Andrew Harkin

List of Publications by Year
in descending order

122 papers	4,856 citations	76196 40 h-index	106150 65 g-index
143 all docs	143 docs citations	143 times ranked	6480 citing authors

#	Article	IF	Citations
1	Acute neuroinflammation, sickness behavior and working memory responses to acute systemic LPS challenge following noradrenergic lesion in mice. Brain, Behavior, and Immunity, 2021, 94, 357-368.	2.0	22
2	Amygdala substructure volumes in Major Depressive Disorder. NeuroImage: Clinical, 2021, 31, 102781.	1.4	26
3	Kynurenic Acid Protects Against Reactive Glial-associated Reductions in the Complexity of Primary Cortical Neurons. Journal of NeuroImmune Pharmacology, 2021, 16, 679-692.	2.1	2
4	PBMC telomerase activity in depression and the response to electroconvulsive therapy. European Archives of Psychiatry and Clinical Neuroscience, 2021, 271, 1297-1307.	1.8	1
5	Pharmacological targeting of Î²₂â€adrenoceptors is neuroprotective in the LPS inflammatory rat model of Parkinson's disease. British Journal of Pharmacology, 2020, 177, 282-297.	2.7	31
6	Tryptophan metabolite concentrations in depressed patients before and after electroconvulsive therapy. Brain, Behavior, and Immunity, 2020, 83, 153-162.	2.0	33
7	Dexamethasone attenuates inflammatory-mediated suppression of Î²2-adrenoceptor expression in rat primary mixed glia. Journal of Neuroimmunology, 2020, 338, 577082.	1.1	8
8	Blood plasma B vitamins in depression and the therapeutic response to electroconvulsive therapy. Brain, Behavior, & Immunity - Health, 2020, 4, 100063.	1.3	12
9	Regulation of Î²₂-adrenoceptors in brain glia: implications for neuroinflammatory and degenerative disorders. Neural Regeneration Research, 2020, 15, 2035.	1.6	3
10	Persistent central inflammation and region specific cellular activation accompany depression- and anxiety-like behaviours during the resolution phase of experimental colitis. Brain, Behavior, and Immunity, 2019, 80, 616-632.	2.0	35
11	Ketamine Versus Midazolam for Depression Relapse Prevention Following Successful Electroconvulsive Therapy. Journal of ECT, 2019, 35, 115-121.	0.3	13
12	Lâ€alphaâ€aminoadipic acid restricts dopaminergic neurodegeneration and motor deficits in an inflammatory model of Parkinsonâ€™s disease in male rats. Journal of Neuroscience Research, 2019, 97, 804-816.	1.3	12
13	A gut instinct for kynurenic acid. Brain, Behavior, and Immunity, 2019, 79, 16-17.	2.0	0
14	L-alpha-amino adipic acid provokes depression-like behaviour and a stress related increase in dendritic spine density in the pre-limbic cortex and hippocampus in rodents. Behavioural Brain Research, 2019, 362, 90-102.	1.2	17
15	Ketamine and depression: A special kase for kynurenic acid?. Brain, Behavior, and Immunity, 2019, 75, 10-11.	2.0	0
16	Treatment with the noradrenaline re-uptake inhibitor atomoxetine alone and in combination with the Î±2-adrenoceptor antagonist idazoxan attenuates loss of dopamine and associated motor deficits in the LPS inflammatory rat model of Parkinsonâ€™s disease. Brain, Behavior, and Immunity, 2018, 69, 456-469.	2.0	21
17	The Î²₂-adrenoceptor agonist clenbuterol reduces the neuroinflammatory response, neutrophil infiltration and apoptosis following intra-striatal IL-1Î² administration to rats. Immunopharmacology and Immunotoxicology, 2018, 40, 99-106.	1.1	14
18	Gutâ€“brain actions underlying comorbid anxiety and depression associated with inflammatory bowel disease. Acta Neuropsychiatrica, 2018, 30, 275-296.	1.0	118

#	Article	IF	Citations
19	Inhibitors of the NMDA-Nitric Oxide Signaling Pathway Protect Against Neuronal Atrophy and Synapse Loss Provoked by l-alpha Aminoadipic Acid-treated Astrocytes. Neuroscience, 2018, 392, 38-56.	1.1	5
