

Top 100 cited articles in the field of rheumatology

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To the Editor,

As there is a vast amount of rheumatological literature in the past years, we aimed to analyze the top 100 cited publications in journals in the field of rheumatology (1, 2).

We retrieved all articles indexed in the field of rheumatology in Web of Science® as of September 2016. Articles that were not within the top 100 most-cited publications were then excluded. We extracted data on title, first author, year, type of research (clinical or basic research), country, journal name, total citation (TC), and citation rate (CR). Data, such as gross domestic product (GDP) and population, were extracted from the World Bank Database base on the address of the corresponding author (3). TC was defined as the total number of citations from the time of publication up to September 2016, while CR was defined as TC divided by the number of years the article was published up to 2016. We calculated TC per billion GDP, TC per million population, CR per billion GDP, and CR per million population. We conducted multivariable linear regressions with publication year and type of research as independent variables and TC and CR as dependent variables. State SE 14.0 was used and $p < 0.05$ was considered statistically significant.

The top cited article was "The 1982 Revised Criteria for the Classification of the Systemic Lupus Erythematosus." The top 100 articles were from 12 countries and with the USA as the top country ($n=70$). After adjusting for population, USA remained as the top. After adjusting for GDP, UK became the top country for TC. The top journal in the first 100 cited articles was Arthritis and Rheumatism ($n=23$). The top 100 articles' list, ranking of TCs of articles sorted by countries and journals are presented in Table 1, S1, and S2, respectively. There were 26 basic science papers and 74 clinical research papers. From the multivariate analyses, there was no difference in the outcome variables associated with types of research. Publication year has an association with CR (β : 2.83, $p < 0.01$) but not with TC (β : 14.03, $p = 0.25$). The above findings were similar to that presented by Ahmad et al(4) in the field of orthopedics, whereby it shows publication year does not affect TC but affects CR. A main limitation of this study was that we did not adjust for the effect of articles that were published as diagnostic criteria as these articles were considered clinical study-related because they consolidated consensus and literature to generate guidelines for diagnoses. However, the intention of this letter was to show readers the types of articles that were most cited; hence, this should not affect the primary aim.

In conclusion, the top 100 cited articles in rheumatology were analyzed in this article. We showed the gap in research in locations other than the UK and USA. The types of research conducted were neither associated with TC nor CR. Publication year was associated with CR but not TC.

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Table 1. The top 100-cited articles in Rheumatology

No.	Title	First author	Journal	Type of research	Year	Country	TC	TC per billion GDP	TC per million pop	CR	CR per billion GDP	CR per million pop
1	The 1982 Revised Criteria For The Classification of Systemic Lupus Erythematosus	Tan, EM	Arthritis Rheum	Clinical	1982	USA	11189	0.15	34.81	339.06	0.0046	1.05
2	The American Rheumatism Association 1987 Revised Criteria for the Classification of Rheumatoid Arthritis	Amett, FC	Arthritis Rheum	Clinical	1987	USA	10233	0.14	31.84	365.46	0.0050	1.14
3	Angiogenesis In Cancer, Vascular, Rheumatoid and Other Disease	Folkman, J	Nat Med	Clinical	1995	USA	5782	0.08	17.99	289.1	0.0039	0.90
4	The American-College-of-Rheumatology 1990 Criteria For The Classification Of Fibromyalgia-Report Of The Multicenter Criteria	Wolfe, F	Arthritis Rheum	Clinical	1990	USA	4894	0.07	15.23	195.76	0.0027	0.61
5	Updating The American College Of Rheumatology Revised Criteria For The Classification Of Systemic Lupus Erythematosus	Hochberg, MC	Arthritis Rheum	Clinical	1997	USA	4425	0.06	13.77	245.83	0.0033	0.76
6	Free Radicals And Antioxidants In Normal Physiological Functions And Human Disease	Valko, M	Int J Biochem Cell Biol	Basic	2007	USA	4226	0.06	13.15	528.25	0.0072	1.64
7	Radiological Assessment Of Osteo-Arthrosis	Kellgren, JH	Ann Rheum Dis	Clinical	1957	UK	4043	1.42	62.07	69.71	0.0245	1.07
8	Oxygen-Toxicity, Oxygen Radicals, Transition-Metals And Disease	Halliwel, B	Biochem J	Basic	1984	UK	3757	1.32	57.68	121.19	0.0425	1.86
9	Interleukin-10 And The Interleukin-10 Receptor	Moore, KW	Annu Rev Immunol	Basic	2001	USA	3574	0.05	11.12	255	0.0035	0.79
10	Validation-Study of Womac -A Health-Status Instrument For Measuring Clinically Important Patient Relevant Outcomes To Antirheumatic Drug-Therapy In Patients with Osteo-Arthritis of The Hip or Knee	Bellamy, N	J Rheumatol	Clinical	1988	Canada	3406	2.20	95.01	126.15	0.0813	3.52
11	Development Of Criteria For The Classification And Reporting Of Osteoarthritis Classification Of Osteoarthritis Of The Knee	Altman, R	Arthritis Rheum	Clinical	1986	USA	3193	0.04	9.93	110.1	0.0015	0.34
12	Derivation Of The Sledai - A Disease-Activity Index For Lupus Patients	Bombardier, C	Arthritis Rheum	Clinical	1992	Canada	2714	1.75	75.70	118	0.0761	3.29
13	The Sickness Impact Profile - Development And Final Revision Of A Health-Status Measure	Bergner, M	Med Care	Clinical	1981	USA	3025	0.04	9.41	88.97	0.0012	0.28
14	Measurement Of Patient Outcome In Arthritis	Fries, JF	Arthritis Rheum	Clinical	1980	USA	2946	0.04	9.17	84.17	0.0011	0.26

