

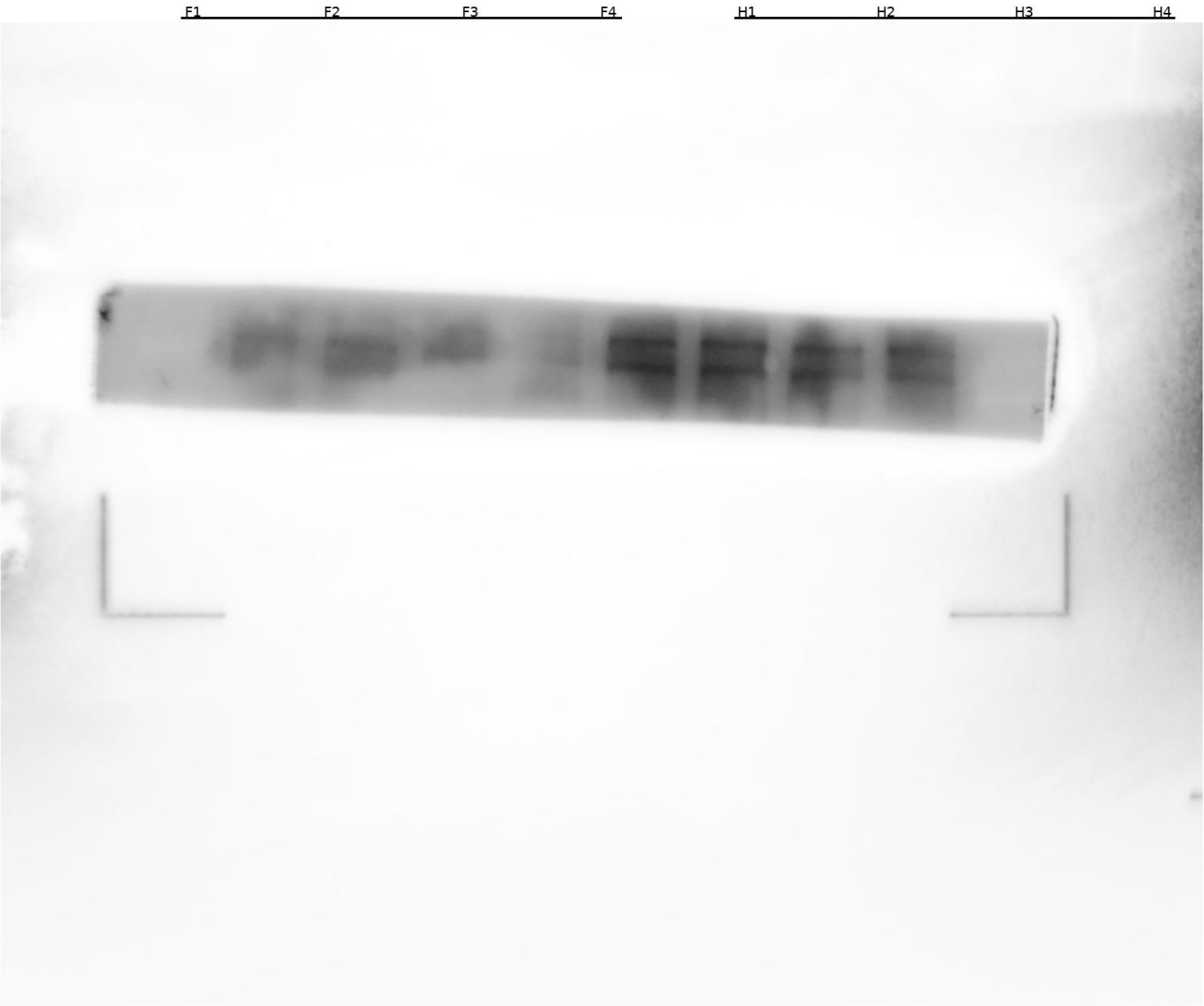
**Supplementary Figure S1. Original, uncropped Western blot membranes.**

Full-length, uncropped and minimally processed images of all Western blot membranes used in the manuscript. Each membrane was loaded with four non-hypercapnia (F1-F4) and four hypercapnia (H1-H4) samples; the representative lanes in the main-text figures are drawn from these membranes. Target proteins and the beta-actin loading control were resolved on the same gel and transferred to the same membrane, which was cut into strips by molecular weight before antibody incubation, so strips grouped together share identical lane order and loaded samples. Expected molecular weights are indicated for each target.