20	Altered tryptophan catabolite concentrations in major depressive disorder and associated changes in hippocampal subfield volumes. Psychoneuroendocrinology, 2018, 95, 8-17.	1.3	69
21	DNA methylation differences at the glucocorticoid receptor gene in depression are related to functional alterations in hypothalamicâ€“pituitaryâ€“adrenal axis activity and to early life emotional abuse. Psychiatry Research, 2018, 265, 341-348.	1.7	120
22	Targeting the noradrenergic system for anti-inflammatory and neuroprotective effects: implications for Parkinson's disease. Neural Regeneration Research, 2018, 13, 1332.	1.6	33
23	Stress-related regulation of the kynurenine pathway: Relevance to neuropsychiatric and degenerative disorders. Neuropharmacology, 2017, 112, 307-323.	2.0	105
24	Association between psychological measures with inflammatory anddisease-related markers of inflammatory bowel disease. International Journal of Psychiatry in Clinical Practice, 2017, 21, 221-230.	1.2	28
25	Regional Specific Modulation of Stress-Induced Neuronal Activation Associated with the PSD95/NOS Interaction Inhibitor ZL006 in the Wistar Kyoto Rat. International Journal of Neuropsychopharmacology, 2017, 20, 833-843.	1.0	8
26	Inhibition of the kynurenine pathway protects against reactive microglial-associated reductions in the complexity of primary cortical neurons. European Journal of Pharmacology, 2017, 810, 163-173.	1.7	25
27	Regional specific modulation of neuronal activation associated with nitric oxide synthase inhibitors in an animal model of antidepressant activity. Behavioural Brain Research, 2017, 316, 18-28.	1.2	13
28	Diurnal Hypothalamic-Pituitary-Adrenal Axis Measures and Inflammatory Marker Correlates in Major Depressive Disorder. International Journal of Molecular Sciences, 2017, 18, 2226.	1.8	49
29	Recent Advances in Translational Magnetic Resonance Imaging in Animal Models of Stress and Depression. Frontiers in Cellular Neuroscience, 2017, 11, 150.	1.8	17
30	Editorial: Biology of Brain Disorders. Frontiers in Cellular Neuroscience, 2017, 11, 366.	1.8	2
31	Novel Targets in the GlutamateÂand Nitric Oxide Neurotransmitter Systems for the Treatment of Depression. , 2016, , 81-113.		6
32	Clenbuterol activates the central IL-1 system via the Î²2-adrenoceptor without provoking inflammatory response related behaviours in rats. Brain, Behavior, and Immunity, 2016, 56, 114-129.	2.0	8
33	P.4.011 L-Î±-Aminoadipic acid provokes a reduction of astrocytes in the prelimbic cortex and depressive-like behaviour in mice. European Neuropsychopharmacology, 2016, 26, S94-S95.	0.3	0
34	Amitriptyline protects against <scp>TNF</scp>â€Î±â€induced atrophy and reduction in synaptic markers via a Trkâ€dependent mechanism. Pharmacology Research and Perspectives, 2016, 4, e00195.	1.1	14
35	Exaggerated Increases in Microglia Proliferation, Brain Inflammatory Response and Sickness Behaviour upon Lipopolysaccharide Stimulation in Non-Obese Diabetic Mice. NeuroImmunoModulation, 2016, 23, 137-150.	0.9	12
36	Evaluation of NMDA signalling modifiers as putative antidepressants in animal models. European Neuropsychopharmacology, 2016, 26, S120.	0.3	0

#	Article	IF	Citations
37	Association of maternal emotional abuse with decreased serotonin transporter gene (SLC6A4) methylation. European Neuropsychopharmacology, 2016, 26, S177.	0.3	2
38	Ketamine for depression relapse prevention following electroconvulsive therapy: protocol for a randomised pilot trial (the KEEP-WELL trial). Pilot and Feasibility Studies, 2016, 2, 38.	0.5	3
39	Glial fibrillary acidic protein (GFAP) immunoreactivity correlates with cortical perfusion parameters determined by bolus tracking arterial spin labelling (bt-ASL) magnetic resonance (MR) imaging in the Wistar Kyoto rat. Physiology and Behavior, 2016, 160, 66-79.	1.0	20
