

# Anti-Paxillin antibody [Y113]

Anti-Paxillin antibody [Y113] (ab32084) is a rabbit monoclonal antibody detecting Paxillin in **Western Blot, Flow Cytometry (Intra), IP, IHC-P, ICC/IF**. Suitable for **Human, Mouse**.

- KO validated for confirmed specificity
- Biophysical QC for unrivalled batch-batch consistency
- Over 210 publications
- Trusted since 2006

Recombinant

RabMAb

KO Validated

20ul selling size

## Key facts

|                        |                                                                                                                      |
|------------------------|----------------------------------------------------------------------------------------------------------------------|
| Isotype                | IgG                                                                                                                  |
| Host species           | Rabbit                                                                                                               |
| Storage buffer         | pH: 7.2 - 7.4 Preservative: 0.01% Sodium azide Constituents: PBS, 40% Glycerol (glycerin, glycerine), 0.05% BSA      |
| Form                   | Liquid                                                                                                               |
| Clonality              | Monoclonal                                                                                                           |
| Immunogen              | The exact immunogen used to generate this antibody is proprietary information.                                       |
| Clone number           | Y113                                                                                                                 |
| Purification technique | Affinity purification Protein A                                                                                      |
| Specificity            | This antibody recognises Paxillin alpha, beta and gamma isoforms.                                                    |
| Dissociation constant  | 4.17 x 10 <sup>-10</sup> M                                                                                           |
| Concentration          | 0.147 mg/mL The concentration of this product may be batch-dependent<br><a href="#">Batch concentration finder</a> → |

## Reactivity data

IHC-P

Tested

|               |                                                                                                                |
|---------------|----------------------------------------------------------------------------------------------------------------|
| Species       | Human                                                                                                          |
| Dilution info | 1/1200                                                                                                         |
| Notes         | Perform heat-mediated antigen retrieval with citrate buffer pH 6 before commencing with IHC staining protocol. |

Expected

|               |                                          |
|---------------|------------------------------------------|
| Species       | Mouse                                    |
| Dilution info | Use at an assay dependent concentration. |
| Notes         | -                                        |

Predicted

|               |     |
|---------------|-----|
| Species       | Dog |
| Dilution info | -   |
| Notes         | -   |

IP

Tested

|               |       |
|---------------|-------|
| Species       | Human |
| Dilution info | 1/20  |
| Notes         | -     |

Expected

|               |                                          |
|---------------|------------------------------------------|
| Species       | Mouse                                    |
| Dilution info | Use at an assay dependent concentration. |
| Notes         | -                                        |

Predicted

|               |     |
|---------------|-----|
| Species       | Dog |
| Dilution info | -   |
| Notes         | -   |

## WB

|               |                                                |
|---------------|------------------------------------------------|
| Tested        |                                                |
| Species       | Mouse                                          |
| Dilution info | 1/1000                                         |
| Notes         | <b>For unpurified use at 1/5000 - 1/10000.</b> |

---

|               |                                                |
|---------------|------------------------------------------------|
| Species       | Human                                          |
| Dilution info | 1/1000                                         |
| Notes         | <b>For unpurified use at 1/5000 - 1/10000.</b> |

## Predicted

|               |     |
|---------------|-----|
| Species       | Dog |
| Dilution info | -   |
| Notes         | -   |

## ICC/IF

|               |                                     |
|---------------|-------------------------------------|
| Tested        |                                     |
| Species       | Human                               |
| Dilution info | 1/50 - 1/150                        |
| Notes         | <b>For unpurified use at 1/250.</b> |

## Expected

|               |                                          |
|---------------|------------------------------------------|
| Species       | Mouse                                    |
| Dilution info | Use at an assay dependent concentration. |
| Notes         | -                                        |

**Predicted**

|               |     |
|---------------|-----|
| Species       | Dog |
| Dilution info | -   |
| Notes         | -   |

**Flow Cyt (Intra)**

**Tested**

|               |       |
|---------------|-------|
| Species       | Human |
| Dilution info | 1/100 |
| Notes         | -     |

**Expected**

|               |                                          |
|---------------|------------------------------------------|
| Species       | Mouse                                    |
| Dilution info | Use at an assay dependent concentration. |
| Notes         | -                                        |

