

Alain Prochiantz

Chaire Processus morphogénétiques (2007-2019)

BIBLIOGRAPHIE

PRINCIPAUX OUVRAGES

- Prochiantz A., *Les stratégies de l'embryon*, PUF, 1987.
- Prochiantz A., *La construction du cerveau*, Hachette, 1989.
- Prochiantz A., *Claude Bernard : la révolution physiologique*, PUF, 1990.
- Prochiantz A., *La biologie dans le boudoir*, Paris, Éditions Odile Jacob, 1995.
- Prochiantz A., *Les anatomies de la pensée*, Paris, Éditions Odile Jacob, 1997.
- Prochiantz A., *Machine-esprit*, Paris, Éditions Odile Jacob, 2001.
- Peyret J.-F. et Prochiantz A., *La Génisse et le Pythagoricien*, Paris, Éditions Odile Jacob, 2002.
- Peyret J.-F. et Prochiantz A., *Les Variations Darwin*, Paris, Éditions Odile Jacob, 2005.
- Prochiantz A., *Géométries du vivant*, Paris, Collège de France/Fayard, 2007.
- Prochiantz A. (dir.), *Darwin : 200 ans*, Paris, Odile Jacob/Collège de France, 2010.
- Prochiantz A., *Qu'est-ce que le vivant ?*, Paris, Éditions du Seuil, coll. « Les Livres du nouveau monde », 2012, 176 p.

PRINCIPAUX ARTICLES

- di Porzio U., Daguet M.-C., Glowinski J. et Prochiantz A., « Effect of striatal target cells on in vitro maturation of mesencephalic dopaminergic neurons grown in serum-free conditions », *Nature*, vol. 288, 1980, p. 370-373.
- Prochiantz A., Daguet M.-C., Herbet A. et Glowinski J., « Specific stimulation of in vitro maturation of dopaminergic neurons by striatal membranes », *Nature*, vol. 293, 1981, p. 570-572.

- Nowak L., Bregestovski P., Ascher P., Herbet A. et Prochiantz A. (1984), « Magnesium gates glutamate-activated channels in mouse central neurones », *Nature*, vol. 307, 1984, p. 462-465.
- Denis-Donini S., Glowinski J. et Prochiantz A., « Glial heterogeneity may define the three-dimensional shape of mesencephalic dopaminergic neurons », *Nature*, vol. 307, 1984, p. 641-643.
- Ayala J., Touchot N., Zahraoui A., Tavitian A. et Prochiantz A., « The product of rab2p, a small GTP-binding protein, increases neuronal adhesion & neurite growth in vitro », *Neuron*, vol. 4, 1990, p. 797-805.
- Joliot A., Pernelle C., Deagostini-Bazin H. et Prochiantz A., « Antennapedia homeobox peptide regulates neural morphogenesis », *PNAS USA*, vol. 88, 1991, p. 1864-1868.
- Le Roux I., Joliot A.H., Bloch-Gallego E., Prochiantz A. et Volovitch M., « Neurotrophic activity of the Antennapedia homeodomain depends on its specific DNA-binding properties », *PNAS USA*, vol. 90, 1993, p. 9120-9124.
- Derossi D., Joliot A.H., Chassaing G. et Prochiantz A., « The third helix of the Antennapedia homeodomain translocates through biological membranes », *J. Biol. Chem.*, vol. 269, 1994, p. 10444-10455.
- Prochiantz A., « Getting hydrophobic compounds into cells: lessons from homeopeptides », *Current Opinion in Neurobiology*, vol. 6, 1996, p. 629-634.
- Joliot A., Trembleau A., Raposo G., Calvet S., Volovitch M. et Prochiantz A., « Association of Engrailed homeoproteins with vesicles presenting caveolae-like properties », *Development*, vol. 124, 1997, p. 1865-1875.
- Joliot A., Maizel A., Rosenberg D., Trembleau A., Volovitch M. et Prochiantz A., « Identification of a signal sequence necessary for the unconventional secretion of Engrailed Homeoprotein », *Curr. Biol.*, vol. 8, 1998, p. 856-863.
- Derossi D., Chassaing G. et Prochiantz A., « Trojan peptides: the penetratin system for intracellular delivery », *Trends in Cell Biol.*, vol. 8, 1998, p. 84-87.
- Maizel A., Bensaude O., Prochiantz A. et Joliot A., « A short region of its homeodomain is necessary for Engrailed nuclear export and secretion », *Development*, vol. 126, 1999, p. 3183-3190.
- Prochiantz A., « Messenger proteins: homeoproteins, TAT and others », *Curr. Opin. Cell Biol.*, vol. 12, 2000, p.400-406.
- Maizel A., Tassetto M., Filhol O., Cochet C., Prochiantz A. et Joliot A., « Engrailed homeoprotein secretion is a regulated process », *Development*, vol. 129, 2002, p. 3545-3553.
- Prochiantz A. and Joliot A., « Can transcription factors function as cell-cell signaling molecules? », *Nature reviews, Molecular Cell Biology*, vol. 4, 2003, p. 814-818.
- Joliot A. et Prochiantz A., « Transduction peptides, from technology to physiology » *Nature Cell Biology*, vol. 6, 2004, p. 189-196.

