

MolecularMatch Trial Search Update (July, 2019)

MolecularMatch was founded on idea of making clinical trial search better. Better for doctors, better for patients, better for health technology integrators. The scoring algorithm we developed, [patented](#), and continually improve, is how we deliver this value.

With our search engine expertise, we have created the most clinically relevant and user friendly trial search in the industry. Our goal is that the most relevant results show up in the top 10 for any clinical oncology search. This means patients have a better chance to get the right treatment.

Trials are continually updated, scored, and sorted for you to easily incorporate into your products. You will find them in our API or Portal.

- [Trial Search API](#)
 - [Search Portal Application](#)
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Search Filtering

The most important factor affecting your search results is what filters are matched, and what is filtered out because of your inputs. Inputs span [everything from Age, Mutation to Geo-Location and more](#).

Your inputs are matched to different parts of the trial like title, summary and inclusion criteria. When inputs match exclusion criteria, those trials are filtered out from the results.

Scoring System Explained

Trials are accessed through API endpoints or search portals. They are returned sorted based on a highly advanced scoring system. Through extensive testing with M.D. and Ph.D. oversight, we've developed a search engine that is most likely to have results relevant to your case.

Scores are made up of a combination of intrinsic and extrinsic values.

Intrinsic scores are related to attributes of the trial, such as:

1. Trial Types (scores adjust up or down).
2. Phase (III > II > I)

The extrinsic score is calculated at search time by matching your search criteria to information on the trial. For example, terms matched in the title are given preference to terms found in the summary automatically. However, the curation continuously overrides this logic by adjusting the priorities of terms based on their scientific understanding of the trial.

Trial Types for Score Adjustments

Trial Types influence the intrinsic score. The highest scoring trials will be those of clinical utility such as those corresponding to clinical trials (higher phases scoring higher), interventional treatments, practice guidelines, case studies, consensuses, etc. Lower scoring publications will correspond with observational research only, animal models, cell-lines, etc.

Test Suite Curation

Ranking has been validated through hundreds of test suites. Test suites represent patient cases (gene/variant + condition), and we use them to check and adjust the ranking of trials so that the most relevant come up first.

Tuning the algorithm is a frequent task as we learn new things about trials and get additional oversight from clients and internal curation teams.

Curation is also how we develop our [biomedical rules engine](#) for further tuning.

Trial Acquisition and Registry Coverage

In 2008, the World Medical Association's Declaration of Helsinki stated that, "Every clinical trial must be registered in a publicly accessible database before recruitment of the first subject." This spurred many countries to start their own clinical trial registries, or to conform to the standards of other major registries like the US's ClinicalTrials.gov. Many organizations now choose to list their trials in a major registry, their home registry, or both.

At MolecularMatch we bring in all trials and merge them into a consistent format; eliminating duplicates across registries and fill in missing data. We keep this data updated so that we can be sure to contain the majority of registered trials in a format for our algorithms to process, and for our users to distribute information to medical practices around the globe.

Public Registries Incorporated into MM Database

MolecularMatch indexes trials by weekly acquisition from a global collection of registries.

Registry Code	Registry Name	Count
CTGOV	ClinicalTrials.gov	252,112
UMIN	University Hospital Medical Information Network (Japan)	5,179
ANZCTR	Australia/New Zealand Clinical Trials Registry	4,979
ChiCTR	Chinese Clinical Trials Registry	4,031
DRKS	German Clinical Trials Registry	3,165
IRCT	Iranian Registry of Clinical Trials	2,953
EUCTR	European Clinical Trials Registry	1,965
ISRCTN	International Standard Registry of Clinical Trials	1,855
CTRI	Indian Clinical Trials Registry	1,456
NTR	Netherlands Trial Registry	773
CRIS	Clinical Research Information Service (Korea)	476
TCTR	Thai Clinical Trials Registry	422
REBEC	Brazilian Clinical Trials Registry	374
PACTR	Pan African Clinical Trials Registry	174
JapicCTI	Japan Pharmaceutical Information Center - Clinical Trials Information	115
REPEC	Peruvian Clinical Trial Registry	70
JMACCT	Japan Medical Association - Center for Clinical Trials	49
SLCTR	Sri Lanka Clinical Trials Registry	31
RPCEC	Cuban Public Registry of Clinical Trials	8
<i>counts from: 04/10/2018</i>		

