

Supplementary material

Supplementary Table 1. Journals in which paper retracted for originating from paper mills, according to their Journal Citation Reports quarter and whether they are Open Access or not.

Journal	Journal Quartile	Open Access	Number of retracted paper mill papers published in the journal	% of retracted paper mill papers published in the journal with respect with all retracted paper mill papers
European Review for Medical and Pharmacological Sciences	2	Si	166	14.04
Journal of Cellular Biochemistry	2	No	134	11.34
International Journal of Electrical Electrical Engineering & Education	1	No	122	10.32
RSC Advances	2	Si	68	5.75
Biomedicine & Pharmacotherapy	1	Si	50	4.23
Cellular Physiology and Biochemistry	1	Si	49	4.15
Molecular Medicine Reports	3	Si	42	3.55
Artificial Cells, Nanomedicine, and Biotechnology	1	Si	40	3.38
Oncology Reports	3	Si	40	3.38
Journal of Cellular Physiology	1	No	37	3.13
Experimental and Therapeutic Medicine	3	Si	34	2.88
OncoTargets and Therapy	2	Si	30	2.54
Bioscience Reports	3	Si	24	2.03
Cancer Management and Research	3	Si	22	1.86
The Anatomical Record: Advances in Integrative Anatomy and Evolutionary Biology	3	No	21	1.78
Oncology Letters	4	Si	19	1.61
Cancer Biotherapy & Radiopharmaceutics	3	No	18	1.52
International Journal of Immunopathology and Pharmacology	2	Si	16	1.35
PLoS One	2	Si	16	1.35
Cell Cycle	2	No	15	1.27
Molecular Therapy - Nucleic Acids	1	Si	13	1.10
Experimental and Molecular Pathology	2	No	13	1.10

Oncology Research Featuring Preclinical and Clinical Cancer Therapeutics	No IF	Si	12	1.02
Technology in Cancer Research & Treatment	3	Si	12	1.02
JBUON: Journal of Balkan Union of Oncology	No IF	Si	10	0.85
American Journal of Cancer Research	1	Si	9	0.76
International Journal of Oncology	2	Si	9	0.76
Life Sciences	1	No	9	0.76
Brazilian Journal of Medical and Biological Research	2	Si	8	0.68
Frontiers in Oncology	2	Si	8	0.68
International Journal of Molecular Medicine	2	Si	8	0.68
Naunyn-Schmiedeberg's Archives of Pharmacology	3	Si	8	0.68
Pharmacological Reports	3	Si	6	0.51
Tumor Biology	No IF	Si	6	0.51
Cancer Biomarkers	2	No	5	0.42
International Immunopharmacology	2	No	5	0.42
BioMed Research International	2	Si	3	0.25
FEBS letters	3	Si	3	0.25
Journal of Experimental & Clinical Cancer Research	1	Si	3	0.25
Journal of International Medical Research	4	Si	3	0.25
Cancer Gene Therapy	1	No	2	0.17
Chemico-Biological Interactions	1	No	2	0.17
DNA and Cell Biology	3	No	2	0.17
BMC Cancer	2	Si	2	0.17
CNS Neuroscience & Therapeutics	1	Si	2	0.17
Journal of Cellular and Molecular Medicine	2	Si	2	0.17
Molecular Immunology	2	No	2	0.17
Archives of Biochemistry and Biophysics	2	No	1	0.08
Biochemical and Biophysical Research Communications	2	No	1	0.08
Biochemistry and Cell Biology: Biochimie Et Biologie Cellulaire	3	No	1	0.08
Biochimica et Biophysica Acta (BBA) - General Subjects	3	No	1	0.08
Biofactors	1	No	1	0.08

