AIMS Medical Science

AIMS Medical Science, 12(4): 325–349.
DOI: 10.3934/medsci.2025023
Received: 10 June 2025
Revised: 16 October 2025
Accepted: 29 October 2025
Published: 21 November 2025

http://www.aimspress.com/journal/medicalScience

Review

COVID-19 vaccines and autoimmune disorders: A scoping review

Claudia Chaufan [1,*], Laurie Manwell [2], Camila Heredia [1] and Jennifer McDonald [1]

[1] School of Health Policy and Management, Faculty of Health, York University, 4700 Keele St., Toronto, ON, M3J 1P3, Canada
[2] Department of Psychology, Faculty of Science, Wilfrid Laurier University, Waterloo, N2L 3C5, Canada

* **Correspondence:** Email: cchaufan@yorku.ca; Tel: +14373434476.

Supplementary

Appendix

Table A.1. Vaccine & autoimmunity – scoping review codebook.

Category	Item	Description	Options
General Identification and characterization of selected-in articles	ID	Order in Rayyan (alphabetical), in numbers	Open
	URL	URL of publication	Open
	Title	Article title	Open
	Date	Year of publication / Month if available (xxxx / yy)	Open
	1st author name	1st author's last & first name	Open
	1st author affiliation (institution & country)	Country of the organization 1st author is affiliated with. If global (WHO), seek academic or personal residency	Open
	Funding sources	Specific funding of study (e.g., Granting agency & grant #). Options: Yes/No/Not mentioned	Yes/No/Not mentioned. Description
	COI	Conflicts of interest declared, all authors (order of authorship). Options: Yes/No/Not mentioned	Yes/No/Not mentioned. Description

Continued on next page

Category	Item	Description	Options
Article characterization Description of article type	Disease	Disease being investigated	Type 1 DBT, RA, SLE, Graves, MS, Hashimoto, Other
	Disease other	If more than one disease is mentioned	Open
	Methodology	What is the method used? Survey, case report, etc.	Open
	Population	What is the population being studied (age, ethnicity, gender, etc.)	Open
	Country	What country was the study conducted in / where did the study population come from?	Open
	Purpose	What is the goal of the article (if applicable)?	Open
	Outcome of interest	What is the outcome of interest being measured?	Open
Vaccine & other drugs	Name	What is the name of the vaccine?	Open
	Type	What is the vaccine type (e.g., adenovector, mRNA, inactivated virus or particle, etc.)	Open
	Dose	How many doses in total did patients receive?	Open
	Other drugs	What other drugs were the patients receiving?	Open
Relationship between vaccines & autoimmune disorder	Post-vaccination	What is the autoimmune disorder associated with vaccination?	• Health patient new disease • Autoimmune patient new disease • Autoimmune patient relapse / flair / complication of disease • Autoimmune patient improvement
	Post-vaccination other	More than 1 post-vaccination patient mentioned	Open
	Causal direction	Is there a causal direction proposed?	Yes/no/unclear
	Causal direction descriptive	What is the direction of the causal association presented? How is the relationship described?	Vaccine causes disease/disease is worsened by the vaccine/both directions. (quote if useful)
	Mechanism	Is there a mechanism described?	Yes/no
	Mechanism descriptive	What is the mechanism described? How is the mechanism described?	One line description & quote if applicable

Continued on next page

Category	Item	Description	Options
Adverse events	Adverse events	Are adverse events reported?	Yes / no
	Adverse events categorization	Do authors assess the severity of adverse events?	Yes/ no
	Adverse events description	What adverse events are described?	Open
Exacerbation of previous disease symptoms	From Covid disease	Does the paper discuss if a Covid infection in the patient/population worsened previous disease symptoms (if applicable)?	Open
	From Covid vaccines	Does the paper discuss if a Covid vaccine in the patient/population worsened previous disease symptoms (if applicable)?	Open
Efficacy of vaccination	Reporting	Does the study report vaccine efficacy against covid (any outcome)?	Yes / no
	Reporting descriptive	What do they mention about it?	Open
Consensus of care	Authors' views on vaccination in autoimmune disorders	Positive / negative / neutral - description	Open
	Evidence	How do authors assess balance of risks and benefits to support their 'consensus of care' views'?	Open

Table A.2. Funding sources.

ID	Article URL	1st Author Last Name	Year	Title	Institution / Country	Funding Sources	COI
1	https://www.msard-journal.com/article/S2211-0348(22)00530-2/fulltext	Allen-Philbey	2022	Did it hurt? COVID-19 vaccination experience in people with multiple sclerosis	Barts and The London School of Medicine and Dentistry, UK	Biogen, Merck, Celgene, Roche, Sanofi-Genzyme, Teva, AbbVie Biotherapeutics, Canbex, Ironwood, Novartis, MSD, Merck Serono, Synthon, Vertex, Janssen Cilag, Neurodiem, ECTRIMS, National MS Society, Takeda, UK MS Society, InMuneBio, Lundbeck, Rock, Arvelle, Merck KGaA, Amgen, EMD Serono, AcadeMe, Medscape, Neurology Academy	GG serves as chief editor for Multiple Sclerosis and Related Disorders and is the academic director of the Neurology Academy. BPT is a member of advisory boards for Biogen, Merck Serono, Novartis, Sanofi Genzyme and Roche. KS has served in an advisory role for, Amgen, Biogen, EMD Serono, Merck KGaA, Novartis, Roche, Sanofi-Genzyme, and Teva.
2	https://doi.org/10.1007/s10067-022-06097-z	Alrashdi	2022	Systemic lupus erythematosus with acute pancreatitis and vasculitic rash following COVID-19 vaccine: a case report and literature review	Qassim University, Kingdom of Saudi Arabia	None declared	None declared
3	https://www.cureus.com/articles/88236-acute-multiple-sclerosis-exacerbation-after-vaccination-with-the-johnson--johnson-covid-19-vaccine-novel-presentation-and-first-documented-case-report#!/	Al-Midfai	2022	Acute Multiple Sclerosis Exacerbation After Vaccination with the Johnson & Johnson COVID-19 Vaccine: Novel Presentation and First Documented Case Report	1. HCA Florida Westside Hospital, Plantation, USA 2. HCA Florida Northwest Hospital, Margate, USA 3. Nova Southeastern University, Fort Lauderdale, USA	None reported	None declared
4	https://www.sciencedirect.com/science/article/pii	Alroughani	2022	COVID-19 vaccination in people with multiple	Kuwait University and Amiri Hospital, Kuwait	None declared	RA is an Advisory Board member of Bayer, Biogen, Merck Serono, Novartis, Roche, Sanofi- Genzyme, and received

	/S0303846722002554?via%3Dihub			sclerosis, real-life experience			honoraria for speaking or consultation fees from Bayer, Biogen, Merck Serono, Novartis, Roche, Sanofi-Genzyme. He is also the principal investigator in clinical trials for Biogen, Merck Serono, Novartis, Roche, Sanofi-Genzyme. SFA acted as Advisory Board members of Bayer, Merck Serono, Novartis, Sanofi-Genzyme, and received honoraria for speaking or consultation fees from, Bayer, Biogen, Merck Serono, Novartis, Roche, Sanofi-Genzyme. She is also the co-investigator in clinical trials for Biogen, Merck Serono, Novartis, Roche, Sanofi-Genzyme. JA is an Advisory Board member and received honoraria for speaking from Bayer, Biogen, Merck Serono, Novartis, Roche, Sanofi- Genzyme.
5	https://doi.org/10.1136/annrheumdis-2021-221916	Araujo	2022	Two-week methotrexate discontinuation in patients with rheumatoid arthritis vaccinated with inactivated SARS-CoV-2 vaccine: a randomised clinical trial	Universidade de Sao Paulo, Brazil	This study was sponsored by grants from Fundação de Amparo à Pesquisa do Estado de São Paulo (FAPESP) (no 2015/03756-4 to NEA, SGP, CAS and EB; no 2017/14352-7 to TP; no 2019/17272-0 to LdvKK; no 2021/06616-0 to GZ); Conselho Nacional de Desenvolvimento Científico e Tecnológico (CNPq) (no 305242/2019-9 to EB; no 304984/2020-5 to CAS; no 305556/2017-7 to RMRP); and B3 - Bolsa de Valores do Brasil.	Not mentioned
6	https://doi.org/10.1101/2022.04.22.22274158	Assawasaksakul	2022	Comparison of immunogenicity and safety of inactivated, adenovirus-vectored	Faculty of Medicine, Chulalongkorn University, Thailand	Rajadapisek Sompot, the Second Century Fund Chulalongkorn University, Health Systems Research	None declared

				and heterologous adenovirus-vectored/mRNA vaccines in patients with systemic lupus erythematosus and rheumatoid arthritis: a prospective cohort study		Institute, and National Science and Technology Development Agency	
7	https://pubmed.ncbi.nlm.nih.gov/35902168/	Assawasaksakul	2022	Immunogenicity of the third and fourth BNT162b2 mRNA COVID-19 boosters in SLE and RA	Faculty of Medicine, Chulalongkorn University, Thailand	Supported by Rajadapisek Sompot grant, Thai national agencies	None declared
8	https://doi.org/10.1007/s12020-022-03130-8	Aydogan	2022	Type 1 diabetes mellitus following SARS-CoV-2 mRNA vaccination	Ankara Güven Hospital and Hacettepe University School of Medicine, Turkey	Not applicable	None declared
9	https://doi.org/10.1155/2022/6436839	Baez-Negron	2022	New-Onset Systemic Lupus Erythematosus after mRNA SARS-CoV-2 Vaccination	University of Puerto Rico, Puerto Rico	None reported	None declared
10	https://pmc.ncbi.nlm.nih.gov/articles/PMC8732147/	Baimukhamedov	2022	Seropositive rheumatoid arthritis after vaccination against SARS-CoV-2 infection	South Kazakhstan Medical Academy and Shymkent Medical Center of Joint Diseases, Shymkent, Kazakhstan	None declared	None declared
11	https://www.sciencedirect.com/science/article/pii/S0003426622000610?via%3Dihub	Brès	2022	Three cases of thyroiditis following SARS-CoV-2 vaccination	hôpital Robert-Debré, France	None declared	None declared
12	https://doi.org/10.1007/s10067-021-05963-6	Barbhaiya	2022	Adverse events and disease flares after SARS-CoV-2 vaccination in patients with	Hospital for Special Surgery, USA	Rheumatology Research Foundation Investigator Award Barbara Volcker Center for Women and Rheumatic Diseases at Hospital for Special	L. Mandl is an Associate Editor at Annals of Internal Medicine. This was mislabelled as funding.

