Christoph Stein

List of Publications by Year
in descending order

205 papers	18,556 citations	8755 75 h-index	12597 132 g-index
232 all docs	232 docs citations	232 times ranked	8217 citing authors

#	Article	IF	Citations
1	Advances in Neuropathic Pain. Archives of Neurology, 2003, 60, 1524.	4.5	1,117
2	The Control of Pain in Peripheral Tissue by Opioids. New England Journal of Medicine, 1995, 332, 1685-1690.	27.0	657
3	Increased content and transport of substance P and calcitonin gene-related peptide in sensory nerves innervating inflamed tissue: Evidence for a regulatory function of nerve growth factor in vivo. Neuroscience, 1992, 49, 693-698.	2.3	619
4	Analgesic Effect of Intraarticular Morphine after Arthroscopic Knee Surgery. New England Journal of Medicine, 1991, 325, 1123-1126.	27.0	578
5	Attacking pain at its source: new perspectives on opioids. Nature Medicine, 2003, 9, 1003-1008.	30.7	535
6	Opioids from immunocytes interact with receptors on sensory nerves to inhibit nociception in inflammation.. Proceedings of the National Academy of Sciences of the United States of America, 1990, 87, 5935-5939.	7.1	534
7	Peripheral Mechanisms of Opioid Analgesia. Anesthesia and Analgesia, 1993, 76, 182???191.	2.2	486
8	Inflammation of the rat paw enhances axonal transport of opioid receptors in the sciatic nerve and increases their density in the inflamed tissue. Neuroscience, 1993, 55, 185-195.	2.3	341
9	Peripheral opioid receptors mediating antinociception in inflammation. Evidence for involvement of mu, delta and kappa receptors. Journal of Pharmacology and Experimental Therapeutics, 1989, 248, 1269-75.	2.5	341
10	Opioid Receptors. Annual Review of Medicine, 2016, 67, 433-451.	12.2	339
11	Local analgesic effect of endogenous opioid peptides. Lancet, The, 1993, 342, 321-324.	13.7	334
12	Perineurial defect and peripheral opioid analgesia in inflammation. Journal of Neuroscience, 1995, 15, 165-172.	3.6	321
13	Interleukin 1 beta and corticotropin-releasing factor inhibit pain by releasing opioids from immune cells in inflamed tissue.. Proceedings of the National Academy of Sciences of the United States of America, 1994, 91, 4219-4223.	7.1	314
14	Unilateral inflammation of the hindpaw in rats as a model of prolonged noxious stimulation: Alterations in behavior and nociceptive thresholds. Pharmacology Biochemistry and Behavior, 1988, 31, 445-451.	2.9	299
15	Gene expression and localization of opioid peptides in immune cells of inflamed tissue: Functional role in antinociception. Neuroscience, 1992, 48, 491-500.	2.3	280
16	Immune cell-derived beta-endorphin. Production, release, and control of inflammatory pain in rats.. Journal of Clinical Investigation, 1997, 100, 142-148.	8.2	274
17	Intraarticular Morphine, Bupivacaine, and Morphine/Bupivacaine for Pain Control after Knee Videoarthroscopy. Anesthesiology, 1992, 77, 263-266.	2.5	246
18	Peripheral mechanisms of pain and analgesia. Brain Research Reviews, 2009, 60, 90-113.	9.0	230

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19	Peripheral mechanisms of opioid analgesia. Current Opinion in Pharmacology, 2009, 9, 3-8.	3.5	227
20	Opioid Peptideâ€"expressing Leukocytes. Anesthesiology, 2001, 95, 500-508.	2.5	206
21	Intrinsic mechanisms of antinociception in inflammation: local opioid receptors and beta-endorphin. Journal of Neuroscience, 1990, 10, 1292-1298.	3.6	204
