1. Phylogeny  
   eIF‑2‑alpha kinase GCN2 (gene EIF2AK4) is an evolutionarily conserved serine/threonine kinase present in a wide range of eukaryotic organisms including yeast, plants, and mammals. Its orthologs have been identified in Saccharomyces cerevisiae (as Gcn2p), Arabidopsis thaliana (AtGCN2), and in higher vertebrates, reflecting a fundamental role in the integrated stress response across species (berlanga2016eif2αkinasesand pages 258-260, lokdarshi2022reviewemergingroles pages 3-4). GCN2 is grouped within the eukaryotic initiation factor 2α kinase family alongside other stress‐responsive kinases such as PKR, PERK, and HRI, and in many respects it is considered the ancestral member of this kinase subfamily, having diverged from a common eukaryotic kinase ancestor prior to the expansion of stress‐responsive pathways in metazoans (berlanga2016eif2αkinasesand pages 268-270, rothenburg2016eif2α pages 1-4). Comparative phylogenetic analyses indicate that GCN2 is part of a conserved core within the kinome, demonstrating an evolutionary lineage that traces back to the Last Eukaryotic Common Ancestor (LECA), with its domain architecture maintained across the various lineages (masson2019towardsamodel pages 7-8, sood2000amammalianhomologue pages 13-14).
2. Reaction Catalyzed  
   GCN2 catalyzes the phosphorylation of the alpha subunit of the eukaryotic initiation factor 2 (eIF2α) using ATP as a phosphate donor. The chemical reaction can be represented as follows: ATP + eIF2α → ADP + eIF2α‑phosphate + H⁺. In this reaction, the transfer of a phosphate group to a specific serine residue (Ser51) on eIF2α converts this factor into an inhibitor of its cognate guanine nucleotide exchange factor (eIF2B), leading to a global repression of cap‐dependent translation (donnelly2013theeif2αkinases pages 5-6, sood2000proteinkinasesgcn2 pages 1-7).
3. Cofactor Requirements  
   The catalytic activity of GCN2 is dependent on the presence of Mg²⁺, which is required for ATP binding and phosphoryl transfer during the kinase reaction. Mg²⁺ acts as an essential cofactor by coordinating with ATP in the active site of the kinase domain to facilitate efficient phosphoryl group transfer to the substrate, eIF2α (masson2019towardsamodel pages 1-2, sood2000amammalianhomologue pages 13-14).
4. Substrate Specificity  
   The primary and well‐characterized substrate of GCN2 is the alpha subunit of eukaryotic translation initiation factor 2 (eIF2α). GCN2 phosphorylates eIF2α specifically at serine residue 51, a modification that is critical for the inhibition of global protein synthesis under stress conditions. Although detailed consensus sequence motifs for serine/threonine kinases have been elucidated in large-scale studies of the human serine/threonine kinome (e.g., Johnson et al. 2023), the substrate specificity of GCN2 is defined by its unique recognition of uncharged tRNAs and subsequent action on eIF2α, rather than a broad spectrum of consensus motifs. Thus, the substrate specificity of GCN2 centers on eIF2α as its major substrate with phosphorylation occurring at Ser51 (berlanga2016eif2αkinasesand pages 258-260, donnelly2013theeif2αkinases pages 5-6).
5. Structure  
   GCN2 is a large multidomain protein whose domain organization underlies its diverse functional capabilities. The protein contains an N‑terminal RWD domain, which mediates interactions with regulatory proteins such as GCN1; a centrally located pseudokinase domain that is thought to participate in intramolecular regulation; and the functional kinase domain, which is responsible for the catalytic activity and adopts the characteristic bilobal structure with an ATP‑binding cleft. Flanking the kinase domain is a histidyl‑tRNA synthetase (HisRS)‑like domain that binds uncharged tRNAs that accumulate during amino acid deprivation and functions as a sensor for nutrient scarcity. In addition, GCN2 possesses a C‑terminal domain implicated in dimerization and ribosome binding that facilitates its activation in vivo (masson2019towardsamodel pages 2-4, berlanga2016eif2αkinasesand pages 268-270). Structural studies using crystallography and hydrogen–deuterium exchange mass spectrometry (HDX-MS) have revealed that the kinase domain contains regulatory features such as an activation loop with conserved threonine residues whose autophosphorylation promotes a conformational change into an active state, a hydrophobic spine, and a C‑helix that stabilizes the active conformation (masson2019towardsamodel pages 7-8, joshi2013smallmoleculemodulators pages 7-9). The overall three‑dimensional architecture of GCN2 is designed to integrate signals from its tRNA‑binding HisRS‐like domain with the catalytic activity of its kinase domain, allowing it to function as a sensor and effector in the stress response.
