1. Phylogeny  
   TRPM7 is a member of the transient receptor potential (TRP) melastatin subfamily that arose early during vertebrate evolution and is conserved among mammals, birds, and fish while being absent in representatives such as Drosophila melanogaster and Caenorhabditis elegans (chubanov2005emergingrolesof pages 2-3). TRPM7 shares a close evolutionary relationship with TRPM6, and both proteins appear as a distinct ‘channel-kinase’ branch within the TRPM family, suggesting that their dual functionality emerged concomitantly with the evolution of vertebrates (chubanov2005emergingrolesof pages 2-3, jolly2025thepactnetwork pages 6-7). The protein belongs to a conserved set of channel proteins that integrate ion transport with enzymatic activity, and its orthologs have been identified in a broad range of vertebrate species, indicative of its essential role in ion homeostasis and cellular signaling (runnels2011trpm6andtrpm7 pages 1-2).
2. Reaction Catalyzed  
   The kinase domain of TRPM7 catalyzes the transfer of a phosphate group from ATP to a serine or threonine residue on a substrate protein, following the classical phosphorylation reaction: ATP + [protein]-(L-serine or L-threonine) → ADP + [protein]-(L-serine/threonine)-phosphate + H⁺ (fleig2014trpm7 pages 9-12).
3. Cofactor Requirements  
   For both its ion channel and kinase catalytic functions, TRPM7 depends on divalent cations, most notably magnesium (Mg²⁺), which serves as an essential cofactor not only for stabilizing the nucleotide–substrate complex during phosphotransfer reactions but also for its role in ion permeation through the channel domain (chubanov2012theemergingrole pages 134-137, runnels2011trpm6andtrpm7 pages 4-5). Additionally, Mg·ATP functions as a regulatory ligand that, in conjunction with free Mg²⁺, modulates the kinase activity and suppresses the channel’s constitutive currents (chubanov2012theemergingrole pages 141-143).
4. Substrate Specificity  
   TRPM7 phosphorylates serine and threonine residues on a variety of substrate proteins. In vivo, one of its notable substrates is SMAD2, implying a role in modulating SMAD signaling pathways, whereas in vitro it phosphorylates proteins such as annexin A1 and several myosin II isoforms (chubanov2012theemergingrole pages 141-143, yee2014cellularanddevelopmental pages 6-8). Although a precise consensus motif has not been definitively established, the kinase domain exhibits a general preference for serine/threonine residues in target proteins that often reside within alpha-helical segments, and the phosphorylation events occur in the context of a regulatory autophosphorylation region that enhances substrate recognition (runnels2011trpm6andtrpm7 pages 3-4).
5. Structure  
   TRPM7 is a bifunctional “chanzyme” with a complex domain organization that supports both its ion channel and kinase functions. The N-terminal region contains melastatin homology domains whose precise function remains to be fully determined but may mediate interactions with cytosolic proteins (fleig2014trpm7 pages 1-3). The central portion is composed of six transmembrane helices (S1–S6) with a pore-forming loop located between S5 and S6 that is responsible for the ion selectivity; key residues in this pore, such as the conserved glutamate (E1047), are critical for divalent cation permeation and magnesium‐mediated pore block (fleig2014trpm7 pages 3-6, runnels2011trpm6andtrpm7 pages 3-4). Downstream of the transmembrane segments, a conserved TRP domain and a coiled-coil motif facilitate tetrameric assembly and contribute to channel gating (chubanov2014naturalandsynthetic pages 1-3, gao2022palmitoylationandregulation pages 49-53). The C-terminal portion is dominated by an atypical α-type serine/threonine kinase domain that undergoes autophosphorylation on multiple serine/threonine residues within a serine/threonine-rich region, which is important for substrate recognition and proper functioning (fleig2014trpm7 pages 9-12, schmucker2023regulatorymechanismsof pages 84-85). Structural studies, including cryo-electron microscopy and modeling efforts, have elucidated that the kinase domain has a fold resembling that of classical kinases with a nucleotide-binding site, a catalytic loop, and regions for metal coordination, although its sequence lacks the typical catalytic motifs found in standard protein kinases and is instead classified among the α-kinases (gao2022palmitoylationandregulation pages 53-58, owsianik2006structure–functionrelationshipof pages 7-9).
