

## CV-Florian LESAGE

*Laboratoire d'Excellence- Ion Channel Science and Therapeutics, director*  
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Date and place of birth: 17/07/1966 - Nancy, France

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### EDUCATION

PhD - Life Sciences, Université de Nice-Sophia Antipolis-1995

MSc - Université de Nice-Sophia Antipolis-1991

### POSITIONS

2018-present: deputy director, *Institut de Pharmacologie Moléculaire et Cellulaire (IPMC)*

2012-present: director, *Laboratoire d'Excellence - Ion Channel Science and Therapeutics (LabEx ICST)*

2020-present: chargé de mission INSB, for interdisciplinarity, Atip/Avenir program, Conférences J. Monod

2021-present: senior director of research (DRE, Inserm)

2008-2021: senior director of research (DR1, Inserm)

2006-present: head of the team *Molecular physiology and physiopathology of ion channels, IPMC*

2003-2013: contrat d'interface/CHRT, *University Hospital of Nice, Department of Neurology*

2002-2008: director of research (DR2, Inserm)

2000-2002: visiting associate professor, *HHMI and The Rockefeller University, NY, USA*

1996-2002: researcher (CR Inserm)

### MAIN ACHIEVEMENTS

My research activity is focused on ion channels and cellular excitability. The main contributions have been the identification of a family of G-protein-coupled potassium channels in the brain and the isolation and characterization of a novel class of channels with unique structural and functional properties: K<sub>2P</sub> channels. They produce background conductances that are a major determinant of the resting potential and input resistance, two key components of cellular excitability. K<sub>2P</sub> channels are polymodal channels that integrate many stimuli, including pH, temperature, stretch, hypoxia, bioactive lipids and modulation by neurotransmitters and hormones. By designing a proteomic approach, we deciphered the composition of native K<sub>2P</sub> channels in the brain. By making and studying knockout mice, we have shown the roles of these channels in heart and adrenal gland development, aldosterone secretion, nociception, and migraine. Recently, we provided the first evidence that K<sub>2P</sub> channels can change their ion selectivity in physiological conditions, shifting from a hyperpolarizing/inhibitory role to a depolarizing/excitatory one. During a sabbatical at Rockefeller University, by "dissecting" presynaptic ion channels and associated proteins in sensory hair cells, I also identified new molecular links between ion channels and the neurotransmitter secretory apparatus, and between synaptic ion channel activity and nuclear transcription (providing one of the earliest examples of excitation/transcription coupling).

### SCIENTIFIC PRODUCTIVITY

- >130 publications cited more than 19,800 times, h-index: 69 according to Google Scholar (> 13,000 citations, h-index: 58 for Web of Science). Original articles in Cell, Cell Reports (2X), Nature (2X), Nature Comm. (3X), Nature Neurosci., Neuron (4X), EMBO J. (14X), PNAS (11X), J. Biol. Chem. (16X), J. Neurosci. (4X)...
- 17 groups of international patents (licenses to *Idagen* and *Bristol Myers Squibb*), 32 sequences in *GenBank*
- >70 invited conferences, seminar and public lectures in France and abroad
- Member or chair of the scientific/organizing committees of 15 international meetings, workshops and schools

### AWARDS

2000: medal Maurice Nicloux, *Société française de biochimie et biologie moléculaire*

2000: fellowship, *North Atlantic Treaty Organization*  
 2002: special prize, *Fondation pour la recherche médicale*  
 2008: laureate of the French *National Academy of Medicine* (Prize Achard/Medicine)  
 2009: invitation fellowship, *Japan Society for the Promotion of Science*  
 2015: Chevalier - French National order of merit

## EDITORIAL BOARDS

**2010-present:** associate editor, *Frontiers in Pharmacology*  
**2015-2021:** review editor, *Journal of Physiology & Eur. J. of Physiology/Pflügers Archiv*  
**2018-present:** review editor, *Physiological Reviews*  
**2018-present:** associate editor for *Frontiers in Molecular Neuroscience*

## SCIENTIFIC COMMITTEES

Since 2000: nomenclature committee ( $K^+$  channel genes), *Human Genome Organisation*  
 Since 2002: nomenclature committee ( $K_{2P}$  channels), *International Union of Basic and Clinical Pharmacology*  
 Since 2019: committee “molecular & cellular physiology”, *International Union of Physiological Sciences*  
 2008-2012: specialized scientific committee CSS1 (neurosciences), *Inserm*  
 2009: *Ad hoc* evaluation committee of the research centers, *Inserm*  
 2012-2015: section 69 (neurosciences), *Conseil national des universités*  
 2012-2016: conseil scientifique *Inserm*/scientific board of *Inserm*  
 2015: chairman of committee CES28 (mol. & cell. neurosciences), *Agence nationale de la recherche*  
 2016-2021: section 28 (technologies for health), *Comité National pour la Recherche Scientifique (CoNRS)*  
 2016-2021: chairman of CID 54 (interdisciplinary methods and technologies for life sciences), *CoNRS*  
 2016-2021: committee of the chairmen of section and CID (CPCN), *CoNRS*  
 2009-2018: visiting committees of 10 major research centers for AERES/HCERES

## REVIEWING

- 2010-present: grant referee for the Wellcome Trust, Royal Society & BBSRC (UK), FRS-FNRS & BSPO (Belgium), SNSF (Switzerland), ISF (Israel), DFG (Germany), NSERC (Canada), RNRC (Romania)...
- 2000-present: reviewer for *Nature*, *Nature Neuroscience*, *Nature Structural and Molecular Biology*, *Nature Communications*, *Science*, *Neuron*, *Trends in Neurosciences*, *Trends in Pharmacological Sciences*, *Physiological Reviews*, *Proceedings of the National Academy of Sciences of USA*, *EMBO Journal*, *Journal of Neuroscience*, *Journal of Physiology*, *Brain Research*, *European Journal of Neuroscience*, *European Journal of Pharmacology*, *Molecular Pharmacology*, *Journal of Molecular and Cellular Cardiology*...

## RECENT PUBLICATIONS

Glogowska E et al. (2021). *Piezo1 and Piezo2 foster mechanical gating of K(2P) channels*. **Cell Rep**, 37 (9) : 110070  
 Cooper A et al. (2020). *Inhibition of histone deacetylation rescues phenotype in a mouse model of Birk-Barel intellectual disability syndrome*. **Nat Commun**, 11 (1): 480  
 Ben Soussia I et al. (2019). *Mutation of a single residue promotes gating of vertebrate and invertebrate two-pore domain potassium channels*. **Nat Commun**, 10 (1): 787  
 Royal P et al. (2019). *Migraine-Associated TRESK Mutations Increase Neuronal Excitability through Alternative Translation Initiation and Inhibition of TREK*. **Neuron**, 101 (2): 232-245.e6

