

Plasticity

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Keywords in search: Limit search to 2017-2021: cognitive neuroepigenetics; dendritic branching; Hebbian learning; learning and plasticity; neural plasticity; neuroepigenetics; neuronal plasticity; plasticity; plasticity traumatic brain injury; sleep-dependent neural plasticity; spatial motor plasticity; ; synaptogenesis; white matter tracts

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Resources

Abraham, E., & Feldman, R. (2022). [The neural basis of human fatherhood: a unique biocultural perspective on plasticity of brain and behavior](#). *Clinical Child and Family Psychology Review*, 25(1), 93-109. doi.org/10.1007/s10567-022-00381-9

[Alila Medical Media](#). (2017 April 3). [Long term potentiation and memory formation, animation](#). [Video] [0:54 to 4:28 minutes]. YouTube. <https://www.youtube.com/watch?v=4Hm08ksPtMo> Appelbaum, L. G., Shenasa, M. A., Stolz, L., & Daskalakis, Z. (2023). [Synaptic plasticity and mental health: Methods, challenges and opportunities](#). *Neuropsychopharmacology*, 48(1), 113-120. doi.org/10.1038/s41386-022-01370-w

Appelbaum, L. G., Shenasa, M. A., Stolz, L., & Daskalakis, Z. (2023). [Synaptic plasticity and mental health: Methods, challenges and opportunities](#). *Neuropsychopharmacology*, 48(1), 113-120. doi.org/10.1038/s41386-022-01370-w

Arrowsmith Program. (2021). [Welcome to Arrowsmith](#). <http://www.arrowsmithschool.org/>

Asim, M., Wang, H., & Chen, X. (2024). [Shedding light on Cholecystokinin's role in hippocampal neuroplasticity and memory formation](#). *Neuroscience & Biobehavioral Reviews*, 105615. <https://doi.org/10.1016/j.neubiorev.2024.105615>

Axelrod, C. J., Gordon, S. P., & Carlson, B. A. (2023). [Integrating neuroplasticity and evolution](#). *Current Biology*, 33(8), R288-R293. doi.org/10.1016/j.cub.2023.03.002

Babi, Z., Frey, B. N., Bieling, P. J., McCabe, R. E., & Green, S. M. (2025). [Mindfulness-based interventions and neuroplasticity: A review of network connectivity in healthy and clinical samples](#). *Mindfulness*, 1-14. <https://doi.org/10.1007/s12671-025-02549-0>

Bach-y-Rita, P. (1990). [Brain plasticity as a basis for recovery of function in humans](#). *Neuropsychologia*, 28(6), 547-554. [https://doi.org/10.1016/0028-3932\(90\)90033-K](https://doi.org/10.1016/0028-3932(90)90033-K)

Bandaru, P., & Sivarajah, M. (2025). [Unraveling the enigmatic potential of the brain: Exploring neuroplasticity's](#)

role in brain health and therapy. *Undergraduate Research in Natural and Clinical Science and Technology Journal*, 9, 1-6. <https://doi.org/10.26685/urncst.676>

- Bethlehem, R. A., Seidlitz, J., White, S. R., Vogel, J. W., Anderson, K. M., Adamson, C., ... & Schaare, H. L. (2022). [Brain charts for the human lifespan](#). *Nature*, 604(7906), 525-533. <https://doi.org/10.1038/s41586-022-04554-y>
- Barry Jensen, M. (2014). [Neuroplasticity](#). [Video] (9:39 minutes). Khan Academy. <https://www.khanacademy.org/science/health-and-medicine/nervous-system-and-sensory-infor/neural-cells-and-neurotransmitters/v/neuroplasticity>
- Bedny, M., Pascual-Leone, A., Dravida, S., & Saxe, R. (2012). [A sensitive period for language in the visual cortex: distinct patterns of plasticity in congenitally versus late blind adults](#). *Brain and Language*, 122(3), 162-170. <https://doi.org/10.1016%2Fj.bandl.2011.10.005>
- Ben Ezzdine, L., Dhahbi, W., Dergaa, I., Ceylan, H. İ., Guelmami, N., Ben Saad, H., ... & El Omri, A. (2025). [Physical activity and neuroplasticity in neurodegenerative disorders: a comprehensive review of exercise interventions, cognitive training, and AI applications](#). *Frontiers in Neuroscience*, 19, 1502417. <https://doi.org/10.3389/fnins.2025.1502417>
- Bennett, S. H., Kirby, A. J., & Finnerty, G. T. (2018). [Rewiring the connectome: Evidence and effects](#). *Neuroscience & Biobehavioral Reviews*. 88, 51–62. <https://doi.org/10.1016%2Fj.neubiorev.2018.03.001>
- Boivin, M. J., Kakooza, A. M., Warf, B. C., Davidson, L. L., & Grigorenko, E. L. (2015). [Reducing neurodevelopmental disorders and disability through research and intervention](#). *Nature*, 527(7578), S155-S160. <https://doi.org/10.1038/nature16029>
- Bonfanti, L., & Charvet, C. J. (2021). [Brain plasticity in humans and model systems: advances, challenges, and future directions](#). *International Journal of Molecular Sciences*, 22(17), 9358. doi.org/10.3390/ijms22179358
- Booming Encore. (2019, August 21). [Neuroplasticity and the aging brain](#). [Video] [10:23 minutes]. YouTube. https://www.youtube.com/watch?v=VPTkdek3HOY&feature=emb_logo
- Broderick, P., Horgan, F., Blake, C., Ehrensberger, M., Simpson, D., & Monaghan, K. (2018). [Mirror therapy for improving lower limb motor function and mobility after stroke: A systematic review and meta-analysis](#). *Gait & Posture*, 63, 208-220. <https://doi.org/10.1016/j.gaitpost.2018.05.017>
- Bruckert, L., Borchers, L. R., Dodson, C. K., Marchman, V. A., Travis, K. E., Ben-Shachar, M., & Feldman, H. M. (2019). [White matter plasticity in reading-related pathways differs in children born preterm and at term: a longitudinal analysis](#). *Frontiers in Human Neuroscience*, 13. <https://doi.org/10.3389%2Ffnhum.2019.00139>
- Chang, Y. (2015). [Reorganization and plastic changes of the human brain associated with skill learning and expertise](#). *Neural Implementations of Expertise*, 56. <https://doi.org/10.3389/fnhum.2014.00035>
- Chechko, N., & Nehls, S. (2025). [Maternal neuroplasticity and mental health during the transition to motherhood](#). *Nature Mental Health*, 1-6. <https://doi.org/10.1038/s44220-025-00399-2>
- Christian G. (2012, December 9). [Christine G. producer]. [Paul Bach-y-Rita and neuroplasticity](#). [Video]. (10:39). YouTube. <https://www.youtube.com/watch?v=7s1VAVcM8s8>
- Colangelo, A. M., Cirillo, G., Alberghina, L., Papa, M., & Westerhoff, H. V. (2019). [Neural plasticity and adult neurogenesis: the deep biology perspective](#). *Neural Regeneration Research*, 14(2), 201. <https://doi.org/10.4103%2F1673-5374.244775>
- d'Aquin, S., Szonyi, A., Mahn, M., Krabbe, S., Gründemann, J., & Lüthi, A. (2022). [Compartmentalized](#)