**Predicted**

|               |     |
|---------------|-----|
| Species       | Dog |
| Dilution info | -   |
| Notes         | -   |

---

**Target data**

[See full target information Paxillin](#) 

|          |                                                                                                                                                                                              |
|----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Function | Cytoskeletal protein involved in actin-membrane attachment at sites of cell adhesion to the extracellular matrix (focal adhesion). Recruits other proteins such as TRIM15 to focal adhesion. |
|----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

---

**Storage**

|                       |                     |
|-----------------------|---------------------|
| Shipped at conditions | Conditional Ambient |
|-----------------------|---------------------|

|                                                  |                           |
|--------------------------------------------------|---------------------------|
| <b>Appropriate short-term storage duration</b>   | 1-2 weeks                 |
| <b>Appropriate short-term storage conditions</b> | +4°C                      |
| <b>Appropriate long-term storage conditions</b>  | -20°C                     |
| <b>Aliquoting information</b>                    | Upon delivery aliquot     |
| <b>Storage information</b>                       | Avoid freeze / thaw cycle |

---

## Notes

### What is this antibody validated in?

Anti-Paxillin antibody [Y113] (ab32084) is a rabbit recombinant monoclonal antibody and is validated for use in Western Blot (WB), Flow Cytometry (Intra), Immunoprecipitation (IP), Immunohistochemistry (IHC-P), Immunocytochemistry/immunofluorescence (ICC/IF) in Human, Mouse samples.

### What is the molecular weight of Paxillin?

Anti-Paxillin [Y113] (ab32084) specifically detects a band for Paxillin (UniProt: P49023) at a molecular weight of 68kDa.

### Trusted by the scientific community

Anti-Paxillin [Y113] (ab32084) was first used in a scientific publication in 2006 and has been cited over 210 times in peer-reviewed journals.

### Reviewed by scientists

Anti-Paxillin [Y113] (ab32084) has over 20 independent reviews from customers.

### Specificity confirmed

The specificity of Anti-Paxillin antibody [Y113] (ab32084) has been confirmed by Western blot testing in Paxillin Knockout HeLa cells.

### Other related products

We have a range of other formats of antibody clone [Y113] also available for your convenience: ab32084, HRP - ab197612, Carrier free - ab216652, Alexa Fluor® 488 - ab246718, APC - ab319338, PE - ab319473, Alexa Fluor® 594 - ab319831, Alexa Fluor® 555 - ab319972, Alexa Fluor® 750 - ab321569

### Patented technology

Our RabMAb® technology is a patented hybridoma-based technology for making rabbit monoclonal antibodies. For details on our patents, please refer to RabMAb® patents.

### What are the advantages of a recombinant monoclonal antibody?

This product is a recombinant monoclonal antibody, which offers several advantages including:

- High batch-to-batch consistency and reproducibility
- Improved sensitivity and specificity
- Long-term security of supply
- Animal-free batch production

For more information, read more on recombinant antibodies.

**Trial sizes available!**

Test your antibody or perform pre-screening before committing to a larger quantity. Sold in 20µl. Discover our selection of trial-size antibodies.

---

## Supplementary info

This supplementary information is collated from multiple sources and compiled automatically.

|                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Activity summary</b>                  | Paxillin also known as PXN is a cytoskeletal protein involved in the assembly of focal adhesions. It has a molecular weight of approximately 68 kDa. You will find Paxillin expressed widely in various tissues including the liver colon and lung. Paxillin plays a part in cell motility by interacting with other focal adhesion proteins. It plays a significant mechanical role by serving as a docking site for structural and signaling molecules.                                       |
| <b>Biological function summary</b>       | Paxillin serves key functions in cellular processes such as migration proliferation and survival. It interacts with different proteins including vinculin and talin forming part of a complex at the focal adhesion sites. The phosphorylation state of Paxillin can modulate its interactions and in this way influence the assembly of signaling complexes that control dynamic cellular processes.                                                                                           |
| <b>Pathways</b>                          | Paxillin participates in the integrin signaling and MAPK pathways. It operates by linking integrin receptors to the actin cytoskeleton facilitating signal transduction. Paxillin phosphorylation is an important regulatory mechanism within these pathways. In particular its interaction with focal adhesion kinase (FAK) and Src family kinases signifies its role in transmitting signals from the extracellular matrix to the cellular interior which impacts cell behavior and response. |
| <b>Associated diseases and disorders</b> | Paxillin has links with osteosarcoma and lung cancer. Deregulation of Paxillin expression or its phosphorylation state contributes to oncogenic transformation and tumor progression. In cancer Paxillin associates with altered activity of proteins such as Src and FAK exacerbating disease states. This relationship highlights Paxillin's potential as a biomarker and therapeutic target in treating related malignancies.                                                                |