6. Regulation  
   Regulation of TRPM7 occurs at multiple levels via mechanisms that involve direct binding of intracellular cations, post-translational modifications, lipid interactions, and proteolytic processing. The ion channel component is constitutively active under basal conditions; however, its activity is strongly suppressed by intracellular Mg²⁺ and Mg·ATP, which bind to distinct regulatory sites on both the channel region and the kinase domain, thereby modulating the open probability of the channel (chubanov2012theemergingrole pages 134-137, runnels2011trpm6andtrpm7 pages 8-9). Activation of phospholipase C-coupled receptors leads to hydrolysis of phosphatidylinositol 4,5-bisphosphate (PIP₂), which subsequently reduces TRPM7 activity as PIP₂ is essential for maintaining channel conformation (chubanov2020mappingtrpm7function pages 1-3, yee2014cellularanddevelopmental pages 8-10). The kinase domain undergoes extensive autophosphorylation within its serine/threonine-rich region, a modification that does not directly influence ion conduction but is thought to enhance substrate recognition and possibly alter kinase substrate specificity (fleig2014trpm7 pages 9-12, runnels2011trpm6andtrpm7 pages 2-3). Under certain cellular conditions, the kinase domain can be proteolytically cleaved, releasing a catalytic fragment that translocates to the nucleus and participates in chromatin remodeling by phosphorylating histones and other nuclear substrates, thereby linking TRPM7 activity to transcriptional regulation (chubanov2020mappingtrpm7function pages 7-9, schmucker2023regulatorymechanismsof pages 18-22). Moreover, regulatory interactions with other proteins such as CNNM magnesium transporters and the ARL15 GTPase further modulate TRPM7’s channel and kinase activities, integrating its function within broader networks of ion homeostasis and signaling (gao2022palmitoylationandregulation pages 58-62, jolly2025thepactnetwork pages 34-35).
7. Function  
   TRPM7 plays a central role in maintaining cellular divalent cation homeostasis by facilitating the influx of calcium (Ca²⁺), magnesium (Mg²⁺), and zinc (Zn²⁺) ions, which are vital for numerous intracellular signaling pathways and metabolic processes (chubanov2005emergingrolesof pages 2-3, yee2014cellularanddevelopmental pages 3-6). Its channel function is crucial for acute regulation of cytosolic ion concentrations, influencing processes such as vesicular zinc release and intracellular Ca²⁺ signaling, while its kinase activity modulates downstream signaling proteins through phosphorylation events (chubanov2012theemergingrole pages 139-141, fleig2014trpm7 pages 6-9). In vivo, TRPM7 is indispensable for embryonic development, as evidenced by genetic ablation studies that result in early embryonic lethality or severe developmental anomalies, highlighting its role in processes such as cell proliferation, motility, and differentiation (chubanov2012theemergingrole pages 141-143, runnels2011trpm6andtrpm7 pages 8-9). In addition, TRPM7-mediated phosphorylation of SMAD2 implicates the channel-kinase in TGF-β/SMAD signaling pathways, which are important for cell growth and differentiation (Information section, chubanov2020mappingtrpm7function pages 1-3). The protein is also upregulated in several cancers and has been associated with cellular senescence, immune responses, and vascular remodeling, thereby underscoring its multifaceted roles in both normal physiology and disease (chubanov2012theemergingrole pages 134-137, jolly2025thepactnetwork pages 22-23). Expression analyses indicate that TRPM7 is ubiquitously distributed among diverse tissues, including the heart, kidney, brain, and immune cells, which is consistent with its broad functional importance in the regulation of cellular ion homeostasis and signaling (nilius2011thetransientreceptor pages 2-4, yee2014cellularanddevelopmental pages 21-23).