				systemic lupus erythematosus		Surgery Regeneron Pharmaceuticals National Center for Advancing Translational Sciences (NCATS), Grant #UL1TR02384 from the Clinical and Translational Science Center at Weill Cornell Medical College, NY	
13	https://doi.org/10.1007/s10072-022-06287-2	Bellinvia	2022	Hypogammaglobulinemia is associated with reduced antibody response after anti-SARS-CoV-2 vaccination in MS patients treated with antiCD20 therapies	Careggi University Hospital, Italy	Celgene/Bristol Myers Squibb (BMS) Biogen Merck Serono Sanofi Teva Novartis Bayer Schering Pharma Sanofi Aventis	Labelled as funding: E. Portaccio – Received compensation for travel grants, participation in advisory boards, and/or speaking activities from Biogen, Merck Serono, Sanofi, Teva, and Novartis; serves on the editorial board of Frontiers in Neurology and Brain Sciences. E. Portaccio – Received compensation for travel grants, participation in advisory boards, and/or speaking activities from Biogen, Merck Serono, Sanofi, Teva, and Novartis; serves on the editorial board of Frontiers in Neurology and Brain Sciences. L. Razzolini – Received research support from Novartis. L. Pastò – Received research support from Novartis and Biogen; received speaker honoraria from Teva. M.P. Amato – Served on scientific advisory boards and received speaker honoraria and research support from Biogen Idec, Merck Serono, Bayer Schering Pharma, and Sanofi Aventis; serves on the editorial board of Multiple Sclerosis Journal and BMC Neurology. L. Pastò – Received research support from Novartis and Biogen; received

							speaker honoraria from Teva. M.P. Amato – Served on scientific advisory boards and received speaker honoraria and research support from Biogen Idec, Merck Serono, Bayer Schering Pharma, and Sanofi Aventis; serves on the editorial board of Multiple Sclerosis Journal and BMC Neurology.
14	https://doi.org/10.1007/s12026-022-09283-y	Benucci	2022	Role of booster with BNT162b2 mRNA in SARS-CoV-2 vaccination in patients with rheumatoid arthritis	San Giovanni di Dio Hospital, Italy	None reported	None declared
15	https://doi.org/10.1093/mrcr/rxac070	Bhullar	2022	Cardiomyopathy following COVID-19 vaccination in a patient with systemic lupus erythematosus	Hospital Raja Permaisuri Bainun, Ipoh, Perak, Malaysia	None reported	None declared
16	https://doi.org/10.1007/s40618-022-01796-5	Bleve	2022	COVID-19 vaccine and autoimmune diabetes in adults: report of two cases	"Sapienza" University of Rome	None reported	None declared
17	https://doi.org/10.1212/NXI.0000000000001104	Briggs	2022	COVID-19 Vaccination Reactogenicity in Persons with Multiple Sclerosis	Case Western Reserve University, USA	National Multiple Sclerosis Society	Accelerated Cure Project (ACP) received grants, funding, or in-kind support from EMD Serono, Sanofi/Genzyme, Biogen, Genentech, AbbVie, Octave, GlycoMinds, Pfizer, MedDay, AstraZeneca, Teva, Mallinckrodt, MSDx, Regeneron Genetics Center, BC Platforms, Celgene, PCORI, and NMSS; Farren Briggs received research grants from NMSS, Michael J. Fox Foundation, and NIH; F.J. Mateen received grants from Biogen, Sumaira Foundation, NMSS, NIH; was a site investigator in IQVIA trials (Genentech, EMD Serono); served

							on ad hoc advisory boards for Horizon Therapeutics, Genentech, and Biogen; K.M. Currie served as advisor for Novartis and Janssen; B.F. Bebo and J. Fiol are employed by NMSS; Michael Racke is employed by Quest Diagnostics; K.C. O'Connor received support from Ra Pharma (UCB Pharma) and Alexion (AstraZeneca); is a consultant/shareholder of Cabaletta Bio; received sponsored research from University of Pennsylvania (via Cabaletta Bio); served as consultant/advisor for Alexion and Roche; received speaking fees from Alexion and Viela Bio (Horizon); L.G. Kolaczkowski served as a patient advisor for EMD Serono, EMD Merck, Novartis, Merakoi, Janssen/J&J, and Genentech; R.N. McBurney received consulting payments from EMD Serono (donated to ACP).
18	https://doi.org/10.1111/ene.15265	Bsteh	2022	Comparing humoral immune response to SARS-CoV2 vaccines in people with multiple sclerosis and healthy controls: An Austrian prospective multicenter cohort study	Medical University of Vienna, Austria	Austrian MS Society, City of Vienna, Austrian Science Fund	G. Bsteh participated in meetings and received speaker honoraria or travel funding from Biogen, Celgene/BMS, Lilly, Merck, Novartis, Roche, Sanofi-Genzyme, Teva; received consulting honoraria from Biogen, Celgene/BMS, Novartis, Roche, Sanofi-Genzyme, Teva; H. Hegen participated in meetings and received speaker honoraria or travel funding from Bayer, Biogen, Merck, Novartis, Roche, Sanofi-Genzyme, Siemens, Teva; received consulting honoraria from Biogen, Novartis, Teva;

G. Traxler participated in meetings and received honoraria (lectures, advisory boards, consultations) or travel funding from Biogen, Celgene/BMS, Merck, Novartis, Roche, Sanofi-Genzyme, Teva;
N. Krajnc participated in meetings and received speaker honoraria or travel funding from Roche, Novartis, Merck; received grant support for MS Clinical Training Fellowship Program from ECTRIMS;

F. Leutmezer participated in meetings or received honoraria for advisory/speaker roles from Bayer, Biogen, Celgene/BMS, MedDay, Merck, Novartis, Roche, Sanofi-Genzyme, Teva;

F. Di Pauli participated in meetings and received honoraria (lectures, advisory boards, consultations) or travel funding from Bayer, Biogen, Celgene/BMS, Merck, Novartis, Sanofi-Genzyme, Roche, Teva;

B. Kornek received honoraria for speaking and consulting from Biogen, BMS-Celgene, Johnson & Johnson, Merck, Novartis, Roche, Teva, Sanofi-Genzyme (outside the submitted work; no conflict for this study);

P. Rommer received consultancy/speaking honoraria from AbbVie, Almirall, Alexion, Biogen, Merck, Novartis, Roche, Sandoz, Sanofi-Genzyme; received research

grants from Amicus, Biogen, Merck, Roche;

G. Zulehner participated in meetings or received travel funding from Biogen, Merck, Novartis, Roche, Sanofi-Genzyme, Teva;

F. Deisenhammer participated in meetings or received advisor/speaker honoraria from Alexion, Almirall, Biogen, Celgene, Merck, Novartis, Roche, Sanofi-Genzyme; institution received scientific grants from Biogen and Sanofi-Genzyme;

M. Guger received support and honoraria for research, consultation, lectures, and education from Almirall, Bayer, Biogen, Celgene/BMS, Janssen, MedDay, Merck, Novartis, Octapharma, Roche, Sanofi-Genzyme, Shire, Teva;

R. Höftberger received lecture honoraria from Novartis and Biogen;

T. Berger participated in meetings and received honoraria (lectures, advisory boards, consultations) from Allergan, Bayer, Biogen, Bionorica, Celgene/BMS, GSK, Janssen-Cilag, MedDay, Merck, Novartis, Octapharma, Roche, Sanofi-Genzyme, Teva; institution received research grants from Bayer, Biogen, Celgene/BMS, Merck, Novartis, Sanofi Aventis, Teva, and clinical trial support from Alexion, Bayer, Biogen, Celgene/BMS, Merck,

							Novartis, Octapharma, Roche, Sanofi-Genzyme, Teva. A. Bianco reports receiving payments from Biogen, Merck Serono, Novartis, Sanofi-Genzyme, and Almirall for the following activities: - Consultancy - Lectures (including speakers' bureaus - Travel/accommodations/meeting expenses unrelated to listed activities F. Capone reports receiving payments from the following entities: - Biogen (for lectures, including service on speaker bureaus) - Biogen, Merck, Sanofi-Genzyme, and Roche (for travel/accommodations/meeting expenses unrelated to other listed activities) E. Ferraro reports receiving payments from Biogen, Merck, Sanofi-Genzyme, and Roche for travel/accommodations/meeting expenses unrelated to other listed activities M. Lucchini reports receiving payments from Biogen, Merck Serono, Novartis, Roche, Sanofi-Genzyme, Almirall, and Bayer for the following activities: - Consultancy - Lectures (including service on speakers' bureaus) - Travel/accommodations/meeting expenses unrelated to other listed activities
19	https://www.neurotherapeuticsjournal.org/article/S1878-7479(23)00170-8/fulltext	Capone	2022	Immunogenicity and safety of mRNA COVID-19 vaccines in people with multiple sclerosis treated with different disease-modifying therapies	Università Campus Bio-Medico di Roma, Italy	None reported	