22	Antinociceptive effects of Î¼- and Îº-agonists in inflammation are enhanced by a peripheral opioid receptor-specific mechanism. European Journal of Pharmacology, 1988, 155, 255-264.	3.5	199
23	Î²-Endorphin-containing memory-cells and Î¼-opioid receptors undergo transport to peripheral inflamed tissue. Journal of Neuroimmunology, 2001, 115, 71-78.	2.3	185
24	Inflammation of the hind limb as a model of unilateral, localized pain: influence on multiple opioid systems in the spinal cord of the rat. Pain, 1988, 35, 299-312.	4.2	184
25	Painful Inflammation-Induced Increase in Î¼-Opioid Receptor Binding and G-Protein Coupling in Primary Afferent Neurons. Molecular Pharmacology, 2003, 64, 202-210.	2.3	178
26	No tolerance to peripheral morphine analgesia in presence of opioid expression in inflamed synovia.. Journal of Clinical Investigation, 1996, 98, 793-799.	8.2	177
27	A nontoxic pain killer designed by modeling of pathological receptor conformations. Science, 2017, 355, 966-969.	12.6	175
28	Expression of corticotropin-releasing factor in inflamed tissue is required for intrinsic peripheral opioid analgesia.. Proceedings of the National Academy of Sciences of the United States of America, 1996, 93, 6096-6100.	7.1	172
29	Modulation of Peripheral Sensory Neurons by the Immune System: Implications for Pain Therapy. Pharmacological Reviews, 2011, 63, 860-881.	16.0	165
30	Pain control in inflammation governed by selectins. Nature Medicine, 1998, 4, 1425-1428.	30.7	164
31	Subcellular Pathways of Î²-Endorphin Synthesis, Processing, and Release from Immunocytes in Inflammatory Pain. Endocrinology, 2004, 145, 1331-1341.	2.8	161
32	Altered Cell-mediated Immunity and Increased Postoperative Infection Rate in Long-term Alcoholic Patients. Anesthesiology, 2004, 100, 1088-1100.	2.5	151
33	Methionine-enkephalin-and Dynorphin A-release from immune cells and control of inflammatory pain. Pain, 2001, 93, 207-212.	4.2	142
34	The German counterpart to McGill Pain Questionnaire. Pain, 1988, 32, 251-255.	4.2	140
35	Î¼-Opioid Receptor Activation Modulates Transient Receptor Potential Vanilloid 1 (TRPV1) Currents in Sensory Neurons in A Model of Inflammatory Pain. Molecular Pharmacology, 2007, 71, 12-18.	2.3	131
36	Intraarticular morphine versus dexamethasone in chronic arthritis. Pain, 1999, 83, 525-532.	4.2	128

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37	Peripheral effect of fentanyl upon nociception in inflamed tissue of the rat. Neuroscience Letters, 1988, 84, 225-228.	2.1	127
38	Peripheral mechanisms of opioid antinociception in inflammation: involvement of cytokines. European Journal of Pharmacology, 1993, 242, 229-235.	3.5	127
39	Opioids. , 2007, , 31-63.		125
40	Sympathetic activation triggers endogenous opioid release and analgesia within peripheral inflamed tissue. European Journal of Neuroscience, 2004, 20, 92-100.	2.6	124
41	Immunohistochemical localization of endomorphin-1 and endomorphin-2 in immune cells and spinal cord in a model of inflammatory pain. Journal of Neuroimmunology, 2002, 126, 5-15.	2.3	120
42	Intraperitoneal Versus Interpleural Morphine or Bupivacaine for Pain after Laparoscopic CholecystectomyÂ. Anesthesiology, 1995, 82, 634-640.	2.5	115
43	Different mechanisms of intrinsic pain inhibition in early and late inflammation. Journal of Neuroimmunology, 2003, 141, 30-39.	2.3	115
