

Dimerization of LIMK1 by Hsp90

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https://reactome.org

Introduction

Reactome is open-source, open access, manually curated and peer-reviewed pathway database. Pathway annotations are authored by expert biologists, in collaboration with Reactome editorial staff and cross-referenced to many bioinformatics databases. A system of evidence tracking ensures that all assertions are backed up by the primary literature. Reactome is used by clinicians, geneticists, genomics researchers, and molecular biologists to interpret the results of high-throughput experimental studies, by bioinformaticians seeking to develop novel algorithms for mining knowledge from genomic studies, and by systems biologists building predictive models of normal and disease variant pathways.

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Literature references

- Fabregat, A., Sidiropoulos, K., Viteri, G., Forner, O., Marin-Garcia, P., Arnau, V. et al. (2017). Reactome pathway analysis: a high-performance in-memory approach. *BMC bioinformatics*, 18, 142.
- Sidiropoulos, K., Viteri, G., Sevilla, C., Jupe, S., Webber, M., Orlic-Milacic, M. et al. (2017). Reactome enhanced pathway visualization. *Bioinformatics*, 33, 3461-3467.
- Fabregat, A., Jupe, S., Matthews, L., Sidiropoulos, K., Gillespie, M., Garapati, P. et al. (2018). The Reactome Pathway Knowledgebase. *Nucleic Acids Res, 46*, D649-D655.
- Fabregat, A., Korninger, F., Viteri, G., Sidiropoulos, K., Marin-Garcia, P., Ping, P. et al. (2018). Reactome graph data-base: Efficient access to complex pathway data. *PLoS computational biology, 14*, e1005968.

Reactome database release: 88

This document contains 1 reaction (see Table of Contents)

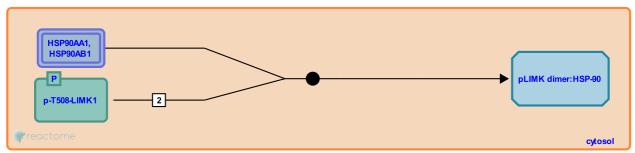
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Dimerization of LIMK1 by Hsp90 →

Stable identifier: R-HSA-419645

Type: binding

Compartments: cytosol



After phosphorylation on Thr 508, LIMK undergoes homodimerization. Homodimer formation is promoted by the binding of heat shock protein 90 (Hsp90) to a short sequence in the kinase domain of LIMKs. LIMKs are further phosphorylated after homodimer formation and transphosphorylation of the kinase domain.

Literature references

Yarden, Y., Soosairajah, J., Morton, CJ., Harari, D., Li, R., Bernard, O. et al. (2006). Hsp90 increases LIM kinase activity by promoting its homo-dimerization. *FASEB J, 20*, 1218-20. *¬*

Bernard, O. (2007). Lim kinases, regulators of actin dynamics. Int J Biochem Cell Biol, 39, 1071-6.

Editions

| 2009-03-23 | Authored, Edited | Garapati, P V. |
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