# Intracellular $Ca^{2+}$ Capacitors for Spatial Signaling Reprogramming: Adaptive Rectification of Metabolic Circuits

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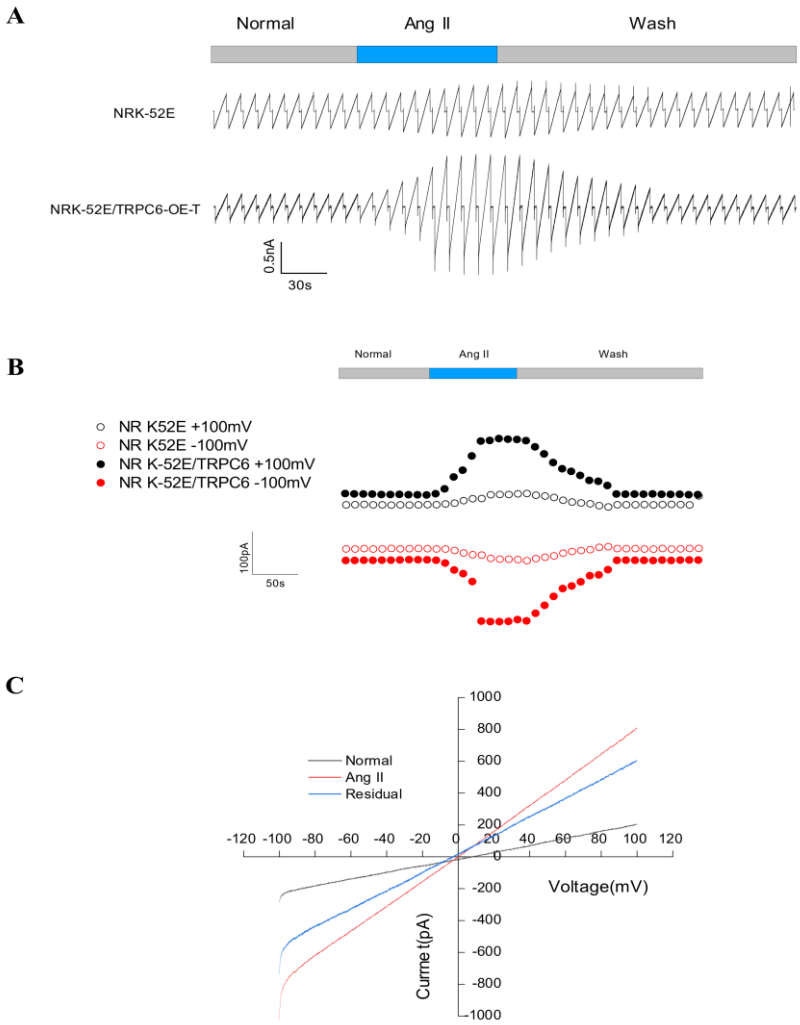


**Figure S1. Effects of Ang II on Ionic Currents in NRK-52E/TRPC6 Cells.** (A) Representative time courses of ramp currents in cells transfected with empty vector or TRPC6. (B) Scatter plots showing ramp current amplitudes at -100 mV and +100 mV in empty vector and TRPC6 groups. (C) Representative current traces of TRPC6-transfected cells under basal conditions, after AngII stimulation, and the net TRPC6 current obtained by subtraction.

Whole-cell patch-clamp recordings were performed to measure currents evoked by 1.0 μM angiotensin II (AngII). The voltage stimulus protocol consisted of a holding potential of −50 mV, from which voltage ramps spanning −100 mV to +100 mV over 1 s were applied to record whole-cell currents; ramp stimuli were delivered every 10 s for a total of 40 consecutive sweeps. Recordings were systematically divided into four sequential phases: sweeps 1 – 10 were acquired under standard intra- and extracellular solution conditions to establish a stable baseline current; sweeps 11–20 were used to monitor current changes induced by intracellular application of AngII

alone; and sweeps 20–40 comprised the washout phase, during which current recovery was assessed. **Figure S1A** show that cells overexpressing TRPC6 exhibit significantly enhanced and characteristic currents compared to those transfected with the empty vector (control group). **Figure S1B** shows the distribution of ramp current amplitudes (-100 mV and +100 mV) throughout the recording time in the empty vector group and the TRPC6 transfection group, visually demonstrating the enhancing effect of TRPC6 expression on the current. **Figure S1C** shows the original current curves from the same TRPC6-expressing cell, including the basal current, the enhanced current after AngII application, and the net current obtained by subtracting the two. This net current represents the specific current component mediated by the activation of TRPC6 channels.