6. Regulation  
   GCN2 is regulated at multiple levels by both post‑translational modifications and protein–protein interactions. Its activation is primarily controlled by the binding of deacylated (uncharged) tRNAs to the HisRS‑like domain. Under conditions of amino acid starvation, the resultant increased pool of uncharged tRNAs promotes a conformational change that relieves autoinhibition imposed by intramolecular interactions, leading to dimerization of GCN2 and subsequent autophosphorylation of key threonine residues in the activation loop (berlanga2016eif2αkinasesand pages 256-258, masson2019towardsamodel pages 7-8). In addition, regulatory proteins such as GCN1 and GCN20 associate with GCN2 via its N‑terminal RWD domain, enhancing its responsiveness to amino acid deprivation by facilitating the transfer of uncharged tRNAs from ribosomes (masson2019towardsamodel pages 2-4, lokdarshi2022reviewemergingroles pages 14-16). Other forms of regulation include stress‑induced phosphorylation events that modulate the protein’s catalytic efficiency, and interactions with inhibitors such as IMPACT, particularly noted in neuronal contexts, which can block the activation of GCN2 (berlanga2016eif2αkinasesand pages 242-246, immanuel2012acriticalreview pages 4-6). Conformational regulation via ribosome binding – specifically through interactions with ribosomal P‑stalk components – further contributes to its controlled activation during stress conditions (masson2019towardsamodel pages 4-5, wek2023survivingandadapting pages 4-5).
7. Function  
   GCN2 functions as a metabolic‑stress sensor that becomes activated under conditions of amino acid shortage or other forms of cellular stress such as glucose deprivation, UV irradiation, and viral infection. Upon activation, GCN2 phosphorylates eIF2α at serine 51, thereby converting eIF2α into an inhibitor of eIF2B and leading to a global attenuation of cap‑dependent translation. This translational arrest conserves cellular resources, reduces the overall rate of protein synthesis, and facilitates selective translation of specific mRNAs that contain upstream open reading frames (uORFs), most notably those encoding transcription factors such as ATF4 (anda2017activationofgcn2 pages 12-13, lehman2015theroleof pages 13-17). The induction of ATF4 leads to a transcriptional reprogramming that upregulates genes involved in amino acid biosynthesis, antioxidative responses, autophagy, and cell cycle arrest, thereby promoting cellular adaptation in nutrient‑limiting or stress‑related conditions (berlanga2016eif2αkinasesand pages 258-260, zhao2023multiplerolesof pages 8-9). In addition to its role in translational control, GCN2 has been implicated in a variety of physiological processes including neurite outgrowth inhibition, synaptic plasticity, learning and memory consolidation, and in mediating anti‑viral responses by impairing early viral mRNA translation (berlanga2016eif2αkinasesand pages 249-251, lehman2015theroleof pages 20-24). Furthermore, GCN2 participates in the regulation of the cell cycle through mechanisms that involve the repression of cyclin D1 mRNA translation and the activation of CDKN1A/p21 translation during stress responses such as those triggered by the unfolded protein response (anda2017activationofgcn2 pages 12-13, lehman2015theroleof pages 20-24). The global protein synthesis repression mediated by GCN2 is critical for cellular adaptation to amino acid starvation as well as other stress signals that challenge the cell’s homeostasis (masson2019towardsamodel pages 7-8, zhao2023multiplerolesof pages 1-2).