Registry Merging

Many trials are listed on *more than one* registry. We handle that by registry priority and secondary identification. For example, if a trial coming in from UMIN has a secondary identifier that is a NCT. No. from ClinicalTrials.gov, the UMIN trial will not make into the final trial table. Instead, a link between the two are created because we already have it from a better source.

Trial Site Geo-Location Enhancements

One of our biggest value additions has been our geo-location and medical group enhancements. Through Google Maps integration, we continuously find the locations of trial sites around the world. We've added millions of addresses for sites that were otherwise not known. This allows features like [distance-based](#) and medical group searches; that way you can find trials near you or at a specific institution. Only with MolecularMatch is this advanced level of geo-location available.

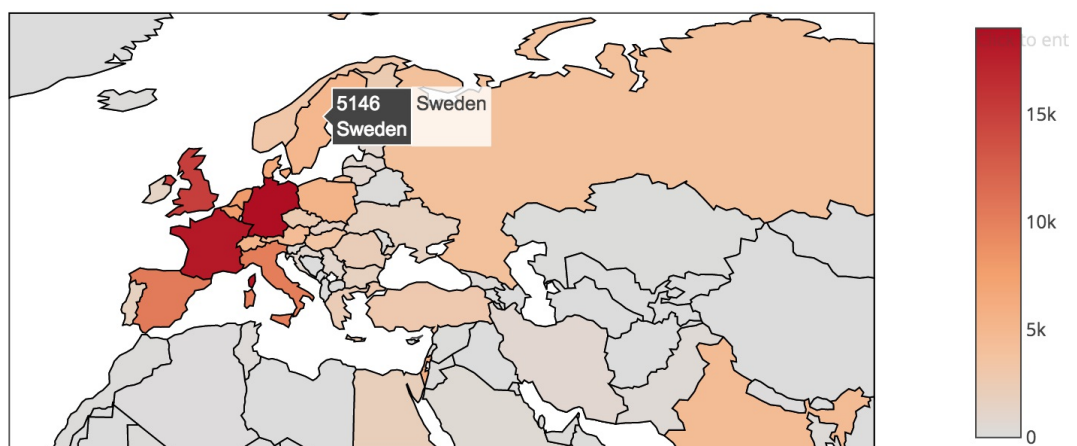
Thousands of hospitals, universities, pharmaceutical / biotechnology companies, contract research organizations, government entities and clinics are represented in the system.

Datasets: World Map of Trials

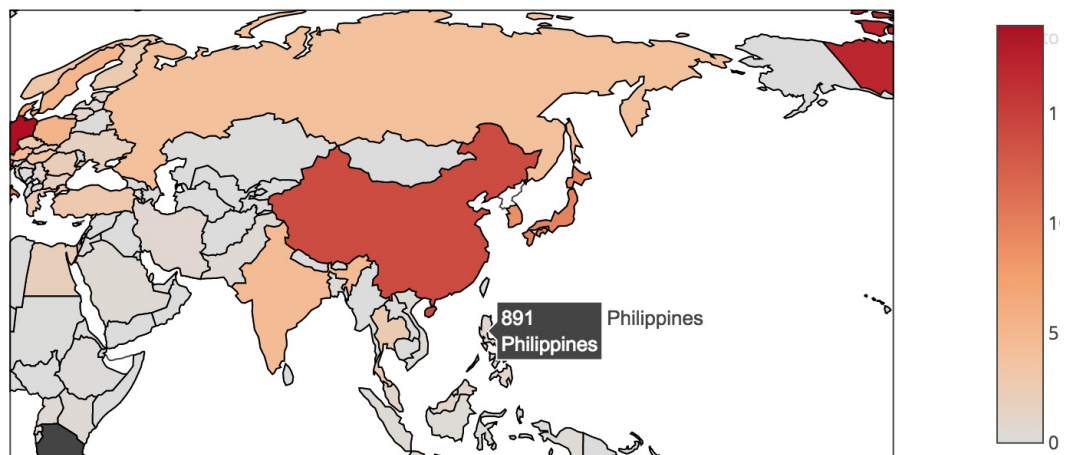
We can easily develop datasets and analytics through our deep understanding of trial data. This data can be used by a variety of industries like medical, financial, research and pharmaceutical groups.

