

Supplementary data

Supplementary Figure 1. The publication trends and prediction curve of global and countries which had the most publications of meibomian gland dysfunction since 2000. **(A)** Global. **(B)** China. **(C)** USA. **(D)** Japan.

Supplementary Figure 2. A network visualization map for country collaboration. This map demonstrates the tight co-operation in the field of meibomian gland dysfunction between many nations and areas.

Supplementary Figure 3. Top 48 keywords with the strongest citation bursts.

Supplementary Table 1: Top 20 most productive countries for MGD research

Country	Documents	Citations	Average Citations	Percentage of articles they published	Percentage of citations
USA	426	21841	51.27	0.294198895	0.504108388
China	271	5646	20.83	0.187154696	0.130314361
Japan	161	12295	76.37	0.111187845	0.283778793
south Korea	116	5493	47.35	0.080110497	0.126782994
Germany	113	6414	56.76	0.078038674	0.148040438
Australia	82	6594	80.41	0.056629834	0.152194987
England	80	8427	105.34	0.055248619	0.194502147
Turkey	73	1549	21.22	0.050414365	0.035752204
Italy	67	3735	55.75	0.046270718	0.086206897
Spain	58	3565	61.47	0.040055249	0.082283156

France	54	3383	62.65	0.037292818	0.078082445
Canada	47	5073	107.94	0.032458564	0.117089046
India	38	569	14.97	0.026243094	0.013132992
New Zealand	37	3973	107.38	0.025552486	0.091700134
Singapore	37	1883	50.89	0.025552486	0.043461201
Iran	22	277	12.59	0.01519337	0.00639339
Norway	19	154	8.11	0.013121547	0.003554448
Poland	19	227	11.95	0.013121547	0.005239348
Wales	18	1397	77.61	0.012430939	0.032243918
Thailand	17	1338	78.71	0.011740331	0.030882149

*the ratio of the number of publications from a country to the total number of included publications about MGD

**the ratio of the number of citations from a country to the total number of citations about MGD

Supplementary Table 2: Top 10 most productive authors for MGD research

Author	Country	Latest affiliation	Publications	Citations	Average Citation/ Publication
Arita Reiko	Japan	Keio University	49	2844	58.04
Tsubota Kazuo	Japan	Keio University	40	3683	92.08
Borchman Douglas	USA	University of Louisville	33	1414	42.85
Tong Louis	Singapore	Singapore National Eye Centre	33	1820	55.15
Craig Jennifer P	New Zealand	The University of Auckland	32	3883	121.34
Seo Kyoung Yul	South Korea	Yonsei University	29	1360	46.90

Foulks Gary N	USA	University of Louisville	25	4818	192.72
Kim Tae-Im	South Korea	Yonsei University College of Medicine	25	407	16.28
Dogru Murat	Japan	Keio University School of Medicine	24	5134	213.92
Nichols Kelly K	USA	University of Alabama at Birmingham	24	3268	136.17

Supplementary Table 3: Top 20 most cited publications for MGD research

Year	Title	Corresponding authors	Type of article	Author	Journal	Citations
2007	The definition and classification of dry eye disease: Report of the Definition and Classification Subcommittee of the international Dry Eye WorkShop (2007)	Lemp, MA	Article; Proceedings Paper	Lemp MA, Baudouin C, Baum J, Dogru M, Foulks G et al.	Ocular Surface	2068
2017	TFOS DEWS II Definition and Classification Report	Craig, JP	Review	Craig JP, Nichols KK, Akpek EK, Caffery B, Dua HS et al.	Ocular Surface	1230
2017	TFOS DEWS II Epidemiology Report	Stapleton, F	Review	Stapleton F, Alves M, Bunya VY, Jalbert I, Lekhanont K et al.	Ocular Surface	935
2017	TFOS DEWS II Diagnostic Methodology report	Wolffsohn, JS	Review	Wolffsohn JS, Arita R, Chalmers R, Djalilian A, Dogru M et al.	Ocular Surface	790
2017	TFOS DEWS II pathophysiology report	Bron, AJ	Review	Bron AJ, de Paiva CS, Chauhan SK, Bonini S, Gabison EE et al.	Ocular Surface	699
2011	The International Workshop on Meibomian Gland Dysfunction: Report of the Subcommittee on Anatomy, Physiology, and Pathophysiology of the Meibomian Gland	Knop, E	Article	Knop E, Knop N, Millar T, Obata H, Sullivan DA.	Investigative Ophthalmology & Visual Science	609

