ARTICLE

A [illegible]

Fed

Starved

c

0

ATG13 SEC16 Merged

d

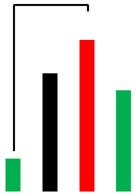
ATG13 SEC16 Merged

[illegible] 41. [illegible]

[illegible] 42. [illegible]

[illegible] (Fig 1), [illegible]

[illegible] (Fig 1), [illegible]



[illegible] [50]. [illegible] (Fig. 6b). [illegible] (Fig. 6b).

[illegible] C.

[illegible]

[illegible] 2030 [illegible] 6070 [illegible] [14,25], [illegible] o 50 [illegible] (Fig. 7a). [illegible] (Fig. 7b). [illegible] (Fig. 7a), [illegible] 200 [illegible] a

ATG13

[illegible][23,24]

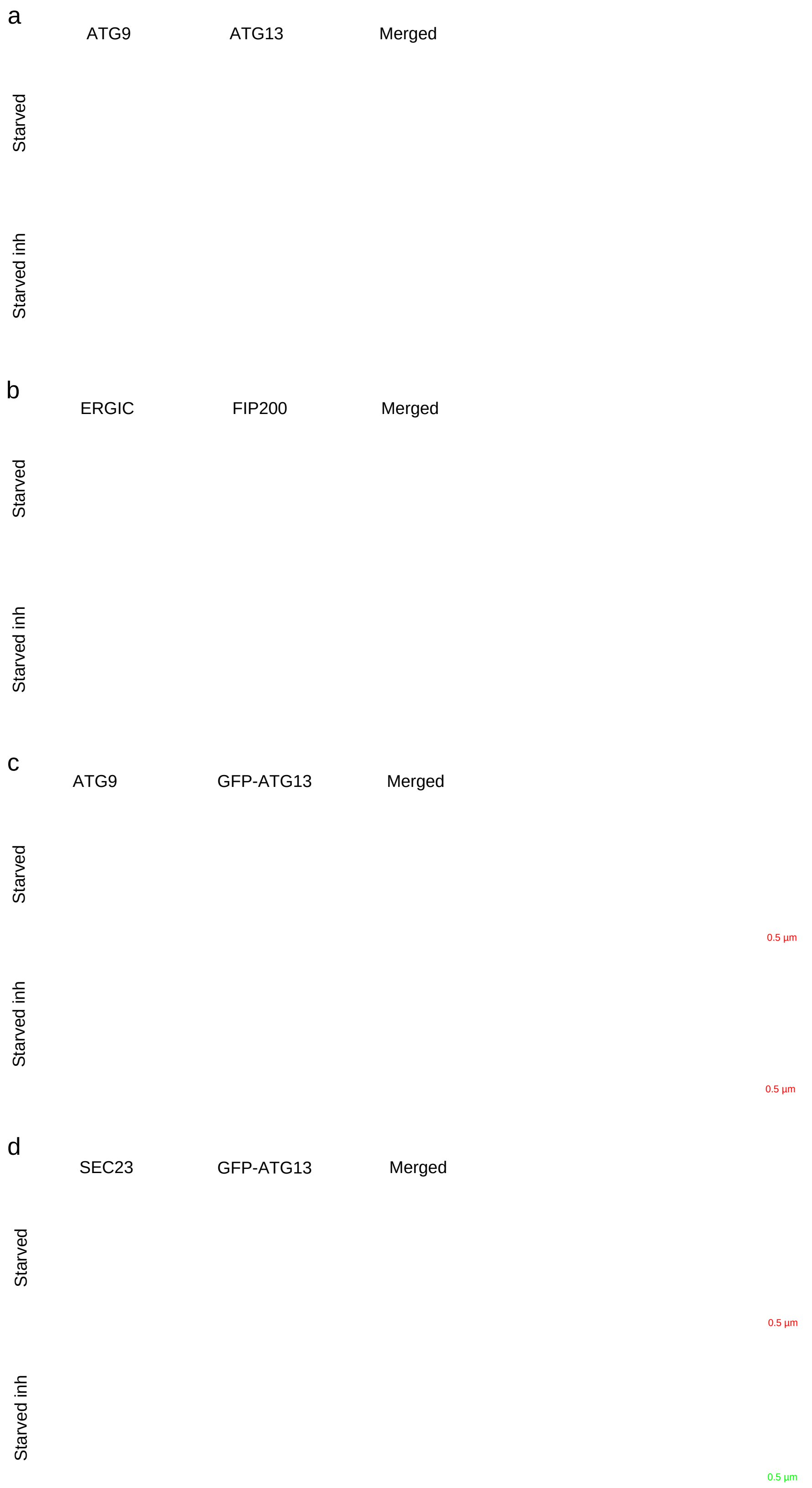