One example would be a country by country breakdown of trial numbers.

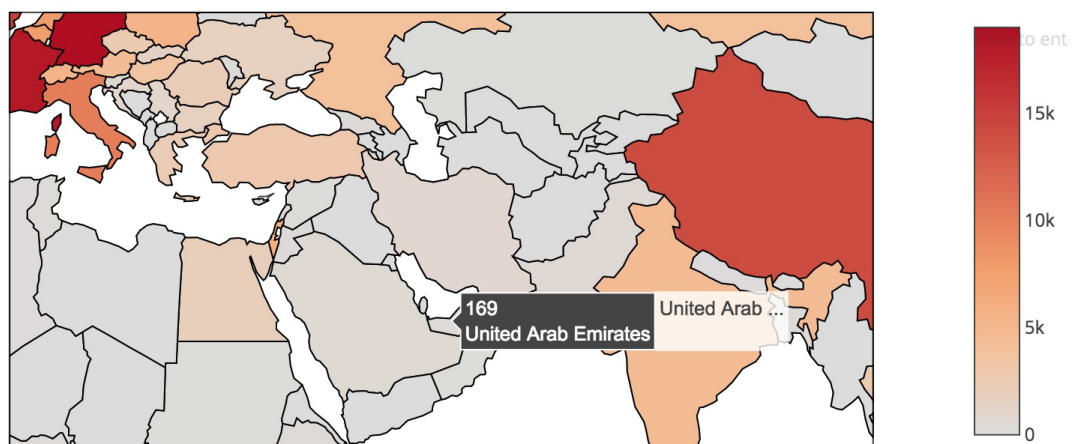
Germany, France lead Europe



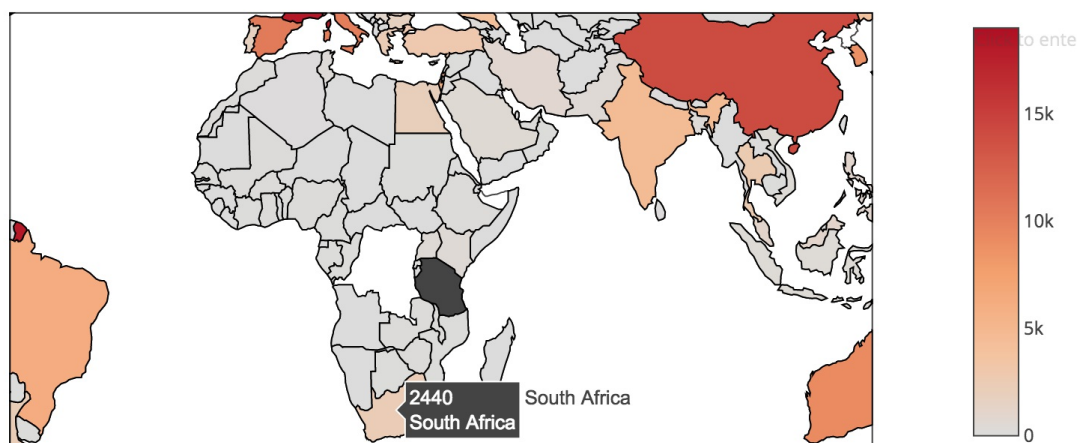
China, Japan, Korea lead Asia



Turkey, Iran, Egypt lead the Middle East / North Africa region



South Africa, Uganda and Kenya lead



Total Counts - (for countries > 3 trials)