15	Modified Disease-Activity Scores That Include 28-Joint Counts -Development And Validation In A Prospective Longitudinal-Study Of Patients With Rheumatoid-Arthritis	Prevoo, MLL	Arthritis Rheum	Clinical	1995	USA	2847	0.04	8.86	142.35	0.0019	0.44
16	Polymyositis And Dermatomyositis	Bohan, A	N Engl J Med	Clinical	1975	USA	2626	0.04	8.17	65.65	0.0009	0.20
17	Therapeutic Criteria In Rheumatoid Arthritis	Steinbrocker, O	JAMA	Clinical	1949	USA	2751	0.04	8.56	41.06	0.0006	0.13
18	Nomenclature Of Systemic Vasculitides - Proposal Of An InternationalConsensus Conference	Jennette, JC	Arthritis Rheum	Clinical	1994	USA	2460	0.03	7.65	117.14	0.0016	0.36
19	Evaluation Of Diagnostic-Criteria For Ankylosing-Spondylitis-A Proposal For Modification Of The New-York Criteria	Vanderlinden, S	Arthritis Rheum	Clinical	1984	USA	2537	0.03	7.89	81.84	0.0011	0.25
20	Classification Criteria For Sjogren'S Syndrome: A Revised Version Of The European Criteria Proposed By The American-European Consensus Group	Vanderlinden, S	Ann Rheum Dis	Clinical	2002	Italy	2339	1.29	38.47	179.92	0.0991	2.96
21	Scleroderma (Systemic-Sclerosis) - Classification, Subsets And Pathogenesis	Leroy, EC	J Rheumatol	Clinical	1988	USA	2447	0.03	7.61	90.63	0.0012	0.28
22	Comparison Of Upper Gastrointestinal Toxicity Of Rofecoxib And Naproxen Ti Comparison Of Upper Gastrointestinal Toxicity Of Rofecoxib And NaproxenIn Patients With Rheumatoid Arthritis	Bombardier, C	N Engl J Med	Clinical	2000	USA	2329	0.03	7.25	155.27	0.0021	0.48
23	Measurement Of Pain	Huskisson, EC	Lancet	Clinical	1974	UK	2094	0.73	32.15	51.07	0.0179	0.78
24	Infliximab And Methotrexate In The Treatment Of Rheumatoid Arthritis	Lipsky, PE	N Engl J Med	Clinical	2000	USA	2098	0.03	6.53	139.87	0.0019	0.44
25	Tuberculosis Associated With Infliximab, A Tumor Necrosis Factor (Alpha)-Neutralizing Agent	Keane, J	N Engl J Med	Clinical	2001	USA	2053	0.03	6.39	146.64	0.0020	0.46
26	Gastrointestinal Toxicity With Celecoxib Vs Nonsteroidal Anti-Inflammatory Drugs For Osteoarthritis And Rheumatoid Arthritis - The Class Study: A Randomized Controlled Trial	Silverstein, FE	JAMA	Clinical	2000	USA	1990	0.03	6.19	132.67	0.0018	0.41
27	A Simple Method Of Reducing The Fading Of Immunofluorescence During Microscopy	Johnson, GD	J Immunol Methods	Basic	1981	USA	1996	0.03	6.21	58.71	0.0008	0.18

