Carlos Lpez-Otn

List of Publications by Year in Descending Order

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Version: 2024-04-28

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The third column is the impact factor (IF) of the journal, and the fourth column is the number of citations of the article.

417	70,028 citations	105	260
papers		h-index	g-index
437 ext. papers	82,406 ext. citations	11.5 avg, IF	8.1 L-index

#	Paper	IF	Citations
417	ATG4D is the main ATG8 delipidating enzyme in mammalian cells and protects against cerebellar neurodegeneration. <i>Cell Death and Differentiation</i> , 2021 , 28, 2651-2672	12.7	2
416	Old Paradoxes and New Opportunities for Appetite Control in Obesity. <i>Trends in Endocrinology and Metabolism</i> , 2021 , 32, 264-294	8.8	7
415	Hallmarks of Health. <i>Cell</i> , 2021 , 184, 33-63	56.2	94
414	Autophagy in major human diseases. <i>EMBO Journal</i> , 2021 , 40, e108863	13	79
413	Circulating tumor cells for comprehensive and multiregional non-invasive genetic characterization of multiple myeloma. <i>Leukemia</i> , 2020 , 34, 3007-3018	10.7	7
412	Ubiquitin-specific proteases as targets for anticancer drug therapies 2020 , 73-120		1
411	Pan-cancer analysis of whole genomes. <i>Nature</i> , 2020 , 578, 82-93	50.4	840
410	Loss of mitochondrial ClpP, Lonp1, and Tfam triggers transcriptional induction of Rnf213, a susceptibility factor for moyamoya disease. <i>Neurogenetics</i> , 2020 , 21, 187-203	3	6
409	Mitochondrial Safeguard: a stress response that offsets extreme fusion and protects respiratory function via flickering-induced Oma1 activation. <i>EMBO Journal</i> , 2020 , 39, e105074	13	5
408	Immunosuppression by Mutated Calreticulin Released from Malignant Cells. <i>Molecular Cell</i> , 2020 , 77, 748-760.e9	17.6	45
407	Identification of common cardiometabolic alterations and deregulated pathways in mouse and pig models of aging. <i>Aging Cell</i> , 2020 , 19, e13203	9.9	6
406	The proliferative history shapes the DNA methylome of B-cell tumors and predicts clinical outcome. <i>Nature Cancer</i> , 2020 , 1, 1066-1081	15.4	11
405	Retrospective evaluation of whole exome and genome mutation calls in 746 cancer samples. <i>Nature Communications</i> , 2020 , 11, 4748	17.4	10
404	Sex differences in oncogenic mutational processes. <i>Nature Communications</i> , 2020 , 11, 4330	17.4	23
403	Cross-reactivity between tumor MHC class I-restricted antigens and an enterococcal bacteriophage. <i>Science</i> , 2020 , 369, 936-942	33-3	74
402	Partial Loss of USP9X Function Leads to a Male Neurodevelopmental and Behavioral Disorder Converging on Transforming Growth Factor (\$\frac{1}{2}\$ignaling. <i>Biological Psychiatry</i> , 2020 , 87, 100-112	7.9	19
401	The U1 spliceosomal RNA is recurrently mutated in multiple cancers. <i>Nature</i> , 2019 , 574, 712-716	50.4	79

(2019-2019)

400	Precise in vivo genome editing via single homology arm donor mediated intron-targeting gene integration for genetic disease correction. <i>Cell Research</i> , 2019 , 29, 804-819	24.7	26
399	Global Proteome of Mouse Embryonal Fibroblasts Reveals Impact on Respiratory Chain, but No Interdependence between Eral1 and Mitoribosomes. <i>International Journal of Molecular Sciences</i> , 2019 , 20,	6.3	8
398	Decelerating ageing and biological clocks by autophagy. <i>Nature Reviews Molecular Cell Biology</i> , 2019 , 20, 385-386	48.7	16
397	Moving Frailty Toward Clinical Practice: NIA Intramural Frailty Science Symposium Summary. Journal of the American Geriatrics Society, 2019 , 67, 1559-1564	5.6	74
396	Progerin accelerates atherosclerosis by inducing endoplasmic reticulum stress in vascular smooth muscle cells. <i>EMBO Molecular Medicine</i> , 2019 , 11,	12	47
395	Insight into genetic predisposition to chronic lymphocytic leukemia from integrative epigenomics. <i>Nature Communications</i> , 2019 , 10, 3615	17.4	19
394	Acyl-CoA-Binding Protein Is a Lipogenic Factor that Triggers Food Intake and Obesity. <i>Cell Metabolism</i> , 2019 , 30, 754-767.e9	24.6	40
393	Remodeling of Bone Marrow Hematopoietic Stem Cell Niches Promotes Myeloid Cell Expansion during Premature or Physiological Aging. <i>Cell Stem Cell</i> , 2019 , 25, 407-418.e6	18	114
392	Healthspan and lifespan extension by fecal microbiota transplantation into progeroid mice. <i>Nature Medicine</i> , 2019 , 25, 1234-1242	50.5	164
391	Differential mechanisms of tolerance to extreme environmental conditions in tardigrades. <i>Scientific Reports</i> , 2019 , 9, 14938	4.9	6
390	Circulating Tumor Cells (CTCs) for Comprehensive and Multiregional Non-Invasive Genetic Characterization of Multiple Myeloma (MM). <i>Blood</i> , 2019 , 134, 3064-3064	2.2	1
389	Development of a CRISPR/Cas9-based therapy for Hutchinson-Gilford progeria syndrome. <i>Nature Medicine</i> , 2019 , 25, 423-426	50.5	62
388	Association of the POT1 Germline Missense Variant p.178T With Familial Melanoma. <i>JAMA Dermatology</i> , 2019 , 155, 604-609	5.1	15
387	and hijack immunoglobulin light-chain enhancers in cyclin D1 mantle cell lymphoma. <i>Blood</i> , 2019 , 133, 940-951	2.2	48
386	Mitochondrial LonP1 protects cardiomyocytes from ischemia/reperfusion injury in vivo. <i>Journal of Molecular and Cellular Cardiology</i> , 2019 , 128, 38-50	5.8	34
385	Genome Sequencing and Analysis Methods in Chronic Lymphocytic Leukemia. <i>Methods in Molecular Biology</i> , 2019 , 1881, 319-325	1.4	
384	Methionine restriction for improving progeria: another autophagy-inducing anti-aging strategy?. <i>Autophagy</i> , 2019 , 15, 558-559	10.2	12
383	Giant tortoise genomes provide insights into longevity and age-related disease. <i>Nature Ecology and Evolution</i> , 2019 , 3, 87-95	12.3	43

382	Mutations in the RAS-BRAF-MAPK-ERK pathway define a specific subgroup of patients with adverse clinical features and provide new therapeutic options in chronic lymphocytic leukemia. <i>Haematologica</i> , 2019 , 104, 576-586	6.6	28
381	Changes at the nuclear lamina alter binding of pioneer factor Foxa2 in aged liver. <i>Aging Cell</i> , 2018 , 17, e12742	9.9	14
380	Vascular Smooth Muscle-Specific Progerin Expression Accelerates Atherosclerosis and Death in a Mouse Model of Hutchinson-Gilford Progeria Syndrome. <i>Circulation</i> , 2018 , 138, 266-282	16.7	61
379	Matriptase-2 deficiency protects from obesity by modulating iron homeostasis. <i>Nature Communications</i> , 2018 , 9, 1350	17.4	17
378	Molecular mechanisms of cell death: recommendations of the Nomenclature Committee on Cell Death 2018. <i>Cell Death and Differentiation</i> , 2018 , 25, 486-541	12.7	2160
377	Loss of the deubiquitinase USP36 destabilizes the RNA helicase DHX33 and causes preimplantation lethality in mice. <i>Journal of Biological Chemistry</i> , 2018 , 293, 2183-2194	5.4	16
376	Ablation of the stress protease OMA1 protects against heart failure in mice. <i>Science Translational Medicine</i> , 2018 , 10,	17.5	41
375	Clinical impact of the subclonal architecture and mutational complexity in chronic lymphocytic leukemia. <i>Leukemia</i> , 2018 , 32, 645-653	10.7	64
374	The Relevance of Induced Pluripotent Stem Cells for the Study of Physiological and Premature Aging 2018 , 311-334		
373	Methionine Restriction Extends Lifespan in Progeroid Mice and Alters Lipid and Bile Acid Metabolism. <i>Cell Reports</i> , 2018 , 24, 2392-2403	10.6	72
372	Progeria Mouse Models 2018 , 689-701		2
371	Prelamin A causes aberrant myonuclear arrangement and results in muscle fiber weakness. <i>JCI Insight</i> , 2018 , 3,	9.9	9
370	Aging of Bone Marrow Microenvironment Promotes Myeloid Bias of Hematopoietic Progenitors and Is a Target in Age-Related Myeloproliferative Neoplasms. <i>Blood</i> , 2018 , 132, 3842-3842	2.2	2
369	An Epigenetic Mitotic Score Tracks the Proliferative History and Capacity of CLL Samples at Diagnosis and Is Associated with Clinical Outcome. <i>Blood</i> , 2018 , 132, 1842-1842	2.2	
368	The mutational landscape of small lymphocytic lymphoma compared to non-early stage chronic lymphocytic leukemia. <i>Leukemia and Lymphoma</i> , 2018 , 59, 2318-2326	1.9	2
367	The microRNA-29/PGC1Iregulatory axis is critical for metabolic control of cardiac function. <i>PLoS Biology</i> , 2018 , 16, e2006247	9.7	22
366	Specific combinations of biallelic variants cause Wiedemann-Rautenstrauch syndrome. <i>Journal of Medical Genetics</i> , 2018 , 55, 837-846	5.8	31
365	Carbotoxicity-Noxious Effects of Carbohydrates. <i>Cell</i> , 2018 , 175, 605-614	56.2	57