							M. Mirabella reports receiving payments from the following entities: - Consultancy: Bayer Schering, Biogen, Sanofi-Genzyme, Merck, Novartis, Teva; - Lectures (including speaker bureau): Almirall, Bayer Schering, Biogen, CSL Behring, Sanofi-Genzyme, Merck, Novartis, Teva, Roche, Ultragenyx; - Travel/accommodations/meeting expenses unrelated to other listed activities: Biogen, Merck, Novartis, Roche, Sanofi-Genzyme, Teva, Ultragenyx, CSL Behring; - Also served as a principal investigator in clinical trials where money was paid to their institution;
20	https://link.springer.com/10.1007/s00415-022-11296-4	Capuano	2022	Humoral response and safety of the third booster dose of BNT162b2 mRNA COVID-19 vaccine in patients with multiple sclerosis treated with ocrelizumab or fingolimod	University of Campania "Luigi Vanvitelli", Italy	Open access funding provided by Università degli Studi della Campania Luigi Vanvitelli within the CRUI-CARE Agreement. The authors received no specific funding for this work.	A. Bisecco, G.Tedeschi and A. Gallo received speaker's honoraria and/or compensation for consulting service and/or speaking activities from Biogen, Roche, Merck, Novartis, Celgene and Genzyme.
21	https://doi.org/10.1007/s10067-022-06250-8	Cassione	2022	No evidence of short-term impact of repeated BNT162b2 vaccination on rheumatoid arthritis homeostasis in drug-free remission	Fondazione IRCCS Istituto Neurologico Carlo Besta, Milan, Italy Università Di Pavia, Italy	None declared	S.Bugatti reports grant/research support from: Pfizer, and personal fees from: AbbVie, Bristol-Myers Squibb, Eli Lilly, Gilead, Pfizer, Sanofi. C.Montecucco reports personal fees from: AbbVie, Bristol-Myers Squibb, Eli Lilly, Gilead, Pfizer, Roche, Sanofi.
22	https://www.jstage.jst.go.jp/article/endocrj/69/12/69_EJ22-0208/_article	Chaudhary	2022	Four cases of Graves' disease following viral vector severe acute respiratory syndrome	Dr Rajendra Prasad Government Medical College, India	None reported	None declared

				corona virus-2 (SARS-CoV-2) vaccine			
23	https://doi.org/10.1210/clinem/dgac119	Chee	2022	SARS-CoV-2 mRNA Vaccination and Graves' Disease: A Report of 12 Cases and Review of the Literature	Tan Tock Seng Hospital, Singapore	R.Dalan is supported in part by Ministry of Health, Clinician Scientist Award (MOH-000014), NHG-LKC Clinician Scientist Fellowship. A.W.K.Tan is supported by the NHG-LKC Clinician Scientist Fellowship.	None declared
24	https://pmc.ncbi.nlm.nih.gov/articles/PMC9625747/	Chui	2022	ODP514 Safety of Inactivated and mRNA COVID-19 Vaccination among Patients Treated for Hypothyroidism: a Population-based Cohort Study	Hong Kong Hospital Authority,	None declared	None declared
25	https://www.msard-journal.com/article/S2211-0348(22)00205-X/fulltext	Ciampi	2022	Safety and humoral response rate of inactivated and mRNA vaccines against SARS-CoV-2 in patients with Multiple Sclerosis	Pontificia Universidad Católica de Chile, Chile Hospital Sótero del Río, Santiago, Chile	None declared	None declared
26	https://journals.lww.com/indjem/abstract/2022/12008/abstract_167__covid_19_vaccine_side_effects_in.167.aspx	Chatterjee	2022	Abstract 167: COVID-19 vaccine side effects in Type 1 diabetes mellitus patients as compared to healthy controls: Results from the COVAD study	University of Illinois College of Medicine Peoria, USA	None reported	None declared
27	https://www.frontiersin.org/journals/neurology/articles/10.3389/fneur.2022.913283/full	Czarnowska	2022	Analysis of Side Effects Following Vaccination Against COVID-19 Among Individuals with	Medical University of Białystok, Poland	None declared	A.K., W.B., H.B.-P., A.P.-D., M.A.-S., E.K., and K.K. received compensation for speaking and consulting services from Biogen, Bayer, Novartis, Roche, Merck, Teva, and Sanofi-Genzyme

				Multiple Sclerosis Treated with DMTs in Poland			M.S. received compensation for speaking from Roche, Novartis, Sanofi-Genzyme, and Biogen M.Ś.-M. received compensation for speaking and consulting services from Biogen, Novartis, Roche, Merck, and Sanofi-Genzyme A.J. received compensation for speaking services from Merck and Sanofi-Genzyme M.S. also received grant funding from Biogen, and compensation for speaking and consulting services from Biogen, Novartis, Roche, Merck, Sanofi-Genzyme, Bristol Myers Squibb, and Teva A.S., M.M., K.N., and M.W. received compensation for speaking and consulting services from Biogen, Bayer, Novartis, Roche, Merck, Teva, and Sanofi-Genzyme; they also received a grant from NCBIR (nr SZPITALE-JEDNOIMIENNE/18/2020) A.K.-L. received grant funding from Novartis, and compensation for speaking and consulting services from Biogen, Bayer, Novartis, Roche, Merck, Teva, CSL Behring, Shire, and Sanofi-Genzyme.
28	https://doi.org/10.3390/vaccines10050763	Czarnowska	2022	Safety of Vaccines against SARS-CoV-	Medical University of Białystok, Poland	None declared	"None of the agreements are relevant to the submitted work." Alina Kułakowska, Waldemar Brola, Halina Bartosik-Psujek, Anna

	2 among Polish Patients with Multiple Sclerosis Treated with Disease-Modifying Therapies	Pokryszko-Dragan, Monika Adamczyk-Sowa, Ewa Krzystanek, and Karolina Kania received compensation for speaking and consulting services from Biogen, Bayer, Novartis, Roche, Merck, Teva, and Sanofi-Genzyme Małgorzata Siger received compensation for speaking from Roche, Novartis, Sanofi-Genzyme, and Biogen Mariola Świderek-Matysiak received compensation for speaking and consulting services from Biogen, Novartis, Roche, Merck, and Sanofi-Genzyme Anna Jurewicz received compensation for speaking services from Merck and Sanofi-Genzyme Mariusz Stasiołek received grant funding from Biogen and received compensation for speaking and consulting services from Biogen, Novartis, Roche, Merck, Sanofi-Genzyme, Bristol Myers Squibb, and Teva Agnieszka Słowik, Monika Marona, Klaudia Nowak, and Marcin Wnuk received compensation for speaking and consulting services from Biogen, Bayer, Novartis, Roche, Merck, Teva, and Sanofi-Genzyme; they also received a grant from NCBIR (no. SZPITALE-JEDNOIMIENNE/18/2020) Alicja Kalinowska-Łyszczarz received

							grant funding from Novartis and received compensation for her speaking and consulting services from Biogen, Bayer, Novartis, Roche, Merck, Teva, CSL Behring, Shire, and Sanofi-Genzyme. "None of the agreements are relevant to the submitted work. The funders had no role in the design of the study; in the collection, analyses, or interpretation of data; in the writing of the manuscript; or in the decision to publish the results."
29	https://diabetesjournals.org/diabetes/article/71/8/1800/146944/Immunogenicity-and-Safety-of-SARS-CoV-2-mRNA	D'Addio	2022	Immunogenicity and Safety of SARS-CoV-2 mRNA Vaccines in a Cohort of Patients with Type 1 Diabetes	Università di Milano, Italy ASST Fatebenefratelli Sacco, Italy	F.D. is supported by a Società Italiana di Diabetologia Lombardia grant and European Foundation for the Study of Diabetes grant EFSD/JDRF/Lilly Programme on Type 1 Diabetes Research 2019. P.F. is supported by Italian Ministry of Health grant RF-2016-02362512 and Università di Milano Linea-2 2019 funding.	None declared
30	https://doi.org/10.1210/clinem/dgac550	Di Filippo	2022	Distinct Clinical Features of Post-COVID-19 Vaccination Early-onset Graves' Disease	Università Vita-Salute San Raffaele, IRCCS Ospedale San Raffaele, Italy	None declared	None declared
31	https://doi.org/10.1007/s00592-021-01837-0	Dicembrini	2022	Interstitial glucose monitoring, type 1 diabetes and COVID-19 vaccine: the patient-reported outcomes and vaccine-associated changes in glucose	University of Florence, Italy	None declared	E.M. received consultancy fees from Merck and Novartis; speaking fees from AstraZeneca, Bristol Myers Squibb, Boehringer-Ingelheim, Eli Lilly, Merck, Novo Nordisk, Sanofi, and Novartis; and research grants from Merck, Novartis, and Takeda.

