1. Phylogeny  
   Cyclin-dependent kinase 5 (CDK5) is a member of the cyclin-dependent kinase family that is evolutionarily distinct from classical cell cycle CDKs and shares sequence homology with kinases such as Pho85 in yeast, reflecting its ancient origin conserved across species in metazoans (malumbres2014cyclindependentkinases pages 2-3). CDK5 is ubiquitously expressed; however, its kinase activity is predominantly observed in postmitotic neurons, a feature that distinguishes it from other CDKs that are primarily involved in cell cycle progression (su2011cyclindependentkinasesin pages 1-3). The enzyme belongs to the serine/threonine kinase group and clusters with kinases engaged in neuronal signaling pathways, demonstrating a branched evolution that emphasizes its non-cell cycle regulatory functions (łukasik2021cyclindependentkinases(cdk) pages 2-4). Furthermore, phylogenetic analyses indicate that while the overall catalytic domain is common amongst all CDKs, CDK5 emerged as a unique variant that utilizes neuronal-specific activators rather than cyclins, a divergence that can be traced back to early metazoan evolution (malumbres2014cyclindependentkinases pages 6-7). The presence of CDK5 orthologs in a wide range of mammalian species underscores its essential role in the nervous system, and its specialized function is maintained throughout evolution even as other CDKs adapted to govern cell cycle events (openTargets Search: -CDK5).
2. Reaction Catalyzed  
   CDK5 catalyzes the phosphorylation of protein substrates by transferring the γ-phosphate from ATP to serine or threonine residues present in target proteins, which results in the production of ADP and a phosphorylated protein product (template). This reaction is general for serine/threonine kinases and follows the stoichiometry: ATP + protein‐(L‐serine or L‐threonine) → ADP + protein‐(L‐serine/threonine)‐phosphate + H⁺, illustrating its role in modulating the activity or stability of key substrates (template, shukla2020virtualscreeningpharmacokinetics pages 1-5).
3. Cofactor Requirements  
   The catalytic activity of CDK5 requires divalent metal ion cofactors, with Mg²⁺ being essential for its kinase function since it facilitates the binding and proper orientation of ATP in the active site (template). This requirement for Mg²⁺ is a conserved trait among serine/threonine kinases and ensures efficient catalysis during the phosphorylation reaction (template, malumbres2014cyclindependentkinases pages 6-7).
4. Substrate Specificity  
   CDK5 exhibits proline-directed serine/threonine kinase activity and demonstrates substrate specificity for sequences where the phosphorylated serine or threonine is immediately followed by a proline residue, often within the context of a consensus motif such as S/TPXK/R (sharma1999identificationofsubstrate pages 1-2). In addition, CDK5’s substrate recognition is modulated by its unique interactions with regulatory activators, which influence substrate selection toward proteins that play a pivotal role in neuronal function, including the microtubule-associated protein tau (MAPT), neurofilaments, and other cytoskeletal components (dhariwala2008anunusualmember pages 1-3, su2011cyclindependentkinasesin pages 3-5). The enzyme phosphorylates a broad range of substrates involved in controlling cytoskeletal dynamics, synaptic vesicle trafficking, and signal transduction pathways, which often include basic amino acids at positions near the phosphoacceptor site that contribute to optimal substrate binding (cheung2012cdk5amultifaceted pages 4-6, mapelli2005mechanismofcdk5p25 pages 1-2). The specificity is further refined by the spatial and temporal regulation provided by CDK5’s activator proteins such as p35 and p39, ensuring that phosphorylation events occur primarily within the neuronal context (dhariwala2008anunusualmember pages 3-5).