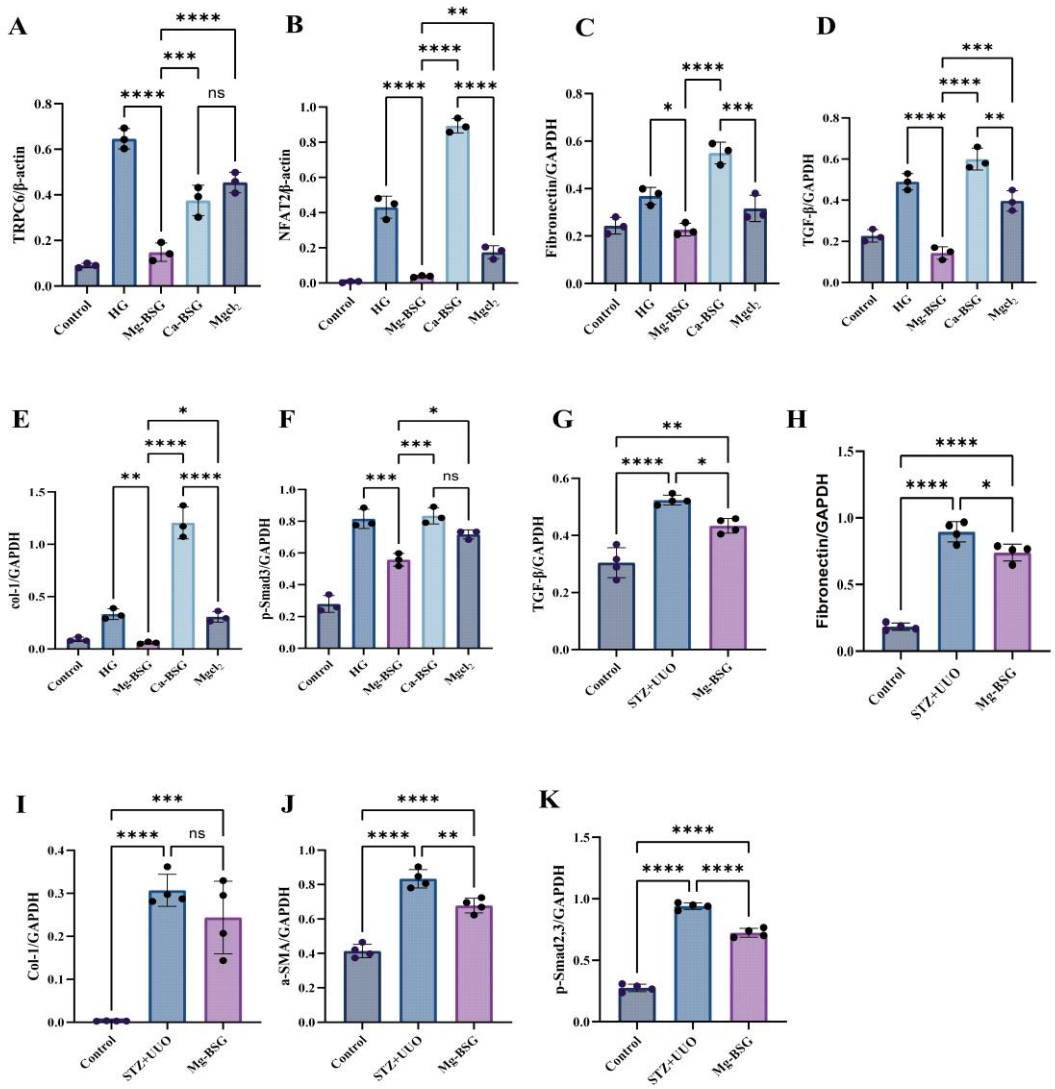


**Figure S2. The quantitative results of Western Blot.**

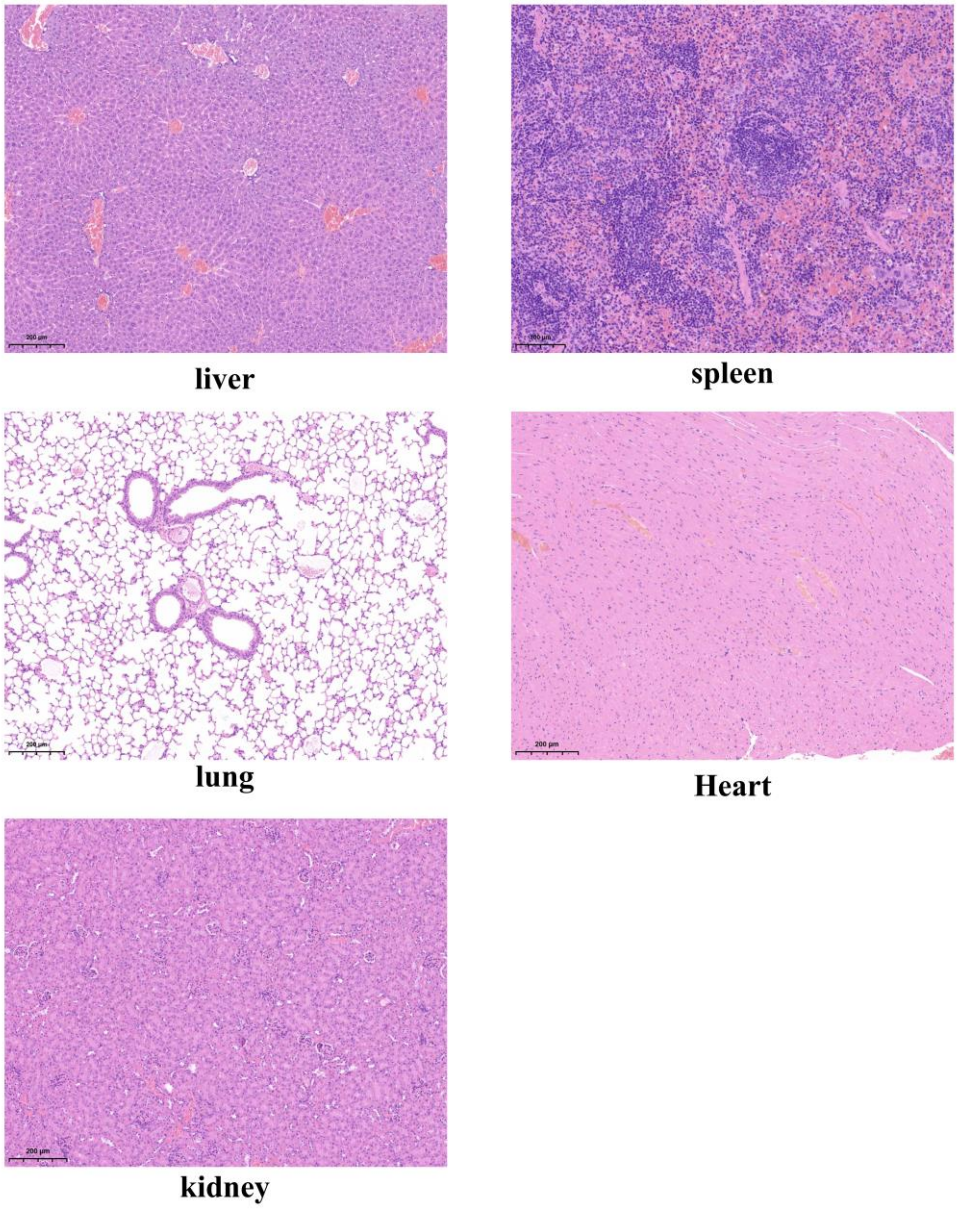


**Figure S3. H&E staining of major organs (heart, liver, spleen, lung, and kidney) after intravenous injection of icacap.**