dendritic plasticity during associative learning. *Science*, 376(6590), Article eabf7052.
<https://doi.org/10.1126/science.abf7052>

- Dagues, M. B., Hall, C. L., & Giraldeau, L. A. (2020). Individual differences in learning ability are negatively linked to behavioural plasticity in a frequency-dependent game. *Animal Behaviour*, 159, 97-103.
<https://doi.org/10.1016/j.anbehav.2019.11.011>
- Dahl, C. J., Wilson-Mendenhall, C. D., & Davidson, R. J. (2020). The plasticity of well-being: A training-based framework for the cultivation of human flourishing. *Proceedings of the National Academy of Sciences*, 117(51), 32197-32206. <https://doi.org/10.1073/pnas.2014859117>
- Daksh, R., Sharma, P., Khanna, S., Mudgal, J., Hariharapura, R. C., & Nampoothiri, M. (2025). Modulation of neuroplasticity and neuroinflammation by exosomal proteins and microRNA in depression: A review. *International Journal of Biological Macromolecules*, 142829.
<https://doi.org/10.1016/j.ijbiomac.2025.142829>
- Debarnot, U., Sperduti, M., Di Rienzo, F., & Guillot, A. (2014). Experts bodies, experts minds: how physical and mental training shape the brain. *Frontiers in Human Neuroscience*, 8.
<https://doi.org/10.3389/fnhum.2014.00280>
- de Figueiredo Pelegrino, A., Attarha, M., Toussaint, P. J., Ouellet, L., Grant, S. J., Van Vleet, T., & de Villers-Sidani, E. (2025). Cholinergic neurotransmission in the anterior cingulate cortex is associated with cognitive performance in healthy older adults: Baseline characteristics of the Improving Neurological Health in Aging via Neuroplasticity-based Computerized Exercise (INHANCE) trial. *NeuroImage: Reports*, 5(1), 100234. <https://doi.org/10.1016/j.ynirp.2025.100234>
- Dehaene, S., & Cohen, L. (2007). Cultural recycling of cortical maps. *Neuron*, 56(2), 384-398.
<https://doi.org/10.1016/j.neuron.2007.10.004>
- De Luca, C., Colangelo, A. M., Virtuoso, A., Alberghina, L., & Papa, M. (2020). Neurons, glia, extracellular matrix and neurovascular unit: A systems biology approach to the complexity of synaptic plasticity in health and disease. *International Journal of Molecular Sciences*, 21(4), 1539.
<https://doi.org/10.3390/ijms21041539>
- De Picker, L. J., Morrens, M., Chance, S. A., & Boche, D. (2017). Microglia and brain plasticity in acute psychosis and schizophrenia illness course: a meta-review. *Frontiers in Psychiatry*, 8, 238.
<https://doi.org/10.3389/fpsy.2017.00238>
- Devi, A., & Jagger, S. (Eds.). (2025). *Understanding neuroplasticity and neurodiversity in the classroom: A handbook for SENCOs and teachers*. Taylor & Francis.
- DNA Learning Center. (n.d.) *What is synaptic plasticity?* [Video] (2:56 minute). Cold Spring Harbor Laboratory.
<https://dnalc.cshl.edu/view/2057-What-is-synaptic-plasticity-.html>
- Doidge, N. (2007). *The brain that changes itself: Stories of personal triumph from the frontiers of brain science*. Penguin.
- Draganski, B., & May, A. (2008). Training-induced structural changes in adult human brain. *Behavioral Brain Research*, 192, 137-142. <https://doi.org/10.1016/j.bbr.2008.02.015>
- Drigas, A., & Sideraki, A. (2024). Brain neuroplasticity leveraging virtual reality and brain-computer interface technologies. *Sensors*, 24(17), 5725. <https://doi.org/10.3390/s24175725>
- Ecker, S., Pancaldi, V., Valencia, A., Beck, S., & Paul, D. S. (2018). Epigenetic and transcriptional variability shape phenotypic plasticity. *Bioessays*, 40(2). <https://doi.org/10.1002/bies.201700148>
- Eriksson, P. S., Perfilieva, E., Björk-Eriksson, T., Alborn, A. M., Nordborg, C., Peterson, D. A., & Gage, F. H.