United States	100803	Thailand	2593	Pakistan	398	Zimbabwe	103	Congo	36	Madagascar	12
Germany	19008	Czech Republic	2593	Kenya	392	Morocco	98	Sudan	35	Azerbaijan	12
France	18209	South Africa	2440	Lebanon	365	Qatar	94	Benin	35	Lao People's Democratic	11
Canada	17047	Greece	2359	Indonesia	346	Nepal	87	Jamaica	35	Swaziland	11
United Kingdom	15018	Argentina	2353	Vietnam	345	Sri Lanka	84	Côte D'Ivoire	33	Libyan Arab Jamahiriya	9
China	14104	New Zealand	2290	Bangladesh	283	Algeria	84	Monaco	33	Somalia	8
Spain	10424	Romania	2239	Guatemala	280	Kuwait	80	Albania	31	Solomon Islands	8
Italy	10223	Egypt	1993	Georgia	279	Cambodia	75	Malta	30	Chad	8
Japan	9845	Singapore	1908	Tanzania	253	Kazakhstan	69	Iraq	28	Yemen	8
Australia	9220	Puerto Rico	1730	Panama	249	Syrian Arab Republic	65	Paraguay	28	Barbados	8
South Korea	8787	Bulgaria	1699	Tunisia	231	Cyprus	65	Papua New Guinea	26	Central African Republic	7
Netherlands	7879	Ukraine	1679	Belarus	209	Senegal	64	Kyrgyzstan	23	Andorra	7
Belgium	7730	Portugal	1674	Malawi	185	Rwanda	62	Niger	22	Togo	7
Denmark	6263	Hong Kong	1523	Bosnia and Herzegovina	179	Botswana	62	Myanmar	21	Angola	6
Brazil	6247	Slovakia	1506	United Arab Emirates	169	Honduras	61	Afghanistan	21	RA@union	6
Israel	5933	Ireland	1442	Zambia	163	Uruguay	60	Sierra Leone	21	Fiji	6
Poland	5482	Chile	1344	Jordan	162	Cameroon	59	Martinique	20	American Samoa	5
Switzerland	5377	Colombia	1114	Costa Rica	153	Mozambique	57	Montenegro	20	Grenada	5
Sweden	5146	Malaysia	1059	Dominican Republic	151	Gambia	57	Mongolia	19	Kosovo	5
Taiwan	4773	Serbia	970	Venezuela	151	Cuba	54	Mauritius	18	Brunei Darussalam	4
India	4579	Peru	936	Moldova	132	Haiti	47	Uzbekistan	17	Mauritania	4
Austria	4466	Croatia	894	Nigeria	131	Taiwan	45	Liberia	17	Namibia	4
Russian Federatio	3995	Philippines	891	Iceland	128	Armenia	43	Bahamas	17	Former Yugoslavia	4
Hungary	3470	Estonia	844	Ghana	118	Bolivia	41	Guinea	15	Suriname	4
Norway	3183	Lithuania	838	Macedonia	118	Guinea-Bissau	41	Belize	14	Equatorial Guinea	4
Iran	3756	Iran	798	Burkina Faso	116	Republic of the Congo	41	Lesotho	13	Bhutan	4
Mexico	2922	Latvia	781	Mali	115	El Salvador	41	Burundi	12	Guyana	3
Turkey	2824	Slovenia	564	Luxembourg	112	Bahrain	39	Trinidad and Tobago	12	Timor-Leste	3
Finland	2614	Saudi Arabia	525	Ecuador	112	Oman	39	Guadeloupe	12	Taiwan	3
		Uganda	403	Ethiopia	110	Gabon	37	Nicaragua	12	Western Sahara	3

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