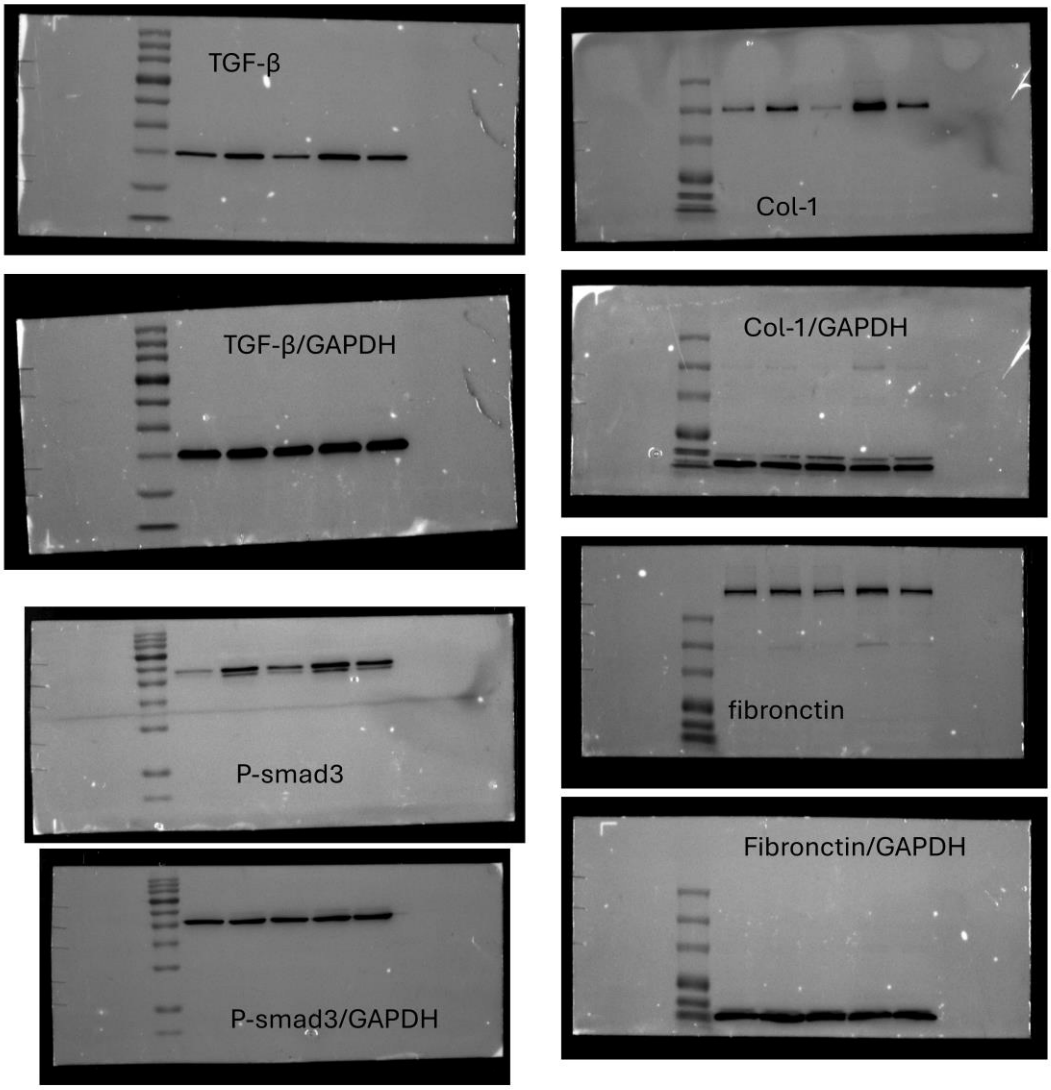


**Figure S4. original western blot images.**

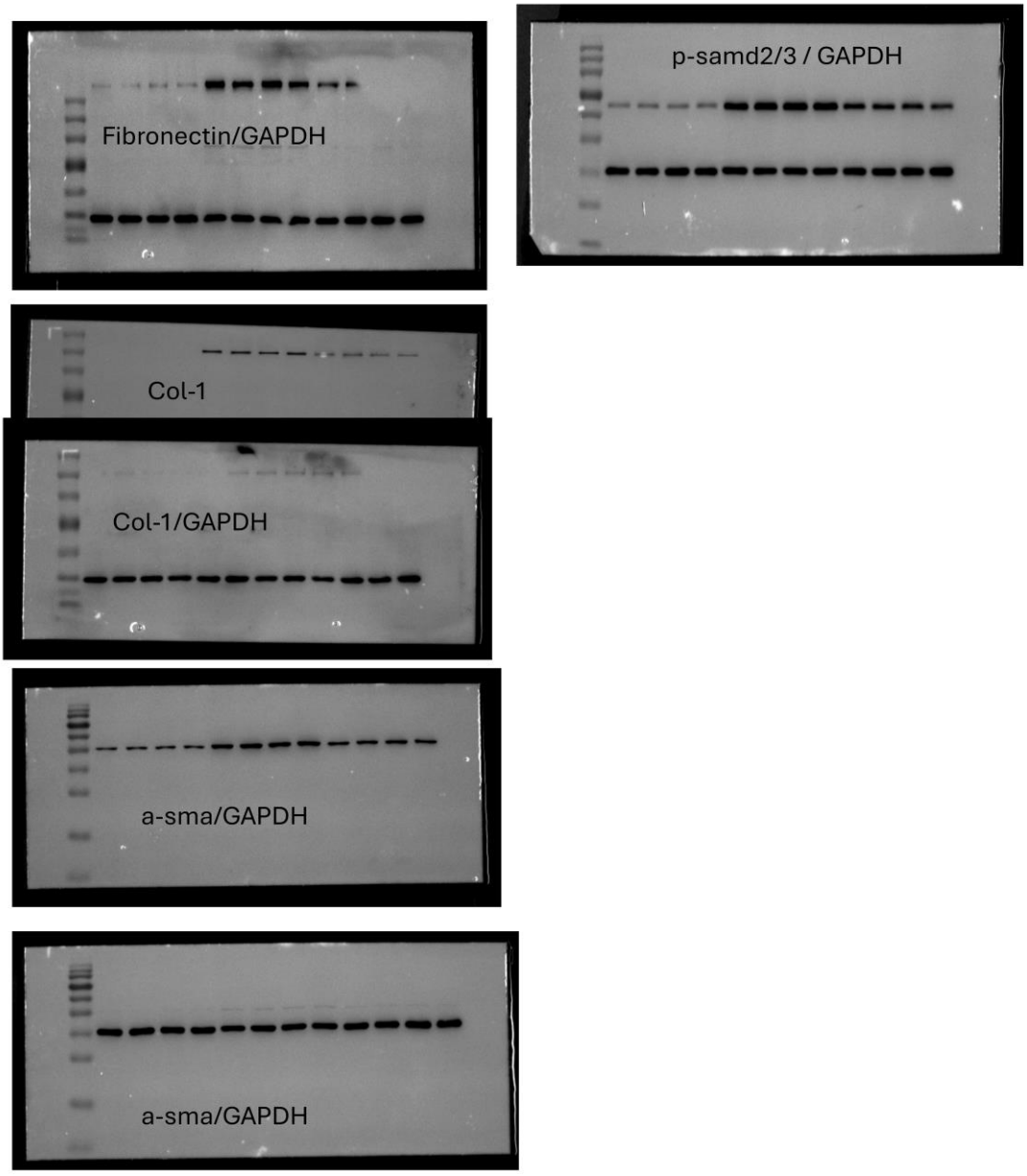


**Figure S5. original western blot images.