5. Structure  
   CDK5 possesses a canonical kinase fold that comprises a small N-terminal lobe rich in β-sheets and a larger C-terminal lobe that is predominantly α-helical, similar to other members of the CDK family, but with unique regulatory features (malumbres2014cyclindependentkinases pages 3-5). The activation loop within its catalytic domain, although structurally analogous to those of other CDKs, does not require phosphorylation by CDK-activating kinase (CAK) for full activation, because the binding of activators p35 or p39 induces a conformational change that stabilizes the active state (dhariwala2008anunusualmember pages 3-5, mapelli2005mechanismofcdk5p25 pages 8-9). A glycine-rich loop, which plays a critical role in ATP binding, is also present and is similar to those found in other serine/threonine kinases, yet CDK5’s overall surface topology is altered by its association with neuron-specific regulatory partners (malumbres2014cyclindependentkinases pages 5-6). The three-dimensional organization of CDK5 includes regions that mediate binding to activators; these regulatory proteins interact with the kinase via a cyclin-box domain-like interface that is distinct from the classical cyclins that activate other CDKs (su2011cyclindependentkinasesin pages 7-9, peyressatre2015targetingcyclindependentkinases pages 4-6). Unique structural features of CDK5 include the absence or altered function of inhibitory phosphorylation sites that are commonly observed in cell cycle CDKs, and its catalytic core is optimized to interact with p35 or p39 rather than relying on phosphorylation-induced conformational changes (dhariwala2008anunusualmember pages 8-11, malumbres2014cyclindependentkinases pages 6-7).
6. Regulation  
   The regulatory mechanisms governing CDK5 activity are complex and involve multiple layers of post-translational modifications and protein–protein interactions. Notably, CDK5 is activated upon binding to its neuron-specific activators p35 and p39, which, unlike cyclins, confer spatial and temporal regulation of the kinase in postmitotic neurons (dhariwala2008anunusualmember pages 1-3, su2011cyclindependentkinasesin pages 1-3). A critical regulatory event is the proteolytic cleavage of p35 by the calcium-dependent protease calpain, which produces p25; this truncated fragment binds CDK5 with higher stability and leads to prolonged, hyperactive kinase activity that has been linked to pathological conditions such as Alzheimer’s disease (dhariwala2008anunusualmember pages 11-13, mapelli2005mechanismofcdk5p25 pages 8-9). CDK5 also undergoes autoregulatory phosphorylation events that modulate its substrate affinity and stability, with phosphorylation of p35 by CDK5 itself contributing to a negative feedback loop that regulates the turnover of the activator (dhariwala2008anunusualmember pages 13-15, su2011cyclindependentkinasesin pages 21-23). Additional layers of regulation include the modulation of CDK5 activity by several interacting proteins and substrates, such as p53, HDAC1, and members of the Rho and Ras family small GTPases, which further influence its kinase activity in stress responses and during neuronal development (cheung2012cdk5amultifaceted pages 4-6, peyressatre2015targetingcyclindependentkinases pages 15-17). Allosteric regulation through conformational changes upon binding of regulatory partners is central to controlling CDK5’s enzymatic activity and substrate specificity, making its regulation highly context-dependent (łukasik2021cyclindependentkinases(cdk) pages 23-25).
7. Function  
   CDK5 plays a pivotal role in the nervous system, where it is essential for neuronal cell cycle arrest and differentiation; it functions by phosphorylating a wide array of proteins involved in neuronal migration, neurite outgrowth, axonal guidance, synaptogenesis, and synaptic plasticity (dhariwala2008anunusualmember pages 1-3, su2011cyclindependentkinasesin pages 7-9). CDK5 phosphorylates substrates such as tau (MAPT), neurofilament proteins, and microtubule-associated proteins including MAP1B and MAP2, thereby modulating cytoskeletal dynamics critical for neurite extension and maintenance of neuronal architecture (dhariwala2008anunusualmember pages 6-8, shukla2020virtualscreeningpharmacokinetics pages 1-5). In addition to its classical roles in neuronal development, CDK5 also phosphorylates proteins involved in synaptic vesicle exocytosis and endocytosis—for instance, synapsin-1, dynamin-1, amphiphysin, and synaptojanin-1—thereby regulating neurotransmitter release and synaptic plasticity (peyressatre2015targetingcyclindependentkinases pages 6-8, su2011cyclindependentkinasesin pages 7-9). Beyond neuronal functions, CDK5 has been implicated in non-neuronal processes such as the regulation of endothelial cell migration and angiogenesis, where it influences lamellipodia formation and the activation of small GTPases like Rac1, pointing to a broader role in cell motility and tissue remodeling (liebl2010cyclindependentkinase5 pages 1-2, łukasik2021cyclindependentkinases(cdk) pages 29-30). CDK5 modulates apoptotic pathways through the phosphorylation of p53, promoting its stabilization and activation of target genes that lead to cell death under conditions of genotoxic stress, thereby linking kinase activity to the control of neuronal survival (dhariwala2008anunusualmember pages 13-15, su2011cyclindependentkinasesin pages 5-6). Moreover, the kinase plays an integral role in circadian regulation by modulating the activity and subcellular localization of CLOCK protein via phosphorylation, which contributes to the precise regulation of circadian rhythms (dhariwala2008anunusualmember pages 6-8, peyressatre2015targetingcyclindependentkinases pages 27-30). The interactome of CDK5 is extensive, including interactions with proteins involved in cytoskeletal reorganization (e.g., vimentin, paxillin), small GTPases (e.g., RAC1, RHOA, CDC42), and transcription factors such as MEF2, underscoring its multifaceted role in orchestrating diverse signaling pathways in both neuronal and non-neuronal cells (dhariwala2008anunusualmember pages 1-3, łukasik2021cyclindependentkinases(cdk) pages 30-31).
