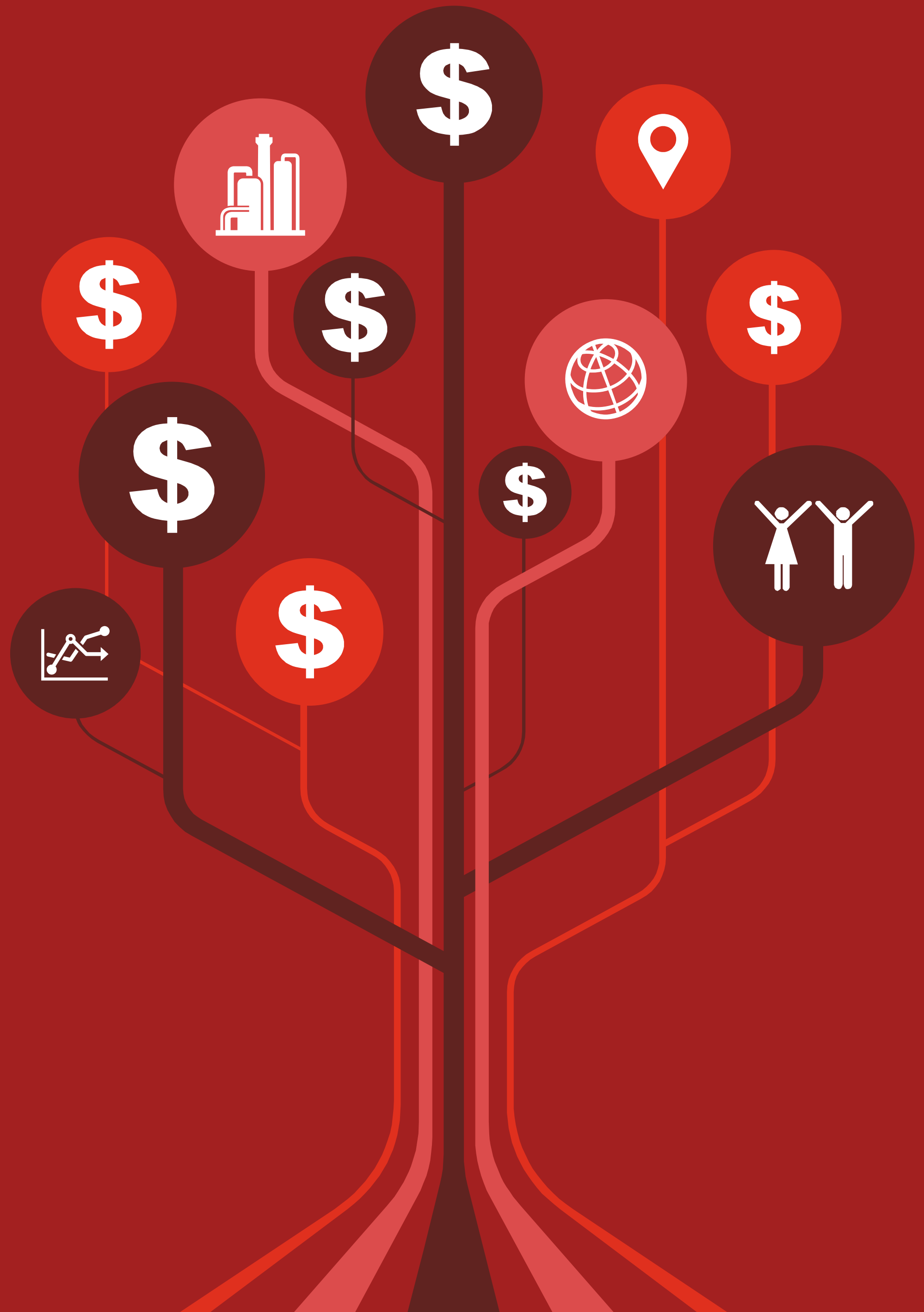
PwC / CB Insights

Healthcare MoneyTree™ Report

Q4 2017



01

US Healthcare Trends

1 With twenty mega-rounds* in 2017, US Healthcare annual funding reaches $14.4B, with 98 more deals than 2016.

2 Compared to Q3'17, dollars invested in Q4'17 increased by 20% but the number of deals remained constant.

3 Total dollars raised from seven mega-rounds was $1,259M in Q4'17, making up 32% of total deal dollars, up eight percentage points from Q3'17.

** deals of $100M or more in value.*

02

US Healthcare Industries

- As compared to Q3'17, the amount of dollars raised by the *Biotechnology related industries* increased 43%, but the *Medical Devices & Equipment related industries* decreased 38%.
- Biotechnology related industries remained on top of the Healthcare sector, holding a 82% share of Q4'17 dollars invested, while the Medical Devices & Equipment related industries accounted for 13% of the Healthcare Sector.

03

US Healthcare Places

- The top five Healthcare regions in the US were New England, Silicon Valley, DC/Metroplex, Midwest, and New York Metro.
- New England came in first for both deals and dollars raised in Q4'17. Of the forty-one deals in New England, three were mega-rounds, which made up 34% of the dollars raised in the region.
- Silicon Valley continued to have a strong year of mega-rounds. Out of the twenty mega-rounds in 2017, nine were closed in the Valley.

04

US Healthcare Movers and Shakers

- Of the seven mega-rounds in Q4'17, four were expansion stage deals, two were late stage deals, while the last deal was with an early stage company.
- New Enterprise Associates was the most active venture capitalist, investing in 13 deals this quarter.
- There were ten Healthcare IPOs in Q4'17 raising a total of $1.0B. The largest IPO was Denali Therapeutics, Inc., raising $250M.

05

Global Healthcare Trends

- Globally, deals and dollars invested remained constant with $5.6B in 303 deals in Q4'17 and $5.9B in 308 deals Q3'17.
- In Q4'17, the number of deals that closed in North America (191) was almost twice of the combined deals closed in Europe (61) and Asia (48).
- Asia finished strong with more than $800M invested across 48 deals. This was the second consecutive quarter with more than 45 deals closed in the last eight quarters.