## COMPLETE LIST OF PUBLICATIONS (major publications are in blue)

### 1) ORIGINAL ARTICLES

1. Honore E., B. Attali, G. Romey, C. Heurteaux, P. Ricard, [F. Lesage](#), M. Lazdunski and J. Barhanin « Cloning, expression, pharmacology and regulation of a delayed rectifier K<sup>+</sup> channel in mouse heart » **EMBO J.** (1991) **10**, 2805-2811.
2. [Lesage F.](#), B. Attali, M. Lazdunski and J. Barhanin « Isk, a slowly activating voltage-sensitive K<sup>+</sup> channel. Characterization of multiple cDNAs and gene organization in the mouse » **FEBS Lett.** (1992) **301**, 168-172.
3. Honoré E., B. Attali, [F. Lesage](#), J. Barhanin and M. Lazdunski «Receptor-mediated regulation of Isk, a very slowly activating, voltage-dependent K<sup>+</sup> channel in *Xenopus* oocytes» **Biochem. Biophys. Res. Commun.** (1992) **184** [3], 1135-1141.
4. Attali B., G. Romey, E. Honoré, A. Schmid-Alliana, M.-G. Mattéi, [F. Lesage](#), P. Ricard, J. Barhanin and M. Lazdunski «Cloning, functional expression and regulation of two K<sup>+</sup> channels in human T lymphocytes» **J. Biol. Chem.** (1992) **267** [12], 8650-8657.
5. Attali B., E. Honoré, [F. Lesage](#), M. Lazdunski and J. Barhanin «Regulation of a major cloned voltage-gated K<sup>+</sup> channel from human T lymphocytes» **FEBS Lett.** (1992) **303** [2,3], 229-232.
6. Honoré E., B. Attali, G. Romey, [F. Lesage](#), J. Barhanin and M. Lazdunski «Different types of K<sup>+</sup> channel currents are generated by different levels of a single mRNA» **EMBO J.** (1992) **11** [7], 2465-2471.
7. [Lesage F.](#), B. Attali, M. Lazdunski and J. Barhanin «Developmental expression of voltage-sensitive K<sup>+</sup> channels in mouse skeletal muscle and C2C12 cells» **FEBS Lett.** (1992) **310** [2], 162-166.
8. Guillemare E., E. Honoré, L. Pradier, [F. Lesage](#), H. Schweitz, B. Attali, J. Barhanin and M. Lazdunski «Effects of the level of mRNA expression on biophysical properties, sensitivity to neurotoxins, and regulation of the brain delayed-rectifier K<sup>+</sup> channel Kv1.2» **Biochemistry** (1992) **31**, 12463-12468.
9. Chevillard C., B. Attali, [F. Lesage](#), M. Fontès, J. Barhanin, M. Lazdunski and M.-G. Mattéi «Assignment of the gene for a very slow potassium channel (IsK) to q22.1-q22.2 by *in situ* hybridization and somatic cell hybrids» **Genomics** (1993) **15** [1], 243-245.
10. [Lesage F.](#), B. Attali, J. Lakey, E. Honoré, G. Romey, E. Faurobert, M. Lazdunski and J. Barhanin «Are *Xenopus* oocytes unique in displaying functional Isk channel heterologous expression?» **Receptors & Channels** (1993) **1** [2], 143-152.
11. Attali B., E. Guillemare, [F. Lesage](#), E. Honoré, G. Romey, M. Lazdunski and J. Barhanin «The protein Isk is a dual activator of K<sup>+</sup> and Cl<sup>-</sup> channels» **Nature** (1993) **365**, 850-852.
12. Attali B., [F. Lesage](#), P. Ziliani, E. Guillemare, E. Honoré, R. Waldmann, J.-P. Hugnot, M.-G. Mattéi, M. Lazdunski and J. Barhanin «Multiple mRNA isoforms encoding the mouse cardiac Kv1.5 delayed-rectifier K<sup>+</sup> channel» **J. Biol. Chem.** (1993) **268**, 24283-24289.
13. Honoré E., J. Barhanin, B. Attali, [F. Lesage](#) and M. Lazdunski «External blockage of the major cardiac delayed-rectifier K<sup>+</sup> channel (Kv1.5) by polyunsaturated fatty acids» **Proc. Natl. Acad. Sci. USA** (1994) **91**, 1937-1944.
14. Honoré E., E. Guillemare, [F. Lesage](#), J. Barhanin and M. Lazdunski «Injection of a K<sup>+</sup> channel (Kv1.3) cRNA in fertilized eggs leads to functional expression in cultured myotomal muscle cells from *Xenopus* embryos» **FEBS Lett.** (1994) **348**, 259-262.
15. [Lesage F.](#), J.-P. Hugnot, E.-Z. Amri, P. Grimaldi, J. Barhanin and M. Lazdunski «Expression cloning in K<sup>+</sup> transport defective yeast and distribution of HBP1, a new putative HMG transcriptional regulator» **Nucleic Acids Research.** (1994) **22**, 3685-3688.
16. [Lesage F.](#), F. Duprat, M. Fink, E. Guillemare, T. Coppola, M. Lazdunski and J.-P. Hugnot «Cloning provides evidence for a family of inward rectifier and G-protein coupled K<sup>+</sup> channels in the brain» **FEBS Lett.** (1994) **353**, 37-42.
17. Duprat F., [F. Lesage](#), E. Guillemare, M. Fink, J.-P. Hugnot, J. Bigay, M. Lazdunski, G. Romey and J. Barhanin «Heterologous multimeric assembly is essential for K<sup>+</sup> channel activity of neuronal and cardiac G-protein-activated inward rectifiers» **Biochem. Biophys. Res. Commun.** (1995) **212**, 657-663.
18. [Lesage F.](#), M. Fink, J. Barhanin, M. Lazdunski and M-G Mattéi «Assignment of Human G-Protein-Coupled Inward Rectifier K<sup>+</sup> Channel Homolog GIRK3 Gene to Chromosome 1q21-q23» **Genomics** (1995) **29**, 808-809.
19. [Lesage F.](#), E. Guillemare, M. Fink, F. Duprat, C. Heurteaux, M. Fosset, G. Romey, J. Barhanin and M. Lazdunski «Molecular properties of neuronal G-protein-activated inwardly rectifying K<sup>+</sup> channels» **J. Biol. Chem.** (1995) **270**, 28660-28667.
20. Duprat F., E. Guillemare, G. Romey, M. Fink, [F. Lesage](#), M. Lazdunski and E. Honoré «Susceptibility of cloned K<sup>+</sup> channels to reactive oxygen species» **Proc. Natl. Acad. Sci. USA** (1995) **92**, 11796-11800.
21. Fink M., F. Duprat, C. Heurteaux, [F. Lesage](#), G. Romey, J. Barhanin and M. Lazdunski «Dominant negative chimeras provide evidence for homo and heteromultimeric assembly of inward rectifier K<sup>+</sup> channel proteins via their N-terminal end» **FEBS Lett.** (1996) **378**, 64-68.
22. [Lesage F.](#), E. Guillemare, M. Fink, F. Duprat, M. Lazdunski, G. Romey and J. Barhanin «Twik-1, a ubiquitous human weakly inward rectifying K<sup>+</sup> channel with a novel structure» **EMBO J.** (1996) **15**, 1004-1011.
23. [Lesage F.](#), E. Guillemare, M. Fink, F. Duprat, M. Lazdunski, G. Romey and J. Barhanin «A pH sensitive yeast outward rectifier K<sup>+</sup> channel with two P domains and novel gating properties» **J. Biol. Chem.** (1996) **271**, 4183-4187.
24. [Lesage F.](#), M.-G Mattéi, M. Fink, J. Barhanin and M. Lazdunski «Assignment of the human weak inward rectifier K<sup>+</sup> channel TWIK-1 gene to chromosome 1q42-q43» **Genomics** (1996) **34**, 153-155.

