Supplementary information for Schmoller et al.

Classification of cross-linked actin networks

The structure of cross-linked actin networks is classified as filamentous, weakly bundled or strongly bundled. To illustrate this classification, actin networks in the presence of varying concentrations of cortexillin at pH ~ 6.6 are shown as an example (Fig. S1). At 0.5 µM cortexillin, first bundle structures can be detected (denoted by the arrow), Therefore, the network is classified as weakly bundled. With increasing cortexillin concentration, the degree of bundling continuously increases. Networks which are bundled to a certain degree (which is chosen arbitrarily) are classified as strongly bundled. This classification is done by hand as consistently as possible by looking at all networks at the same time. The network at 1.75 µM cortexillin shown in Fig. S1 is one of the "weakest bundled" networks which is classified as strongly bundled.
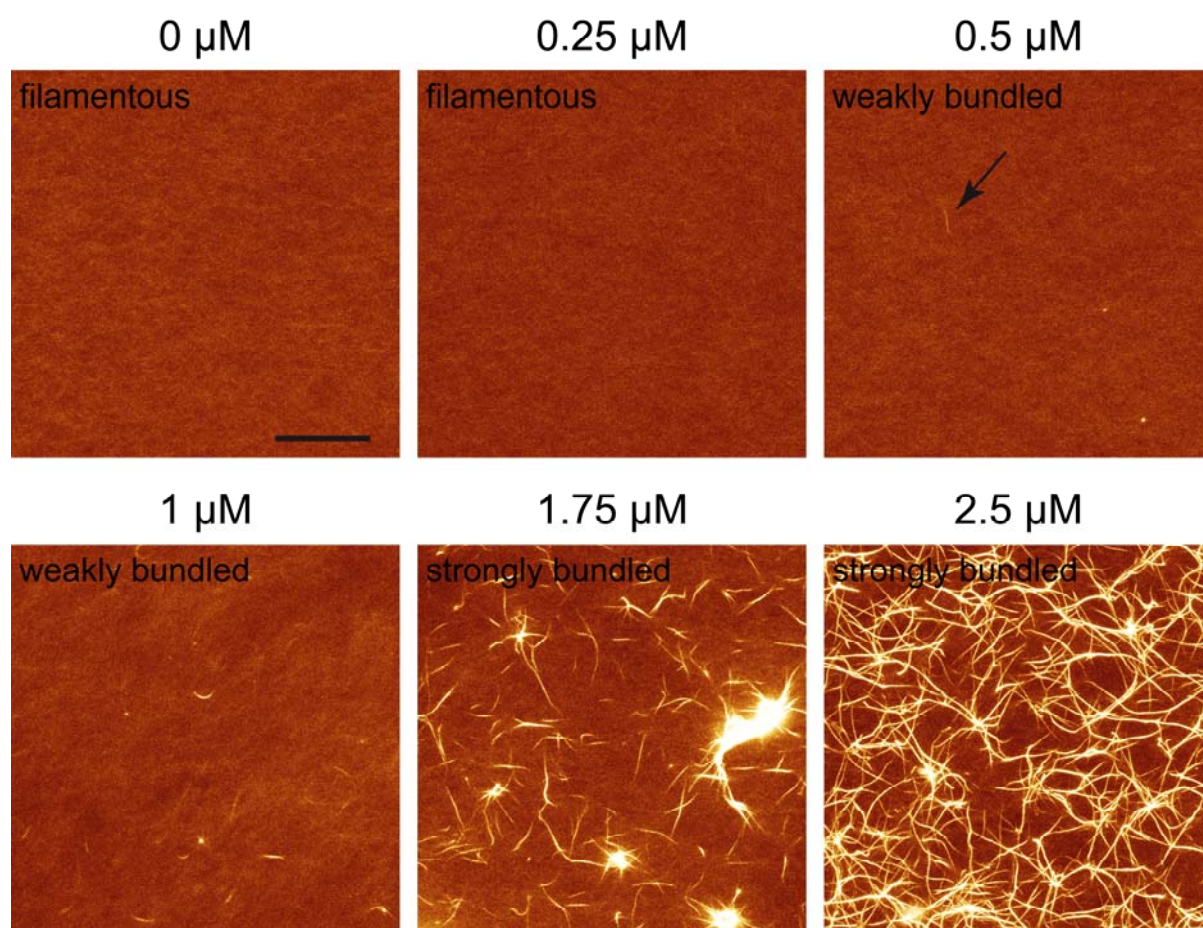

Figure S1: Confocal images (maximum projection of 20 µm stacks) of actin networks (10 µM) at pH ~ 6.6 and varying cortexillin concentrations. The scale bar denotes 20 µm. The networks at 0 and 0.25 µM cortexillin are classified as filamentous. The networks at 0.5 and 1 µM cortexillin are classified as weakly bundled. The networks at 1.75 and 2.5 µM cortexillin are classified as strongly bundled.