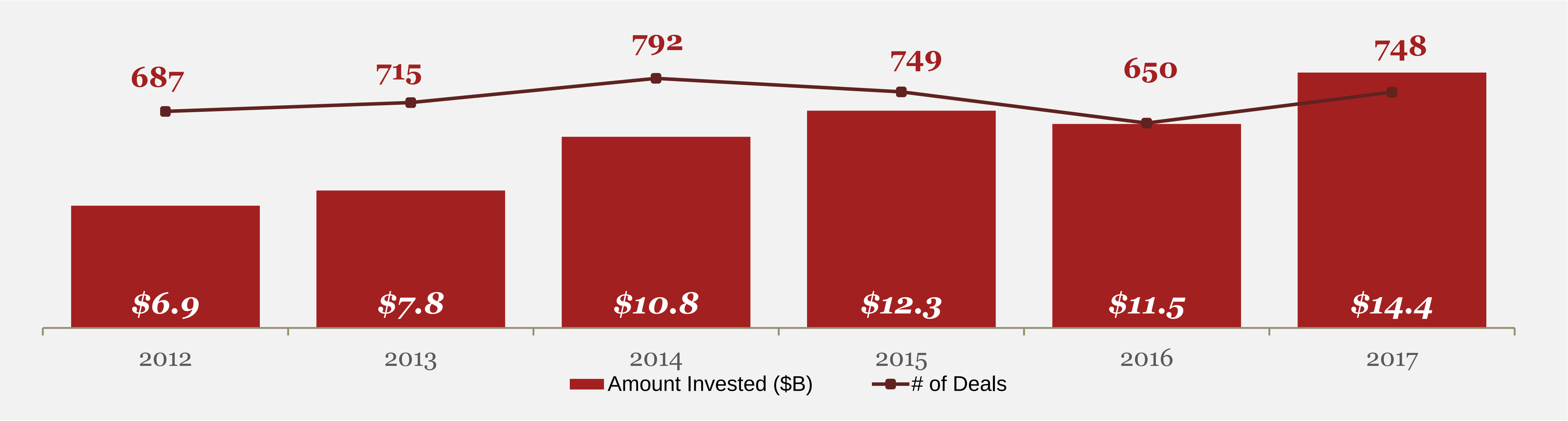
01

US Healthcare Trends: Q4 2017

Annual Healthcare financing trends

US Healthcare annual funding reaches $14.4B on strong mega-round activity

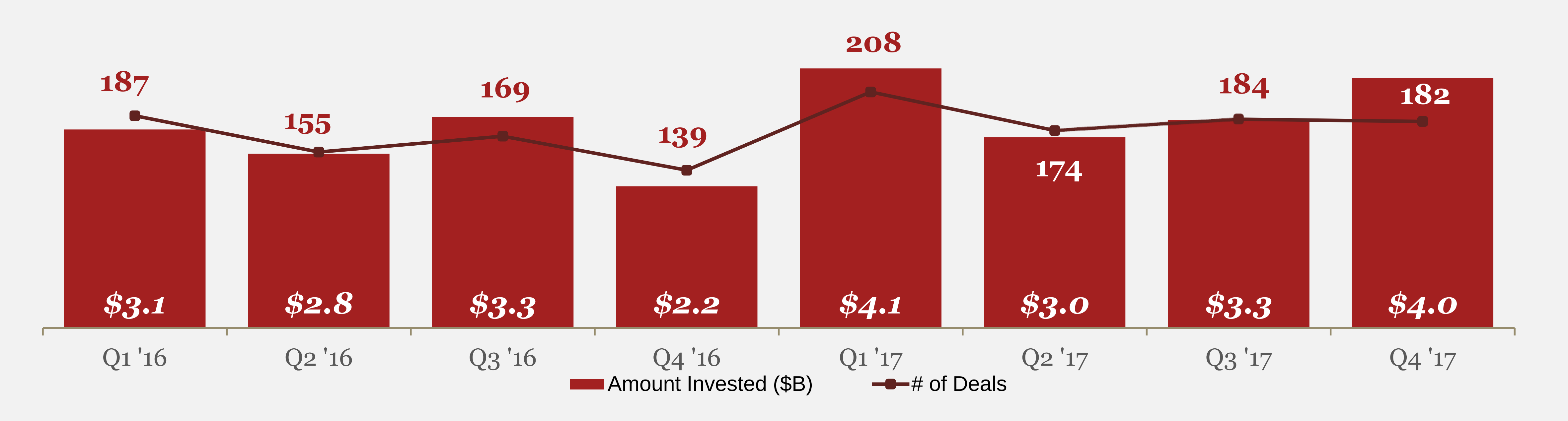
- Total annual dollars invested in US Healthcare increased 25% in 2017, as **$14.4B** was invested across 748 deals. Out of the $14.4B, 30% of the total funding was raised in 20 mega-round deals.
- While the annual number of deals from 2012 to 2017 have remained relatively consistent, average deal size has steadily increased from $10.0M in 2012 to $19.3M in 2017.



8-quarter Healthcare financing trends

Healthcare funding increased in Q4’17, and deals remained constant

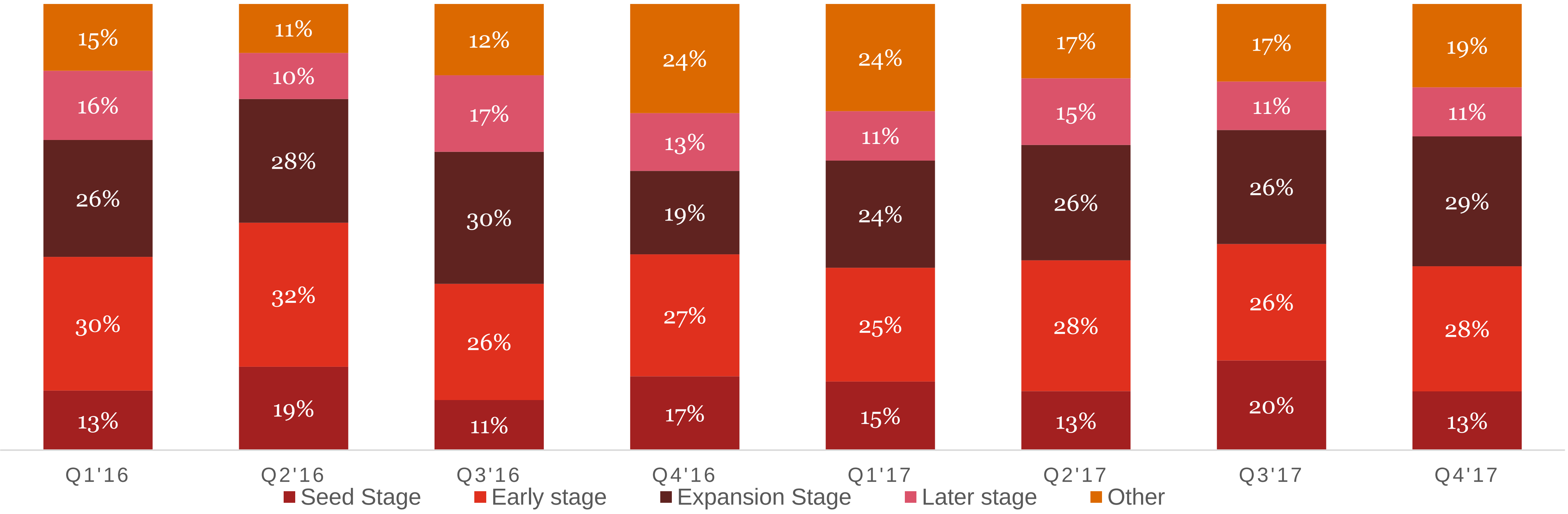
- Dollars invested in US Healthcare increased to **$4.0B** in Q4’17, which was up **20%** from the total funding in the prior quarter.
- Deal numbers were **relatively constant with a decrease of 1%** from the prior quarter, with **182 deals** closing in Q4’17. The average deal value increased from $17.9M in Q3’17 to $21.8M in Q4’17.
- Compared to the same quarter in FY’16, dollars invested increased 76% and the number of deals increased 31% in Q4’17, with a resulting increase in average deal value from $16.2M in Q4’16 to $21.8 in Q4’17.



US Healthcare deal share by stage

Early and expansion stage deals continue to make up the majority of deals, while seed activity declines

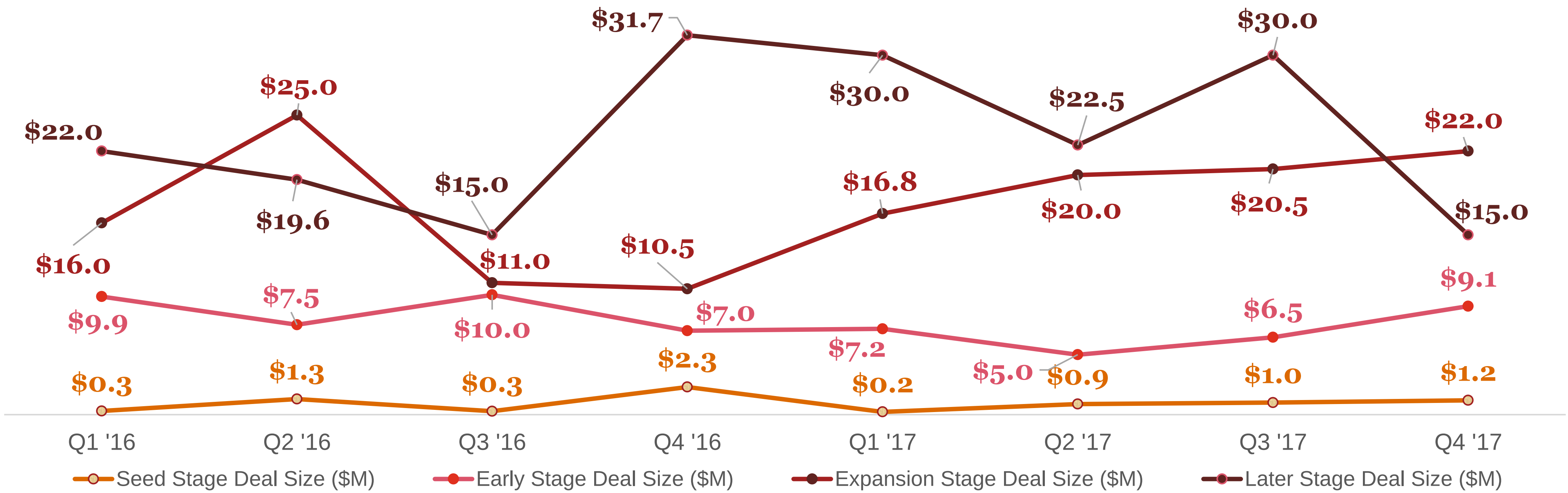
- The average deal share for the past eight quarters showed that early stage deals made up 28% and expansion stage deals made up 29% of the market, though the most significant deal share by stage switches between the two stages from quarter to quarter.
- Seed activity as a proportion of all deals decreased to 13% in Q4’17, down from an eight-quarter high the quarter before.



Median US deal size by stage

Later stage median deal size declines to eight-quarter low

- Median deal size for later stage deals fell to $15.0M, an eight-quarter low, in Q4'17, from $30.0M the quarter before.
- Seed, early and expansion stage deals continued their upward trends, hitting $1.2M, $9.1M and $22.0M respectively



Healthcare sector trends

Healthcare sector continues to be led by Biotechnology related industries

- There was a total of **$3.2B** invested into **Biotechnology related industries** in Q4’17, which represents an **increase of 43%** from Q3’17, while deals also 3% quarter on quarter to 110 deals in Q4’17.
- The **Medical Devices & Equipment related industries** saw a **decrease of 38%** in funding to **$505M** but a **2% increase** in deals from Q3’17.
- **Biotechnology related industries** remained on top of the Healthcare sector, holding a **82%** share of Q4’17 dollars invested, up 13 percentage points from Q3’17, while the **Medical Devices & Equipment related** industries made up **13%** of the Healthcare Sector.