25. Hugnot J-P., M. Salinas, [F. Lesage](#), E. Guillemare, J. de Weille, C. Heurteaux, M-G. Mattéi and M. Lazdunski «Kv8.1, a new neuronal potassium channel subunit with specific inhibitory properties towards *Shab* and *Shaw* channels» **EMBO J.** (1996) **15**, 3322-3331.
26. Fink M., F. Duprat, [F. Lesage](#)\*, C. Heurteaux, G. Romey, J. Barhanin and M. Lazdunski «A new K<sup>+</sup> channel  $\beta$  subunit to specifically enhance Kv2.2 (CDRK) expression» **J. Biol. Chem.** (1996) **271**, 26341-26348. (\* co first author)
27. Barhanin J., [F. Lesage](#), E. Guillemare, M. Fink, M. Lazdunski and G. Romey «KvLQT1 and Isk (minK) proteins associate to form the IKs cardiac potassium current» **Nature** (1996) **384**, 78-80
28. [Lesage F.](#), R. Reyes, M. Fink, F. Duprat, E. Guillemare and M. Lazdunski «Dimerization of TWIK-1 K<sup>+</sup> channel subunits via a disulfide bridge» **EMBO J.** (1996) **15**, 6400-6407.
29. Vetter D. E., J. R. Mann, P. Wangemann, J. Liu, K. J. McLaughlin, [F. Lesage](#), D. C. Marcus, M. Lazdunski, S. F. Heinemann and J. Barhanin «Inner ear defects induced by null mutation of the Isk gene» **Neuron** (1996) **17**, 1251-1264.
30. Fink M., F. Duprat, [F. Lesage](#), R. Reyes, G. Romey, C. Heurteaux and M. Lazdunski «Cloning, functional expression and brain localisation of a novel unconventional outward rectifier K<sup>+</sup> channel» **EMBO J.** (1996) **15**, 6854-6862.
31. [Lesage F.](#), I. Lauritzen, F. Duprat, R. Reyes, M. Fink, C. Heurteaux and M. Lazdunski «The structure, function and distribution of the mouse TWIK-1 K<sup>+</sup> channel» **FEBS Lett.** (1997) **402**, 28-32.
32. Lauritzen I., J. de Weille, C. Adelbrecht, [F. Lesage](#), G. Murer, R. Raisman-Vozari and M. Lazdunski «Comparative expression of the inward rectifier K<sup>+</sup> channel GIRK2 in the cerebellum of normal and *weaver* mutant mice» **Brain Res.** (1997) **753**, 8-17.
33. Adelbrecht C., M. G. Murer, I. Lauritzen, [F. Lesage](#), M. Lazdunski, Y. Agid and R. Raisman-Vozari «An immunocytochemical study of a G-protein-gated inward rectifier K<sup>+</sup> channel (GIRK2) in the *weaver* mouse mesencephalon» **Neuroreport** (1997) **8**, 969-974.
34. Murer M. G., C. Adelbrecht, I. Lauritzen, [F. Lesage](#) and M. Lazdunski, Y. Agid and R. Raisman-Vozari «An immunocytochemical study of the distribution of two G-protein-gated inward rectifier potassium channels (GIRK2 and GIRK4) in the adult rat brain» **Neuroscience** (1997) **80**, 345-357.
35. Duprat F., [F. Lesage](#)\*, M. Fink, R. Reyes, C. Heurteaux and M. Lazdunski «TASK, a human background K<sup>+</sup> channel to sense external pH variations near physiological pH» **EMBO J.** (1997) **16**, 5464-5471 (\* co first author)
36. Arrighi, I., [F. Lesage](#), J.C. Scimeca, G.F. Carleb and J. Barhanin «Structure, chromosome localization, and tissue distribution of the mouse TWIK K<sup>+</sup> channel gene» **FEBS Lett.** (1998) **425**, 310-316.
37. Fink, M., [F. Lesage](#)\*, F. Duprat, C. Heurteaux, R. Reyes, M. Fosset and M. Lazdunski «A neuronal two P domain K<sup>+</sup> channel stimulated by arachidonic acid and polyunsaturated fatty acid» **EMBO J.** (1998) **17**, 3297-3308. (\* co first author)
38. Patel A. J., E. Honoré, F. Maingret, [F. Lesage](#), M. Fink, F. Duprat and M. Lazdunski «A mammalian two pore domain mechano-gated S-like K<sup>+</sup> channel» **EMBO J.** (1998) **17**, 4283-4290.
39. [Lesage, F.](#) and M. Lazdunski «Mapping of human potassium channel genes TREK-1 (*KCNK2*) and TASK (*KCNK3*) to chromosomes 1q41 and 2p23» **Genomics** (1998) **51**, 478-479.
40. Reyes, R., F. Duprat, [F. Lesage](#)\*, M. Fink, M. Salinas, N. Farman and M. Lazdunski «Cloning and expression of a novel pH-sensitive two pore domain K<sup>+</sup> channel from human kidney» **J. Biol. Chem.** (1998) **273**, 30863-30869. (\* co first author)
41. Cluzeaud F., R. Reyes, B. Escoubet, M. Fay, M. Lazdunski, J. P. Bonvalet, [F. Lesage](#) and N. Farman «Expression of TWIK-1, a novel weakly inward rectifying potassium channel in rat kidney» **Am. J. Physiol.** (1998) **275**, C1602-C1609.
42. Maingret F., M. Fosset, [F. Lesage](#), M. Lazdunski and E. Honoré «TRAAK is a mammalian neuronal mechano-gated K<sup>+</sup> gated» **J. Biol. Chem.** (1999) **274**, 1381-1387.
43. Salinas M., R. Reyes, [F. Lesage](#), M. Fosset, C. Heurteaux, G. Romey and M. Lazdunski «Cloning of a new mouse two P domain channel subunit and a human homologue with a unique pore structure» **J. Biol. Chem.** (1999) **274**, 11751-11760.
44. Patel A.J., E. Honoré, [F. Lesage](#), M. Fink, G. Romey and M. Lazdunski «Inhalational anesthetics activate two-pore-domain background K<sup>+</sup> channels» **Nature Neurosci.** (1999) **2**, 422-426.
45. Lopez-Coronado J.M., J.M. Bellés, [F. Lesage](#), R. Serrano and P. L. Rodriguez «A novel mammalian lithium-sensitive enzyme with a dual enzymatic activity, 3'-phosphoadenosine 5'-phosphate phosphatase and inositol-polyphosphate 1-phosphatase» **J. Biol. Chem.** (1999) **274**, 16034-16039.
46. Maingret F., A.J. Patel, [F. Lesage](#), M. Lazdunski and E. Honoré «Mechano- or acid stimulation, two interactive modes of activation of the TREK-1 potassium channel» **J. Biol. Chem.** (1999) **274**, 26691-26696.
47. Reyes R., I. Lauritzen, [F. Lesage](#), M. Ettaiche, M. Fosset and M. Lazdunski «Immunolocalization of the arachidonic-acid and mechano-sensitive baseline TRAAK potassium channel in the nervous system» **Neuroscience** (2000) **95**, 893-901.
48. Duprat F., [F. Lesage](#), A.J. Patel, M. Fink, G. Romey and M. Lazdunski «The neuroprotective agent riluzole activates the two P-domain K<sup>+</sup> channels TREK-1 and TRAAK» **Mol. Pharmacol.** (2000) **57**, 906-912.
49. Maingret F., A.J. Patel, [F. Lesage](#), M. Lazdunski and E. Honoré «Lysophospholipids open the two P domain mechano-gated K<sup>+</sup> channels TREK-1 and TRAAK» **J. Biol. Chem.** (2000) **275**, 10128-10133.
50. Bearzatto B., [F. Lesage](#), R. Reyes, M. Lazdunski and P. Laduron «Axonal transport of TREK and TRAAK potassium channels in rat sciatic nerves» **Neuroreport** (2000) **11**, 927-930.
51. Czirjak G., T. Fischer, A. Spat, [F. Lesage](#) and P. Enyedi «TASK is expressed in glomerulosa cells of rat adrenal cortex and inhibited by angiotensin II» **Mol. Endocrinol.** (2000) **14**, 863-874.
52. [Lesage F.](#), F. Maingret and M. Lazdunski «Cloning and expression of human TRAAK, a polyunsaturated fatty acids-activated and mechano-sensitive K<sup>+</sup> channel» **FEBS Lett.** (2000) **471**, 137-140.

