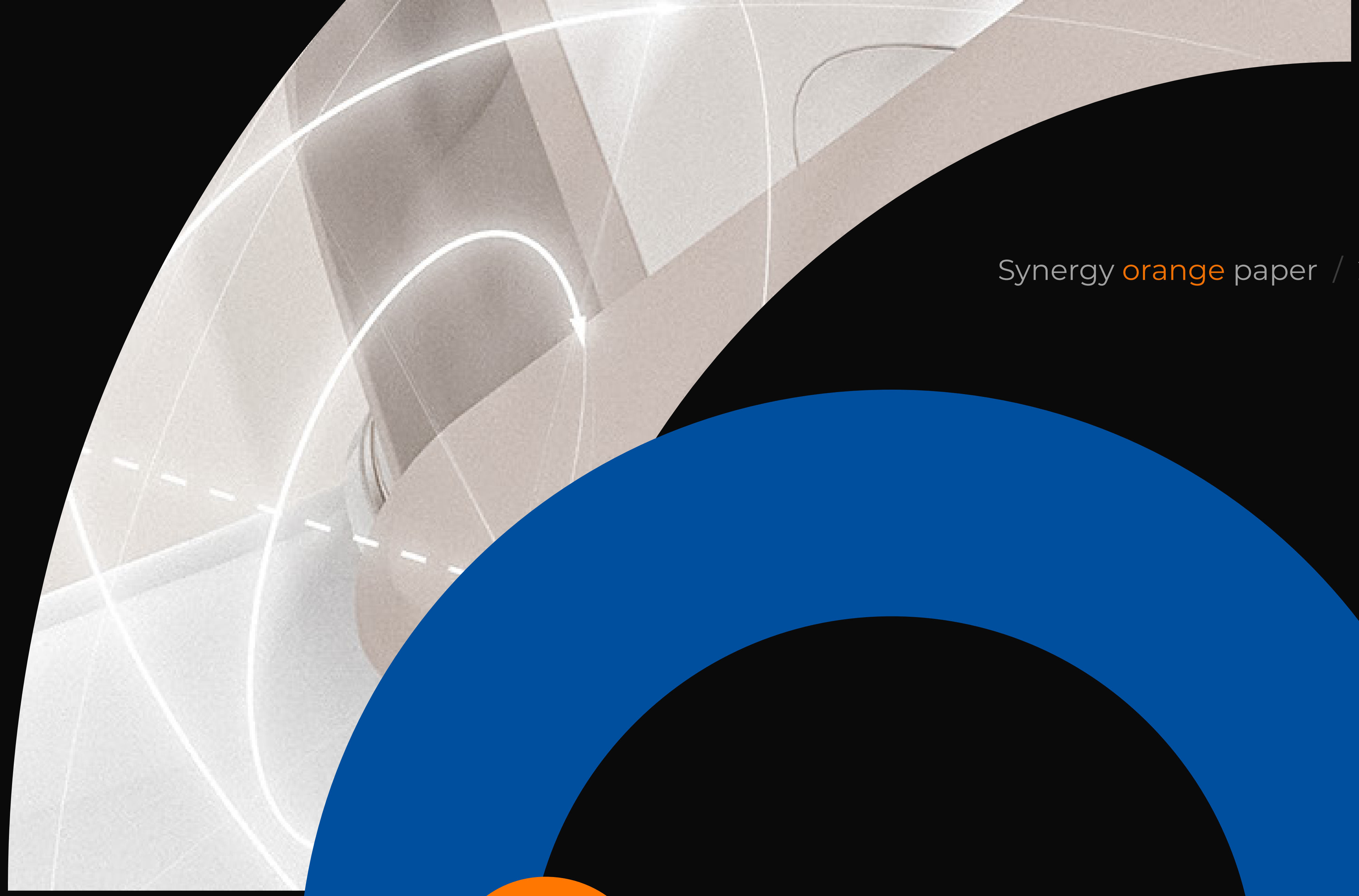

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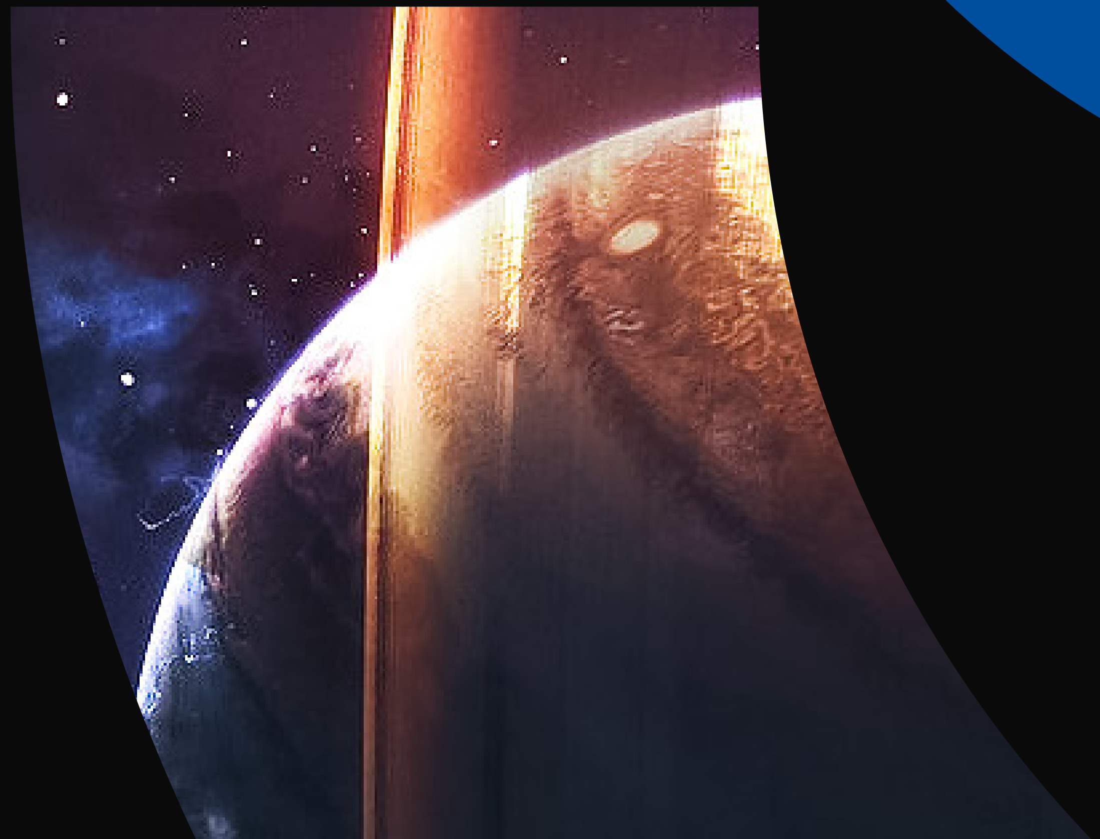
Clinical trials in USA

Research report



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Foreword

The orange paper is a free publication produced by Synergy Research Group for the pharmaceutical industry since 2007. It pulls together data from numerous public sources into a single brief document to aid decision makers planning to conduct clinical trials. It is produced quarterly, with an annual summary at the close of each year.