---

## Product promise

**Tested**  
We have tested this species and application combination and it works. It is covered by our product promise.

**Expected**  
We have not tested this specific species and application combination in-house, but expect it will work. It is covered by our product promise.

**Predicted**

This species and application combination has not been tested, but we predict it will work based on strong homology. However, this combination is not covered by our product promise.

**Not recommended**

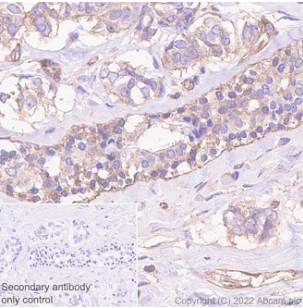
We do not recommend this combination. It is not covered by our product promise.

We are dedicated to supporting your work with high quality reagents and we are here for you every step of the way should you need us.

In the unlikely event of one of our products not working as expected, you are covered by our product promise.

Full details and terms and conditions can be found here:  
Terms & Conditions.

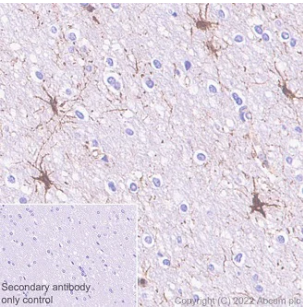
**13 product images**



**Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-Paxillin antibody [Y113] (ab32084)**

Immunohistochemistry analysis of paraffin-embedded human breast carcinoma tissue sections labelling Paxillin with ab32084 at 1/1200 dilution. The section was incubated with ab32084 for 30 mins at room temperature. Rabbit specific IHC polymer detection kit HRP/DAB ([ab209101](#)) was used as the secondary antibody. Sections were counterstained with Hematoxylin. Antigen retrieval was heat mediated antigen retrieval with Citrate buffer (pH 6.0, epitope retrieval solution 1) for 20 mins.

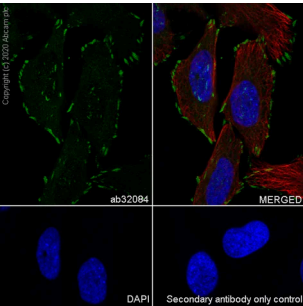
Positive staining on human breast carcinoma tissue. The immunostaining was performed on a Leica Biosystems BOND® RX instrument.



**Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-Paxillin antibody [Y113] (ab32084)**

Immunohistochemistry analysis of paraffin-embedded human cerebrum tissue sections labelling Paxillin with ab32084 at 1/1200 dilution. The section was incubated with ab32084 for 30 mins at room temperature. Rabbit specific IHC polymer detection kit HRP/DAB ([ab209101](#)) was used as the secondary antibody. Sections were counterstained with Hematoxylin. Antigen retrieval was heat mediated antigen retrieval with Citrate buffer (pH 6.0, epitope retrieval solution 1) for 20 mins.

Positive staining on human cerebrum tissue. The immunostaining was performed on a Leica Biosystems BOND® RX instrument.