				and side effects (PRO-VACS)			M.M. received speaking fees from AstraZeneca, Bristol Myers Squibb, Boehringer-Ingelheim, Eli Lilly, Merck, Novo Nordisk, Sanofi, and Novartis; and research grants from Bristol Myers Squibb I.D. received speaking fees from Merck, Novo Nordisk, Eli Lilly, Abbott, Sanofi, and Boehringer Ingelheim
32	https://linkinghub.elsevier.com/retrieve/pii/S0022510X22000144	Dreyer-Alster	2022	COVID-19 vaccination in patients with multiple sclerosis: Safety and humoral efficacy of the third booster dose	Tel Aviv University, Israel Hebrew University, Israel	None declared	None declared
33	https://doi.org/10.1080/21645515.2022.2041945	Etemadifar	2022	Self-Reported safety of the BBIBP-CorV (Sinopharm) COVID-19 vaccine among Iranian people with multiple sclerosis	Isfahan University of Medical Sciences, Iran	None declared	None declared
34	https://doi.org/10.1080/21645515.2022.2033540	Etemadifar	2022	Detection of anti-NMDA receptor antibodies following BBIBP-CorV COVID-19 vaccination in a rituximab-treated person with multiple sclerosis presenting with manifestations of an acute relapse	Isfahan University of Medical Sciences, Iran	None declared	None declared
35	https://www.sciencedirect.com/science/article/pii/S2667257X22000250	Faruk	2022	Varicella zoster virus infection due to Pfizer-BioNTech mRNA COVID-19	Uludag University, Turkey	None declared	None declared

				vaccine and sinovac vaccine in two relapsing-remitting multiple sclerosis patients during fingolimod therapy			
36	https://doi.org/10.1186/s41983-022-00573-8	Gad	2022	Multiple sclerosis patients' response to COVID-19 pandemic and vaccination in Egypt	Cairo University, Egypt	None declared	None declared
37	https://onlinelibrary.wiley.com/doi/10.1111/dth.15677	Gamonal	2022	New-onset systemic lupus erythematosus after ChAdOX1 nCoV-19 and alopecia areata after BNT162b2 vaccination against SARS-CoV-2	Federal University of Juiz de Fora (UFJF), Brazil	None declared	None declared
38	https://www.sciencedirect.com/science/article/pii/S187140212100391X	Ganakumar	2022	Diabetic ketoacidosis (DKA) in type 1 diabetes mellitus (T1DM) temporally related to COVID-19 vaccination	All India Institute of Medical Sciences (AIIMS), India	None declared	None declared
39	https://www.msard-journal.com/article/S2211-0348(21)00630-1/fulltext	Ghadiri	2022	The study of COVID-19 infection following vaccination in patients with multiple sclerosis	Tehran University of Medical Sciences, Iran	None declared	None declared
40	https://www.msard-journal.com/article/S2211-0348(21)00681-7/fulltext	Giossi	2022	Anti-Spike IgG in multiple sclerosis patients after BNT162b2 vaccine: An exploratory case-control study in Italy	Fondazione I.R.C.C.S. Istituto Neurologico Carlo Besta, Italy	Fondazione I.R.C.C.S. Istituto Neurologico Carlo Besta, Milan, Italy	None declared

41	https://linkinghub.elsevier.com/retrieve/pii/S2214624521000277	Hamouche	2022	A case report of new onset graves' disease induced by SARS-CoV-2 infection or vaccine?	Brookdale University Hospital Medical Center, USA	Open Access funding enabled and organized by Projekt DEAL. JH is (partially) funded by the German Federal Ministry of Education and Research (Grant Numbers 01ZZ1603[A-D] and 01ZZ1804[A-H] (DIFUTURE)).	None declared
42	https://doi.org/10.1007/s00415-021-10648-w	Havla	2022	First manifestation of multiple sclerosis after immunization with the Pfizer-BioNTech COVID-19 vaccine	Ludwig Maximilian University of Munich, Germany	None declared	J. Havla reports grants for OCT research from Friedrich-Baur-Stiftung and Merck; personal fees and non-financial support from Celgene, Merck, Alexion, Novartis, Roche, Santhera, Biogen, Heidelberg Engineering, and Sanofi Genzyme; non-financial support from the Guthy-Jackson Charitable Foundation; all outside the submitted work R. Hohlfeld received honoraria and grant support from Novartis, Sanofi, Biogen, Teva, Merck, Johnson & Johnson, and Roche T. Kümpfel received travel expenses and personal compensation from Bayer Healthcare, Teva Pharma, Merck, Novartis Pharma, Sanofi-Aventis/Genzyme, Roche, and Biogen; received grant support from Bayer Schering AG, Novartis, and Chugai Pharma; all outside the submitted work
43	https://www.msard-journal.com/article/S2211-0348(22)00587-9/fulltext	Holroyd	2022	Humoral response to COVID-19 vaccination in MS patients on disease modifying therapy: Immune profiles and clinical outcomes	Harvard Medical School, Boston, USA Brigham and Women's Hospital, USA	None declared	B.H. has received research support from Analysis Group, Celgene (Bristol-Myers Squibb), Verily Life Sciences, Merck-Serono, Novartis, and Genzyme; M.H. has served as a consultant for Biogen, Roche Genentech, Novartis, and

Genzyme; received research support from Biogen, Genentech, and Genzyme

S.B. has received consulting fees from Teladoc Health and Alexion Pharmaceuticals; publishing honoraria from UpToDate and the American Academy of Neurology; research support from Alexion Pharmaceuticals

G.B. has received an MS Postdoctoral Fellowship award from the Multiple Sclerosis Society of Canada

K.G. has received consulting compensation from GlaxoSmithKline, not relevant to this project

T.K. has received consulting and advisory board fees from Biogen, Genzyme-Sanofi, Roche-Genentech/Roche, Novartis, and Bristol Myers Squibb

C.S. has received consulting fees from Genzyme, Novartis, and Biogen

T.S. has received consulting compensation from Novartis Pharmaceuticals and research support from Novartis Pharmaceuticals and Genzyme-Sanofi

T.C. has received consulting compensation from Banner Life Sciences, Biogen, Bristol Myers Squibb, Novartis Pharmaceuticals, Roche Genentech, and Sanofi Genzyme; received research support from the NIH,

							National MS Society, US Department of Defense, Sumaira Foundation, Brainstorm Cell Therapeutics, Bristol Myers Squibb, EMD Serono, I-Mab Biopharma, Mallinckrodt ARD, Novartis Pharmaceuticals, Octave Bioscience, Roche Genentech, Sanofi Genzyme, and Tiziana Life Sciences
44	https://www.frontiersin.org/journals/immunology/articles/10.3389/fimmu.2022.946356/full	Idda	2022	Cross-sectional analysis of the humoral response after SARS-CoV-2 vaccination in Sardinian multiple sclerosis patients, a follow-up study	National Research Council, Italy	The study was supported by the Italian Foundation for Multiple Sclerosis- FISM (Grant N. 22021/Special/002 and 2021/C19-R-Single/010).	None declared
45	https://pubmed.ncbi.nlm.nih.gov/34347939/	Izmirly	2022	Evaluation of Immune Response and Disease Status in Systemic Lupus Erythematosus Patients Following SARS–CoV-2 Vaccination	NYU, School of Medicine, USA	National Institute of Arthritis and Musculoskeletal and Skin Diseases, NIH (grant P50-AR-07059), the National Institute of Allergy and Infectious Diseases, NIH (grant AI-148574), and a Bloomberg Philanthropies COVID-19 Response Initiative grant.	Eli Lilly, Pfizer, Sanof, Meissa Vaccines
46	https://www.cureus.com/articles/83253-multiple-sclerosis-relapse-following-covid-19-vaccination-a-case-report-and-literature-review	Kataria	2022	Multiple Sclerosis Relapse Following COVID-19 Vaccination: A Case Report and Literature Review	Ochsner Louisiana State University Health Shreveport, USA University of Missouri Health Care, USA Virginia University, USA	None declared	None declared
47	https://linkinghub.elsevier.com/retrieve/pii/S2211034822002231	Kavosh	2022	Safety of Sinopharm vaccine for people with Multiple Sclerosis: Study of adverse reactions and disease activity	Isfahan University of Medical Sciences, Iran	None declared	None declared