Percentage change in dollars invested Q4’17/Q3’17

43%

Biotechnology Related Industries

38%

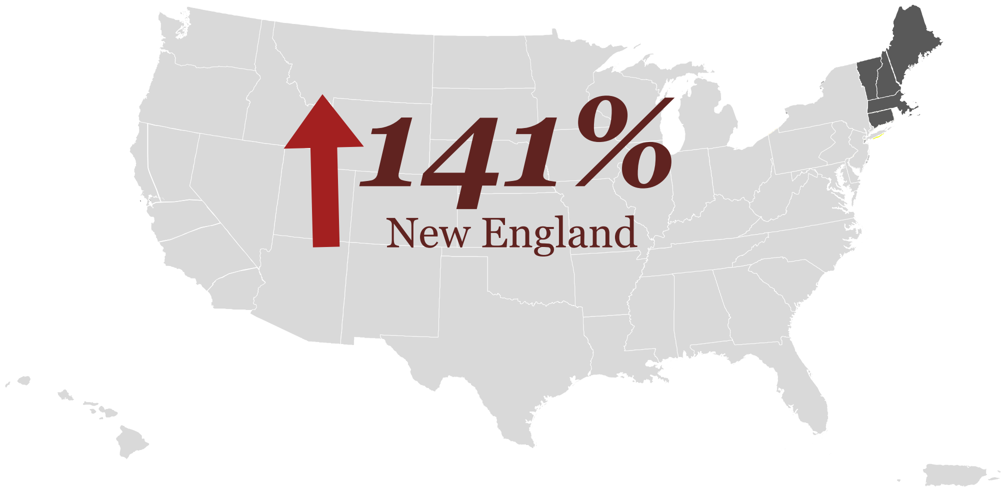
Medical Devices & Equipment Related Industries

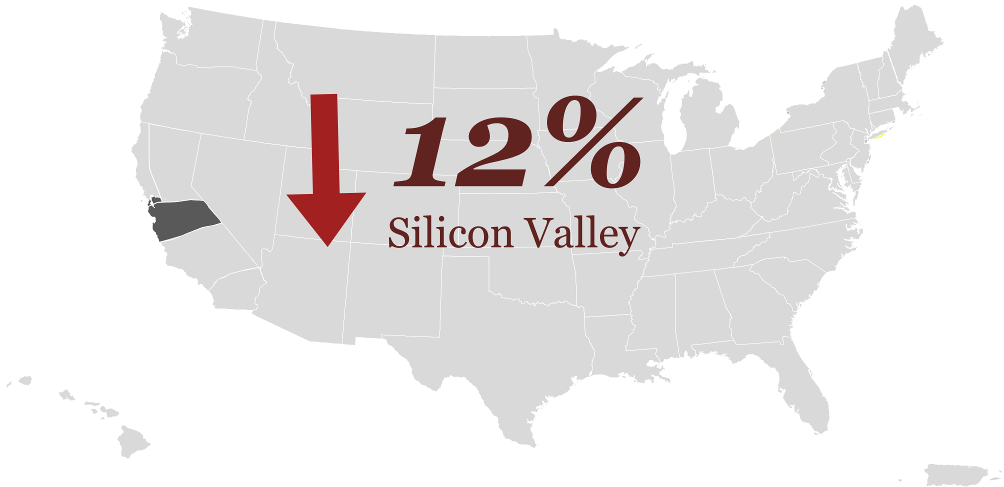
Regional Healthcare trends

New England rises above Silicon Valley in both deals and dollars invested in Q4'17

- **New England** upstaged **Silicon Valley** in both deals and dollars invested in Q4'17, with a total of **41** deals closed and **$1,590M** raised this quarter. Of the 41 deals closed in New England, 3 were mega-rounds, which raised a total of **$539M**.
- **Silicon Valley** fell to second place and saw a **12%** decrease in funding to **$1,155M** when compared to the prior quarter. The Valley also saw a decline in number of deals closed from **50** in Q3'17 to **38** in Q4'17.
- **New England** held **40%** of the US Healthcare market share for total deal dollars invested in Q4'17, while **Silicon Valley** accounted for **29%** of total deal dollars. **DC/Metroplex** came in third with **10%** of the total deal dollars. Together, the top 3 regions accounted for more than three quarters of the total deal dollars in the country this quarter.

Percentage change in dollars invested Q4'17/Q3'17



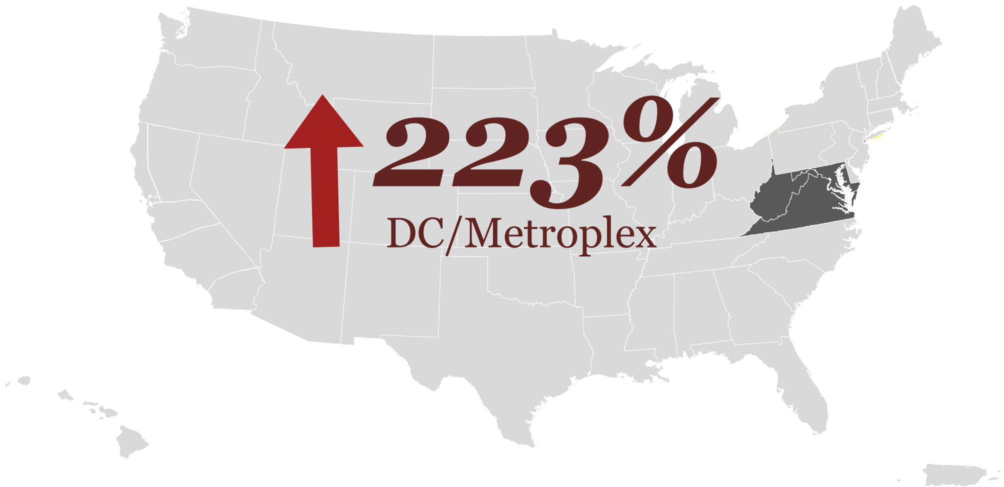


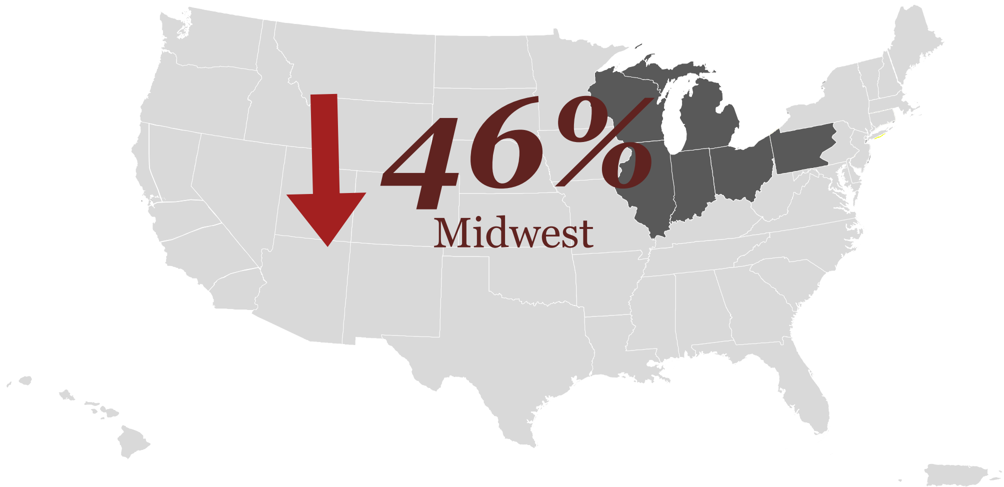
Regional Healthcare trends (cont.)

Changes in other US regions:

- **The DC/Metroplex region** raised $401M, a 223% increase from Q4'17, and climbed into the third position. A big driver in the improvement in ranking was the $275M mega-round raised by Precision Medical Group, Inc., which accounted for 69% of the dollars invested in this region.
- **The Midwest** came in fourth, down one rank from Q4'17, even though the number of deals increased from 17 in Q3'17 to 19 in Q4'17. The total investment in Q4'17 for the region was $205M, a 46% decrease from Q3'17's investment of $382M.