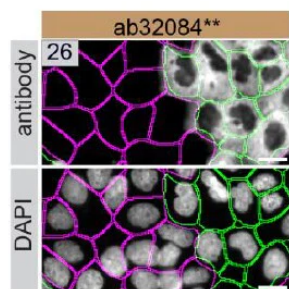


**Immunocytochemistry/ Immunofluorescence - Anti-Paxillin antibody [Y113] (ab32084)**

Paxillin Immunocytochemistry/ Immunofluorescence staining using rabbit Anti-Paxillin antibody

Immunocytochemistry analysis of HeLa (Human cervix adenocarcinoma epithelial cell) cells labeling Paxillin with purified ab32084 at 1/50 dilution (2.88 µg/mL). Cells were fixed in 4% Paraformaldehyde and permeabilized with 0.1% tritonX-100. Cells were counterstained with [ab195889](#) Anti-alpha Tubulin antibody [DM1A] - Microtubule Marker (Alexa Fluor® 594) 1/200 (2.5 µg/mL). Goat anti rabbit IgG (Alexa Fluor® 488, [ab150077](#)) was used as the secondary antibody at

1/1000 (2 µg/mL) dilution. DAPI (blue) was used as nuclear counterstain. PBS instead of the primary antibody was used as the secondary antibody only control.

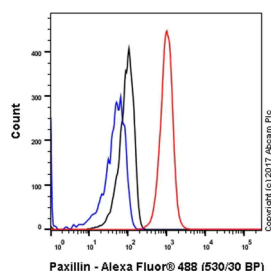


## Immunocytochemistry/ Immunofluorescence - Anti-Paxillin antibody [Y113] (ab32084)

Paxillin Immunocytochemistry/ Immunofluorescence staining using rabbit Anti-Paxillin antibody

ab32084 was shown to react with PXN in wild-type A-431 cells in immunocytochemistry with loss of signal observed in PXN knockout cell line [ab261892](#). Wild-type and knockout cells were mixed and pelleted at a 1:1 ratio on coverslips. The cells were fixed with 4% paraformaldehyde (15 min) then permeabilized with 0.1% Triton X-100 (10min) and then blocked with 1x PBS, 0.01% Triton X-100, 5% BSA, 5% NGS. The cells were then incubated with ab32084 at 1/150 dilution overnight at 4°C followed by a further incubation at room temperature for 1h with a goat anti-rabbit secondary antibody to (Alexa Fluor® 555) at 0.5 µg/ml. Acquisition of the green (wild-type), red (antibody staining) and far-red (knockout) channels was performed. Representative grayscale images of the red channel are shown. Wild-type and knockout cells are outlined with yellow and magenta dashed line, respectively. Schematic representation of the mosaic strategy used is shown on the bottom-right panel. Image was acquired with a Zeiss(LSM-880).

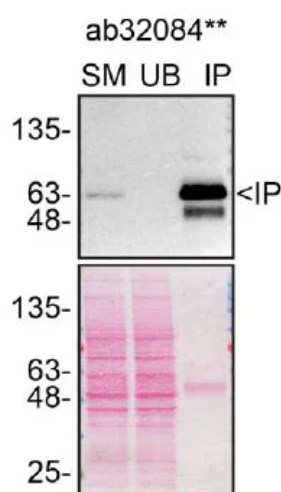
This data was provided by YCharOS Inc., an open science company with the mission of characterizing commercially available antibody reagents for all human proteins. Abcam and YCharOS are working together to help address the reproducibility crisis by enabling the life science community to better evaluate commercially available antibodies.



## Flow Cytometry (Intracellular) - Anti-Paxillin antibody [Y113] (ab32084)

Paxillin Flow Cytometry (Intracellular) staining using rabbit Anti-Paxillin antibody

Intracellular Flow Cytometry analysis of HeLa (human cervix adenocarcinoma) cells labeling with purified ab32084 at 1/100 dilution (10µg/ml) (Red). Cells were fixed with 4% paraformaldehyde and permeabilized with 90% methanol. A Goat anti rabbit IgG (Alexa Fluor® 488) ([ab150077](#)) (1/2000 dilution) was used as the secondary antibody. Rabbit monoclonal IgG (Black) ([ab172730](#)) was used as an isotype control. Cell without incubation with primary antibody and secondary antibody (Blue) were used as unlabeled control.



## Immunoprecipitation - Anti-Paxillin antibody [Y113] (ab32084)

Immunoprecipitation of PXN in A-431 cells. Lysates were prepared and immunoprecipitation was performed using 13.6 µg of ab32084 pre-coupled to Protein A beads. Samples were then washed and processed for western blot.