All of the data containing in this document are actual on date: 01/07/2019

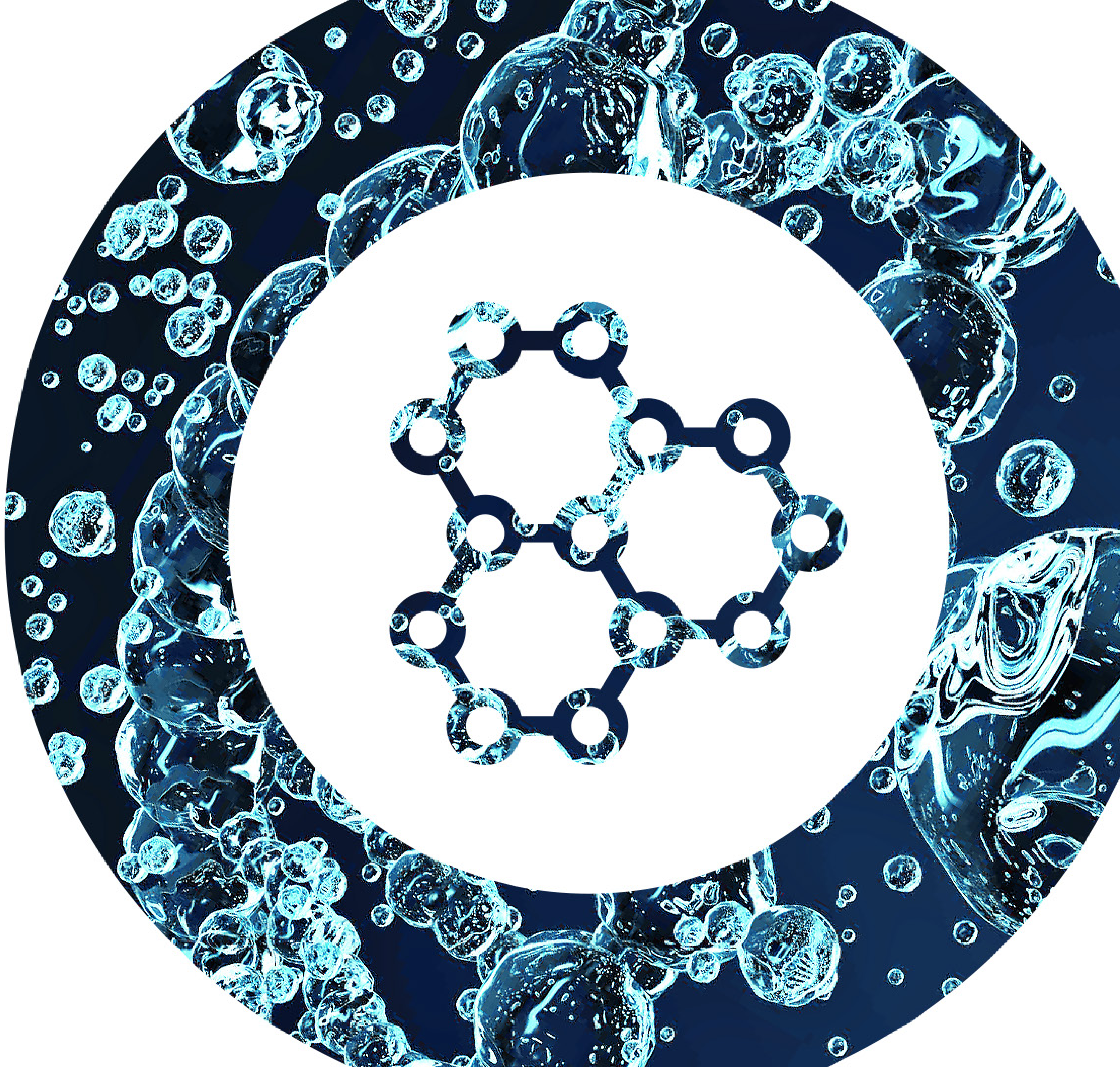


Table of Contents

Executive Summary

During Q2 2019 the official FDA website showed approvals for the initiation of 6,905 new clinical trials of all types worldwide, including local and bioequivalence studies. The number of studies initiated in the U.S. remained steady at 2,242 – a 0.5% increase in comparison with Q2 2018.

The dominant type of clinical trials conducted in Q2 2019 were Interventional Clinical trials with 81% market share worldwide and 89% market share in the U.S. The most prevalent phase of clinical trials conducted worldwide by number of studies was Phase II.

The total number of subjects enrolled in Clinical trials of all types in Q2 2019 reached 1,37 million of subjects. The most prevalent Therapeutic areas of Clinical trials were Oncology, Cardiology and Endocrinology.

In Q2 2019 the Center for Drug Evaluation and Research (CDER) of the U.S. FDA approved 29 new drugs, including 4 new molecular entities (NME); other approvals concerned new dosages, combinations or manufacturers.

According to U.S. FDA data, 9 FDA inspections were conducted across U.S. investigative sites whilst 3 FDA inspections were conducted across investigative sites located in Belgium (1 inspections), France (1 inspection) and Czech Republic (1 inspection) during Q2 2019.

Section 1

Global Clinical Trials

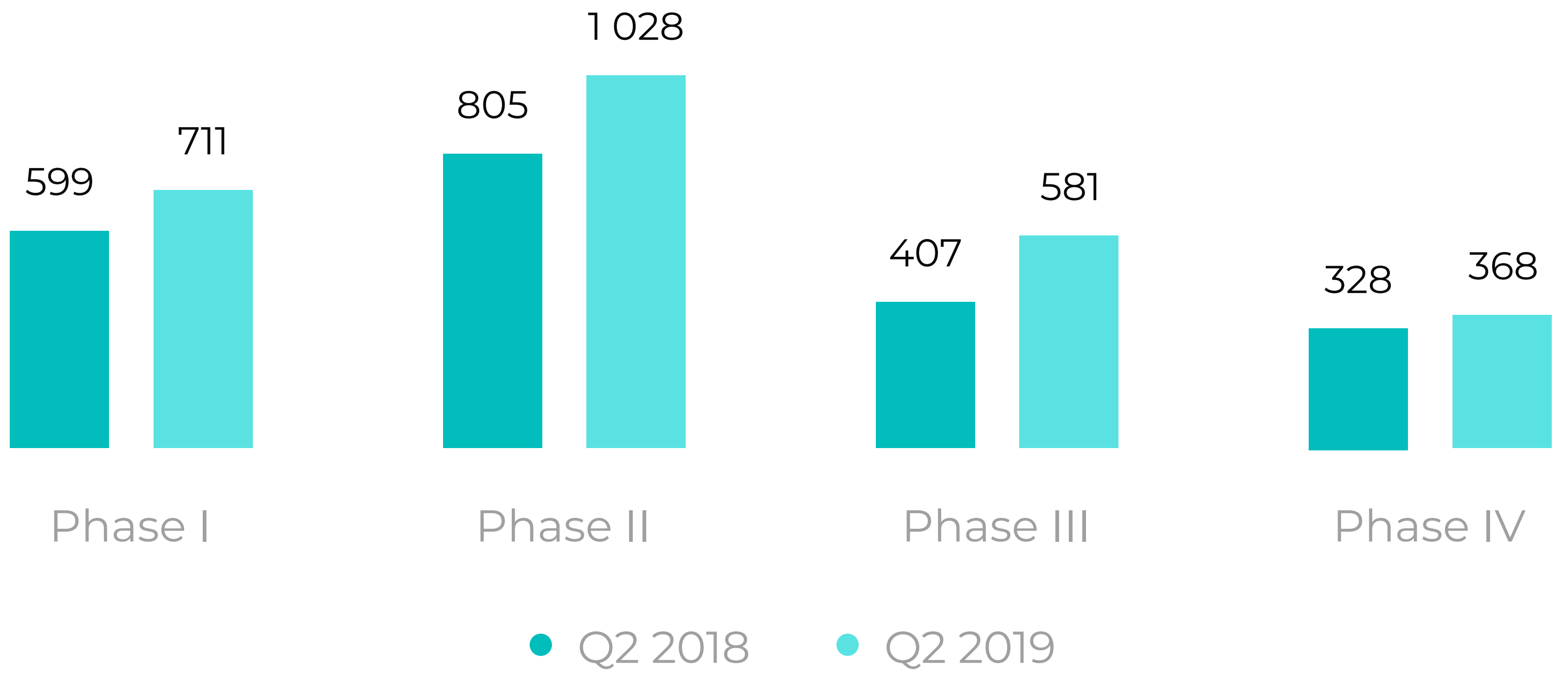
Trial Data

During Q2 2019 the official FDA website showed approvals for initiation of 6,905 new clinical trials of all types worldwide, including local and bioequivalence studies with an overall year on year growth rate of 12% driven in large by an increasing number of trials in developing countries.