(1998). [Neurogenesis in the adult human hippocampus](#). *Nature Medicine*, 4(11), 1313-1317. <https://doi.org/10.1038/3305>

Farhy-Tselnicker, I., & Allen, N. J. (2018). [Astrocytes, neurons, synapses: a tripartite view on cortical circuit development](#). *Neural Development*, 13(1), 7. <https://doi.org/10.1186/s13064-018-0104-y>

Feik, N. (2009, April 29). [Norman Doidge on the brain and neuroplasticity](#). [Video] (8:31 minutes). YouTube. <https://www.youtube.com/watch?v=tFbm3jL7CDI&list=PLGXzCM5c78jRffGwSzMEFxXYGsUCJ6PQ>

Feldman, R., Braun, K., & Champagne, F. A. (2019). [The neural mechanisms and consequences of paternal caregiving](#). *Nature Reviews Neuroscience*, 1. <https://doi.org/10.1038/s41583-019-0124-6>

Feuerstein, R., Feuerstein, R., & Falik, L. H. (2015). [Beyond smarter: Mediated learning and the brain's capacity for change](#). Teachers College Press.

Fields, R. D. (2015). [A new mechanism of nervous system plasticity: activity-dependent myelination](#). *Nature Reviews Neuroscience*, 16(12), 756-767. <https://doi.org/10.1038/nrn4023>

Fitzsimmons, S. M., Oostra, E., Postma, T. S., van der Werf, Y. D., & van den Heuvel, O. A. (2024). [Repetitive transcranial magnetic stimulation-induced neuroplasticity and the treatment of psychiatric disorders: State of the evidence and future opportunities](#). *Biological Psychiatry*, 95(6), 592-600. <https://www.sciencedirect.com/science/article/pii/S0006322323017456>

Fox, R. J., Donelson, J. M., Schunter, C., Ravasi, T., & Gaitán-Espitia, J. D. (2019). [Beyond buying time: the role of plasticity in phenotypic adaptation to rapid environmental change](#). *Philosophical Transaction Royal Society*. 374, 20180174. <http://doi.org/10.1098/rstb.2018.0174>

Fox, S. E., Levitt, P., & Nelson III, C. A. (2010). [How the timing and quality of early experiences influence the development of brain architecture](#). *Child Development*, 81(1), 28-40. <https://doi.org/10.1111%2Fj.1467-8624.2009.01380.x>

Freitas, C., Farzan, F., & Pascual-Leone, A. (2013). [Assessing brain plasticity across the lifespan with transcranial magnetic stimulation: why, how, and what is the ultimate goal?](#) *Frontiers in Neuroscience*, 7. <https://doi.org/10.3389%2Ffnins.2013.00042>

Furman-Haran, E., Dhollander, T., & Sobel, N. (2020). [Human olfaction without apparent olfactory bulbs](#). *Neuron*, 105, 1-11. <https://doi.org/10.1016/j.neuron.2019.10.006>

Gallo, F., Voits, T., Rothman, J., Abutalebi, J., Shtyrov, Y., & Myachykov, A. (2025). [Experience-dependent neuroplasticity in the hippocampus of bilingual young adults](#). *eNeuro*. <https://doi.org/10.1523/ENEURO.0128-25.2025>

Ganapathee, D. S., & Gunz, P. (2023). [Insights into brain evolution through the genotype-phenotype connection](#). *Progress in Brain Research*, 275, 73-92. <https://doi.org/10.1016/bs.pbr.2022.12.013>

Ganglberger, F., Kaczanowska, J., Penninger, J. M., Hess, A., Buehler, K., & Haubensak, W. (2018). [Predicting functional neuroanatomical maps from fusing brain networks with genetic information](#). *NeuroImage*, 170, 113-120. <https://doi.org/10.1016/j.neuroimage.2017.08.070>

Gomez-Mestre, I., & Jovani, R. (2013). [A heuristic model on the role of plasticity in adaptive evolution: plasticity increases adaptation, population viability and genetic variation](#). *Proceedings of the Royal Society of London B: Biological Sciences*, 280(1771), 20131869. <https://doi.org/10.1098/rspb.2013.1869>

Haak, K. V., & Beckmann, C. F. (2019). [Plasticity versus stability across the human cortical visual connectome](#). *Nature Communications*, 10(1), 1-8. <https://doi.org/10.1101/520395>

Helena, V., Ellen, D., Guy, V., Karel, D., & Karen, C. (2019). [Exploration of gray matter correlates of cognitive training benefit in adolescents with chronic traumatic brain injury](#). *Neuroimage: Clinical*, 23, 101827.