(2016-2018)

364	Altered patterns of global protein synthesis and translational fidelity in RPS15-mutated chronic lymphocytic leukemia. <i>Blood</i> , 2018 , 132, 2375-2388	2.2	31
363	Mouse Models to Disentangle the Hallmarks of Human Aging. <i>Circulation Research</i> , 2018 , 123, 905-924	15.7	44
362	The reference epigenome and regulatory chromatin landscape of chronic lymphocytic leukemia. <i>Nature Medicine</i> , 2018 , 24, 868-880	50.5	103
361	USP39 Deubiquitinase Is Essential for Oncogene-driven Cancer. <i>Journal of Biological Chemistry</i> , 2017 , 292, 4164-4175	5.4	25
360	Functional relevance of miRNAs in premature ageing. <i>Mechanisms of Ageing and Development</i> , 2017 , 168, 10-19	5.6	7
359	The role of matrix metalloproteinases in aging: Tissue remodeling and beyond. <i>Biochimica Et Biophysica Acta - Molecular Cell Research</i> , 2017 , 1864, 2015-2025	4.9	94
358	Molecular definitions of autophagy and related processes. <i>EMBO Journal</i> , 2017 , 36, 1811-1836	13	857
357	A single-copy Sleeping Beauty transposon mutagenesis screen identifies new PTEN-cooperating tumor suppressor genes. <i>Nature Genetics</i> , 2017 , 49, 730-741	36.3	34
356	Clonal evolution in leukemia. <i>Nature Medicine</i> , 2017 , 23, 1135-1145	50.5	66
355	A fruitful liaison of ZSCAN10 and ROS on the road to rejuvenation. <i>Nature Cell Biology</i> , 2017 , 19, 1012-1	0 1334	2
354	Physiological and Pathological Functions of Mitochondrial Proteases 2017 , 3-25		3
353	Functional Relevance of Deubiquitinases in Life and Disease 2017, 355-382		1
352	Autophagy couteracts weight gain, lipotoxicity and pancreatic Etell death upon hypercaloric pro-diabetic regimens. <i>Cell Death and Disease</i> , 2017 , 8, e2970	9.8	53
351	Overview of transcriptomic analysis of all human proteases, non-proteolytic homologs and inhibitors: Organ, tissue and ovarian cancer cell line expression profiling of the human protease degradome by the CLIP-CHIPIDNA microarray. <i>Biochimica Et Biophysica Acta - Molecular Cell</i>	4.9	25
350	Tagged ATG8-Coding Constructs for the In Vitro and In Vivo Assessment of ATG4 Activity. <i>Methods in Enzymology</i> , 2017 , 587, 189-205	1.7	3
349	Immune and inflammatory responses to DNA damage in cancer and aging. <i>Mechanisms of Ageing and Development</i> , 2017 , 165, 10-16	5.6	20
348	The Novel Evolution of the Sperm Whale Genome. <i>Genome Biology and Evolution</i> , 2017 , 9, 3260-3264	3.9	27

346	Age-driven developmental drift in the pathogenesis of idiopathic pulmonary fibrosis. <i>European Respiratory Journal</i> , 2016 , 48, 538-52	13.6	74
345	Hallmarks of progeroid syndromes: lessons from mice and reprogrammed cells. <i>DMM Disease Models and Mechanisms</i> , 2016 , 9, 719-35	4.1	76
344	Cardiac electrical defects in progeroid mice and Hutchinson-Gilford progeria syndrome patients with nuclear lamina alterations. <i>Proceedings of the National Academy of Sciences of the United States of America</i> , 2016 , 113, E7250-E7259	11.5	34
343	NF-B signaling as a driver of ageing. International Review of Cell and Molecular Biology, 2016, 326, 133-7	7 46	45
342	MMP-25 Metalloprotease Regulates Innate Immune Response through NF- B Signaling. <i>Journal of Immunology</i> , 2016 , 197, 296-302	5.3	24
341	iPSCs: On the Road to Reprogramming Aging. <i>Trends in Molecular Medicine</i> , 2016 , 22, 713-724	11.5	36
340	Guidelines for the use and interpretation of assays for monitoring autophagy (3rd edition). <i>Autophagy</i> , 2016 , 12, 1-222	10.2	3838
339	Loss of OMA1 delays neurodegeneration by preventing stress-induced OPA1 processing in mitochondria. <i>Journal of Cell Biology</i> , 2016 , 212, 157-66	7-3	84
338	Pharmacogenetics and pharmacogenomics as tools in cancer therapy. <i>Drug Metabolism and Personalized Therapy</i> , 2016 , 31, 25-34	2	18
337	Loss of the proteostasis factor AIRAPL causes myeloid transformation by deregulating IGF-1 signaling. <i>Nature Medicine</i> , 2016 , 22, 91-6	50.5	24
336	Chronic lymphocytic leukemia: looking into the dark side of the genome. <i>Cell Death and Differentiation</i> , 2016 , 23, 7-9	12.7	2
335	Interruption of progerin-lamin A/C binding ameliorates Hutchinson-Gilford progeria syndrome phenotype. <i>Journal of Clinical Investigation</i> , 2016 , 126, 3879-3893	15.9	54
334	Barrier-to-autointegration factor (BAF) involvement in prelamin A-related chromatin organization changes. <i>Oncotarget</i> , 2016 , 7, 15662-77	3.3	35
333	Loss of OMA1 delays neurodegeneration by preventing stress-induced OPA1 processing in mitochondria. <i>Journal of Experimental Medicine</i> , 2016 , 213, 2132OIA1	16.6	
332	Non-coding recurrent mutations in chronic lymphocytic leukaemia. <i>Nature</i> , 2016 , 534, S11-S12	50.4	О
331	Novel mutations cause an aggressive atypical neonatal progeria without progerin accumulation. <i>Journal of Medical Genetics</i> , 2016 , 53, 776-785	5.8	14
330	A genome-wide association scan in admixed Latin Americans identifies loci influencing facial and scalp hair features. <i>Nature Communications</i> , 2016 , 7, 10815	17.4	108
329	Extreme genomic erosion after recurrent demographic bottlenecks in the highly endangered Iberian lynx. <i>Genome Biology</i> , 2016 , 17, 251	18.3	85

(2015-2016)

328	Proteostasis alterations in myeloproliferative neoplasms: Oncogenic relevance and therapeutic opportunities. <i>Experimental Hematology</i> , 2016 , 44, 574-7	3.1	3
327	Congenital dilated cardiomyopathy caused by biallelic mutations in Filamin C. <i>European Journal of Human Genetics</i> , 2016 , 24, 1792-1796	5.3	28
326	Clinical impact of clonal and subclonal TP53, SF3B1, BIRC3, NOTCH1, and ATM mutations in chronic lymphocytic leukemia. <i>Blood</i> , 2016 , 127, 2122-30	2.2	188
325	Metabolic Control of Longevity. <i>Cell</i> , 2016 , 166, 802-821	56.2	429
324	Nonsense mutations in the shelterin complex genes ACD and TERF2IP in familial melanoma. <i>Journal of the National Cancer Institute</i> , 2015 , 107,	9.7	102
323	NF-B activation impairs somatic cell reprogramming in ageing. <i>Nature Cell Biology</i> , 2015 , 17, 1004-13	23.4	80
322	Non-coding recurrent mutations in chronic lymphocytic leukaemia. <i>Nature</i> , 2015 , 526, 519-24	50.4	565
321	Essential role for the ATG4B protease and autophagy in bleomycin-induced pulmonary fibrosis. <i>Autophagy</i> , 2015 , 11, 670-84	10.2	95
320	New roles for mitochondrial proteases in health, ageing and disease. <i>Nature Reviews Molecular Cell Biology</i> , 2015 , 16, 345-59	48.7	333
319	ADAMTS proteases and cancer. <i>Matrix Biology</i> , 2015 , 44-46, 77-85	11.4	79
318	A critical role for murine transferrin receptor 2 in erythropoiesis during iron restriction. <i>British Journal of Haematology</i> , 2015 , 168, 891-901	4.5	25
317	The Becretase inhibitor PF-03084014 combined with fludarabine antagonizes migration, invasion and angiogenesis in NOTCH1-mutated CLL cells. <i>Leukemia</i> , 2015 , 29, 96-106	10.7	51
316	A B-cell epigenetic signature defines three biologic subgroups of chronic lymphocytic leukemia with clinical impact. <i>Leukemia</i> , 2015 , 29, 598-605	10.7	92
315	Essential versus accessory aspects of cell death: recommendations of the NCCD 2015. <i>Cell Death and Differentiation</i> , 2015 , 22, 58-73	12.7	643
314	Molecular mechanisms of normal and pathological aging. <i>Orphanet Journal of Rare Diseases</i> , 2015 , 10,	4.2	78
313	Mutations in CHD2 cause defective association with active chromatin in chronic lymphocytic leukemia. <i>Blood</i> , 2015 , 126, 195-202	2.2	38
312	Nuclear DICKKOPF-1 as a biomarker of chemoresistance and poor clinical outcome in colorectal cancer. <i>Oncotarget</i> , 2015 , 6, 5903-17	3.3	26
311	Loss of MT1-MMP causes cell senescence and nuclear defects which can be reversed by retinoic acid. <i>EMBO Journal</i> , 2015 , 34, 1875-88	13	54