44	Control of inflammatory pain by chemokine-mediated recruitment of opioid-containing polymorphonuclear cells. Pain, 2004, 112, 229-238.	4.2	115
45	Opioid Control of Inflammatory Pain Regulated by Intercellular Adhesion Molecule-1. Journal of Neuroscience, 2002, 22, 5588-5596.	3.6	111
46	Relative contribution of peripheral versus central opioid receptors to antinociception. Brain Research, 2007, 1160, 30-38.	2.2	111
47	Pain control by CXCR2 ligands through Ca 2+ â€regulated release of opioid peptides from polymorphonuclear cells. FASEB Journal, 2006, 20, 2627-2629.	0.5	110
48	3D-Wound healing model: Influence of morphine and solid lipid nanoparticles. Journal of Biotechnology, 2010, 148, 24-30.	3.8	110
49	Peptide neuroanatomy of adjuvant-induced arthritic inflammation in rat. Agents and Actions, 1988, 25, 255-259.	0.7	109
50	Rapid upregulation of Î¼ opioid receptor mrna in dorsal root ganglia in response to peripheral inflammation depends on neuronal conduction. Neuroscience, 2004, 129, 473-479.	2.3	109
51	Corticotropin-releasing factor in antinociception and inflammation. European Journal of Pharmacology, 1997, 323, 1-10.	3.5	105
52	Â-Endorphin, Met-enkephalin and corresponding opioid receptors within synovium of patients with joint trauma, osteoarthritis and rheumatoid arthritis. Annals of the Rheumatic Diseases, 2007, 66, 871-879.	0.9	105
53	Chronic morphine use does not induce peripheral tolerance in a rat model of inflammatory pain. Journal of Clinical Investigation, 2008, 118, 1065-73.	8.2	105
54	Targeting inflammation and wound healing by opioids. Trends in Pharmacological Sciences, 2013, 34, 303-312.	8.7	105

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55	Leukocytes in the regulation of pain and analgesia. Journal of Leukocyte Biology, 2005, 78, 1215-1222.	3.3	104
56	New concepts in opioid analgesia. Expert Opinion on Investigational Drugs, 2018, 27, 765-775.	4.1	104
57	Inflammation enhances peripheral Î¼-opioid receptor-mediated analgesia, but not Î¼-opioid receptor transcription in dorsal root ganglia. European Journal of Pharmacology, 1995, 279, 165-169.	3.5	103
58	Analgesic and Antiinflammatory Effects of Two Novel Îº-Opioid Peptides. Anesthesiology, 2001, 94, 1034-1044.	2.5	100
59	Pain and the immune system. British Journal of Anaesthesia, 2008, 101, 40-44.	3.4	91
60	Dynorphin, a preferential ligand for Îº-opioid receptors, is present in nerve fibers and immune cells within inflamed tissue of the rat. Neuroscience Letters, 1992, 140, 85-88.	2.1	90
61	Peripheral morphine analgesia in dental surgery. Pain, 1998, 76, 145-150.	4.2	90
62	Analgesic efficacy of opioids in chronic pain: recent metaâ€analyses. British Journal of Pharmacology, 2015, 172, 324-333.	5.4	89
63	Peripheral opioid analgesia. Current Opinion in Pharmacology, 2001, 1, 62-65.	3.5	88
64	Efficacy of Peripheral Morphine Analgesia in Inflamed, Non-Inflamed and Perineural Tissue of Dental Surgery Patients. Journal of Pain and Symptom Management, 2001, 21, 330-337.	1.2	88
65	Involvement of capsaicin-sensitive neurones in hyperalgesia and enhanced opioid antinociception in inflammation. Naunyn-Schmiedeberg's Archives of Pharmacology, 1990, 342, 666-670.	3.0	87
66	Opioids, sensory systems and chronic pain. European Journal of Pharmacology, 2013, 716, 179-187.	3.5	87
67	The K ⁺ channel GIRK2 is both necessary and sufficient for peripheral opioidâ€mediated analgesia. EMBO Molecular Medicine, 2013, 5, 1263-1277.	6.9	87