48	https://www.kidney-international.org/article/S0085-2538(22)00064-3/fulltext	Kim	2022	New-onset class III lupus nephritis with multi-organ involvement after COVID-19 vaccination	Yonsei University College of Medicine, Republic of Korea	None declared	None declared
49	https://jamanetwork.com/journals/jamaneurology/fullarticle/2787974	König	2022	Immunogenicity and Safety of a Third SARS-CoV-2 Vaccine Dose in Patients with Multiple Sclerosis and Weak Immune Response After COVID-19 Vaccination	Oslo University Hospital, Norway	This study was funded by the Coalition for Epidemic Preparedness Innovations and Oslo University Hospital	Dr. König reported receiving speaker honoraria from Novartis, Biogen, and AstraZeneca outside the submitted work Dr. Holmøy reported receiving speaker honoraria from Merck, Biogen, Genzyme, Sanofi, Novartis, Roche, and Bristol Myers Squibb during the conduct of the study
50	https://academic.oup.com/ced/article/47/1/161/6598177	Kreuter	2022	Induction and exacerbation of subacute cutaneous lupus erythematosus following mRNA-based or adenoviral vector-based SARS-CoV-2 vaccination	HELIOS St Elisabeth Hospital Oberhausen University, Germany	None declared	None declared
51	https://www.cureus.com/articles/113414-covid-19-vaccine-induced-rapid-progression-of-prediabetes-to-ketosis-prone-diabetes-mellitus-in-an-elderly-male	Kshetree	2022	COVID-19 Vaccine-Induced Rapid Progression of Prediabetes to Ketosis-Prone Diabetes Mellitus in an Elderly Male	Cayuga Medical Center, USA	None declared	None declared
52	https://journals.viamedica.pl/kardiologia_polska/article/view/87799	Łagosz	2022	The surprising course of multiple sclerosis relapse in a patient after SARS-CoV-2 vaccination	Wroclaw Medical University, Poland	None declared	None declared
53	https://doi.org/10.1007/s10067-022-06126-x	Lemoine	2022	Systemic lupus erythematous after Pfizer COVID-19	University of Pittsburgh Medical Center, USA	None declared	Dr. Aggarwal has received research grant and consulting fee from Pfizer

				vaccine: a case report			
54	https://ard.eular.org/article/S0003-4967(24)18492-0/fulltext	Li	2022	Two-dose COVID-19 vaccination and possible arthritis flare among patients with rheumatoid arthritis in Hong Kong	The University of Hong Kong, China Laboratory of Data Discovery for Health, China	None declared	None declared
55	https://www.mdpi.com/1422-0067/23/19/11492	Lioulios	2022	Two Cases of Autoimmune Thyroid Disorders after COVID Vaccination in Dialysis Patients	Aristotle University of Thessaloniki, Greece	None declared	None declared
56	https://doi.org/10.1186/s12883-022-02698-y	Lohmann	2022	Severe disease exacerbation after mRNA COVID-19 vaccination unmasks suspected multiple sclerosis as neuromyelitis optica spectrum disorder: a case report	University Hospital Münster, Germany	Open Access funding enabled and organized by Projekt DEAL. No funding was received to assist with the preparation of this manuscript.	G.M. received industry-funded travel support from Desitin Arzneimittel, Eisai Pharma, and UCB Pharma, as well as speaking honoraria from UCB Pharma J.D.L. received speaker fees, research support, and served on advisory boards for the Swiss National Science Foundation, Swiss Multiple Sclerosis Society, AbbVie, Alexion, ArgenX, Bayer AG, Biogen Inc., Sanofi Genzyme, Merck & Co., Novartis AG, and F. Hoffmann-La Roche H.W. received honoraria for serving on scientific advisory boards for Biogen, Evgen, Genzyme, MedDay Pharmaceuticals, Merck Serono, Novartis, Roche Pharma AG, and Sanofi-Aventis; received speaker honoraria and travel support from Alexion, Biogen, Cognomed, F. Hoffmann-La Roche Ltd., Gemeinnützige Hertie-Stiftung, Merck

							Serono, Novartis, Roche Pharma AG, Genzyme, Teva, and WebMD Global; acted as a paid consultant for Actelion, Biogen, IGES, Johnson & Johnson, Novartis, Roche, Sanofi-Aventis, and the Swiss Rheuma Society; his research is funded by BMBF, DFG, Else Kröner Fresenius Foundation, Fresenius Foundation, European Union, Hertie Foundation, NRW Ministry of Education and Research, IZKF Münster, Biogen, GlaxoSmithKline GmbH, Roche Pharma AG, and Sanofi-Genzyme L.K. received compensation for serving on scientific advisory boards for Alexion, Genzyme, Janssen, Merck Serono, Novartis, and Roche; received speaker honoraria and travel support from Bayer, Biogen, Genzyme, Grifols, Merck Serono, Novartis, Roche, Santhera, and Teva; receives research support from the German Research Foundation, IZKF Münster, IMF Münster, Biogen, Immunic AG, Novartis, and Merck Serono
57	https://www.mdpi.com/2077-0383/11/22/6855	Maniscalco	2022	The Safety Profile of COVID-19 Vaccines in Patients Diagnosed with Multiple Sclerosis: A Retrospective Observational Study	"A. Cardarelli" Hospital, Italy	None declared	The authors declare no conflict of interest. G.T.M. received personal compensation from Serono, Biogen, Novartis, Roche, and TEVA for public speaking and advisory boards.
58	https://etj.bioscientifica.com/view/journals/etj/11/4/ETJ-22-0049.xml	Manta	2022	New-onset Graves' disease following SARS-CoV-2 vaccination: a case report	Université Libre de Bruxelles (ULB), Belgium	None declared	None declared

59	https://linkinghub.elsevier.com/retrieve/pii/S0003496724080282	Medeiros-Ribeiro	2022	Distinct impact of DMARD combination and monotherapy in immunogenicity of an inactivated SARS-CoV-2 vaccine in rheumatoid arthritis	Universidade de Sao Paulo, Brazil	This study was sponsored by grants from Fundação de Amparo à Pesquisa do Estado de São Paulo (number: 2015/03756–4 to NEA, SGP, CAS and EB; number: 2017/14352–7 to TP; number: 2019/17272–0 to LdVKK; and number: 2021/06613–0 to TLN); Conselho Nacional de Desenvolvimento Científico e Tecnológico (number: 305242/2019–9 to EB and number: 304984/2020–5 to CAS) and B3, Bolsa de Valores do Brasil. Instituto Butantan supplied the study product and had no other role in the trial.	None declared
60	https://www.cureus.com/articles/85770-a-case-of-multiple-sclerosis-uncovered-following-moderna-sars-cov-2-vaccination	Mele	2022	A Case of Multiple Sclerosis Uncovered Following Moderna SARS-CoV-2 Vaccination	Northeast Georgia Medical Center Gainesville, USA	None declared	None declared
61	https://www.reumatismo.org/index.php/reuma/article/view/1489	Mohamadzadeh	2022	Disseminated cutaneous herpes simplex infection after COVID-19 vaccination in a rheumatoid arthritis patient: a case report and review	University of Medical Sciences, Iran	None declared	None declared
62	https://linkinghub.elsevier.com/retrieve/pii/S0264410X22010672	Mok	2022	Hesitancy for SARS-CoV-2 vaccines and post-vaccination flares in patients with systemic lupus erythematosus	Tuen Mun Hospital, Hong Kong	None declared	None declared

63	https://doi.org/10.1093/mrcr/rxac018	Molina-Rios	2022	Systemic lupus erythematosus and antiphospholipid syndrome after COVID-19 vaccination. A case report	Universidad Nacional de Colombia, Colombia Hospital Universitario Nacional de Colombia, Colombia	None declared	None declared
64	https://www.mdpi.com/2076-393X/10/8/1221	Mormile	2022	Immunogenicity and Safety of mRNA Anti-SARS-CoV-2 Vaccines in Patients with Systemic Lupus Erythematosus	University of Naples Federico II, Italy	None declared	None declared
65	https://journals.lww.com/10.1097/MD.0000000000030806	Morikawa	2022	BNT162b2 coronavirus disease-2019 vaccination accelerated rheumatoid arthritis disease activity in chronic eosinophilic pneumonia: A case report	Iwata City Hospital, Japan	None declared	None declared
66	https://ard.eular.org/article/S0003-4967(24)18494-4/fulltext	Moyon	2022	BNT162b2 vaccine-induced humoral and cellular responses against SARS-CoV-2 variants in systemic lupus erythematosus	Sorbonne Université, France	ANR, CNRS, Inserm, and Fondation Arthritis	COI disclosed in article
67	https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9334251/	Nakamura	2022	Successful Treatment of SARS-CoV-2 Vaccination-related Activation of Rheumatoid Arthritis with Positive Findings for Epstein-Barr Virus	Nihon University School of Medicine, Japan	None declared	None declared

68	https://academic.oup.com/rheumatology/article/62/7/2453/6839954	Naveen	2022	Safety and tolerance of vaccines against SARS-CoV-2 infection in systemic lupus erythematosus: results from the COVAD study	Sanjay Gandhi Postgraduate Institute of Medical Sciences, India	I.P. is supported by grants from the Swedish Rheumatism Association (R-941095), King Gustaf V's 80-year Foundation (FAI-2020–0741), Professor Nanna Svartz Foundation (2020–00368), Swedish Society of Medicine (SLS-974449), Ulla and Roland Gustafsson Foundation (2021–26), Region Stockholm (FoUI-955483) and Karolinska Institutet.	A.L.T. received honoraria for advisory boards and speaking from AbbVie, Gilead, Janssen, Lilly, Novartis, Pfizer, and UCB E.N. received speaker honoraria and/or participated in advisory boards for Celltrion, Pfizer, Sanofi, Gilead, Galapagos, AbbVie, and Lilly; holds research grants from Pfizer and Lilly H.C. received grant support from Eli Lilly and UCB; consulting fees from Novartis, Eli Lilly, Orphazyme, AstraZeneca; speaker fees from UCB and Biogen I.P. received research funding and/or honoraria from Amgen, AstraZeneca, Aurinia Pharmaceuticals, Eli Lilly, Gilead Sciences, GlaxoSmithKline, Janssen Pharmaceuticals, Novartis, and F. Hoffmann-La Roche AG M.K. received research grants and personal fees from AbbVie, AsahiKasei, Astellas, Boehringer Ingelheim, Chugai, Corbus, GlaxoSmithKline, Horizon, Kissei, MBL, Mitsubishi-Tanabe, Mochida, Nippon Shinyaku, and Ono Pharmaceuticals J.D. received research funding from CSL Limited N.Z. received speaker fees, advisory board fees, and research grants from Pfizer, Roche, AbbVie, Eli Lilly, NewBridge, Sanofi-Aventis, Boehringer