Percentage change in dollars invested Q4'17/Q3'17

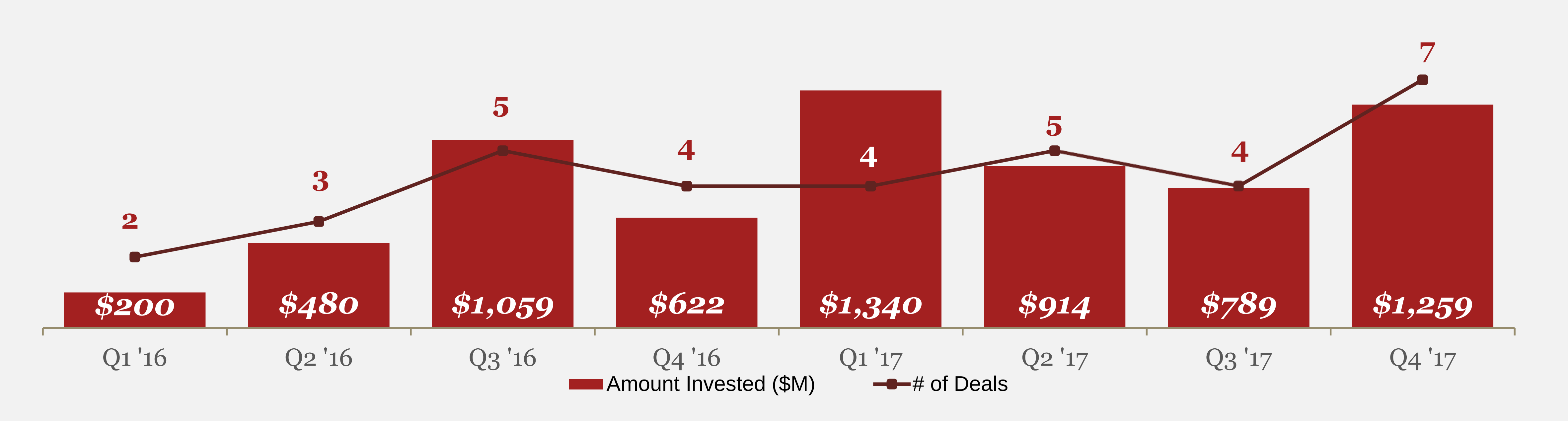




US Healthcare mega-rounds

Mega-round financing saw another strong quarter, reaching a record number of deals

- US Healthcare mega-round financing raised **$1.3B** in Q4'17, which was up **60%** from the mega-round funding in the prior quarter. Mega-round activity also reached a record high with 7 deals closing in Q4'17.
- Dollars raised from mega-round deals made up 32% of the total dollars raised in Q4'17, up eight percentage points from 24% in Q3'17.
- Compared to 2016, dollars invested in mega-rounds increased 82% from $2.4B in 2016 to $4.3B in 2017. The number of mega-round deals also increased from 14 in 2016 to 20 in 2017, with a resulting increase in average mega-round deal value from $169M in 2016 to $215M in 2017.



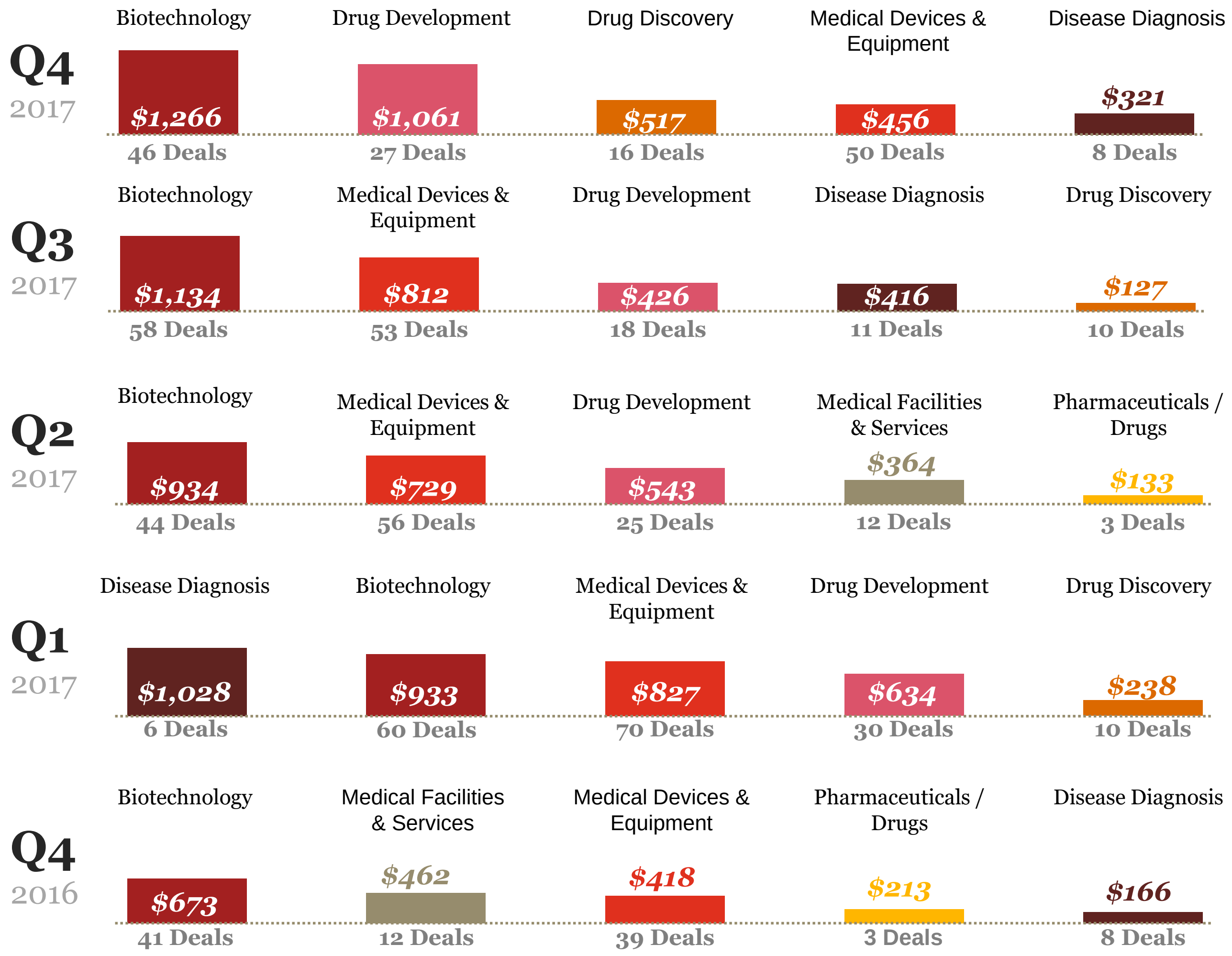
02

US Healthcare Industries: Q4 2017

Top five US Healthcare Industries over the last five quarters

Trends:

- The **Biotechnology** industry continues to lead the Healthcare sector in Q4’17 in terms of dollars invested, raising $1,266M, a 12% increase from Q3’17.
- The **Drug Development** industry achieved a five-quarter high in terms of dollars invested. This was mainly driven by 4 mega-round deals, which raised $632M, making up 60% of the dollars raised in this industry.
- In Q4’17, **Medial Device & Equipment** industry raised $456M in 50 deals, the lowest quarter for both deals and dollars invested in all of 2017.



Q4’17 Deep Dive:
Biotechnology

> *Increase in biotechnology funding this quarter was driven by record-high financing rounds, many of them aimed at advancing novel therapies into clinical trials. This trend shows growing investor confidence that higher capitalizations and related valuations will be supported with early clinical trial results.*
>
> — ***Mikayel Nazloyan,*** *Life Science Partner at PwC*

12%

Increase in funding compared to Q3’17

Largest Q4’17 Biotechnology deals:

$275M	***Ginkgo BioWorks, Inc.***
$114M	***Semma Therapeutics, Inc.***
$77M	***Codiak Biosciences, Inc.***

Q4'17 Deep Dive:
Drug Development

> *Investment in drug development companies saw a significant surge in funding driven by 4 mega- round deals this quarter as investors are continuing to support expansion stage companies prior to liquidity events.*

— ***Greg Vlahos,*** *Partner, Bay Area & Northwest Region Life Science Leader at PwC*

149%

Increase in funding compared to Q3'17

Largest Q4'17 Drug Development deals:

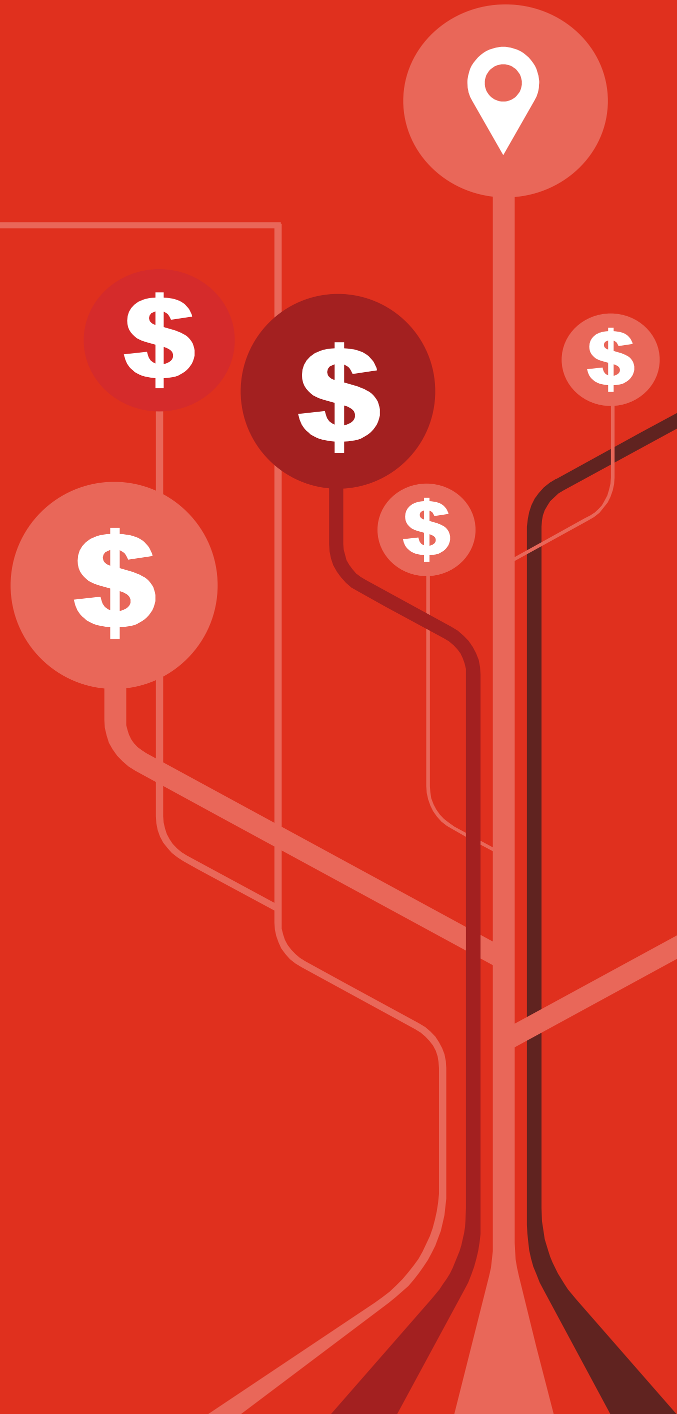
$275M ***Precision Medicine Group, Inc.***