**S1.1 Ischemic penumbra cortex (main-text Figure 3A)**

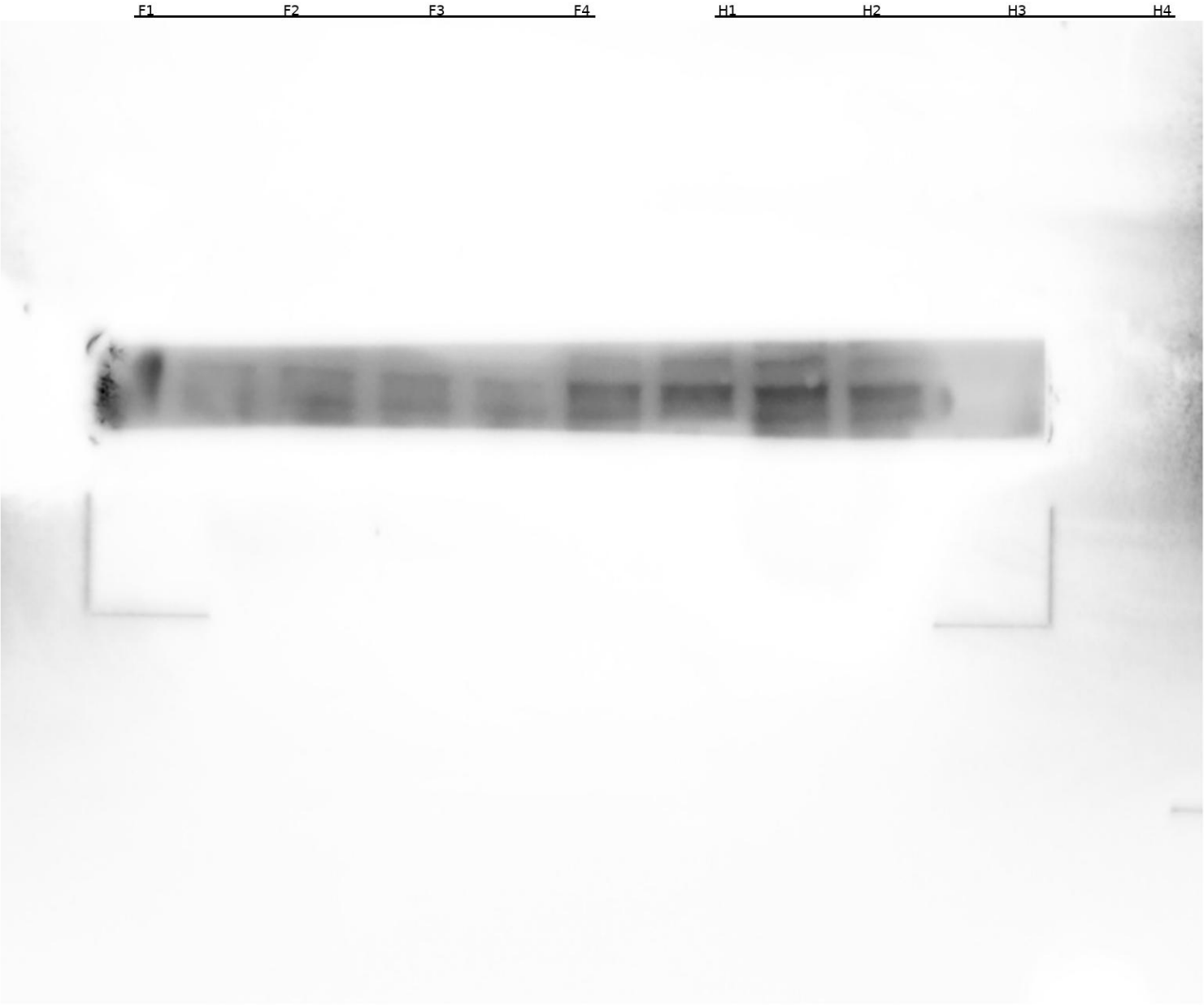
**ZO-1 (tight junction protein, 230 kDa)**