310	The functional and pathologic relevance of autophagy proteases. <i>Journal of Clinical Investigation</i> , 2015 , 125, 33-41	15.9	70
309	Molecular pathogenesis of CLL and its evolution. <i>International Journal of Hematology</i> , 2015 , 101, 219-28	82.3	16
308	A comprehensive assessment of somatic mutation detection in cancer using whole-genome sequencing. <i>Nature Communications</i> , 2015 , 6, 10001	17.4	199
307	Regulatory Roles of miRNAs in Aging. Advances in Experimental Medicine and Biology, 2015, 887, 213-30	3.6	10
306	Insights into the evolution of longevity from the bowhead whale genome. <i>Cell Reports</i> , 2015 , 10, 112-22	210.6	203
305	Clinical Impact of Clonal and Subclonal TP53, SF3B1, BIRC3, and ATM Mutations in Chronic Lymphocytic Leukemia. <i>Blood</i> , 2015 , 126, 4138-4138	2.2	1
304	The splicing modulator sudemycin induces a specific antitumor response and cooperates with ibrutinib in chronic lymphocytic leukemia. <i>Oncotarget</i> , 2015 , 6, 22734-49	3.3	49
303	Progeria: a paradigm for translational medicine. <i>Cell</i> , 2014 , 156, 400-7	56.2	165
302	POT1 loss-of-function variants predispose to familial melanoma. <i>Nature Genetics</i> , 2014 , 46, 478-481	36.3	241
301	Regulation of autophagy by cytosolic acetyl-coenzyme A. <i>Molecular Cell</i> , 2014 , 53, 710-25	17.6	331
300	The miR-424(322)/503 cluster orchestrates remodeling of the epithelium in the involuting mammary gland. <i>Genes and Development</i> , 2014 , 28, 765-82	12.6	52
299	Matrix metalloprotease 1a deficiency suppresses tumor growth and angiogenesis. <i>Oncogene</i> , 2014 , 33, 2264-72	9.2	32
298	Mutations in filamin C cause a new form of familial hypertrophic cardiomyopathy. <i>Nature Communications</i> , 2014 , 5, 5326	17.4	109
297	Transcriptome characterization by RNA sequencing identifies a major molecular and clinical subdivision in chronic lymphocytic leukemia. <i>Genome Research</i> , 2014 , 24, 212-26	9.7	143
296	Comprehensive characterization of complex structural variations in cancer by directly comparing genome sequence reads. <i>Nature Biotechnology</i> , 2014 , 32, 1106-12	44.5	62
295	Mutations in TLR/MYD88 pathway identify a subset of young chronic lymphocytic leukemia patients with favorable outcome. <i>Blood</i> , 2014 , 123, 3790-6	2.2	82
294	The common marmoset genome provides insight into primate biology and evolution. <i>Nature Genetics</i> , 2014 , 46, 850-7	36.3	179
293	ATP-dependent Lon protease controls tumor bioenergetics by reprogramming mitochondrial activity. <i>Cell Reports</i> , 2014 , 8, 542-56	10.6	133

(2013-2014)

292	Exome sequencing identifies a novel mutation in PIK3R1 as the cause of SHORT syndrome. <i>BMC Medical Genetics</i> , 2014 , 15, 51	2.1	26
291	MT5-MMP regulates adult neural stem cell functional quiescence through the cleavage of N-cadherin. <i>Nature Cell Biology</i> , 2014 , 16, 629-38	23.4	64
290	Matriptase-2 is essential for hepcidin repression during fetal life and postnatal development in mice to maintain iron homeostasis. <i>Blood</i> , 2014 , 124, 441-4	2.2	20
289	Nuclear envelope lamin-A couples actin dynamics with immunological synapse architecture and T cell activation. <i>Science Signaling</i> , 2014 , 7, ra37	8.8	52
288	Lon protease: A key enzyme controlling mitochondrial bioenergetics in cancer. <i>Molecular and Cellular Oncology</i> , 2014 , 1, e968505	1.2	10
287	The prognostic impact of minimal residual disease in patients with chronic lymphocytic leukemia requiring first-line therapy. <i>Haematologica</i> , 2014 , 99, 873-80	6.6	28
286	OMA1 mediates OPA1 proteolysis and mitochondrial fragmentation in experimental models of ischemic kidney injury. <i>American Journal of Physiology - Renal Physiology</i> , 2014 , 306, F1318-26	4.3	72
285	Exosomes and autophagy: coordinated mechanisms for the maintenance of cellular fitness. <i>Frontiers in Immunology</i> , 2014 , 5, 403	8.4	275
284	The anti-metastatic activity of collagenase-2 in breast cancer cells is mediated by a signaling pathway involving decorin and miR-21. <i>Oncogene</i> , 2014 , 33, 3054-63	9.2	56
283	Functional Relevance of Autophagins in Life and Disease 2014 , 111-119		
282	Frequent somatic mutations in components of the RNA processing machinery in chronic lymphocytic leukemia. <i>Leukemia</i> , 2013 , 27, 1600-3	10.7	26
281	The genomic landscape of chronic lymphocytic leukemia: clinical implications. <i>BMC Medicine</i> , 2013 , 11, 124	11.4	26
280	Signatures of mutational processes in human cancer. <i>Nature</i> , 2013 , 500, 415-21	50.4	5895
279	Matriptase-2 2013 , 2975-2983		
278	Identification of mitochondrial dysfunction in Hutchinson-Gilford progeria syndrome through use of stable isotope labeling with amino acids in cell culture. <i>Journal of Proteomics</i> , 2013 , 91, 466-77	3.9	79
277	Supercomplex assembly determines electron flux in the mitochondrial electron transport chain. <i>Science</i> , 2013 , 340, 1567-70	33.3	528
276	Recurrent gene mutations in CLL. Advances in Experimental Medicine and Biology, 2013, 792, 87-107	3.6	6
275	Next-generation sequencing in chronic lymphocytic leukemia. <i>Seminars in Hematology</i> , 2013 , 50, 286-95	5 4	14

274	Defective extracellular pyrophosphate metabolism promotes vascular calcification in a mouse model of Hutchinson-Gilford progeria syndrome that is ameliorated on pyrophosphate treatment. <i>Circulation</i> , 2013 , 127, 2442-51	16.7	149
273	Prelamin A causes progeria through cell-extrinsic mechanisms and prevents cancer invasion. <i>Nature Communications</i> , 2013 , 4, 2268	17.4	55
272	POT1 mutations cause telomere dysfunction in chronic lymphocytic leukemia. <i>Nature Genetics</i> , 2013 , 45, 526-30	36.3	199
271	Conquering cancer in our lifetime: new diagnostic and therapeutic trends. <i>Clinical Chemistry</i> , 2013 , 59, 1-3	5.5	19
270	Immune-dependent and independent antitumor activity of GM-CSF aberrantly expressed by mouse and human colorectal tumors. <i>Cancer Research</i> , 2013 , 73, 395-405	10.1	55
269	Matrix metalloproteinase 13 modulates intestinal epithelial barrier integrity in inflammatory diseases by activating TNF. <i>EMBO Molecular Medicine</i> , 2013 , 5, 1000-16	12	86
268	Genome-wide association study identifies multiple risk loci for chronic lymphocytic leukemia. <i>Nature Genetics</i> , 2013 , 45, 868-76	36.3	147
267	NOTCH1 mutations identify a genetic subgroup of chronic lymphocytic leukemia patients with high risk of transformation and poor outcome. <i>Leukemia</i> , 2013 , 27, 1100-6	10.7	135
266	The hallmarks of aging. <i>Cell</i> , 2013 , 153, 1194-217	56.2	7165
265	Cell-cell adhesion genes CTNNA2 and CTNNA3 are tumour suppressors frequently mutated in laryngeal carcinomas. <i>Nature Communications</i> , 2013 , 4, 2531	17.4	61
264	Landscape of somatic mutations and clonal evolution in mantle cell lymphoma. <i>Proceedings of the National Academy of Sciences of the United States of America</i> , 2013 , 110, 18250-5	11.5	377
263	Genetic and epigenetic basis of chronic lymphocytic leukemia. <i>Current Opinion in Hematology</i> , 2013 , 20, 362-8	3.3	32
262	A novel family of soluble minimal scaffolds provides structural insight into the catalytic domains of integral membrane metallopeptidases. <i>Journal of Biological Chemistry</i> , 2013 , 288, 21279-21294	5.4	26
261	Functional analysis of sucrase-isomaltase mutations from chronic lymphocytic leukemia patients. <i>Human Molecular Genetics</i> , 2013 , 22, 2273-82	5.6	21
260	The Emergence of GeroMIRs: A Group of MicroRNAs Implicated in Aging 2013 , 77-89		
259	Matrix metalloproteinase Mmp-1a is dispensable for normal growth and fertility in mice and promotes lung cancer progression by modulating inflammatory responses. <i>Journal of Biological Chemistry</i> , 2013 , 288, 14647-14656	5.4	41
258	ATG4B/autophagin-1 regulates intestinal homeostasis and protects mice from experimental colitis. <i>Autophagy</i> , 2013 , 9, 1188-200	10.2	60
257	New roles for OMA1 metalloprotease: From mitochondrial proteostasis to metabolic homeostasis. <i>Adipocyte</i> , 2013 , 2, 7-11	3.2	6

