REUTERS/Tobias Schwarz

# THOMSON REUTERS RECAP

Current Life Sciences Dealmaking Landscape

May 2015

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# Contents

- Introduction to Data Source
- Overview of 2014 and Q1 2015 Dealmaking
- Mergers and Acquisitions
- Option to Acquire Structures
- Licenses and JVs of Products and Technologies
- Conclusions

# Introduction to Thomson Reuters Life Sciences

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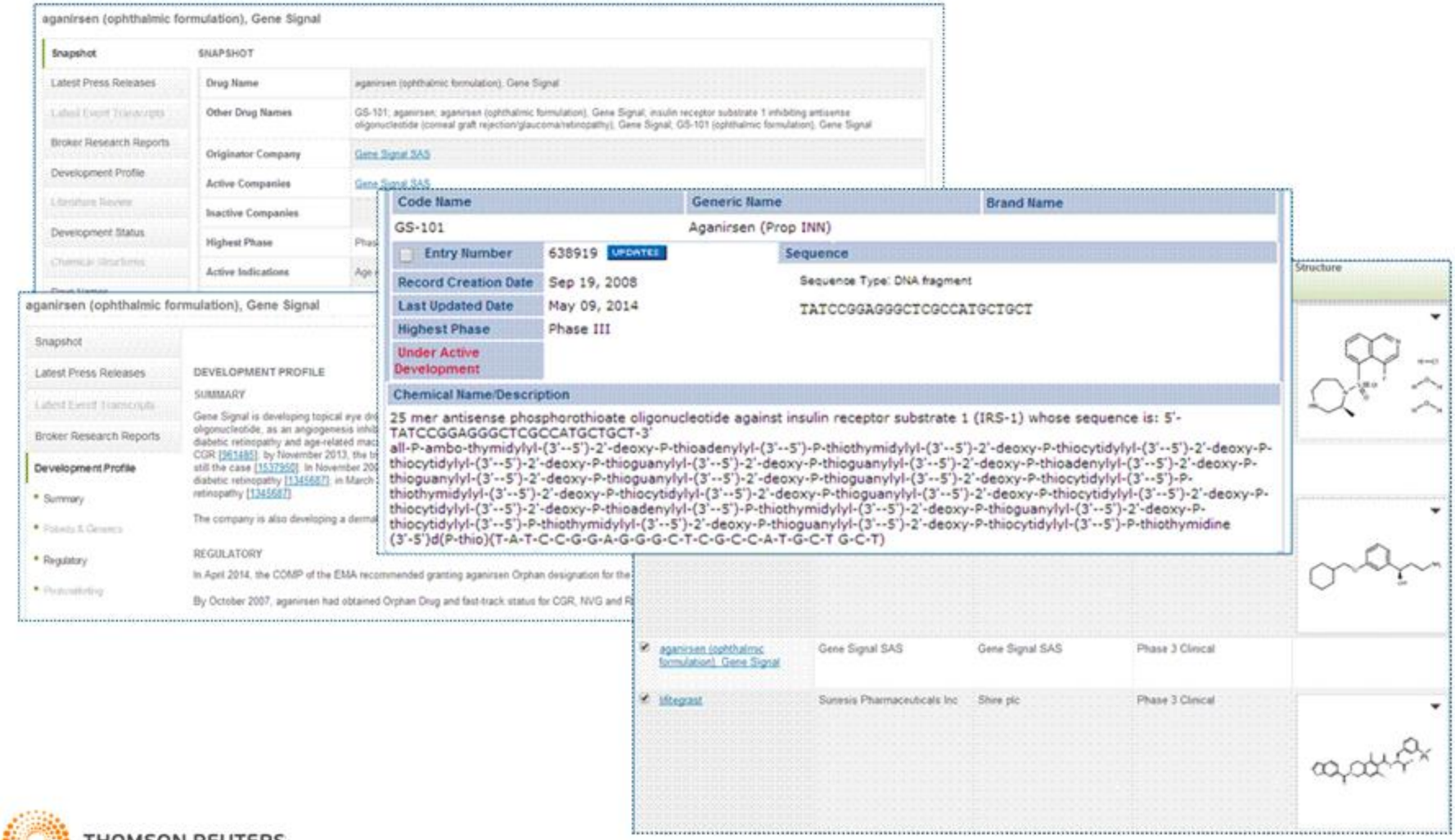
# Selected Thomson Reuters IP&S Tools

| Intellectual Property | Scientific R&D | Business of Science |
|---|---|---|
| • Derwent World Patents<br>• Thomson Innovation<br>• Saegis Global Trademark Screening<br>• TechStreet Codes and Standards<br>• IP Rules Comprehensive File<br>• Thomson File Histories<br>• MarkMonitor Online Brand Protection<br>• IP Translation and Payment Services | • Web of Science Research Platform<br>• Science Citation Index<br>• Chinese Science Citation Index<br>• Conference Proceedings Citation Index<br>• BIOSIS Previews<br>• Inspec<br>• Current Contents<br>• EndNote<br>• ScholarOne Grants & Awards | • Recap Dealbuilder IQ<br>• Cortellis Competitive Intelligence<br>• Cortellis Data Fusion<br>• Cortellis for Regulatory Intelligence<br>• Cortellis for Clinical Trials Intelligence<br>• BioWorld Today<br>• Incidence Prevalence Database<br>• Newport Generic Market Intelligence<br>• CMR GlobalR&D Performance Metrics Program<br>• Integrity<br>• Systems Biology and Systems Toxicology |