Figure 7 | A [illegible] ATG9 [illegible] ERGIC [illegible]. (**a**,**b**) HEK293 cells were starved in the presence or absence of VPS34 inhibitor for 1 h, immunolabelled for ATG13 and ATG9 (**a**) or FIP200 and ERGIC53 (**b**), and imaged by dSTORM. (,) HEK293 cells stably expressing GFP-ATG13 were starved in the presence or absence of Vps34 inhibitor for 1 h, immunolabelled for ATG13 and ATG9 ( ) or SEC23 ( ), and imaged by dSTORM. Conventional images and super-resolution magnifications are shown. Scale bars in wide-field images: 5 µm. Scale bars in super-resolution images, 0.5 µm.

Merge ATG13 ER i

Merge ATG13 ER i

Merge ATG13 ER

Merged ATG13 ER ii

z1

Merge ATG13 ER ii

z1

Merged ATG13 ER ii

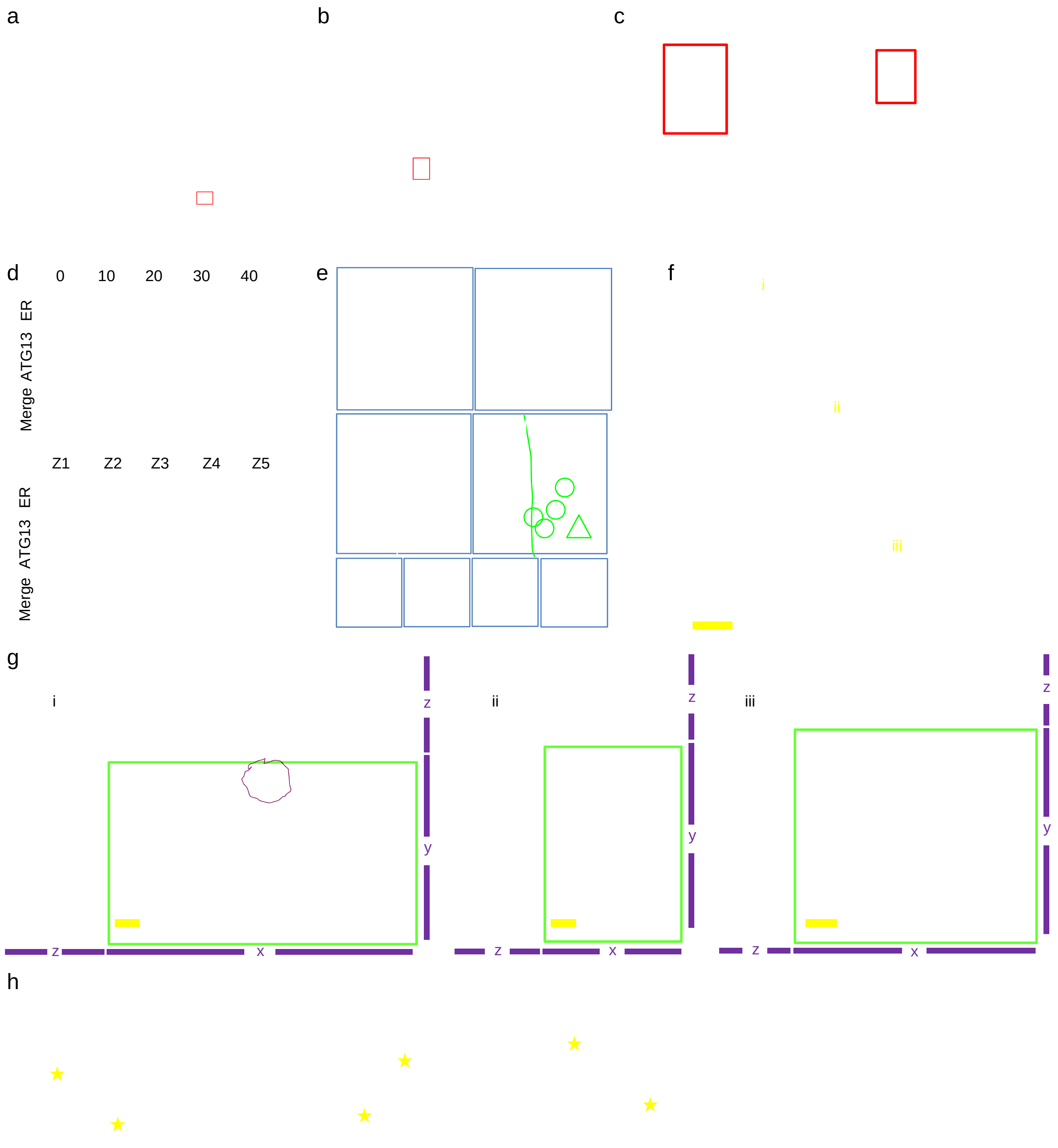
z1

iii

iii

[illegible]