53. Maingret F., I. Lauritzen, A.J. Patel, C. Heurteaux, R. Reyes, [F. Lesage](#), M. Lazdunski and E. Honoré «TREK-1 is a heat-activated background K<sup>+</sup> channel» **EMBO J.** (2000) **19**, 2483-2491.
54. [Lesage F.](#), C. Terrenoire, G. Romey and M. Lazdunski «Human TREK2, a 2P domain mechano-sensitive K<sup>+</sup> channel with multiple regulations by polyunsaturated fatty acids, lysophospholipids and Gs-, Gi, and Gq-protein-coupled receptors» **J. Biol. Chem.** (2000), **275**, 28398-28405.
55. Girard C., F. Duprat, C. Terrenoire, N. Tinel, M. Fosset, G. Romey, M. Lazdunski and [F. Lesage](#) « Genomic and functional properties of novel human pancreatic 2P domain K<sup>+</sup> channels» **Bioch. Biophys. Res. Commun.** (2001) **282**, 249-256.
56. Terrenoire C., I. Lauritzen, [F. Lesage](#), G. Romey and M. Lazdunski «A TREK-1-like potassium channel in atrial cells inhibited by beta-adrenergic stimulation and activated by volatile anesthetics» **Circ. Res.** (2001) **89**, 336-342.
57. Hibino H., R. Pironkova, O. Onwumere, M. Vologodskaja, A.J. Hudspeth and [F. Lesage](#) «RIM Binding Proteins (RBPs) Couple Rab3-Interacting Molecules (RIMs) to Voltage-Gated Ca<sup>2+</sup> Channels» **Neuron** (2002) **34**, 411-423.
58. Hibino H., R. Pironkova, O. Onwumere, P. Charnet, M. Rousset, A.J. Hudspeth and [F. Lesage](#) «Direct interaction with the nuclear protein HP1g/ CHCB2 and regulation of gene silencing by a variant of the Ca<sup>2+</sup> - channel  $\beta_4$  subunit» **Proc. Natl. Acad. Sci. USA.** (2003) **100**, 307-312. **RECOMMENDED BY FACULTY OF 1000**
59. Magloire H., [F. Lesage](#), M.L. Couble, M. Lazdunski and F. Bleicher « Expression and localization of TREK-1 K<sup>+</sup> channels in human odontoblasts » **J Dent Res.** (2003) **82**, 542-545.
60. Barriere H., R. Belfodil, I. Rubera, M. Tauc, [F. Lesage](#), C. Poujeol, N. Guy, J. Barhanin and P. Poujeol « Role of TASK2 potassium channels regarding volume regulation in primary cultures of mouse proximal tubules » **J. Gen. Physiol.** (2003) **122**, 177-190.
61. Chemin J., C. Girard, F. Duprat, [F. Lesage](#), G. Romey and M. Lazdunski . « Mechanisms underlying excitatory effects of group I metabotropic glutamate receptors via inhibition of 2P domain K<sup>+</sup> channels » **EMBO J.** (2003) **20**, 5403-5411.
62. [Lesage F.](#), H. Hibino and A.J. Hudspeth « Association of beta-catenin with the alpha-subunit of neuronal large-conductance Ca<sup>2+</sup>-activated K<sup>+</sup> channels » **Proc. Natl. Acad. Sci. USA.** (2004) **101**, 671-675.
63. Warth R., H. Barriere, P. Meneton, M. Bloch, J. Thomas, M. Tauc, D. Heitzmann, E. Romeo, F. Verrey, R. Mengual, N. Guy, S. Bendahhou, [F. Lesage](#), P. Poujeol and J. Barhanin « Proximal renal tubular acidosis in TASK2 K<sup>+</sup> channel-deficient mice reveals a mechanism for stabilizing bicarbonate transport » **Proc. Natl. Acad. Sci. USA.** (2004) **101**, 8215-8220.
64. Nicolas MT., [F. Lesage](#), R. Reyes, J. Barhanin and D. Dememes « Localization of TREK-1, a two-pore-domain K<sup>+</sup> channel in the peripheral vestibular system of mouse and rat » **Brain Res.** (2004) **1017**, 46-52.
65. Decressac S., M. Franco, S. Bendahhou, R. Warth, S. Knauer, J. Barhanin, M. Lazdunski and [F. Lesage](#) « ARF6-dependent interaction of the TWIK1 K<sup>+</sup> channel with EFA6, a GDP/GTP exchange factor for ARF6 » **EMBO Rep.** (2004) **5**, 1171-1175. **RECOMMENDED BY FACULTY OF 1000**
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### ORIGINAL SEQUENCES PUBLISHED IN GENBANK DATABASE (32 SEQUENCES CORRESPONDING TO ION CHANNEL PORE-FORMING OR AUXILIARY SUBUNITS)