256	Aminopeptidase O 2013 , 438-442		
255	Identification of novel tumor suppressor proteases by degradome profiling of colorectal carcinomas. <i>Oncotarget</i> , 2013 , 4, 1931-2	3.3	9
254	Identification of novel tumor suppressor proteases by degradome profiling of colorectal carcinomas. <i>Oncotarget</i> , 2013 , 4, 1919-1932	3.3	1
253	ADAMTS12 2013 , 1194-1198		
252	Cathepsin O 2013 , 1821-1823		
251	Polyserases 2013 , 2990-2994		
250	Matrix Metallopeptidase-19 2013 , 830-835		
249	Loss of mitochondrial protease OMA1 alters processing of the GTPase OPA1 and causes obesity and defective thermogenesis in mice. <i>EMBO Journal</i> , 2012 , 31, 2117-33	13	180
248	Matrix Proteases and the Degradome 2012 , 5-23		
247	Matrix metalloproteinase-19 is a key regulator of lung fibrosis in mice and humans. <i>American Journal of Respiratory and Critical Care Medicine</i> , 2012 , 186, 752-62	10.2	66
246	Matrix metalloprotease 8-dependent extracellular matrix cleavage at the blood-CSF barrier contributes to lethality during systemic inflammatory diseases. <i>Journal of Neuroscience</i> , 2012 , 32, 9805-	-16 ⁶	80
245	An immunosurveillance mechanism controls cancer cell ploidy. <i>Science</i> , 2012 , 337, 1678-84	33.3	299
244	Nuclear lamina defects cause ATM-dependent NF- B activation and link accelerated aging to a systemic inflammatory response. <i>Genes and Development</i> , 2012 , 26, 2311-24	12.6	181
244		12.6 23.4	181
	systemic inflammatory response. <i>Genes and Development</i> , 2012 , 26, 2311-24 Selective subversion of autophagy complexes facilitates completion of the Brucella intracellular		2
243	Selective subversion of autophagy complexes facilitates completion of the Brucella intracellular cycle. <i>Cell Host and Microbe</i> , 2012 , 11, 33-45 Nondegradative role of Atg5-Atg12/ Atg16L1 autophagy protein complex in antiviral activity of	23.4	228
243	Selective subversion of autophagy complexes facilitates completion of the Brucella intracellular cycle. <i>Cell Host and Microbe</i> , 2012 , 11, 33-45 Nondegradative role of Atg5-Atg12/ Atg16L1 autophagy protein complex in antiviral activity of interferon gamma. <i>Cell Host and Microbe</i> , 2012 , 11, 397-409 Epigenomic analysis detects widespread gene-body DNA hypomethylation in chronic lymphocytic	23.4 23.4 36.3	228 167

238	Deubiquitinases in cancer: new functions and therapeutic options. <i>Oncogene</i> , 2012 , 31, 2373-88	9.2	317
237	Chronic lymphocytic leukemia with SF3B1 mutation. New England Journal of Medicine, 2012, 366, 2530	59.2	46
236	Reprogramming aging and progeria. Current Opinion in Cell Biology, 2012, 24, 757-64	9	29
235	Arresten, a collagen-derived angiogenesis inhibitor, suppresses invasion of squamous cell carcinoma. <i>PLoS ONE</i> , 2012 , 7, e51044	3.7	31
234	Estimation of copy number alterations from exome sequencing data. <i>PLoS ONE</i> , 2012 , 7, e51422	3.7	16
233	Regulation of ATG4B stability by RNF5 limits basal levels of autophagy and influences susceptibility to bacterial infection. <i>PLoS Genetics</i> , 2012 , 8, e1003007	6	74
232	ADAMTS-12 metalloprotease is necessary for normal inflammatory response. <i>Journal of Biological Chemistry</i> , 2012 , 287, 39554-63	5.4	31
231	Control of allergen-induced inflammation and hyperresponsiveness by the metalloproteinase ADAMTS-12. <i>Journal of Immunology</i> , 2012 , 189, 4135-43	5.3	14
230	New and paradoxical roles of matrix metalloproteinases in the tumor microenvironment. <i>Frontiers in Pharmacology</i> , 2012 , 3, 140	5.6	76
229	NF-kB in premature aging. <i>Aging</i> , 2012 , 4, 726-7	5.6	20
228	Exome sequencing identifies recurrent mutations of the splicing factor SF3B1 gene in chronic lymphocytic leukemia. <i>Nature Genetics</i> , 2011 , 44, 47-52	36.3	752
227	Cell autonomous and systemic factors in progeria development. <i>Biochemical Society Transactions</i> , 2011 , 39, 1710-4	5.1	17
226	Spermidine and resveratrol induce autophagy by distinct pathways converging on the acetylproteome. <i>Journal of Cell Biology</i> , 2011 , 192, 615-29	7.3	362
225	Protease addiction and synthetic lethality in cancer. Frontiers in Oncology, 2011, 1, 25	5.3	15
224	Regulation of TMPRSS6 by BMP6 and iron in human cells and mice. <i>Blood</i> , 2011 , 118, 747-56	2.2	94
223	Aging and chronic DNA damage response activate a regulatory pathway involving miR-29 and p53. <i>EMBO Journal</i> , 2011 , 30, 2219-32	13	182
222	Comparative and demographic analysis of orang-utan genomes. <i>Nature</i> , 2011 , 469, 529-33	50.4	431
221	Proteomic profiling of adipose tissue from Zmpste24-/- mice, a model of lipodystrophy and premature aging, reveals major changes in mitochondrial function and vimentin processing.	7.6	46

220	Exome sequencing and functional analysis identifies BANF1 mutation as the cause of a hereditary progeroid syndrome. <i>American Journal of Human Genetics</i> , 2011 , 88, 650-6	11	148
219	The nutraceutical flavonoid luteolin inhibits ADAMTS-4 and ADAMTS-5 aggrecanase activities. Journal of Molecular Medicine, 2011 , 89, 611-9	5.5	16
218	NEtor-Guillermo progeria syndrome: a novel premature aging condition with early onset and chronic development caused by BANF1 mutations. <i>American Journal of Medical Genetics, Part A</i> , 2011 , 155A, 2617-25	2.5	97
217	Analysis of the disintegrin-metalloproteinases family reveals ADAM29 and ADAM7 are often mutated in melanoma. <i>Human Mutation</i> , 2011 , 32, E2148-75	4.7	32
216	Whole-genome sequencing identifies recurrent mutations in chronic lymphocytic leukaemia. <i>Nature</i> , 2011 , 475, 101-5	50.4	1206
215	A conserved splicing mechanism of the LMNA gene controls premature aging. <i>Human Molecular Genetics</i> , 2011 , 20, 4540-55	5.6	54
214	Micromanaging aging with miRNAs: new messages from the nuclear envelope. <i>Nucleus</i> , 2011 , 2, 549-55	3.9	29
213	Splicing-directed therapy in a new mouse model of human accelerated aging. <i>Science Translational Medicine</i> , 2011 , 3, 106ra107	17.5	240
212	Longevity-relevant regulation of autophagy at the level of the acetylproteome. <i>Autophagy</i> , 2011 , 7, 647	′-£ 0.2	30
211	Iron-deficiency anemia from matriptase-2 inactivation is dependent on the presence of functional Bmp6. <i>Blood</i> , 2011 , 117, 647-50	2.2	28
210	Nuclear envelope alterations generate an aging-like epigenetic pattern in mice deficient in Zmpste24 metalloprotease. <i>Aging Cell</i> , 2010 , 9, 947-57	9.9	44
209	Higher sensitivity of Adamts12-deficient mice to tumor growth and angiogenesis. <i>Oncogene</i> , 2010 , 29, 3025-32	9.2	85
208	The genome of a songbird. <i>Nature</i> , 2010 , 464, 757-62	50.4	655
207	International network of cancer genome projects. <i>Nature</i> , 2010 , 464, 993-8	50.4	1613
206	The regulatory crosstalk between kinases and proteases in cancer. <i>Nature Reviews Cancer</i> , 2010 , 10, 278	3 -39 123	192
205	Functional interaction between acyl-CoA synthetase 4, lipooxygenases and cyclooxygenase-2 in the aggressive phenotype of breast cancer cells. <i>PLoS ONE</i> , 2010 , 5, e15540	3.7	65
204	Rejuvenating somatotropic signaling: a therapeutical opportunity for premature aging?. <i>Aging</i> , 2010 , 2, 1017-22	5.6	11
203	Cancer genomes. Clinical Chemistry, 2010 , 56, 1660-4	5.5	5