40	Association of Increased Treg Cell Levels With Elevated Indoleamine 2,3â€Dioxygenase Activity and an Imbalanced Kynurenine Pathway in Interferonâ€Positive Primary SjÃ¶gren's Syndrome. Arthritis and Rheumatology, 2016, 68, 1688-1699.	2.9	45
41	Stress-Related Immune Markers in Depression: Implications for Treatment. International Journal of Neuropsychopharmacology, 2016, 19, pyw001.	1.0	53
42	P.1.f.015 Evidence for central molecular changes and changes to neuronal activity in an animal model of inflammatory bowel disease. European Neuropsychopharmacology, 2015, 25, S233-S234.	0.3	0
43	Soluble beta amyloid evokes alteration in brain norepinephrine levels: role of nitric oxide and interleukin-1. Frontiers in Neuroscience, 2015, 9, 428.	1.4	27
44	Interdependent and independent roles of type I interferons and IL-6 in innate immune, neuroinflammatory and sickness behaviour responses to systemic poly I:C. Brain, Behavior, and Immunity, 2015, 48, 274-286.	2.0	70
45	Small-molecule inhibitors at the PSD-95/nNOS interface protect against glutamate-induced neuronal atrophy in primary cortical neurons. Neuroscience, 2015, 301, 421-438.	1.1	10
46	Investigation of the mechanisms mediating MDMA â€œEcstasyâ€•induced increases in cerebro-cortical perfusion determined by btASL MRI. Psychopharmacology, 2015, 232, 1501-1513.	1.5	4
47	P.1.d.002 A role for glial-associated kynurenine pathway activation in modulating neuronal outgrowth and complexity. European Neuropsychopharmacology, 2015, 25, S206-S207.	0.3	1
48	Rodent Models of Stress-Induced Depression: The Link Between Stress and Immune System Related Changes. Current Topics in Neurotoxicity, 2015, , 33-62.	0.4	3
49	Effects of brief pulse and ultrabrief pulse electroconvulsive stimulation on rodent brain and behaviour in the corticosterone model of depression. International Journal of Neuropsychopharmacology, 2014, 17, 1477-1486.	1.0	19
50	Expression of glucocorticoid inducible genes is associated with reductions in cornu ammonis and dentate gyrus volumes in patients with major depressive disorder. Development and Psychopathology, 2014, 26, 1209-1217.	1.4	19
51	Inhibition of stress-induced hepatic tryptophan 2,3-dioxygenase exhibits antidepressant activity in an animal model of depressive behaviour. International Journal of Neuropsychopharmacology, 2014, 17, 917-928.	1.0	76
52	Muscling In on Depression. New England Journal of Medicine, 2014, 371, 2333-2334.	13.9	14
53	Noradrenaline acting on astrocytic Î²2-adrenoceptors induces neurite outgrowth in primary cortical neurons. Neuropharmacology, 2014, 77, 234-248.	2.0	44
54	The anti-inflammatory actions of noradrenergic agents as a target to prevent neurodegeneration in Parkinson's disease. Journal of Neuroimmunology, 2014, 275, 122-123.	1.1	1

#	Article	IF	Citations
55	Noradrenaline-mediated protection against TNF-alpha-induced neuronal atrophy. Journal of Neuroimmunology, 2014, 275, 167.	1.1	1
56	Astrocytic dysfunction induced by l-alphaaminoadipic acid reduces measures of neuronal complexity in vitro; rescue by NMDA receptor antagonists. Journal of Neuroimmunology, 2014, 275, 127-128.	1.1	0
57	Characterisation of the antidepressant properties of nitric oxide synthase inhibitors in the olfactory bulbectomised rat model of depression. European Neuropsychopharmacology, 2014, 24, 1349-1361.	0.3	22
58	AB0186â€…Elevated Indoleamine-2,3-Dioxygenase (IDO) and Tryptophan Catabolism in Primary SjÃ–Gren's Syndrome Patients, Positive for the Interferon Type I Signature: A Possible Link to Fatigue and Depression. Annals of the Rheumatic Diseases, 2014, 73, 864.2-864.	0.5	1
59	Ketamine elicits sustained antidepressant-like activity via a serotonin-dependent mechanism. Psychopharmacology, 2013, 228, 157-166.	1.5	149