8. Other Comments  
   Several small molecule compounds have been investigated that modulate GCN2 activity; for example, agents that inhibit prolyl‑tRNA synthetase can activate GCN2 by mimicking amino acid starvation conditions, while other experimental compounds have been identified as potential inhibitors, though their specificity remains under evaluation (joshi2013smallmoleculemodulators pages 7-9, zhao2023multiplerolesof pages 13-15). Mutations in the EIF2AK4 gene have been associated with alterations in the integrated stress response, and in clinical contexts, disruptions in GCN2 function have been implicated in pulmonary veno‑occlusive disease as well as in modulating tumor cell survival under nutrient‑deprived conditions (lehman2015theroleof pages 20-24, sood2000amammalianhomologue pages 14-15). In addition, GCN2’s role in neuronal signaling is underscored by its involvement in synaptic plasticity and long‑term memory formation, while its activation in immune cells has been shown to regulate cytokine production and T‑cell proliferation, indicating potential therapeutic targets in oncology and immunomodulation (zhao2023multiplerolesof pages 16-18, goodman2019therolesof pages 101-105). Overall, GCN2 stands as a promising target for pharmacological intervention in diseases related to metabolic stress and translational dysregulation, and ongoing research is focused on developing more selective modulators of its activity (joshi2013smallmoleculemodulators pages 1-2, zhao2023multiplerolesof pages 13-15).
9. References  
   anda2017activationofgcn2 pages 12-13; berlanga2016eif2αkinasesand pages 246-249; berlanga2016eif2αkinasesand pages 249-251; berlanga2016eif2αkinasesand pages 258-260; berlanga2016eif2αkinasesand pages 268-270; coots2016evaluationofmrna pages 120-124; immanuel2012acriticalreview pages 4-6; lehman2015theroleof pages 13-17; lehman2015theroleof pages 20-24; masson2019towardsamodel pages 1-2; masson2019towardsamodel pages 2-4; masson2019towardsamodel pages 7-8; miles2021gcn2eif2kinase pages 29-36; zhao2023multiplerolesof pages 1-2; zhao2023multiplerolesof pages 15-16; zhao2023multiplerolesof pages 8-9; berlanga2016eif2αkinasesand pages 239-242; berlanga2016eif2αkinasesand pages 242-246; berlanga2016eif2αkinasesand pages 256-258; donnelly2013theeif2αkinases pages 5-6; donnelly2013theeif2αkinases pages 8-9; goodman2019therolesof pages 101-105; joshi2013smallmoleculemodulators pages 1-2; joshi2013smallmoleculemodulators pages 7-9; kimpe2012pkh1interactswith pages 6-6; lageix2008arabidopsiseif2αkinase pages 1-2; lageix2008arabidopsiseif2αkinase pages 9-9; lokdarshi2022reviewemergingroles pages 13-14; lokdarshi2022reviewemergingroles pages 14-16; lokdarshi2022reviewemergingroles pages 16-18; lokdarshi2022reviewemergingroles pages 22-28; lokdarshi2022reviewemergingroles pages 3-4; masson2019towardsamodel pages 4-5; misra2024multiplemechanismsactivate pages 16-16; rothenburg2016eif2α pages 1-4; rothenburg2016eif2α pages 19-21; rothenburg2016eif2α pages 4-8; sood2000amammalianhomologue pages 13-14; sood2000amammalianhomologue pages 14-15; sood2000proteinkinasesgcn2 pages 1-7; su2006controlofeif2 pages 23-29; taniuchi2016integratedstressresponse pages 1-2; taniuchi2016integratedstressresponse pages 10-11; taniuchi2016integratedstressresponse pages 2-4; wek2023survivingandadapting pages 4-5; zhao2023multiplerolesof pages 13-15; zhao2023multiplerolesof pages 16-18.

References

1. (anda2017activationofgcn2 pages 12-13): Silje Anda, Róbert Zach, and Beáta Grallert. Activation of gcn2 in response to different stresses. PLOS ONE, 12:e0182143, Aug 2017. URL: https://doi.org/10.1371/journal.pone.0182143, doi:10.1371/journal.pone.0182143. This article has 98 citations and is from a peer-reviewed journal.
2. (berlanga2016eif2αkinasesand pages 246-249): Juan José Berlanga, César de Haro, Miguel A. Rodríguez-Gabriel, and Iván Ventoso. Eif2α kinases and the evolution of stress response in eukaryotes. Evolution of the Protein Synthesis Machinery and Its Regulation, pages 261-276, Jan 2016. URL: https://doi.org/10.1007/978-3-319-39468-8\_12, doi:10.1007/978-3-319-39468-8\_12. This article has 3 citations.