202	Autophagy and aging: lessons from progeria models. <i>Advances in Experimental Medicine and Biology</i> , 2010 , 694, 61-8	3.6	18
201	Insulin-like growth factor 1 treatment extends longevity in a mouse model of human premature aging by restoring somatotroph axis function. <i>Proceedings of the National Academy of Sciences of the United States of America</i> , 2010 , 107, 16268-73	11.5	105
200	Mutational and functional analysis reveals ADAMTS18 metalloproteinase as a novel driver in melanoma. <i>Molecular Cancer Research</i> , 2010 , 8, 1513-25	6.6	41
199	Autophagy, proteases and the sense of balance. <i>Autophagy</i> , 2010 , 6, 961-3	10.2	20
198	Absence or inhibition of matrix metalloproteinase-8 decreases ventilator-induced lung injury. <i>American Journal of Respiratory Cell and Molecular Biology</i> , 2010 , 43, 555-63	5.7	52
197	Matrix metalloproteinase-19 deficiency promotes tenascin-C accumulation and allergen-induced airway inflammation. <i>American Journal of Respiratory Cell and Molecular Biology</i> , 2010 , 43, 286-95	5.7	25
196	Epigenetic repression of ROR2 has a Wnt-mediated, pro-tumourigenic role in colon cancer. <i>Molecular Cancer</i> , 2010 , 9, 170	42.1	52
195	Matrix metalloproteinase-8 deficiency increases joint inflammation and bone erosion in the K/BxN serum-transfer arthritis model. <i>Arthritis Research and Therapy</i> , 2010 , 12, R224	5.7	34
194	Vitamin D: Proteases, protease inhibitors and cancer. <i>Cell Cycle</i> , 2010 , 9, 32-7	4.7	30
193	Comparative genomic analysis of the zebra finch degradome provides new insights into evolution of proteases in birds and mammals. <i>BMC Genomics</i> , 2010 , 11, 220	4.5	23
192	Matrix metalloproteinases: evolution, gene regulation and functional analysis in mouse models. <i>Biochimica Et Biophysica Acta - Molecular Cell Research</i> , 2010 , 1803, 3-19	4.9	348
191	Autophagy is essential for mouse sense of balance. <i>Journal of Clinical Investigation</i> , 2010 , 120, 2331-44	15.9	137
190	Resistance to bleomycin-induced lung fibrosis in MMP-8 deficient mice is mediated by interleukin-10. <i>PLoS ONE</i> , 2010 , 5, e13242	3.7	69
189	Metalloproteases and the degradome. <i>Methods in Molecular Biology</i> , 2010 , 622, 3-29	1.4	29
188	The Degradome database: mammalian proteases and diseases of proteolysis. <i>Nucleic Acids Research</i> , 2009 , 37, D239-43	20.1	124
187	Protective roles of matrix metalloproteinases: from mouse models to human cancer. <i>Cell Cycle</i> , 2009 , 8, 3657-62	4.7	103
186	A role of matrix metalloproteinase-8 in atherosclerosis. <i>Circulation Research</i> , 2009 , 105, 921-9	15.7	99
185	Cystatin D is a candidate tumor suppressor gene induced by vitamin D in human colon cancer cells. <i>Journal of Clinical Investigation</i> , 2009 , 119, 2343-58	15.9	87

(2008-2009)

184	Genetic inactivation of ADAMTS15 metalloprotease in human colorectal cancer. <i>Cancer Research</i> , 2009 , 69, 4926-34	10.1	66
183	The ADAMTS12 metalloprotease gene is epigenetically silenced in tumor cells and transcriptionally activated in the stroma during progression of colon cancer. <i>Journal of Cell Science</i> , 2009 , 122, 2906-13	5.3	67
182	Matriptase-2 mutations in iron-refractory iron deficiency anemia patients provide new insights into protease activation mechanisms. <i>Human Molecular Genetics</i> , 2009 , 18, 3673-83	5.6	54
181	Metalloproteinase MT5-MMP is an essential modulator of neuro-immune interactions in thermal pain stimulation. <i>Proceedings of the National Academy of Sciences of the United States of America</i> , 2009 , 106, 16451-6	11.5	56
180	Accelerated ageing: from mechanism to therapy through animal models. <i>Transgenic Research</i> , 2009 , 18, 7-15	3.3	37
179	Proteolytic systems: constructing degradomes. <i>Methods in Molecular Biology</i> , 2009 , 539, 33-47	1.4	14
178	Matriptase-2 (TMPRSS6): a proteolytic regulator of iron homeostasis. <i>Haematologica</i> , 2009 , 94, 840-9	6.6	94
177	Genome analysis of the platypus reveals unique signatures of evolution. <i>Nature</i> , 2008 , 453, 175-83	50.4	545
176	Collagenase-2 (matrix metalloproteinase-8) plays a protective role in tongue cancer. <i>British Journal of Cancer</i> , 2008 , 98, 766-75	8.7	97
175	Combined treatment with statins and aminobisphosphonates extends longevity in a mouse model of human premature aging. <i>Nature Medicine</i> , 2008 , 14, 767-72	50.5	300
174	Microcephalia with mandibular and dental dysplasia in adult Zmpste24-deficient mice. <i>Journal of Anatomy</i> , 2008 , 213, 509-19	2.9	12
173	Loss of genes implicated in gastric function during platypus evolution. <i>Genome Biology</i> , 2008 , 9, R81	18.3	40
172	Proteases: multifunctional enzymes in life and disease. <i>Journal of Biological Chemistry</i> , 2008 , 283, 3043.	3 <i>-</i> 7 .4	537
171	Nuclear envelope defects cause stem cell dysfunction in premature-aging mice. <i>Journal of Cell Biology</i> , 2008 , 181, 27-35	7.3	145
170	Autophagy and aging: new lessons from progeroid mice. <i>Autophagy</i> , 2008 , 4, 807-9	10.2	26
169	Guidelines for the use and interpretation of assays for monitoring autophagy in higher eukaryotes. <i>Autophagy</i> , 2008 , 4, 151-75	10.2	1920
168	Nitric oxide elicits functional MMP-13 protein-tyrosine nitration during wound repair. <i>FASEB Journal</i> , 2008 , 22, 3207-15	0.9	33
167	Matrix metalloproteinase-8 functions as a metastasis suppressor through modulation of tumor cell adhesion and invasion. <i>Cancer Research</i> , 2008 , 68, 2755-63	10.1	144

166	Collagenase-2 deficiency or inhibition impairs experimental autoimmune encephalomyelitis in mice. <i>Journal of Biological Chemistry</i> , 2008 , 283, 9465-74	5.4	55
165	Premature aging in mice activates a systemic metabolic response involving autophagy induction. <i>Human Molecular Genetics</i> , 2008 , 17, 2196-211	5.6	123
164	Membrane-bound serine protease matriptase-2 (Tmprss6) is an essential regulator of iron homeostasis. <i>Blood</i> , 2008 , 112, 2539-45	2.2	234
163	Nuclear envelope defects cause stem cell dysfunction in premature-aging mice. <i>Journal of Experimental Medicine</i> , 2008 , 205, i10-i10	16.6	
162	Protease Genomics and the Cancer Degradome 2008 , 3-15		5
161	Expanding the complexity of the human degradome: polyserases and their tandem serine protease domains. <i>Frontiers in Bioscience - Landmark</i> , 2007 , 12, 4661-9	2.8	11
160	Emerging roles of proteases in tumour suppression. <i>Nature Reviews Cancer</i> , 2007 , 7, 800-8	31.3	646
159	Collagenase-2 (MMP-8) and matrilysin-2 (MMP-26) expression in human wounds of different etiologies. <i>Wound Repair and Regeneration</i> , 2007 , 15, 47-57	3.6	62
158	Human progeroid syndromes, aging and cancer: new genetic and epigenetic insights into old questions. <i>Cellular and Molecular Life Sciences</i> , 2007 , 64, 155-70	10.3	71
157	Tissue-specific autophagy alterations and increased tumorigenesis in mice deficient in Atg4C/autophagin-3. <i>Journal of Biological Chemistry</i> , 2007 , 282, 18573-18583	5.4	335
156	The ADAMTS12 metalloproteinase exhibits anti-tumorigenic properties through modulation of the Ras-dependent ERK signalling pathway. <i>Journal of Cell Science</i> , 2007 , 120, 3544-52	5.3	72
155	Increased inflammation delays wound healing in mice deficient in collagenase-2 (MMP-8). <i>FASEB Journal</i> , 2007 , 21, 2580-91	0.9	205
154	Involvement of specific matrix metalloproteinases during tumor necrosis factor/IFNgamma-based cancer therapy in mice. <i>Molecular Cancer Therapeutics</i> , 2007 , 6, 2563-71	6.1	10
153	LPS responsiveness and neutrophil chemotaxis in vivo require PMN MMP-8 activity. <i>PLoS ONE</i> , 2007 , 2, e312	3.7	157
152	Comparative analysis of cancer genes in the human and chimpanzee genomes. <i>BMC Genomics</i> , 2006 , 7, 15	4.5	67
151	Membrane-type 4 matrix metalloproteinase promotes breast cancer growth and metastases. <i>Cancer Research</i> , 2006 , 66, 5165-72	10.1	54
150	Earlier onset of tumoral angiogenesis in matrix metalloproteinase-19-deficient mice. <i>Cancer Research</i> , 2006 , 66, 5234-41	10.1	57
149	Matrix metalloproteinase-13 is highly expressed in destructive periodontal disease activity. <i>Journal of Periodontology</i> , 2006 , 77, 1863-70	4.6	87

(2005-2006)

