PeriFlow Therapeutics
Publications and Reference Papers
September 2026

#1. Fragment-based structure-activity relationship analysis of CK-571 reveals non-interacting groups drive smooth muscle myosin selectivity.
Suthar SK, Jernei T, Kurdi C, Horváth ÁI, Rauscher AÁ, Gyimesi M, Málnási-Csizmadia A.
Eur J Med Chem. 2026 Mar 5;305:118476. doi: 10.1016/j.ejmech.2025.118476. Epub 2025 Dec 16.
https://www.sciencedirect.com/science/article/pii/S0223523425007640?via%3Dihub

This is the first demonstration which reveals the functional roles of structural segments of CJ-571 smooth muscle myosin inhibitor.

#2. Comprehensive SAR analysis of actomyolytics, drug candidates targeting the actomyosin complex.
Suthar SK, Szimler T, Pénzes M, Chandrabhas S, Rauscher AÁ, Lőrincz I, Hegyi G, Kurdi C, Glatz G, Szőnyegi Z, Kovács M, Szabó A, Gyimesi M, Málnási-Csizmadia A.
Eur J Med Chem. 2025 Dec 5;299:117999. doi: 10.1016/j.ejmech.2025.117999. Epub 2025 Aug 9.
https://www.sciencedirect.com/science/article/pii/S0223523425007640?via%3Dihub

This is the most comprehensive structure-function relationship analysis on myosin inhibitors including 144 drug candidates tested on 7 different myosin isoforms (i.e. cardiac, smooth muscle, non-muscle, skeletal muscle and Dictiostelium model myosins).

#3. Post-reperfusion acute MR diffusion in stroke is a potential predictor for clinical outcome in rats.
Nagy SA, Ivic I, Tóth P, Komoly S, Kiss T, Pénzes M, Málnási-Csizmadia A, Dóczi T, Perlaki G, Orsi G.
Sci Rep. 2023 Apr 5;13(1):5598. doi: 10.1038/s41598-023-32679-1.
https://pmc.ncbi.nlm.nih.gov/articles/PMC10076321/

We developed an in vivo stroke model system correlating MRI imaging with neurological functions.

#4. Titin activates myosin filaments in skeletal muscle by switching from an extensible spring to a mechanical rectifier.
Squarci C, Bianco P, Reconditi M, Pertici I, Caremani M, Narayanan T, Horváth ÁI, Málnási-Csizmadia A, Linari M, Lombardi V, Piazzesi G.
Proc Natl Acad Sci U S A. 2023 Feb 28;120(9):e2219346120. doi: 10.1073/pnas.2219346120. Epub 2023 Feb 22.
https://pmc.ncbi.nlm.nih.gov/articles/PMC9992839/

This breakthrough paper discovers the active function of the giant protein titin which regulates plasticity of muscle fibers.

#5. Pharmacological Modulation of Neurite Outgrowth in Human Neural Progenitor Cells by Inhibiting Non-muscle Myosin II.
Lilienberg J, Hegyi Z, Szabó E, Hathy E, Málnási-Csizmadia A, Réthelyi JM, Apáti Á, Homolya L.
Front Cell Dev Biol. 2021 Sep 17;9:719636. doi: 10.3389/fcell.2021.719636. eCollection 2021.
https://pmc.ncbi.nlm.nih.gov/articles/PMC8484915/

We revealed the essential function of non-muscle myosin in neuronal plasticity.

#6. Chiral HPLC separation of enantiomeric blebbistatin derivatives and racemization analysis in vertebrate tissues.
Suthar SK, Rauscher AÁ, Winternitz M, Gyimesi M, Málnási-Csizmadia A.
J Pharm Biomed Anal. 2021 Sep 10;204:114246. doi: 10.1016/j.jpba.2021.114246. Epub 2021 Jul 6.P
https://www.sciencedirect.com/science/article/abs/pii/S0731708521003575?via%3Dihub

This is the first paper that presents a technology to separate enantiomers of myosin inhibitors i.e. blebbsitatin and MPH derivatives.