This data was provided by YCharOS Inc., an open science company with the mission of characterizing commercially available antibody reagents for all human proteins. Abcam and YCharOS are working together to help address the reproducibility crisis by enabling the life science community to better evaluate commercially available antibodies.

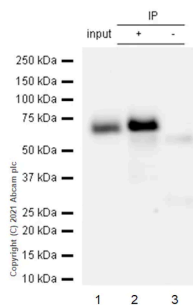
All lanes:

Immunoprecipitation - Anti-Paxillin antibody [Y113] (ab32084) at 13.6 µg

All lanes:

A-431 cell Lysates

Observed band size: 64 kDa



## Immunoprecipitation - Anti-Paxillin antibody [Y113] (ab32084)

Purified ab32084 at 1/20 dilution (0.7µg) immunoprecipitating Paxillin in HeLa whole cell lysate.

Lane 1 (input): HeLa (Human cervix adenocarcinoma epithelial cell) whole cell lysate 10µg.

Lane 2 (+): ab32084 + HeLa whole cell lysate.

Lane 3 (-): Rabbit monoclonal IgG ([ab172730](#)) instead of ab32084 in HeLa whole cell lysate.

VeriBlot for IP Detection Reagent (HRP) ([ab131366](#)) (1/1000 dilution) was used for Western blotting.

Blocking Buffer and concentration: 5% NFDM/TBST.

Diluting buffer and concentration: 5% NFDM/TBST.

Observed band size: 48 kDa

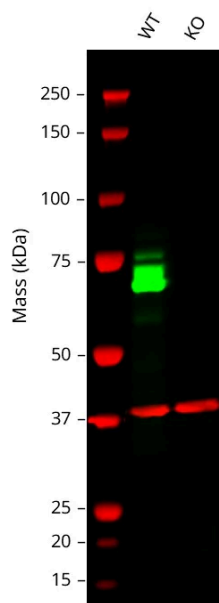
All lanes:

Immunoprecipitation - Anti-Paxillin antibody [Y113] (ab32084)

Predicted band size: 65 kDa

Observed band size: 68 kDa

## Western blot - Anti-Paxillin antibody [Y113] (ab32084)



Copyright © 2023 Abcam plc

Anti-PXN antibody [Y113] (ab32084) staining at 1/1000 dilution, shown in green; Mouse anti-

GAPDH antibody [6C5] ([ab8245](#)) loading control staining at 1/20000 dilution, shown in red. In

Western blot, ab32084 was shown to bind specifically to PXN. A band was observed at 70 kDa in

wild-type A431 cell lysates with no signal observed at this size in PXN knockout cell line [ab261892](#)

(knockout cell lysate [ab261701](#)). To generate this image, wild-type and PXN knockout A431 cell

lysates were analysed. First, samples were run on an SDS-PAGE gel then transferred onto a

nitrocellulose membrane. Membranes were blocked in 3 % milk in TBS-0.1 % Tween® 20 (TBS-T)

before incubation with primary antibodies overnight at 4 °C. Blots were washed four times in TBS-

T, incubated with secondary antibodies for 1 h at room temperature, washed again four times then

imaged. Secondary antibodies used were Goat anti-Rabbit IgG H&L 800CW and Goat anti-Mouse

IgG H&L 680RD at 1/20000 dilution

All lanes:

Western blot - Anti-Paxillin antibody [Y113] (ab32084) at 1/1000 dilution

Lane 2:

Western blot - Human PXN (Paxillin) knockout A-431 cell lysate ([ab261701](#))

Lane 2:

Western blot - Human PXN (Paxillin) knockout A-431 cell line ([ab261892](#))

Predicted band size: 65 kDa

Observed band size: 70 kDa

ab32084\*\*

## Western blot - Anti-Paxillin antibody [Y113] (ab32084)

Paxillin Western blot staining using rabbit Anti-Paxillin antibody

ab32084 was shown to react with PXN in wild-type A-431 cells in Western blot with loss of signal observed in PXN knockout cell line [ab261892](#). Wild-type A-431 and PXN knockout cell lysates were subjected to SDS-PAGE. Membranes were blocked in 5% milk in TBST for 1 hr before incubation with ab32084 overnight at 4 °C at a 1/1000 dilution. Blots were incubated with secondary antibodies at 0.2 µg/mL before imaging.