8. Other Comments  
   Several small molecule inhibitors have been identified as modulators of CDK5 activity, with roscovitine being one of the most widely used experimental inhibitors that targets the ATP-binding site of CDK5 (peyressatre2015targetingcyclindependentkinases pages 4-6). The abnormal hyperactivation of CDK5, especially due to the formation of the p25/CDK5 complex, has been implicated in the pathogenesis of various neurodegenerative disorders such as Alzheimer’s disease, Parkinson’s disease, and amyotrophic lateral sclerosis, making CDK5 a prominent therapeutic target (dhariwala2008anunusualmember pages 11-13, cheung2012cdk5amultifaceted pages 4-6). In addition, mutations or dysregulation of CDK5 activity have been associated with aberrant cell cycle re-entry in neurons, which may lead to apoptotic cell death and contribute to neurodegeneration (dhariwala2008anunusualmember pages 3-5, su2011cyclindependentkinasesin pages 21-23). CDK5 is also noted to interact with various proteins that modulate inflammatory responses and DNA damage repair pathways, such as APEX1 and HDAC1, linking its activity to the regulation of cellular stress responses (peyressatre2015targetingcyclindependentkinases pages 15-17, clare2001thecyclindependentkinases pages 3-5). Furthermore, recent proteomic studies have expanded the known CDK5 interactome by identifying novel binding partners in non-neuronal cells, indicating roles in cell growth and migration beyond its classical neuronal functions (xu2014proteomicanalysisof pages 1-2, łukasik2021cyclindependentkinases(cdk) pages 4-5). Such findings emphasize the potential of CDK5 as a target in therapeutic strategies not only for neurodegenerative diseases but also for cancers in which dysregulated cell migration and proliferation are observed (peyressatre2015targetingcyclindependentkinases pages 27-30).
9. References
10. OpenTargets Search: -CDK5
11. dhariwala2008anunusualmember pages 1-3
12. dhariwala2008anunusualmember pages 3-5
13. dhariwala2008anunusualmember pages 6-8
14. dhariwala2008anunusualmember pages 8-11
15. dhariwala2008anunusualmember pages 11-13
16. dhariwala2008anunusualmember pages 13-15
17. mapelli2005mechanismofcdk5p25 pages 1-2
18. mapelli2005mechanismofcdk5p25 pages 8-9
19. peyressatre2015targetingcyclindependentkinases pages 4-6
20. peyressatre2015targetingcyclindependentkinases pages 6-8
21. peyressatre2015targetingcyclindependentkinases pages 15-17
22. peyressatre2015targetingcyclindependentkinases pages 27-30
23. shukla2020virtualscreeningpharmacokinetics pages 1-5
24. su2011cyclindependentkinasesin pages 1-3
25. su2011cyclindependentkinasesin pages 3-5
26. su2011cyclindependentkinasesin pages 5-6
27. su2011cyclindependentkinasesin pages 6-7
28. su2011cyclindependentkinasesin pages 7-9
29. tang1996cyclindependentkinase5 pages 1-2
30. tang1996cyclindependentkinase5 pages 8-9
31. łukasik2021cyclindependentkinases(cdk) pages 2-4
32. łukasik2021cyclindependentkinases(cdk) pages 4-5
33. łukasik2021cyclindependentkinases(cdk) pages 22-23
34. łukasik2021cyclindependentkinases(cdk) pages 23-25
35. łukasik2021cyclindependentkinases(cdk) pages 29-30
36. łukasik2021cyclindependentkinases(cdk) pages 30-31
37. cheung2012cdk5amultifaceted pages 4-6
38. clare2001thecyclindependentkinases pages 1-3
39. clare2001thecyclindependentkinases pages 3-5
40. clare2001thecyclindependentkinases pages 12-14
41. echalier2010recentdevelopmentsin pages 1-2
42. echalier2010recentdevelopmentsin pages 7-8
43. echalier2010recentdevelopmentsin pages 9-9
44. malumbres2014cyclindependentkinases pages 1-2
45. malumbres2014cyclindependentkinases pages 2-3
46. malumbres2014cyclindependentkinases pages 3-5
47. malumbres2014cyclindependentkinases pages 5-6
48. malumbres2014cyclindependentkinases pages 6-7
49. xu2014proteomicanalysisof pages 1-2
50. xu2014proteomicanalysisof pages 12-13
51. xu2014proteomicanalysisof pages 14-15
52. katayama2020cyclindependentkinaselike5 pages 1-2
53. liebl2010cyclindependentkinase5 pages 1-2

References

1. (OpenTargets Search: -CDK5): Open Targets Query (-CDK5, 22 results). Ochoa, D. et al. (2023). The next-generation Open Targets Platform: reimagined, redesigned, rebuilt. Nucleic Acids Research.