- Linsik M.F., Christiaens B., Vandekerckhove J., Prochiantz A. et Rosseneu M., « Penetratin-membrane association: W48/R52/W56 shield the peptide from the aqueous phase », *Biophys J*, vol. 88, 2005, p. 1-14.
- Madeira A., Pommet J.M., Prochiantz A. et Allinquant B., « SET protein (TAF1 β , I2PP2A) is involved in neuronal apoptosis induced by an Amyloid Precursor Protein cytoplasmic subdomain », *FASEB J*, vol. 19, 2005, p. 1905-1907.
- Brunet I., Weini C., Piper M., Trembleau A., Volovitch M., Harris B., Prochiantz* A., & Holt* C., « Engrailed-2 guides retinal axons », *Nature*, vol. 438, 2005, p. 94-98.
- Brunet I., Di Nardo A., Sonnier L., Beurdeley M. et Prochiantz A., « Shaping neural pathways with messenger homeoproteins », *Trends in Neurosciences*, vol. 30, 2007, p. 260-267.
- Dupont E., Prochiantz A. et Joliot A., « Identification of a signal peptide for unconventional secretion », *J Biol Chem*, vol. 282, n° 12, 2007, p. 8894-9000.
- Agid Y., Buzsáki G., Diamond D. M., Frackowiak R., Giedd J., Girault J.-A., Grace A., Lambert J. J., Manji H., Mayberg H., Popoli M., Prochiantz A., Richter-Levin G., Somogyi P., Spedding M., Svenningsson P. et Weinberger D., « How can drug discovery for psychiatric disorders be improved? », *Nature Reviews Drug Discovery*, vol. 6, 2007, p. 189-201.
- Sonnier L., Le Pen G., Hartman A., Bizot J.-C., Trovero F., Krebs M.-O. et Prochiantz A., « Progressive loss of dopaminergic neurons in the ventral midbrain of adult mice heterozygote for Engrailed1: a new genetic model for neurological and psychiatric disorders », *J Neurosci*, vol. 27, 2007, p. 1063-1071.
- Lesaffre B., Joliot A., Prochiantz A. et Volovitch M., « Direct non-cell autonomous Pax6 activity regulates eye development in the zebrafish », *Neural Development*, vol. 2, n° 2, 2007.
- Prochiantz A. « A protein fusion a day keeps the aggregates away », *Molecular Therapy*, vol. 15, 2007, p. 226-227.
- Prochiantz A., « For protein transduction, chemistry can win over biology », *Nat Methods*, vol. 4, 2007, p. 119-120.
- Holcman D., Kasatkin V. et Prochiantz A., « Modeling homeoprotein intercellular transfer unveils a parsimonious mechanism for gradient and boundary formation in early brain development », *J Theor Biol*, vol. 249, 2007, p. 503-517.
- Di Nardo A., Nedelec S. (co-first), Trembleau A., Volovitch M., Prochiantz* A. et Montesinos M.L., « Dendritic localization and activity-dependent translation of En1 homeodomain transcription factor mRNA », *Mol Cell Neurosci*, vol. 35, 2007, p. 230-236.
- De Toni A., Zbinden M., Epstein J.A., Ruiz I Altaba A., Prochiantz A. et Caillé I., « Regulation of survival in adult hippocampal stem cell lineages by the homeodomain only protein HOP », *Neural Dev*, vol. 3, n° 13, 2008.

