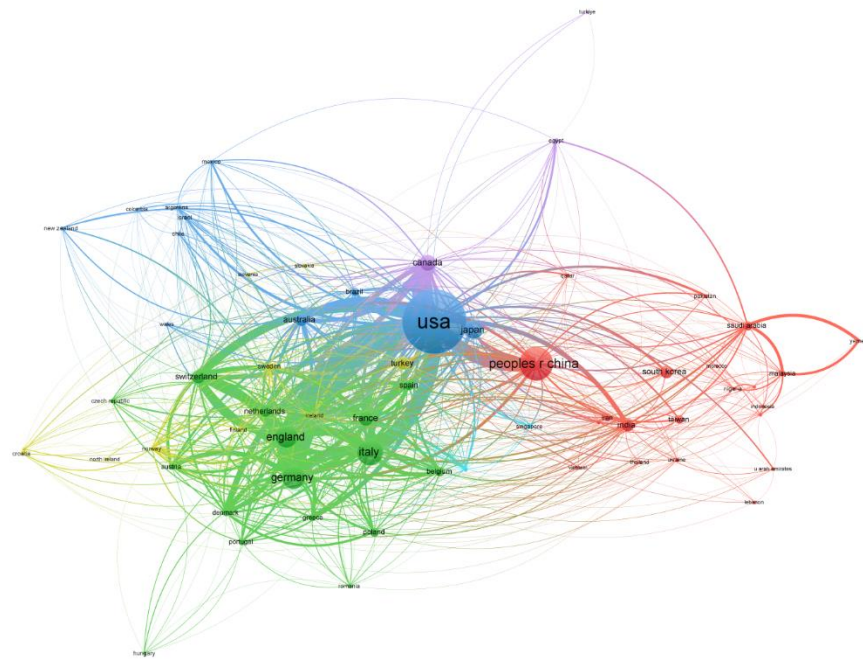
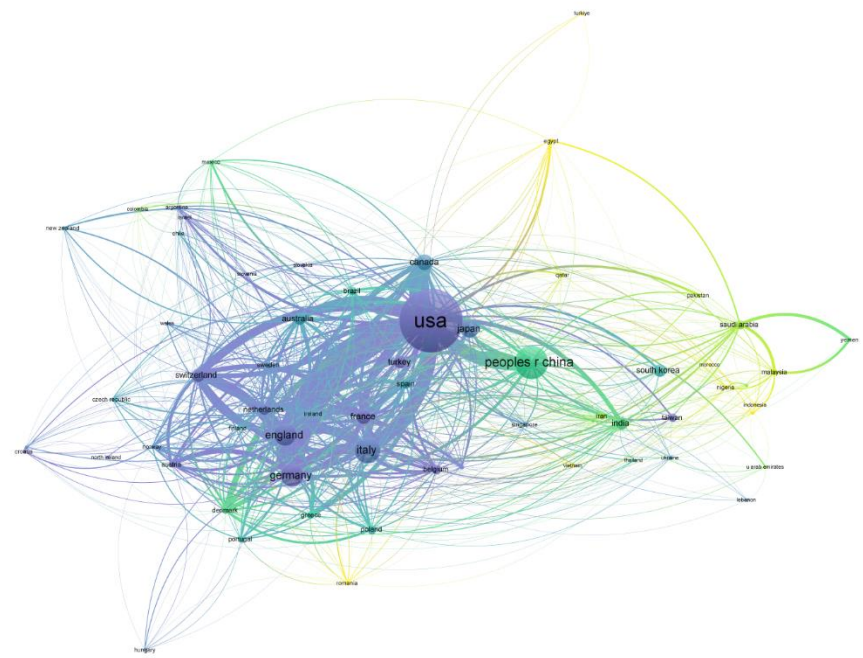


A



VOSviewer

B



VOSviewer



Figure S1

Visualization maps of the country from 2003 to 2023. **(A)** Network diagram of countries for patent foramen ovale research, grouped by color. **(B)** Network diagram of

A



Visualization maps of the institution. **(A)** Network diagram of institutions for patent foramen ovale research from 2003 to 2023, grouped by color. **(B)** Network diagram of institutions for patent foramen ovale research from 2003 to 2023. Yellow is close to 2023, blue is close to 2010.