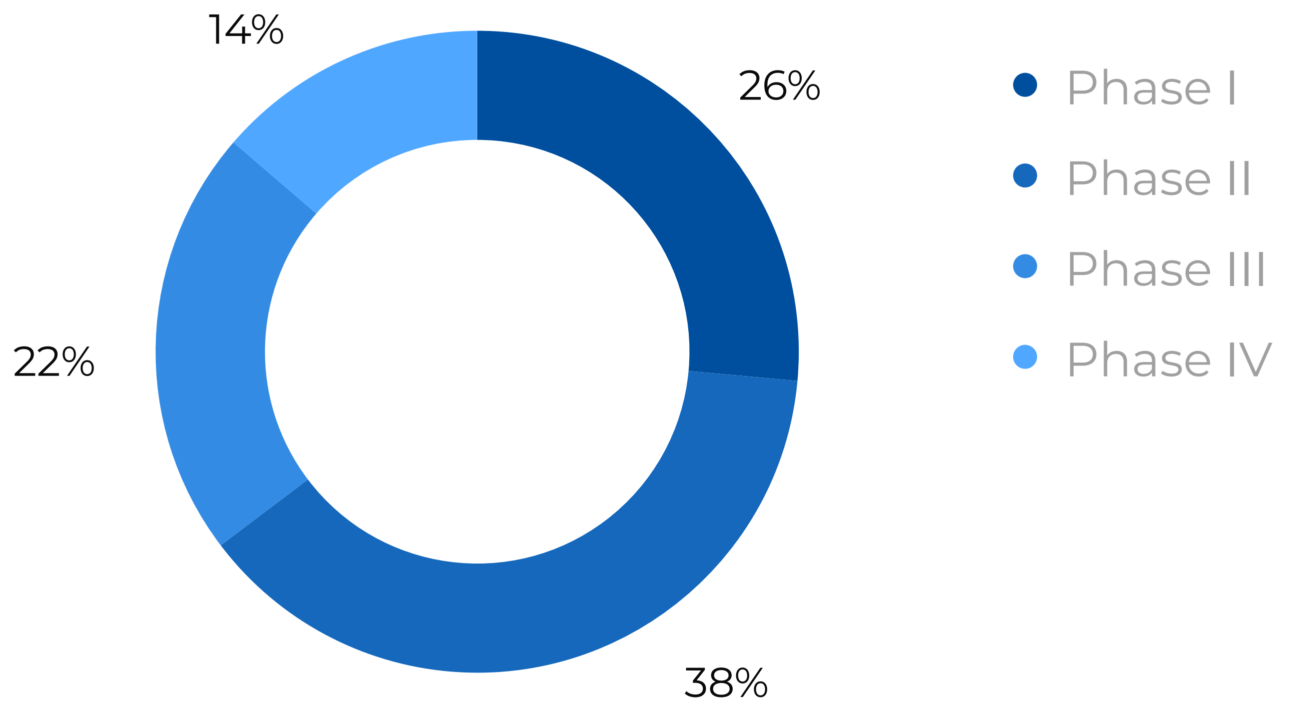
The combined market share of the U.S. and European countries by number of global initiated studies plunged from 88% in Q2 2018 to 63% in Q2 2019, with the U.S. having 32% and Europe having 31%.

81% of all global clinical trials initiated in Q2 2019 were Interventional Clinical Trials.

Breakdown of Clinical trials by Phase



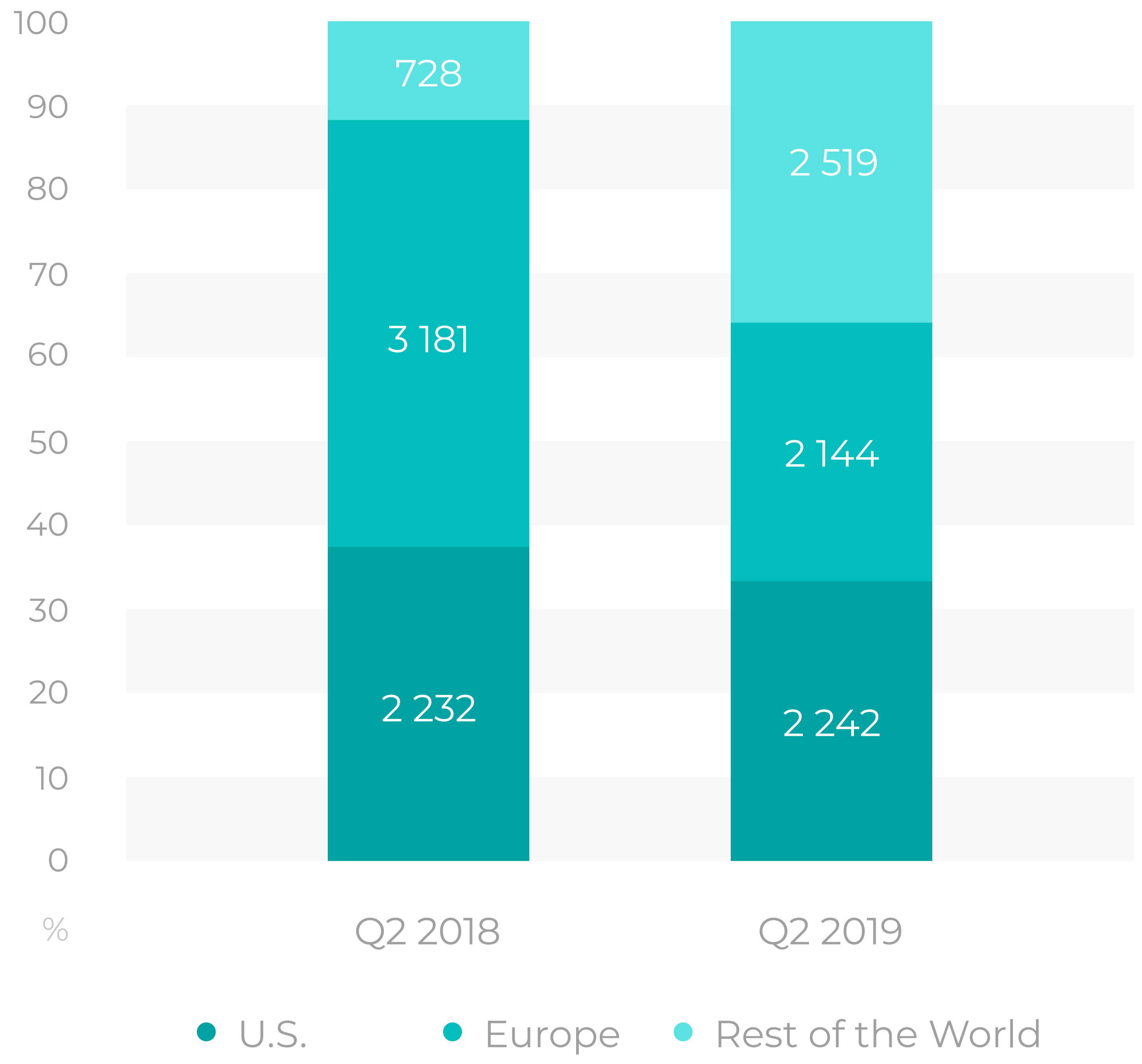
Percentage breakdown of global clinical trials by Phase