28	The Fatigue Severity Scale - Application T Patients with Multiple-Sclerosis And Systemic Lupus-Erythematosus	Krupp, LB	Arch Neurol	Clinical	1989	USA	1914	0.03	5.95	73.61	0.0010	0.23
29	The Biochemical Basis Of Zinc Physiology	Vallee, BL	Physiol Rev	Basic	1993	USA	1806	0.02	5.62	82.09	0.0011	0.26
30	Role Of Cytokines In Rheumatoid Arthritis	Feldmann, M	Annu Rev Immunol	Basic	1996	UK	1776	0.62	27.26	93.47	0.0328	1.43
31	Gout-Associated Uric Acid Crystals Activate The Nalp3 Inflammasome	Martinon, F	Nature	Basic	2006	Switzerland	1749	2.63	210.98	194.33	0.2922	23.44
32	International Consensus Statement On Preliminary Classification Criteria For Definite Antiphospholipid Syndrome - Report Of An International Workshop	Wilson, WA	Arthritis Rheum	Clinical	1999	USA	1684	0.02	5.24	105.25	0.0014	0.33
33	Analysis Of Any Point Mutation In DNA - The Amplification Refractory Mutation System (Arms)	Newton, CR	Nucleic Acids Res	Basic	1989	Canada	1704	1.10	47.53	65.54	0.0423	1.83
34	American-College-Of-Rheumatology Preliminary Definition Of Improvement In Rheumatoid-Arthritis	Felson, DT	Arthritis Rheum	Clinical	1995	USA	1707	0.02	5.31	85.85	0.0012	0.27
35	Clinical Importance Of Changes In Chronic Pain Intensity Measured On An 11-Point Numerical Pain Rating Scale	Farrar, JT	Pain	Clinical	2001	USA	1714	0.02	5.33	122.43	0.0017	0.38
36	Biochemical And Metabolic Abnormalities In Articular Cartilage From Osteo-Arthritic Human Hips .2. Correlation Of Morphology With Biochemical And Metabolic Data	Mankin, HJ	J Bone Joint Surg Am	Clinical	1971	USA	1626	0.02	5.06	36.95	0.0005	0.11
37	The Shared Epitope Hypothesis - An Approach To Understanding The Molecular-Genetics Of Susceptibility To Rheumatoid-Arthritis	Gregersen, PK	Arthritis Rheum	Basic	1987	USA	1644	0.02	5.11	58.71	0.0008	0.18
38	Infliximab (Chimeric Anti-Tumour Necrosis Factor Alpha Monoclonal Antibody) Versus Placebo In Rheumatoid Arthritis Patients Receiving Concomitant Methotrexate: A Randomised Phase Iii Trial	Maini, R	Lancet	Clinical	1999	UK	1622	0.57	24.90	101.38	0.0356	1.56
39	Evolving Concepts Of Rheumatoid Arthritis	Firestein, GS	Nature	Clinical	2003	USA	1544	0.02	4.80	128.67	0.0018	0.40
40	Functional Status And Well-Being Of Patients With Chronic Conditions -Results From The Medical Outcomes Study	Stewart, AL	JAMA	Clinical	1989	USA	1610	0.02	5.01	61.92	0.0008	0.19