							Ingelheim, Janssen, and Pierre Fabre (none related to this manuscript) O.D. has/had consultancy relationships and/or received research funding or speaker fees from AbbVie, Acceleron, Alcimed, Amgen, AnaMar, Arxx, Baecon, Blade, Bayer, Boehringer Ingelheim, ChemomAb, Corbus, CSL Behring, Galapagos, Glenmark, GSK, Horizon (Curzion), Inventiva, iQvia, Kymera, Lupin, Medac, Medscape, Mitsubishi Tanabe, Novartis, Roche, Roivant, Sanofi, Serodapharm, Topadur, and UCB; holds a patent for "mir-29 for the treatment of systemic sclerosis" (US8247389, EP2331143) R.A. has/had consultancy relationships and/or received research funding from Bristol Myers-Squibb, Pfizer, Genentech, Octapharma, CSL Behring, Mallinckrodt, AstraZeneca, Corbus, Kezar, AbbVie, Janssen, Alexion, Argenx, Q32, EMD Serono, Boehringer Ingelheim, and Roivant
69	https://doi.org/10.1186/s41927-022-00313-8	Nelson	2022	Presentation of SLE after COVID vaccination in a pediatric patient	Emory University School of Medicine, USA	None declared	None declared
70	https://doi.org/10.1007/s00296-022-05203-3	Sagy	2022	New-onset systemic lupus erythematosus following BNT162b2 mRNA COVID-19 vaccine: a case series and literature review	Soroka University Medical Center, Israel Ben-Gurion University of the Negev, Israel	Not mentioned	No conflicts declared

71	https://www.jstage.jst.go.jp/article/internalmedicine/61/10/61_9231-21/_article	Sakai	2022	Graves' Disease after Administration of Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) Vaccine in a Type 1 Diabetes Patient	Gifu University Graduate School of Medicine, Japan	Not mentioned	No conflicts declared
72	https://onlinelibrary.wiley.com/doi/abs/10.1111/jdi.13781	Sakurai	2022	Type 1 diabetes mellitus following COVID-19 RNA-based vaccine	National Hospital Organization Sendai Medical Center, Japan	Not mentioned	No conflicts declared
73	https://onlinelibrary.wiley.com/doi/10.1111/jdi.13757	Sasaki	2022	Newly developed type 1 diabetes after coronavirus disease 2019 vaccination: A case report	Keio University School of Medicine, Japan	Not mentioned	No conflicts declared
74	https://onlinelibrary.wiley.com/doi/10.1111/jdi.13771	Sasaki	2022	New-onset fulminant type 1 diabetes after severe acute respiratory syndrome coronavirus 2 vaccination: A case report	Osaka City University Graduate School of Medicine, Japan	Not mentioned	No conflicts declared
75	https://wwwnc.cdc.gov/eid/article/28/7/22-0127_article.htm	Sato	2022	Type 1 Diabetes Mellitus Associated with Nivolumab after Second SARS-CoV-2 Vaccination, Japan	Tohoku University Hospital, Japan	Not mentioned	No conflicts declared
76	https://www.msard-journal.com/article/S2211-0348(22)00252-8/fulltext	Satyanarayan	2022	Differential antibody response to COVID-19 vaccines across immunomodulatory therapies for multiple sclerosis	Icahn School of Medicine at Mount Sinai, USA	None declared	S. Klineova has given non-promotional lectures with Biogen Idec and Alexion; participated on advisory boards for Biogen Idec, Genentech, and Greenwich Biosciences S. Krieger reports consulting or advisory work with Biogen, EMD Serono, Genentech, Genzyme, Mallinckrodt,

MedDay, Novartis, Teva, and TG Therapeutics; non-promotional speaking with Biogen, EMD Serono, Genentech, and Novartis; received grant and research support from Biogen and Novartis

F. Lublin reports research funding from Novartis, Actelion, Biogen, Sanofi, NMSS, NIH, and Brainstorm Cell Therapeutics; served on consulting/advisory boards or DSMBs for Biogen, EMD Serono, Novartis, Teva, Actelion/Janssen, Sanofi/Genzyme, Acorda, Roche/Genentech, MedImmune/Viela Bio, Receptos/Celgene/BMS, TG Therapeutics, MedDay, Atara Biotherapeutics, Mapi Pharma, Apitope, Orion Biotechnology, Brainstorm Cell Therapeutics, Jazz Pharmaceuticals, GW Pharma, Mylan, Immunic, Population Council, Avotres, Neurogene, and Banner Life Sciences; holds stock options in Avotres; gave non-promotional speaker talks for Sanofi and EMD Serono

A. Miller reports consulting for AbbVie, Health Services (Caremark), Adamas, Biogen Idec, Bristol Myers Squibb/Celgene, Corrona, EMD Serono, Mallinckrodt, Mapi-Pharma, Novartis, and Roche/Genentech; gave non-promotional talks with Biogen Idec, EMD Serono, Alexion, and Genentech; received research support from Genzyme/Sanofi, Mallinckrodt, Novartis, Roche/Genentech, and

							MedDay J. Sumowski reports consulting or advisory work with Biogen and Genzyme
77	https://link.springer.com/10.1007/s00592-022-01885-0	Scaramuzza	2022	A nationwide survey of Italian pediatric diabetologists about COVID-19 vaccination in children and adolescents with type 1 diabetes	ASST Cremona, Italy	None declared	V.C. serves on the advisory board for Insulet and Eli Lilly; his institution has received research support from AstraZeneca, Eli Lilly, and Dompè D.L. has spoken for Abbott and received support for attending meetings from Eli Lilly I.R. serves on the advisory board for Sanofi Aventis and Movi; has spoken for Aboca, Abbott, Sanofi Aventis, and Eli Lilly R.S. has spoken for Abbott and Lilly; received support for attending meetings from Medtronic and Movi; served on advisory boards for Abbott and Sanofi A.E.S. has spoken for Sanofi and Abbott; received support for attending meetings from Movi; served on the advisory board for Medtronic and Movi
78	https://pmc.ncbi.nlm.nih.gov/articles/PMC9525201/	Sogbe	2022	Systemic lupus erythematosus myocarditis after COVID-19 vaccination	Clínica Universidad de Navarra, Spain	None declared	None declared
79	https://journals.sagepub.com/doi/10.1177/1759720X221089586	So	2022	Immunogenicity and safety of inactivated and mRNA COVID-19 vaccines in patients with	The Chinese University of Hong Kong, Hong Kong	None declared	None declared

				systemic lupus erythematosus			
80	https://onlinelibrary.wiley.com/doi/10.1111/1346-8138.16327	Sugimoto	2022	Exacerbation of systemic lupus erythematosus after receiving mRNA-1273-based coronavirus disease 2019 vaccine	Hiroshima University Hospital, Japan	JSPS KAKENHI grant no. 19K07940	None declared
81	https://linkinghub.elsevier.com/retrieve/pii/S2352396422002237	Sormani	2022	Breakthrough SARS-CoV-2 infections after COVID-19 mRNA vaccination in MS patients on disease modifying therapies during the Delta and the Omicron waves in Italy	University of Genova, Italy IRCCS Ospedale Policlinico San Martino, Genova, Italy	FISM – Fondazione Italiana Sclerosi Multipla; Italian Ministry of Health	M.P. Sormani received consulting fees from Roche, Biogen, Merck, Novartis, Sanofi, Celgene, Immunic, Geneuro, GSK, and MedDay; received payment or honoraria for lectures, presentations, speaker bureaus, manuscript writing, or educational events from Roche, Biogen, Merck, Novartis, Sanofi, and Celgene; participated on Data Safety Monitoring Boards or Advisory Boards for Roche, Sanofi, Novartis, and Merck A. Uccelli received institutional grants from FISM, Biogen, Roche, Alexion, and Merck Serono; participated on Data Safety Monitoring Boards or Advisory Boards (to his institution) for BD, Biogen, Iqvia, Sanofi, Roche, Alexion, and Bristol Myers Squibb M. Ulivelli received consulting fees from Biogen, Novartis, and Serono F. Caleri received honoraria for lectures or presentations from Biogen, Merck, Teva, Novartis, Sanofi-Genzyme, and Roche; received support for meeting attendance and travel from Biogen, Merck, Teva, Novartis, Sanofi-Genzyme, and Roche; received

honoraria for participation on Advisory Boards from Biogen, Merck, Teva, Novartis, Sanofi-Genzyme, and Roche

C. Cordioli received grants or contracts from Roche, Novartis, Merck Serono, Biogen, and Celgene; received consulting fees from Biogen

M. Inglese received grants or contracts from FISM, INAIL, and the European Union

A. Laroni received grants or contracts from the Italian Ministry of University and the Ministry of Health; received consulting fees from Merck, Biogen, Roche, Novartis, and Bristol-Myers Squibb Pharma EEIG; received honoraria for lectures, presentations, speaker bureaus, manuscript writing, or educational events from Merck, Biogen, Roche, Novartis, and Bristol-Myers Squibb Pharma EEIG

M. Salvetti received grants or contracts from Biogen, Merck, and Novartis; received payments or honoraria for lectures, presentations, speaker bureaus, manuscript writing, or educational events from Biogen, Merck, Novartis, Roche, and Sanofi