68	A thermosensitive morphine-containing hydrogel for the treatment of large-scale skin wounds. International Journal of Pharmaceutics, 2013, 444, 96-102.	5.2	86
69	Peripheral Opioid Analgesia. Current Pharmaceutical Biotechnology, 2003, 4, 270-274.	1.6	86
70	Peripheral morphine analgesia. Pain, 1997, 71, 119-121.	4.2	85
71	Opioids and Sensory Nerves. Handbook of Experimental Pharmacology, 2009, , 495-518.	1.8	84
72	Peripheral analgesic and antiinflammatory effects of opioids. Zeitschrift Fur Rheumatologie, 2001, 60, 416-424.	1.0	81

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73	Selective local PMN recruitment by CXCL1 or CXCL2/3 injection does not cause inflammatory pain. Journal of Leukocyte Biology, 2006, 79, 1022-1032.	3.3	81
74	Characterization of Î¼ Opioid Receptor Binding and G Protein Coupling in Rat Hypothalamus, Spinal Cord, and Primary Afferent Neurons during Inflammatory Pain. Journal of Pharmacology and Experimental Therapeutics, 2004, 308, 712-718.	2.5	79
75	Mycobacteria Attenuate Nociceptive Responses by Formyl Peptide Receptor Triggered Opioid Peptide Release from Neutrophils. PLoS Pathogens, 2009, 5, e1000362.	4.7	79
76	Modulation of Transient Receptor Vanilloid 1 Activity by Transient Receptor Potential Ankyrin 1. Molecular Pharmacology, 2014, 85, 335-344.	2.3	79
77	Peripheral Opioid Receptors. Annals of Medicine, 1995, 27, 219-221.	3.8	77
78	Effects of neurotoxins and hindpaw inflammation on opioid receptor immunoreactivities in dorsal root ganglia. Neuroscience, 1998, 85, 281-291.	2.3	77
79	Contribution of opioid receptors on primary afferent versus sympathetic neurons to peripheral opioid analgesia. Journal of Pharmacology and Experimental Therapeutics, 1998, 286, 1000-6.	2.5	76
80	Peripheral Antinociceptive Effects of Exogenous and Immune Cell-Derived Endomorphins in Prolonged Inflammatory Pain. Journal of Neuroscience, 2006, 26, 4350-4358.	3.6	73
81	Periaqueductal gray stimulation produces a spinally mediated, opioid antinociception for the inflamed hindpaw of the rat. Brain Research, 1991, 545, 17-23.	2.2	72
82	Endogenous peripheral antinociception in early inflammation is not limited by the number of opioid-containing leukocytes but by opioid receptor expression. Pain, 2004, 108, 67-75.	4.2	72
83	Involvement of corticotropin-releasing hormone receptor subtypes 1 and 2 in peripheral opioid-mediated inhibition of inflammatory pain. Pain, 2003, 106, 297-307.	4.2	68
84	Endothelin Potentiates TRPV1 via ETAReceptor-Mediated Activation of Protein Kinase C. Molecular Pain, 2007, 3, 1744-8069-3-35.	2.1	68
85	Opioid receptors and opioid peptide-producing leukocytes in inflammatory pain â€“ Basic and therapeutic aspects. Brain, Behavior, and Immunity, 2010, 24, 683-694.	4.1	68
86	Peripheral effects of the kappa-opioid agonist EMD 61753 on pain and inflammation in rats and humans. Journal of Pharmacology and Experimental Therapeutics, 1999, 290, 354-61.	2.5	68
87	Tissue Monocytes/Macrophages in Inflammation. Anesthesiology, 2004, 101, 204-211.	2.5	66
88	Local upregulation of corticotropin-releasing hormone and interleukin-1 receptors in rats with painful hindlimb inflammation. European Journal of Pharmacology, 1996, 311, 221-231.	3.5	64
89	Dose-dependency of intra-articular morphine analgesia. British Journal of Anaesthesia, 1999, 83, 241-244.	3.4	64