41	Interleukin-8 As A Macrophage-Derived Mediator Of Angiogenesis	Koch, AE	Science	Basic	1992	USA	1576	0.02	4.90	68.52	0.0009	0.21
42	The European-Spondylarthropathy-Study-Group Preliminary Criteria For The Classification Of Spondylarthropathy	Dougados, M	Arthritis Rheum	Clinical	1991	USA	1524	0.02	4.74	63.5	0.0009	0.20
43	Estimates Of The Prevalence Of Arthritis And Selected Musculoskeletal Disorders In The United States	Lawrence, RC	Arthritis Rheum	Clinical	1998	USA	1521	0.02	4.73	89.47	0.0012	0.28
44	Bosentan Therapy For Pulmonary Arterial Hypertension	Rubin, LJ	N Engl J Med	Clinical	2002	USA	1463	0.02	4.55	112.54	0.0015	0.35
45	Depression Is A Risk Factor For Noncompliance With Medical Treatment -Meta-Analysis Of The Effects Of Anxiety And Depression On Patient Adherence	DiMatteo, MR	Arch Intern Med	Clinical	2000	USA	1495	0.02	4.65	99.67	0.0014	0.31
46	Ankylosing-Spondylitis And HLA 27	Brewerton, DA	Lancet	Clinical	1973	UK	1486	0.52	22.81	35.38	0.0124	0.54
47	Clinical Studies With An Articular Index For Assessment Of Joint Tenderness In Patient With Rheumatoid Arthritis	Ritchie, DM	Q J Med	Clinical	1968	UK	1503	0.53	23.07	31.98	0.0112	0.49
48	Spontaneous Murine Lupus-Like Syndromes - Clinical And Immunopathological Manifestations In Several Strain	Andrews, BS	J Exp Med	Basic	1978	USA	1487	0.02	4.63	40.19	0.0005	0.13
49	Mixed Connective-Tissue Disease - Apparently Distinct Rheumatic Disease Syndrome Associated With A Specific Antibody To An Extractable Nuclear Antigen (Ena)	Sharp, GC	Am J Med	Clinical	1972	USA	1460	0.02	4.54	33.95	0.0005	0.11
50	Radiographic Evaluation Of Rheumatoid-Arthritis And Related Conditions By Standard Reference Films	Larsen, A	Acta Radiol Diagn	Clinical	1977	Norway	1451	3.74	279.04	38.18	0.0984	7.34
51	A New Approach To Defining Disease Status In Ankylosing-Spondylitis -The Bath Ankylosing-Spondylitis Disease -Activity Index	Garrett, S	J Rheumatol	Clinical	1994	UK	1360	0.48	20.88	64.76	0.0227	0.99
52	Murine Models Of Systemic Lupus-Erythematosus	Theofilopoulos, AN	Adv Immunol	Basic	1985	USA	1442	0.02	4.49	48.07	0.0007	0.15
53	Estimates Of The Prevalence Of Arthritis And Other Rheumatic Conditions In The United States	Lawrence, R	Arthritis Rheum	Clinical	2008	USA	1410	0.02	4.39	201.43	0.0027	0.63

54	Antinuclear Antibodies - Diagnostic Markers For Autoimmune-Diseases And Probes For Cell Biology	Tan, EM	Adv Immunol	Basic	1989	USA	1422	0.02	4.42	54.69	0.0007	0.17
55	A Trial Of Etanercept, A Recombinant Tumor Necrosis Factor Receptor: Fc Fusion Protein, In Patients With Rheumatoid Arthritis Receiving Methotrexate	Weinblatt, ME	N Engl J Med	Clinical	1999	USA	1389	0.02	4.32	86.81	0.0012	0.27
56	Efficacy Of B-Cell-Targeted Therapy With Rituximab In Patients With Rheumatoid Arthritis	Edwards, JCW	N Engl J Med	Clinical	2004	USA	1350	0.02	4.20	122.73	0.0017	0.38
57	Synthesis And Biological Evaluation Of The 1,5-Diarylpyrazole Class Of Cyclooxygenase-2 Inhibitors: Identification Of 4-[5-(4-Methylphenyl)-3-(Trifluoromethyl)-1H-Pyrazol-1-Yl]Benzenesulfonamide (Sc-58635, Celecoxib)	Penning, TD	J Med Chem	Basic	1997	USA	1389	0.02	4.32	77.17	0.0010	0.24
58	Randomized Double-Blind Comparison Of Chimeric Monoclonal-Antibody To Tumor-Necrosis-Factor-Alpha (Ca2) Versus Placebo In Rheumatoid-Arthritis	Elliott, MJ	Lancet	Clinical	1994	UK	1362	0.48	20.91	64.86	0.0228	1.00
59	International League Of Associations For Rheumatology Classification Of Juvenile Idiopathic Arthritis: Second Revision, Edmonton, 2001	Petty, RE	J Rheumatol	Clinical	2004	USA	1280	0.02	3.98	116.36	0.0016	0.36
60	Anti-Cardiolipin Antibodies - Detection By Radioimmunoassay And Association With Thrombosis In Systemic Lupus-Erythematosus	Harris, EN	Lancet	Clinical	1983	UK	1364	0.48	20.94	42.63	0.0150	0.65
61	Polymyositis And Dermatomyositis	Bohan, A	N Engl J Med	Clinical	1975	USA	1326	0.02	4.13	33.15	0.0005	0.10
62	The Prevalence And Characteristics Of Fibromyalgia In The General-Population	Wolfe, F	Arthritis Rheum	Clinical	1995	USA	1342	0.02	4.18	67.1	0.0009	0.21
63	Evaluation Of Knee Ligament Surgery Results With Special Emphasis On Use Of A Scoring Scale	Lysholm, J	Am J Sports Med	Clinical	1982	USA	1162	0.02	3.62	35.21	0.0005	0.11
64	A Prospective-Study Of Plasma Homocyst(E)ine And Risk Of Myocardial-Infarction In United-States Physicians	Stamper, MJ	JAMA	Clinical	1992	USA	1309	0.02	4.07	56.91	0.0008	0.18