[illegible]


a
b
c
d
0
10
20
30
40
ER
ATG13
Merge
Z1
Z2
Z3
Z4
Z5
ER
ATG13
Merge
e
f
i
ii
iii
g
i
z
y
z
x
ii
z
y
z
x
iii
z
y
z
x
h

[illegible]

D[illegible]n

[illegible] [14,32,51,52] [illegible] [16] [illegible]

[illegible] [13,32,53] [illegible] 50 [illegible] (Fig. 7a) [illegible] (Fig. 10) [illegible] (Fig. 7a) [illegible] [54] [illegible] (Fig. 6a [illegible]

[illegible] [55] [illegible] [56] [illegible] [53] [illegible] [14] [illegible] [57]

[illegible] (Fig. 7 [illegible] 8) [illegible] [23,24] [illegible] [16]

[illegible] [22,35] [illegible] [8,16] [illegible] [60] [illegible] [11,51] [illegible]

[illegible]

[illegible] 10 [illegible] ATG13 [illegible] ER. HEK293 cells stably expressing GFP-ATG13 and transiently expressing mCherry-dgk1 (ER marker) were starved, subjected to live-cell imaging by wide-field microscopy and fixed on stage. (**a**) Fluorescent images of the frame capture just before the fixation, 100 and 10 DIC images of the fixed cells are shown. Red box in 10 DIC image indicates the cell of interest. (**b**) Image of the resin-embedded sample. Cell of interest located in red box. ( ) Resin blocks were trimmed down to a block face of 1 mm^2 and mounted on stub for imaging in an Auriga focused ion beam scanning electron microscopy (FIB-SEM, Carl Zeiss). Overview images before (left) and after milling (right) indicating the cell of interest with a red box. ( ) Montage of an ATG13 particle formation from the live-cell imaging step and stacks after fixation (particle ii in). ( ) Overlays of light and electron microscopy images. Light and electron microscopy images were correlated using landmarks identified in both (shown in white and green lines, circles and triangles). ( ) Three-dimensional (3D) opacity rendering of the FIB-SEM image stack. The areas outlined in red within the green boxes indicate ATG13 particles. Particle ii is the one that could be traced throughout the experiment and was identified in both live-cell and FIB-SEM imaging. ATG13 Particles in boxes i and iii could be identified from the wide-field and fluorescence image, but their provenance by live imaging could not because they were on a different focal plane from particle ii. ( ) Magnification of the area within the green boxes in (i–iii). Shown are the view from the middle of the ATG13 signal, and orthogonal and views along the thin white lines. ( ) 3D Opacity rendering of the cropped FIB-SEM stacks in with overlay of the ATG13 signal (red). Rendered in green are the membranes detected in the FIB-SEM stack that are in proximity of the ATG13 particle. Stars indicate mitochondrial membranes. Bars: 10 µm (**a**), 50 µm (**b**), 5 µm ( ), 1 µm ( ) and 0.25 µm ( ).

gead Ceb f g

[illegible]

STORM [illegible]

22. [illegible] **24,** 29182931 (2013).
23. [illegible] **2,** θ0947 (2013).
24. [illegible] **3,** θ4135 (2014).
25. [illegible] **135,** 1935 (1996).
26. [illegible] (3) [illegible] *A* **7,** 1726 (2011).
27. [illegible] *A* . . *A* **2012,** 69816986 (2012).
28. [illegible] *A* . . *A* **110,** 98009805 (2013).
29. [illegible] *A* . . *A* **107,** 78117816 (2010).
30. [illegible] *A* . . *A* **110,** 1943219437 (2013).
31. [illegible] **11** , 38883900 (2006).
32. [illegible] **23,** 18601873 (2012).
33. [illegible] **287,** 4426144269 (2012).
34. [illegible] **12,** 209218 (2007).
35. [illegible] **126,** 25342544 (2013).
36. [illegible] **36,** 585595 (2015).
37. [illegible] *A* **7,** 14241433 (2011).
38. [illegible] **15,** 14391447 (2005).
39. [illegible] **11** , 21732183 (2006).
40. [illegible] , 731738 (2013).
41. [illegible] **26,** 348364 (2011).
42. [illegible] **185,** 305321 (2009).
43. [illegible]