- Kasatkin V., Prochiantz A. et Holcman D., « Morphogenetic gradients and the stability of boundaries between neighbouring morphogenetic regions », *Bulletin of Mathematical Biology*, vol. 70, 2008, p. 156-178.
- Sugiyama S., Di Nardo A., Aizawa S., Matsuo I., Volovitch M., Prochiantz* A. et Hensch* T.K., « Experience-dependent transport of Otx2 homeoprotein in the visual pathway activates postnatal cortical plasticity », *Cell*, vol. 134, 2008, p. 508-520.
- Wizenmann A., Brunet I., Lam J., Sonnier L., Beurdeley M., Zarbalis K., Weisenhorn-Vogt D., Weinkl C., Dwivedy A., Joliot A., Wurst W., Holt* C. et Prochiantz A., « Extracellular Engrailed participates in the topographic guidance of retinal axons in vivo », *Neuron*, vol. 64, 2009, p. 355-366.
- Layalle S., Volovitch M., Mugat B., Bonneaud N., Parmentier M.L., Prochiantz A., Joliot A. et Maschat F., « Engrailed homeoprotein acts as a signaling molecule in the developing fly », *Development*, vol. 138, n° 11, 2011, p. 2315-2323.
- Di Lullo E., Haton C., Le Poupon C., Volovitch M., Joliot A., Thomas J.-L. et Prochiantz A., « Paracrine Pax6 activity regulates oligodendrocyte precursor cell migration in the chick embryonic neural tube », *Development*, vol. 138, 2011, p. 4991-5001.
- Torero Ibad R., Rhee J., Mrejen S., Forster V., Picaud S., Prochiantz A. et Moya K.L., « Otx2 promotes the survival of damaged adult retinal ganglion cells and protects against excitotoxic loss of visual acuity in vivo », *J. Neurosci*, vol. 31, n° 14, 2011, p. 5495-5503.
- Alvarez-Fischer D., Fuchs J., Castagner F., Stettler O., Massiani-Beaudoin O., Moya K.L., Bouillot C., Oertel W.H., Lombès A., Faigle W., Joshi R.L., Hartmann A. et Prochiantz A. « Engrailed protects mouse midbrain dopaminergic neurons against mitochondrial complex I insults », *Nat. Neurosci*, 2011, p. 1260-1266.
- Beurdeley M., Spatazza J., Lee H., Sugiyama S., Bernard C., Di Nardo A., Hensch T. et Prochiantz A., « Otx2 Binding to Perineuronal Nets Persistently Regulates Plasticity in the Mature Visual Cortex », *The Journal of Neuroscience*, vol. 32, n° 27, 2012, p. 9429-9437.
- Stettler O., Joshi R.L., Wizenmann A., Reingruber J., Holcman D., Bouillot C., Castagner F., Prochiantz A. et Moya K.L., « Engrailed homeoprotein recruits the adenosine A1 receptor to potentiate ephrin A5 function in retinal growth cones », *Development*, vol. 139, n° 1, 2012, p. 215-224.
- Spatazza J., Lee H.H., Di Nardo A.A., Tibaldi L., Joliot A., Hensch T.K. et Prochiantz A., « Choroid-Plexus-Derived Otx2 Homeoprotein Constrains Adult Cortical Plasticity », *Cell Report*, vol. 3, n° 6, 2013, p. 1815-1823.
- Spatazza J., Di Lullo E., Joliot A., Dupont E., Moya K.L. et Prochiantz A., « Homeoprotein signaling in development, health, and disease: a shaking of dogmas offers challenges and promises from bench to bed », *Pharmacol Rev*, vol. 65, n° 1, 2013, p. 90-104.
- Prochiantz A., « Signaling with homeoprotein transcription factors in development and throughout adulthood », *Current Genomics*, vol. 14, 2013, p. 361-370.
- Bernard C., Kim H.-T. Kim, Torero-Ibad R., Lee E.J., Simonutti M., Picaud S., Acampora D., Simeone A., Di Nardo A. A., Prochiantz A., Moya K. L. et Kim J. W., « Graded Otx2