90	Immunosuppressive Effects of Opioidsâ€"Clinical Relevance. Journal of NeuroImmune Pharmacology, 2011, 6, 490-502.	4.1	64

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91	Motivational effects of opioids in an animal model of prolonged inflammatory pain: alteration in the effects of Îº-but not of Î¼-receptor agonists. Pain, 1988, 35, 179-186.	4.2	63
92	Pain inhibition by blocking leukocytic and neuronal opioid peptidases in peripheral inflamed tissue. FASEB Journal, 2012, 26, 5161-5171.	0.5	63
93	Non-Analgesic Effects of Opioids: Peripheral Opioid Effects on Inflammation and Wound Healing. Current Pharmaceutical Design, 2012, 18, 6053-6069.	1.9	63
94	Peripheral opioid receptors mediating antinociception in inflammation. Activation by endogenous opioids and role of the pituitary-adrenal axis. Pain, 1990, 41, 81-93.	4.2	61
95	Lymphocytes upregulate signal sequence-encoding proopiomelanocortin mRNA and beta-endorphin during painful inflammation in vivo. Journal of Neuroimmunology, 2007, 183, 133-145.	2.3	61
96	Targeting pain and inflammation by peripherally acting opioids. Frontiers in Pharmacology, 2013, 4, 123.	3.5	61
97	Interleukin-1 beta contributes to the upregulation of kappa opioid receptor mrna in dorsal root ganglia in response to peripheral inflammation. Neuroscience, 2006, 141, 989-998.	2.3	60
98	Mobilization of Opioid-containing Polymorphonuclear Cells by Hematopoietic Growth Factors and Influence on Inflammatory Pain. Anesthesiology, 2004, 100, 149-157.	2.5	57
99	Immune Mechanisms in Pain Control. Anesthesia and Analgesia, 2002, 95, 1002-1008.	2.2	55
100	Opioid withdrawal increases transient receptor potential vanilloid 1 activity in a protein kinase A-dependent manner. Pain, 2013, 154, 598-608.	4.2	54
101	Peripheral opioid receptor blockade increases postoperative morphine demandsâ€"A randomized, double-blind, placebo-controlled trial. Pain, 2014, 155, 2056-2062.	4.2	54
102	Selectins and integrins but not platelet-endothelial cell adhesion molecule-1 regulate opioid inhibition of inflammatory pain. British Journal of Pharmacology, 2004, 142, 772-780.	5.4	53
103	CXCR1/2 ligands induce p38 MAPK-dependent translocation and release of opioid peptides from primary granules in vitro and in vivo. Brain, Behavior, and Immunity, 2007, 21, 1021-1032.	4.1	53
104	Novel Opioid Analgesics and Side Effects. ACS Chemical Neuroscience, 2017, 8, 1638-1640.	3.5	52
105	Analgesic effects of a novel pH-dependent Î¼-opioid receptor agonist in models of neuropathic and abdominal pain. Pain, 2018, 159, 2277-2284.	4.2	51
106	Co-expression of Î²-endorphin with adhesion molecules in a model of inflammatory pain. Journal of Neuroimmunology, 2000, 108, 160-170.	2.3	50
107	Pain Control by Immune-Derived Opioids. Clinical and Experimental Pharmacology and Physiology, 2000, 27, 533-536.	1.9	49
108	Opioid use in chronic noncancer pain: guidelines revisited. Current Opinion in Anaesthesiology, 2010, 23, 598-601.	2.0	48

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109	Peripheral analgesic actions of opioids. Journal of Pain and Symptom Management, 1991, 6, 119-124.	1.2	47
110	Involvement of Intra-articular Corticotropin-releasing Hormone in Postoperative Pain Modulation. Clinical Journal of Pain, 2007, 23, 136-142.	1.9	47
111	Opioid receptor signaling, analgesic and side effects induced by a computationally designed pH-dependent agonist. Scientific Reports, 2018, 8, 8965.	3.3	47