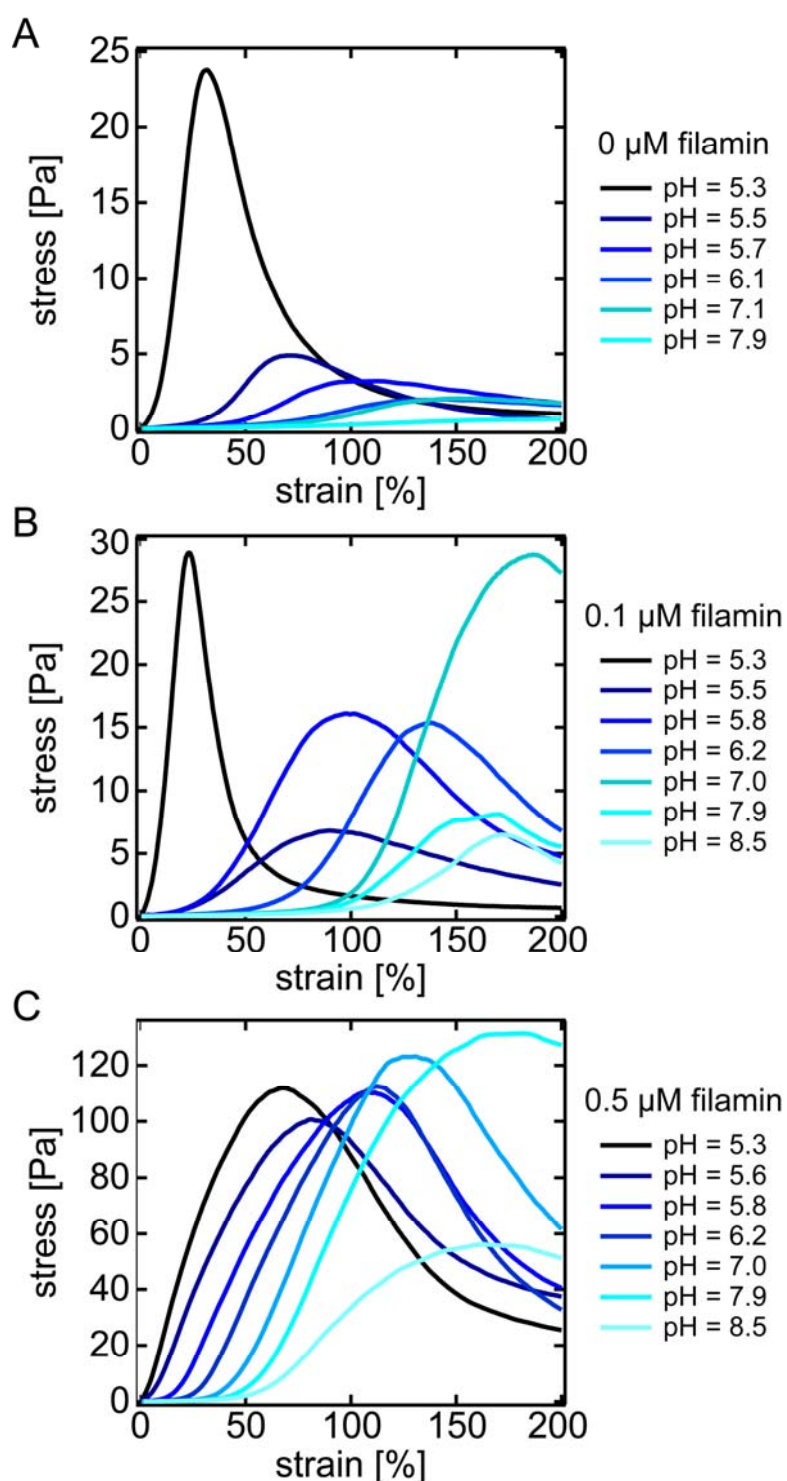## *Non-linear response of actin/filamin networks*

Figure S2: The non-linear response of actin networks (10 μM actin) in the presence of different concentrations of filamin ((A): 0 μM, (B): 0.1 μM and (C): 0.5 μM (dimer)) is shown for different pH values. These data are used to calculate the degree of stiffening shown in Fig. 2F.