- activities demonstrate does-sensitive eye and retina phenotypes », *Human Molecular Genetics*, vol. 23, 2014, p. 1742-1753.
- Prochiantz A., Fuchs J. et Di Nardo A. A., « Postnatal signaling with homeoprotein transcription factors », *Philosophical Transactions B.*, vol. 369, 2014.
 - Prochiantz A. et Di Nardo A. A., « Homeoprotein signaling in the developing and adult nervous system », *Neuron*, vol. 85, 2015, p. 911-925.
 - Nordström U., Beauvais G., Ghosh A., Chakrapani B., Sasidharan P., Lundblad M., Fuchs J., Joshi R. L., Lipton J. W., Roholt A., Feinstein T. N., Steiner J. A., Escobar M. L., Prochiantz A. et Brundin P., « Progressive nigrostriatal terminal dysfunction and degeneration in engrailed 1 heterozygous model of Parkinson's disease », *Neurobiology of Disease*, vol. 73, 2015, p. 70-82.
 - Quiñinao C., Prochiantz A. et Touboul J., « Local Homeoprotein diffusion can stabilize boundaries generated by graded positional cues », *Development*, vol. 142, 2015, p.1860-1868.
 - Rekaik H. (co-first), Blandin de Thé F.-X. (co-first), Fuchs J., Massiani-Beaudoin O., Prochiantz A. et Joshi R., « Engrailed homeoprotein protects mesencephalic dopaminergic neurons from oxidative stress », *Cell Reports*, vol. 13, 2015, p. 1-9.
 - Bernard C. (co-first), Vincent C. (co-first), Testa D. (co-first), Bertini E., Ribot J., Di Nardo A.A., Volovitch M. et Prochiantz A., « A mouse model for conditional secretion of specific single-chain antibodies provides genetic evidence for regulation of cortical plasticity by a non-cell autonomous homeoprotein transcription factor », *PLOS Genetics*, 2016.
 - Lee H. H. C. (co-first), Bernard C. (co-first), MA Z. Y., Acampora D., Simeone A., Prochiantz A., DI Nardo A. A. et Hensch T. K., « Genetic Otx2 mis-localization delays critical period plasticity across brain regions », *Mol. Psy.*, vol. 22, 2017, p. 680-688.
 - Blandin de Thé F.-X. (co-first), Rekaik H. (co-first), Peze-Heidsieck E. (co-first), Massiani-Beaudoin O., Joshi R. L., Fuchs J. et Prochiantz A., « LINE-1 repression attenuates degeneration in adult dopaminergic neurons », *EMBO J*, 2018, <https://doi.org/10.15252/embj.201797374>.
 - Prochiantz A., « How to navigate counter dogmatic research findings », *EMBO J*, 2018, <https://doi.org/10.15252/embj.201898945>.
 - Di Nardo A. A., Fuchs J., Joshi R. L., Moya K. L. et Prochiantz A., « The physiology of homeoprotein transduction », *Physiological Reviews*, vol. 98, n° 4, 2018, p. 1943-1982, 2018, <https://doi.org/10.1152/physrev.00018.2017>.
 - Apulei J. (co-first), Kim N. (co-first), Testa D. (co-first), Ribot J., Bernard C., Di Nardo A.A. et Prochiantz A., « Non-cell autonomous Otx2 homeoprotein regulates visual cortex plasticity through GADD45b », *Cerebral Cortex*, vol. 29, n° 6, 219, p. 2384-2395, <https://doi.org/10.1093/cercor/bhy108>.
 - Planques A., Oliveira Moreira V., Dubreuil C., Prochiantz A. et Di Nardo A. A., « Otx2 signals from the choroid plexus to regulate adult neurogenesis », *eNeuro*, vol. 6, n° 2, 2019, <https://doi.org/10.1523/ENEURO.0262-18.2019>.