112	Modulation of Peripheral Endogenous Opioid Analgesia by Central Afferent Blockade. Anesthesiology, 2003, 98, 195-202.	2.5	46
113	Leukocyte-Derived Opioid Peptides and Inhibition of Pain. Journal of NeuroImmune Pharmacology, 2006, 1, 90-97.	4.1	44
114	Barbiturate-induced inhibition of a spinal nociceptive reflex: role of GABA mechanisms and descending modulation. Brain Research, 1987, 407, 307-311.	2.2	42
115	Evidence for an Increase in the Release of CGRP from Sensory Nerves during Inflammation. Annals of the New York Academy of Sciences, 1992, 657, 505-506.	3.8	39
116	Immune Mechanisms in Pain Control. Anesthesia and Analgesia, 2002, 95, 1002-1008.	2.2	39
117	Cytotoxic T cells modulate inflammation and endogenous opioid analgesia in chronic arthritis. Journal of Neuroinflammation, 2017, 14, 30.	7.2	38
118	Impaired Nociception and Peripheral Opioid Antinociception in Mice Lacking Both Kinin B1 and B2 Receptors. Anesthesiology, 2012, 116, 448-457.	2.5	38
119	Exploiting Fluorescence Lifetime Plasticity in FLIM: Target Molecule Localization in Cells and Tissues. ACS Medicinal Chemistry Letters, 2011, 2, 724-728.	2.8	37
120	Targeting delta opioid receptors for pain treatment: drugs in phase I and II clinical development. Expert Opinion on Investigational Drugs, 2017, 26, 155-160.	4.1	37
121	Involvement of cytokines, chemokines and adhesion molecules in opioid analgesia. European Journal of Pain, 2005, 9, 109-112.	2.8	35
122	Neurokinin-1 Receptor Antagonists Inhibit the Recruitment of Opioid-containing Leukocytes and Impair Peripheral Antinociception. Anesthesiology, 2007, 107, 1009-1017.	2.5	35
123	EFFECT OF INTERPLEURAL MORPHINE ON POSTOPERATIVE PAIN AND PULMONARY FUNCTION AFTER THORACOTOMY. British Journal of Anaesthesia, 1992, 69, 637-639.	3.4	34
124	Increased numbers of opioid expressing inflammatory cells do not affect intra-articular morphine analgesia â€. British Journal of Anaesthesia, 2004, 93, 375-380.	3.4	34
125	Polyglycerol-opioid conjugate produces analgesia devoid of side effects. ELife, 2017, 6, .	6.0	32
126	Opioid Treatment of Chronic Nonmalignant Pain1. Anesthesia and Analgesia, 1997, 84, 912-914.	2.2	31

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127	Antinociception by neutrophil-derived opioid peptides in noninflamed tissueâ€"Role of hypertonicity and the perineurium. Brain, Behavior, and Immunity, 2009, 23, 548-557.	4.1	31
128	Cholecystokinin inhibits peripheral opioid analgesia in inflamed tissue. Neuroscience, 1997, 82, 603-611.	2.3	30
129	JAK-STAT1/3-Induced Expression of Signal Sequence-Encoding Proopiomelanocortin mRNA in Lymphocytes Reduces Inflammatory Pain in Rats. Molecular Pain, 2012, 8, 1744-8069-8-83.	2.1	29
130	Production of G proteinâ€coupled receptors in an insectâ€based cellâ€free system. Biotechnology and Bioengineering, 2017, 114, 2328-2338.	3.3	29
131	Opioid receptors on peripheral sensory neurons. Advances in Experimental Medicine and Biology, 2003, 521, 69-76.	1.6	29
132	Agonist that activates the Âµ-opioid receptor in acidified microenvironments inhibits colitis pain without side effects. Gut, 2022, 71, 695-704.	12.1	28
133	Why is morphine not the ultimate analgesic and what can be done to improve it?. Journal of Pain, 2000, 1, 51-56.	1.4	26
134	Pro-algesic versus analgesic actions of immune cells. Current Opinion in Anaesthesiology, 2003, 16, 527-533.	2.0	26