- Herzberg, M. P., Nielsen, A. N., Luby, J., & Sylvester, C. M. (2025). [Measuring neuroplasticity in human development: the potential to inform the type and timing of mental health interventions.](#) *Neuropsychopharmacology*, 50(1), 124-136. <https://doi.org/10.1038/s41386-024-01947-7>
- Herzberg, M. P., Nielsen, A. N., Luby, J., & Sylvester, C. M. (2024). [Measuring neuroplasticity in human development: the potential to inform the type and timing of mental health interventions.](#) *Neuropsychopharmacology*, 1-13. <https://doi.org/10.1038/s41386-024-01947-7>
- Hill, J. L., & Martinowich, K. (2016). [Activity-dependent signaling: influence on plasticity in circuits controlling fear-related behavior.](#) *Current Opinion in Neurobiology*, 36, 59-65. <https://doi.org/10.1016%2Fj.conb.2015.10.001>
- Ho, D. H. (2019). [Historical perspective of transgenerational epigenetics.](#) In *Transgenerational epigenetics* (pp. 25-40). Academic Press. <https://doi.org/10.1016/B978-0-12-816363-4.00003-1>
- Hong, S., Dissing-Olesen, L., & Stevens, B. (2016). [New insights on the role of microglia in synaptic pruning in health and disease.](#) *Current Opinion in Neurobiology*, 36, 128-134. <https://doi.org/10.1016%2Fj.conb.2015.12.004>
- Huyck, C. R. (2020). [A neural cognitive architecture.](#) *Cognitive Systems Research*, 59, 171-178. <https://doi.org/10.1016/j.cogsys.2019.09.023>
- Immordino-Yang, M. (2007). [A tale of two cases: Lessons for education from the study of two boys living with half their brains.](#) *Mind, Brain & Education*, 1(2), 66-83. doi/10.1111/j.1751-228X.2007.00008.x
- Inguaggiato, E., Sgandurra, G., & Cioni, G. (2017). [Brain plasticity and early development: implications for early intervention in neurodevelopmental disorders.](#) *Neuropsychiatrie de l'Enfance et de l'Adolescence*, 65(5), 299-306. <https://doi.org/10.1016/j.neurenf.2017.03.009>
- Ismail, F. Y., & Ljubisavljevic, M. R. (2025). [Neuroplasticity in neurodevelopmental disorders.](#) In Fatima Y. Ismail, Pasquale J. Accardo and Bruce K. Shapiro's *Capute and Accardo's neurodevelopmental disabilities in infancy and childhood* (pp. 71-84). Academic Press. <https://doi.org/10.1016/B978-0-12-824060-1.00010-9>
- Ismail, F. Y., Fatemi, A., & Johnston, M. V. (2017). [Cerebral plasticity: windows of opportunity in the developing brain.](#) *European Journal of Paediatric Neurology*, 21(1), 23-48. <https://doi.org/10.1016/j.ejpn.2016.07.007>
- Iuculano, T., Rosenberg-Lee, M., Richardson, J., Tenison, C., Fuchs, L., Supekar, K., & Menon, V. (2015). [Cognitive tutoring induces widespread neuroplasticity and remediates brain function in children with mathematical learning disabilities.](#) *Nature Communications*, 6(8543). <https://doi.org/10.1038/ncomms9453>
- Jung, J., Williams, S., & Ralph, M. A. L. (2025). [The role of GABA in semantic memory and its neuroplasticity.](#) *eLife*, 12, RP91771. <https://doi.org/10.7554/eLife.91771.4>
- Katz, L. C., & Shatz, C. J. (1996). [Synaptic activity and the construction of cortical circuits.](#) *Science*, 274(5290), 1133-1138. <https://doi.org/10.1126/science.274.5290.1133>
- Kays, J. L., Hurley, R. A., & Taber, K. H. (2012). [The dynamic brain: neuroplasticity and mental health.](#) *Journal Neuropsychiatry and Clinical Neuroscience*, 24(2), 118-124. <https://doi.org/10.1176/appi.neuropsych.12050109>
- Kelly, C., & Castellanos, F. X. (2014). [Strengthening connections: functional connectivity and brain plasticity.](#)

- Kelly, C. E., Thompson, D. K., Adamson, C. L., Ball, G., Dhollander, T., Beare, R., ... & Inder, T. E. (2024). [Cortical growth from infancy to adolescence in preterm and term-born children](#). *Brain*, 147(4), 1526-1538. <https://academic.oup.com/brain/article/147/4/1526/7304366>
- Kempermann, G., Gage, F. H., Aigner, L., Song, H., Curtis, M. A., Thuret, S., ... & Gould, E. (2018). [Human adult neurogenesis: evidence and remaining questions](#). *Cell Stem Cell*, 23(1), 25-30. <https://doi.org/10.1016/j.stem.2018.04.004>
- Khalil, M. H. (2025). [Green environments for sustainable brains: Parameters shaping adaptive neuroplasticity and lifespan neurosustainability—A systematic review and future directions](#). *International Journal of Environmental Research and Public Health*, 22(5), 690. <https://doi.org/10.3390/ijerph22050690>
- Khalil, M. H. (2025). [Borderline in a linear city: Urban living brings borderline personality disorder to crisis through neuroplasticity—an urgent call to action](#). *Frontiers in Psychiatry*, 15, 1524531. <https://doi.org/10.3389/fpsy.2024.1524531>
- Kim, S., & Kaang, B. K. (2017). [Epigenetic regulation and chromatin remodeling in learning and memory](#). *Experimental & Molecular Medicine*, 49(1), e281-e281. <https://doi.org/10.1038/emm.2016.140>
- Kinderlehrer, D. A. (2025). [Mushrooms, microdosing, and mental illness: The effect of psilocybin on neurotransmitters, neuroinflammation, and neuroplasticity](#). *Neuropsychiatric Disease and Treatment*, 21, 141–155. <https://doi.org/10.2147/NDT.S500337>
- Kolb, B., Forgie, M., Gibb, R., Gorny, G., & Rowntree, S. (1998). [Age, experience, and the changing brain](#). *Neuroscience and Biobehavioral Reviews*, 22, 143-159. [https://doi.org/10.1016/S0149-7634\(97\)00008-0](https://doi.org/10.1016/S0149-7634(97)00008-0)
- Kolb, B., Gibb, R., & Gorny, G. (2000). [Cortical plasticity and the development of behavior after early frontal cortical injury](#). *Developmental Neuropsychology*, 18, 423-444. <https://doi.org/10.1207/s1532694208kolb>
- Korte, M. (2022). [The impact of the digital revolution on human brain and behavior: where do we stand?](#). *Dialogues in Clinical Neuroscience*. doi.org/10.31887/DCNS.2020.22.2/mkorte
- Kronberg, G., Rahman, A., Sharma, M., Bikson, M., & Parra, L. C. (2020). [Direct current stimulation boosts hebbian plasticity in vitro](#). *Brain Stimulation*, 13(2), 287-301. <https://doi.org/10.1016/j.brs.2019.10.014>
- Kuhl, U., Friederici, A. D., Emmrich, F., Brauer, J., Wilcke, A., Neef, N., ... & Müller, B. (2020). [Early cortical surface plasticity relates to basic mathematical learning](#). *NeuroImage*, 204, 116235. <https://doi.org/10.1016/j.neuroimage.2019.116235>
- Kunikullaya, U. K., Pranjić, P., Rigby, A., Pallás-Ferrer, P. F., Anand, H., Kunnavil, R., & Jaschke, A. C. (2025). [The molecular basis of music-induced neuroplasticity in humans: a systematic review](#). *Neuroscience & Biobehavioral Reviews*, 106219. <https://doi.org/10.1016/j.neubiorev.2025.106219>
- Langer, N., Hänggi, J., Müller, N. A., Simmen, H. P., & Jäncke, L. (2012). [Effects of limb immobilization on brain plasticity](#). *Neurology*, 78(3), 182-188. <https://doi.org/10.1212/WNL.0b013e31823fcd9c>
- Lanza, G., DelRosso, L. M., & Ferri, R. (2022). [Sleep and homeostatic control of plasticity](#). *Handbook of Clinical Neurology*, 184, 53-72. doi.org/10.1016/B978-0-12-819410-2.00004-7
- Laroy, M., Emsell, L., Vandenbulcke, M., & Bouckaert, F. (2025). [Mapping electroconvulsive therapy induced neuroplasticity: Towards a multilevel understanding of the available clinical literature—A scoping review](#). *Neuroscience & Biobehavioral Reviews*, 106143. <https://doi.org/10.1016/j.neubiorev.2025.106143>
- Laube, C., van den Bos, W., & Fandakova, Y. (2020). [The relationship between pubertal hormones and brain plasticity: Implications for cognitive training in adolescence](#). *Developmental Cognitive Neuroscience*, 42,