148	Identification and characterization of human polyserase-3, a novel protein with tandem serine-protease domains in the same polypeptide chain. <i>BMC Biochemistry</i> , 2006 , 7, 9	4.8	13
147	A functional link between the tumour suppressors ARF and p33ING1. Oncogene, 2006, 25, 5173-9	9.2	36
146	Comparative genomic analysis of human and chimpanzee proteases. <i>Genomics</i> , 2005 , 86, 638-47	4.3	63
145	A genomic view of the complexity of mammalian proteolytic systems. <i>Biochemical Society Transactions</i> , 2005 , 33, 331-4	5.1	104
144	Recombinant CUB-1 domain polypeptide inhibits the cleavage of ULVWF strings by ADAMTS13 under flow conditions. <i>Blood</i> , 2005 , 106, 4139-45	2.2	92
143	Genomic instability in laminopathy-based premature aging. <i>Nature Medicine</i> , 2005 , 11, 780-5	50.5	498
142	Accelerated ageing in mice deficient in Zmpste24 protease is linked to p53 signalling activation. <i>Nature</i> , 2005 , 437, 564-8	50.4	362
141	Initial sequence of the chimpanzee genome and comparison with the human genome. <i>Nature</i> , 2005 , 437, 69-87	50.4	1828
140	Identification and characterization of human archaemetzincin-1 and -2, two novel members of a family of metalloproteases widely distributed in Archaea. <i>Journal of Biological Chemistry</i> , 2005 , 280, 30)3& 7 -75	22
139	Loss of ZMPSTE24 (FACE-1) causes autosomal recessive restrictive dermopathy and accumulation of Lamin A precursors. <i>Human Molecular Genetics</i> , 2005 , 14, 1503-13	5.6	237
138	From immature lamin to premature aging: molecular pathways and therapeutic opportunities. <i>Cell Cycle</i> , 2005 , 4, 1732-5	4.7	30
137	Resistance of collagenase-2 (matrix metalloproteinase-8)-deficient mice to TNF-induced lethal hepatitis. <i>Journal of Immunology</i> , 2005 , 175, 7642-9	5.3	90
136	Identification of human aminopeptidase O, a novel metalloprotease with structural similarity to aminopeptidase B and leukotriene A4 hydrolase. <i>Journal of Biological Chemistry</i> , 2005 , 280, 14310-7	5.4	33
135	Matrix metalloproteinase-8 deficiency promotes granulocytic allergen-induced airway inflammation. <i>Journal of Immunology</i> , 2005 , 175, 2589-97	5-3	128
134	Human polyserase-2, a novel enzyme with three tandem serine protease domains in a single polypeptide chain. <i>Journal of Biological Chemistry</i> , 2005 , 280, 1953-61	5.4	13
133	Carbohydrate- and conformation-dependent cargo capture for ER-exit. <i>Molecular Biology of the Cell</i> , 2005 , 16, 1258-67	3.5	58
132	Dysregulation of TGF-beta1 receptor activation leads to abnormal lung development and emphysema-like phenotype in core fucose-deficient mice. <i>Proceedings of the National Academy of Sciences of the United States of America</i> , 2005 , 102, 15791-6	11.5	341
131	Defective prelamin A processing resulting from LMNA or ZMPSTE24 mutations as the cause of restrictive dermopathy. <i>Archives of Dermatology</i> , 2005 , 141, 1473-4; author reply 1474		8

130	MMP13 mutation causes spondyloepimetaphyseal dysplasia, Missouri type (SEMD(MO). <i>Journal of Clinical Investigation</i> , 2005 , 115, 2832-42	15.9	74
129	Diet-induced obesity and reduced skin cancer susceptibility in matrix metalloproteinase 19-deficient mice. <i>Molecular and Cellular Biology</i> , 2004 , 24, 5304-13	4.8	84
128	Critical roles for collagenase-3 (Mmp13) in development of growth plate cartilage and in endochondral ossification. <i>Proceedings of the National Academy of Sciences of the United States of America</i> , 2004 , 101, 17192-7	11.5	439
127	Protease degradomics: mass spectrometry discovery of protease substrates and the CLIP-CHIP, a dedicated DNA microarray of all human proteases and inhibitors. <i>Biological Chemistry</i> , 2004 , 385, 493-5	0 4 ·5	101
126	Identification and characterization of human and mouse ovastacin: a novel metalloproteinase similar to hatching enzymes from arthropods, birds, amphibians, and fish. <i>Journal of Biological Chemistry</i> , 2004 , 279, 26627-34	5.4	70
125	Membrane-bound matrix metalloproteinase-8 on activated polymorphonuclear cells is a potent, tissue inhibitor of metalloproteinase-resistant collagenase and serpinase. <i>Journal of Immunology</i> , 2004 , 172, 7791-803	5.3	206
124	A genomic analysis of rat proteases and protease inhibitors. <i>Genome Research</i> , 2004 , 14, 609-22	9.7	142
123	Tumor cell traffic through the extracellular matrix is controlled by the membrane-anchored collagenase MT1-MMP. <i>Journal of Cell Biology</i> , 2004 , 167, 769-81	7-3	482
122	Genome sequence of the Brown Norway rat yields insights into mammalian evolution. <i>Nature</i> , 2004 , 428, 493-521	50.4	1689
121	Differential expression of three matrix metalloproteinases, MMP-19, MMP-26, and MMP-28, in normal and inflamed intestine and colon cancer. <i>Digestive Diseases and Sciences</i> , 2004 , 49, 653-61	4	58
120	Use of a multiple-enzyme/multiple-reagent assay system to quantify activity levels in samples containing mixtures of matrix metalloproteinases. <i>Biochemistry</i> , 2004 , 43, 2987-95	3.2	21
119	Cloning and enzymatic analysis of 22 novel human ubiquitin-specific proteases. <i>Biochemical and Biophysical Research Communications</i> , 2004 , 314, 54-62	3.4	172
118	Matrix metalloproteinases in cancer: from new functions to improved inhibition strategies. <i>International Journal of Developmental Biology</i> , 2004 , 48, 411-24	1.9	432
117	Membrane type-matrix metalloproteinases (MT-MMP). <i>Current Topics in Developmental Biology</i> , 2003 , 54, 1-74	5.3	146
116	AtFACE-2, a functional prenylated protein protease from Arabidopsis thaliana related to mammalian Ras-converting enzymes. <i>Journal of Biological Chemistry</i> , 2003 , 278, 42091-7	5.4	42
115	Human autophagins, a family of cysteine proteinases potentially implicated in cell degradation by autophagy. <i>Journal of Biological Chemistry</i> , 2003 , 278, 3671-8	5.4	172
114	Identification and characterization of ADAMTS-20 defines a novel subfamily of metalloproteinases-disintegrins with multiple thrombospondin-1 repeats and a unique GON domain. <i>Journal of Biological Chemistry</i> , 2003 , 278, 13382-9	5.4	73
113	Identification, functional expression and enzymic analysis of two distinct CaaX proteases from Caenorhabditis elegans. <i>Biochemical Journal</i> , 2003 , 370, 1047-54	3.8	25

(2000-2003)

112	Matrix metalloproteinase-19 expression in dermal wounds and by fibroblasts in culture. <i>Journal of Investigative Dermatology</i> , 2003 , 121, 997-1004	4.3	40
111	Loss of collagenase-2 confers increased skin tumor susceptibility to male mice. <i>Nature Genetics</i> , 2003 , 35, 252-7	36.3	501
110	Human and mouse proteases: a comparative genomic approach. <i>Nature Reviews Genetics</i> , 2003 , 4, 544-5	58 0.1	725
109	Polyserase-I, a human polyprotease with the ability to generate independent serine protease domains from a single translation product. <i>Proceedings of the National Academy of Sciences of the United States of America</i> , 2003 , 100, 9185-90	11.5	51
108	Matrix metalloproteinases and tumor progression. <i>Advances in Experimental Medicine and Biology</i> , 2003 , 532, 91-107	3.6	118
107	Nitric oxide regulates matrix metalloprotease-13 expression and activity in endothelium. <i>Kidney International</i> , 2002 , 61, 804-8	9.9	40
106	Defective prelamin A processing and muscular and adipocyte alterations in Zmpste24 metalloproteinase-deficient mice. <i>Nature Genetics</i> , 2002 , 31, 94-9	36.3	426
105	Strategies for MMP inhibition in cancer: innovations for the post-trial era. <i>Nature Reviews Cancer</i> , 2002 , 2, 657-72	31.3	1089
104	Protease degradomics: a new challenge for proteomics. <i>Nature Reviews Molecular Cell Biology</i> , 2002 , 3, 509-19	48.7	608
103	Structural and enzymatic characterization of Drosophila Dm2-MMP, a membrane-bound matrix metalloproteinase with tissue-specific expression. <i>Journal of Biological Chemistry</i> , 2002 , 277, 23321-9	5.4	80
102	Matriptase-2, a membrane-bound mosaic serine proteinase predominantly expressed in human liver and showing degrading activity against extracellular matrix proteins. <i>Journal of Biological Chemistry</i> , 2002 , 277, 37637-46	5.4	131
101	Activation of the mitogen activated protein kinase extracellular signal-regulated kinase 1 and 2 by the nitric oxide-cGMP-cGMP-dependent protein kinase axis regulates the expression of matrix metalloproteinase 13 in vascular endothelial cells. <i>Molecular Pharmacology</i> , 2002 , 62, 927-35	4.3	78
100	Cloning, expression analysis, and structural characterization of seven novel human ADAMTSs, a family of metalloproteinases with disintegrin and thrombospondin-1 domains. <i>Gene</i> , 2002 , 283, 49-62	3.8	226
99	The urokinase plasminogen activator receptor-associated protein/endo180 is coexpressed with its interaction partners urokinase plasminogen activator receptor and matrix metalloprotease-13 during osteogenesis. <i>Laboratory Investigation</i> , 2001 , 81, 1403-14	5.9	58
98	A regulatory cascade involving retinoic acid, Cbfa1, and matrix metalloproteinases is coupled to the development of a process of perichondrial invasion and osteogenic differentiation during bone formation. <i>Journal of Cell Biology</i> , 2001 , 155, 1333-44	7.3	95
97	Strategies for cloning new MMPs and TIMPs. <i>Methods in Molecular Biology</i> , 2001 , 151, 25-44	1.4	1
96	Inhibition of collagenase-3 (MMP-13) expression in transformed human keratinocytes by interferon-gamma is associated with activation of extracellular signal-regulated kinase-1,2 and STAT1. <i>Oncogene</i> , 2000 , 19, 248-57	9.2	52
95	Biochemical characterization of the catalytic domain of human matrix metalloproteinase 19. Evidence for a role as a potent basement membrane degrading enzyme. <i>Journal of Biological Chemistry</i> , 2000 , 275, 14809-16	5.4	103