3. (berlanga2016eif2αkinasesand pages 249-251): Juan José Berlanga, César de Haro, Miguel A. Rodríguez-Gabriel, and Iván Ventoso. Eif2α kinases and the evolution of stress response in eukaryotes. Evolution of the Protein Synthesis Machinery and Its Regulation, pages 261-276, Jan 2016. URL: https://doi.org/10.1007/978-3-319-39468-8\_12, doi:10.1007/978-3-319-39468-8\_12. This article has 3 citations.
4. (berlanga2016eif2αkinasesand pages 258-260): Juan José Berlanga, César de Haro, Miguel A. Rodríguez-Gabriel, and Iván Ventoso. Eif2α kinases and the evolution of stress response in eukaryotes. Evolution of the Protein Synthesis Machinery and Its Regulation, pages 261-276, Jan 2016. URL: https://doi.org/10.1007/978-3-319-39468-8\_12, doi:10.1007/978-3-319-39468-8\_12. This article has 3 citations.
5. (berlanga2016eif2αkinasesand pages 268-270): Juan José Berlanga, César de Haro, Miguel A. Rodríguez-Gabriel, and Iván Ventoso. Eif2α kinases and the evolution of stress response in eukaryotes. Evolution of the Protein Synthesis Machinery and Its Regulation, pages 261-276, Jan 2016. URL: https://doi.org/10.1007/978-3-319-39468-8\_12, doi:10.1007/978-3-319-39468-8\_12. This article has 3 citations.
6. (coots2016evaluationofmrna pages 120-124): R Coots. Evaluation of mrna translation initiation control mechanisms under cellular stress conditions. Unknown journal, 2016.
7. (immanuel2012acriticalreview pages 4-6): Tracey M. Immanuel, David R. Greenwood, and Robin M. MacDiarmid. A critical review of translation initiation factor eif2α kinases in plants - regulating protein synthesis during stress. Functional Plant Biology, 39:717, Jan 2012. URL: https://doi.org/10.1071/fp12116, doi:10.1071/fp12116. This article has 37 citations and is from a peer-reviewed journal.
8. (lehman2015theroleof pages 13-17): SL Lehman. The role of the integrated stress response kinase gcn2 in cell cycle regulation and tumorigenesis. Unknown journal, 2015.
9. (lehman2015theroleof pages 20-24): SL Lehman. The role of the integrated stress response kinase gcn2 in cell cycle regulation and tumorigenesis. Unknown journal, 2015.
10. (masson2019towardsamodel pages 1-2): Glenn R. Masson. Towards a model of gcn2 activation. Biochemical Society Transactions, 47:1481-1488, Oct 2019. URL: https://doi.org/10.1042/bst20190331, doi:10.1042/bst20190331. This article has 136 citations and is from a peer-reviewed journal.
11. (masson2019towardsamodel pages 2-4): Glenn R. Masson. Towards a model of gcn2 activation. Biochemical Society Transactions, 47:1481-1488, Oct 2019. URL: https://doi.org/10.1042/bst20190331, doi:10.1042/bst20190331. This article has 136 citations and is from a peer-reviewed journal.
12. (masson2019towardsamodel pages 7-8): Glenn R. Masson. Towards a model of gcn2 activation. Biochemical Society Transactions, 47:1481-1488, Oct 2019. URL: https://doi.org/10.1042/bst20190331, doi:10.1042/bst20190331. This article has 136 citations and is from a peer-reviewed journal.
13. (miles2021gcn2eif2kinase pages 29-36): RR Miles. Gcn2 eif2 kinase is critical for keratinocyte collective migration and wound healing. Unknown journal, 2021.
14. (zhao2023multiplerolesof pages 1-2): Chenxu Zhao, Han Guo, Yangxiao Hou, Tong Lei, Dong Wei, and Yong Zhao. Multiple roles of the stress sensor gcn2 in immune cells. International Journal of Molecular Sciences, 24:4285, Feb 2023. URL: https://doi.org/10.3390/ijms24054285, doi:10.3390/ijms24054285. This article has 22 citations and is from a peer-reviewed journal.
15. (zhao2023multiplerolesof pages 15-16): Chenxu Zhao, Han Guo, Yangxiao Hou, Tong Lei, Dong Wei, and Yong Zhao. Multiple roles of the stress sensor gcn2 in immune cells. International Journal of Molecular Sciences, 24:4285, Feb 2023. URL: https://doi.org/10.3390/ijms24054285, doi:10.3390/ijms24054285. This article has 22 citations and is from a peer-reviewed journal.