- **Mus musculus G-protein-coupled inward rectifier K<sup>+</sup> channel splice variant mGIRK2A mRNA**, complete cds, MMU37253 1998 bp mRNA linear ROD 07-MAR-1996, GenBank: U37253.1  
[Lesage, F.](#)
- **Mus musculus G-protein-gated inwardly rectifying K<sup>+</sup> channel GIRK4 mRNA**, complete cds MMU33631 1260 bp mRNA linear ROD 05-JUN-1996, GenBank: U33631.1  
[Lesage, F.](#)
- **Mus musculus G protein coupled inward rectifier K<sup>+</sup> channel 3 mRNA**, complete cds MMU11860 2267 bp mRNA linear ROD 28-NOV-1994, GenBank: U11860.1  
[Lesage F.](#)
- **Mus musculus G protein coupled inward rectifier K<sup>+</sup> channel 2 mRNA**, complete cds MMU11859 1978 bp mRNA linear ROD 28-NOV-1994, GenBank: U11859.1  
[Lesage, F.](#)
- **Mus musculus inwardly-rectifying K<sup>+</sup> channel protein (mb-IRK3) mRNA**, complete cds MMU11075 1681 bp mRNA linear ROD 19-NOV-1994, GenBank: U11075.1  
[Lesage, F.](#)
- **Rattus norvegicus HMG-box containing protein 1 (HBP1) mRNA**, complete cds RNU09551 2642 bp mRNA linear ROD 28-NOV-1994, GenBank: U09551.1  
[Lesage, F.](#)
- **Saccharomyces cerevisiae two-domain outward rectifier K<sup>+</sup> channel YORK gene**, complete cds SCU37254 2076 bp DNA linear PLN 24-FEB-1996, GenBank: U37254.1



Lesage, F.

• **Human two P-domain K<sup>+</sup> channel TWIK-1 mRNA**, complete cds

HSU33632 1882 bp mRNA linear PRI 05-JUN-1996, GenBank: U33632.1

Lesage, F.

• **Mus musculus TWIK-1 K<sup>+</sup> channel mRNA**, complete cds

MMU86009 1011 bp mRNA linear ROD 02-APR-1997, GenBank: U86009

Lesage, F., Lauritzen, I, Duprat, F, Reyes, R, Fink, M, Heurteaux, C, Lazdunski, M.

• **Mus musculus potassium channel subunit (KvLQT1) mRNA**, complete cds

MMU70068 2841 bp mRNA linear ROD 23-NOV-1996, GenBank: U70068.1

Barhanin, J, Lesage, E., Guillemare, E, Fink, M, Lazdunski, M, Romey, G.

• **Mus musculus K<sup>+</sup> channel beta1 subunit mRNA**, complete cds

MMU65591 1206 bp mRNA linear ROD 03-DEC-1996, GenBank: U65591.1

Fink, M, Duprat, F, Lesage, E., Heurteaux, C, Romey, G, Barhanin, J, Lazdunski, M.

• **Mus musculus K<sup>+</sup> channel beta4 subunit mRNA**, complete cds

MMU65593 750 bp mRNA linear ROD 03-DEC-1996, GenBank: U65593.1

Fink, M, Duprat, F, Lesage, E., Heurteaux, C, Romey, G, Barhanin, J, Lazdunski, M.

• **Mus musculus K<sup>+</sup> channel beta2 subunit mRNA**, complete cds

MMU65592 1104 bp mRNA linear ROD 03-DEC-1996, GenBank: U65592.1

Fink, M, Duprat, F, Lesage, E., Heurteaux, C, Romey, G, Barhanin, J, Lazdunski, M.

• **Mesocricetus auratus potassium channel Kv8.1 mRNA**, complete cds

MAU62810 2871 bp mRNA linear ROD 24-AUG-1996, GenBank: U62810.1

Hugnot, JP, Salinas, M, Lesage, E., Guillemare, E, De Weille, J, Heurteaux, C, Matti, MG, Lazdunski, M.

• **Mus musculus TREK-1 K<sup>+</sup> channel subunit mRNA**, complete cds

MMU73488 3580 bp mRNA linear ROD 15-APR-1999, GenBank: U73488.2

Fink, M, Duprat, F, Lesage, E., Reyes, R, Romey, G, Heurteaux, C, Lazdunski, M.

• **Homo sapiens TREK-1 potassium channel (KCNK2) mRNA**, complete cds

AF129399 1236 bp mRNA linear PRI 29-MAR-2001, GenBank: AF129399.1

Patel, AJ, Honore, E, Lesage, F., Fink, M, Romey, G, Lazdunski, M.

• **Homo sapiens TWIK-related acid-sensitive K<sup>+</sup> channel (TASK) mRNA**, complete cds

AF006823 2590 bp mRNA linear PRI 06-OCT-1997, GenBank: AF006823.1

Duprat, F, Lesage, F., Fink, M, Reyes, R, Heurteaux, C, Lazdunski, M.

• **Mus musculus TWIK-related acid-sensitive K<sup>+</sup> channel (TASK) mRNA**, partial cds

AF006824 1887 bp mRNA linear ROD 24-JUL-2016, GenBank: AF006824.1

Duprat, F, Lesage, F., Fink, M, Reyes, R, Heurteaux, C, Lazdunski, M.

• **Homo sapiens two pore domain K<sup>+</sup> channel (TASK-2) mRNA**, complete cds

AF084830 3514 bp mRNA linear PRI 14-JUN-1999, GenBank: AF084830.1

Reyes, R, Duprat F, Lesage, F., Fink, M, Salinas, M, Farman, N, Lazdunski, M.

• **Homo sapiens two pore domain K<sup>+</sup> channel subunit A mRNA**, complete cds

AF110522 1312 bp mRNA linear PRI 11-MAY-1999, GenBank: AF110522.1

Salinas, M, Reyes, R, Lesage, F., Fosset, M, Heurteaux, C, Romey, G, Lazdunski, M.

• **Mus musculus two pore domain K<sup>+</sup> channel subunit mRNA**, complete cds


AF110521 1273 bp mRNA linear ROD 11-MAY-1999, GenBank: AF110521.1

Salinas, M, Reyes, R, Lesage, F., Fosset, M, Heurteaux, C, Romey, G, Lazdunski, M.