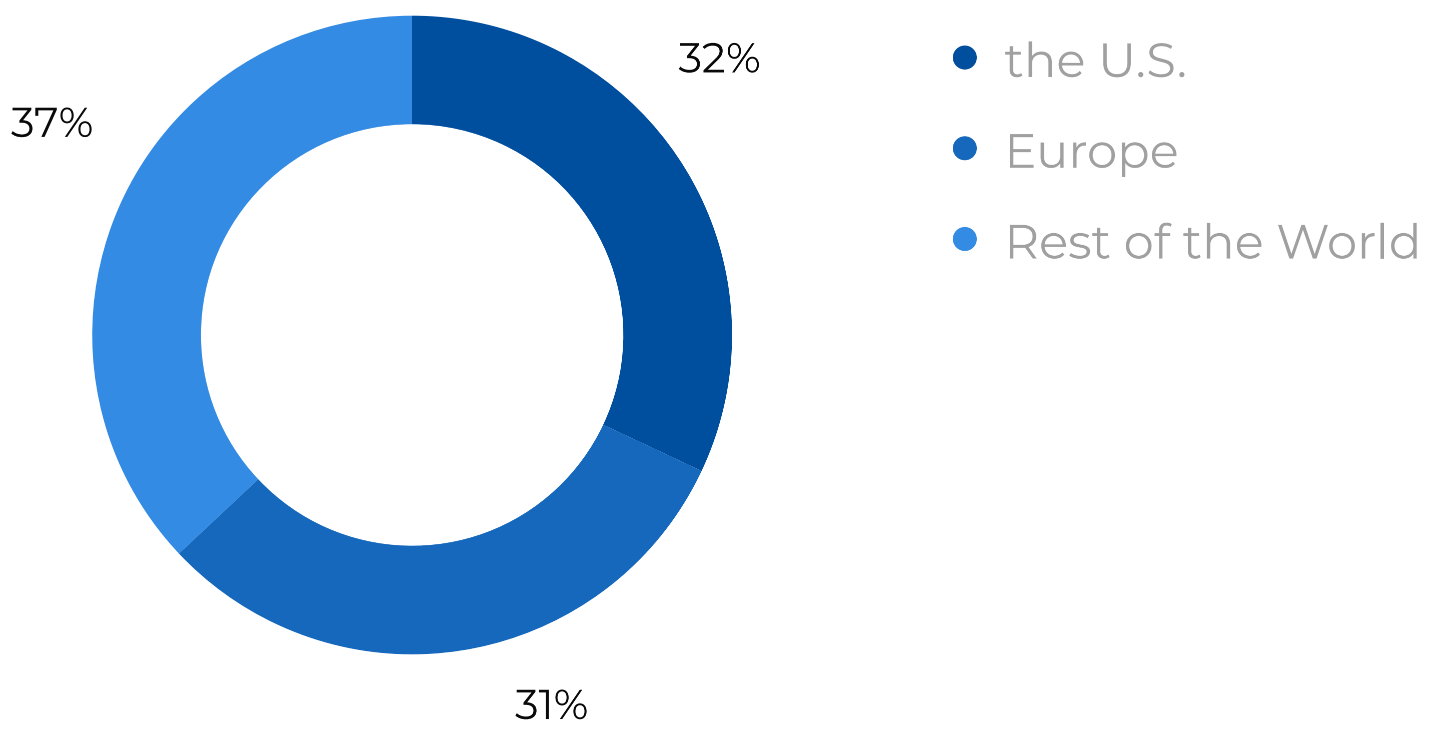
Trial Data

Breakdown by Region of Origin

The proportions between different global regions (i.e. U.S., Europe and Rest of the World) for trials conducted in Q2 2019 changed in comparison to Q2 2018. Notably, the market share of leading European countries by number of initiated studies dropped from 52% to 31% in Q2 2019.



Percentage Breakdown of Global Clinical Trials by Region



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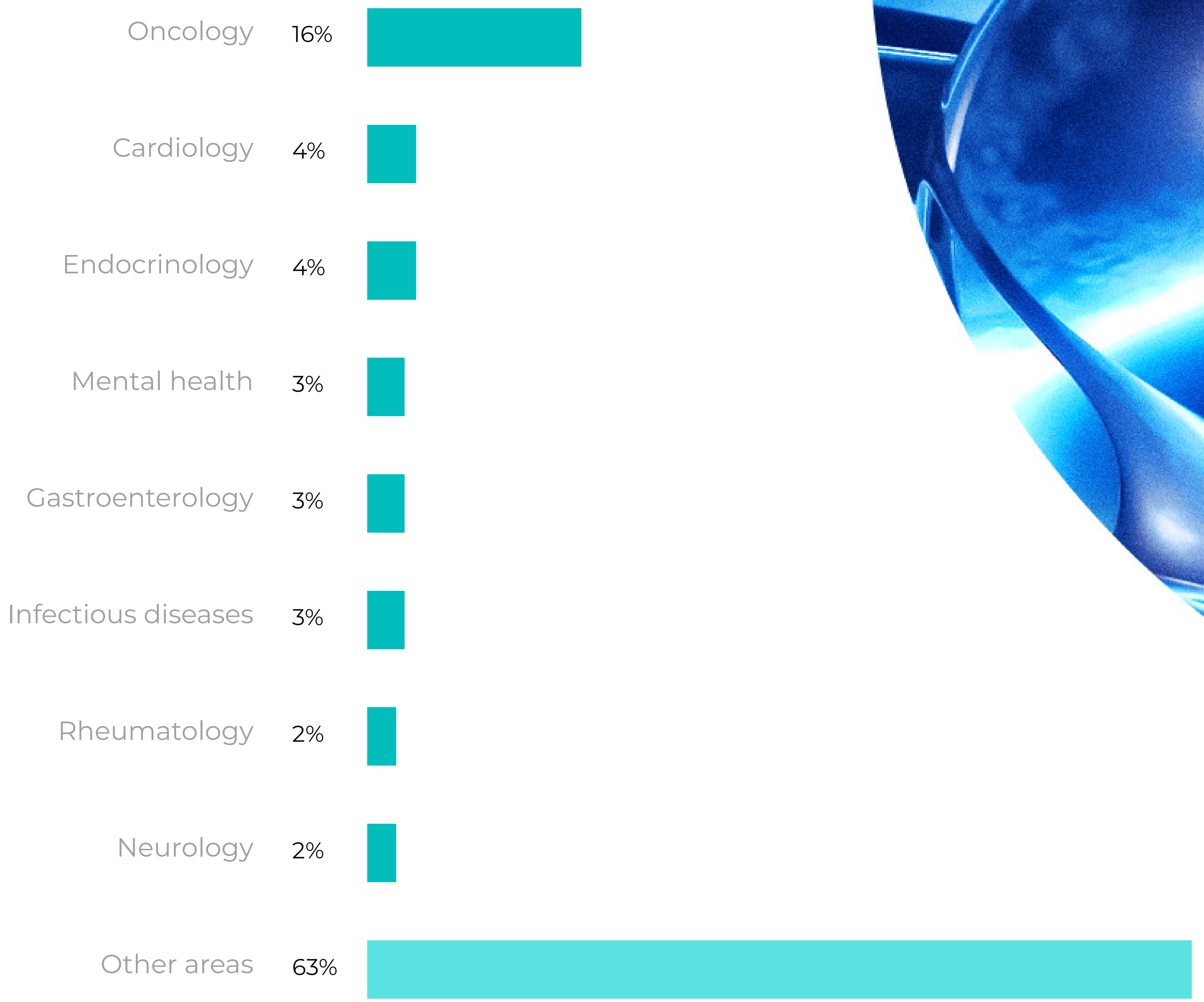
Trial Data

Therapeutic Areas of Global Clinical Trials

In Q2 2019 the largest number of studies were initiated in Oncology (1,115 studies), Cardiology (288 studies), Endocrinology (249 studies) and Mental health (240 studies).