16. (zhao2023multiplerolesof pages 8-9): Chenxu Zhao, Han Guo, Yangxiao Hou, Tong Lei, Dong Wei, and Yong Zhao. Multiple roles of the stress sensor gcn2 in immune cells. International Journal of Molecular Sciences, 24:4285, Feb 2023. URL: https://doi.org/10.3390/ijms24054285, doi:10.3390/ijms24054285. This article has 22 citations and is from a peer-reviewed journal.
17. (berlanga2016eif2αkinasesand pages 239-242): Juan José Berlanga, César de Haro, Miguel A. Rodríguez-Gabriel, and Iván Ventoso. Eif2α kinases and the evolution of stress response in eukaryotes. Evolution of the Protein Synthesis Machinery and Its Regulation, pages 261-276, Jan 2016. URL: https://doi.org/10.1007/978-3-319-39468-8\_12, doi:10.1007/978-3-319-39468-8\_12. This article has 3 citations.
18. (berlanga2016eif2αkinasesand pages 242-246): Juan José Berlanga, César de Haro, Miguel A. Rodríguez-Gabriel, and Iván Ventoso. Eif2α kinases and the evolution of stress response in eukaryotes. Evolution of the Protein Synthesis Machinery and Its Regulation, pages 261-276, Jan 2016. URL: https://doi.org/10.1007/978-3-319-39468-8\_12, doi:10.1007/978-3-319-39468-8\_12. This article has 3 citations.
19. (berlanga2016eif2αkinasesand pages 256-258): Juan José Berlanga, César de Haro, Miguel A. Rodríguez-Gabriel, and Iván Ventoso. Eif2α kinases and the evolution of stress response in eukaryotes. Evolution of the Protein Synthesis Machinery and Its Regulation, pages 261-276, Jan 2016. URL: https://doi.org/10.1007/978-3-319-39468-8\_12, doi:10.1007/978-3-319-39468-8\_12. This article has 3 citations.
20. (donnelly2013theeif2αkinases pages 5-6): Neysan Donnelly, Adrienne M. Gorman, Sanjeev Gupta, and Afshin Samali. The eif2α kinases: their structures and functions. Cellular and Molecular Life Sciences, 70:3493-3511, Jan 2013. URL: https://doi.org/10.1007/s00018-012-1252-6, doi:10.1007/s00018-012-1252-6. This article has 1029 citations and is from a domain leading peer-reviewed journal.
21. (donnelly2013theeif2αkinases pages 8-9): Neysan Donnelly, Adrienne M. Gorman, Sanjeev Gupta, and Afshin Samali. The eif2α kinases: their structures and functions. Cellular and Molecular Life Sciences, 70:3493-3511, Jan 2013. URL: https://doi.org/10.1007/s00018-012-1252-6, doi:10.1007/s00018-012-1252-6. This article has 1029 citations and is from a domain leading peer-reviewed journal.
22. (goodman2019therolesof pages 101-105): D Goodman. The roles of eif2 kinases pkr and gcn2 during mouse adenovirus type 1 infection. Unknown journal, 2019.
23. (joshi2013smallmoleculemodulators pages 1-2): Manali Joshi, Abhijeet Kulkarni, and Jayanta K. Pal. Small molecule modulators of eukaryotic initiation factor 2α kinases, the key regulators of protein synthesis. Biochimie, 95:1980-1990, Nov 2013. URL: https://doi.org/10.1016/j.biochi.2013.07.030, doi:10.1016/j.biochi.2013.07.030. This article has 47 citations and is from a peer-reviewed journal.
24. (joshi2013smallmoleculemodulators pages 7-9): Manali Joshi, Abhijeet Kulkarni, and Jayanta K. Pal. Small molecule modulators of eukaryotic initiation factor 2α kinases, the key regulators of protein synthesis. Biochimie, 95:1980-1990, Nov 2013. URL: https://doi.org/10.1016/j.biochi.2013.07.030, doi:10.1016/j.biochi.2013.07.030. This article has 47 citations and is from a peer-reviewed journal.