This data was provided by YCharOS Inc., an open science company with the mission of characterizing commercially available antibody reagents for all human proteins. Abcam and YCharOS are working together to help address the reproducibility crisis by enabling the life science community to better evaluate commercially available antibodies.

All lanes:

Western blot - Anti-Paxillin antibody [Y113] (ab32084) at 1/1000 dilution

Lane 1:

Wild-type A-431 lysate at 30 µg

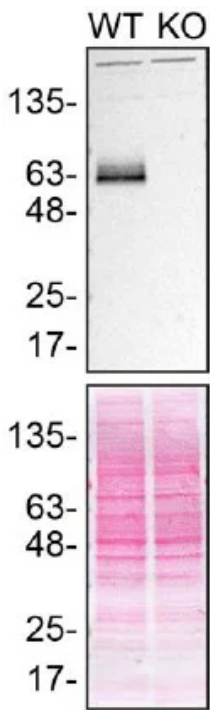
Lane 2:

PXN knock-out A-431 lysate at 30 µg

Lane 2:

Western blot - Human PXN (Paxillin) knockout A-431 cell line ([ab261892](#))

Observed band size: 63 kDa



## Western blot - Anti-Paxillin antibody [Y113] (ab32084)

All lanes:

Western blot - Anti-Paxillin antibody [Y113] (ab32084) at 1/1000 dilution

Lane 1:

HeLa (Human cervix adenocarcinoma epithelial cell) whole cell lysate

Lane 2:

RAW 264.7 (Mouse Abelson murine leukemia virus-induced tumor macrophage) whole cell lysate

Lane 3:

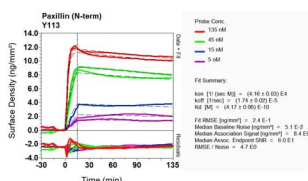
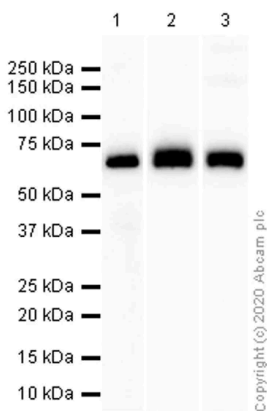
Mouse heart lysate

Secondary

All lanes:

Western blot - Goat Anti-Rabbit IgG H&L (HRP) ([ab97051](#)) at 1/20000 dilution

Predicted band size: 65 kDa



## OI-RD Scanning - Anti-Paxillin antibody [Y113] (ab32084)

We have systematically measured KD (the equilibrium dissociation constant between the antibody and its antigen), of more than 840 recombinant antibodies to assess not only their individual KD values but also to see the average affinity of antibody. Based on the comparison with published literature values for mouse monoclonal antibodies, Recombinant antibodies appear to be on average 1-2 order of magnitude higher affinity.

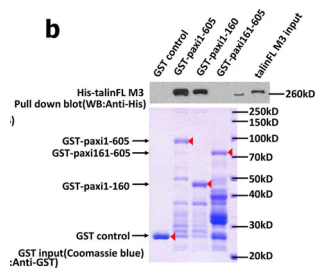


Image collected and cropped by CiteAb under a [CC-BY license](#) from the publication

## Western blot - Anti-Paxillin antibody [Y113] (ab32084)

Paxillin Western blot staining using rabbit Anti-Paxillin antibody

Western Blotting using Anti-Paxillin antibody [Y113], ab32084. Publication image from Yang, J. et al., 2022, Nat Commun, 35488005. Legend direct from paper.