$150M ***Cullinan Oncology, Inc.***

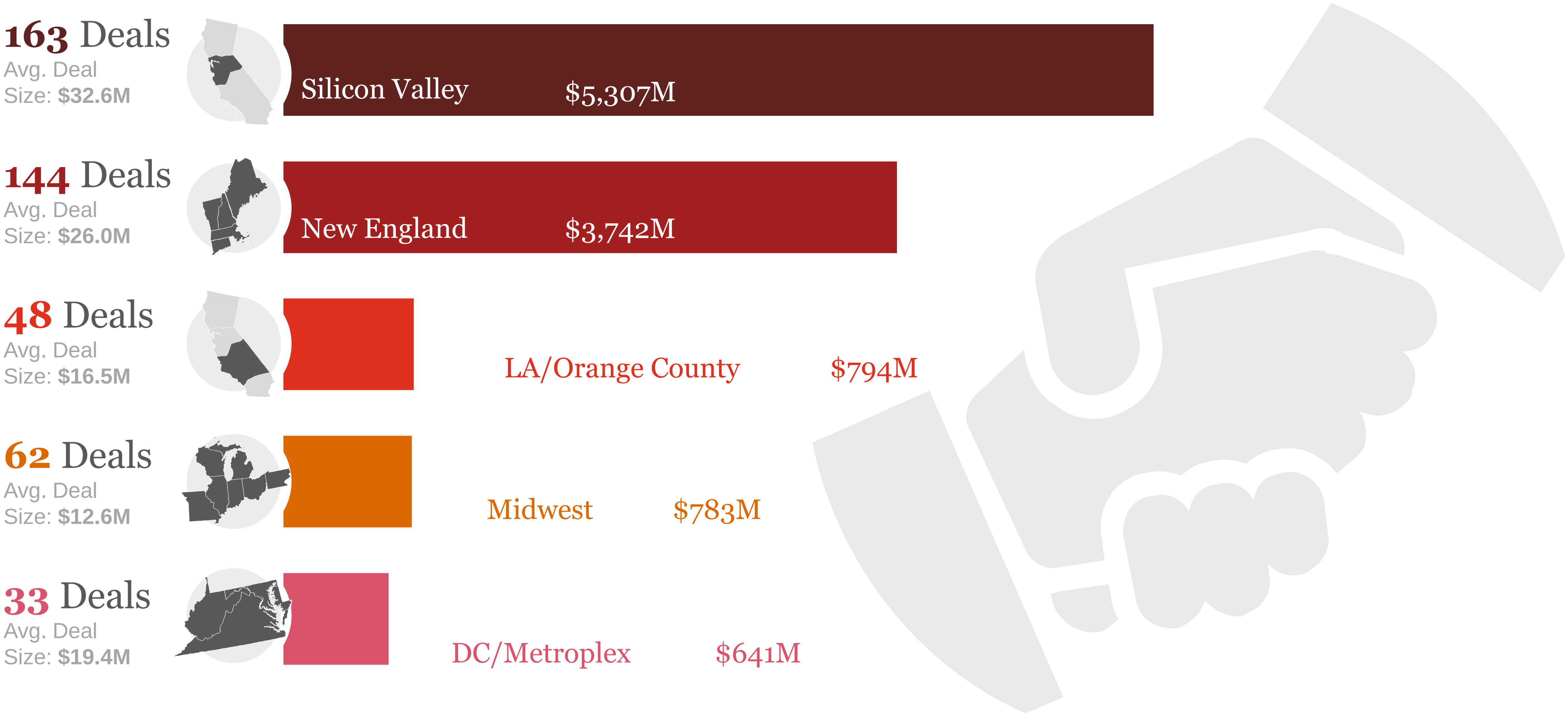
$107M ***Arcus Biosciences, Inc.***

03

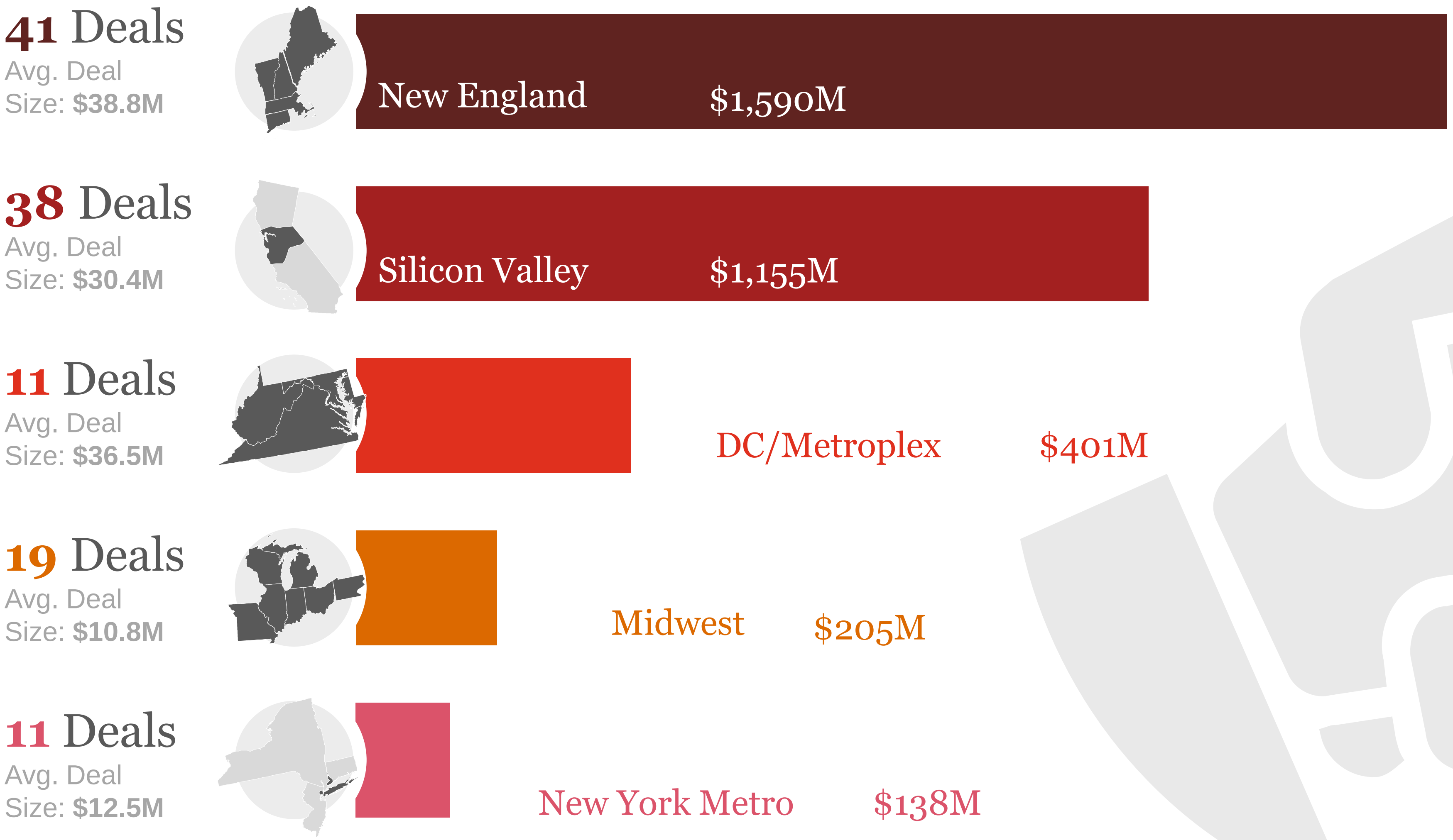
US Places: Q4 2017



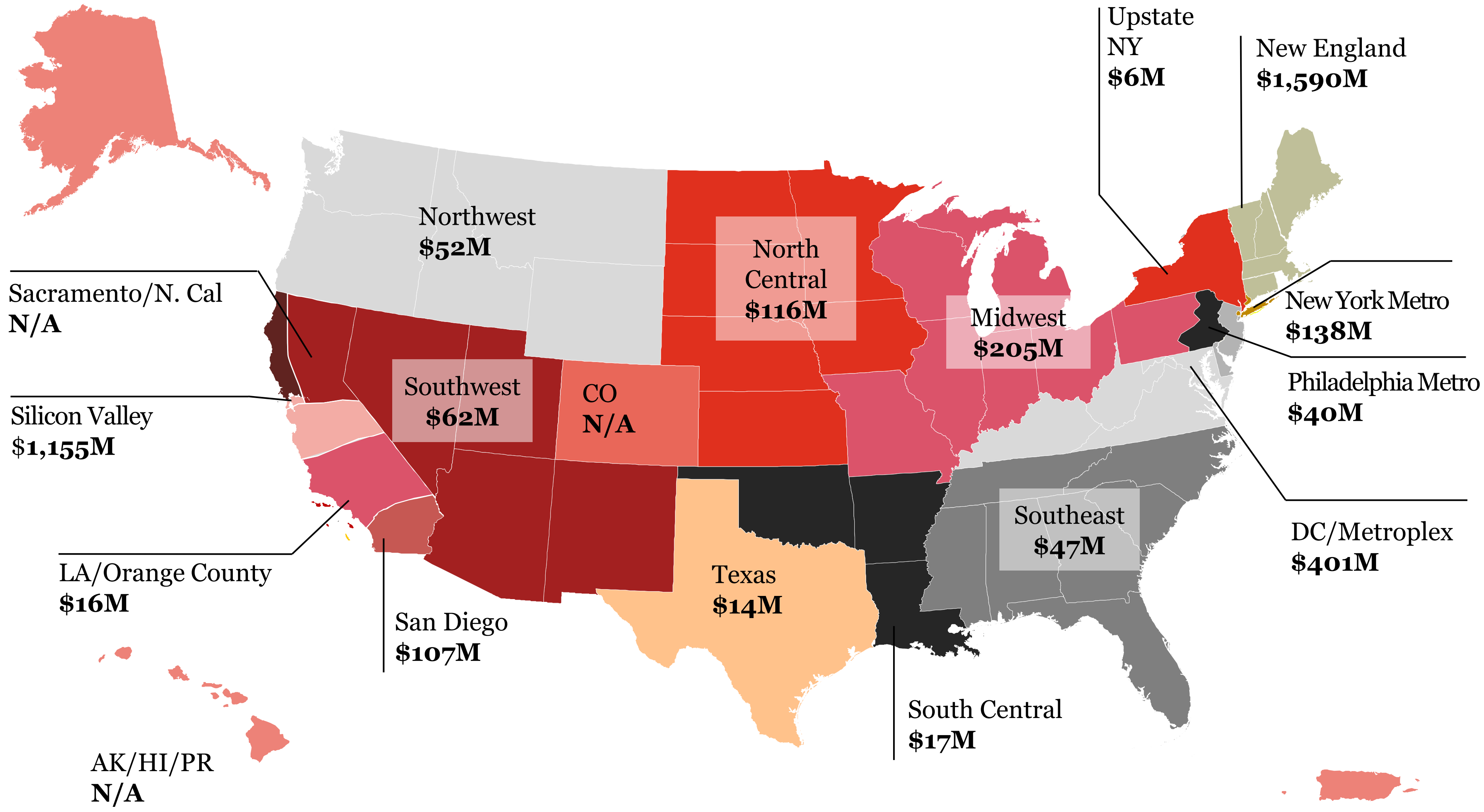
US Healthcare: Top five regions by deal value in 2017



US Healthcare: Top five regions by deal value in Q4'17



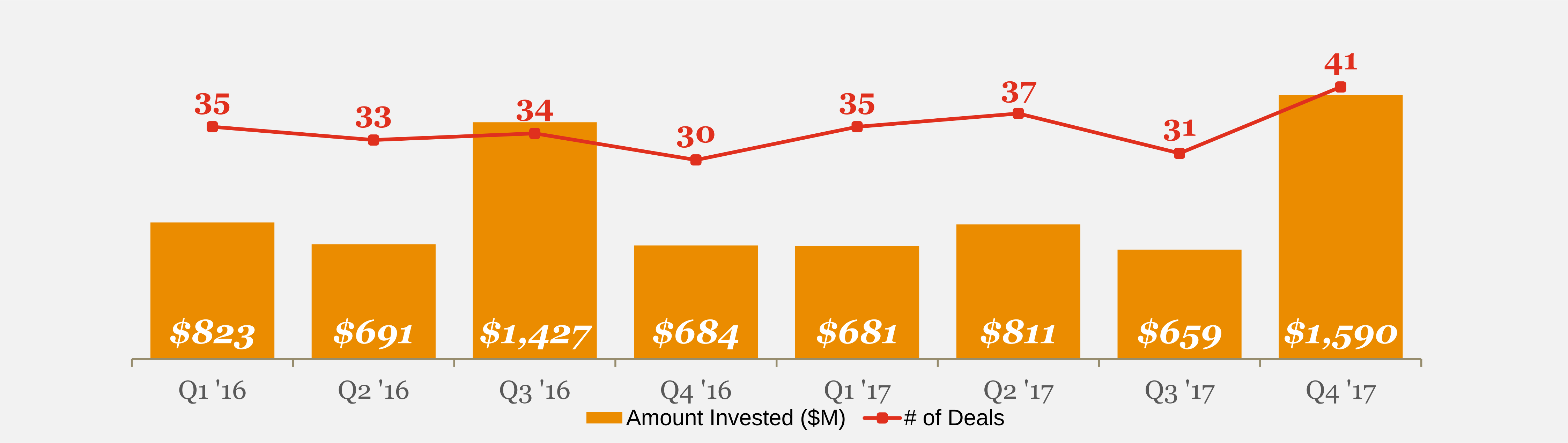
US Healthcare: All US regions in Q4'17



8-quarter financing trend: New England

Deals and Dollars in New England reached 8-quarter high, driven by mega-round activity

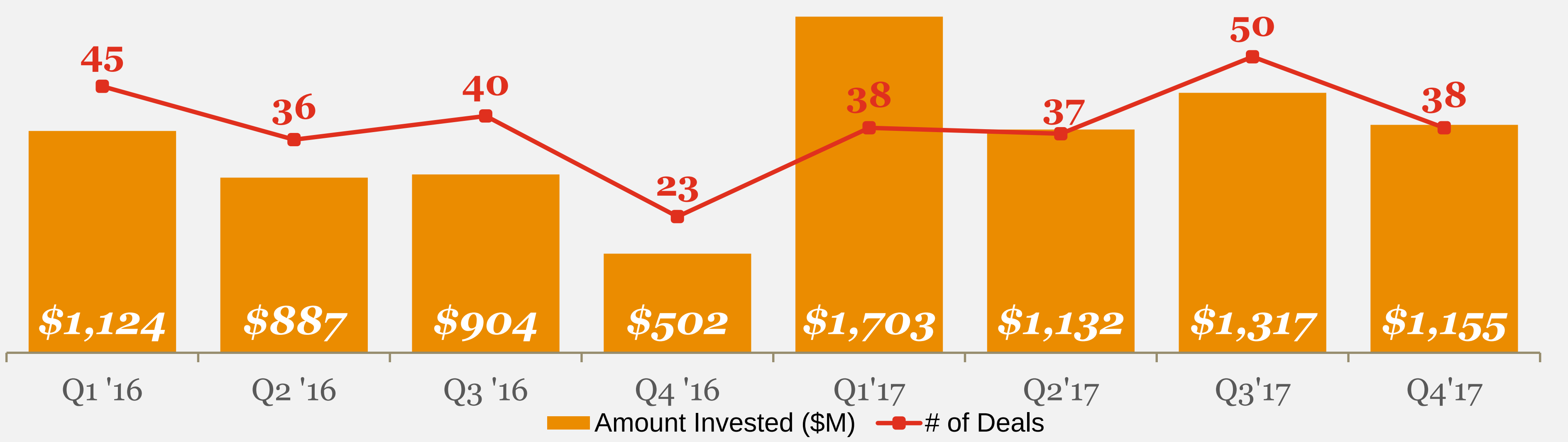
- New England was the best performing region in Q4'17, raising $1.6B in 41 deals. Average deal size was also up 82%, with deals in Q4'17 closing at an average size of $39M compared to an average size of $21M in Q3'17.
- Mega-round activity was the main driver for the increase in investment this quarter. The region raised $539M through 3 mega-rounds. The dollars invested in mega-round deals made up 34% of the total dollars raised in the region this quarter.



8-quarter financing trend: Silicon Valley

Deals and dollars declined in Silicon Valley this quarter, but mega-rounds activity remains strong

- Silicon Valley closed a total of 38 deals this quarter, a 24% decrease from Q3’17, and raised $1.2B in dollars, a 12% decrease from last quarter. The Valley also closed three mega-rounds, which raised $445M, making up 39% of the dollars raised in the Valley this quarter.
- In 2017, there were 9 Healthcare mega-rounds in the Valley, raising $2.5B compared to 5 Healthcare mega-rounds in 2016,which raised a total of $606M.
- There have been 34 Healthcare mega-rounds in the US over the last eight quarters raising $6.7B, with 14 of these being in the Silicon Valley for a total of $3.1B. Approximately 47% of the mega-round dollars invested over the last eight quarters have been in the Valley.