2011	The International Workshop on Meibomian Gland Dysfunction: Executive Summary	Nichols, KK	Article	Nichols KK, Foulks GN, Bron AJ, Glasgow BJ, Dogru M et al.	Investigative Ophthalmology & Visual Science	546
2004	Functional aspects of the tear film lipid layer	Bron, AJ	Review	Bron AJ, Tiffany JM, Gouveia SM, Yokoi N, Voon LW.	Experimental Eye Research	545
2007	Methodologies to diagnose and monitor dry eye disease: Report of the Diagnostic Methodology Subcommittee of the international Dry Eye WorkShop (2007)	Bron, AJ	Article; Proceedings Paper	Bron, A. J.	Ocular Surface	542
2017	TFOS DEWS II Management and Therapy Report	Jones, L	Review	Jones L, Downie LE, Korb D, Benitez-Del-Castillo JM, Dana R et al.	Ocular Surface	532
2011	The International Workshop on Meibomian Gland Dysfunction: Report of the Definition and Classification Subcommittee	Nelson, JD	Article	Nelson JD, Shimazaki J, Benitez-del-Castillo JM, Craig JP, McCulley JP et al.	Ocular Surface	504
2011	The International Workshop on Meibomian Gland Dysfunction: Report of the Diagnosis Subcommittee	Bron, AJ	Article	Tomlinson A, Bron AJ, Korb DR, Amano S, Paugh JR et al.	Investigative Ophthalmology & Visual Science	490
2017	TFOS DEWS II Tear Film Report	Willcox, MDP	Review	Willcox MDP, Argueso P, Georgiev GA, Holopainen JM, Laurie GW et al.	Ocular Surface	397
2011	The International Workshop on Meibomian Gland Dysfunction: Report of the Subcommittee on Management and Treatment of Meibomian Gland Dysfunction	Nichols, KK	Article	Geerling G, Tauber J, Baudouin C, Goto E, Matsumoto Y et al.	Investigative Ophthalmology & Visual Science	370

2011	The International Workshop on Meibomian Gland Dysfunction: Report of the Subcommittee on the Epidemiology of, and Associated Risk Factors for, MGD	Nichols, KK	Article	Schaumberg DA, Nichols JJ, Papas EB, Tong L, Uchino M et al.	Investigative Ophthalmology & Visual Science	352
2004	The role of the lacrimal functional unit in the pathophysiology of dry eye	Stern, ME	Review	Stern ME, Gao JP, Siemasko KF, Beuerman RW, Pflugfelder S.	Experimental Eye Research	345
2012	Distribution of Aqueous-Deficient and Evaporative Dry Eye in a Clinic-Based Patient Cohort: A Retrospective Study	Sullivan, BD	Article	Lemp MA, Crews LA, Bron AJ, Foulks GN, Sullivan BD.	Cornea	307
2017	New Perspectives on Dry Eye Definition and Diagnosis: A Consensus Report by the Asia Dry Eye Society	Tsubota, K	Article	Tsubota K, Yokoi N, Shimazaki J, Watanabe H, Dogru M et al.	Ocular Surface	278
2015	The Pathophysiology, Diagnosis, and Treatment of Dry Eye Disease	Messmer, EM	Article	Messmer, E. M.	Deutsches Arzteblatt International	251
2016	Revisiting the vicious circle of dry eye disease: a focus on the pathophysiology of meibomian gland dysfunction	Baudouin, C	Review	Baudouin C, Messmer EM, Aragona P, Geerling G, Akova YA et al.	British Journal of Ophthalmology	242

Supplementary Table 4: Top 10 Web of Science categories of journals on MGD research.

Web of Science categories	Number of articles	Percentage of articles
Ophthalmology	1071	73.96%
Medicine General Internal	110	7.60%
Multidisciplinary Sciences	49	3.38%

Biochemistry Molecular Biology	39	2.69%
Pharmacology Pharmacy	38	2.62%
Surgery	34	2.35%
Medicine Research Experimental	25	1.73%
Chemistry Multidisciplinary	21	1.45%
Cell Biology	14	0.97%
Immunology	11	0.76%