# Cortellis: Drug Monographs

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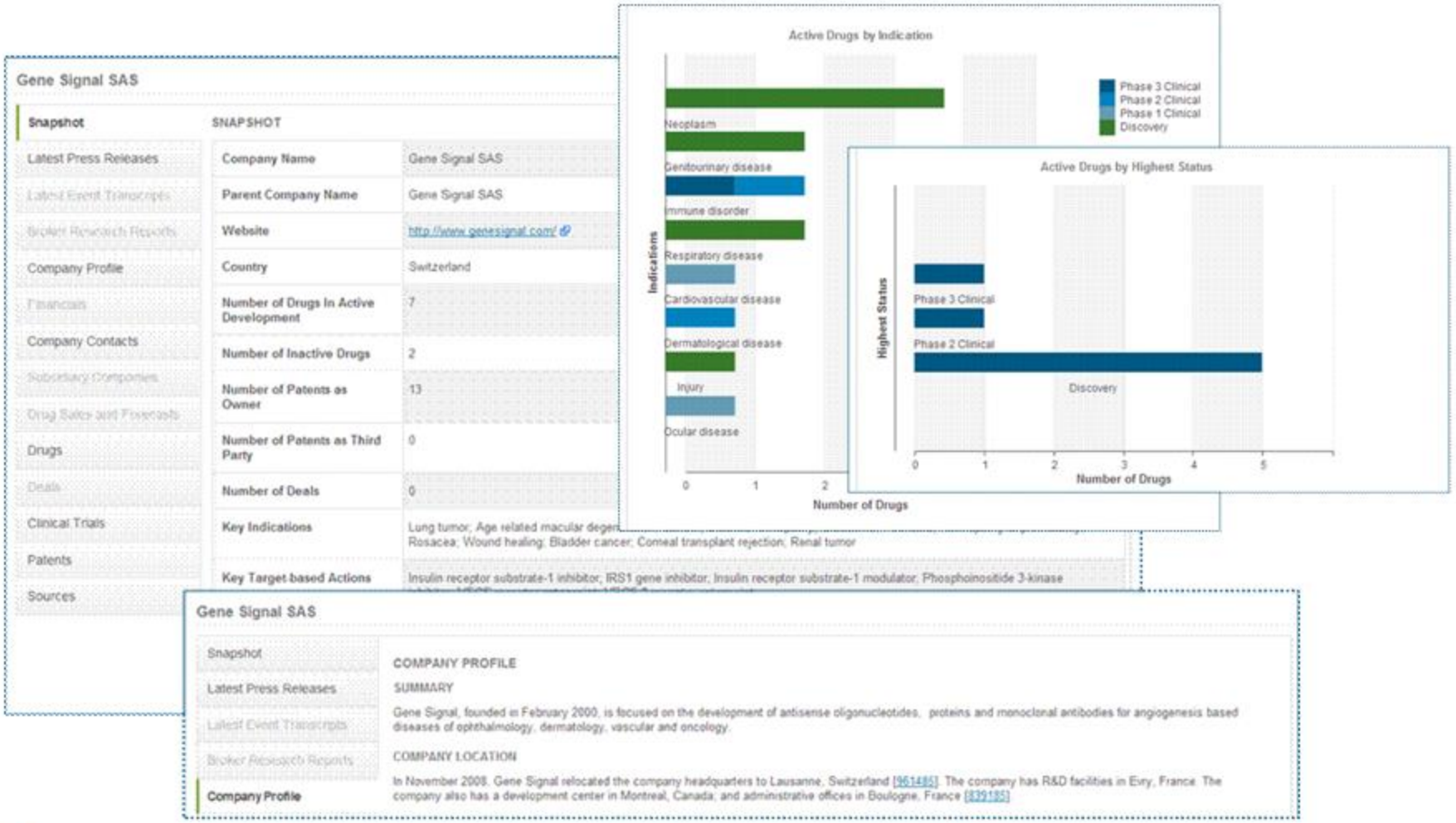
# Cortellis: Company Profiles



# CMR Benchmarking Consortium

2014 CMR INTERNATIONAL PHARMACEUTICAL R&D EXECUTIVE SUMMARY

AUGUST 2014

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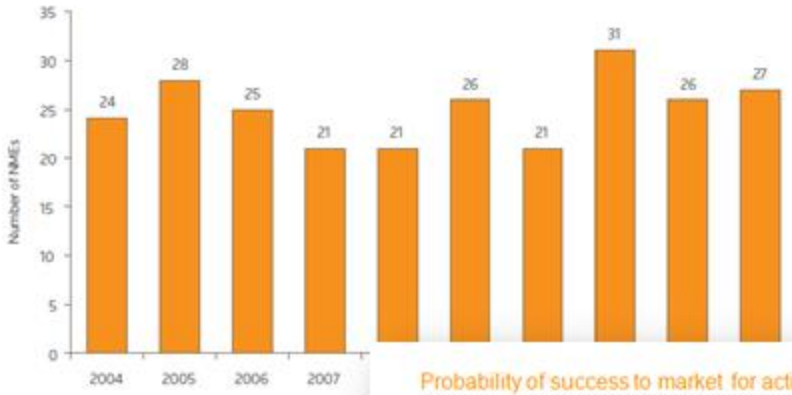
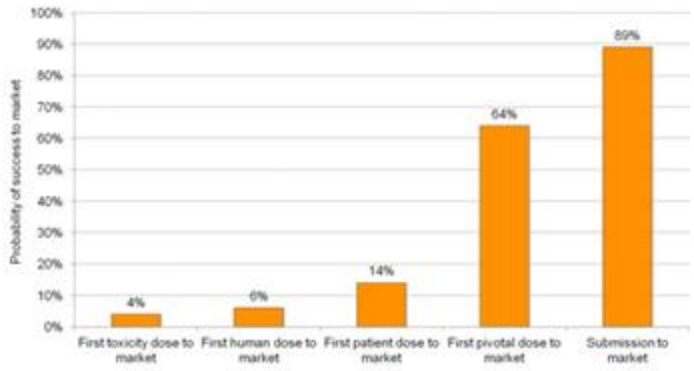
FIGURE 2 – NUMBER OF NME FIRST WORLD LAUNCHES 2004 TO 2013




Source: 2014 CMR International Pharmaceutical

Probability of success to market for active substances




Probabilities of success to market were calculated using success rates between phase for active substances entering phase between 2007 and 2009 and year of assessment 2012.