Ischemic penumbra cortex | Figure 3A, quantified in 3B



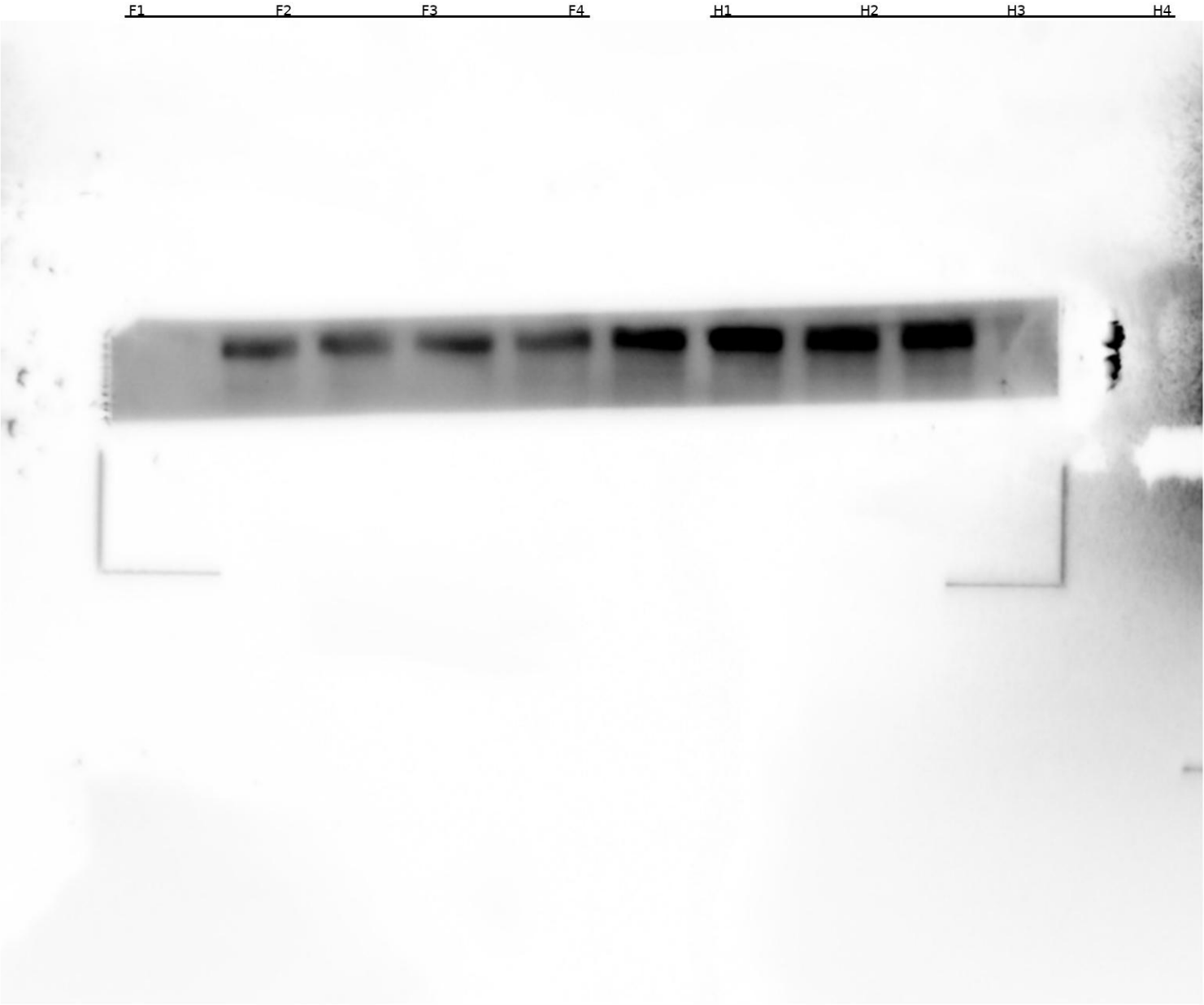
**DARS2 (71 kDa)**

Ischemic penumbra cortex | Figure 3A, quantified in 3C



**Occludin (59 kDa)**

Ischemic penumbra cortex | Figure 3A, quantified in 3D



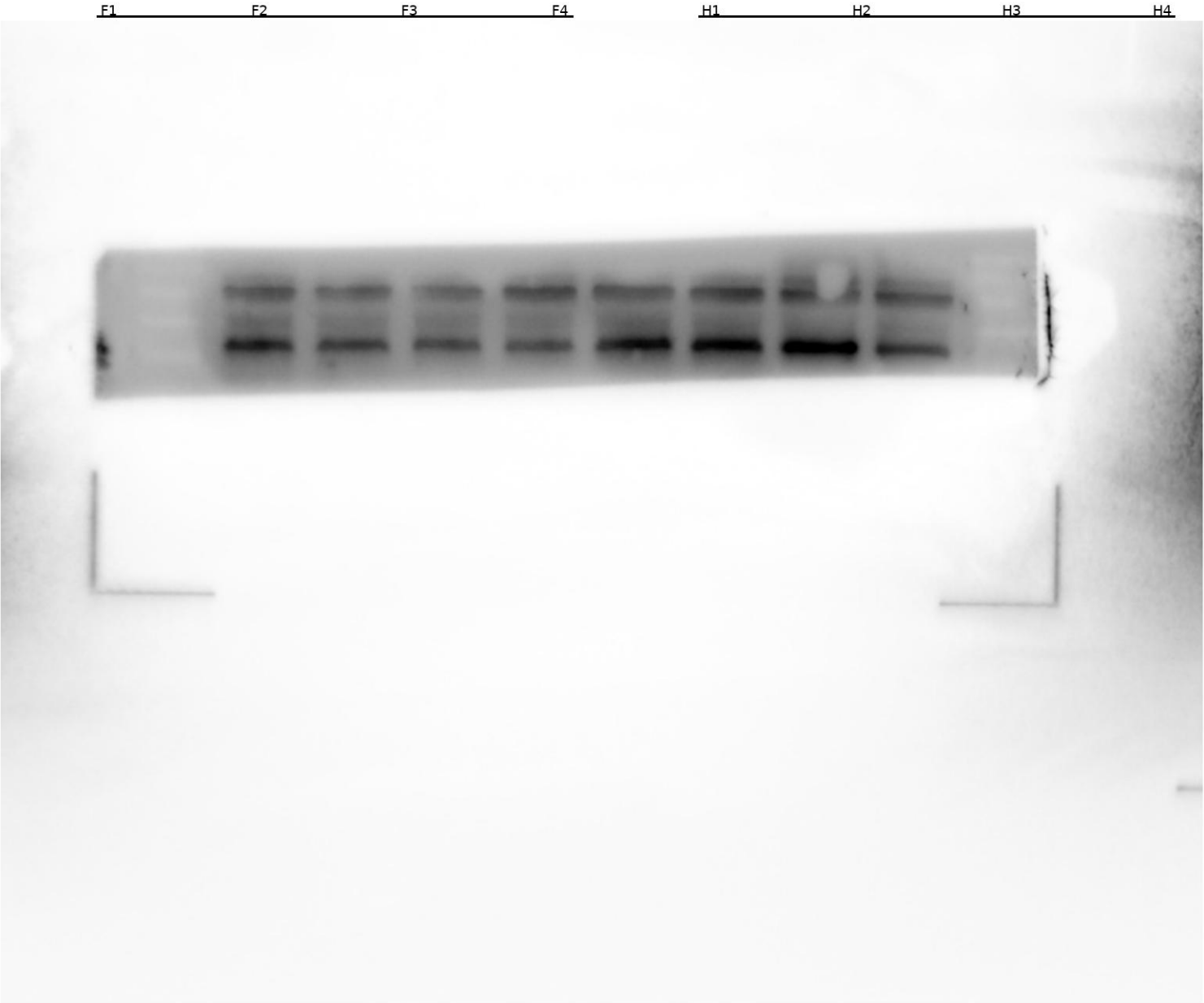