More than one therapeutic area could be assigned to a trial. BE studies were not included in any therapeutic area group.

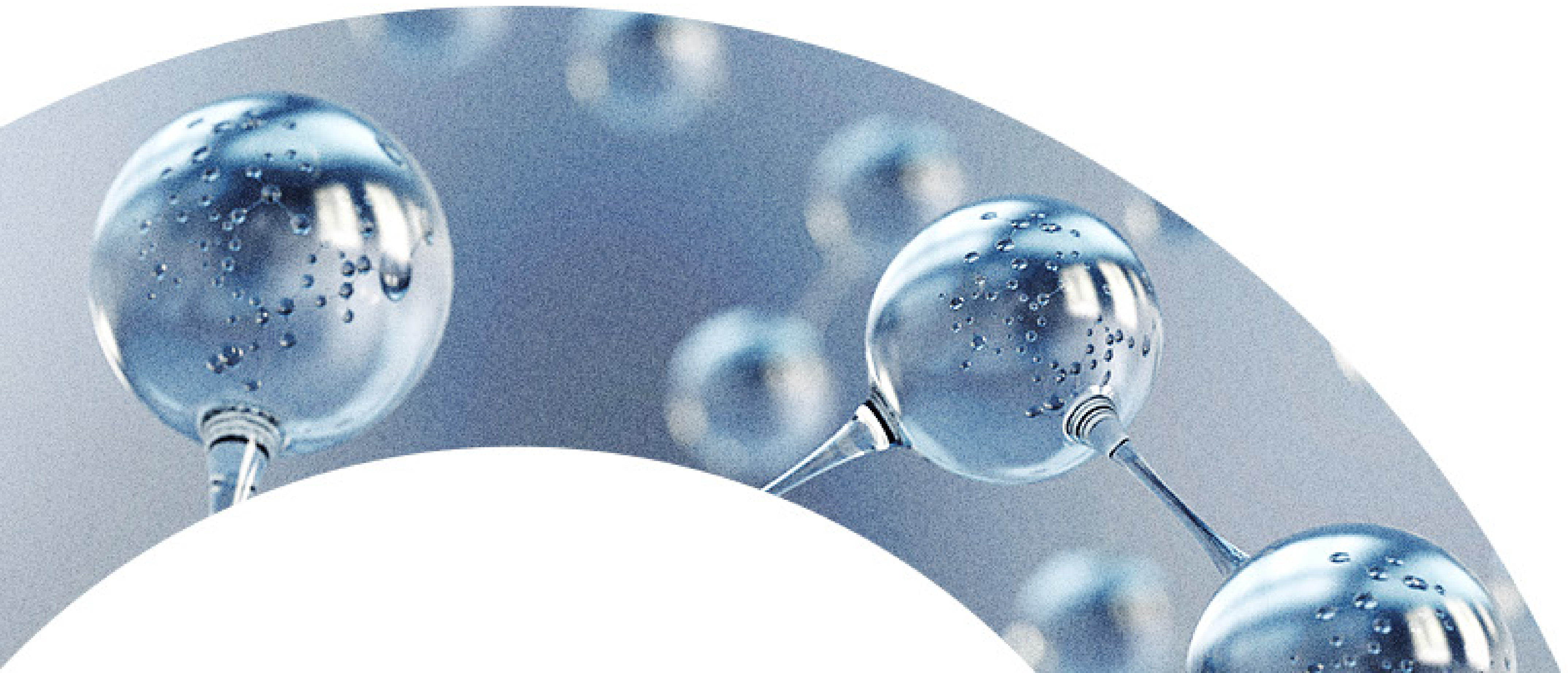


Global Clinical Trials

Sponsor Data

The Top-10 list of global Sponsors of Clinical Trials worldwide remains unchanged for the past 5 years – this fact may be explained by the significant and continuously increasing amount of investment required for research and development of new drugs.

However, it's remarkable that the combined market power of these leading pharmaceutical corporations accounts for just 13% of all interventional clinical trials where the study Phase has been identified, and just 6% of all enrolled subjects.



Top-10 Global Sponsors by Total Number of Studies Initiated in Q2 2019

№	Company Name	No. studies	No. subjects
1	Merck	65	24 815
2	Bristol-Myers Squibb	45	5 429
3	AstraZeneca	41	5 834
4	Pfizer	35	4 216
5	Novartis	35	5 701
6	Eli Lilly	34	13 078
7	Janssen	25	9 299
8	AbbVie	22	2 479
9	Amgen	21	16 657
10	Boehringer Ingelheim	18	1 615
Combined market share of top-10 companies		**13%**	**6%**