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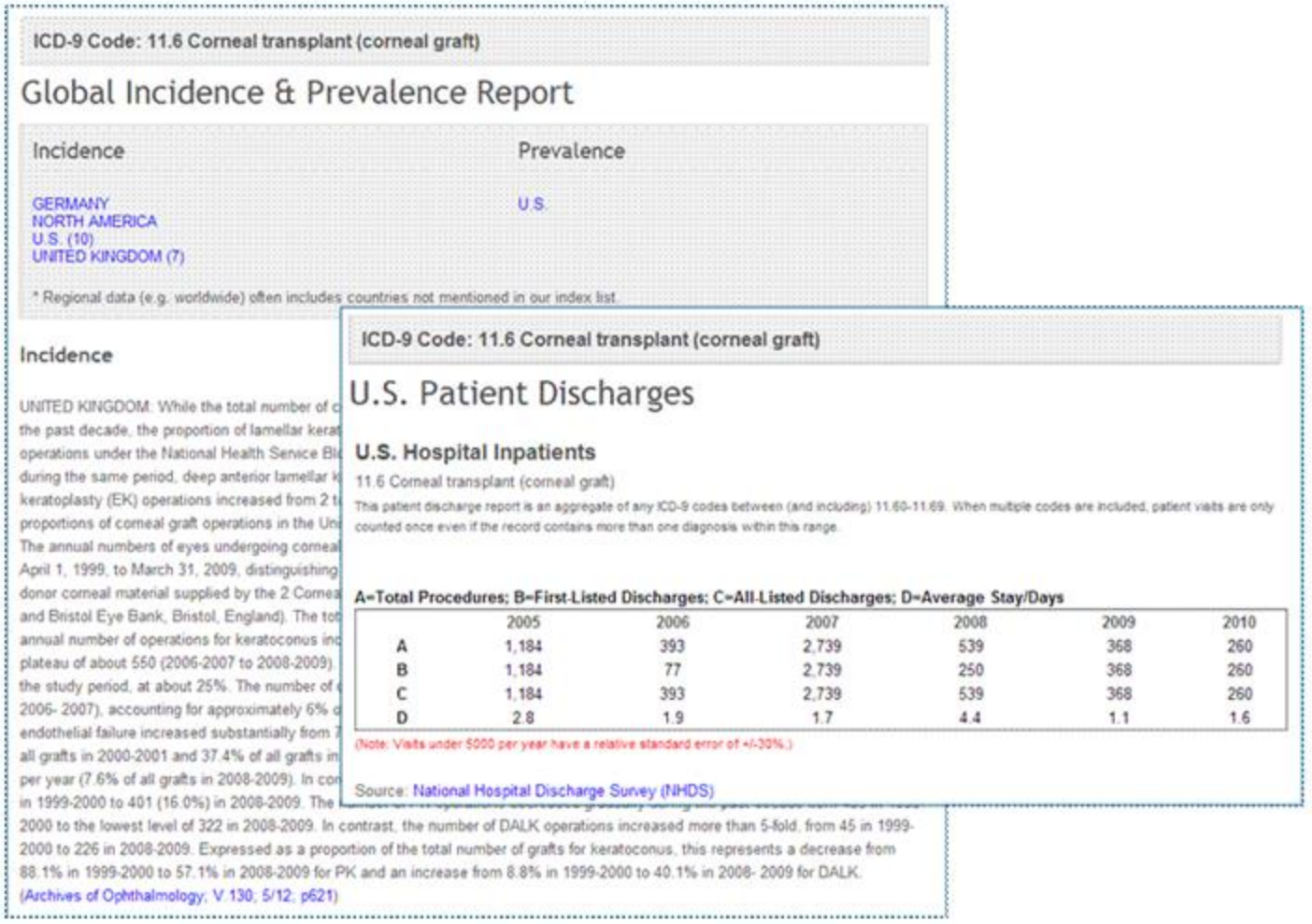
# Incidence and Prevalence Database



ICD-9 Code: 11.6 Corneal transplant (corneal graft)

Global Incidence & Prevalence Report

| Incidence | Prevalence |
|---|---|
| GERMANY<br>NORTH AMERICA<br>U.S. (10)<br>UNITED KINGDOM (7) | U.S. |

* Regional data (e.g. worldwide) often includes countries not mentioned in our index list.

Incidence

UNITED KINGDOM: While the total number of c
the past decade, the proportion of lamellar kerat
operations under the National Health Service Bl
during the same period, deep anterior lamellar k
keratoplasty (EK) operations increased from 2 t
proportions of corneal graft operations in the Un
The annual numbers of eyes undergoing corneal
April 1, 1999, to March 31, 2009, distinguishing
donor corneal material supplied by the 2 Cornea
and Bristol Eye Bank, Bristol, England). The tot
annual number of operations for keratoconus inc
plateau of about 550 (2006-2007 to 2008-2009)
the study period, at about 25%. The number of
2006- 2007), accounting for approximately 6% o
endothelial failure increased substantially from 7
all grafts in 2000-2001 and 37.4% of all grafts in
per year (7.6% of all grafts in 2008-2009). In con
in 1999-2000 to 401 (16.0%) in 2008-2009. The
2000 to the lowest level of 322 in 2008-2009. In contrast, the number of DALK operations increased more than 5-fold, from 45 in 1999-2000 to 226 in 2008-2009. Expressed as a proportion of the total number of grafts for keratoconus, this represents a decrease from 88.1% in 1999-2000 to 57.1% in 2008-2009 for PK and an increase from 8.8% in 1999-2000 to 40.1% in 2008- 2009 for DALK.
(Archives of Ophthalmology. V.130; 5/12; p621)

ICD-9 Code: 11.6 Corneal transplant (corneal graft)

U.S. Patient Discharges

U.S. Hospital Inpatients

11.6 Corneal transplant (corneal graft)

This patient discharge report is an aggregate of any ICD-9 codes between (and including) 11.60-11.69. When multiple codes are included, patient visits are only counted once even if the record contains more than one diagnosis within this range.

A=Total Procedures; B=First-Listed Discharges; C=All-Listed Discharges; D=Average Stay/Days

| | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 |
|---|---|---|---|---|---|---|
| A | 1,184 | 393 | 2,739 | 539 | 368 | 260 |
| B | 1,184 | 77 | 2,739 | 250 | 368 | 260 |
| C | 1,184 | 393 | 2,739 | 539 | 368 | 260 |
| D | 2.8 | 1.9 | 1.7 | 4.4 | 1.1 | 1.6 |

(Note: Visits under 5000 per year have a relative standard error of +/-30%.)

Source: National Hospital Discharge Survey (NHDS)

# BioWorld Today


BIOWORLD™ TODAY

THE DAILY BIOPHARMACEUTICAL NEWS SOURCE

JULY 23, 2014 — BIOTECH'S MOST RESPECTED NEWS SOURCE FOR MORE THAN 20 YEARS — VOLUME 25, NO. 141

"SYNTA STAGE"

**Next step in AML study advances ganetespib to phase III extension**

*By Randy Osborne, Staff Writer*

With its lead cancer drug unpartnered and a new CEO yet to be chosen, Synta Pharmaceuticals Corp. is advancing the phase II/III AML LI-1 trial to test the chemosensitizing mettle of the heat-shock protein 90 inhibitor ganetespib when paired with low-dose cytarabine (Ara-C) in acute myeloid leukemia (AML) or high-risk myelodysplastic syndrome patients who are not eligible for intensive chemotherapy.