**Arg1 (40 kDa)**

Ischemic penumbra cortex | Figure 3A, quantified in 3E



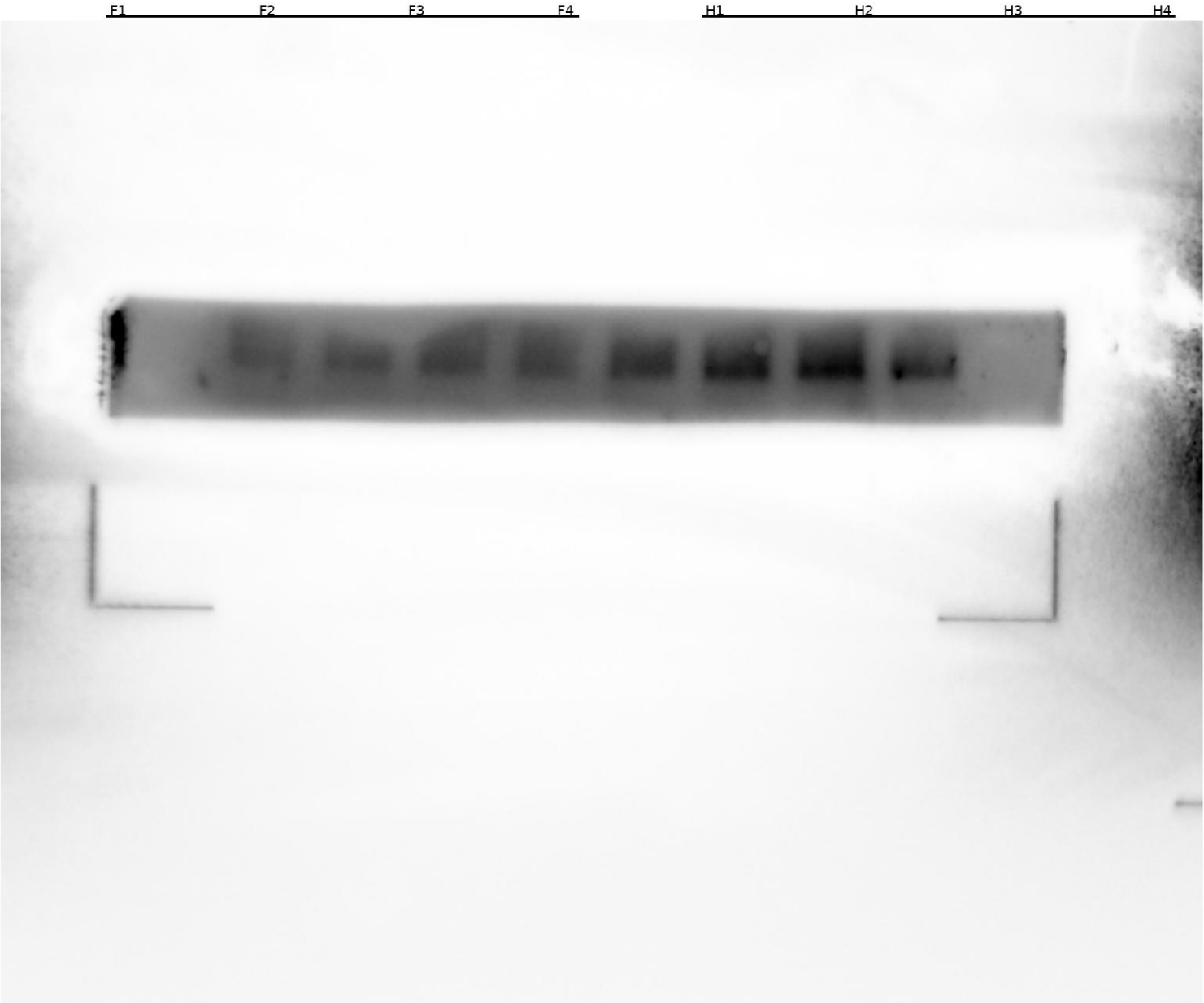
**TREM2 (30-50 kDa, glycosylated)**

Ischemic penumbra cortex | Figure 3A, quantified in 3F



**VEGFA (17 kDa)**

Ischemic penumbra cortex | Figure 3A, quantified in 3G

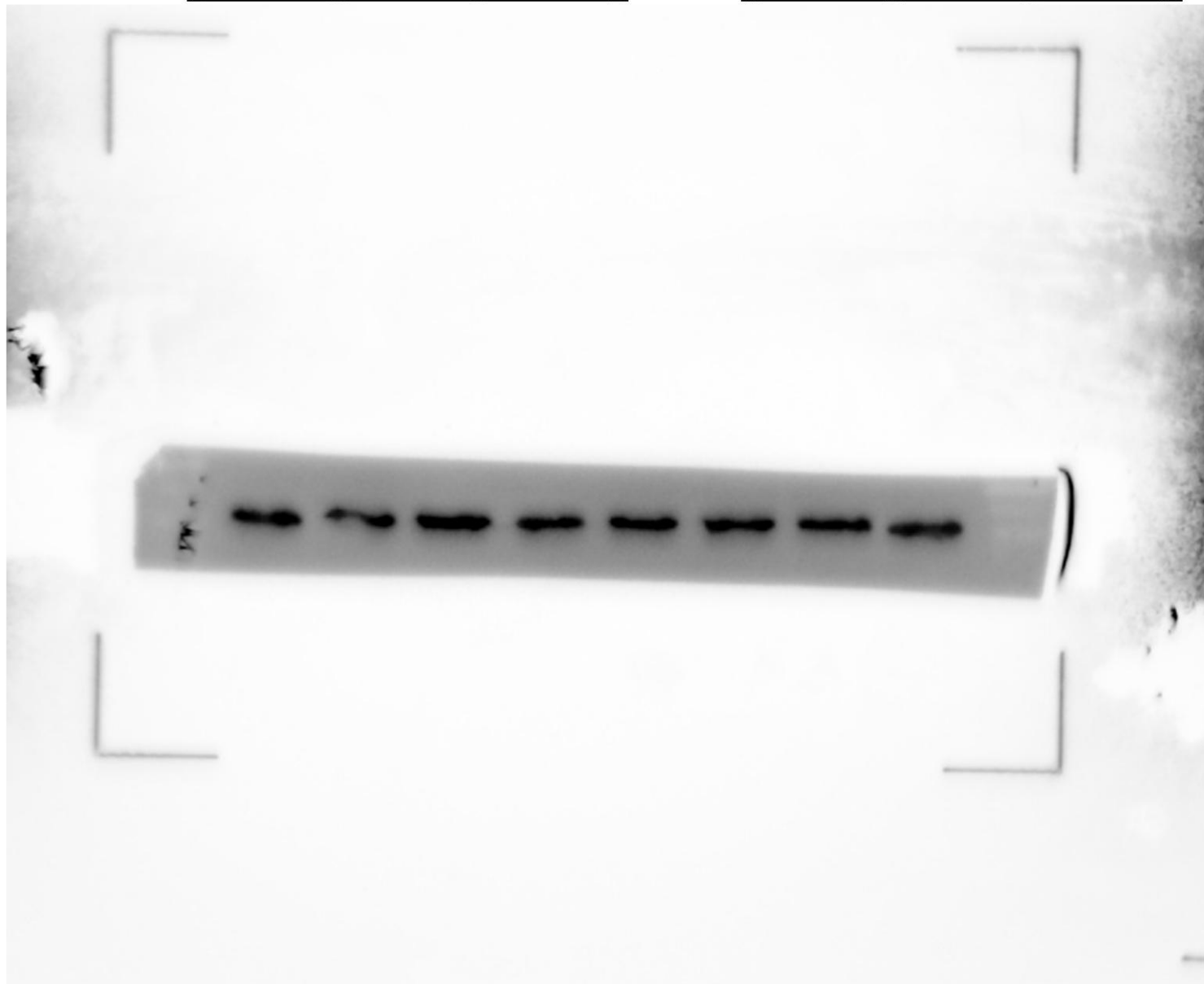