8. Other Comments  
   Several pharmacological modulators have been identified that affect TRPM7 channel activity, including naturally derived compounds and synthetic agents such as waixenicin A, NS8593, and naltriben, which exhibit Mg²⁺-dependent inhibition or activation of the channel (chubanov2014naturalandsynthetic pages 1-3, chubanov2020mappingtrpm7function pages 7-9). Dysregulation or mutations affecting TRPM7 have been linked to a variety of pathological conditions, including hypomagnesemia with secondary hypocalcemia, aberrant cell proliferation, neurodegenerative disorders, and cancer, making it a promising therapeutic target in these settings (chubanov2012theemergingrole pages 139-141, jolly2025thepactnetwork pages 22-23). Although specific disease mutations have been described—such as mutations that impair channel assembly or disrupt magnesium sensitivity—the detailed impact of these variants on cellular function and clinical outcomes remains an area of active investigation (jolly2025thepactnetwork pages 34-35, runnels2011trpm6andtrpm7 pages 8-9). In addition, post-translational modifications such as palmitoylation, which influences TRPM7 trafficking and membrane localization, further add to the complexity of its regulation and have been proposed as potential targets for modulating its function in disease (gao2022palmitoylationandregulation pages 239-242, gao2022palmitoylationandregulation pages 46-49).
9. References  
   chubanov2005emergingrolesof pages 2-3; chubanov2012theemergingrole pages 134-137; chubanov2012theemergingrole pages 139-141; chubanov2012theemergingrole pages 141-143; chubanov2014naturalandsynthetic pages 1-3; chubanov2014naturalandsynthetic pages 6-9; chubanov2020mappingtrpm7function pages 1-3; chubanov2020mappingtrpm7function pages 7-9; fleig2014trpm7 pages 1-3; fleig2014trpm7 pages 3-6; fleig2014trpm7 pages 9-12; gao2022palmitoylationandregulation pages 239-242; gao2022palmitoylationandregulation pages 49-53; gao2022palmitoylationandregulation pages 53-58; gao2022palmitoylationandregulation pages 58-62; jimenez2020trpmchannelsin pages 25-27; jimenez2020trpmchannelsin pages 51-52; jolly2025thepactnetwork pages 22-23; jolly2025thepactnetwork pages 34-35; jolly2025thepactnetwork pages 6-7; runnels2011trpm6andtrpm7 pages 1-2; runnels2011trpm6andtrpm7 pages 3-4; runnels2011trpm6andtrpm7 pages 4-5; runnels2011trpm6andtrpm7 pages 8-9; schmidt2022structuralmechanismof pages 1-3; schmidt2022structuralmechanismof pages 3-4; schmucker2023regulatorymechanismsof pages 9-14; schmucker2023regulatorymechanismsof pages 14-18; schmucker2023regulatorymechanismsof pages 18-22; schmucker2023regulatorymechanismsof pages 84-85; schmucker2023regulatorymechanismsof pages 90-92; tetteh2022regulationoftrpm7 pages 13-18; visser2014functionandregulation pages 2-3; nilius2011thetransientreceptor pages 2-4; yee2014cellularanddevelopmental pages 21-23; yee2014cellularanddevelopmental pages 3-6; yee2014cellularanddevelopmental pages 6-8; yee2014cellularanddevelopmental pages 8-10; matsushita2005channelfunctionis pages 2-4; owsianik2006structure–functionrelationshipof pages 6-7; owsianik2006structure–functionrelationshipof pages 7-9.

References

1. (chubanov2005emergingrolesof pages 2-3): V. Chubanov, M. Mederos y Schnitzler, J. Wäring, A. Plank, and T. Gudermann. Emerging roles of trpm6/trpm7 channel kinase signal transduction complexes. Naunyn-Schmiedeberg’s Archives of Pharmacology, 371:334-341, May 2005. URL: https://doi.org/10.1007/s00210-005-1056-4, doi:10.1007/s00210-005-1056-4. This article has 60 citations.
