

Discovery of degradation mechanism of a sensor protein for oxidative stress –Protein degradation is a key regulatory point for the maintenance of cellular redox homeostasis-

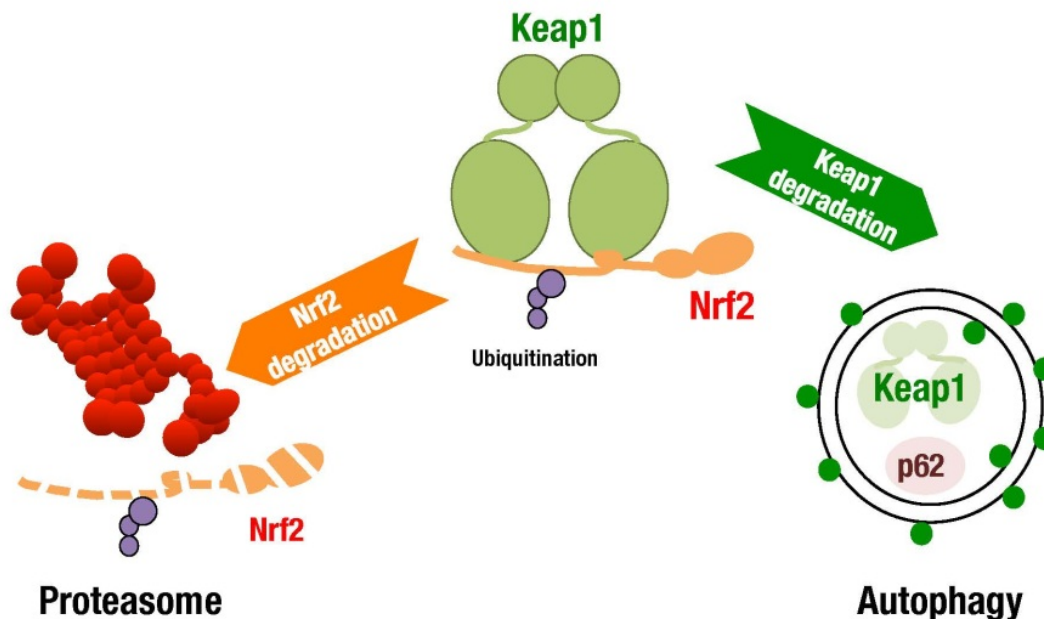
### Professor Masayuki Yamamoto

Research groups led by Professor Masayuki Yamamoto at Tohoku University Graduate School of Medicine and by Vice-Councilor Researcher Masaaki Komatsu at Tokyo Metropolitan Institute of Medical Science have jointly discovered that Keap1, which acts as a sensor for reactive oxygen species and toxic substances, is degraded by the autophagy mechanism. This discovery is important for understanding of molecular mechanisms of the stress response in living organisms and is going to be published in Proceedings of the National Academy of Sciences of the United States of America (PNAS).



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## Sensor protein Keap1 and Transcription factor Nrf2 Are Degraded through Two Distinct Mechanisms



Taguchi K et al, PNAS 109, 13561 (2012)

Keap1 acts as a sensor for reactive oxygen species and toxic substances. We found that Nrf2 is degraded through the proteasome pathway and Keap1 is degraded through the autophagy pathway. These discoveries have clarified the molecular basis of the Keap1-Nrf2 system induction in response to the environmental stress.

### “Keap1 degradation by autophagy for the maintenance of redox homeostasis.”

Taguchi K, Fujikawa N, Komatsu M, Ishii T, Unno M, Akaike T, Motohashi H, Yamamoto M.

*Proc Natl Acad Sci U S A.* 2012 Aug 21;109(34):13561-6. doi: 10.1073/pnas.1121572109. Epub 2012 Aug 7.

PMID: 22872865 [PubMed - indexed for MEDLINE] PMCID: PMC3427110