D. Landi received consulting fees from Merck Serono, Celgene, Bristol Myers Squibb, Roche, Novartis, and Teva; received payments or honoraria for lectures, presentations, speaker bureaus, manuscript writing, or educational

							events from Merck Serono, Celgene, Bristol Myers Squibb, Biogen, Roche, Novartis, Sanofi Genzyme, and Mylan; received support for attending meetings and/or travel from Merck Serono, Biogen, Roche, Sanofi Genzyme, Novartis, and Mylan; participated on Data Safety Monitoring Boards or Advisory Boards for Merck Serono, Celgene, Bristol Myers Squibb, Biogen, Roche, and Sanofi Genzyme
82	https://linkinghub.elsevier.com/retrieve/pii/S0929664622000729	Shih	2022	SARS-CoV-2 vaccination related hyperthyroidism of Graves' disease	National Taiwan University Hospital, Taiwan	None declared	None declared
83	https://www.tandfonline.com/doi/full/10.1080/09273948.2022.2089901	Shirah	2022	Optic Neuritis Following the BNT162b2 mRNA COVID-19 Vaccine in a Patient with Systemic Lupus Erythematosus Uncovering the Diagnosis of Neuromyelitis Optica Spectrum Disorders	King Faisal Specialist Hospital & Research Centre, Saudi Arabia	None declared	None declared
84	https://europepmc.org/article/PPR/PPR439864	Singh	2022	New onset rheumatoid arthritis with refractory hyper-eosinophilia associated with inactivated COVID-19 vaccin	Postgraduate Institute of Medical Education and Research, India	None declared	None declared
85	https://jamanetwork.com/journals/jamanetworkopen/fullarticle/2799956	Smith	2022	Analysis of Rituximab Use, Time Between Rituximab and SARS-CoV-2	Southern California Permanente Medical Group, USA	This work was supported in part through Patient-Centered Outcomes Research Institute Program Award MS-1511-33196 (Dr Langer-Gould).	None declared

				Vaccination, and COVID-19 Hospitalization or Death in Patients with Multiple Sclerosis			
86	https://pubmed.ncbi.nlm.nih.gov/34791449/	Sekar	2022	Lupus nephritis flare post Moderna mRNA-1273 coronavirus vaccine	Associates in Kidney Care, USA	None mentioned	None declared
87	https://www.europeanreview.org/article/28500	Taieb	2022	A rare case of grave's disease after SARS-CoV-2 vaccine: is it an adjuvant effect?	University Hospital of Farhat Hached Sousse, Tunisia	None declared	None declared
88	https://linkinghub.elsevier.com/retrieve/pii/S1262363622000076	Tang	2022	Fulminant type 1 diabetes after COVID-19 vaccination	The Second Xiangya Hospital of Central South University, China	None declared	None declared
89	https://link.springer.com/10.1007/s10238-022-00832-1	Tang	2022	Attitudes towards and safety of the SARS-CoV-2 inactivated vaccines in 188 patients with systemic lupus erythematosus: a post-vaccination cross-sectional survey	The Third Xiangya Hospital of Central South University, China	The Education Reform Foundation of Central South University (No. 2021JY188) and Hunan Province (HNJG-2021-0322), the National Natural Science Foundation of China (No. 81802208), the Natural Science Foundation of Hunan Province (No. 2021JJ40922), and the Foundation of Health Commission of Hunan Province (No. 202204074821) fund this study.	None declared
90	https://linkinghub.elsevier.com/retrieve/pii/S2211034822006277	Tavazzi	2022	Quantitative and qualitative features of acute phase-adverse events following SARS-CoV-2 vaccination in	IRCCS Mondino Foundation, Italy	None declared	RB has served on scientific advisory boards for Biogen, Merck-Serono, Novartis, Sanofi-Genzyme; he received research support from Almirall, Bayer, Biogen, Merck-Serono, Novartis, Sanofi-Genzyme; he received support

				a large sample of people with multiple sclerosis			for travel and congress from Biogen, Roche, Merck-Serono, Sanofi-Genzyme, Teva; received honoraria for speaking engagement from Biogen, Merck-Serono, Novartis, Sanofi-Genzyme
91	https://www.sciencedirect.com/science/article/pii/S016557282100312X	Toljan	2022	New diagnosis of multiple sclerosis in the setting of mRNA COVID-19 vaccine exposure	Cleveland Clinic, USA	None declared	None declared
92	https://onlinelibrary.wiley.com/doi/10.1002/kjm2.12630	Wang	2022	Systemic lupus erythematosus with acrocyanosis after AstraZeneca COVID-19 vaccination	Kaohsiung Medical University, Taiwan	Not reported	None declared
93	https://linkinghub.elsevier.com/retrieve/pii/S0753332222003869	Wang	2022	Seroprevalence of SARS-CoV-2-specific antibodies and vaccination-related adverse events in systemic lupus erythematosus and rheumatoid arthritis	Anhui Medical University, China	This study was funded by grants from the National Natural Science Foundation of China (81872687, 82103932), Anhui Provincial Natural Science Foundation (2108085Y26, 2108085QH361) and Research Fund of Anhui Institute of Translational Medicine (2021zhyx-B04).	None declared
94	https://www.frontiersin.org/journals/immunology/articles/10.3389/fimmu.2022.859926/full	Watanabe	2022	Case Report: New-Onset Rheumatoid Arthritis Following COVID-19 Vaccination	Kindai University Faculty of Medicine, Japan	This study was supported in part by a Grant-in-Aid for Scientific Research (22K07996) from Japan Society for the Promotion of Science, Yakult Bioscience Foundation, Smoking Research Foundation and Takeda Science Foundation.	None declared
95	https://www.frontiersin.org/articles/10.3389/fendo.2022.840580/full	Yakou	2022	A Case Series of Ketoacidosis After Coronavirus Disease 2019 Vaccination in	Tokyo Medical University Hachioji Medical Center, Japan	Not mentioned	None declared

				Patients with Type 1 Diabetes			
96	https://www.jstage.jst.go.jp/article/internalmedicine/61/8/61_9004-21/_article	Yano	2022	New-onset Type 1 Diabetes after COVID-19 mRNA Vaccination	Osaka City University Graduate School of Medicine, Japan	Not mentioned	None declared
97	https://www.jstage.jst.go.jp/article/internalmedicine/61/22/61_0257-22/_article	Yonezawa	2022	New-onset Seropositive Rheumatoid Arthritis Following COVID-19 Vaccination in a Patient with Seronegative Status	Seirei Hamamatsu General Hospital, Japan	Not mentioned	None declared
98	https://lupus.bmj.com/content/9/1/e000727	Yoshida	2022	Medium-term impact of the SARS-CoV-2 mRNA vaccine against disease activity in patients with systemic lupus erythematosus	Kyoto University, Japan	None declared	None declared
99	https://acrjournals.onlinelibrary.wiley.com/doi/10.1002/acr.24824	Yuki	2022	Impact of Distinct Therapies on Antibody Response to SARS-CoV-2 Vaccine in Systemic Lupus Erythematosus	Hospital das Clínicas, University of São Paulo, Brazil	Supported by Fundação de Amparo à Pesquisa do Estado de São Paulo (grant 2015/03756–4 to Drs. Pasoto, Silva, Aikawa, and Bonfa, grant 2017/14352-7 to Dr. Pedrosa, grant 2019/17272-0 to Dr. Kupa, and grant 2021/06615-3 to Ms. Hoff), Conselho Nacional de Desenvolvimento Científico e Tecnológico (grant 305242/2019-9 to Dr. Bonfa, grant 304984/2020-5 to Dr. Silva, and grant 306879/2018-2 to Dr. Borba), and B3 - Bolsa de Valores do Brasil. Instituto Butantan, Sao Paulo, Brazil, provided the study product.	Eduardo F Borba - reports research Grants from Conselho Nacional de Desenvolvimento Científico e Tecnológico (CNPq) Sandra Gofinet Pasoto - reports funding from Fundação de Amparo à Pesquisa do Estado de São Paulo (FAPESP) Clovis Artur Almeida da Silva - reports funding from Fundação de Amparo à Pesquisa do Estado de São Paulo (FAPESP); Funding from Conselho Nacional de Desenvolvimento Científico e Tecnológico (CNPq) Danieli Castro Oliveira de Andrade -

							reports leadership or fiduciary role paid or unpaid in Brazilian Society of Rheumatology, Rheumatology Society – State of São Paulo and APS Action Alliance for Clinical Trials &Intl. Networking Léonard De Vinci Kanda Kupa - reports funding from Fundação de Amparo à Pesquisa do Estado de São Paulo (FAPESP) Camilla Oliveira Hoff - reports funding from Fundação de Amparo à Pesquisa do Estado de São Paulo (FAPESP) Tatiana do Nascimento Pedrosa - reports funding from Fundação de Amparo à Pesquisa do Estado de São Paulo (FAPESP) Nadia Emi Aikawa - reports funding from Fundação de Amparo à Pesquisa do Estado de São Paulo (FAPESP) Eloisa Bonfá - reports funding from Fundação de Amparo à Pesquisa do Estado de São Paulo (FAPESP); Conselho Nacional de Desenvolvimento Científico e Tecnológico (CNPq) and from B3 - Bolsa de Valores do Brasil (paid to their institution)
100	https://doi.org/10.1007/s10067-021-05980-5	Zavala-Flores	2022	Side effects and flares risk after SARS-CoV-2	Cayetano Heredia Hospital, Peru	None mentioned	None declared