**beta-actin (43 kDa), loading control**

Ischemic penumbra cortex | same membrane as the strips above

F1 F2 F3 F4

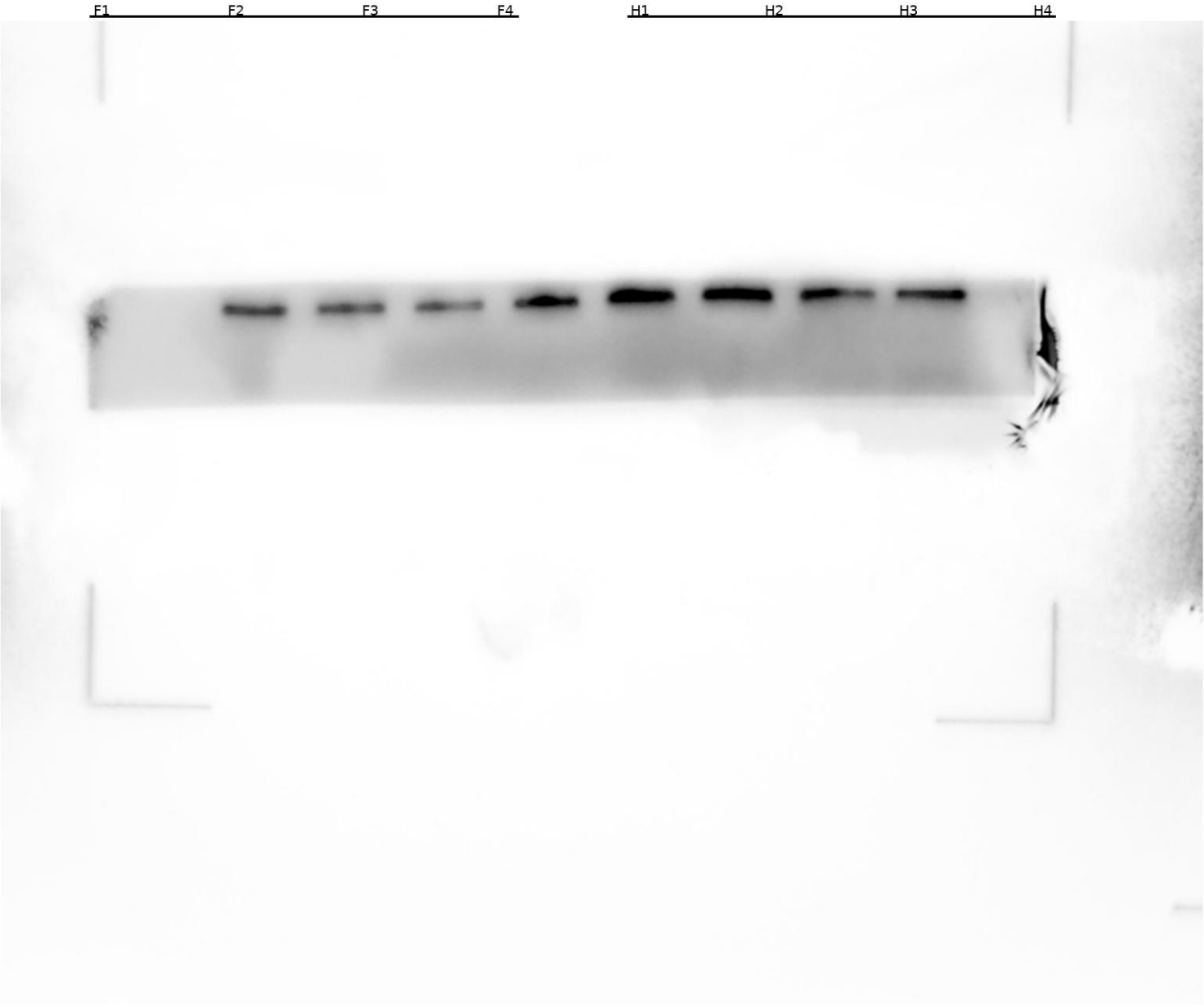
H1 H2 H3 H4



**S1.2 Hippocampus (main-text Figure 3H and Figure 2J)**

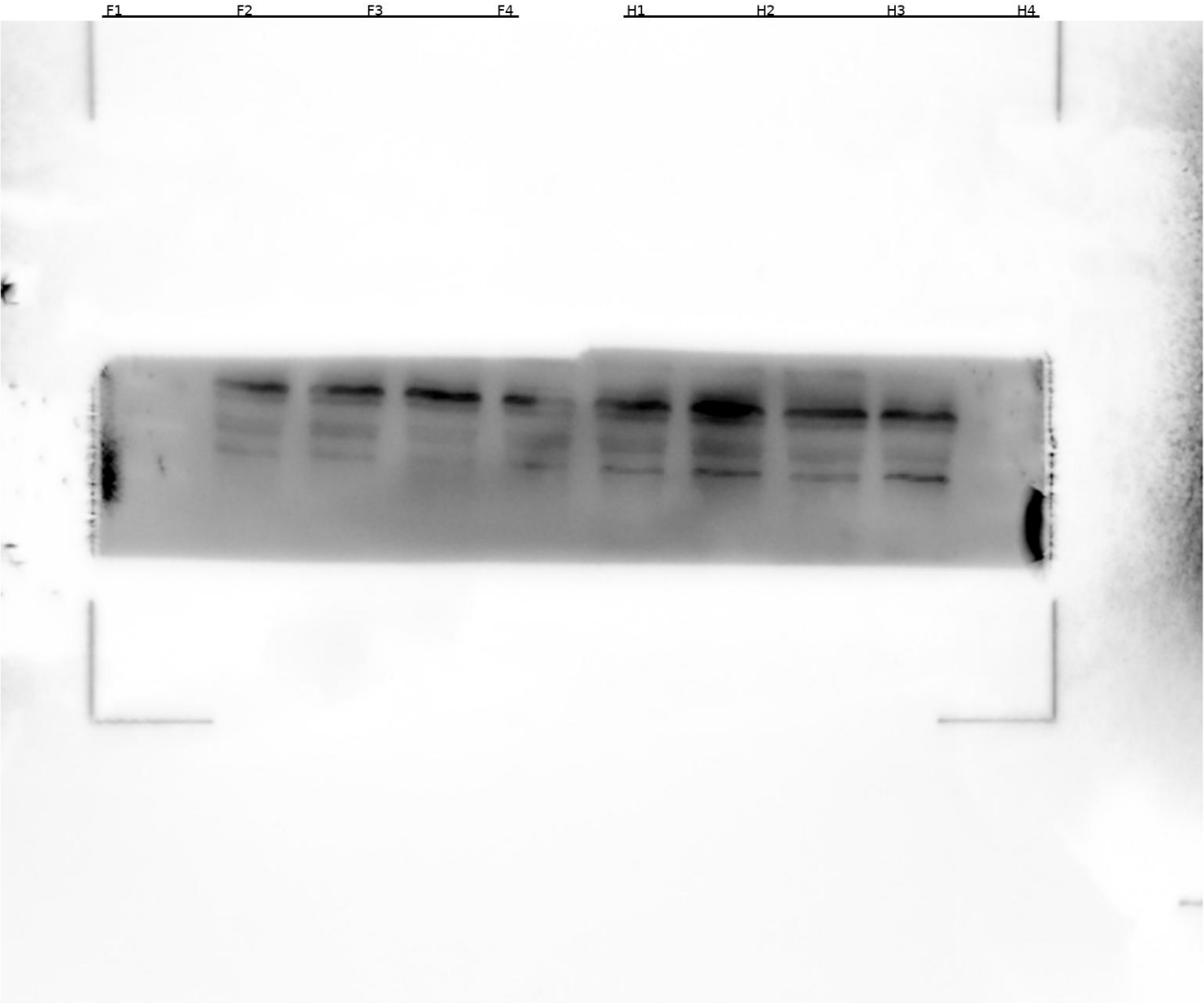