25. (kimpe2012pkh1interactswith pages 6-6): M. Kimpe, K. Voordeckers, J.M. Thevelein, and G. Van Zeebroeck. Pkh1 interacts with and phosphorylates components of the yeast gcn2/eif2α system. Biochemical and Biophysical Research Communications, 419:89-94, Mar 2012. URL: https://doi.org/10.1016/j.bbrc.2012.01.133, doi:10.1016/j.bbrc.2012.01.133. This article has 6 citations and is from a peer-reviewed journal.
26. (lageix2008arabidopsiseif2αkinase pages 1-2): Sébastien Lageix, Elodie Lanet, Marie-Noëlle Pouch-Pélissier, Marie-Claude Espagnol, Christophe Robaglia, Jean-Marc Deragon, and Thierry Pélissier. Arabidopsis eif2α kinase gcn2 is essential for growth in stress conditions and is activated by wounding. BMC Plant Biology, 8:134-134, Dec 2008. URL: https://doi.org/10.1186/1471-2229-8-134, doi:10.1186/1471-2229-8-134. This article has 186 citations and is from a peer-reviewed journal.
27. (lageix2008arabidopsiseif2αkinase pages 9-9): Sébastien Lageix, Elodie Lanet, Marie-Noëlle Pouch-Pélissier, Marie-Claude Espagnol, Christophe Robaglia, Jean-Marc Deragon, and Thierry Pélissier. Arabidopsis eif2α kinase gcn2 is essential for growth in stress conditions and is activated by wounding. BMC Plant Biology, 8:134-134, Dec 2008. URL: https://doi.org/10.1186/1471-2229-8-134, doi:10.1186/1471-2229-8-134. This article has 186 citations and is from a peer-reviewed journal.
28. (lokdarshi2022reviewemergingroles pages 13-14): Ansul Lokdarshi and Albrecht G. von Arnim. Review: emerging roles of the signaling network of the protein kinase gcn2 in the plant stress response. Plant Science, 320:111280, Jul 2022. URL: https://doi.org/10.1016/j.plantsci.2022.111280, doi:10.1016/j.plantsci.2022.111280. This article has 16 citations and is from a peer-reviewed journal.
29. (lokdarshi2022reviewemergingroles pages 14-16): Ansul Lokdarshi and Albrecht G. von Arnim. Review: emerging roles of the signaling network of the protein kinase gcn2 in the plant stress response. Plant Science, 320:111280, Jul 2022. URL: https://doi.org/10.1016/j.plantsci.2022.111280, doi:10.1016/j.plantsci.2022.111280. This article has 16 citations and is from a peer-reviewed journal.
30. (lokdarshi2022reviewemergingroles pages 16-18): Ansul Lokdarshi and Albrecht G. von Arnim. Review: emerging roles of the signaling network of the protein kinase gcn2 in the plant stress response. Plant Science, 320:111280, Jul 2022. URL: https://doi.org/10.1016/j.plantsci.2022.111280, doi:10.1016/j.plantsci.2022.111280. This article has 16 citations and is from a peer-reviewed journal.
31. (lokdarshi2022reviewemergingroles pages 22-28): Ansul Lokdarshi and Albrecht G. von Arnim. Review: emerging roles of the signaling network of the protein kinase gcn2 in the plant stress response. Plant Science, 320:111280, Jul 2022. URL: https://doi.org/10.1016/j.plantsci.2022.111280, doi:10.1016/j.plantsci.2022.111280. This article has 16 citations and is from a peer-reviewed journal.
32. (lokdarshi2022reviewemergingroles pages 3-4): Ansul Lokdarshi and Albrecht G. von Arnim. Review: emerging roles of the signaling network of the protein kinase gcn2 in the plant stress response. Plant Science, 320:111280, Jul 2022. URL: https://doi.org/10.1016/j.plantsci.2022.111280, doi:10.1016/j.plantsci.2022.111280. This article has 16 citations and is from a peer-reviewed journal.
33. (masson2019towardsamodel pages 4-5): Glenn R. Masson. Towards a model of gcn2 activation. Biochemical Society Transactions, 47:1481-1488, Oct 2019. URL: https://doi.org/10.1042/bst20190331, doi:10.1042/bst20190331. This article has 136 citations and is from a peer-reviewed journal.
34. (misra2024multiplemechanismsactivate pages 16-16): Jagannath Misra, Kenneth R Carlson, Dan F Spandau, and Ronald C Wek. Multiple mechanisms activate gcn2 eif2 kinase in response to diverse stress conditions. Nucleic Acids Research, 52:1830-1846, Jan 2024. URL: https://doi.org/10.1093/nar/gkae006, doi:10.1093/nar/gkae006. This article has 27 citations and is from a highest quality peer-reviewed journal.