Cell Biochemistry and Biophysics	3	No	1	0.08
Cell Biochemistry and Function	3	No	1	0.08
Cell Stress and Chaperones	3	No	1	0.08
Cellular and Molecular Neurobiology	2	No	1	0.08
Cluster Computing	2	No	1	0.08
Cytogenetic and Genome Research	4	No	1	0.08
European Journal of Pharmacology	2	No	1	0.08
Experimental Cell Research	3	No	1	0.08
Food & Function	1	No	1	0.08
Gene	2	No	1	0.08
Gene Therapy	1	No	1	0.08
Human Gene Therapy	1	No	1	0.08
International Journal of Clinical and Experimental Pathology	No IF	Si	1	0.08
Journal of Cardiovascular Pharmacology	3	No	1	0.08
ACS Omega	2	Si	1	0.08
American Journal of Physiology - Cell Physiology	2	Si	1	0.08
American Journal of Translational Research	2	Si	1	0.08
BMC Complementary Medicine and Therapies	No IF	Si	1	0.08
BMC Medical Genetics	3	Si	1	0.08
BMC Molecular and Cell Biology	4	Si	1	0.08
Cancer Medicine	2	Si	1	0.08
Microbial Pathogenesis	2	No	1	0.08
Cancer Science	1	Si	1	0.08
Cell Death & Disease	1	Si	1	0.08
FEBS open bio	3	Si	1	0.08
Frontiers in Endocrinology	1	Si	1	0.08
Frontiers in Pharmacology	1	Si	1	0.08
Frontiers in Physiology	1	Si	1	0.08
Neuroscience Letters	3	No	1	0.08
Human Cell	3	Si	1	0.08
Journal of Clinical Laboratory Analysis	3	Si	1	0.08
Journal of Diabetes Research	2	Si	1	0.08
Journal of Materials Science: Materials in Electronics	2	Si	1	0.08
Journal of Molecular Neuroscience	3	Si	1	0.08

Kidney and Blood Pressure Research	3	Si	1	0.08
Molecular Medicine	1	Si	1	0.08
Neurobiology of Disease	1	Si	1	0.08
Neuropsychiatric Disease and Treatment	3	Si	1	0.08
Open Biology	1	Si	1	0.08
Pathology & Oncology Research	2	Si	1	0.08
RSC Medicinal Chemistry	4	No	1	0.08
Pharmacology	3	Si	1	0.08
Sustainable Energy Technologies and Assessments	2	No	1	0.08
RNA Biology	2	Si	1	0.08
The International Journal of Biochemistry	2	No	1	0.08
Thinking Skills and Creativity	2	No	1	0.08
Risk Management and Healthcare Policy	2	Si	1	0.08

IF: Impact Factor.

Note: Hybrid and transformative journals were categorized as non-Open Access. Journals belonging to Spandidos Publications were categorized as Open Access journals since they do not offer a subscription modality.

Supplementary Table 2. Publishing houses of the journals in which papers retracted for originating from paper mills were published

Publishing house	Number of papers retracted for originating from paper mills	% of papers retracted for originating from paper mills
Wiley	205	17.34
Verduci Editore	166	14.04
SAGE Publications	153	12.94
Spandidos	152	12.86
Elsevier	93	7.87
Royal Society of Chemistry (RSC)	70	5.92
Taylor and Francis	56	4.74
Taylor and Francis - Dove Press	54	4.57
Cellular Physiol Biochem Press	49	4.15
Portland Press	24	2.03
Mary Ann Liebert	21	1.78
Springer	21	1.78
PLoS	16	1.35
Cell Press	13	1.10
Cognizant Communication Corporation	12	1.02
Frontiers	12	1.02
IOS Press	11	0.93
e-Century Publishing Corporation	11	0.93
BAKIS Productions LTD	10	0.85
Associação Brasileira de Divulgação Científica	8	0.68
Springer - Biomed Central (BMC)	8	0.68
Hindawi	4	0.34
Springer - Nature Publishing Group	4	0.34
Karger	3	0.25
American Chemical Society (ACS)	1	0.08
American Physiological Society	1	0.08
Canadian Science Publishing	1	0.08
MDPI	1	0.08
Royal Society Publishing	1	0.08
Wolters Kluwer - Lippincott Williams & Wilkins	1	0.08