94	Membrane type 4 matrix metalloproteinase (MMP17) has tumor necrosis factor-alpha convertase activity but does not activate pro-MMP2. <i>Journal of Biological Chemistry</i> , 2000 , 275, 14046-55	5.4	161
93	An overview of collagenase-3 expression in malignant tumors and analysis of its potential value as a target in antitumor therapies. <i>Clinica Chimica Acta</i> , 2000 , 291, 137-55	6.2	73
92	Matrix metalloproteinases as emerging targets for cancer therapy 2000 , 2, 282-293		3
91	Collagenase-3 binds to a specific receptor and requires the low density lipoprotein receptor-related protein for internalization. <i>Journal of Biological Chemistry</i> , 1999 , 274, 30087-93	5.4	97
90	Cloning and characterization of human MMP-23, a new matrix metalloproteinase predominantly expressed in reproductive tissues and lacking conserved domains in other family members. <i>Journal of Biological Chemistry</i> , 1999 , 274, 4570-6	5.4	159
89	Evaluation of some newer matrix metalloproteinases. <i>Annals of the New York Academy of Sciences</i> , 1999 , 878, 25-39	6.5	80
88	Collagenase-2 and -3 are inhibited by doxycycline in the chronically inflamed lung in bronchiectasis. <i>Annals of the New York Academy of Sciences</i> , 1999 , 878, 683-5	6.5	5
87	Expression and regulation of collagenase-3 (MMP-13) in human malignant tumors. <i>Apmis</i> , 1999 , 107, 45-53	3.4	73
86	Molecular cloning and structural and functional characterization of human cathepsin F, a new cysteine proteinase of the papain family with a long propeptide domain. <i>Journal of Biological Chemistry</i> , 1999 , 274, 13800-9	5.4	66
85	Collagenase-3 (MMP-13) and its activators in rheumatoid arthritis: localization in the pannus-hard tissue junction and inhibition by alendronate. <i>Matrix Biology</i> , 1999 , 18, 401-12	11.4	67
84	Induction of collagenase-3 (MMP-13) expression in human skin fibroblasts by three-dimensional collagen is mediated by p38 mitogen-activated protein kinase. <i>Journal of Biological Chemistry</i> , 1999 , 274, 2446-55	5.4	222
83	Identification and chromosomal location of two human genes encoding enzymes potentially involved in proteolytic maturation of farnesylated proteins. <i>Genomics</i> , 1999 , 58, 270-80	4.3	50
82	Collagenase-3 expression is associated with advanced local invasion in human squamous cell carcinomas of the larynx. <i>Journal of Pathology</i> , 1998 , 186, 144-50	9.4	75
81	Secretion of recombinant pro- and mature fungal alpha-sarcin ribotoxin by the methylotrophic yeast Pichia pastoris: the Lys-Arg motif is required for maturation. <i>Protein Expression and Purification</i> , 1998 , 12, 315-22	2	32
80	Genomic structure and chromosomal localization of the human cathepsin O gene (CTSO). <i>Genomics</i> , 1998 , 53, 231-4	4.3	19
79	Structural characterization and chromosomal localization of the gene encoding human biphenyl hydrolase-related protein (BPHL). <i>Genomics</i> , 1998 , 51, 459-62	4.3	7
78	Localization of the human membrane type 4-matrix metalloproteinase gene (MMP17) to chromosome 12q24. <i>Genomics</i> , 1998 , 54, 578-9	4.3	7
77	Collagenase-3 (MMP-13) expression in chondrosarcoma cells and its regulation by basic fibroblast growth factor. <i>American Journal of Pathology</i> , 1998 , 153, 91-101	5.8	110

76	Differential effects of transforming growth factor-beta on the expression of collagenase-1 and collagenase-3 in human fibroblasts. <i>Journal of Biological Chemistry</i> , 1998 , 273, 9769-77	5.4	163
75	Cathepsin Z, a novel human cysteine proteinase with a short propeptide domain and a unique chromosomal location. <i>Journal of Biological Chemistry</i> , 1998 , 273, 16816-23	5.4	106
74	Collagenase 2 (MMP-8) expression in murine tissue-remodeling processes. Analysis of its potential role in postpartum involution of the uterus. <i>Journal of Biological Chemistry</i> , 1998 , 273, 23959-68	5.4	110
73	Induction of matrix metalloproteinase activation cascades based on membrane-type 1 matrix metalloproteinase: associated activation of gelatinase A, gelatinase B and collagenase 3. <i>Biochemical Journal</i> , 1998 , 331 (Pt 2), 453-8	3.8	156
72	High levels of expression of collagenase-3 (MMP-13) in pathological conditions associated with a foreign-body reaction. <i>Journal of Bone and Joint Surgery: British Volume</i> , 1998 , 80, 701-10		28
71	Gene characterization, promoter analysis, and chromosomal localization of human bleomycin hydrolase. <i>Journal of Biological Chemistry</i> , 1997 , 272, 33298-304	5.4	23
70	The role of the C-terminal domain of human collagenase-3 (MMP-13) in the activation of procollagenase-3, substrate specificity, and tissue inhibitor of metalloproteinase interaction. <i>Journal of Biological Chemistry</i> , 1997 , 272, 7608-16	5.4	263
69	Identification and characterization of a novel human matrix metalloproteinase with unique structural characteristics, chromosomal location, and tissue distribution. <i>Journal of Biological Chemistry</i> , 1997 , 272, 4281-6	5.4	182
68	The PLEES proteins: a family of structurally related enzymes widely distributed from bacteria to humans. <i>Biochemical Journal</i> , 1997 , 322 (Pt 3), 947-9	3.8	15
67	Identification and structural and functional characterization of human enamelysin (MMP-20). <i>Biochemistry</i> , 1997 , 36, 15101-8	3.2	183
66	Prostate-specific membrane antigen in breast carcinoma. <i>Lancet, The</i> , 1997 , 349, 1601	40	13
65	Structural analysis and promoter characterization of the human collagenase-3 gene (MMP13). <i>Genomics</i> , 1997 , 40, 222-33	4.3	171
64	Biochemical characterization and crystalization of human Zn-alpha2-glycoprotein, a soluble class I major histocompatibility complex homolog. <i>Proceedings of the National Academy of Sciences of the United States of America</i> , 1997 , 94, 4626-30	11.5	47
63	Wheat flour peroxidase is a prominent allergen associated with baker® asthma. <i>Clinical and Experimental Allergy</i> , 1997 , 27, 1130-1137	4.1	70
62	Activation of progelatinase B (proMMP-9) by active collagenase-3 (MMP-13). <i>FEBS Journal</i> , 1997 , 248, 369-73		132
61	Characterization of the African swine fever virus structural protein p14.5: a DNA binding protein. <i>Virology</i> , 1997 , 229, 201-11	3.6	20
60	Matrix metalloproteinase 13 (collagenase 3) in human rheumatoid synovium. <i>Arthritis and Rheumatism</i> , 1997 , 40, 1391-9		187
59	Functional analysis of a p21WAF1,CIP1,SDI1 mutant (Arg94> Trp) identified in a human breast carcinoma. Evidence that the mutation impairs the ability of p21 to inhibit cyclin-dependent kinases. Journal of Biological Chemistry. 1996, 271, 15782-6	5.4	45