An interim analysis of results from 50 patients given the combo in the phase II part of the trial, with complete response as its main efficacy outcome, led to the move

See Synta, page 3

**CBMG taking China's stem cell industry to international stage**

*By Shannon Ellis, Staff Writer*

SHANGHAI – Cellular Biomedicine Group Inc. (CBMG) of Shanghai, has had a busy month, successfully listing on Nasdaq as the first "pureplay" biotech company from China and closing a $30 million stock transaction.

It also didn't hurt that the company had some good news to share regarding its

See CBMG, page 4

FINANCINGS

**Synlogic scores $29.4M series A for therapeutic microbes**

*By Marie Powers, Staff Writer*

Synlogic Inc. tucked a $29.4 million series A into its belt as it aims at the nexus of synthetic biology and the microbiome with the development of therapeutic microbes. Atlas Venture and

See Synlogic, page 5

U.S. NEWS

**Ease communications rules to encourage progress, Congress told**

*By Michael Fitzhugh, Staff Writer*

Policy changes expanding access to patient health data and better fostering collaboration through transparency will be crucial to expediting patient access to new therapies, witnesses told members

See Policy, page 6

IN THE CLINIC

**Biosceptre reports POC phase I cancer data, plans funding round**

*By Nuala Moran, Staff Writer*

LONDON – Biosceptre Ltd. announced positive results from a U.S. phase I study of its lead antibody, BIL-010t, providing proof of concept for what the company said is a highly specific target found in at

See Biosceptre, page 7

CHINA

**Sinopharm to undergo ownership reform in pilot SASAC program**

*By Kristine Yong, Staff Writer*

HONG KONG – Sinopharm Group, one of the largest biotech companies in China, is likely to undergo major structural reforms as the government kicks off a series of reforms on its state-owned

See Sinopharm, page 8

THE BIOWORLD BIOME

*PSYCHIATRY'S MANHATTAN PROJECT?*

**New research findings, $650M cash pledge to bolster psychiatric space**

*By Anette Breindl, Science Editor*

Psychiatry's net gains Tuesday: 108 new schizophrenia genetic loci and $650 million.

The former were published in the July

See Psychiatric, page 9

NEWS & VIEWS

**Therapeutic Proteins' Niazi dispels myths of biosimilars**

One of the worries about biosimilar drug development is that the regulatory pathway will be just an onerous as it is for naval drugs, preventing any significant price reductions in biosimilar products.

But Sarfaraz K. Niazi, founder, chairman

See News & Views, page 10



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# Thomson One Financial Content


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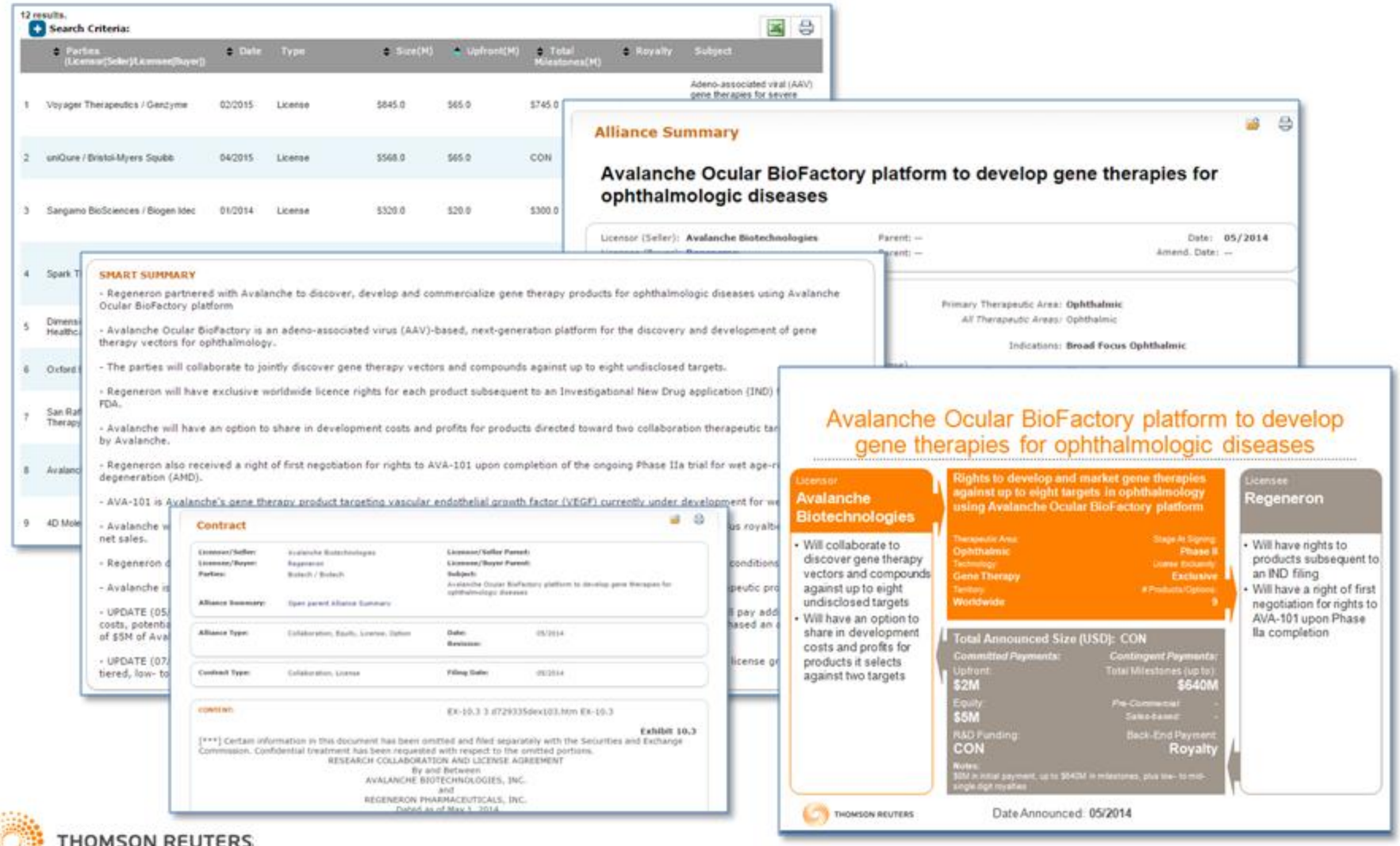
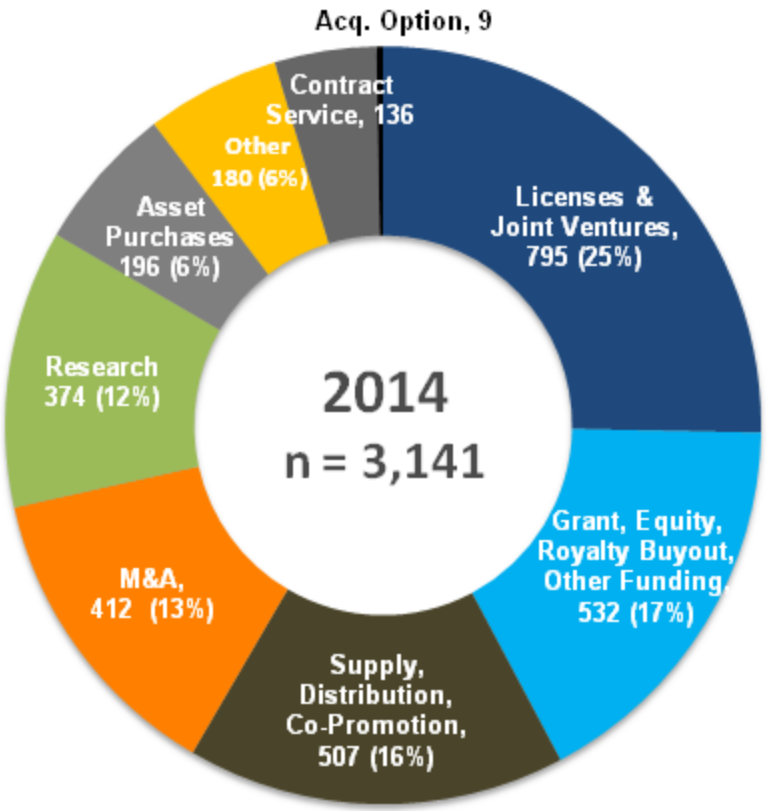
# Recap Dealbuilder Database