2. (dhariwala2008anunusualmember pages 1-3): Fatema A. Dhariwala and Medha S. Rajadhyaksha. An unusual member of the cdk family: cdk5. Cellular and Molecular Neurobiology, 28:351-369, Jan 2008. URL: https://doi.org/10.1007/s10571-007-9242-1, doi:10.1007/s10571-007-9242-1. This article has 238 citations and is from a peer-reviewed journal.
3. (dhariwala2008anunusualmember pages 8-11): Fatema A. Dhariwala and Medha S. Rajadhyaksha. An unusual member of the cdk family: cdk5. Cellular and Molecular Neurobiology, 28:351-369, Jan 2008. URL: https://doi.org/10.1007/s10571-007-9242-1, doi:10.1007/s10571-007-9242-1. This article has 238 citations and is from a peer-reviewed journal.
4. (mapelli2005mechanismofcdk5p25 pages 1-2): Marina Mapelli, Lucia Massimiliano, Claudia Crovace, Markus A. Seeliger, Li-Huei Tsai, Laurent Meijer, and Andrea Musacchio. Mechanism of cdk5/p25 binding by cdk inhibitors. Journal of Medicinal Chemistry, 48:671-679, Jan 2005. URL: https://doi.org/10.1021/jm049323m, doi:10.1021/jm049323m. This article has 251 citations and is from a highest quality peer-reviewed journal.
5. (mapelli2005mechanismofcdk5p25 pages 8-9): Marina Mapelli, Lucia Massimiliano, Claudia Crovace, Markus A. Seeliger, Li-Huei Tsai, Laurent Meijer, and Andrea Musacchio. Mechanism of cdk5/p25 binding by cdk inhibitors. Journal of Medicinal Chemistry, 48:671-679, Jan 2005. URL: https://doi.org/10.1021/jm049323m, doi:10.1021/jm049323m. This article has 251 citations and is from a highest quality peer-reviewed journal.
6. (sharma1999identificationofsubstrate pages 1-2): Pushkar Sharma, Peter J. Steinbach, Monica Sharma, Niranjana D. Amin, Joseph J. Barchi, and Harish C. Pant. Identification of substrate binding site of cyclin-dependent kinase 5\*. The Journal of Biological Chemistry, 274:9600-9606, Apr 1999. URL: https://doi.org/10.1074/jbc.274.14.9600, doi:10.1074/jbc.274.14.9600. This article has 49 citations.
7. (shukla2020virtualscreeningpharmacokinetics pages 1-5): Rohit Shukla and Tiratha Raj Singh. Virtual screening, pharmacokinetics, molecular dynamics and binding free energy analysis for small natural molecules against cyclin-dependent kinase 5 for alzheimer’s disease. Journal of Biomolecular Structure and Dynamics, 38:248-262, Jan 2020. URL: https://doi.org/10.1080/07391102.2019.1571947, doi:10.1080/07391102.2019.1571947. This article has 69 citations and is from a peer-reviewed journal.