2. (chubanov2012theemergingrole pages 134-137): Vladimir Chubanov, Jonathan T. Eggenschwiler, Lillia V. Ryazanova, Thomas Gudermann, and Alexey G. Ryazanov. The emerging role of trpm7 in the regulation of magnesium homeostasis. Methods in Pharmacology and Toxicology, pages 127-139, Jan 2012. URL: https://doi.org/10.1007/978-1-62703-077-9\_7, doi:10.1007/978-1-62703-077-9\_7. This article has 0 citations.
3. (chubanov2014naturalandsynthetic pages 1-3): Vladimir Chubanov, Sebastian Schäfer, Silvia Ferioli, and Thomas Gudermann. Natural and synthetic modulators of the trpm7 channel. Cells, 3:1089-1101, Nov 2014. URL: https://doi.org/10.3390/cells3041089, doi:10.3390/cells3041089. This article has 72 citations and is from a peer-reviewed journal.
4. (chubanov2014naturalandsynthetic pages 6-9): Vladimir Chubanov, Sebastian Schäfer, Silvia Ferioli, and Thomas Gudermann. Natural and synthetic modulators of the trpm7 channel. Cells, 3:1089-1101, Nov 2014. URL: https://doi.org/10.3390/cells3041089, doi:10.3390/cells3041089. This article has 72 citations and is from a peer-reviewed journal.
5. (chubanov2020mappingtrpm7function pages 1-3): Vladimir Chubanov and Thomas Gudermann. Mapping trpm7 function by ns8593. International Journal of Molecular Sciences, 21:7017, Sep 2020. URL: https://doi.org/10.3390/ijms21197017, doi:10.3390/ijms21197017. This article has 28 citations and is from a peer-reviewed journal.
6. (chubanov2020mappingtrpm7function pages 7-9): Vladimir Chubanov and Thomas Gudermann. Mapping trpm7 function by ns8593. International Journal of Molecular Sciences, 21:7017, Sep 2020. URL: https://doi.org/10.3390/ijms21197017, doi:10.3390/ijms21197017. This article has 28 citations and is from a peer-reviewed journal.
7. (fleig2014trpm7 pages 1-3): Andrea Fleig and Vladimir Chubanov. Trpm7. Handbook of Experimental Pharmacology, pages 521-546, Jan 2014. URL: https://doi.org/10.1007/978-3-642-54215-2\_21, doi:10.1007/978-3-642-54215-2\_21. This article has 127 citations and is from a peer-reviewed journal.
8. (fleig2014trpm7 pages 3-6): Andrea Fleig and Vladimir Chubanov. Trpm7. Handbook of Experimental Pharmacology, pages 521-546, Jan 2014. URL: https://doi.org/10.1007/978-3-642-54215-2\_21, doi:10.1007/978-3-642-54215-2\_21. This article has 127 citations and is from a peer-reviewed journal.
9. (fleig2014trpm7 pages 9-12): Andrea Fleig and Vladimir Chubanov. Trpm7. Handbook of Experimental Pharmacology, pages 521-546, Jan 2014. URL: https://doi.org/10.1007/978-3-642-54215-2\_21, doi:10.1007/978-3-642-54215-2\_21. This article has 127 citations and is from a peer-reviewed journal.
10. (gao2022palmitoylationandregulation pages 239-242): X Gao. Palmitoylation and regulation of divalent cation transport by trpm7 and trpm6. Unknown journal, 2022.
11. (gao2022palmitoylationandregulation pages 49-53): X Gao. Palmitoylation and regulation of divalent cation transport by trpm7 and trpm6. Unknown journal, 2022.
12. (gao2022palmitoylationandregulation pages 53-58): X Gao. Palmitoylation and regulation of divalent cation transport by trpm7 and trpm6. Unknown journal, 2022.
13. (gao2022palmitoylationandregulation pages 58-62): X Gao. Palmitoylation and regulation of divalent cation transport by trpm7 and trpm6. Unknown journal, 2022.