135	Peripheral Non-Viral MIDGE Vector-Driven Delivery of Î²-Endorphin in Inflammatory Pain. Molecular Pain, 2009, 5, 1744-8069-5-72.	2.1	25
136	Emergent biomarker derived from next-generation sequencing to identify pain patients requiring uncommonly high opioid doses. Pharmacogenomics Journal, 2017, 17, 419-426.	2.0	25
137	Modulation of Tight Junction Proteins in the Perineurium to Facilitate Peripheral Opioid Analgesia. Anesthesiology, 2012, 116, 1323-1334.	2.5	25
138	The other side of the medal: How chemokines promote analgesia. Neuroscience Letters, 2008, 437, 203-208.	2.1	24
139	Influence of pain treatment by epidural fentanyl and bupivacaine on homing of opioid-containing leukocytes to surgical wounds. Brain, Behavior, and Immunity, 2007, 21, 544-552.	4.1	23
140	Analysis of absorption enhancers in epithelial cell models. Annals of the New York Academy of Sciences, 2012, 1258, 86-92.	3.8	22
141	Fentanyl decreases discharges of C and A nociceptors to suprathreshold mechanical stimulation in chronic inflammation. Journal of Neurophysiology, 2012, 108, 2827-2836.	1.8	21
142	Antinociceptive effects of dynorphin peptides in a model of inflammatory pain. Pain, 1997, 70, 141-147.	4.2	20
143	Opioid analgesia: recent developments. Current Opinion in Supportive and Palliative Care, 2020, 14, 112-117.	1.3	20
144	Opioids in rheumatic diseases. Annals of the New York Academy of Sciences, 2010, 1193, 111-116.	3.8	19

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145	pKa of opioid ligands as a discriminating factor for side effects. Scientific Reports, 2019, 9, 19344.	3.3	19
146	Cannabidivarin for HIVâ€Associated Neuropathic Pain: A Randomized, Blinded, Controlled Clinical Trial. Clinical Pharmacology and Therapeutics, 2021, 109, 1055-1062.	4.7	19
147	Modulation of Î¼â€opioid receptor activation by acidic pH is dependent on ligand structure and an ionizable amino acid residue. British Journal of Pharmacology, 2019, 176, 4510-4520.	5.4	18
148	Opioid Treatment of Chronic Nonmalignant Pain1. Anesthesia and Analgesia, 1997, 84, 912-914.	2.2	15
149	Opioids for the treatment of arthritis pain. Expert Opinion on Pharmacotherapy, 2014, 15, 193-202.	1.8	15
150	The role of the peripheral nervous system in immune cell recruitment. Experimental Neurology, 2003, 184, 44-49.	4.1	14
151	Blockade of intra-articular adrenergic receptors increases analgesic demands for pain relief after knee surgery. Rheumatology International, 2011, 31, 1299-1306.	3.0	13
152	Potential Energy Function for Fentanyl-Based Opioid Pain Killers. Journal of Chemical Information and Modeling, 2020, 60, 3566-3576.	5.4	13
153	Functional Characteristics of the Naked Mole Rat Î¼-Opioid Receptor. PLoS ONE, 2013, 8, e79121.	2.5	11
154	Peripheral Mechanisms of Opioid Analgesia. Handbook of Experimental Pharmacology, 1993, , 91-103.	1.8	11
155	Breaking the pain barrier. Nature Medicine, 2003, 9, 1353-1354.	30.7	10
156	B Lymphocytes Express Pomc mRNA, Processing Enzymes and Î²-Endorphin in Painful Inflammation. Journal of NeuroImmune Pharmacology, 2017, 12, 180-186.	4.1	10
157	Topical application of morphine for wound healing and analgesia in patients with oral lichen planus: a randomized, double-blind, placebo-controlled study. Clinical Oral Investigations, 2018, 22, 305-311.	3.0	10
158	Pain therapy â€“ Are there new options on the horizon?. Best Practice and Research in Clinical Rheumatology, 2019, 33, 101420.	3.3	10