8. (su2011cyclindependentkinasesin pages 1-3): Susan C. Su and Li-Huei Tsai. Cyclin-dependent kinases in brain development and disease. Annual Review of Cell and Developmental Biology, 27:465-491, Nov 2011. URL: https://doi.org/10.1146/annurev-cellbio-092910-154023, doi:10.1146/annurev-cellbio-092910-154023. This article has 356 citations and is from a domain leading peer-reviewed journal.
9. (su2011cyclindependentkinasesin pages 21-23): Susan C. Su and Li-Huei Tsai. Cyclin-dependent kinases in brain development and disease. Annual Review of Cell and Developmental Biology, 27:465-491, Nov 2011. URL: https://doi.org/10.1146/annurev-cellbio-092910-154023, doi:10.1146/annurev-cellbio-092910-154023. This article has 356 citations and is from a domain leading peer-reviewed journal.
10. (su2011cyclindependentkinasesin pages 3-5): Susan C. Su and Li-Huei Tsai. Cyclin-dependent kinases in brain development and disease. Annual Review of Cell and Developmental Biology, 27:465-491, Nov 2011. URL: https://doi.org/10.1146/annurev-cellbio-092910-154023, doi:10.1146/annurev-cellbio-092910-154023. This article has 356 citations and is from a domain leading peer-reviewed journal.
11. (tang1996cyclindependentkinase5 pages 8-9): Damu Tang and Jerry H. Wang. Cyclin-dependent kinase 5 (cdk5) and neuron-specific cdk5 activators. Progress in Cell Cycle Research, 2:205-216, Jan 1996. URL: https://doi.org/10.1007/978-1-4615-5873-6\_20, doi:10.1007/978-1-4615-5873-6\_20. This article has 98 citations.
12. (łukasik2021cyclindependentkinases(cdk) pages 2-4): Paweł Łukasik, Michał Załuski, and Izabela Gutowska. Cyclin-dependent kinases (cdk) and their role in diseases development–review. International Journal of Molecular Sciences, 22:2935, Mar 2021. URL: https://doi.org/10.3390/ijms22062935, doi:10.3390/ijms22062935. This article has 199 citations and is from a peer-reviewed journal.
13. (łukasik2021cyclindependentkinases(cdk) pages 22-23): Paweł Łukasik, Michał Załuski, and Izabela Gutowska. Cyclin-dependent kinases (cdk) and their role in diseases development–review. International Journal of Molecular Sciences, 22:2935, Mar 2021. URL: https://doi.org/10.3390/ijms22062935, doi:10.3390/ijms22062935. This article has 199 citations and is from a peer-reviewed journal.
14. (łukasik2021cyclindependentkinases(cdk) pages 23-25): Paweł Łukasik, Michał Załuski, and Izabela Gutowska. Cyclin-dependent kinases (cdk) and their role in diseases development–review. International Journal of Molecular Sciences, 22:2935, Mar 2021. URL: https://doi.org/10.3390/ijms22062935, doi:10.3390/ijms22062935. This article has 199 citations and is from a peer-reviewed journal.
15. (łukasik2021cyclindependentkinases(cdk) pages 29-30): Paweł Łukasik, Michał Załuski, and Izabela Gutowska. Cyclin-dependent kinases (cdk) and their role in diseases development–review. International Journal of Molecular Sciences, 22:2935, Mar 2021. URL: https://doi.org/10.3390/ijms22062935, doi:10.3390/ijms22062935. This article has 199 citations and is from a peer-reviewed journal.
16. (łukasik2021cyclindependentkinases(cdk) pages 30-31): Paweł Łukasik, Michał Załuski, and Izabela Gutowska. Cyclin-dependent kinases (cdk) and their role in diseases development–review. International Journal of Molecular Sciences, 22:2935, Mar 2021. URL: https://doi.org/10.3390/ijms22062935, doi:10.3390/ijms22062935. This article has 199 citations and is from a peer-reviewed journal.
17. (cheung2012cdk5amultifaceted pages 4-6): Zelda H. Cheung and Nancy Y. Ip. Cdk5: a multifaceted kinase in neurodegenerative diseases. Trends in Cell Biology, 22:169-175, Mar 2012. URL: https://doi.org/10.1016/j.tcb.2011.11.003, doi:10.1016/j.tcb.2011.11.003. This article has 281 citations and is from a domain leading peer-reviewed journal.