60	Poly I:C-induced activation of the immune response is accompanied by depression and anxiety-like behaviours, kynurenine pathway activation and reduced BDNF expression. Brain, Behavior, and Immunity, 2013, 28, 170-181.	2.0	173
61	C-reactive protein predicts fatigue independently of depression in breast cancer patients prior to chemotherapy. Brain, Behavior, and Immunity, 2013, 34, 108-119.	2.0	81
62	Stimulation of central Î²2-adrenoceptors suppresses NFÎºB activity in rat brain: A role for IÎºB. Neurochemistry International, 2013, 63, 368-378.	1.9	22
63	Small-Molecule Inhibitors at the PSD-95/nNOS Interface have Antidepressant-Like Properties in Mice. Neuropsychopharmacology, 2013, 38, 1575-1584.	2.8	65
64	<scp>MDMA</scp> â€˜ecstasyâ€™ increases cerebral cortical perfusion determined by bolusâ€tracking arterial spin labelling (<scp>btASL</scp>) <scp>MRI</scp>. British Journal of Pharmacology, 2013, 169, 974-987.	2.7	6
65	The immune theory of psychiatric diseases: a key role for activated microglia and circulating monocytes. Journal of Leukocyte Biology, 2012, 92, 959-975.	1.5	293
66	Caffeine provokes adverse interactions with 3,4â€methylenedioxymethamphetamine (MDMA, â€˜ecstasyâ€™) and related psychostimulants: mechanisms and mediators. British Journal of Pharmacology, 2012, 167, 946-959.	2.7	52
67	Tryptophan depletion in depressed patients occurs independent of kynurenine pathway activation. Brain, Behavior, and Immunity, 2012, 26, 979-987.	2.0	90
68	Dopamine D₁ Receptorâ€Mediated Intracellular Responses in the Hypothalamus after Coâ€Administration of Caffeine with MDMA. Basic and Clinical Pharmacology and Toxicology, 2012, 110, 283-289.	1.2	6
69	The PSD-95/nNOS complex: New drugs for depression?. , 2012, 133, 218-229.		68
70	The effect of antidepressants on inflammatory markers in animal models of depression. European Psychiatry, 2011, 26, 2091-2091.	0.1	0
71	Comparison of kynurenine pathway activation and tryptophan depletion induced by activation of human T-cells and innate immune cells. Brain, Behavior, and Immunity, 2011, 25, S208-S209.	2.0	1
72	149. Poly I:C-induced activation of the innate immune response is accompanied by symptoms of depression and anxiety. Brain, Behavior, and Immunity, 2011, 25, S222.	2.0	0

#	Article	IF	Citations
73	150. Stimulation of central Î²2-adrenoceptors suppresses NF-ÎºB activity in hippocampus and cortex: A role for IÎºB. Brain, Behavior, and Immunity, 2011, 25, S222.	2.0	0
74	A role for adenosine A1 receptor blockade in the ability of caffeine to promote MDMA â€œEcstasyâ€•induced striatal dopamine release. European Journal of Pharmacology, 2011, 650, 220-228.	1.7	19
75	Caffeine promotes dopamine D1 receptor-mediated body temperature, heart rate and behavioural responses to MDMA (â€˜ecstasyâ€™). Psychopharmacology, 2010, 211, 15-25.	1.5	20
76	Noradrenaline reuptake inhibitors inhibit expression of chemokines IP-10 and RANTES and cell adhesion molecules VCAM-1 and ICAM-1 in the CNS following a systemic inflammatory challenge. Journal of Neuroimmunology, 2010, 220, 34-42.	1.1	57
77	A role for serotonin in the antidepressant activity of NG-Nitro-L-arginine, in the rat forced swimming test. Pharmacology Biochemistry and Behavior, 2010, 94, 524-533.	1.3	31
78	Mechanisms mediating the ability of caffeine to influence MDMA (â€˜Ecstasyâ€™)â€•induced hyperthermia in rats. British Journal of Pharmacology, 2010, 160, 860-877.	2.7	36
79	Noradrenaline acting at central Î²2-adrenoceptors induces interleukin-10 and suppressor of cytokine signaling-3 expression in rat brain: Implications for neurodegeneration. Brain, Behavior, and Immunity, 2010, 24, 660-671.	2.0	58
80	The Î²2-adrenoceptor agonist clenbuterol elicits neuroprotective, anti-inflammatory and neurotrophic actions in the kainic acid model of excitotoxicity. Brain, Behavior, and Immunity, 2010, 24, 1354-1361.	2.0	56