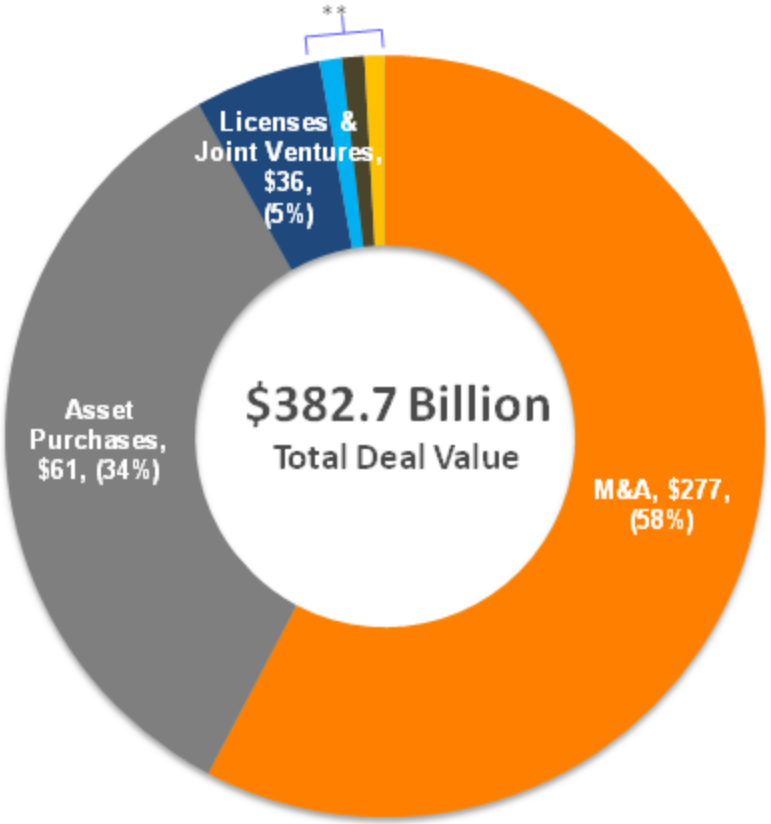
# Overview of Today's Dealmaking Landscape

# 2014 Life Sciences Dealmaking

## Deal Volume




## Deal Dollars

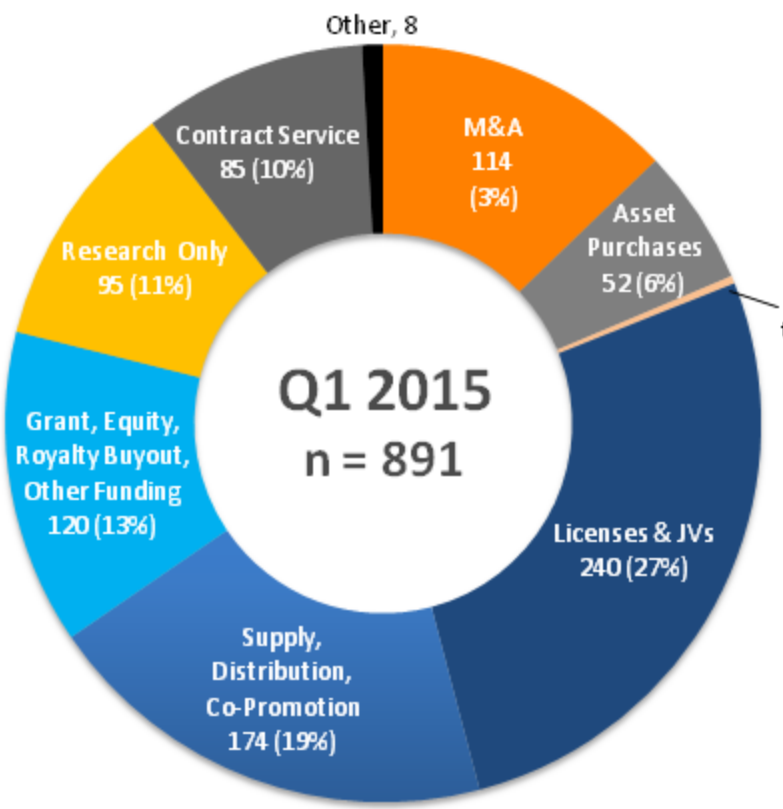



NOTE: All dollars throughout presentation are US $.