65	Vascular Pathology Of Homocysteinemia - Implications For Pathogenesis Of Arteriosclerosis	Mccully, KS	Am J Pathol	Clinical	1969	USA	1247	0.02	3.88	27.11	0.0004	0.08
66	Mechanisms Of Disease - Rheumatoid-Arthritis - Pathophysiology And Implications For Therapy	Harris, ED	N Engl J Med	Basic	1990	USA	1312	0.02	4.08	52.48	0.0007	0.16
67	Preliminary Criteria For The Classification Of Sjogrens-Syndrome -Results Of A Prospective Concerted Action Supported By The European Community	Vitali, C	Arthritis Rheum	Clinical	1993	Italy	1296	0.71	21.32	58.91	0.0325	0.97
68	Oarsi Recommendations For The Management Of Hip And Knee Osteoarthritis, Part Ii: Oarsi Evidence-Based, Expert Consensus Guidelines	Zhang, W	Osteoarthritis Cartilage	Clinical	2008	UK	1264	0.44	19.40	180.57	0.0634	2.77
69	Anti-Tnf Antibody Therapy In Rheumatoid Arthritis And The Risk Of Serious Infections And Malignancies - Systematic Review And Meta-Analysis Of Rare Harmful Effects In Randomized Controlled Trials	Bongartz, T	JAMA	Clinical	2006	USA	1257	0.02	3.91	139.67	0.0019	0.43
70	The Etiology Of Chondromalacia Patellae	Outerbridge, RE	J Bone Joint Surg Br	Basic	1961	Canada	1256	0.81	35.03	23.26	0.0150	0.65
71	A Comparison Of Etanercept And Methotrexate In Patients With Early Rheumatoid Arthritis	Bathon, JM	N Engl J Med	Clinical	2000	USA	1215	0.02	3.78	81	0.0011	0.25
72	2010 Rheumatoid Arthritis Classification Criteria An American College Of Rheumatology/European League Against Rheumatism Collaborative Initiative	Aletaha, Daniel	Arthritis Rheum	Clinical	2010	Austria	1170	3.12	135.89	234	0.6240	27.18
73	Elevated C-Reactive Protein Levels In Overweight And Obese Adults	Visser, M	JAMA	Clinical	1999	USA	1220	0.02	3.80	76.25	0.0010	0.24
74	Immunological And Inflammatory Functions Of The Interleukin-1 Family	Dinarello, CA	Annu Rev Immunol	Basic	2009	USA	1215	0.02	3.78	202.5	0.0028	0.63
75	Macrophage Phagocytosis Of Aging Neutrophils In Inflammation -Programmed Cell-Death In The Neutrophil Leads To Its Recognition By Macrophages	Savill, JS	J Clin Invest	Basic	1989	UK	1238	0.43	19.01	47.62	0.0167	0.73
76	Autoantigens Targeted In Systemic Lupus-Erythematosus Are Clustered In 2 Populations Of Surface-Structures On Apoptotic Keratinocytes	Casciolarosen, LA	J Exp Med	Basic	1994	USA	1229	0.02	3.82	58.52	0.0008	0.18