81	A role for central IL-1beta in the suppression of locomotor activity induced the by the beta2-adrenoceptor agonist clenbuterol?. Brain, Behavior, and Immunity, 2010, 24, S2-S3.	2.0	0
82	The NOD mouse model for immune induced depressive-like behavior. Brain, Behavior, and Immunity, 2010, 24, S50-S51.	2.0	0
83	Noradrenaline acting at Î²-adrenoceptors induces expression of IL-1Î² and its negative regulators IL-1ra and IL-1RII, and drives an overall anti-inflammatory phenotype in rat cortex. Neuropharmacology, 2010, 59, 37-48.	2.0	72
84	Noradrenaline reuptake inhibitors limit neuroinflammation in rat cortex following a systemic inflammatory challenge: implications for depression and neurodegeneration. International Journal of Neuropsychopharmacology, 2009, 12, 687.	1.0	122
85	47. Noradrenaline re-uptake inhibition influences neuroinflammatory and degenerative changes associated with the excitotoxin kainic acid. Brain, Behavior, and Immunity, 2009, 23, S38.	2.0	0
86	107. A systemic LPS challenge does not alter central Beta2-adrenoceptor expression or reponsiveness. Brain, Behavior, and Immunity, 2009, 23, S54-S55.	2.0	0
87	Induction of indolamine 2,3-dioxygenase and kynurenine 3-monooxygenase in rat brain following a systemic inflammatory challenge: A role for IFN-Î³?. Neuroscience Letters, 2008, 441, 29-34.	1.0	180
88	Reduced efficacy of fluoxetine following MDMA (â€œEcstasyâ€)-induced serotonin loss in rats. Progress in Neuro-Psychopharmacology and Biological Psychiatry, 2008, 32, 1894-1901.	2.5	16
89	Chronic Fluoxetine Treatment Attenuates Stressor-Induced Changes in Temperature, Heart Rate, and Neuronal Activation in the Olfactory Bulbectomized Rat. Neuropsychopharmacology, 2007, 32, 1312-1320.	2.8	68
90	Lipids and essential fatty acids in patients presenting with self-harm. British Journal of Psychiatry, 2007, 190, 112-117.	1.7	75

#	Article	IF	Citations
91	Caffeine induces a profound and persistent tachycardia in response to MDMA (â€œEcstasyâ€) administration. European Journal of Pharmacology, 2007, 555, 194-198.	1.7	24
92	Caffeine promotes hyperthermia and serotonergic loss following co-administration of the substituted amphetamines, MDMA (â€œEcstasyâ€) and MDA (â€œLoveâ€). Neuropharmacology, 2006, 50, 69-80.	2.0	56
93	Acute stress suppresses pro-inflammatory cytokines TNF-Î± and IL-1Î² independent of a catecholamine-driven increase in IL-10 production. Journal of Neuroimmunology, 2005, 159, 119-128.	1.1	70
94	Methylenedioxymethamphetamine Suppresses Production of the Proinflammatory Cytokine Tumor Necrosis Factor-Î± Independent of a Î²-Adrenoceptor-Mediated Increase in Interleukin-10. Journal of Pharmacology and Experimental Therapeutics, 2005, 312, 134-143.	1.3	32
95	Olfactory bulbectomy in mice induces alterations in exploratory behavior. Neuroscience Letters, 2005, 374, 142-146.	1.0	85
96	Adenosine A1 Receptor Blockade Mimics Caffeine's Attenuation of Ethanol-Induced Motor Incoordination. Basic and Clinical Pharmacology and Toxicology, 2004, 95, 299-304.	1.2	32
97	Nitric oxide synthase inhibitors augment the effects of serotonin re-uptake inhibitors in the forced swimming test. European Neuropsychopharmacology, 2004, 14, 274-281.	0.3	148
98	A review of the relevance and validity of olfactory bulbectomy as a model of depression. Clinical Neuroscience Research, 2003, 3, 253-262.	0.8	91
99	Methylenendioxyamphetamine produces serotonin nerve terminal loss and diminished behavioural and neurochemical responses to the antidepressant fluoxetine. European Journal of Neuroscience, 2003, 18, 1021-1027.	1.2	21
100	Serotonergic mediation of the antidepressant-like effects of nitric oxide synthase inhibitors. Neuropharmacology, 2003, 44, 616-623.	2.0	137