18. (clare2001thecyclindependentkinases pages 3-5): Paula M. Clare, Roger A. Poorman, Laura C. Kelley, Keith D. Watenpaugh, Carol A. Bannow, and Karen L. Leach. The cyclin-dependent kinases cdk2 and cdk5 act by a random, anticooperative kinetic mechanism\*. The Journal of Biological Chemistry, 276:48292-48299, Dec 2001. URL: https://doi.org/10.1074/jbc.m102034200, doi:10.1074/jbc.m102034200. This article has 67 citations.
19. (dhariwala2008anunusualmember pages 11-13): Fatema A. Dhariwala and Medha S. Rajadhyaksha. An unusual member of the cdk family: cdk5. Cellular and Molecular Neurobiology, 28:351-369, Jan 2008. URL: https://doi.org/10.1007/s10571-007-9242-1, doi:10.1007/s10571-007-9242-1. This article has 238 citations and is from a peer-reviewed journal.
20. (dhariwala2008anunusualmember pages 13-15): Fatema A. Dhariwala and Medha S. Rajadhyaksha. An unusual member of the cdk family: cdk5. Cellular and Molecular Neurobiology, 28:351-369, Jan 2008. URL: https://doi.org/10.1007/s10571-007-9242-1, doi:10.1007/s10571-007-9242-1. This article has 238 citations and is from a peer-reviewed journal.
21. (dhariwala2008anunusualmember pages 3-5): Fatema A. Dhariwala and Medha S. Rajadhyaksha. An unusual member of the cdk family: cdk5. Cellular and Molecular Neurobiology, 28:351-369, Jan 2008. URL: https://doi.org/10.1007/s10571-007-9242-1, doi:10.1007/s10571-007-9242-1. This article has 238 citations and is from a peer-reviewed journal.
22. (dhariwala2008anunusualmember pages 6-8): Fatema A. Dhariwala and Medha S. Rajadhyaksha. An unusual member of the cdk family: cdk5. Cellular and Molecular Neurobiology, 28:351-369, Jan 2008. URL: https://doi.org/10.1007/s10571-007-9242-1, doi:10.1007/s10571-007-9242-1. This article has 238 citations and is from a peer-reviewed journal.
23. (echalier2010recentdevelopmentsin pages 1-2): Aude Echalier, Jane A. Endicott, and Martin E.M. Noble. Recent developments in cyclin-dependent kinase biochemical and structural studies. Biochimica et Biophysica Acta (BBA) - Proteins and Proteomics, 1804:511-519, Mar 2010. URL: https://doi.org/10.1016/j.bbapap.2009.10.002, doi:10.1016/j.bbapap.2009.10.002. This article has 162 citations.
24. (echalier2010recentdevelopmentsin pages 7-8): Aude Echalier, Jane A. Endicott, and Martin E.M. Noble. Recent developments in cyclin-dependent kinase biochemical and structural studies. Biochimica et Biophysica Acta (BBA) - Proteins and Proteomics, 1804:511-519, Mar 2010. URL: https://doi.org/10.1016/j.bbapap.2009.10.002, doi:10.1016/j.bbapap.2009.10.002. This article has 162 citations.
25. (malumbres2014cyclindependentkinases pages 2-3): Marcos Malumbres. Cyclin-dependent kinases. Genome Biology, 15:122-122, Jun 2014. URL: https://doi.org/10.1186/gb4184, doi:10.1186/gb4184. This article has 1882 citations and is from a highest quality peer-reviewed journal.
26. (malumbres2014cyclindependentkinases pages 5-6): Marcos Malumbres. Cyclin-dependent kinases. Genome Biology, 15:122-122, Jun 2014. URL: https://doi.org/10.1186/gb4184, doi:10.1186/gb4184. This article has 1882 citations and is from a highest quality peer-reviewed journal.
27. (malumbres2014cyclindependentkinases pages 6-7): Marcos Malumbres. Cyclin-dependent kinases. Genome Biology, 15:122-122, Jun 2014. URL: https://doi.org/10.1186/gb4184, doi:10.1186/gb4184. This article has 1882 citations and is from a highest quality peer-reviewed journal.
28. (peyressatre2015targetingcyclindependentkinases pages 15-17): Marion Peyressatre, Camille Prével, Morgan Pellerano, and May Morris. Targeting cyclin-dependent kinases in human cancers: from small molecules to peptide inhibitors. Cancers, 7:179-237, Jan 2015. URL: https://doi.org/10.3390/cancers7010179, doi:10.3390/cancers7010179. This article has 402 citations and is from a peer-reviewed journal.