- **Homo sapiens two pore domain K<sup>+</sup> channel subunit C mRNA**, complete cds  
AF110524 1577 bp mRNA linear PRI 11-MAY-1999, GenBank: AF110524.1  
Salinas, M, Reyes, R, [Lesage, F](#), Fosset, M, Heurteaux, C, Romey, G, Lazdunski, M.
- **Homo sapiens two pore domain K<sup>+</sup> channel subunit B mRNA**, complete cds  
AF110523 1388 bp mRNA linear PRI 11-MAY-1999, GenBank: AF110523.1  
Salinas, M, Reyes, R, [Lesage, F](#), Fosset, M, Heurteaux, C, Romey, G., Lazdunski, M.
- **Mus musculus TRAAK K<sup>+</sup> channel subunit mRNA**, complete cds  
AF056492 1757 bp mRNA linear ROD 20-DEC-2016, GenBank: AF056492.2  
Fink, M, [Lesage, F](#), Duprat, F, Heurteaux C, Reyes, R, Fosset, M, Lazdunski, M.
- **Homo sapiens 2P domain potassium channel TREK2 (KCNK10) mRNA**, complete cds  
AF279890 2730 bp mRNA linear PRI 20-SEP-2000, GenBank: AF279890.1  
[Lesage, F](#).
- **Homo sapiens 2P domain potassium channel Talk-1 (KCNK16) mRNA**, complete cds  
AF358909 930 bp mRNA linear PRI 02-MAY-2001, GenBank: AF358909.1  
[Lesage, F](#), Girard, C, Tinel, N.
- **Homo sapiens 2P domain potassium channel Talk-2 (KCNK17) mRNA**, complete cds  
AF358910 999 bp mRNA linear PRI 02-MAY-2001, GenBank: AF358910.1  
[Lesage, F](#), Girard, C, Tinel, N.
- **Gallus gallus voltage-gated Ca<sup>2+</sup>-channel beta 4a subunit mRNA, complete cds; alternatively spliced**  
AY168000 1895 bp mRNA linear VRT 01-FEB-2003, GenBank: AY168000.1  
Hibino, H, Pironkova, R, Onwumere, O, Rousset, M, Charnet, P, Hudspeth, AJ., [Lesage, F](#).
- **Gallus gallus voltage-gated Ca<sup>2+</sup>-channel beta 4c subunit mRNA**, complete cds; alternatively spliced  
AY168001 3197 bp mRNA linear VRT 01-FEB-2003, GenBank: AY168001.1  
Hibino, H, Pironkova, R, Onwumere, O, Rousset, M, Charnet, P, Hudspeth, AJ, [Lesage, F](#).
- **Gallus gallus RIM-binding protein 2 mRNA**, complete cds  
AY072908 4407 bp mRNA linear VRT 14-MAY-2002, GenBank: AY072908.1  
Hibino, H, Pironkova, R, Onwumere, O, Vologdskaia, M, Hudspeth, AJ, [Lesage, F](#).
- **Human TREK2, a novel stretch- and arachidonic acid-sensitive K<sup>+</sup> channel activated by inhalational anesthetics and riluzole**  
BD432870 1614 bp DNA linear PAT 04-NOV-2005, GenBank: BD432870.1  
[Lesage F](#), Romey, G, Lazdunski, M.
- **Novel family of mechanosensitive human potassium channels activated by polyunsaturated fatty acids and their use**  
BD393525 1337 bp DNA linear PAT 04-NOV-2005, GenBank: BD393525.1  
Maingret, F, [Lesage, F](#), Lazdunski, M.

## PATENTS (from espacenet patent search)

### PAIN RELIEF COMPOUNDS

Page bookmark	<a href="#">US2015038466 (A1) - PAIN RELIEF COMPOUNDS</a>
Inventor(s):	DUCKI SYLVIE [FR]; BENNIS KHALIL [FR]; ESCHALIER ALAIN [FR]; BUSSEROLLES JÉRÔME [FR]; <b>LESAGE FLORIAN</b> [FR]; RODRIGUEZ NUNO [FR]; VIVIER DELPHINE [FR] ±
Applicant(s):	ECOLE NATIONALE SUPERIEURE DE CHIMIE DE CLERMONT FERRAND [FR]; UNIV D AUVERGNE CLERMONT I [FR] ±
Classification:	- international: <b>C07C229/34; C07C255/41; C07C57/60; C07D209/42; C07D307/54; C07F9/09</b> - cooperative: <b>C07C229/34; C07C255/41; C07C57/60; C07D209/18; C07D209/42; C07D307/54; C07F9/09; C07F9/12; C07C2101/14</b>
Application number:	US201214369674 20121231  <a href="#">Global Dossier</a>
Priority number(s):	<a href="#">FR20110062564 20111230</a> ; <a href="#">WO2012EP77113 20121231</a>
Also published as:	<a href="#">US2015274633 (A2)</a> <a href="#">WO2013098416 (A2)</a> <a href="#">WO2013098416 (A3)</a> <a href="#">EP2797886 (A2)</a> <a href="#">CN104093706 (A)</a> → <a href="#">more</a>

### PROTEIN CHIPS, PREPARATION AND USE THEREOF

Page bookmark	<a href="#">US2015018251 (A1) - PROTEIN CHIPS, PREPARATION AND USE THEREOF</a>
Inventor(s):	<b>LESAGE FLORIAN</b> [FR]; CHATELAIN FRANCK [FR]; MAZZUCA MICHEL [FR]; ROGEMOND VERONIQUE [FR]; LARROQUE MARIE-MADELEINE [FR]; HONNORAT JEROME [FR] ±
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Classification:	- international: <b>G01N33/543; G01N33/564; G01N33/68</b> - cooperative: <b>G01N33/543; G01N33/54366; G01N33/564; G01N33/6845; G01N33/6854; G01N33/6872; G01N33/6896; G01N2333/70571; G01N2800/28; G01N2800/2828</b>
Application number:	US201314375623 20130201  <a href="#">Global Dossier</a>
Priority number(s):	<a href="#">FR20120050956 20120201</a> ; <a href="#">WO2013EP52009 20130201</a>
Also published as:	<a href="#">FR2986331 (A1)</a> <a href="#">WO2013113864 (A1)</a> <a href="#">EP2810075 (A1)</a>

### A METHOD FOR THE IDENTIFICATION OF ANESTHETICS

Page bookmark	<a href="#">AT508192 (T) - A METHOD FOR THE IDENTIFICATION OF ANESTHETICS</a>
Inventor(s):	LAZDUNSKI MICHEL [FR]; HONORE ERIC [FR]; <b>LESAGE FLORIAN</b> [FR]; ROMÉY GEORGES [FR]; PATEL AMANDA J [FR] ±
Applicant(s):	CENTRE NAT RECH SCIENT [FR] ±
Classification:	- international: <b>C07K14/47; C07K14/705; C12N15/09; C12N15/12; C12Q1/02; C12Q1/68; G01N33/15; G01N33/50; C12R1/91</b> - cooperative: <b>C07K14/705; C07K2319/00</b>
Application number:	AT20000905230T 20000211
Priority number(s):	<a href="#">US20000503089 20000211</a> ; <a href="#">WO2000IB00226 20000211</a> ; <a href="#">US19990119727P 19990212</a>
Also published as:	<a href="#">WO0047738 (A2)</a> <a href="#">WO0047738 (A3)</a> → <a href="#">WO0047738 (A9)</a> <a href="#">JP2002536017 (A)</a> <a href="#">EP1144624 (A2)</a> → <a href="#">more</a>


## PROTEINA DE CANAL DE POTASIO TREK-1 HUMANA Y DE RATON Y SU USO.

Page bookmark	<a href="#">ES2366080 (T3) - PROTEINA DE CANAL DE POTASIO TREK-1 HUMANA Y DE RATON Y SU USO.</a>
Inventor(s):	LAZDUNSKI MICHEL; HONORE ERIC; <a href="#">LESAGE FLORIAN</a> ; ROMEY GEORGES; PATEL AMANDA J ±
Applicant(s):	CENTRE NAT RECH SCIENT [FR] ±
Classification:	- international: <b>C07K14/705; C12N15/12; G01N33/50</b> - cooperative:
Application number:	ES20000905230T 20000211
Priority number(s):	<a href="#">US19990119727P 19990212</a>