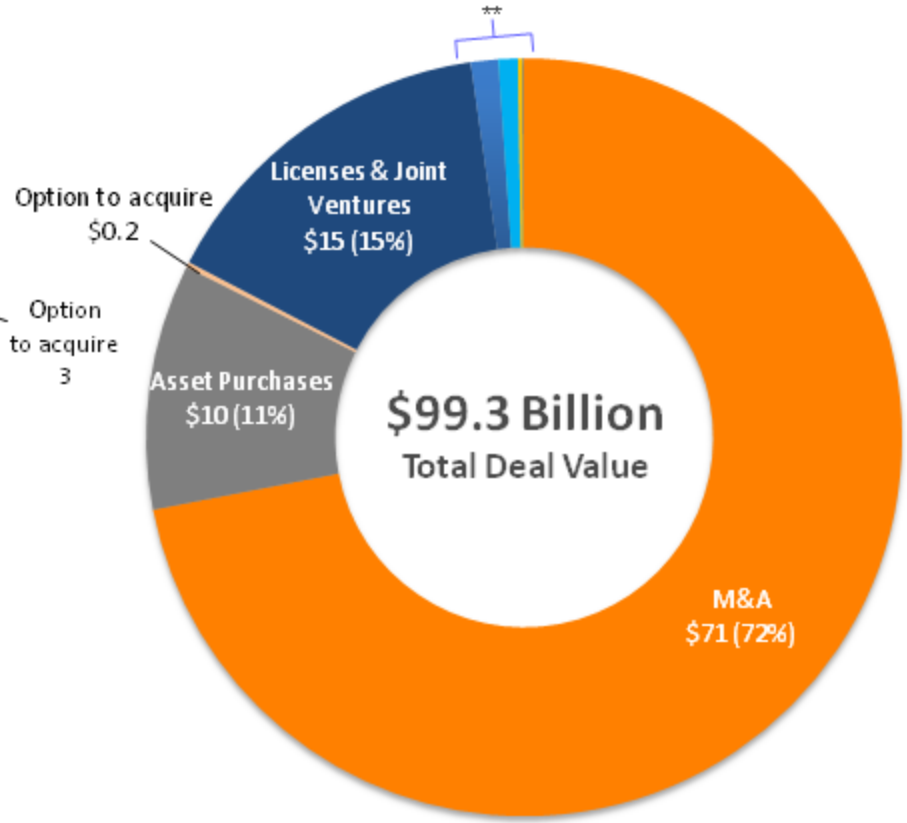
Grant, Equity, Royalty Buyout, Other Funding=$6B; Supply, Distribution, Co-Promotion=$1 B; Contract Service=$.1B; Acq. Option=$1B; Research=$24M; Other=$1

# Deals Announced in Q1 2015

## Deal Volume




## Deal Dollars




** $1.2B Supply/Distribution/Co-promotion; $0.8B Grant/Equity/Royalty Buyout/Other Funding; $0.2B Research only; $0.1B Contract Services