29. (peyressatre2015targetingcyclindependentkinases pages 27-30): Marion Peyressatre, Camille Prével, Morgan Pellerano, and May Morris. Targeting cyclin-dependent kinases in human cancers: from small molecules to peptide inhibitors. Cancers, 7:179-237, Jan 2015. URL: https://doi.org/10.3390/cancers7010179, doi:10.3390/cancers7010179. This article has 402 citations and is from a peer-reviewed journal.
30. (peyressatre2015targetingcyclindependentkinases pages 4-6): Marion Peyressatre, Camille Prével, Morgan Pellerano, and May Morris. Targeting cyclin-dependent kinases in human cancers: from small molecules to peptide inhibitors. Cancers, 7:179-237, Jan 2015. URL: https://doi.org/10.3390/cancers7010179, doi:10.3390/cancers7010179. This article has 402 citations and is from a peer-reviewed journal.
31. (peyressatre2015targetingcyclindependentkinases pages 6-8): Marion Peyressatre, Camille Prével, Morgan Pellerano, and May Morris. Targeting cyclin-dependent kinases in human cancers: from small molecules to peptide inhibitors. Cancers, 7:179-237, Jan 2015. URL: https://doi.org/10.3390/cancers7010179, doi:10.3390/cancers7010179. This article has 402 citations and is from a peer-reviewed journal.
32. (su2011cyclindependentkinasesin pages 5-6): Susan C. Su and Li-Huei Tsai. Cyclin-dependent kinases in brain development and disease. Annual Review of Cell and Developmental Biology, 27:465-491, Nov 2011. URL: https://doi.org/10.1146/annurev-cellbio-092910-154023, doi:10.1146/annurev-cellbio-092910-154023. This article has 356 citations and is from a domain leading peer-reviewed journal.
33. (su2011cyclindependentkinasesin pages 6-7): Susan C. Su and Li-Huei Tsai. Cyclin-dependent kinases in brain development and disease. Annual Review of Cell and Developmental Biology, 27:465-491, Nov 2011. URL: https://doi.org/10.1146/annurev-cellbio-092910-154023, doi:10.1146/annurev-cellbio-092910-154023. This article has 356 citations and is from a domain leading peer-reviewed journal.
34. (su2011cyclindependentkinasesin pages 7-9): Susan C. Su and Li-Huei Tsai. Cyclin-dependent kinases in brain development and disease. Annual Review of Cell and Developmental Biology, 27:465-491, Nov 2011. URL: https://doi.org/10.1146/annurev-cellbio-092910-154023, doi:10.1146/annurev-cellbio-092910-154023. This article has 356 citations and is from a domain leading peer-reviewed journal.
35. (tang1996cyclindependentkinase5 pages 1-2): Damu Tang and Jerry H. Wang. Cyclin-dependent kinase 5 (cdk5) and neuron-specific cdk5 activators. Progress in Cell Cycle Research, 2:205-216, Jan 1996. URL: https://doi.org/10.1007/978-1-4615-5873-6\_20, doi:10.1007/978-1-4615-5873-6\_20. This article has 98 citations.
36. (xu2014proteomicanalysisof pages 1-2): Shuangbing Xu, Xu Li, Zihua Gong, Wenqi Wang, Yujing Li, Binoj Chandrasekharan Nair, Hailong Piao, Kunyu Yang, Gang Wu, and Junjie Chen. Proteomic analysis of the human cyclin-dependent kinase family reveals a novel cdk5 complex involved in cell growth and migration. Molecular & Cellular Proteomics, 13:2986-3000, Nov 2014. URL: https://doi.org/10.1074/mcp.m113.036699, doi:10.1074/mcp.m113.036699. This article has 47 citations.
37. (xu2014proteomicanalysisof pages 12-13): Shuangbing Xu, Xu Li, Zihua Gong, Wenqi Wang, Yujing Li, Binoj Chandrasekharan Nair, Hailong Piao, Kunyu Yang, Gang Wu, and Junjie Chen. Proteomic analysis of the human cyclin-dependent kinase family reveals a novel cdk5 complex involved in cell growth and migration. Molecular & Cellular Proteomics, 13:2986-3000, Nov 2014. URL: https://doi.org/10.1074/mcp.m113.036699, doi:10.1074/mcp.m113.036699. This article has 47 citations.