14. (jimenez2020trpmchannelsin pages 25-27): Ivanka Jimenez, Yolanda Prado, Felipe Marchant, Carolina Otero, Felipe Eltit, Claudio Cabello-Verrugio, Oscar Cerda, and Felipe Simon. Trpm channels in human diseases. Cells, 9:2604, Dec 2020. URL: https://doi.org/10.3390/cells9122604, doi:10.3390/cells9122604. This article has 65 citations and is from a peer-reviewed journal.
15. (jimenez2020trpmchannelsin pages 51-52): Ivanka Jimenez, Yolanda Prado, Felipe Marchant, Carolina Otero, Felipe Eltit, Claudio Cabello-Verrugio, Oscar Cerda, and Felipe Simon. Trpm channels in human diseases. Cells, 9:2604, Dec 2020. URL: https://doi.org/10.3390/cells9122604, doi:10.3390/cells9122604. This article has 65 citations and is from a peer-reviewed journal.
16. (jolly2025thepactnetwork pages 22-23): Jeffery T. Jolly and Jessica S. Blackburn. The pact network: prl, arl, cnnm, and trpm proteins in magnesium transport and disease. International Journal of Molecular Sciences, 26:1528, Feb 2025. URL: https://doi.org/10.3390/ijms26041528, doi:10.3390/ijms26041528. This article has 1 citations and is from a peer-reviewed journal.
17. (jolly2025thepactnetwork pages 34-35): Jeffery T. Jolly and Jessica S. Blackburn. The pact network: prl, arl, cnnm, and trpm proteins in magnesium transport and disease. International Journal of Molecular Sciences, 26:1528, Feb 2025. URL: https://doi.org/10.3390/ijms26041528, doi:10.3390/ijms26041528. This article has 1 citations and is from a peer-reviewed journal.
18. (jolly2025thepactnetwork pages 6-7): Jeffery T. Jolly and Jessica S. Blackburn. The pact network: prl, arl, cnnm, and trpm proteins in magnesium transport and disease. International Journal of Molecular Sciences, 26:1528, Feb 2025. URL: https://doi.org/10.3390/ijms26041528, doi:10.3390/ijms26041528. This article has 1 citations and is from a peer-reviewed journal.
19. (runnels2011trpm6andtrpm7 pages 1-2): Loren W. Runnels. Trpm6 and trpm7: a mul-trp-plik-cation of channel functions. Current Pharmaceutical Biotechnology, 12:42-53, Jan 2011. URL: https://doi.org/10.2174/138920111793937880, doi:10.2174/138920111793937880. This article has 105 citations and is from a peer-reviewed journal.
20. (runnels2011trpm6andtrpm7 pages 4-5): Loren W. Runnels. Trpm6 and trpm7: a mul-trp-plik-cation of channel functions. Current Pharmaceutical Biotechnology, 12:42-53, Jan 2011. URL: https://doi.org/10.2174/138920111793937880, doi:10.2174/138920111793937880. This article has 105 citations and is from a peer-reviewed journal.
21. (runnels2011trpm6andtrpm7 pages 8-9): Loren W. Runnels. Trpm6 and trpm7: a mul-trp-plik-cation of channel functions. Current Pharmaceutical Biotechnology, 12:42-53, Jan 2011. URL: https://doi.org/10.2174/138920111793937880, doi:10.2174/138920111793937880. This article has 105 citations and is from a peer-reviewed journal.
22. (schmidt2022structuralmechanismof pages 3-4): Eva Schmidt, Chamali Narangoda, Wolfgang Nörenberg, Miyuki Egawa, Anna Rössig, Marion Leonhardt, Michael Schaefer, Susanna Zierler, Maria G. Kurnikova, Thomas Gudermann, and Vladimir Chubanov. Structural mechanism of trpm7 channel regulation by intracellular magnesium. Cellular and Molecular Life Sciences, Apr 2022. URL: https://doi.org/10.1007/s00018-022-04192-7, doi:10.1007/s00018-022-04192-7. This article has 27 citations and is from a domain leading peer-reviewed journal.