159	Uncovering the analgesic effects of a pH-dependent mu-opioid receptor agonist using a model of nonevoked ongoing pain. Pain, 2020, 161, 2798-2804.	4.2	10
160	What is wrong with opioids in chronic pain?. Current Opinion in Anaesthesiology, 2000, 13, 557-559.	2.0	8
161	Controlling Pain by Influencing Neurogenic Pathways. Rheumatic Disease Clinics of North America, 2005, 31, 103-113.	1.9	8
162	Intra-Articular Morphine for Inflammatory Pain. Regional Anesthesia and Pain Medicine, 2006, 31, 496-497.	2.3	8

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163	A randomized, controlled, clinical pilot study assessing the analgesic effect of morphine applied topically onto split-thickness skin wounds. Journal of Pharmacy and Pharmacology, 2014, 66, 1559-1566.	2.4	8
164	Opioids as novel intra-articular agents for analgesia following arthroscopic knee surgery. Knee Surgery, Sports Traumatology, Arthroscopy, 1994, 2, 174-175.	4.2	7
165	Neurogenic painful inflammation. Current Opinion in Anaesthesiology, 2004, 17, 461-464.	2.0	7
166	A low pKa ligand inhibits cancer-associated pain in mice by activating peripheral mu-opioid receptors. Scientific Reports, 2020, 10, 18599.	3.3	7
167	Peripheral opioid analgesia: Basic and clinical aspects. Seminars in Anesthesia, 1997, 16, 112-116.	0.3	6
168	Potential links between leukocytes and antinociception. Pain, 2004, 111, 1-2.	4.2	6
169	Towards safer and more effective analgesia. Veterinary Journal, 2013, 196, 6-7.	1.7	6
170	Local opioid receptors mediating antinociception in inflammation: endogenous ligands. Progress in Clinical and Biological Research, 1990, 328, 425-7.	0.2	6
171	Peripheral Opioid Analgesia: Mechanisms and Clinical Implications. , 1998, , 96-108.		5
172	Immune System, Pain and Analgesia. , 2008, , 407-427.		5
173	Liquid Chromatography-Tandem Mass Spectrometry for Analysis of Intestinal Permeability of Loperamide in Physiological Buffer. PLoS ONE, 2012, 7, e48502.	2.5	5
174	Inflammatory-linked changes in CpG island methylation of three opioid peptide genes in a rat model for pain. PLoS ONE, 2018, 13, e0191698.	2.5	5
175	Corticotropin releasing factor receptors in inflamed tissue: Autoradiographic identification. Regulatory Peptides, 1994, 54, 203-204.	1.9	4
176	Intra-Articular Morphine for Inflammatory Pain. Regional Anesthesia and Pain Medicine, 2006, 31, 496-497.	2.3	4
177	Methylnaltrexone and opioid analgesia. Pain, 2014, 155, 2722-2723.	4.2	4
178	Ankyrinâ€rich membrane spanning protein as a novel modulator of transient receptor potential vanilloid 1â€function in nociceptive neurons. European Journal of Pain, 2017, 21, 1072-1086.	2.8	4
179	Opioid Analgesia at Peripheral Sites. , 1991, , 273-285.		4
180	Anesthesia and Treatment of Chronic Pain. , 2010, , 1797-1818.		4

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181	Intraarticular opioid-local anesthetic combinations for chronic joint pain. Middle East Journal of Anesthesiology, 1994, 12, 579-85.	0.2	4
182	Endogenous Opioid Peptides and Analgesia. , 1998, , 21-45.		3
183	Arthritic inflammation in rats as a model of chronic pain: role of opioid systems. NIDA Research Monograph, 1989, 95, 110-5.	0.1	3
184	Neck and shoulder pain associated with hepatic arterial chemotherapy using an implantable infusion pump. Pain, 1988, 32, 275-277.	4.2	2
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