77	Treatment Of Rheumatoid Arthritis With A Recombinant Human Tumor Necrosis Factor Receptor (P75)-Fc Fusion Protein	Moreland, LW	N Engl J Med	Clinical	1997	USA	1207	0.02	3.76	67.06	0.0009	0.21
78	Pathogenesis Of Group A Streptococcal Infections	Cunningham, MW	Clin Microbol Rev	Basic	2000	USA	1167	0.02	3.63	77.8	0.0011	0.24
79	Transplantability And Therapeutic Effects Of Bone Marrow-Derived Mesenchymal Cells In Children With Osteogenesis Imperfecta	Horwitz, EM	Nat Med	Clinical	1999	USA	1150	0.02	3.58	71.88	0.0010	0.22
80	High Serum IgG4 Concentrations In Patients With Sclerosing Pancreatitis	Hamano, H	N Engl J Med	Clinical	2001	Japan	1111	0.27	8.75	79.36	0.0192	0.63
81	Islet-Cell Antibodies In Diabetes-Mellitus With Autoimmune Poly-Endocrine Deficiencies	Bottazzo, GF	Lancet	Clinical	1974	UK	1181	0.41	18.13	28.8	0.0101	0.44
82	High Association Of An HLA Antigen, W27, With Ankylosing-Spondylitis	Schlosstein, L	N Engl J Med	Clinical	1973	USA	1161	0.02	3.61	27.64	0.0004	0.09
83	Mechanisms Of Disease: Cytokine Pathways And Joint Inflammation In Rheumatoid Arthritis	Choy, EHS	N Engl J Med	Basic	2001	USA	1115	0.02	3.47	79.64	0.0011	0.25
84	Spontaneous Calcification Of Arteries And Cartilage In Mice Lacking Matrix Gla Protein	Luo, GB	Nature	Basic	1997	USA	1134	0.02	3.53	29.84	0.0004	0.09
85	Prevalence Of Alexithymic Characteristics In Psychosomatic Patients So Psychotherapy And Psychosomatics	Sifneos, PE	Psychother Psychosom	Clinical	1973	USA	1130	0.02	3.52	26.9	0.0004	0.08
86	The Effect Of A Hormone Of The Adrenal Cortex (17-Hydroxy-11-Dehydrocorticosterone - Compound-E) And Of Pituitary Adrenocorticotrophic Hormone On Rheumatoid Arthritis - Preliminary Report	Hench, PS	Proc Staff Meet Mayo Clin	Basic	1949	USA	1148	0.02	3.57	17.39	0.0002	0.05
87	Therapeutic Efficacy Of Multiple Intravenous Infusions Of Anti-Tumor Necrosis Factor Alpha Monoclonal Antibody Combined With Low-Dose Weekly Methotrexate In Rheumatoid Arthritis	Maini, RN	Arthritis Rheum	Clinical	1998	UK	1110	0.39	17.04	65.29	0.0229	1.00
88	The Biochemistry And Medical Significance Of The Flavonoids	Havsteen, BH	Pharmacol Ther	Basic	2002	Germany	1079	0.32	13.25	83	0.0247	1.02
89	The American-College-Of-Rheumatology 1990 Criteria For The Classification Of Wegener Granulomatosis	Leavitt, RY	Arthritis Rheum	Clinical	1990	USA	1088	0.01	3.38	43.52	0.0006	0.14

