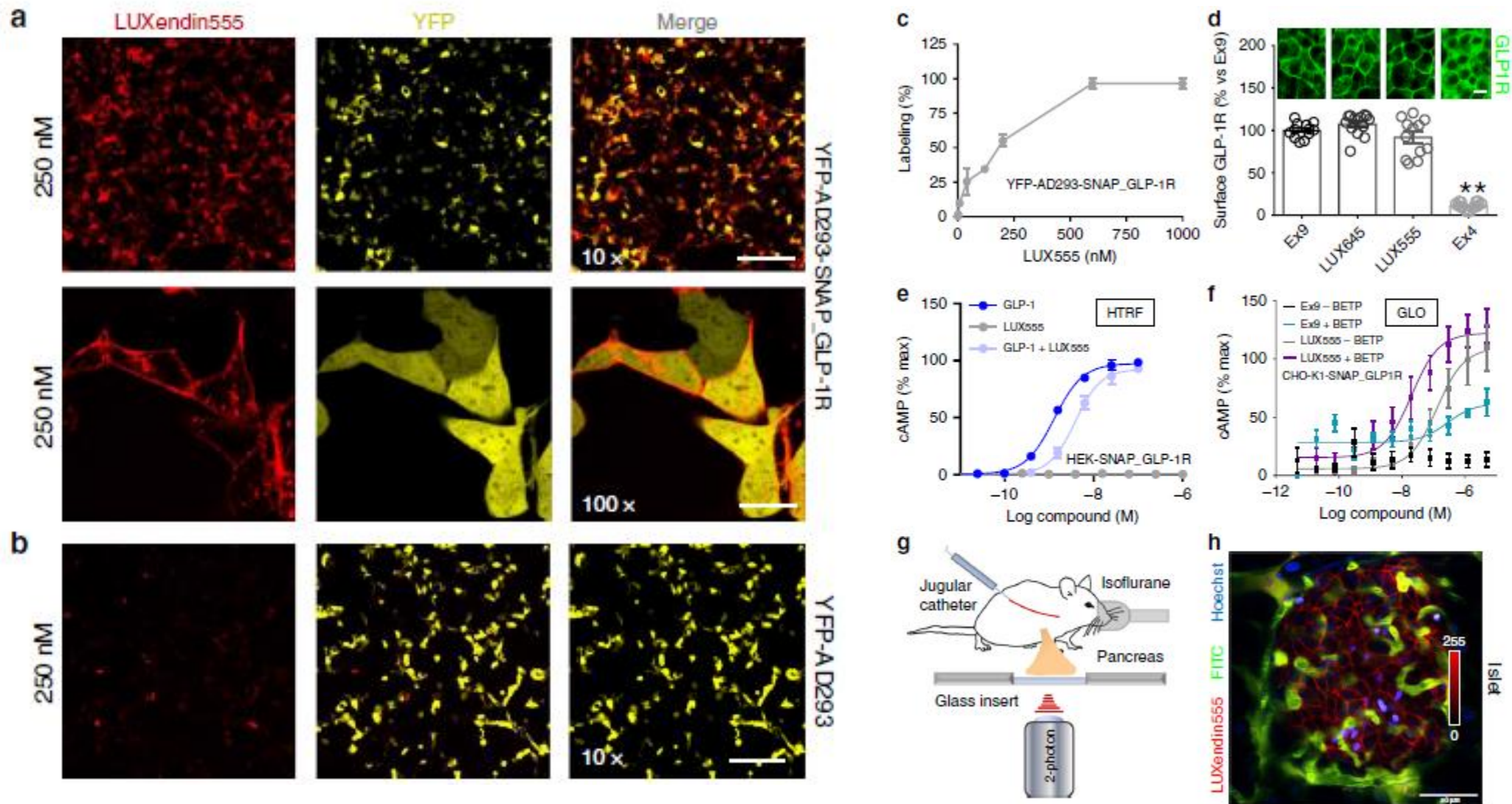


Fig. 9: LUXendin555 allows in vivo labeling of islets.