**

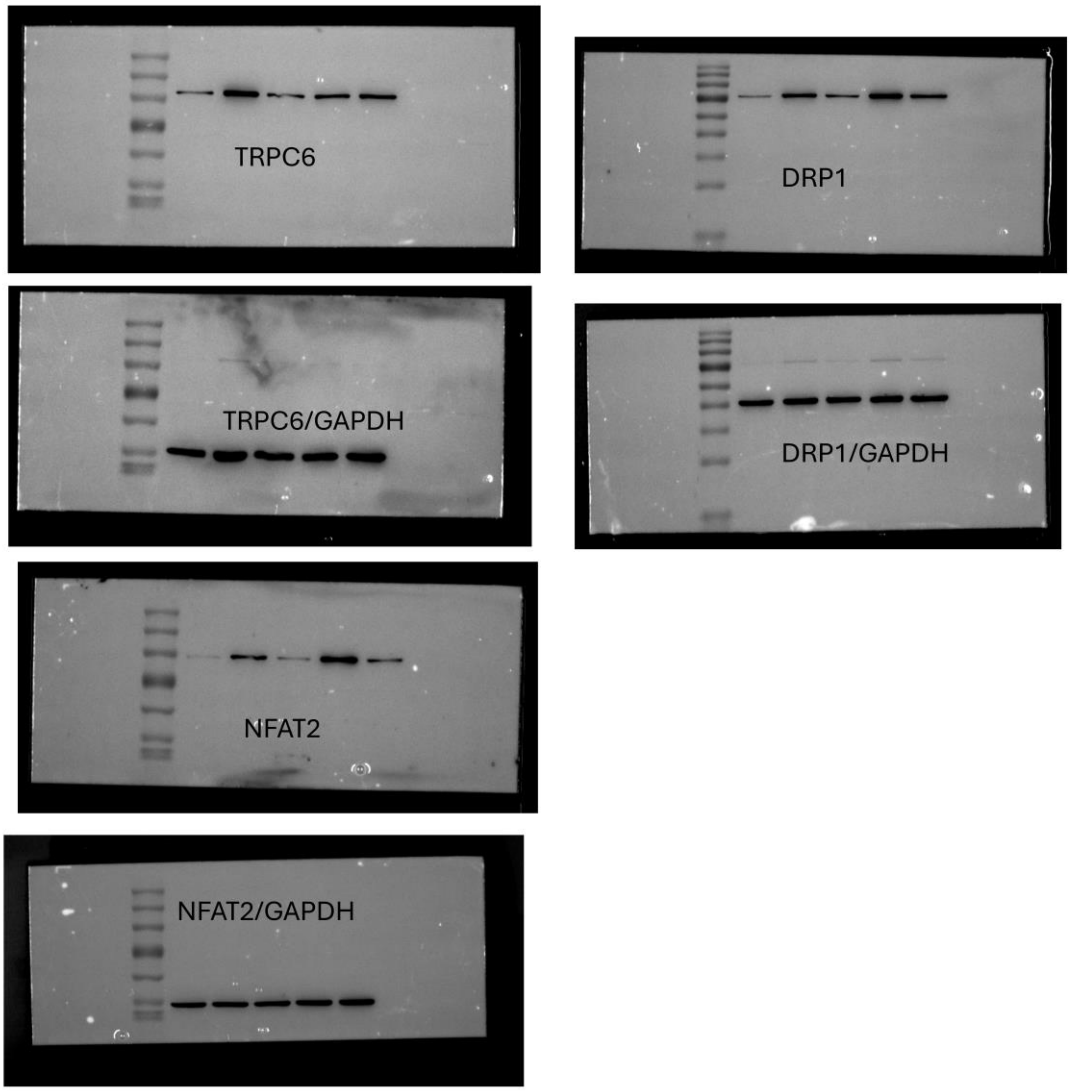


**Figure S6. original western blot images.**

| Antibody | Manufacturer | Cat. No. |
|---|---|---|
| TRPC6 | Thermo | PA5-20256 |
| NFAT2 | Thermo | PA5-90432 |
| Fibronectin | Thermo | PA5-29578 |
| TGF- β | Thermo | MA5-53830 |
| Collagen-1 | Thermo | PA5-29569 |
| Smad-3 | thermo | MA5-35269 |

**Table S1. Primary antibodies used in this study.**