101	A Toxicokinetic Study of Nickelâ€Induced Immunosuppression in Rats. Immunopharmacology and Immunotoxicology, 2003, 25, 655-670.	1.1	17
102	A combined and comparative study of physiologic and behavioral parameters in a systemic toxicity test. Contemporary Topics in Laboratory Animal Science, 2003, 42, 31-8.	0.2	0
103	A study of VitalViewâ„¢ for behavioural and physiological monitoring in laboratory rats. Physiology and Behavior, 2002, 77, 65-77.	1.0	54
104	Reduction in preference for saccharin by repeated unpredictable stress in mice and its prevention by imipramine. Journal of Psychopharmacology, 2002, 16, 115-123.	2.0	85
105	Physiological and behavioral responses to stress: what does a rat find stressful?. Lab Animal, 2002, 31, 42-50.	0.2	18
106	Prior exposure to methylenedioxyamphetamine (MDA) induces serotonergic loss and changes in spontaneous exploratory and amphetamine-induced behaviors in rats. Life Sciences, 2001, 68, 1367-1382.	2.0	33
107	Modulation of MK-801-induced behaviour by noradrenergic agents in mice. Psychopharmacology, 2001, 154, 177-188.	1.5	31
108	Methylenedioxymethamphetamine-induced suppression of interleukin-1Î² and tumour necrosis factor-Î± is not mediated by serotonin. European Journal of Pharmacology, 2001, 418, 147-152.	1.7	23

#	Article	IF	Citations
109	Olfactory Bulbectomy Provokes a Suppression of Interleukin-1Î² and Tumour Necrosis Factor-Î± Production in Response to an in vivo Challenge with Lipopolysaccharide: Effect of Chronic Desipramine Treatment. NeuroImmunoModulation, 2000, 7, 27-35.	0.9	79
110	Effect of Subchronic Antidepressant Treatments on Behavioral, Neurochemical, and Endocrine Changes in the Forced-Swim Test. Pharmacology Biochemistry and Behavior, 2000, 65, 591-597.	1.3	86
111	Test Conditions Influence the Response to a Drug Challenge in Rodents. Pharmacology Biochemistry and Behavior, 2000, 65, 389-398.	1.3	19
112	Noradrenergic lesion antagonizes desipramine-induced adaptation of NMDA receptors. European Journal of Pharmacology, 2000, 389, 187-192.	1.7	8
113	Characterization of d-fenfluramine-induced hypothermia: evidence for multiple sites of action. European Journal of Pharmacology, 2000, 390, 275-285.	1.7	36
114	Corrigendum to: â€œNoradrenergic lesion antagonizes desipramine-induced adaptation of NMDA receptorsâ€•[Eur. J. Pharmacol. 389 (2000) 187â€“192]. European Journal of Pharmacology, 2000, 397, 399.	1.7	2
115	Effects of reboxetine and sertraline treatments alone and in combination on the binding properties of cortical NMDA and Î²1-adrenergic receptors in an animal model of depression. Journal of Neural Transmission, 2000, 107, 1213-1227.	1.4	19
116	Varying responses to the rat forced-swim test under diurnal and nocturnal conditions. Physiology and Behavior, 2000, 69, 531-539.	1.0	80
117	Metyrapone displays antidepressant-like properties in preclinical paradigms. Psychopharmacology, 1999, 145, 303-308.	1.5	42
118	Nitric oxide synthase inhibitors have antidepressant-like properties in mice. European Journal of Pharmacology, 1999, 372, 207-213.	1.7	202
119	Reboxetine attenuates forced swim test-induced behavioural and neurochemical alterations in the rat. European Journal of Pharmacology, 1999, 379, 125-133.	1.7	54
120	Effects of acute and chronic antidepressant administration on phencyclidine (PCP) induced locomotor hyperactivity. European Neuropsychopharmacology, 1999, 9, 165-170.	0.3	26
121	Activity and onset of action of reboxetine and effect of combination with sertraline in an animal model of depression. European Journal of Pharmacology, 1999, 364, 123-132.	1.7	85
122	The functional sensitisation of sigma receptors following chronic selective serotonin reuptake inhibitor treatment. European Journal of Pharmacology, 1998, 346, 15-21.	1.7	13