58	Alternative splicing gives rise to two novel long isoforms of Zn-alpha 2-glycoprotein, a member of the immunoglobulin superfamily. <i>Gene</i> , 1996 , 169, 233-6	3.8	7
57	Fine physical mapping of the human matrix metalloproteinase genes clustered on chromosome 11q22.3. <i>Genomics</i> , 1996 , 37, 266-8	4.3	46
56	The helping hand of collagenase-3 (MMP-13): 2.7 A crystal structure of its C-terminal haemopexin-like domain. <i>Journal of Molecular Biology</i> , 1996 , 264, 556-66	6.5	127
55	Mutational analysis of the human cyclin-dependent kinase inhibitor p27kip1 in primary breast carcinomas. <i>Human Genetics</i> , 1996 , 97, 91-4	6.3	62
54	Biochemical characterization of human collagenase-3. <i>Journal of Biological Chemistry</i> , 1996 , 271, 1544-5	505.4	691
53	Prostate specific antigena new constituent of breast cyst fluid. <i>Breast Cancer Research and Treatment</i> , 1996 , 38, 259-64	4.4	38
52	Cellular mechanisms for human procollagenase-3 (MMP-13) activation. Evidence that MT1-MMP (MMP-14) and gelatinase a (MMP-2) are able to generate active enzyme. <i>Journal of Biological Chemistry</i> , 1996 , 271, 17124-31	5.4	553
51	Retinoic acid-induced expression of apolipoprotein D and concomitant growth arrest in human breast cancer cells are mediated through a retinoic acid receptor RARalpha-dependent signaling pathway. <i>Journal of Biological Chemistry</i> , 1996 , 271, 32105-11	5.4	24
50	Hormonal regulation of the human pepsinogen C gene in breast cancer cells. Identification of a cis-acting element mediating its induction by androgens, glucocorticoids, and progesterone. <i>Journal of Biological Chemistry</i> , 1996 , 271, 15175-81	5.4	41
49	Mapping and sequence of the gene encoding protein p17, a major African swine fever virus structural protein. <i>Virology</i> , 1995 , 206, 1140-4	3.6	18
48	Thiol-disulfide exchange of ribonuclease inhibitor bound to ribonuclease A. Evidence of active inhibitor-bound ribonuclease. <i>Journal of Biological Chemistry</i> , 1995 , 270, 28570-8	5.4	15
47	Cloning and expression analysis of a novel human serine hydrolase with sequence similarity to prokaryotic enzymes involved in the degradation of aromatic compounds. <i>Journal of Biological Chemistry</i> , 1995 , 270, 12926-32	5.4	27
46	The human collagenase-3 (CLG3) gene is located on chromosome 11q22.3 clustered to other members of the matrix metalloproteinase gene family. <i>Genomics</i> , 1995 , 26, 615-8	4.3	46
45	A major bakerß asthma allergen from rye flour is considerably more active than its barley counterpart. <i>FEBS Letters</i> , 1995 , 364, 36-40	3.8	34
44	Arachidonic acid binds to apolipoprotein D: implications for the protein function. <i>FEBS Letters</i> , 1995 , 366, 53-6	3.8	100
43	Rye chromosome arm 3RS encodes a homodimeric inhibitor of insect ﷺ <i>Theoretical and Applied Genetics</i> , 1994 , 89, 60-3	6	14
42	Glucocorticoids and androgens up-regulate the Zn-alpha 2-glycoprotein messenger RNA in human breast cancer cells. <i>Breast Cancer Research and Treatment</i> , 1994 , 29, 247-58	4.4	33
41	Rye inhibitors of animal alpha-amylases show different specificities, aggregative properties and IgE-binding capacities than their homologues from wheat and barley. <i>FEBS Journal</i> , 1994 , 224, 525-31		24

40	Isolation and characterization of an olive allergen-like protein from lilac pollen. Sequence analysis of three cDNA encoding protein isoforms. <i>FEBS Journal</i> , 1994 , 221, 187-93		35
39	Cloning and expression analysis of the cDNA encoding rat Zn-alpha 2-glycoprotein. <i>Gene</i> , 1994 , 145, 24	5 -9 8	7
38	Overproduction and purification of biologically active native fungal alpha-sarcin in Escherichia coli. <i>Gene</i> , 1994 , 142, 147-51	3.8	63
37	Barley Tetrameric Inhibitor of Insect Emylases. Characterization of an Allelic Variant of the BTAI-CMb Subunit. <i>Journal of Cereal Science</i> , 1993 , 17, 107-113	3.8	7
36	Human Zn-alpha 2-glycoprotein: complete genomic sequence, identification of a related pseudogene and relationship to class I major histocompatibility complex genes. <i>Genomics</i> , 1993 , 18, 57	5- 1 8- 3	25
35	High-level expression in Escherichia coli of the gene coding for the major structural protein (p72) of African swine fever virus. <i>Gene</i> , 1993 , 123, 259-62	3.8	9
34	Zn-alpha 2-glycoprotein levels in breast cancer cytosols and correlation with clinical, histological and biochemical parameters. <i>European Journal of Cancer</i> , 1993 , 29A, 1256-60	7.5	77
33	Nucleotide sequence of a nucleoside triphosphate phosphohydrolase gene from African swine fever virus. <i>Virus Research</i> , 1993 , 30, 63-72	6.4	7
32	Genetic variants of the trypsin inhibitor from barley endosperm show different inhibitory activities. <i>Plant Science</i> , 1993 , 89, 23-29	5.3	14
31	A sequence variation in the human cystatin D gene resulting in an amino acid (Cys/Arg) polymorphism at the protein level. <i>Human Genetics</i> , 1993 , 90, 668-9	6.3	14
30	Inhibitory effects of human cystatin C on plum pox potyvirus proteases. <i>Plant Molecular Biology</i> , 1993 , 22, 697-701	4.6	18
29	The amino acid sequence of Ole e I, the major allergen from olive tree (Olea europaea) pollen. <i>FEBS Journal</i> , 1993 , 216, 863-9		107
28	Structure and expression in E. coli of the gene coding for protein p10 of African swine fever virus. <i>Archives of Virology</i> , 1993 , 130, 93-107	2.6	20
27	Role of the carboxy terminal region of beta tubulin on microtubule dynamics through its interaction with the GTP phosphate binding region. <i>FEBS Letters</i> , 1993 , 325, 173-6	3.8	11
26	Quantification and molecular analysis of cathepsin D in breast cyst fluids. <i>European Journal of Cancer</i> , 1992 , 28A, 828-32	7.5	9
25	A gene homologous to topoisomerase II in African swine fever virus. <i>Virology</i> , 1992 , 188, 938-47	3.6	44
24	Factors affecting protein composition of breast secretions from nonlactating women. <i>Breast Cancer Research and Treatment</i> , 1992 , 23, 251-8	4.4	16
23	A Streptomyces glaucescens endodeoxyribonuclease which shows a strong preference for CC dinucleotide. <i>FEBS Journal</i> , 1992 , 205, 695-9		3

22	Structural analysis of the small chain of the 2S albumin, napin nIII, from rapeseed. Chemical and spectroscopic evidence of an intramolecular bond formation. <i>BBA - Proteins and Proteomics</i> , 1991 , 1078, 265-72		18
21	Wheat Inhibitors of Heterologous alpha-Amylases: Characterization of Major Components from the Monomeric Class. <i>Plant Physiology</i> , 1991 , 96, 768-74	6.6	23
20	Tau-related protein present in paired helical filaments has a decreased tubulin binding capacity as compared with microtubule-associated protein tau. <i>Biochimica Et Biophysica Acta - Molecular Basis of Disease</i> , 1991 , 1096, 197-204	6.9	19
19	Human Zn-alpha 2-glycoprotein cDNA cloning and expression analysis in benign and malignant breast tissues. <i>FEBS Letters</i> , 1991 , 290, 247-9	3.8	35
18	A new distinct group of 2 S albumins from rapeseed. Amino acid sequence of two low molecular weight napins. <i>FEBS Letters</i> , 1991 , 295, 207-10	3.8	35
17	GCDFP-70 protein in cyst fluid identified as albumin and used to classify cysts in women with breast gross cystic disease. <i>Clinical Chemistry</i> , 1991 , 37, 547-551	5.5	11
16	Sequence and evolutionary relationships of African swine fever virus thymidine kinase. <i>Virology</i> , 1990 , 178, 301-4	3.6	37
15	Mapping and sequence of the gene coding for protein p72, the major capsid protein of African swine fever virus. <i>Virology</i> , 1990 , 175, 477-84	3.6	59
14	Determination of polyprotein processing sites by amino terminal sequencing of nonstructural proteins encoded by plum pox potyvirus. <i>Virus Research</i> , 1990 , 15, 97-106	6.4	21
13	Beta-turns as structural motifs for the proteolytic processing of seed proteins. <i>FEBS Letters</i> , 1990 , 263, 209-12	3.8	21
12	Location and characterization of the three carbohydrate prosthetic groups of human protein HC. <i>FEBS Letters</i> , 1990 , 266, 167-70	3.8	27
11	Isolation of three allergenic fractions of the major allergen from Olea europea pollen and N-terminal amino acid sequence. <i>Biochemical and Biophysical Research Communications</i> , 1990 , 172, 523-6	8 ^{3.4}	56
10	Sequence of the coding regions from the 3.0 kb and 3.9 kb mRNA. Subgenomic species from a virulent isolate of transmissible gastroenteritis virus. <i>Archives of Virology</i> , 1989 , 105, 165-78	2.6	20
9	A barley flour inhibitor of insect alpha-amylase is a major allergen associated with bakerß asthma disease. <i>FEBS Letters</i> , 1989 , 248, 119-22	3.8	52
8	Mapping and sequence of the gene encoding protein p37, a major structural protein of African swine fever virus. <i>Virus Genes</i> , 1988 , 1, 291-303	2.3	16
7	Complete amino acid sequence of the Aspergillus cytotoxin mitogillin. <i>Biochemistry</i> , 1985 , 24, 861-7	3.2	61
6	The primary structure of the cytotoxin restrictocin. FEBS Journal, 1984, 143, 621-34		58
5	Conformational studies of the human complex-forming glycoprotein, heterogeneous in charge: protein HC. <i>Biochemistry</i> , 1984 , 23, 1234-8	3.2	20

LIST OF PUBLICATIONS

4	The complete amino acid sequence of human complex-forming glycoprotein heterogeneous in charge (protein HC) from one individual. <i>Archives of Biochemistry and Biophysics</i> , 1984 , 228, 544-54	4.1	48
3	Neutral microprotein, a novel human plasma and urinary protein associated with a yellow-brown chromophore. Isolation from protein HC preparations and partial characterization. <i>Biochemical and Biophysical Research Communications</i> , 1983 , 117, 202-9	3.4	2
2	Amino acid sequence homologies in alfa-sarcin, restrictocin and mitogillin. <i>Biochemical and Biophysical Research Communications</i> , 1982 , 108, 315-21	3.4	22
1	The proliferative history shapes the DNA methylome of B-cell tumors and predicts clinical outcome		2