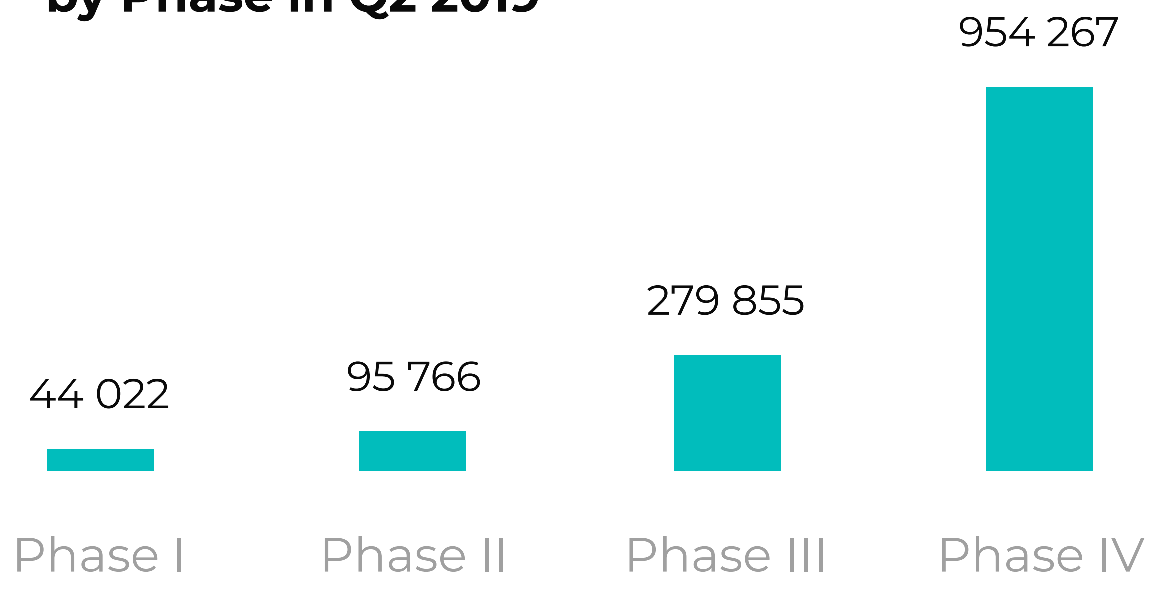
Global Clinical Trials

Subject Data

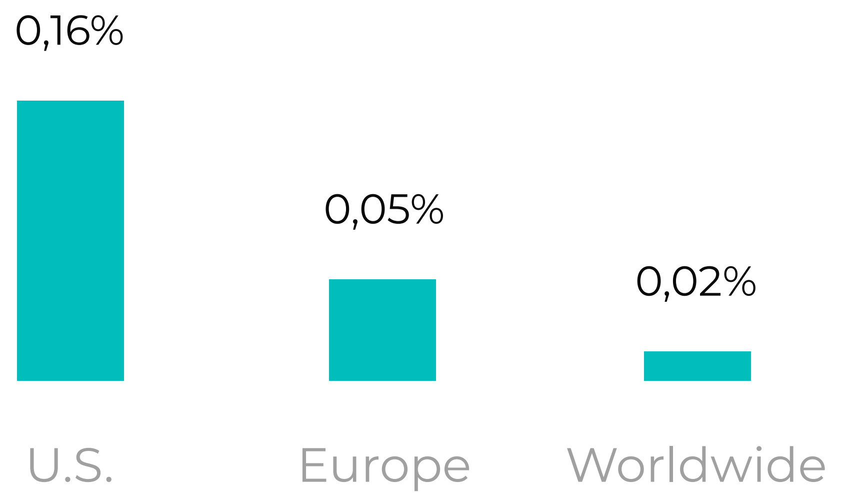
The total number of subjects enrolled in Clinical trials of all types in Q2 2019 reached 1,373,910 subjects.

The majority of subjects were (or planned to be) enrolled in Phase IV trials, and the largest proportion of the global subject population were from the U.S. However, the share of subjects participating in clinical trials remains extremely low in comparison with overall size of the population – with approximately 0.02% Worldwide.

Number of Subjects Enrolled Worldwide by Phase in Q2 2019



Breakdown of Number of Subjects Enrolled as a % of Population



Section 2

Clinical Trials in the U.S.

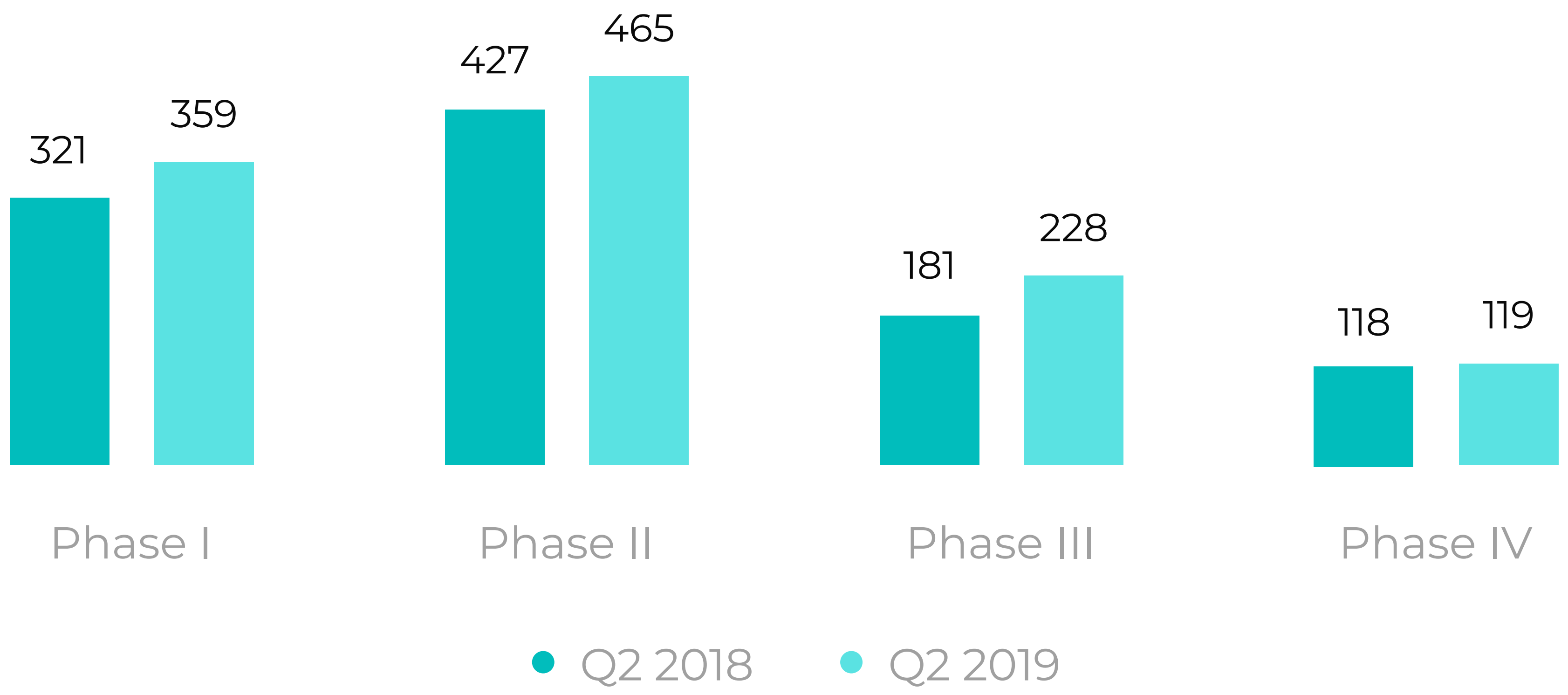
Trial Data

During Q2 2019 there were 2,242 clinical trials initiated in the U.S. including local and bioequivalence studies. That closely matches the previous year when 2,232 studies were initiated. But, excluding bioequivalence studies and studies without an FDA-defined Phase, there were only 1,047 clinical trials initiated in Q2 2018 and 1,171 in Q2 2019.

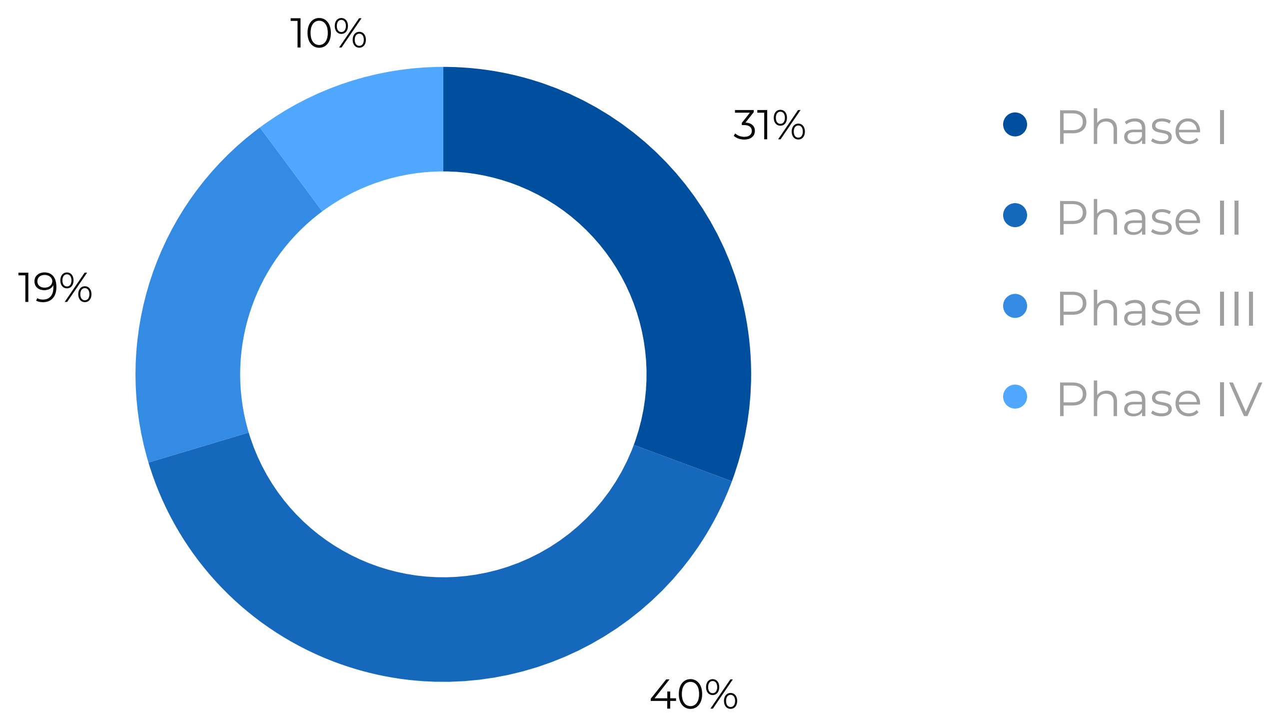
The most prevalent type of clinical trials conducted in the U.S. sites were interventional studies with a 89% market share.