Paxillin binds to full-length active talin through multiple sites. a Paxillin prefers binding to activated talin as shown by GST pulldown. GST-tagged full-length paxillin was immobilized to GST beads and incubated with the same amount of full-length wild-type talin (talinFL WT) and full-length activated talin (talinFL TM). Pull-down fraction of talin was detected by talin antibody on western blot. Immobilized GST proteins were detected by GST antibody on western blot after 10x dilution. Four independent experiments were performed. b N-terminal part of paxillin (paxi1-160) is mainly responsible for binding to full-length active talin, while paxillin C-terminal (paxi161-605) shows no binding to talinFL TM. Pull-down fraction of talin was detected by Anti-6xHis antibody on western blot. Immobilized GST protein was resolved by SDS-PAGE and shown by Coomassie blue staining. As can be recognized from Coomassie staining, GST-paxillin 161-605 became unstable upon the 1-160 deletion, which degraded further after gel filtration. To alleviate this problem, we loaded much more paxillin 161-605 to have the major band (see arrow) to match other paxillin inputs, yet there was still no talin pulled down, indicating that paxillin 161-605 does not contribute to talin binding in contrast to paxillin 1-160. Four independent experiments were performed. c The HSQC spectra of 50  $\mu$ M  $^{15}$ N-labeled talin-R2 in the absence (black) and presence of 100  $\mu$ M unlabeled paxillin- $\gamma$  1-160 (red) showing direct interaction between paxillin and talin R2. d Cartoon representation of the best model of Paxillin-LD2 (in cyan) and talin-R2 (in green) complex through Haddock calculation. Side chains of critical residues involved in the binding are displayed and labeled. Red-dashed lines indicate potential H-bonds. e Mutations in talin-R2 (A680E/K687E, AKEE) abolished talin-R2 binding to paxillin 1-160 at the same experimental condition as (c). f Summary of mutation testing results from HSQC. Uncropped images are provided in Source Data file.

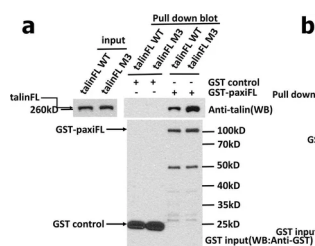


Image collected and cropped by CiteAb under a [CC-BY license](#) from the publication

## Western blot - Anti-Paxillin antibody [Y113] (ab32084)

Paxillin Western blot staining using rabbit Anti-Paxillin antibody

Western Blotting using Anti-Paxillin antibody [Y113], ab32084. Publication image from Yang, J. et al., 2022, Nat Commun, 35488005. Legend direct from paper.

Paxillin binds to full-length active talin through multiple sites. a Paxillin prefers binding to activated talin as shown by GST pulldown. GST-tagged full-length paxillin was immobilized to GST beads and incubated with the same amount of full-length wild-type talin (talinFL WT) and full-length activated talin (talinFL TM). Pull-down fraction of talin was detected by talin antibody on western blot. Immobilized GST proteins were detected by GST antibody on western blot after 10x dilution. Four independent experiments were performed. b N-terminal part of paxillin (paxi1-160) is mainly responsible for binding to full-length active talin, while paxillin C-terminal (paxi161-605) shows no binding to talinFL TM. Pull-down fraction of talin was detected by Anti-6xHis antibody on western blot. Immobilized GST protein was resolved by SDS-PAGE and shown by Coomassie blue staining. As can be recognized from Coomassie staining, GST-paxillin 161-605 became unstable upon the 1-160 deletion, which degraded further after gel filtration. To alleviate this problem, we loaded much more paxillin 161-605 to have the major band (see arrow) to match other paxillin inputs, yet there was still no talin pulled down, indicating that paxillin 161-605 does not contribute to talin binding in contrast to paxillin 1-160. Four independent experiments were performed. c The HSQC spectra of 50  $\mu$ M  $^{15}$ N-labeled talin-R2 in the absence (black) and presence of 100  $\mu$ M unlabeled paxillin- $\gamma$  1-160 (red) showing direct interaction between paxillin and talin R2. d Cartoon representation of the best model of Paxillin-LD2 (in cyan) and talin-R2 (in green) complex through Haddock calculation. Side chains of critical residues involved in the binding are displayed and labeled. Red-dashed lines indicate potential H-bonds. e Mutations in talin-R2

(A680E/K687E, AKEE) abolished talin-R2 binding to paxillin 1–160 at the same experimental condition as (c). f Summary of mutation testing results from HSQC. Uncropped images are provided in Source Data file.

---

Please note: All products are 'FOR RESEARCH USE ONLY. NOT FOR USE IN DIAGNOSTIC OR THERAPEUTIC PROCEDURES'.