				vaccination in patients with systemic lupus erythematosus			
101	https://onlinelibrary.wiley.com/doi/10.1111/jdv.17827	Zengarini	2022	Subacute cutaneous lupus erythematosus induction after SARS-CoV-2 vaccine in a patient with primary biliary cholangitis	University of Bologna, Italy	None mentioned	None declared
102	https://doi.org/10.1007/s40618-021-01650-0	Zettinig	2022	Two further cases of Graves' disease following SARS-Cov-2 vaccination	Vienna Thyroid Center Schilddruesenpraxis Josefstadt, Austria	None declared	None declared
103	https://www.frontiersin.org/articles/10.3389/fpubh.2022.875558/full	Zhao	2022	Immunogenicity of inactivated SARS-CoV-2 vaccines in patients with rheumatoid arthritis: A case series	Yunnan University of Chinese Medicine, China	National Natural Science Foundation of China and several provincial funds	None declared
104	https://linkinghub.elsevier.com/retrieve/pii/S1568997222000660	Patrizio	2022	Worsening of Graves' ophthalmopathy after SARS-CoV-2 mRNA vaccination	, Azienda Ospedaliero-Universitaria Pisana, Pisa, Italy	Not mentioned	Declared none
105	https://onlinelibrary.wiley.com/doi/10.1111/pedi.13326	Piccini	2022	COVID-19 vaccination in adolescents and young adults with type 1 diabetes: Glycemic control and side effects	Meyer University Children's Hospital, Italy	Not mentioned	Not mentioned
106	https://jnnp.bmj.com/content/93/9/978	Räuber	2022	Immune response to SARS-CoV-2 vaccination in relation to peripheral immune cell profiles among patients with	Heinrich Heine University Düsseldorf, Germany	This project was supported by a grant from the DMSG OV Düsseldorf u.U.e.V. (no grant number).	M.K. received travel grants from Merck Serono and Biogen L.R. received travel reimbursements from Merck Serono and Sanofi Genzyme

	multiple sclerosis receiving ocrelizumab	M.P.'s research is funded by the German Multiple Sclerosis Society North Rhine-Westphalia (DMSG), Novartis, and the "Innovative Medizinische Forschung" (IMF) programme of the University of Muenster M.B. served on scientific advisory boards for Biogen, Novartis, and Genzyme; received conference travel support from Biogen and Novartis; serves on steering committees for Novartis trials; his institution has received research support from Biogen, Merck, and Novartis H.-P.H. received fees for consulting, speaking, and steering committee participation from Bayer Healthcare, Biogen, GeNeuro, MedImmune, Merck, Novartis, Opexa, Receptos Celgene, Roche, Sanofi Genzyme, CSL Behring, Octapharma, and Teva with approval from Heinrich-Heine-University O.A. received personal fees from Alexion, Bayer Healthcare, Biogen, Celgene, Merck Serono, MedImmune, Novartis, Roche, Teva, and Zambon; received research support from the German Science Foundation (DFG) and the German Ministry of Education, Science, Research and Technology (BMBF), outside the submitted work P.A. received compensation for advisory boards, speaker honoraria, and/or travel support from Novartis, Teva, Biogen,

Bristol Myers Squibb, Celgene, Janssen Cilag, Merz Pharmaceuticals, Ipsen, Allergan, Bayer Healthcare, Eisai, UCB, GlaxoSmithKline, and Roche; received research support from Novartis, Biogen, Celgene, Teva, Merz Pharmaceuticals, Ipsen, and Roche

N.M. received honoraria for lecturing and travel expenses from Biogen Idec, GlaxoSmithKline, Teva, Novartis Pharma, Bayer Healthcare, Genzyme, Alexion Pharmaceuticals, Fresenius Medical Care, Diamed, and BIAL; received research support from Euroimmun, Fresenius Medical Care, Diamed, Alexion Pharmaceuticals, and Novartis Pharma

T.R. received grants from the German Ministry of Education, Science, Research and Technology during the conduct of the study; grants and personal fees from Sanofi Genzyme; personal fees from Biogen, Merck Serono, Roche, and Teva, all outside the submitted work

S.G.M. received honoraria and travel expenses for meetings from Almirall, Amicus Therapeutics Germany, Bayer Healthcare, Biogen, Celgene, Diamed, Genzyme, MedDay Pharmaceuticals, Merck Serono, Novartis, Novo Nordisk, ONO Pharma, Roche, Sanofi-Aventis, Chugai Pharma, QuintilesIMS, and Teva; his research is funded by BMBF, DFG, Else Kröner Fresenius Foundation, DAAD, Hertie Foundation,

							IZKF Muenster, German Foundation Neurology, and by Almirall, Amicus Therapeutics Germany, Biogen, Diamed, Fresenius Medical Care, Genzyme, Merck Serono, Novartis, ONO Pharma, Roche, and Teva D.K. received travel grants from GeNeuro and Merck, congress fee refunds from GeNeuro, Merck, and Servier; consulting and lecture payments from Grifols; research support from Teva; funded by DFG
107	https://onlinelibrary.wiley.com/doi/abs/10.1155/2022/9698138	Raviv	2022	First Presentation of Systemic Lupus Erythematosus in a 24-Year-Old Male following mRNA COVID-19 Vaccine	Soroka University Medical Center, Israel	Not mentioned	None declared
108	https://pubmed.ncbi.nlm.nih.gov/36041291/	Rodriguez	2022	Autoimmune and autoinflammatory conditions after COVID-19 vaccination. New case reports and updated literature review	Clinica de Occidente, Colombia	Universidad del Rosario (grant ABN011) and LifeFactors.	None declared
109	https://doi.org/10.1007/s40618-022-01863-x	Ruggeri	2022	SARS-CoV-2 vaccine may trigger thyroid autoimmunity: real-life experience and review of the literature	University of Messina, Italy	Not supported by any funding	None declared

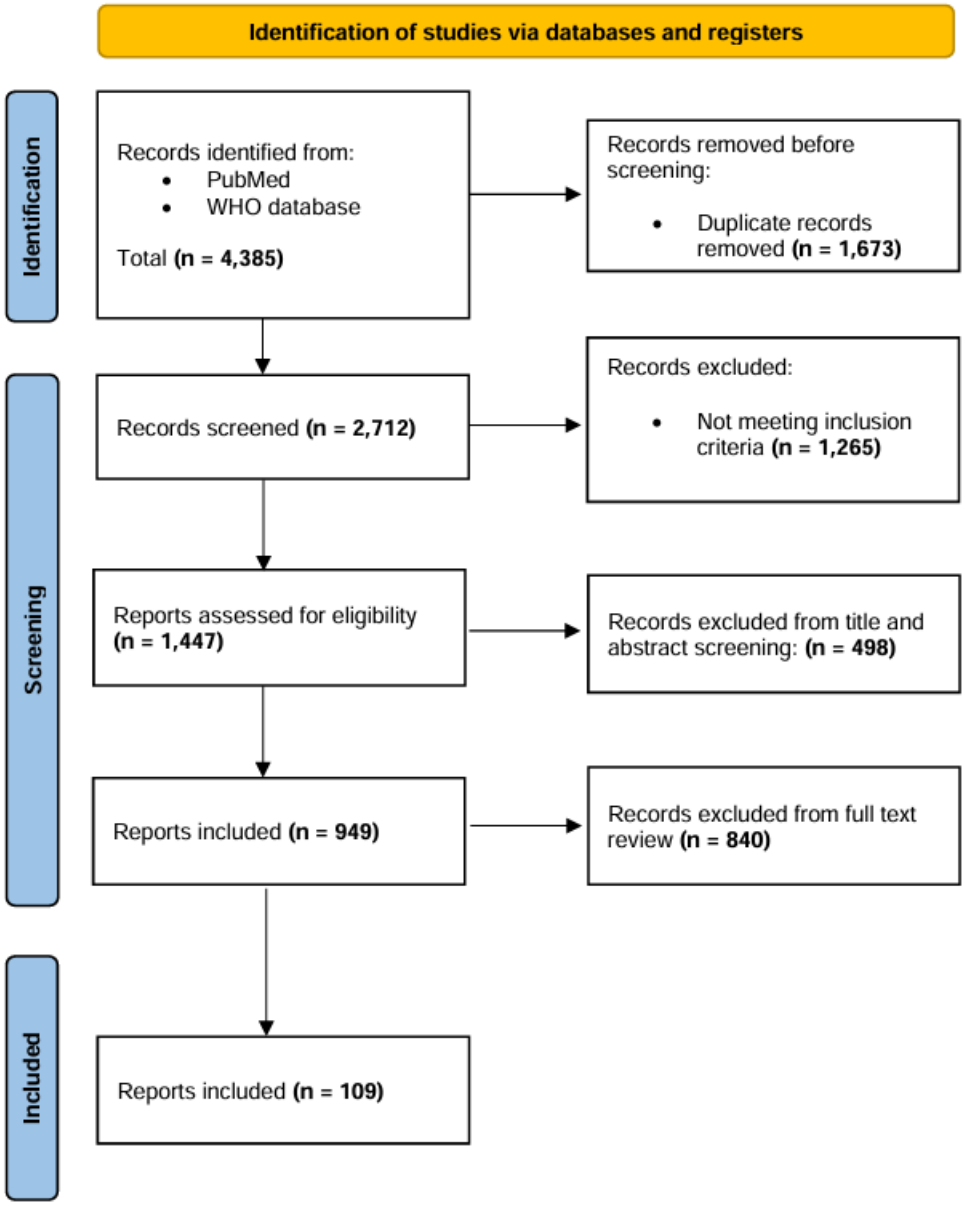

Figure A.1. PRISMA flow chart. From: https://www.prisma-statement.org/prisma-2020-flow-diagram.