## NEW FAMILY OF MAMMALIAN POTASSIUM CHANNELS, THEIR CLONING AND THEIR USE, ESPECIALLY FOR THE SCREENING OF DRUGS

Page bookmark	<a href="#">ES2307343 (T3) - NEW FAMILY OF MAMMALIAN POTASSIUM CHANNELS, THEIR CLONING AND THEIR USE, ESPECIALLY FOR THE SCREENING OF DRUGS</a>
Inventor(s):	DUPRAT FABRICE [FR]; <a href="#">LESAGE FLORIAN</a> [FR]; LAZDUNSKI MICHEL [FR] ±
Applicant(s):	CENTRE NAT RECH SCIENT ±
Classification:	- international: <b>A61K38/17; C07K14/47; C07K14/705; C12N1/19; C12N1/21; C12N15/12; C12N5/14; C12N5/16; C12P21/02; C12Q1/68</b> - cooperative: <b>C07K14/705</b>
Application number:	ES19990956260T 19991109
Priority number(s):	<a href="#">US19980107692P 19981109</a> ; <a href="#">US19990436265 19991108</a>
Also published as:	<a href="#">WO0027871 (A2)</a> <a href="#">WO0027871 (A3)</a> <a href="#">EP1129187 (A2)</a> <a href="#">EP1129187 (B1)</a> <a href="#">CA2350334 (A1)</a> → <a href="#">more</a>

## MECHANOSENSITIVE MAMMALIAN POTASSIUM CHANNEL ACTIVATABLE BY POLYUNSATURATED FATTY ACIDS

Page bookmark	<a href="#">US2009162368 (A1) - MECHANOSENSITIVE MAMMALIAN POTASSIUM CHANNEL ACTIVATABLE BY POLYUNSATURATED FATTY ACIDS</a>
Inventor(s):	HONORE ERIC [FR]; FINK MICHEL [FR]; LAZDUNSKI MICHEL [FR]; <a href="#">LESAGE FLORIAN</a> [FR]; DUPRAT FABRICE [FR] ±
Applicant(s):	CENTRE NAT RECH SCIENT [FR] ±
Classification:	- international: <b>A61K31/7088; A61K38/16; A61K39/395; C07K14/00; C07K16/18; C12N15/00; C12N15/11; C12N15/87; C12N5/06; C12P21/02; C12Q1/02</b> - cooperative: <b>C07K14/705; A61K38/00</b>
Application number:	US20080329381 20081205  <a href="#">Global Dossier</a>
Priority number(s):	<a href="#">US20080329381 20081205</a> ; <a href="#">FR19980002725 19980305</a> ; <a href="#">US20050224260 20050912</a> ; <a href="#">US20000655272 20000905</a> ; <a href="#">WO1999FR00404 19990223</a>

## Family of mammalian potassium channels, their cloning and their use, especially for the screening of drugs

Page bookmark	<a href="#">US2002032322 (A1)</a> - Family of mammalian potassium channels, their cloning and their use, especially for the screening of drugs
Inventor(s):	DUPRAT FABRICE [FR]; <a href="#">LESAGE FLORIAN</a> [FR]; FINK MICHEL [FR]; LAZDUNSKI MICHEL [FR] ±
Applicant(s):	CENTRE NAT RECH SCIENT [US] ±
Classification:	- international: <b>C07K14/705</b> ; A61K38/00; (IPC1-7): A01K67/00; A01K67/033; C07H21/04; C12P21/06; C12Q1/68; G01N33/53 - cooperative: <b>C07K14/705</b> ; A61K38/00
Application number:	US20010939484 20010824
Priority number(s):	<a href="#">US19980095234P 19980804</a> ; <a href="#">US19980144914 19980901</a> ; US20010939484 20010824 ; <a href="#">FR19960001565 19960208</a> ; <a href="#">US19960749816 19961115</a>
Also published as:	<a href="#">US6309855 (B1)</a>

## Family of mammalian potassium channels, their cloning and their use, especially for the screening of drugs

Page bookmark	<a href="#">US2002094558 (A1)</a> - Family of mammalian potassium channels, their cloning and their use, especially for the screening of drugs
Inventor(s):	DUPRAT FABRICE [FR]; <a href="#">LESAGE FLORIAN</a> [FR]; FINK MICHEL [FR]; LAZDUNSKI MICHEL [FR] ±
Applicant(s):	CENTRE NAT RECH SCIENT [US] ±
Classification:	- international: <b>C07K14/705</b> ; A61K38/00; (IPC1-7): C07H21/04; C07K14/435; C12N5/06; C12N9/00; C12P21/02 - cooperative: <b>C07K14/705</b> ; A01K2217/05; A61K38/00
Application number:	US20010939483 20010824
Priority number(s):	<a href="#">US19960749816 19961115</a> ; <a href="#">US19980095234P 19980804</a> ; <a href="#">US19980144914 19980901</a> ; US20010939483 20010824

## Family of mammalian potassium channels, their cloning and their use especially for the screening of drugs

Page bookmark	<a href="#">US6013470 (A)</a> - Family of mammalian potassium channels, their cloning and their use especially for the screening of drugs
Inventor(s):	<a href="#">LESAGE FLORIAN</a> [FR]; GUILLEMARE ERIC [FR]; FINK MICHEL [FR]; DUPRAT FABRICE [FR]; LAZDUNSKI MICHEL [FR]; ROMÉY GEORGES [FR]; BARHANIN JACQUES [FR] ±
Applicant(s):	CENTRE NAT RECH SCIENT [FR] ±
Classification:	- international: <b>C07K14/705</b> ; <b>C12N15/12</b> ; A61K38/00; (IPC1-7): C07H21/02; C12N15/00; C12N15/63; C12P21/06 - cooperative: <b>C07K14/705</b> ; A61K38/00
Application number:	US19960749816 19961115
Priority number(s):	<a href="#">FR19960001565 19960208</a>
Also published as:	<a href="#">FR2744730 (A1)</a> <a href="#">FR2744730 (B1)</a> <a href="#">EP0799889 (A1)</a> <a href="#">EP0799889 (B1)</a> <a href="#">DE69631516 (T2)</a> → more



## Human TREK2, a stretch- and arachidonic acid-sensitive K<sup>+</sup> channel activated by inhalational anesthetics and riluzole