Table S1 Top 10 authors of publications, total citations, and H-index

Rank	Author	Publications	Total citations	H-index
1	Meier B	81 (1.025%)	4,071	31
2	Cao Y	68 (0.860 %)	3,042	28
3	Rigatelli G	47 (0.595%)	710	16
4	Windecker S	41 (0.519%)	2,775	22
5	Sievert H	39 (0.493%)	1,813	20
6	Mattle HP	38 (0.481%)	5,188	28
7	Post MC	37 (0.468%)	784	17
8	Tobis JM	36 (0.455%)	1,425	21
9	Diener HC	34 (0.430%)	3,855	16
10	Zhang Y	33 (0.417%)	879	10

Table S2 Top 10 co-cited authors of total citations, and total link strength

Rank	Author	Total citations	Total link strength
1	Mas JL	1,360	36938
2	Homma S	1,116	37570
3	Hagen PT	912	18771
4	Meier B	757	20068
5	Lechat P	627	17361
6	Kent DM	626	18086
7	Wilmschurst PT	586	15869
8	Hart RG	567	22687
9	Saver JL	567	15463
10	Anzola GP	562	17315

Table S3 Top 10 journals of publications, JCR.

Rank	Journal	Publications	JCR (2023)
1	Catheterization and Cardiovascular Interventions	249 (3.150 %)	Q3
2	Echocardiography-A Journal of Cardiovascular Ultrasound and Allied Techniques	111 (1.404 %)	Q3
3	Cureus Journal of Medical Science	101 (1.278 %)	Q3
4	Stroke	98 (1.240 %)	Q1
5	Journal of Stroke Cerebrovascular Diseases	84 (1.063 %)	Q3
6	Cardiology in The Young	83 (1.050 %)	Q3
7	Journal of The American Society of Echocardiography	75 (0.949 %)	Q1
8	International Journal of Cardiology	74 (0.936 %)	Q2
9	American Journal of Cardiology	72 (0.911 %)	Q2
10	Pediatric Cardiology	69 (0.873 %)	Q2

Table S4 Top 10 co-cited journal of total citations, JCR.

Rank	Journal	Total citations	JCR (2023)
1	Stroke	13,124	Q1
2	Circulation	10,136	Q1
3	New England Journal of Medicine	9,867	Q1
4	Journal of The American College of Cardiology	9,355	Q1
5	Neurology	6,063	Q1
6	American Journal of Cardiology	4,867	Q2
7	Lancet	3,934	Q1
8	Catheterization and Cardiovascular Interventions	3,410	Q3
9	European Heart Journal	3,015	Q1
10	Journal of The American Society of Echocardiography	2,905	Q1

Table S5 Top 20 keywords of publications.

Rank	Keywords	Counts	Rank	Keywords	Counts
1	Patent foramen ovale	2787	11	Prevalence	439
2	Stroke	1028	12	Migraine	407
3	Cryptogenic stroke	879	13	Medical therapy	400
4	Transesophageal echocardiography	679	14	Ischemic-stroke	383
5	Transcatheter closure	666	15	Diagnosis	380
6	Echocardiography	593	16	Atrial septal aneurysm	361
7	Percutaneous closure	579	17	Atrial septal defect	352
8	Closure	535	18	Transcranial doppler	350
9	Risk	510	19	Management	342
10	Paradoxical embolism	494	20	To-left shunt	290

Table S6 Top 10 highly co-cited references, JCR, and co-citations.

Rank	Title	Journal	Authors	JCR (2023)	Co-citations
1	Incidence and size of patent foramen ovale during the first 10 decades of life: an autopsy study of 965 normal hearts	MAYO CLINIC PROCEEDINGS	Hagen PT	Q1	910
2	Recurrent cerebrovascular events associated with patent foramen ovale, atrial septal aneurysm, or both	New England Journal of Medicine	Mas JL	Q1	653
3	Prevalence of patent foramen ovale in patients with stroke	New England Journal of Medicine	Lechat P	Q1	602
4	Interatrial septal abnormalities and stroke: a meta-analysis of case-control studies	Neurology	Overell JR	Q1	472
5	Closure or medical therapy for cryptogenic stroke with patent foramen ovale	New England Journal of Medicine	Furlan AJ	Q1	470
6	Effect of medical treatment in stroke patients with patent foramen ovale: patent foramen ovale in Cryptogenic Stroke Study	Circulation	Homma S	Q1	470
7	Patent Foramen Ovale Closure or Anticoagulation vs. Antiplatelets after Stroke	New England Journal of Medicine	Mas JL	Q1	467
8	Patent Foramen Ovale Closure or Antiplatelet Therapy for Cryptogenic Stroke	New England Journal of Medicine	Sondergaard L	Q1	463
9	Closure of patent foramen ovale versus medical therapy after cryptogenic stroke	New England Journal of Medicine	Carroll JD	Q1	451
10	Percutaneous closure of patent foramen ovale in cryptogenic embolism	New England Journal of Medicine	Meier B	Q1	447