35. (sood2000amammalianhomologue pages 13-14): Ruchira Sood, Amy C Porter, DeAnne Olsen, Douglas R Cavener, and Ronald C Wek. A mammalian homologue of gcn2 protein kinase important for translational control by phosphorylation of eukaryotic initiation factor-2α. Genetics, 154:787-801, Feb 2000. URL: https://doi.org/10.1093/genetics/154.2.787, doi:10.1093/genetics/154.2.787. This article has 367 citations and is from a domain leading peer-reviewed journal.
36. (sood2000amammalianhomologue pages 14-15): Ruchira Sood, Amy C Porter, DeAnne Olsen, Douglas R Cavener, and Ronald C Wek. A mammalian homologue of gcn2 protein kinase important for translational control by phosphorylation of eukaryotic initiation factor-2α. Genetics, 154:787-801, Feb 2000. URL: https://doi.org/10.1093/genetics/154.2.787, doi:10.1093/genetics/154.2.787. This article has 367 citations and is from a domain leading peer-reviewed journal.
37. (sood2000proteinkinasesgcn2 pages 1-7): R Sood. Protein kinases, gcn2 and pek, control translation in response to cellular stress. Unknown journal, 2000.
38. (su2006controlofeif2 pages 23-29): Q Su. Control of eif2 alpha kinases by tyrosine phosphorylation: implications for gene translation and anti-viral signaling. Unknown journal, 2006.
39. (taniuchi2016integratedstressresponse pages 1-2): Shusuke Taniuchi, Masato Miyake, Kazue Tsugawa, Miho Oyadomari, and Seiichi Oyadomari. Integrated stress response of vertebrates is regulated by four eif2α kinases. Scientific Reports, Sep 2016. URL: https://doi.org/10.1038/srep32886, doi:10.1038/srep32886. This article has 302 citations and is from a poor quality or predatory journal.
40. (taniuchi2016integratedstressresponse pages 10-11): Shusuke Taniuchi, Masato Miyake, Kazue Tsugawa, Miho Oyadomari, and Seiichi Oyadomari. Integrated stress response of vertebrates is regulated by four eif2α kinases. Scientific Reports, Sep 2016. URL: https://doi.org/10.1038/srep32886, doi:10.1038/srep32886. This article has 302 citations and is from a poor quality or predatory journal.
41. (taniuchi2016integratedstressresponse pages 2-4): Shusuke Taniuchi, Masato Miyake, Kazue Tsugawa, Miho Oyadomari, and Seiichi Oyadomari. Integrated stress response of vertebrates is regulated by four eif2α kinases. Scientific Reports, Sep 2016. URL: https://doi.org/10.1038/srep32886, doi:10.1038/srep32886. This article has 302 citations and is from a poor quality or predatory journal.
42. (wek2023survivingandadapting pages 4-5): Ronald C. Wek, Tracy G. Anthony, and Kirk A. Staschke. Surviving and adapting to stress: translational control and the integrated stress response. Antioxidants & Redox Signaling, 39:351-373, Aug 2023. URL: https://doi.org/10.1089/ars.2022.0123, doi:10.1089/ars.2022.0123. This article has 34 citations.
43. (zhao2023multiplerolesof pages 13-15): Chenxu Zhao, Han Guo, Yangxiao Hou, Tong Lei, Dong Wei, and Yong Zhao. Multiple roles of the stress sensor gcn2 in immune cells. International Journal of Molecular Sciences, 24:4285, Feb 2023. URL: https://doi.org/10.3390/ijms24054285, doi:10.3390/ijms24054285. This article has 22 citations and is from a peer-reviewed journal.
44. (zhao2023multiplerolesof pages 16-18): Chenxu Zhao, Han Guo, Yangxiao Hou, Tong Lei, Dong Wei, and Yong Zhao. Multiple roles of the stress sensor gcn2 in immune cells. International Journal of Molecular Sciences, 24:4285, Feb 2023. URL: https://doi.org/10.3390/ijms24054285, doi:10.3390/ijms24054285. This article has 22 citations and is from a peer-reviewed journal.