# M&A and Product/Technology Licensing/JV Trends Over Time: 2008 to Q1 2015

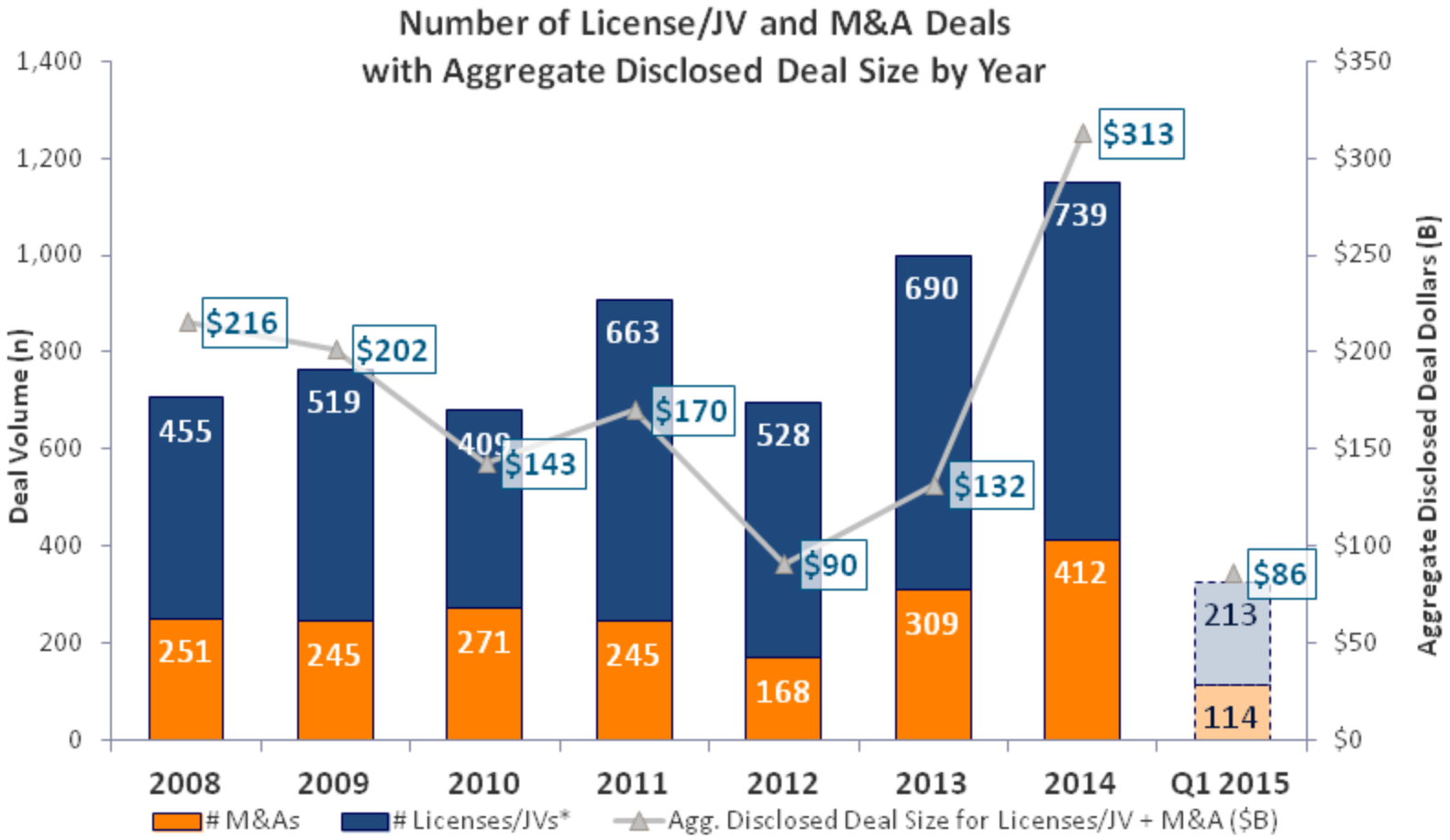
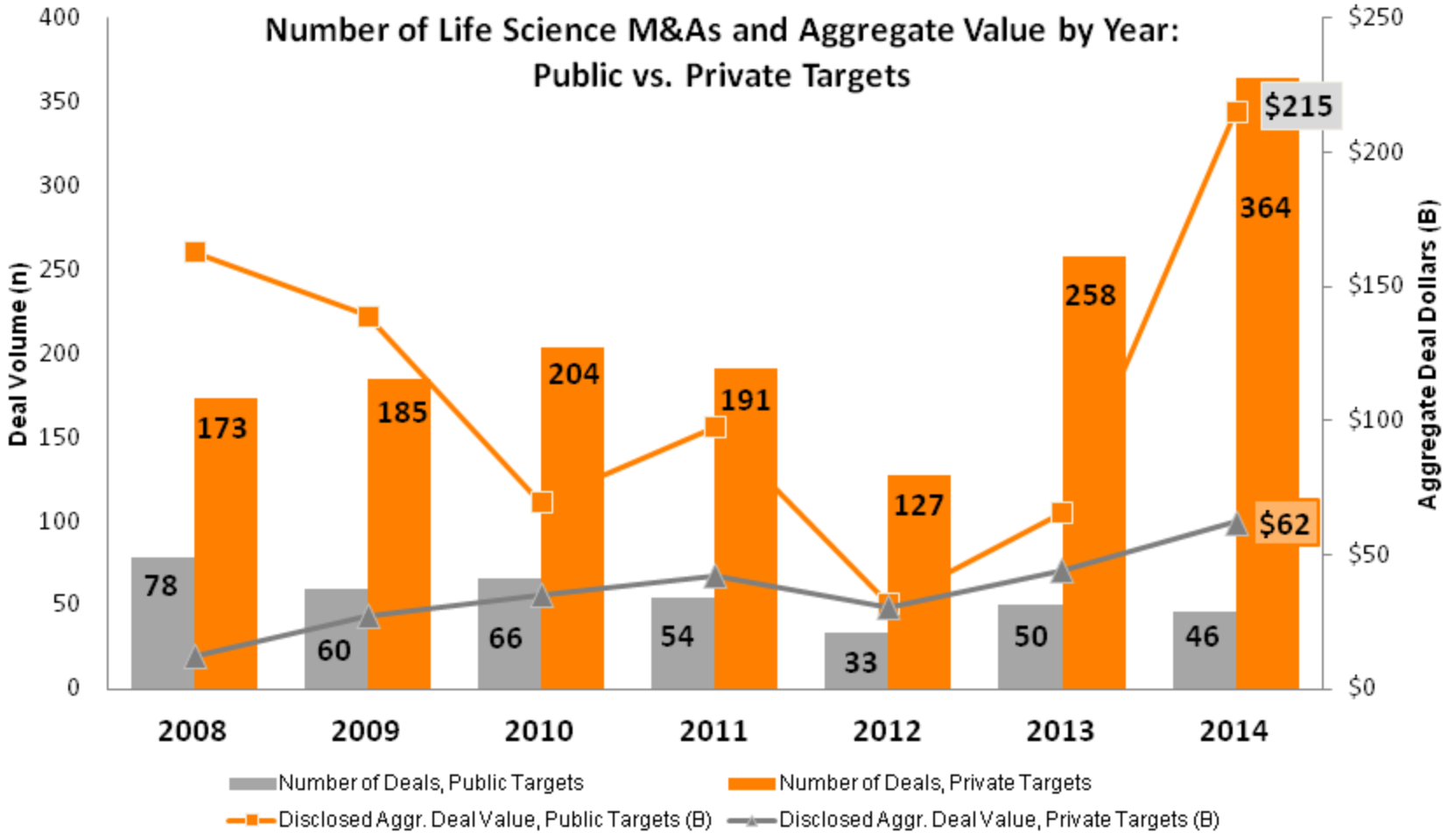



*Chart includes product and technology licenses/JVs only; excludes IP-only licenses. JV = Joint Venture.