- Lindenberger, U., & Lövdén, M. (2019). [Brain plasticity in human lifespan development: the exploration–selection–refinement model](#). *Annual Review of Developmental Psychology*, 1, 197-222. doi.org/10.1146/annurev-devpsych-121318-085229
- Lindenberger, U., Wenger, E., & Lövdén, M. (2017). [Towards a stronger science of human plasticity](#). *Nature Reviews Neuroscience*, 18(5), 261. <http://doi.org/10.1038/nrn.2017.44>
- Mansoor, M., Ibrahim, A., Hamide, A., Tran, T., Candreva, E., & Baltaji, J. (2025). [Exercise-Induced neuroplasticity: adaptive mechanisms and preventive potential in neurodegenerative disorders](#). *Physiologia*, 5(2), 13. <https://doi.org/10.3390/physiologia5020013>
- Mansvelder, H. D., Verhoog, M. B., & Goriounova, N. A. (2019). [Synaptic plasticity in human cortical circuits: cellular mechanisms of learning and memory in the human brain?](#) *Current Opinion in Neurobiology*, 54, 186-193. <https://doi.org/10.1016/j.conb.2018.06.013>
- Margolis, E. T., & Gabard-Durnam, L. J. (2025). [Prenatal influences on postnatal neuroplasticity: Integrating DOHaD and sensitive/critical period frameworks to understand biological embedding in early development](#). *Infancy*, 30(1), e12588. <https://doi.org/10.1111/infa.12588>
- Marshall, P., & Bredy, T. W. (2016). [Cognitive neuroepigenetics: the next evolution in our understanding of the molecular mechanisms underlying learning and memory?](#) *NPJ Science of Learning*, 1(1), 1-8. <https://doi.org/10.1038/npjscilearn.2016.14>
- Matheson, R. (2024). [Neuroscientific principles](#). In P.R. Stephen and D. Moss' (Eds.) Integrating psychotherapy and psychophysiology: Theory, assessment, and practice, (pp. 53-74). Oxford University Press
- Mattson, M. P., & Leak, R. K. (2024). [The hormesis principle of neuroplasticity and neuroprotection](#). *Cell Metabolism*. DOI: 10.1016/j.cmet.2023.12.022.
- McDevitt, E. A., Krishnan, G. P., Bazhenov, M., & Mednick, S. C. (2017). [The role of sleep spindles in sleep-dependent memory consolidation](#). In *Cognitive Neuroscience of Memory Consolidation* (pp. 209-226). Springer, Cham. https://doi.org/10.1007/978-3-319-45066-7_13
- McEwen, B. S. (2016). [In pursuit of resilience: stress, epigenetics, and brain plasticity](#). *Annals of the New York Academy of Sciences*, 1373(1), 56-64. <https://doi.org/10.1111/nyas.13020>
- Meisenheimer, K. (2019, June 10). [Rewiring revolution: Neuroplasticity's impact on wellbeing](#) [Video]. (20:12 minutes). TED Conferences. https://www.ted.com/talks/kristen_meisenheimer_rewiring_revolution_neuroplasticity_s_impact_on_well_being
- Miltner, W. H., & Witte, O. W. (2016). [Neural plasticity in rehabilitation and psychotherapy](#). *Zeitschrift für Psychologie*, 224,59-61. <https://doi.org/10.1027/2151-2604/a000239>
- Morelli, G., Della Valle, F., & Orlando, V. (2023). [Epigenetics and brain plasticity: Back to function](#). In L. Petrosini's (ed.) *Neurobiological and psychological aspects of brain recovery* (pp. 237-252). Cham: Springer International Publishing. [access through HOLLIS]
- Mrazek, M. D., Mooneyham, B. W., Mrazek, K. L., & Schooler, J. W. (2016). [Pushing the limits: Cognitive, affective, and neural plasticity revealed by an intensive multifaceted intervention](#). *Frontiers in Human Neuroscience*, 10, 117. <https://doi.org/10.3389/fnhum.2016.00117>
- Nayak, M., Das, D., Pradhan, J., Ahmed, R. G., Laureano-Melo, R., & Dandapat, J. (2022). [Epigenetic signature in neural plasticity: The journey so far and journey ahead](#). *Heliyon*, e12292. doi.org/10.1016/j.heliyon.2022.e12292