- Thomasson N., Pioli E., Friedel C., Monseur A., Lavour J., Moya K. L., Bezard E, Bousseau A. et Prochiantz A. « Engrailed-1 induces long-lasting behavior benefit in an experimental Parkinson primate model », *Movement Disorders*, vol. 34, n° 7, 2019, p. 1082-1084, <https://doi.org/10.1002/mds.27714>.
- Vargas Abonce S. E. (co-first), Lebœuf M. (co-first), Prochiantz A. et Moya K. L., « Homeoprotein neuroprotection of embryonic neuronal cells », *eNeuro*, vol. 6, n° 5, 2019, <https://doi.org/10.1523/ENEURO.0061-19.2019>.
- Testa D., Prochiantz A. et Di Nardo A. A., « Perineuronal nets in brain physiology and disease », *Seminars in Cell and Developmental Biology*, vol. 89, 2019, p. 125-135.
- Di Nardo A. A., Joliot A. et Prochiantz A., « Homeoprotein transduction in neurodevelopment and physiopathology », *Science Advances*, vol. 6, n° 44, 2020, <https://doi.org/10.1126/sciadv.abc6374>.
- Kaddour H., Coppola E., Di Nardo A. A., Wizenmann A., Volovitch M., Prochiantz A. et Pierani A., « Extracellular Pax6 regulates tangential Cajal-Retzius cell migration in the developing mouse neocortex », *Cerebral Cortex*, vol. 30, n° 2, 2020, p. 465-475, <https://doi.org/10.1093/cercor/bhz098>.
- Amblard I., Thauvin M., Rampon C., Park V. V., Prochiantz A., Volovitch M., Joliot A. et Vríz S., « H2O2 and Engrailed 2 paracrine activity synergize to shape the zebrafish optic tectum », *Commun. Biol*, vol. 3, n° 536, 2020, <https://doi.org/10.1038/s42003-020-01268-7>.
- Torero-Ibad R. (co-first), Mazhar B. (co-first), Vincent C., Bernard C., Déjardin J., Simonutti M., Lamonerie T., Di Nardo A. A., Prochiantz A. et Moya K. L., « OTX2 non-cell autonomous activity regulates inner retinal functions », *eNeuro*, vol. 7, n° 5, 2020, <https://doi.org/10.1523/ENEURO.0012-19.2020>.
- Arnaud K., Oliveira Moreira V., Vincent J., Dallerac G., Le Poupon C., Richter M., Müller U. C., Rondi-Reig L., Prochiantz A. et Di Nardo A. A., *bioRxiv*, 2020, <https://doi.org/10.1101/734103>.
- Vincent C., Gilabert-Juan J., Alvarez-Fischer D., Di Nardo A. A., Krebs M. O., Le Pen G. et Prochiantz A., « Non-cell autonomous OTX2 transcription factor regulates anxiety-related behaviors in the mouse », *bioRxiv*, 2021, <https://doi.org/10.1101/710848>.
- Vargas Abonce S. E. (co-first), Lebœuf M. (co-first), Moya K. L. et Prochiantz A., « Homeoprotein ENGRAILED-1 promotes motoneuron survival and motor functions », *bioRxiv*, 2020, <https://doi.org/10.1101/734020>.
- Harkness J. H., Gonzales A. E., Bushana P. N., Jorgensen E. T., Hegarty D. M., Di Nardo A. A., Prochiantz A., Wisor J. P., Aicher S. A., Brown T. E. et Sorg B. A., « Diurnal changes in perineuronal nets and parvalbumin neurons in rat prefrontal cortex », *bioRxiv*, <https://doi.org/10.1101/2020.10.25.354134>.
- Ravel-Godreuil C., Massiani-Beaudouin O., Mailly P., Prochiantz A., Joshi R. L. et Fuchs J., « Perturbed DNA methylation by sustained expression of Gadd45b induces chromatin disorganization, DNA strand breaks and dopamine neuron death in mice », *bioRxiv*, <https://doi.org/10.1101/2020.06.23.158014>.

- Torero-Ibad R., Quenech'du N., Prochiantz A. et Moya K., « OTX2 stimulates adult retinal ganglion cell regeneration », *bioRxiv*, <https://doi.org/10.1101/2020.10.06.327999>.

BREVETS

- Prochiantz A., Moya K. et Joshi R., Use of Engrailed for increasing dopamine synthesis by dopaminergic neurons. 2012. PCT/IB2012/050949.
- Prochiantz A., Rekaik H., Blaudin de Thé F.-X., Joshi R. et Fuchs J., Utilisation d'un inhibiteur de transcriptase inverse dans la prévention et le traitement des maladies dégénératives. Déposé le 31 octobre 2014 sous le n° 1460535.
- Prochiantz A., Rekaik H., Blaudin de Thé F.-X., Joshi R. et Fuchs J., Reparation and restructuration of chromatin using a homeoprotein. Déposé le 31 octobre 2014 sous le n° 14306753.6
- Kim J. W., Lee E. J., Prochiantz A., Screening extracellular secreted homeodomain transcription factors, by cloning homeodomain transcription factor into expression vector, transforming cell, culturing cell, and analyzing homeodomain transcription factor. Patent number KR2013123688-A KR1542139-B1.
- Dail L. Kim J. W. Prochiantz A., New gene construct is useful for producing dedifferentiated stem cell, comprises fusion gene of specific base pair sequence and gene encoding reverse differentiation-inducing factor. Patent Number: KR2013118080-A KR1456998-B1
- Prochiantz A., Moya K. et Di Nardo A. A., Treating neurodegenerative diseases including Alzheimer's disease, comprises β -amyloid precursor protein synthesis inhibitor or amyloid β active peptide to choroid plexus. 4 juillet 2013. Patent Number: FR3007988-A1 WO2015001532-A1 FR3007988-B1
- Mallet J.-M., Lavielle S., Marquant R., Prochiantz A., Di Nardo A. A., Testa D., Ligand controlling interaction between GAGs with their effector molecules and use thereof. 2018. EP18305752.