The most frequent phase of clinical trials conducted across the U.S. sites by number of studies was Phase II.

Breakdown of Clinical Trials in the U.S. Q2 2019 by Phase



Percentage Breakdown of Clinical Trials in the U.S. by Phase

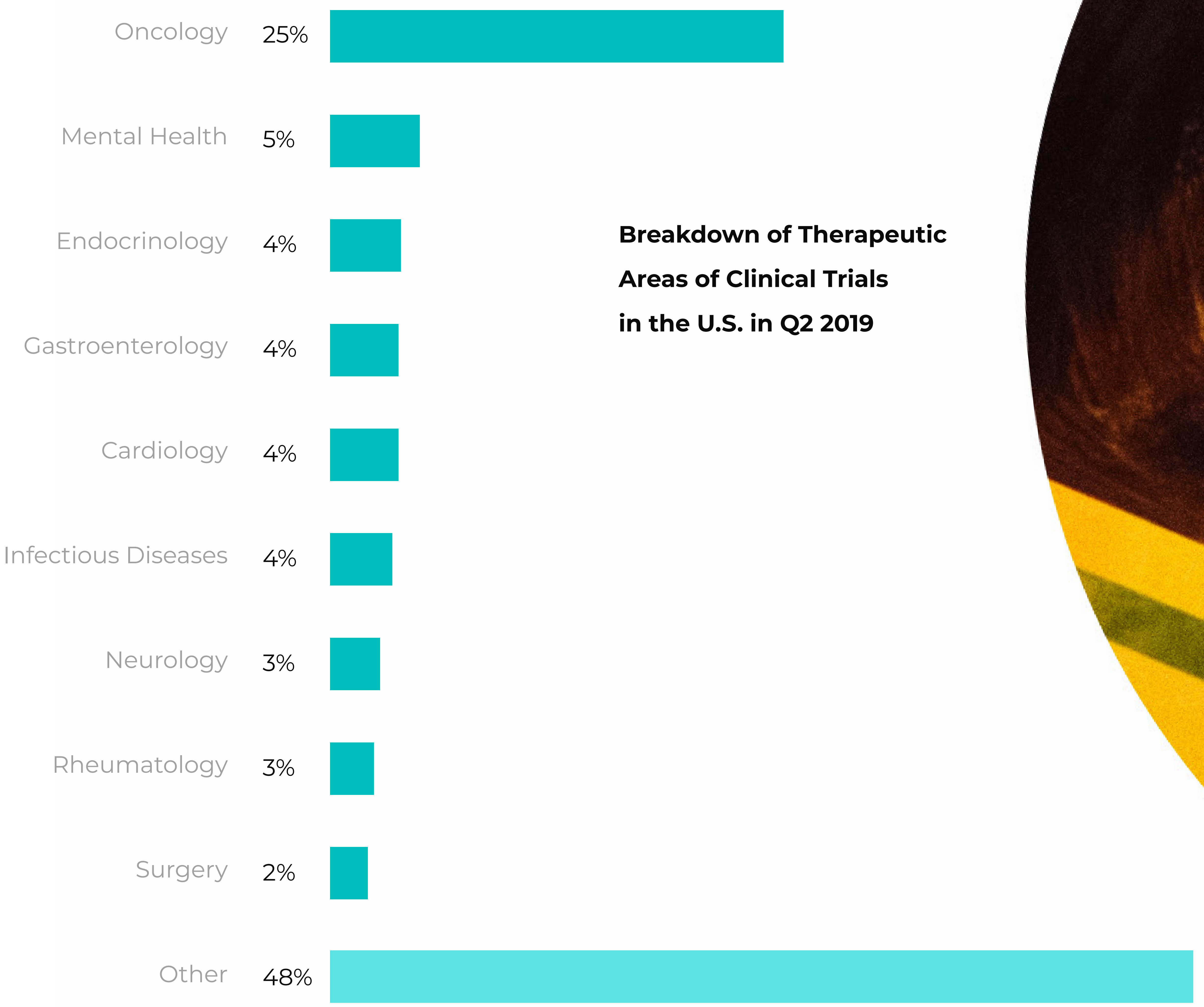


Clinical Trials in the U.S.

Trial Data

The largest number of clinical trials initiated in the U.S. in Q2 2019 were related to Oncology (496 studies), Mental health (101 studies), Endocrinology (78 studies), Gastroenterology (76 studies) and Cardiology (75 studies). Other prominent therapy areas included Infectious diseases, Neurology, Rheumatology and Surgery.

The majority of Clinical trials conducted in the U.S. in Q2 2019 were Interventional.



Breakdown of Therapeutic Areas of Clinical Trials in the U.S. in Q2 2019

Clinical Trials in the U.S.

Sponsor Data

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Top-10 Sponsors of Clinical trials in the U.S. in Q2 2019

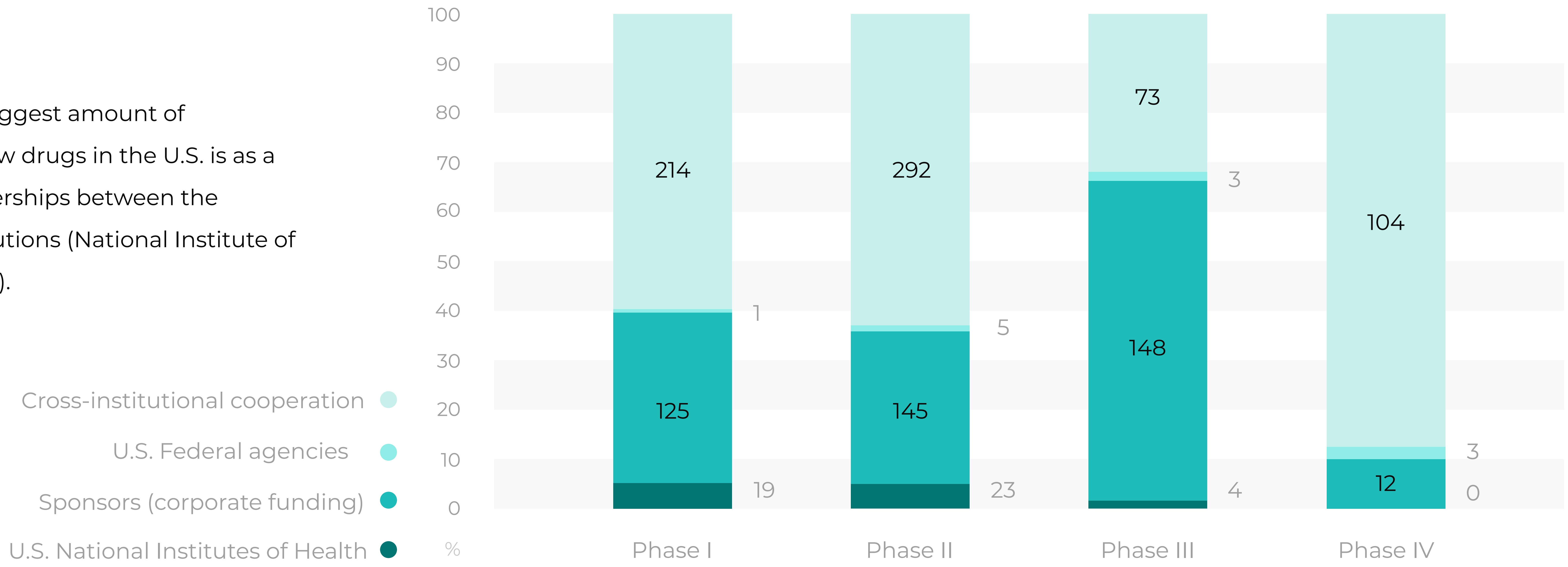
№	Company Name	No. studies	No. subjects
1	Merck	33	12 749
2	Bristol-Myers Squibb	27	4 573
3	Eli Lilly	23	9 598
4	AbbVie	21	2 429
5	AstraZeneca	20	3 948
6	Pfizer	19	2 283
7	Janssen	16	8 295
8	Incyte Corporation	12	3 805
9	Novartis	11	1 869
10	Genentech	11	1 257
Combined market share of these companies		**16%**	**10%**