NIHOD. (2014, November 5). *Neuroepigenetics*. YouTube. <https://www.youtube.com/watch?v=KHzhAAZt4KI>

Oginga, F. O., Magwai, T., Shangase, K. B., Xulu, K. R., & Mpofana, T. (2022). *Early life stress and brain plasticity: from alterations of brain morphology to development of psychopathology*. *NeuroSci*, 3(1), 104-110. doi.org/10.3390/neurosci3010008

Ortuño-Sahagún, D., Schliebs, R., & Pallas, M. (2019). *Epigenetic mechanisms regulating neural plasticity*. *Frontiers in Cellular Neuroscience*, 13, 118. <https://doi.org/10.3389/fncel.2019.00118>

Oyovwi, M. O., Ogenma, U. T., & Onyenweny, A. (2025). *Exploring the impact of exercise-induced BDNF on neuroplasticity in neurodegenerative and neuropsychiatric conditions*. *Molecular Biology Reports*, 52(1), 140. <https://doi.org/10.1007/s11033-025-10248-1>

Pappa, K., Biswas, V., Flegat, K., Evans, J., & Baylan, S. (2020). *Working memory updating training promotes plasticity & behavioural gains: A systematic review & meta-analysis*. *Neuroscience & Biobehavioral Reviews*. <https://doi.org/10.1016/j.neubiorev.2020.07.027>

Pascual-Leone, A., et al. (2011). *Characterizing brain cortical plasticity and network dynamics across the age-span in health and disease with tms-eeg and tms-fmri*. *Brain Topography*, 24(3-4), 302-15. <https://doi.org/10.1007%2Fs10548-011-0196-8>

Payeur, A., Guerguiev, J., Zenke, F., Richards, B. A., & Naud, R. (2021). *Burst-dependent synaptic plasticity can coordinate learning in hierarchical circuits*. *Nature Neuroscience*, 24(7), 1010-1019. <https://doi.org/10.1038/s41593-021-00857-x>

Patton, M. H., Blundon, J. A., & Zakharenko, S. S. (2019). *Rejuvenation of plasticity in the brain: opening the critical period*. *Current Opinion in Neurobiology*, 54, 83-89. <https://doi.org/10.1016/j.conb.2018.09.003>

Pinabiaux, C., Save-Pédebos, J., Dorfmueller, G., Jambaqué, I., & Bulteau, C. (2022). *The hidden face of hemispherectomy: Visuo-spatial and visuo-perceptive processing after left or right functional hemispherectomy in 40 children*. *Epilepsy & Behavior*, 134 <https://doi.org/10.1016/j.yebeh.2022.108821>.

Power, J. D., & Schlaggar, B. L. (2017). *Neural plasticity across the lifespan*. *Wiley Interdisciplinary Reviews: Developmental Biology*, 6(1), e216. <https://doi.org/10.1002%2Fwdev.216>

Prouteau, F. (2023). *Plasticity*. In *Handbook of the anthropocene: Humans between heritage and future* (pp. 793-797). Cham: Springer International Publishing. doi.org/10.1007/978-3-031-25910-4_129

QUTube, The . (2015, August 5). *Dr Michael Merzenich – Harnessing the power of brain plasticity*. [Video]. (53:25). YouTube. <https://www.youtube.com/watch?v=qDEwBOqc8nE>

Ritonga, A. R., Lahmi, A., Hakim, R., & Dahlan, D. (2025). *Optimizing learning environments through the lens of neuroscience: A study on the role of emotion, motivation, and brain plasticity*. *Edu Global: Jurnal Pendidikan Islam*, 6(1), 12-19. <https://doi.org/10.56874/eduglobal.v6i1.2183>

Rivi, V., Batabyal, A., & Lukowiak, K. (2024). *The multifaceted effects of flavonoids on neuroplasticity*. *Restorative Neurology and Neuroscience*, 42(2), 93-111. <https://doi.org/10.3233/RNN-230150>

Romero-Mujalli, D., Fuchs, L. I., Haase, M., Hildebrandt, J. P., Weissing, F. J., & Revilla, T. A. (2024). *Emergence of phenotypic plasticity through epigenetic mechanisms*. *Evolution Letters*, qrae012. <https://doi.org/10.1093/evlett/qrae012>

Rosso, S. B., & Inestrosa, N. C. (2013). *WNT signaling in neuronal maturation and synaptogenesis*. *Frontiers in Cellular Neuroscience*, 7. <https://doi.org/10.3389%2Ffncel.2013.00103>

Rygvoid, T. W., Hatlestad-Hall, C., Elvsåshagen, T., Moberget, T., & Andersson, S. (2022). *Long term potentiation-like neural plasticity and performance-based memory function*. *Neurobiology of Learning*