90	A New Approach To Defining Functional Ability In Ankylosing-Spondylitis- The Development Of The Bath Ankylosing-Spondylitis Functional Index	Calin, A	J Rheumatol	Clinical	1994	UK	1064	0.37	3.31	50.67	0.0178	0.16
91	The American-College-Of-Rheumatology Preliminary Core Set Of Disease-Activity Measures For Rheumatoid-Arthritis Clinical-Trials	Felson, DT	Arthritis Rheum	Clinical	1993	USA	1104	0.02	3.43	50.18	0.0007	0.16
92	Genetic-Heterogeneity In Osteogenesis Imperfecta	Sillence, DO	J Med Genet	Basic	1979	Australia	1075	0.80	45.21	29.86	0.0223	1.26
93	Updated Clinical Classification Of Pulmonary Hypertension	Simonneau, G	J Am Coll Cardiol	Clinical	2009	France	1044	0.43	15.63	174	0.0718	2.60
94	The American-College-Of-Rheumatology 1990 Criteria For The Classification Of Giant-Cell Arteritis	Hunder, GG	Arthritis Rheum	Clinical	1990	USA	1175	0.02	3.66	47	0.0006	0.15
95	Antibodies To Small Nuclear Rnas Complexed With Proteins Are Produced By Patients With Systemic Lupus-Erythematosus	Lerner, MR	Proc Natl Acad Sci USA	Clinical	1979	USA	1099	0.01	3.42	30.53	0.0004	0.09
96	Femoroacetabular Impingement -A Cause For Osteoarthritis Of The Hip	Ganz, R	Clinic Orthop Relat Res	Clinical	2003	Switzerland	1069	1.61	128.95	89.08	0.1340	10.75
97	Antiphospholipid Antibodies - Anticardiolipin And The Lupus Anticoagulant In Systemic Lupus-Erythematosus (Sle) And In Non-Sle Disorders - Prevalence And Clinical-Significance	Love, PE	Ann Intern Med	Clinical	1990	USA	1078	0.01	3.35	43.12	0.0006	0.13
98	Therapeutic Effect Of The Combination Of Etanercept And Methotrexate Compared With Each Treatment Alone In Patients With Rheumatoid Arthritis: Double-Blind Randomised Controlled Trial	Klareskog, L	Lancet	Clinical	2004	Sweden	1046	2.12	106.73	95.09	0.1929	9.70
99	Collagens - Molecular-Biology, Diseases, And Potentials For Therapy	Prockop, DJ	Annu Rev Biochem	Basic	1995	USA	1044	0.01	3.25	52.2	0.0007	0.16
100	Development Of Autoantibodies Before The Clinical Onset Of Systemic Lupus Erythematosus	Arbuckle, MR	N Engl J Med	Clinical	2003	USA	1021	0.01	3.18	85.08	0.0012	0.26

TC: total citations; GDP: gross domestic product; pop: population
All GDP are calculated using the USA dollars

Table S1. Ranking of countries in the top 100 cited articles in rheumatology

Rank	Country	Number of articles	TC	GDP in billions (USD)	Population in millions	TC per billion GDP (USD)	TC per million population
1	USA	70	145733	73502	321.42	1.98	453.41
2	UK	15	26224	2849	65.14	9.20	402.59
3	Canada	4	9080	1551	35.85	5.85	253.26
4	Italy	2	3635	1815	60.80	2.00	59.78
5	Switzerland	2	2818	665	8.29	4.24	340.05
6	Norway	1	1451	388	5.20	3.74	279.25
7	Austria	1	1170	375	8.61	3.12	135.89
8	Japan	1	1111	4123	126.96	0.27	8.75
9	Germany	1	1079	3356	81.41	0.32	13.25
10	Australia	1	1075	1340	23.78	0.80	45.20
11	Sweden	1	1069	493	9.80	2.17	109.09
12	France	1	1044	2422	66.81	0.43	15.63

TC: total citations; GDP: gross domestic product; USD: United States Dollar

Table S2. Ranking of journals in the top 100 cited articles in rheumatology

Rank	Journal	Number of articles
1	Arthritis Rheum	23
2	N Engl J Med	15
3	Lancet	7
4	JAMA	6
5	J Rheumatol	5
6	Annu Rev Immunol	3
7	Nature	3
8	Adv Immunol	2
9	Ann Rheum Dis	2
10	J Exp Med	2
11	Nat Med	2
12	Acta Radiol Diagn	1
13	Am J Med	1
14	Am J Pathol	1
15	Am J Sports Med	1
16	Ann Intern Med	1
17	Annu Rev Biochem	1
18	Arch Intern Med	1
19	Arch Neurol	1
20	Biochem J	1
21	Clin Microbiol Rev	1
22	Clin Orthop Relat Res	1
23	Int J Biochem	1
24	J Bone Joint Surg Am	1
25	J Bone Joint Surg Br	1
26	J Clin Invest	1
27	J Immunol Methods	1
28	J Med Genet	1
29	J Med Chem	1
30	J Am Coll Cardiol	1
31	Med Care	1
32	Nucleic Acids Res	1
33	Osteoarthritis Cartilage	1
34	Pain	1
35	Pharmacol Ther	1
36	Physiol Rev	1
37	Proc Natl Acad Sci USA	1
38	Proc Staff Meet Mayo Clin	1
39	Psychother Psychosom	1
40	Q J Med	1
41	Science	1