US: Top 10 states by deal value in Q4'17

1. MA
$1,582M
38 Deals,
Avg. Deal Size: ***$41.6M***

2. CA
$1,277M
52 Deals,
Avg. Deal Size: ***$24.6M***

3. MD
$366M
5 Deals,
Avg. Deal Size: ***$73.3M***

4. NY
$128M
9 Deals,
Avg. Deal Size: ***$14.2M***

5. MN
$90M
4 Deals,
Avg. Deal Size: ***$22.6M***

6. IL
$89M
4 Deals,
Avg. Deal Size: ***$22.3M***

7. MI
$63M
4 Deals,
Avg. Deal Size: ***$15.9M***

8. UT
$60M
2 Deals,
Avg. Deal Size: ***$30.0M***

9. IN
$40M
3 Deals,
Avg. Deal Size: ***$13.3M***

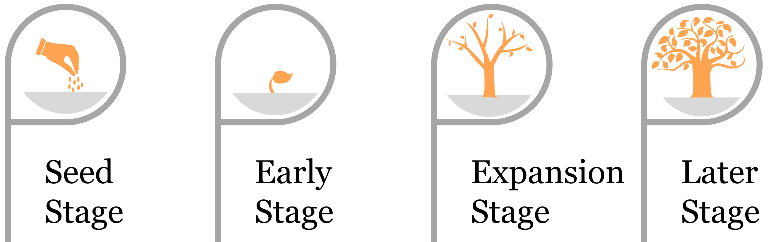
10. WA
$35M
5 Deals,
Avg. Deal Size: ***$7.1M***

04

US Healthcare Movers and Shakers: Q4 2017

Largest Healthcare Deals in Q4’17

Company	Location	Industry	Stage of Funding	$ Value of Deal	Select Investors
Ginkgo BioWorks, Inc.	Boston, MA	Biotechnology		$275M	Cascade Investment; General Atlantic; Viking Global Investors; Y Combinator
Precision Medicine Group, Inc.	Bethesda, MD	Drug Development		$275M	Berkshire Partners; J.H. Whitney; Oak Investment Partners; TPG Growth
GRAIL, Inc.	Menlo Park, CA	Disease Diagnosis		$238M	ARCH Venture Partners; Kleiner Perkins Caufield & Byers
Cullinan Oncology, LLC	Cambridge, MA	Drug Development		$150M	F2 Ventures; MPM Capital
Semma Therapeutics, Inc.	Cambridge, MA	Biotechnology		$114M	ARCH Venture Partners; Cowen Group; Eight Roads Ventures; F-Prime Capital; JDRF T1D Fund; Medtronic; MPM Capital; Novartis
Arcus Biosciences, Inc,	Hayward, CA	Drug Development		$107M	Aisling Capital; BVF Partners; EcoR1 Capital; Foresite Capital Management; Google Ventures; Taiho Ventures; Wellington Management
Allakos, Inc.	San Carlos, CA	Drug Development		$100M	LifeSci Advisors; New Enterprise Associates; Partner Fund Management; Redmile Group; Rock Springs Capital; Samsara BioCapital



Most active venture capital firms in Healthcare in Q4'17

Investor	Location	No. of Companies	Select Q4'17 Investments
1. New Enterprise Associates	Menlo Park, CA	13	Personal Genome Diagnostics; Allakos; Cydan; Pionyr Immunotherapeutics
2. Alexandria Venture Investments	Boston, MA	8	Codiak Biosciences; Relay Therapeutics; Obsidian Therapeutics
3. ARCH Venture Partners	Chicago, IL	6	Semma Therapeutics; Codiak Biosciences; GRAIL
4. OrbiMed Advisors	New York, NY	6	Tricida; Pionyr Immunotherapeutics; Kyn Therapeutics
5. Atlas Venture	Cambridge, MA	5	Gemini Therapeutics; Obsidian Therapeutics; Kyn Therapeutics

Healthcare IPOs in Q4'17

Company	Location	Industry	$ Amount
Denali Therapeutics, Inc.	South San Francisco, CA	Biotechnology	$250M
Apellis Pharmaceuticals, Inc.	Crestwood, KY	Drug Development	$150M
OptiNose, Inc.	Morrisville, PA	Drug Delivery	$120M
Rhythm Pharmaceuticals, Inc.	Boston, MA	Biotechnology	$120M
scPharmaceuticals, Inc.	Lexington, MA	Drug Delivery	$90M
Spero Therapeutics, Inc.	Cambridge, MA	Biotechnology	$77M
Allena Pharmaceuticals, Inc.	Newton Lower Falls, MA	Pharmaceuticals / Drugs	$75M
Quanterix Corp	Lexington, MA	Medical Devices & Equipment	$64M
Arsanis, Inc.	Waltham, MA	Biotechnology	$40M
Restoration Robotics, Inc.	San Jose, MA	Elective & Aesthetic Medicine	$25M

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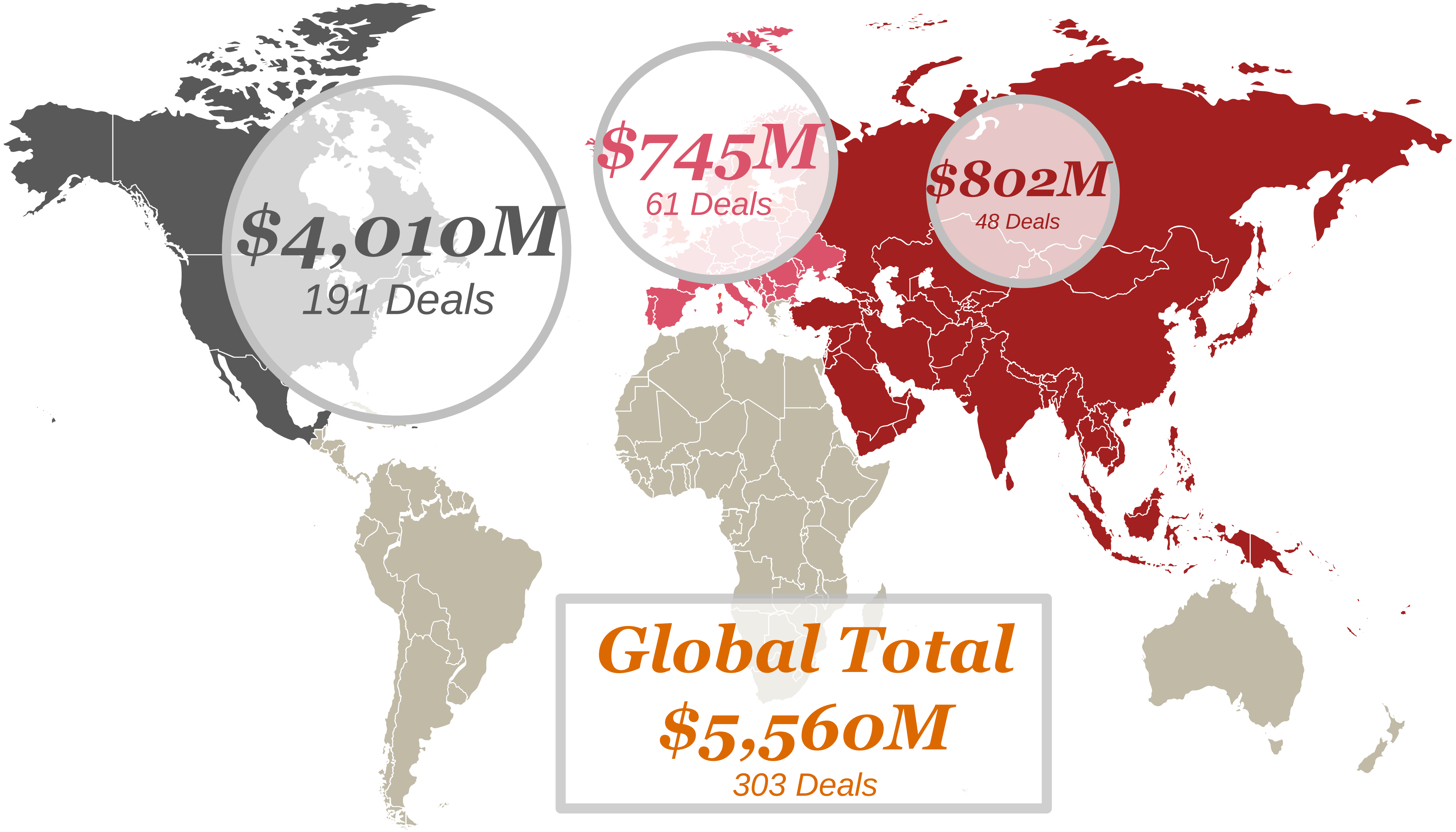
Global Healthcare Trends: Q4 2017