- Sale, A., Berardi, N., & Maffei, L. (2014). [Environment and brain plasticity: towards an endogenous pharmacotherapy](#). *Physiological Reviews*, 94(1), 189-234. <https://doi.org/10.1152/physrev.00036.2012>
- Sanchez-Mendoza, E. H., de Carvalho, T. S., & Hermann, D. M. (2016). [Methods for the analysis of neuronal plasticity and brain connectivity during neurological recovery](#). *Neural Regeneration Research*, 11(11), 1701. <https://doi.org/10.4103%2F1673-5374.194704>
- Schättin, A., Gennaro, F., Egloff, M., Vogt, S., & De Bruin, E. D. (2018). [Physical activity, nutrition, cognition, neurophysiology and short-time synaptic plasticity in healthy older adults: A cross-sectional study](#). *Frontiers in Aging Neuroscience*, 10, 242. <https://doi.org/10.3389/fnagi.2018.00242>
- Schirinzi, T., Canevelli, M., Suppa, A., Bologna, M., & Marsili, L. (2020). [The continuum between neurodegeneration, brain plasticity, and movement: a critical appraisal](#). *Reviews in the Neurosciences*, 1(ahead-of-print). <https://doi.org/10.1515/revneuro-2020-0011>
- Shatz**, C. J., Lindstro, S., & Wiesel, T. N. (1977). [The distribution of afferents representing the right and left eyes in the cat's visual cortex](#). *Brain Research*, 131(1), 103-116. [https://doi.org/10.1016/0006-8993\(77\)90031-2](https://doi.org/10.1016/0006-8993(77)90031-2)
- Shine, J. M., & Poldrack, R. A. (2018). [Principles of dynamic network reconfiguration across diverse brain states](#). *NeuroImage*, 180, 396-405. <https://doi.org/10.1016/j.neuroimage.2017.08.010>
- Sisk, L. M., & Gee, D. G. (2024). [Developmental neuroplasticity and adversity-related risk for psychopathology](#). *Neuropsychopharmacology: Official Publication of the American College of Neuropsychopharmacology*. <https://doi.org/10.1038/s41386-024-01950-y>
- Sominsky**, L., De Luca, S., & Spencer, S. J. (2018). [Microglia: Key players in neurodevelopment and neuronal plasticity](#). *The International Journal of Biochemistry & Cell Biology*, 94, 56-60. <https://doi.org/10.1016/j.biocel.2017.11.012>
- Somerville, L. H., Bookheimer, S. Y., Buckner, R. L., Burgess, G. C., Curtiss, S. W., Dapretto, M., ... & Kandala, S. (2018). [The lifespan human Connectome project in development: A large-scale study of brain connectivity development in 5–21 year olds](#). *NeuroImage*, 183, 456-468. <https://doi.org/10.1016/j.neuroimage.2018.08.050>
- Snell-Rood, E., & Snell-Rood, C. (2020). [The developmental support hypothesis: Adaptive plasticity in neural development in response to cues of social support](#). *Philosophical Transactions of the Royal Society B*, 375(1803), 20190491. <https://doi.org/10.1098/rstb.2019.0491>
- Spurny, B., Seiger, R., Moser, P., Vanicek, T., Reed, M. B., Heckova, E., ... & Trattinig, S. (2020). [Hippocampal GABA levels correlate with retrieval performance in an associative learning paradigm](#). *NeuroImage*, 204, 116244. <https://doi.org/10.1016/j.neuroimage.2019.116244>
- Stasenکو, A., Kaestner, E., Rodriguez, J., Benjamin, C., Winstanley, F. S., Sepeta, L., ... & McDonald, C. R. (2025). [Neural \(re\) organisation of language and memory: implications for neuroplasticity and cognition](#). *Journal of Neurology, Neurosurgery & Psychiatry*. <https://doi.org/10.1136/jnnp-2024-333871>
- Staudinger, U. M. (2020). [The positive plasticity of adult development: Potential for the 21st century](#). *American Psychologist*, 75(4), 540. <http://doi.org/10.1037/amp0000612>
- Stiles, N. R., & Shimojo, S. (2015). [Sensory substitution: A new perceptual experience](#). In *The Oxford handbook of perceptual experience*. Oxford University Press.
- Su, F., & Xu, W. (2020). [Enhancing brain plasticity to promote stroke recovery](#). *Frontiers in Neurology*, 11. <https://doi.org/10.3389/fneur.2020.554089>

- Sugden, S. G., Merlo, G., & Manger, S. (2024). [Strengthening neuroplasticity in substance use recovery through lifestyle intervention](#). *American Journal of Lifestyle Medicine*, 15598276241242016. <https://doi.org/10.1177/15598276241242016>
- Sun, L., Zhou, H., Cichon, J., & Yang, G. (2020). [Experience and sleep-dependent synaptic plasticity: from structure to activity](#). *Philosophical Transactions of the Royal Society B*, 375(1799), 20190234. <https://doi.org/10.1098/rstb.2019.0234>
- Suppa, A., Ascì, F., & Guerra, A. (2022). [Transcranial magnetic stimulation as a tool to induce and explore plasticity in humans](#). *Handbook of Clinical Neurology*, 184, 73-89. doi.org/10.1016/B978-0-12-819410-2.00005-9
- Sweatt**, J. D. (2016). [Neural plasticity and behavior—sixty years of conceptual advances](#). *Journal of Neurochemistry*, 139, 179-199. <https://doi.org/10.1111/jnc.13580>
- Takesian, A. E., & Hensch, T. K. (2013). [Balancing plasticity/stability across brain development](#). *Progress Brain Research*, 207(3), 3-34. <https://doi.org/10.1016/B978-0-444-63327-9.00001-1>
- Tataranu, L. G., & Rizea, R. E. (2025). [Neuroplasticity and nervous system recovery: Cellular mechanisms, therapeutic advances, and future prospects](#). *Brain Sciences*, 15(4), 400. <https://doi.org/10.3390/brainsci15040400>
- Taylor, J. A., Hasegawa, M., Benoit, C. M., Freire, J. A., Theodore, M., Ganea, D. A., ... & Gründemann, J. (2020). [Single cell plasticity and population coding stability in auditory thalamus upon associative learning](#). *bioRxiv*. <https://doi.org/10.1101/2020.04.06.026401>
- TEDx Talks**. (2013, April 27). [The woman who changed her brain](#). TEDxToronto. [Video]. (13:56). YouTube. <https://www.youtube.com/watch?v=o0td5aw1KXA&t=9s>
- TEDx Talks. (2015, December 5). [After watching this, your brain will not be the same](#). [Video] (14:24 minutes). YouTube. <https://www.youtube.com/watch?v=LNHBMFCzznE>
- The Agenda with Steve Paikin**. (2015, April 7). [Norman Doidge: Brain's healing energies](#). [Video] (28:02 minutes). YouTube. https://www.youtube.com/watch?v=ifYcE4-el_s
- Thriene, K., & Michels, K. B. (2023). [Human gut microbiota plasticity throughout the life course](#). *International Journal of Environmental Research and Public Health*, 20(2), 1463. doi.org/10.3390/ijerph20021463
- Thomas, M. S. C. (2016). [Do more intelligent brains retain heightened plasticity for longer in development? A computational investigation](#). *Developmental Cognitive Neuroscience*, 19, 258–269. <https://doi.org/10.1016/j.dcn.2016.04.002>
- Tononi, G., & Cirelli, C. (2014). [Sleep and the price of plasticity: From synaptic and cellular homeostasis to memory consolidation and integration](#). *Neuron*, 81(1), 12-34. <https://doi.org/10.1016/j.neuron.2013.12.025>
- Vahdat, S., Darainy, M., & Ostry, D. J. (2014). [Structure of plasticity in human sensory and motor networks due to perceptual learning](#). *The Journal of Neuroscience*, 34(7), 2451-2463. <https://doi.org/10.1523/JNEUROSCI.4291-13.2014>
- van Huijstee, A. N., & Kessels, H. W. (2020). [Variance analysis as a tool to predict the mechanism underlying synaptic plasticity](#). *Journal of Neuroscience Methods*, 331, 108526. <https://doi.org/10.1016/j.jneumeth.2019.108526>
- Voss, P., Thomas, M. E., Cisneros-Franco, J. M., & de Villers-Sidani, É. (2017). [Dynamic brains and the changing rules of neuroplasticity: implications for learning and recovery](#). *Frontiers in Psychology*, 8, Article 1657. <https://doi.org/10.3389/fpsyg.2017.01657>