23. (schmucker2023regulatorymechanismsof pages 14-18): E Schmücker. Regulatory mechanisms of the trpm7 channel-kinase. Unknown journal, 2023.
24. (schmucker2023regulatorymechanismsof pages 18-22): E Schmücker. Regulatory mechanisms of the trpm7 channel-kinase. Unknown journal, 2023.
25. (schmucker2023regulatorymechanismsof pages 9-14): E Schmücker. Regulatory mechanisms of the trpm7 channel-kinase. Unknown journal, 2023.
26. (schmucker2023regulatorymechanismsof pages 90-92): E Schmücker. Regulatory mechanisms of the trpm7 channel-kinase. Unknown journal, 2023.
27. (tetteh2022regulationoftrpm7 pages 13-18): S Tetteh. Regulation of trpm7 by cnnm2 and interacting partners. Unknown journal, 2022.
28. (visser2014functionandregulation pages 2-3): Daan Visser, Jeroen Middelbeek, Frank N. van Leeuwen, and Kees Jalink. Function and regulation of the channel-kinase trpm7 in health and disease. European Journal of Cell Biology, 93:455-465, Oct 2014. URL: https://doi.org/10.1016/j.ejcb.2014.07.001, doi:10.1016/j.ejcb.2014.07.001. This article has 93 citations and is from a peer-reviewed journal.
29. (yee2014cellularanddevelopmental pages 21-23): Nelson Yee, Abid Kazi, and Rosemary Yee. Cellular and developmental biology of trpm7 channel-kinase: implicated roles in cancer. Cells, 3:751-777, Jul 2014. URL: https://doi.org/10.3390/cells3030751, doi:10.3390/cells3030751. This article has 66 citations and is from a peer-reviewed journal.
30. (yee2014cellularanddevelopmental pages 3-6): Nelson Yee, Abid Kazi, and Rosemary Yee. Cellular and developmental biology of trpm7 channel-kinase: implicated roles in cancer. Cells, 3:751-777, Jul 2014. URL: https://doi.org/10.3390/cells3030751, doi:10.3390/cells3030751. This article has 66 citations and is from a peer-reviewed journal.
31. (yee2014cellularanddevelopmental pages 6-8): Nelson Yee, Abid Kazi, and Rosemary Yee. Cellular and developmental biology of trpm7 channel-kinase: implicated roles in cancer. Cells, 3:751-777, Jul 2014. URL: https://doi.org/10.3390/cells3030751, doi:10.3390/cells3030751. This article has 66 citations and is from a peer-reviewed journal.
32. (yee2014cellularanddevelopmental pages 8-10): Nelson Yee, Abid Kazi, and Rosemary Yee. Cellular and developmental biology of trpm7 channel-kinase: implicated roles in cancer. Cells, 3:751-777, Jul 2014. URL: https://doi.org/10.3390/cells3030751, doi:10.3390/cells3030751. This article has 66 citations and is from a peer-reviewed journal.
33. (chubanov2012theemergingrole pages 139-141): Vladimir Chubanov, Jonathan T. Eggenschwiler, Lillia V. Ryazanova, Thomas Gudermann, and Alexey G. Ryazanov. The emerging role of trpm7 in the regulation of magnesium homeostasis. Methods in Pharmacology and Toxicology, pages 127-139, Jan 2012. URL: https://doi.org/10.1007/978-1-62703-077-9\_7, doi:10.1007/978-1-62703-077-9\_7. This article has 0 citations.
34. (chubanov2012theemergingrole pages 141-143): Vladimir Chubanov, Jonathan T. Eggenschwiler, Lillia V. Ryazanova, Thomas Gudermann, and Alexey G. Ryazanov. The emerging role of trpm7 in the regulation of magnesium homeostasis. Methods in Pharmacology and Toxicology, pages 127-139, Jan 2012. URL: https://doi.org/10.1007/978-1-62703-077-9\_7, doi:10.1007/978-1-62703-077-9\_7. This article has 0 citations.