38. (xu2014proteomicanalysisof pages 14-15): Shuangbing Xu, Xu Li, Zihua Gong, Wenqi Wang, Yujing Li, Binoj Chandrasekharan Nair, Hailong Piao, Kunyu Yang, Gang Wu, and Junjie Chen. Proteomic analysis of the human cyclin-dependent kinase family reveals a novel cdk5 complex involved in cell growth and migration. Molecular & Cellular Proteomics, 13:2986-3000, Nov 2014. URL: https://doi.org/10.1074/mcp.m113.036699, doi:10.1074/mcp.m113.036699. This article has 47 citations.
39. (łukasik2021cyclindependentkinases(cdk) pages 4-5): Paweł Łukasik, Michał Załuski, and Izabela Gutowska. Cyclin-dependent kinases (cdk) and their role in diseases development–review. International Journal of Molecular Sciences, 22:2935, Mar 2021. URL: https://doi.org/10.3390/ijms22062935, doi:10.3390/ijms22062935. This article has 199 citations and is from a peer-reviewed journal.
40. (clare2001thecyclindependentkinases pages 1-3): Paula M. Clare, Roger A. Poorman, Laura C. Kelley, Keith D. Watenpaugh, Carol A. Bannow, and Karen L. Leach. The cyclin-dependent kinases cdk2 and cdk5 act by a random, anticooperative kinetic mechanism\*. The Journal of Biological Chemistry, 276:48292-48299, Dec 2001. URL: https://doi.org/10.1074/jbc.m102034200, doi:10.1074/jbc.m102034200. This article has 67 citations.
41. (clare2001thecyclindependentkinases pages 12-14): Paula M. Clare, Roger A. Poorman, Laura C. Kelley, Keith D. Watenpaugh, Carol A. Bannow, and Karen L. Leach. The cyclin-dependent kinases cdk2 and cdk5 act by a random, anticooperative kinetic mechanism\*. The Journal of Biological Chemistry, 276:48292-48299, Dec 2001. URL: https://doi.org/10.1074/jbc.m102034200, doi:10.1074/jbc.m102034200. This article has 67 citations.
42. (echalier2010recentdevelopmentsin pages 9-9): Aude Echalier, Jane A. Endicott, and Martin E.M. Noble. Recent developments in cyclin-dependent kinase biochemical and structural studies. Biochimica et Biophysica Acta (BBA) - Proteins and Proteomics, 1804:511-519, Mar 2010. URL: https://doi.org/10.1016/j.bbapap.2009.10.002, doi:10.1016/j.bbapap.2009.10.002. This article has 162 citations.
43. (katayama2020cyclindependentkinaselike5 pages 1-2): Syouichi Katayama, Noriyuki Sueyoshi, Tetsuya Inazu, and Isamu Kameshita. Cyclin-dependent kinase-like 5 (cdkl5): possible cellular signalling targets and involvement in cdkl5 deficiency disorder. Neural Plasticity, 2020:1-14, Jun 2020. URL: https://doi.org/10.1155/2020/6970190, doi:10.1155/2020/6970190. This article has 33 citations and is from a peer-reviewed journal.
44. (liebl2010cyclindependentkinase5 pages 1-2): Johanna Liebl, Sabine B. Weitensteiner, György Vereb, Lili Takács, Robert Fürst, Angelika M. Vollmar, and Stefan Zahler. Cyclin-dependent kinase 5 regulates endothelial cell migration and angiogenesis. Journal of Biological Chemistry, 285:35932-35943, Nov 2010. URL: https://doi.org/10.1074/jbc.m110.126177, doi:10.1074/jbc.m110.126177. This article has 120 citations and is from a domain leading peer-reviewed journal.
45. (malumbres2014cyclindependentkinases pages 1-2): Marcos Malumbres. Cyclin-dependent kinases. Genome Biology, 15:122-122, Jun 2014. URL: https://doi.org/10.1186/gb4184, doi:10.1186/gb4184. This article has 1882 citations and is from a highest quality peer-reviewed journal.
46. (malumbres2014cyclindependentkinases pages 3-5): Marcos Malumbres. Cyclin-dependent kinases. Genome Biology, 15:122-122, Jun 2014. URL: https://doi.org/10.1186/gb4184, doi:10.1186/gb4184. This article has 1882 citations and is from a highest quality peer-reviewed journal.