- Voss, P. (2019). [Brain \(re\) organization following visual loss](#). *Wiley Interdisciplinary Reviews: Cognitive Science*, 10(1), e1468. <https://doi.org/10.1002/wcs.1468>
- Walker, M. P., & Stickgold, R. (2014). [Sleep, memory and plasticity](#). *Neuroscience and Psychoanalysis*, 1, 93. <https://doi.org/10.1146/annurev.psych.56.091103.070307>
- Wardlaw, K. S., & Hardingham, G. E. (2023). [Long-term plasticity of astrocytic phenotypes and their control by neurons in health and disease](#). *Essays in Biochemistry*, 67(1), 39-47. doi.org/10.1042/EBC20220090
- Wei, H., Bu, Y., & Zhu, Z. (2020). [Robotic arm controlling based on a spiking neural circuit and synaptic plasticity](#). *Biomedical Signal Processing and Control*, 55, 101640. <https://doi.org/10.1016/j.bspc.2019.101640>
- Weller, J. A., Leve, L. D., Kim, H., Bhimji, J., & Fisher, P. A. (2015). [Plasticity of risky decision making among maltreated adolescents: Evidence from a randomized controlled trial](#). *Development and Psychopathology*, 27, 535-551. <https://doi.org/10.1017%2FS0954579415000140>
- Woldemichael**, B. T., Bohacek, J., Gapp, K., & Mansuy, I. M. (2014). [Epigenetics of memory and plasticity](#). *Progress in Molecular Biology and Translational Science*, 122, 305-340. <http://doi.org/10.1016/B978-0-12-420170-5.00011-8>
- Wolf, M. E. (2025). [Targeting neuroplasticity in substance use disorders: implications for therapeutics](#). *Annual Review of Pharmacology and Toxicology*, 65. <https://doi.org/10.1146/annurev-pharmtox-061724-080548>
- World Science Festival. (2023, March 9). Rewiring the brain: The promise and peril of neuroplasticity. [Video] (1:26:29). YouTube. <https://www.youtube.com/watch?v=RDVgfFzZVsA>
- Yuan, J., Niu, H., Lei, C., Xu, R., Liu, Y., Yuan, K., ... & Zhao, Y. (2025). [Neuroplasticity and functional reorganization of language in patients with arteriovenous malformations: insights from neuroimaging and clinical interventions](#). *Frontiers in Human Neuroscience*, 19, 1503864. <https://doi.org/10.3389/fnhum.2025.1503864>
- Zatorre, R. J., Fields, R. D., & Johansen-Berg, H. (2012). [Plasticity in gray and white: Neuroimaging changes in brain structure during learning](#). *Nature Neuroscience*, 15(4), 528-536. <https://doi.org/10.1038%2Fnn.3045>
- Zhang, Z., Guo, J., & Jia, R. (2023). [Treg plasticity and human diseases](#). *Inflammation Research*, 1-17. doi.org/10.1007/s00011-023-01808-x

Other Resources

- ApolloEightGenesis. (2013 January 18). [Genie Wiley - TLC Documentary](#). (2003). [Video]. (12:26 minutes). <https://www.youtube.com/watch?v=VjZolHCrC8E>
- Dynamic Neural Retraining System** (2015, April 8). [The brain that changes itself](#). [Video] (33:43 minutes). YouTube. <https://www.youtube.com/watch?v=VI-QRgBwlb8>
- Orleck, K. (2012 November 14). [Genie: Feral child](#). [Video]. (5:54 minutes). YouTube. <https://www.youtube.com/watch?v=YQNBSPY4QUc>
- sixesfullofnines**. (2014, January 11). [Cheryl Schiltz Vertigo lifestory. - July 2-13 -](#). [Video] (36:21 minutes). YouTube. <https://www.youtube.com/watch?v=jlF091FgeaE>

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