35. (fleig2014trpm7 pages 6-9): Andrea Fleig and Vladimir Chubanov. Trpm7. Handbook of Experimental Pharmacology, pages 521-546, Jan 2014. URL: https://doi.org/10.1007/978-3-642-54215-2\_21, doi:10.1007/978-3-642-54215-2\_21. This article has 127 citations and is from a peer-reviewed journal.
36. (gao2022palmitoylationandregulation pages 46-49): X Gao. Palmitoylation and regulation of divalent cation transport by trpm7 and trpm6. Unknown journal, 2022.
37. (matsushita2005channelfunctionis pages 2-4): Masayuki Matsushita, J. Ashot Kozak, Yoshio Shimizu, Derek T. McLachlin, Hiroto Yamaguchi, Fan-Yan Wei, Kazuhito Tomizawa, Hideki Matsui, Brian T. Chait, Michael D. Cahalan, and Angus C. Nairn. Channel function is dissociated from the intrinsic kinase activity and autophosphorylation of trpm7/chak1\*. Journal of Biological Chemistry, 280:20793-20803, May 2005. URL: https://doi.org/10.1074/jbc.m413671200, doi:10.1074/jbc.m413671200. This article has 249 citations and is from a domain leading peer-reviewed journal.
38. (nilius2011thetransientreceptor pages 2-4): Bernd Nilius and Grzegorz Owsianik. The transient receptor potential family of ion channels. Genome Biology, 12:218-218, Mar 2011. URL: https://doi.org/10.1186/gb-2011-12-3-218, doi:10.1186/gb-2011-12-3-218. This article has 1156 citations and is from a highest quality peer-reviewed journal.
39. (owsianik2006structure–functionrelationshipof pages 6-7): G. Owsianik, D. D’hoedt, T. Voets, and B. Nilius. Structure–function relationship of the trp channel superfamily. Reviews of Physiology, Biochemistry and Pharmacology, pages 61-90, Jan 2006. URL: https://doi.org/10.1007/s10254-005-0006-0, doi:10.1007/s10254-005-0006-0. This article has 244 citations.
40. (owsianik2006structure–functionrelationshipof pages 7-9): G. Owsianik, D. D’hoedt, T. Voets, and B. Nilius. Structure–function relationship of the trp channel superfamily. Reviews of Physiology, Biochemistry and Pharmacology, pages 61-90, Jan 2006. URL: https://doi.org/10.1007/s10254-005-0006-0, doi:10.1007/s10254-005-0006-0. This article has 244 citations.
41. (runnels2011trpm6andtrpm7 pages 2-3): Loren W. Runnels. Trpm6 and trpm7: a mul-trp-plik-cation of channel functions. Current Pharmaceutical Biotechnology, 12:42-53, Jan 2011. URL: https://doi.org/10.2174/138920111793937880, doi:10.2174/138920111793937880. This article has 105 citations and is from a peer-reviewed journal.
42. (runnels2011trpm6andtrpm7 pages 3-4): Loren W. Runnels. Trpm6 and trpm7: a mul-trp-plik-cation of channel functions. Current Pharmaceutical Biotechnology, 12:42-53, Jan 2011. URL: https://doi.org/10.2174/138920111793937880, doi:10.2174/138920111793937880. This article has 105 citations and is from a peer-reviewed journal.
43. (schmidt2022structuralmechanismof pages 1-3): Eva Schmidt, Chamali Narangoda, Wolfgang Nörenberg, Miyuki Egawa, Anna Rössig, Marion Leonhardt, Michael Schaefer, Susanna Zierler, Maria G. Kurnikova, Thomas Gudermann, and Vladimir Chubanov. Structural mechanism of trpm7 channel regulation by intracellular magnesium. Cellular and Molecular Life Sciences, Apr 2022. URL: https://doi.org/10.1007/s00018-022-04192-7, doi:10.1007/s00018-022-04192-7. This article has 27 citations and is from a domain leading peer-reviewed journal.
44. (schmucker2023regulatorymechanismsof pages 84-85): E Schmücker. Regulatory mechanisms of the trpm7 channel-kinase. Unknown journal, 2023.