Global Healthcare comparisons for Q4'17

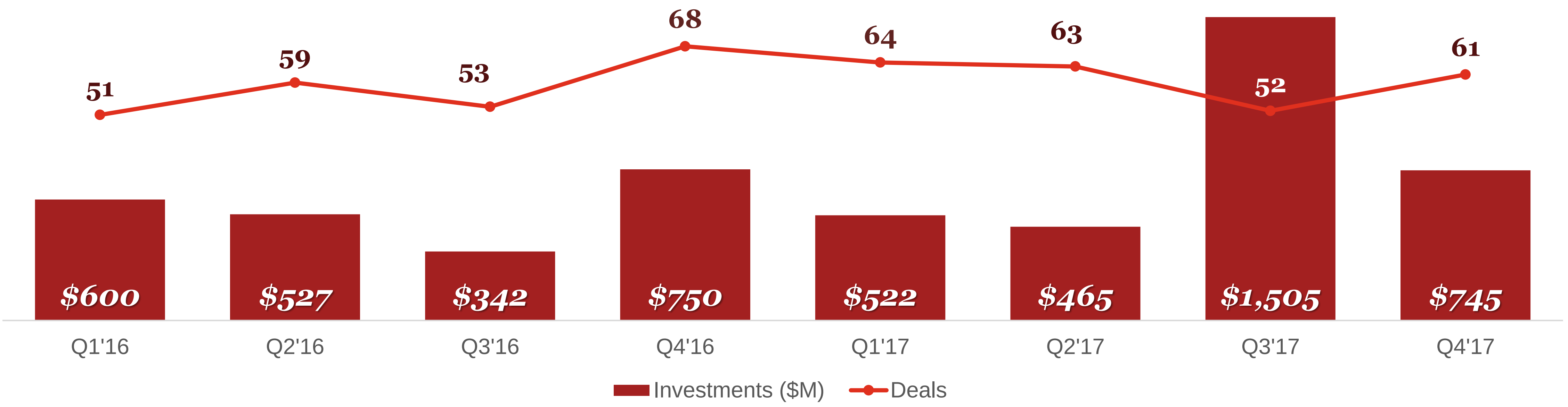


Global Total
$5,560M
303 Deals

8-quarter financing trend: Europe

Deals increased in Europe but funding declines by more than half

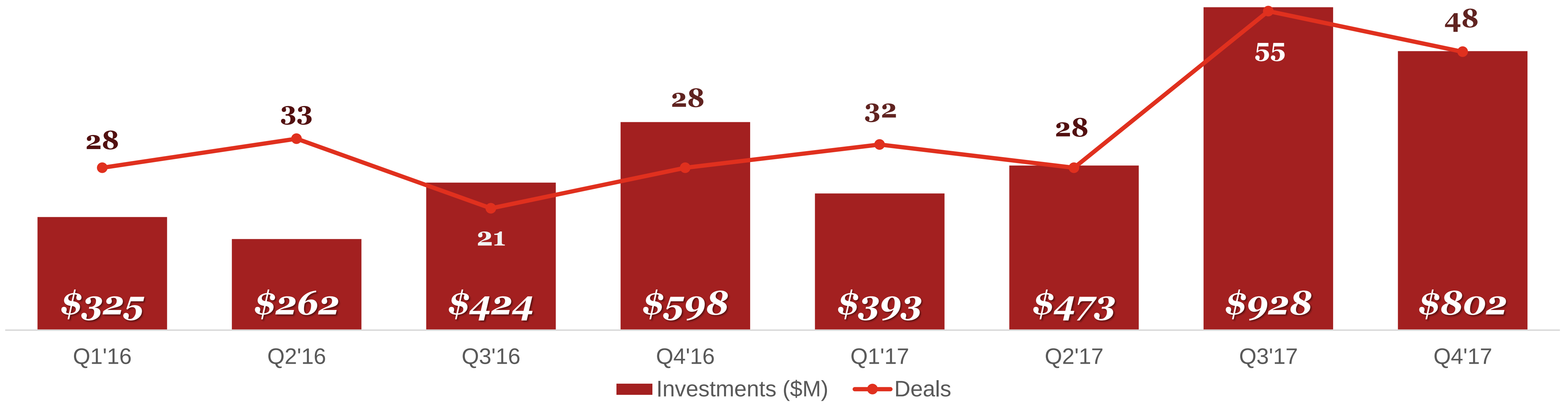
- Though deals increased in Q4'17, Europe's funding in the quarter dropped by more than half, as Q3'17 was propped up by a $1.1B investment in to Roivant Sciences. The largest deal in Q4'17 was closed by Orchard Therapeutics, which raised $110M.
- France led the way in Q4'17 with 13 deals, followed by Germany and the United Kingdom with 11 deals each. Q4'17 was the fourth time that Europe had more than 60 VC-baked Healthcare deals in the last eight quarters.
- The average deal size for Europe this quarter was $12.2M, which represents a 58% decrease in average deal size of $28.9M from Q3'17.



8-quarter financing trend: Asia

Asia experienced strong funding activity in the second half of 2017

- Asia finished strong in Q4’17 with more than $800M invested across 48 deals. Though deals slightly dipped from Q3’17, this was the second consecutive quarter with more than 45 deals closed in the last eight quarters.
- While most deals were in China, the largest deal was closed by Fullerton Healthcare in Singapore. There were several large deals in Israel as well, including Azura Ophthalmics Ltd. and CathWorks Ltd.
- The average deal size in Asia was $16.7M, which was above the average over the past eight quarters of $15.4M.



Appendix

US States: Full listing

State	$M	No. of Deals
Alabama	$0	2
Arizona	$2	2
California	$1,227	52
Connecticut	$7	3
DC	$1	1
Delaware	$12	1
Florida	$1	2

State	$M	No. of Deals
Georgia	$10	1
Illinois	$89	4
Indiana	$40	3
Iowa	$3	1
Kansas	$14	1
Louisiana	$4	2

State	$M	No. of Deals
Maryland	$366	5
Massachusetts	$1,582	38
Michigan	$63	4
Minnesota	$90	4
Missouri	$2	1
Nebraska	$19	3

State	$M	No. of Deals
New Jersey	$16	3
New York	$128	9
North Carolina	$35	4
Ohio	$8	4
Oregon	$16	2
Pennsylvania	$31	7

State	$M	No. of Deals
Rhode Island	$2	1
Texas	$14	6
Utah	$60	2
Virginia	$33	5
Washington	$35	5
Wisconsin	$4	3

No disclosed quarterly activity: *AK, AR, CO, HI, ID, KY, ME, MS, MT, ND, NV, NH, NM, OK, SC, SD, TN, VT, VW and WY. States unknown for 1 deal of less than $1M..*

Notes on methodology

PwC (pwcmoneytree.com) and CB Insights (cbinsights.com) encourage you to review the methodology and definitions employed to better understand the numbers presented in this report. If you have any questions about the definitions or methodological principles used, we encourage you to reach out to CB Insights directly. Additionally, if you feel your firm has been underrepresented, please send an email to info@cbinsights.com and we can work together to ensure your firm's investment data is up-to-date.

Rankings, e.g., top states and top sectors, are done by quarterly deal value (that is, dollars invested for the given quarter).

For full analysis of Q4'17 activity across all sectors, refer to the PwC / CB Insights MoneyTree™ Report.

What is included:

- Equity financings into emerging companies. Fundings must be to VC-backed companies, which are defined as companies who have received funding at any point from either: venture capital firms, corporate venture arms, or super angel investors.
- Fundings of private companies only. Funding rounds raised by public companies of any kind on any exchange (including Pink Sheets) are excluded from our numbers, even if they received investment by a venture firm(s).
- Only includes the investment made in the quarter for tranched investments. If a company does a second closing of its Series B round for $5M and previously had closed $2M in a prior quarter, only the $5M is reflected in our results.
- Round numbers reflect what has closed – not what is intended. If a company indicates the closing of $5M out of a desired raise of $15M, our numbers reflect only the amount which has closed.
- Only verifiable fundings are included. Fundings are verified via (1) various federal and state regulatory filings; (2) direct confirmation with firm or investor; (3) press release; or (4) credible media sources.
- Equity fundings to joint ventures and spinoffs/spinouts are included, given that they meet the VC-backed criteria.
- Geography note: Israel funding figures are classified in Asia.

What is excluded:

- No contingent funding. If a company receives a commitment for $20M subject to hitting certain milestones but first gets $8M, only the $8M is included in our data.
- No business development / R&D arrangements whether transferable into equity now, later or never. If a company signs a $300M R&D partnership with a larger corporation, this is not equity financing nor is it from venture capital firms. As a result, it is not included.
- No buyouts, consolidations or recapitalizations. All three of these transaction types are commonly employed by private equity firms and are tracked by CB Insights. However, they are excluded for the purposes of this report.
- No private placements. These investments, also known as PIPEs (Private Investment in Public Equities), are not included even if made by a venture capital firm(s).
- No debt / loans of any kind (except convertible notes). Venture debt or any kind of debt / loan issued to emerging, startup companies, even if included as an additional part of an equity financing, is not included. If a company receives $3M with $2M from venture investors and $1M in debt, only the $2M is included in these statistics.
- No non-equity government funding. Grants or loans by the federal government, state agencies, or public-private partnerships to emerging, startup companies are not included.
- No fundings to subsidiaries of a larger parent corporation.