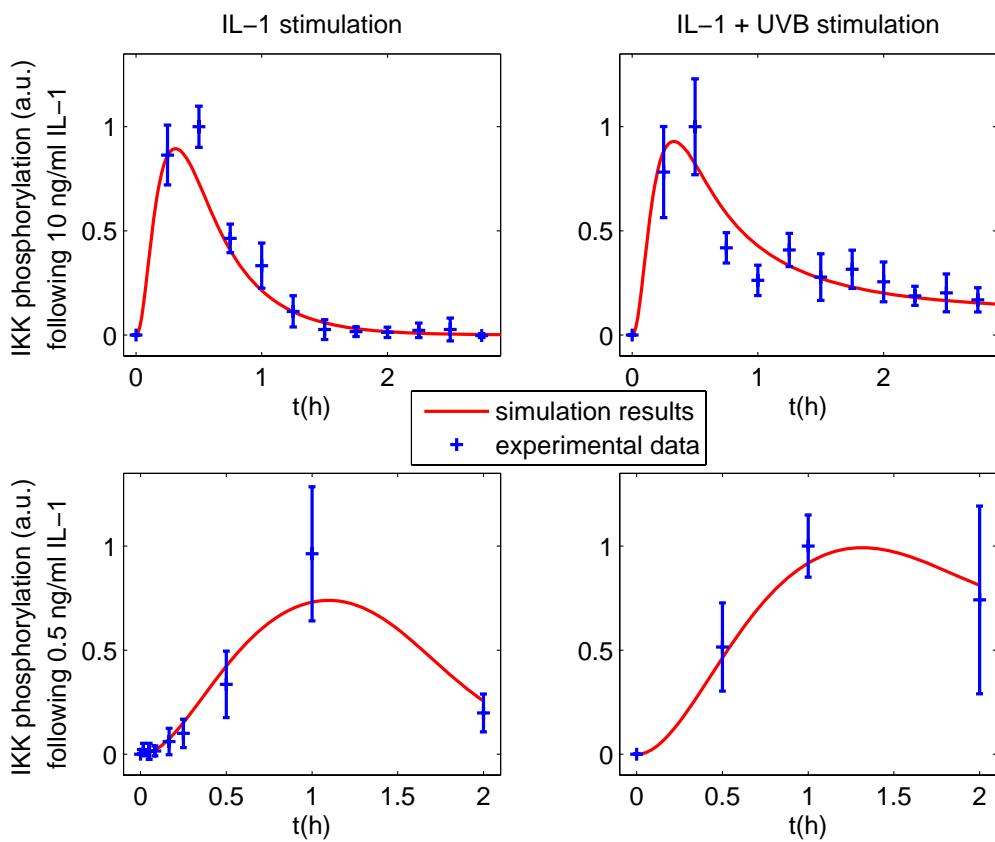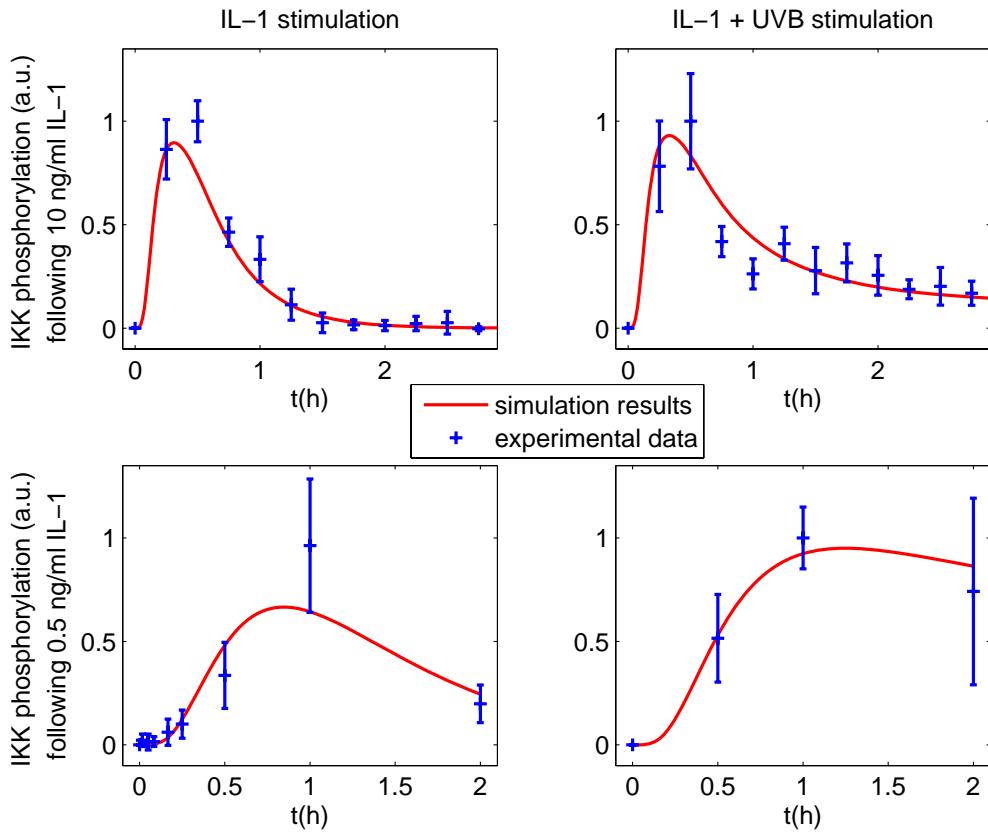Supplementary Table 1. Parameter values of the model with TRAF extension.

Parameter	value	dimension
ka	0.014	$\mathrm{nM^{-1}\,s^{-1}}$
ki	5.6e-4	$\mathrm{s^{-1}}$
kp	0.095	$\mathrm{s^{-1}}$
kdp	9.3e-4	$\mathrm{s^{-1}}$
kuv	2.6e-4	$\mathrm{s^{-1}}$
kaut	0.095	$\mathrm{s^{-1}}$
ku	9.3e-5	$\mathrm{s^{-1}}$
kdu	0.041	$\mathrm{s^{-1}}$
scaleIKK_high	0.90	-
scaleIKK_low	4.0	-

Supplementary Figure 1. IKKβ phosphorylation following different stimulations – experimental data and simulation results of the model with buffer extension. Columns show stimulation with IL-1 or IL-1+UVB (300 J/m²) radiation, respectively, applied at t = 0 h. Rows indicate whether a high (10 ng/ml) or low (0.5 ng/ml) IL-1 dose was applied. A different scaling factor is chosen for the data for 10 ng/ml and 0.5 ng/ml IL-1 stimulation.

Supplementary Figure 2. IKKβ phosphorylation following different stimulations – experimental data and simulation results of the model with double phosphorylation extension. Columns show stimulation with IL-1 or IL-1+UVB (300 J/m²) radiation, respectively, applied at t = 0 h. Rows indicate whether a high (10 ng/ml) or low (0.5 ng/ml) IL-1 dose was applied. A different scaling factor is chosen for the data for 10 ng/ml and 0.5 ng/ml IL-1 stimulation.