#7. Improved Inhibitory and Absorption, Distribution, Metabolism, Excretion, and Toxicology (ADMET) Properties of Blebbistatin Derivatives Indicate That Blebbistatin Scaffold Is Ideal for drug Development Targeting Myosin-2.
Gyimesi M, Rauscher AÁ, Suthar SK, Hamow KÁ, Oravecz K, Lőrincz I, Borhegyi Z, Déri MT, Kiss ÁF, Monostory K, Szabó PT, Nag S, Tomasic I, Krans J, Tierney PJ, Kovács M, Kornya L, Málnási-Csizmadia A.
J Pharmacol Exp Ther. 2021 Mar;376(3):358-373. doi: 10.1124/jpet.120.000167. Epub 2021 Jan 19.
https://jpet.aspetjournals.org/article/S0022-3565(24)25769-4/fulltext

The first ADMET study of different blebbistatin derivatives, this paper demonstrates that certain chemical modifications of blebbistatin substantially improve in vivo ADMET features.

#8. Single Residue Variation in Skeletal Muscle Myosin Enables Direct and Selective Drug Targeting for Spasticity and Muscle Stiffness.
Gyimesi M, Horváth ÁI, Túrós D, Suthar SK, Pénzes M, Kurdi C, Canon L, Kikuti C, Ruppel KM, Trivedi DV, Spudich JA, Lőrincz I, Rauscher AÁ, Kovács M, Pál E, Komoly S, Houdusse A, Málnási-Csizmadia A.
Cell. 2020 Oct 15;183(2):335-346.e13. doi: 10.1016/j.cell.2020.08.050. Epub 2020 Oct 8.
https://pmc.ncbi.nlm.nih.gov/articles/PMC7596007/

The first skeletal muscle specific myosin inhibitor. MPH-220 resolves muscle spasticity after neuronal traumas without affecting normal physical activities demonstrated in disease models.

#9. Effect of allosteric inhibition of non-muscle myosin 2 on its intracellular diffusion.
Horváth ÁI, Gyimesi M, Várkuti BH, Képiró M, Szegvári G, Lőrincz I, Hegyi G, Kovács M, Málnási-Csizmadia A.
Sci Rep. 2020 Aug 7;10(1):13341. doi: 10.1038/s41598-020-69853-8.
https://pmc.ncbi.nlm.nih.gov/articles/PMC7415145/

We presented dynamics of cellular distribution of non-muscle myosin associated with its function.

#10. Direct myosin-2 inhibition enhances cerebral perfusion resulting in functional improvement after ischemic stroke.
Pénzes M, Túrós D, Máthé D, Szigeti K, Hegedűs N, Rauscher AÁ, Tóth P, Ivic I, Padmanabhan P, Pál G, Dobolyi Á, Gyimesi M, Málnási-Csizmadia A.
Theranostics. 2020 Apr 6;10(12):5341-5356. doi: 10.7150/thno.42077. eCollection 2020.
https://pmc.ncbi.nlm.nih.gov/articles/PMC7196296/

The first demonstration that myosin inhibition substantially improves the outcome of stroke by resolving capillary no-reflow.

#11. Targeting Myosin by Blebbistatin Derivatives: Optimization and Pharmacological Potential.
Rauscher AÁ, Gyimesi M, Kovács M, Málnási-Csizmadia A.
Trends Biochem Sci. 2018 Sep;43(9):700-713. doi: 10.1016/j.tibs.2018.06.006. Epub 2018 Jul 26.
https://www.cell.com/trends/biochemical-sciences/abstract/S0968-0004(18)30123-3?_returnURL=https%3A%2F%2Flinkinghub.elsevier.com%2Fretrieve%2Fpii%2FS0968000418301233%3Fshowall%3Dtrue

A comprehensive review about structure-function relationship of myosin inhibitors on a series of myosin-2 isoforms.