**Arg1 (40 kDa)**

Hippocampus | Figure 3H, quantified in 3I



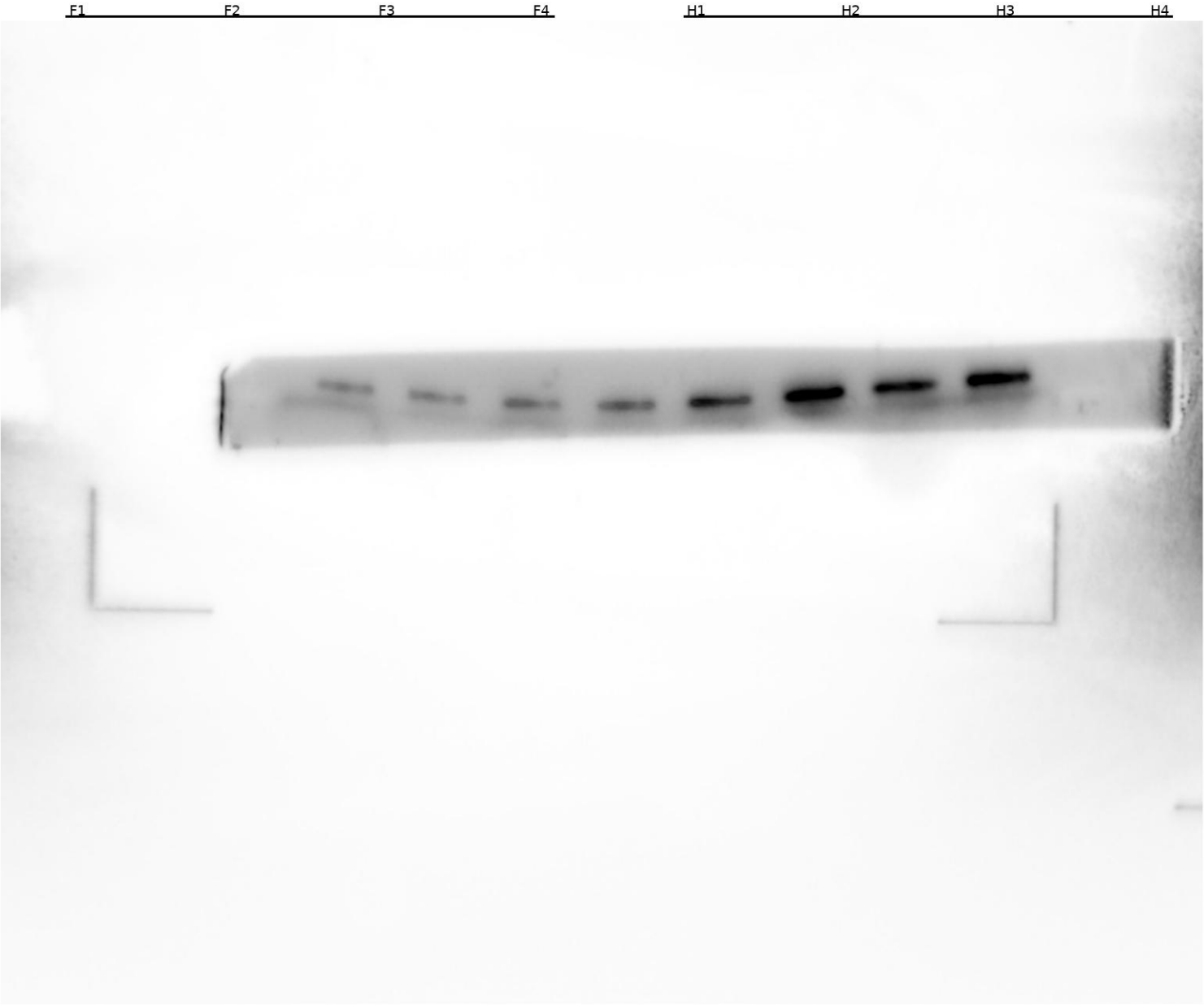
**TREM2 (30-50 kDa, glycosylated)**

Hippocampus | Figure 3H, quantified in 3J



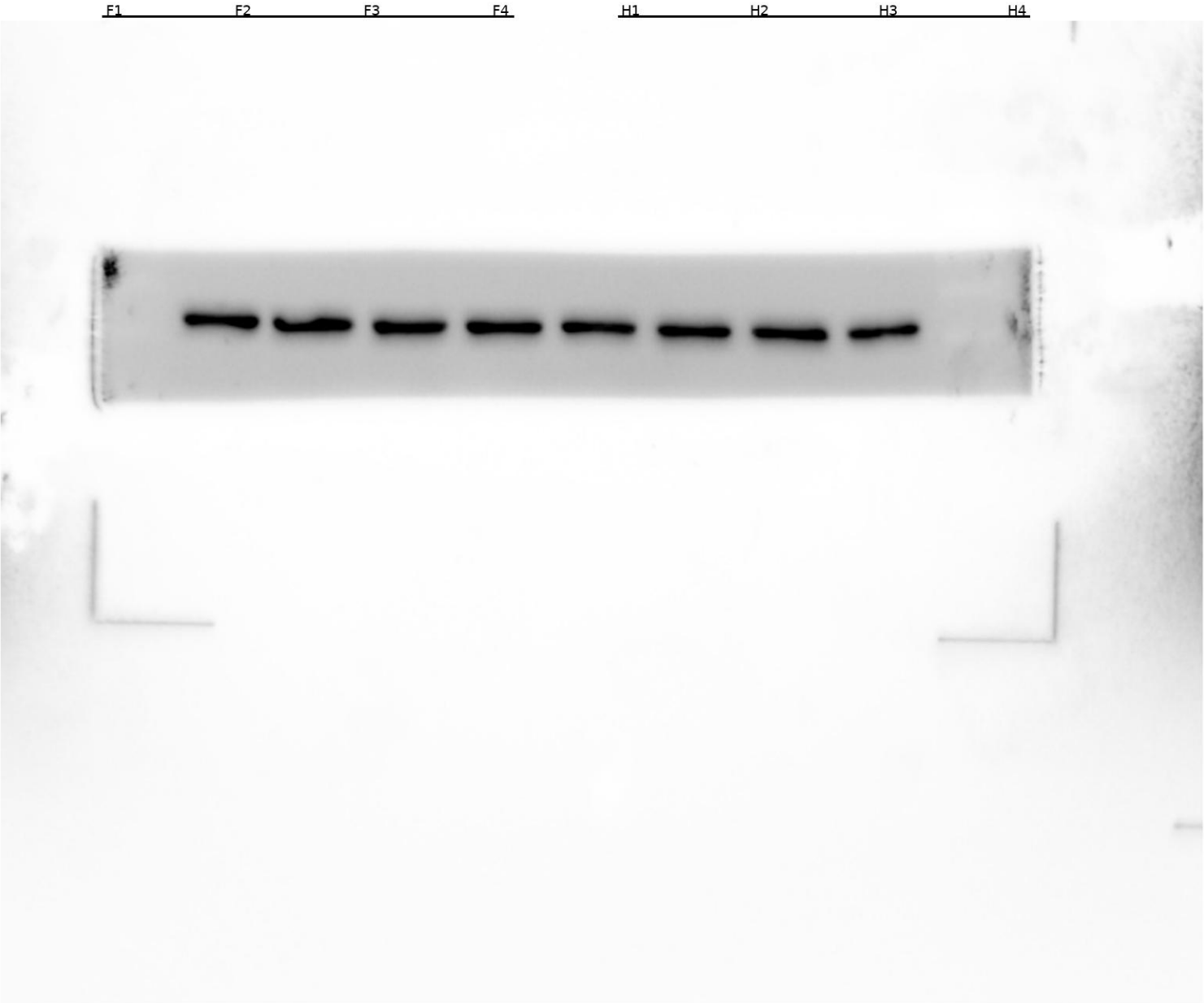
**VEGFA (17 kDa)**

Hippocampus | Figure 3H, quantified in 3K



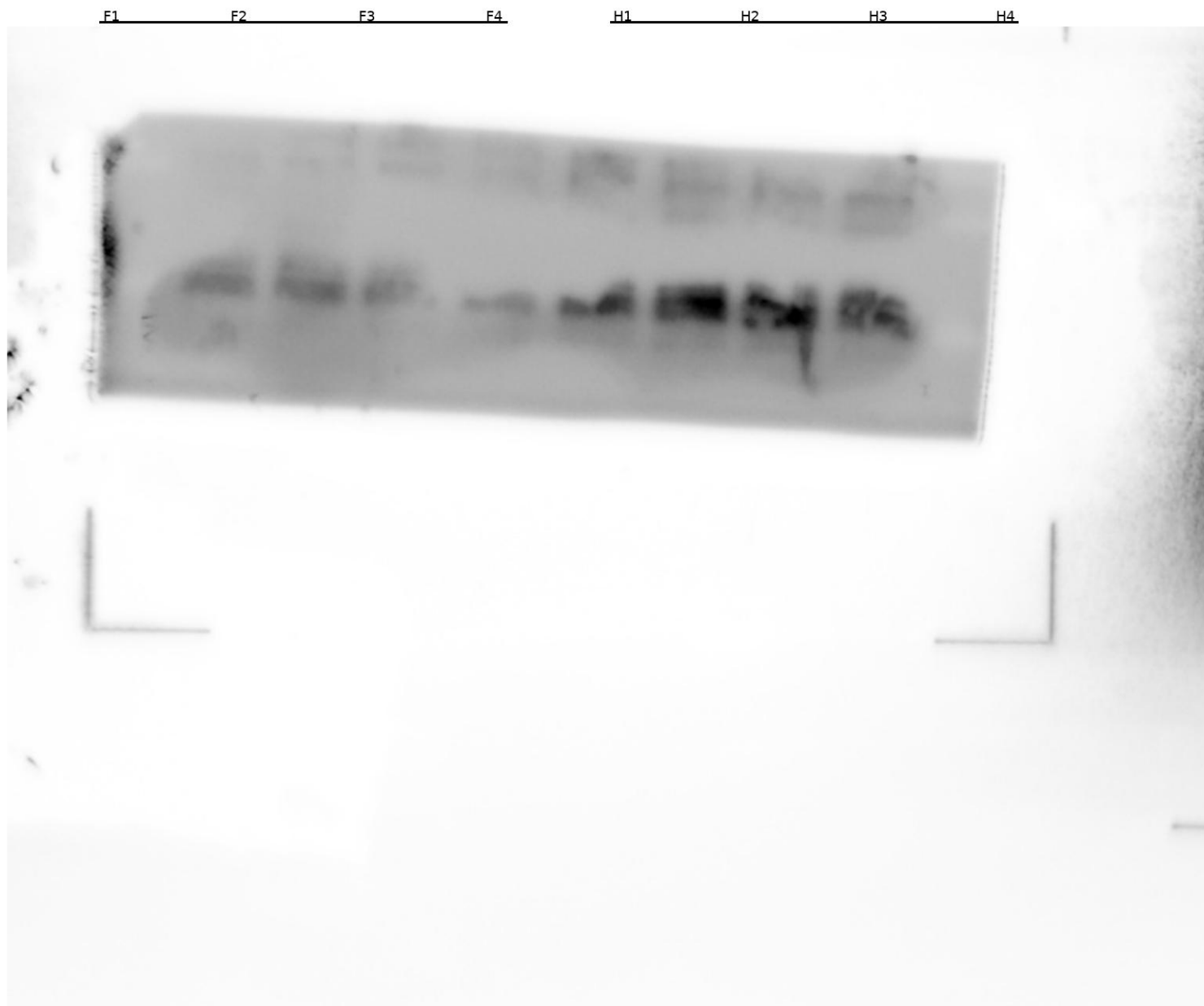
**beta-actin (43 kDa), loading control**

Hippocampus | same membrane as hippocampus strips and BDNF below



## BDNF (14/28 kDa)

Hippocampus | Figure 2J, quantified in 2K



### Notes:

1. Images were exported directly from the Clinkx ChemiCapture imaging system at original resolution; no lanes were removed, spliced or rearranged, and full membrane edges are retained.
2. Brightness/contrast adjustments, where used, were applied uniformly across each membrane and match the corresponding main-text panel.
3. Blots shown are representative; main-text quantification used  $n = 6$  animals per group in technical duplicate.