Clinical Trials in the U.S.

Sponsor Data

It's worth highlighting that the biggest amount of investments in clinical trials of new drugs in the U.S. is as a result of cross-institutional partnerships between the pharma business and state institutions (National Institute of Health, U.S. Federal agencies, etc.).

U.S. Clinical Trials - Funding Sources of Clinical Trials in the U.S. in Q2 2019



Clinical Trials in the U.S.

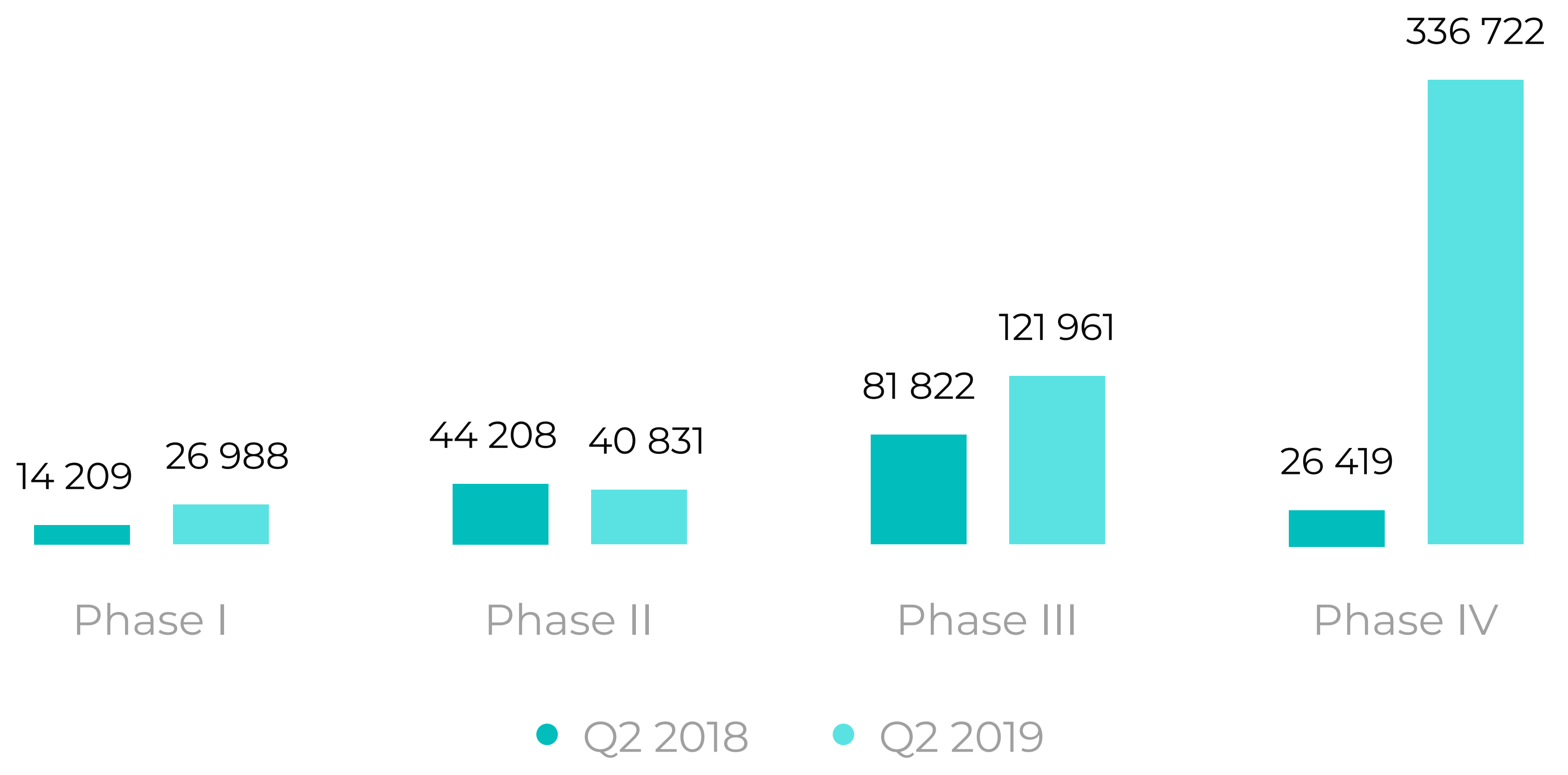
Subject Data

The overall number of subjects involved in clinical trials initiated in the U.S. in Q2 2019 reached 526,502 subjects with year on year growth rate of 216%.

It is worth noting that the participation of 320,000 patients is planned in the only Phase IV study with NCT number NCT03335072.

The most prevalent Phase of clinical trials by total number of participating subjects was Phase IV.

Breakdown of Number of Subjects Enrolled in U.S. Clinical Trials by Phase



U.S. Regulatory Data

During Q2 2019 the Center for Drug Evaluation and Research (CDER) of the U.S. FDA approved 29 new drugs; four of them are new molecular entities (NME); other approvals concerned new dosages, combinations or manufacturers.

U.S. Inspection Data

According to U.S. FDA data, 9 FDA inspections were conducted across U.S. investigative sites during Q2 2019. Seven inspections resulted with No Action Indicated (NAI) outcomes, and 2 inspections resulted with a Voluntary Action Indicated (VAI) outcome.

№	Appr. date	Drug (active ingredient)	Company
1	04.12.2019	Balversanda (Erdafitinib)	Janssen
2	05.03.2019	Vyndaqelnda (Tafamidis Meglumine)	FoldRxPharmaceuticals
3	05.24.2019	Piqraynda (Alpelisib)	Novartis
4	06.21.2019	Vyleesinda (Bremelanotide Acetate)	AMAG Pharmaceuticals
Source: FDA			

CDER - New Molecular Entity (NME) Approvals – Q2 2019

About Synergy

Synergy Research Group is a contract research organization successfully operating in Russia, Kazakhstan, Ukraine and Canada since 2002.

The high recruitment rates of the emerging markets combined with innovative technology allows Synergy to offer our clients conduct faster, more cost-effective studies without sacrificing quality for our clients.

We have replaced outdated R&D strategies by novel, more efficient approaches to clinical research.