<b>Page bookmark</b>	<a href="#">US2004101833 (A1)</a> - Human TREK2, a stretch- and arachidonic acid-sensitive K <sup>+</sup> channel activated by inhalational anesthetics and riluzole
<b>Inventor(s):</b>	LAZDUNSKI MICHEL [FR]; <b>LESAGE FLORIAN</b> [FR]; ROMÉY GEORGES [FR] ±
<b>Applicant(s):</b>	LAZDUNSKI MICHEL, ; LESAGE FLORIAN, ; ROMÉY GEORGES, ; CENTRE NATIONAL DE LA RECHERCHE SCIENTIFIQUE-CNRS
<b>Classification:</b>	<p>- international: <b>A61K45/00; A61P23/00; C07K14/47; C07K14/705; C07K16/18; C12N1/15; C12N1/19; C12N1/21; C12N15/09; C12N15/12; C12N5/10; C12P21/08; G01N33/15; G01N33/50;</b> (IPC1-7): C07H21/04; C07K14/705; C07K16/28; C12Q1/68</p> <p>- cooperative: <b>C07K14/705</b></p>
<b>Application number:</b>	US20010892360 20010627
<b>Priority number(s):</b>	US20010892360 20010627 ; <a href="#">US20000214559P 20000627</a>
<b>Also published as:</b>	<a href="#">US6962976 (B2)</a> <a href="#">WO0200715 (A2)</a> <a href="#">WO0200715 (A3)</a> <a href="#">JP2004501627 (A)</a> <a href="#">EP1297138 (A2)</a> → more

## Method for screening substances capable of modulating the activity of a TRAAK potassium channel

<b>Page bookmark</b>	<a href="#">US6942979 (B1)</a> - Method for screening substances capable of modulating the activity of a TRAAK potassium channel
<b>Inventor(s):</b>	HONORE ERIC [FR]; FINK MICHEL [FR]; LAZDUNSKI MICHEL [FR]; <b>LESAGE FLORIAN</b> [FR]; DUPRAT FABRICE [FR] ±
<b>Applicant(s):</b>	CENTRE NAT RECH SCIENT [FR] ±
<b>Classification:</b>	<p>- international: <b>A61K31/7088; A61K38/00; A61K39/395; A61K48/00; A61P21/00; A61P25/00; A61P25/28; A61P5/00; A61P9/00; C07K14/705; C07K16/28; C12N1/15; C12N1/19; C12N1/21; C12N15/09; C12N15/12; C12N5/00; C12N5/10; C12P21/02; C12P21/08; C12Q1/02; G01N33/15; G01N33/50; G01N33/53;</b> (IPC1-7): C07K21/04; C11Q1/68; C12N5/00; G01N33/53</p> <p>- cooperative: <b>C07K14/705; C12N5/00; G01N33/53; A61K38/00; A61K48/00</b></p>
<b>Application number:</b>	US20000655272 20000905
<b>Priority number(s):</b>	US20000655272 20000905 ; <a href="#">FR19980002725 19980305</a> ; <a href="#">WO1999FR00404 19990223</a>
<b>Also published as:</b>	<a href="#">FR2775688 (A1)</a> <a href="#">FR2775688 (B1)</a> <a href="#">JP2002505102 (A)</a> <a href="#">JP4289790 (B2)</a> <a href="#">WO9945108 (A2)</a> → more

## Method for the identification of anesthetics

<b>Page bookmark</b>	<a href="#">US7112403 (B1)</a> - Method for the identification of anesthetics
<b>Inventor(s):</b>	PATEL AMANDA J [FR]; HONORE ERIC [FR]; <b>LESAGE FLORIAN</b> [FR]; ROMÉY GEORGES [FR]; LAZDUNSKI MICHEL [FR]; FINK MICHEL [FR]; DUPRAT FABRICE [FR]; MAINGRET FRANCOIS [GB] ±
<b>Applicant(s):</b>	CNRS AND FABRICE DUPRAT [FR] ±
<b>Classification:</b>	<p>- international: <b>C12Q1/00; G01N35/00</b></p> <p>- cooperative: <b>G01N33/5041; G01N33/6872; G01N2500/04; Y10T436/12</b></p>
<b>Application number:</b>	US20000503089 20000211
<b>Priority number(s):</b>	US20000503089 20000211 ; <a href="#">US19980144914 19980901</a> ; <a href="#">US19990119727P 19990212</a>


## Isolated TWIK-1 potassium channel proteins

Page bookmark	<a href="#">US7067625 (B1) - Isolated TWIK-1 potassium channel proteins</a>
Inventor(s):	<a href="#">LESAGE FLORIAN</a> [FR]; GUILLEMARE ERIC [FR]; FINK MICHEL [FR]; DUPRAT FABRICE [FR]; LAZDUNSKI MICHEL [FR]; ROMÉY GEORGES [FR]; BARHANIN JACQUES [FR] ±
Applicant(s):	CENTRE NAT RECH SCIENT ±
Classification:	- international: <b>C07K1/00; C07K14/00; C07K17/00</b> - cooperative: <b>C07K14/705</b>
Application number:	US20000481990 20000111
Priority number(s):	<a href="#">FR19960001565</a> <a href="#">19960208</a> ; <a href="#">US19960749816</a> <a href="#">19961115</a> ; US20000481990 20000111

## Family of mechanosensitive human potassium channels activated by polyunsaturated fatty acids and their use

Page bookmark	<a href="#">US2003049697 (A1) - Family of mechanosensitive human potassium channels activated by polyunsaturated fatty acids and their use</a>
Inventor(s):	LAZDUNSKI MICHEL [FR]; <a href="#">LESAGE FLORIAN</a> [FR]; MAINGRET FRANCOIS [FR] ±
Applicant(s):	CENTRE NAT RECH SCIENT [FR] ±
Classification:	- international: <b>A61K45/00; A61P21/00; A61P27/02; A61P5/00; A61P9/00; A61P9/14; C07K14/705; C12N15/12; C12Q1/02; C12Q1/68; A61K38/00</b> ; (IPC1-7): G01N33/567 - cooperative: <b>C07K14/705; A61K38/00</b>
Application number:	US20020243035 20020913
Priority number(s):	<a href="#">FR20000003264</a> <a href="#">20000314</a> ; <a href="#">WO2001FR00758</a> <a href="#">20010314</a>
Also published as:	<a href="#">FR2806411 (A1)</a> <a href="#">FR2806411 (B1)</a> <a href="#">JP2003527114 (A)</a> <a href="#">WO0168670 (A2)</a> <a href="#">WO0168670 (A3)</a> → <a href="#">more</a>

## Mechanosensitive mammalian potassium channels activatable by polyunsaturated fatty acids and the use of said channels in drug screening

Page bookmark	<a href="#">US2006024729 (A1) - Mechanosensitive mammalian potassium channels activatable by polyunsaturated fatty acids and the use of said channels in drug screening</a>
Inventor(s):	HONORE ERIC [FR]; FINK MICHEL [FR]; LAZDUNSKI MICHEL [FR]; <a href="#">LESAGE FLORIAN</a> [FR]; DUPRAT FABRICE [FR] ±
Applicant(s):	CENTRE NAT RECH SCIENT [FR] ±
Classification:	- international: <b>C07H21/04; C07K14/705; C07K16/28; C12N5/00; C12P21/06; C12Q1/68; G01N33/53</b> - cooperative: <b>C07K14/705; A61K38/1709</b>
Application number:	US20050224260 20050912  <a href="#">Global Dossier</a>
Priority number(s):	US20050224260 20050912 ; <a href="#">FR19980002725</a> <a href="#">19980305</a> ; <a href="#">US20000655272</a> <a href="#">20000905</a> ; <a href="#">WO1999FR00404</a> <a href="#">19990223</a>
Also published as:	<a href="#">US7468422 (B2)</a>