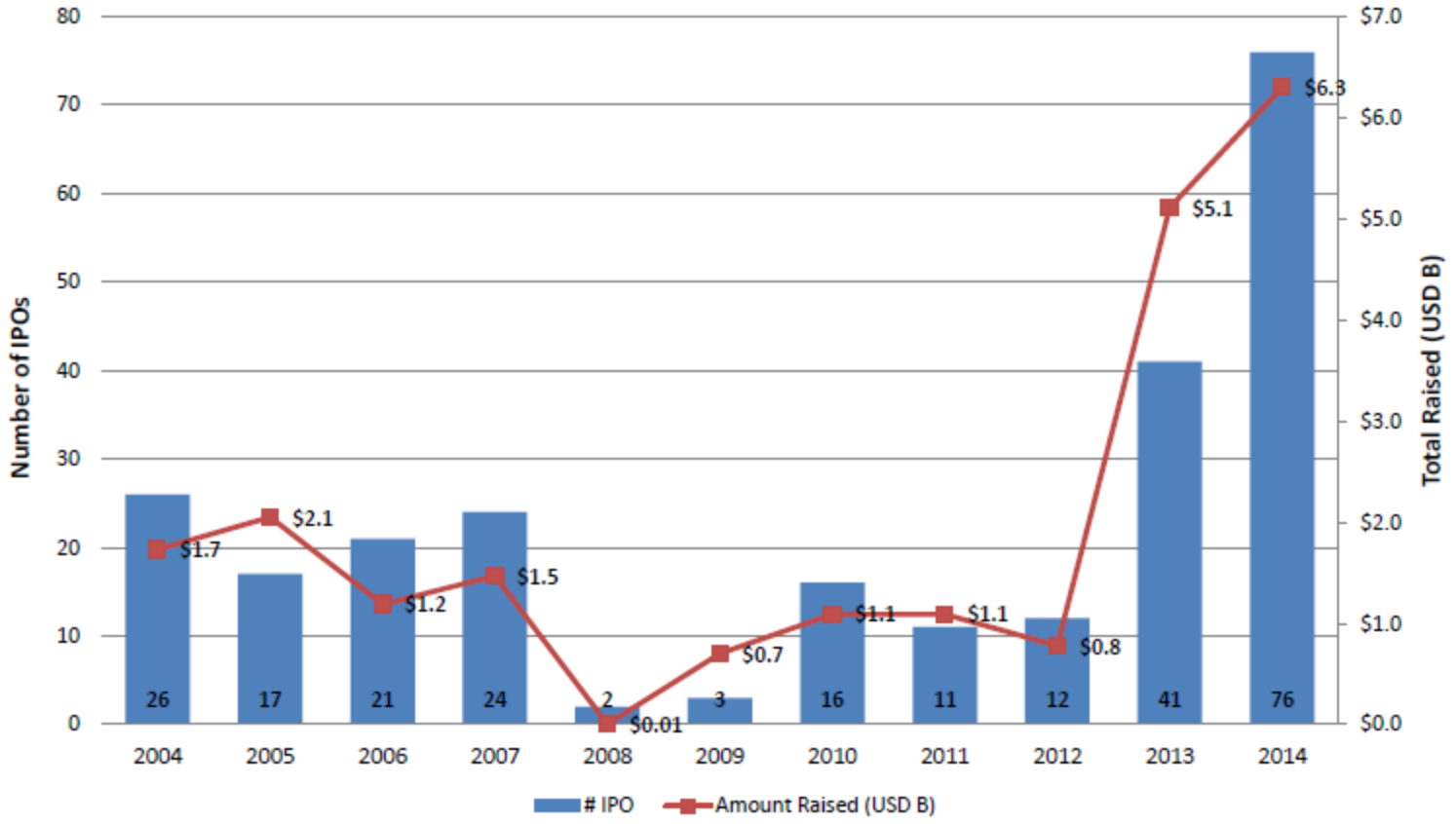
# Mergers and Acquisitions

# Public vs. Private M&A Targets: 2008-2014



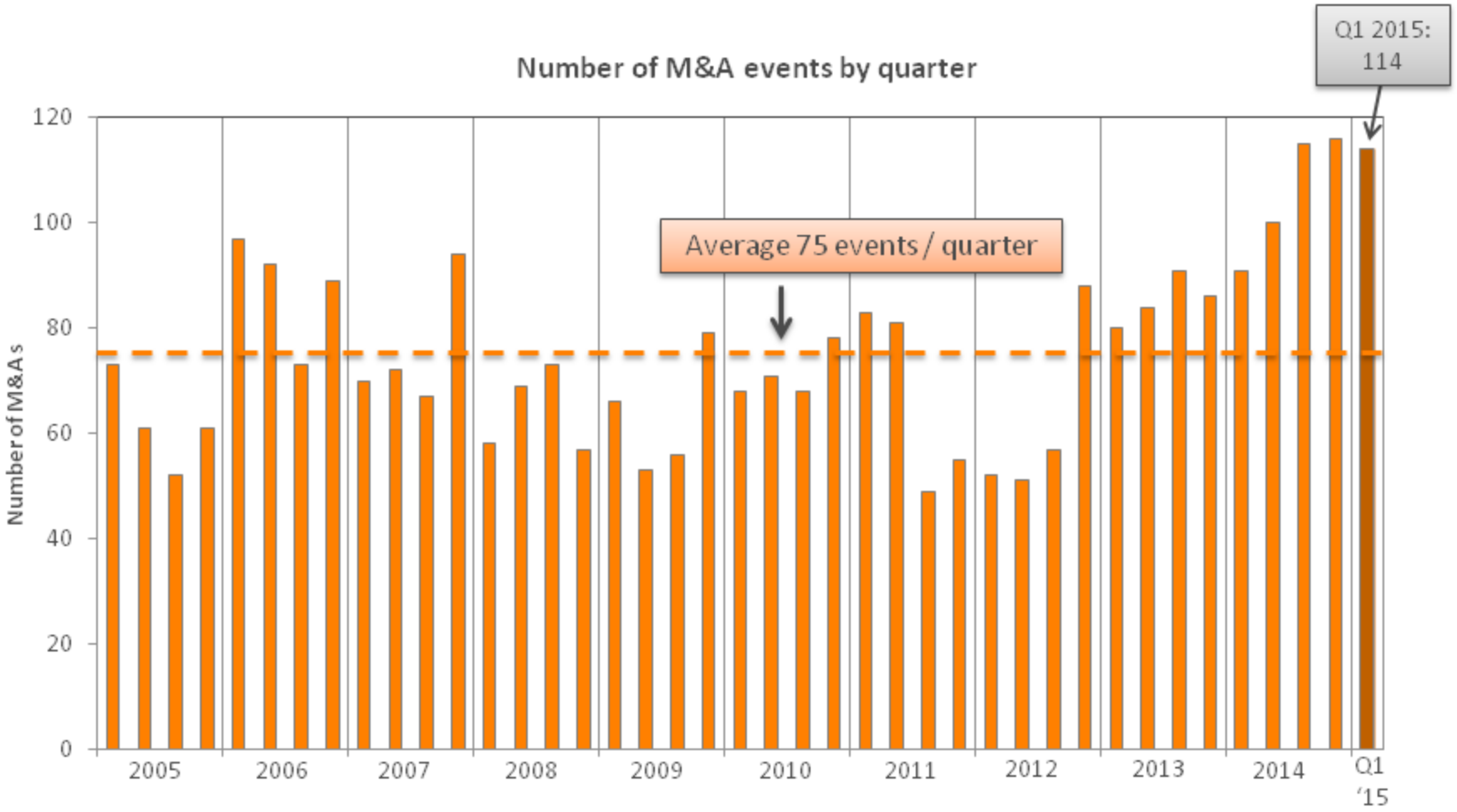

Note: 2014 data excludes 2 M&A transactions for which the company ownership was not known.

# Life Sciences Initial Public Offerings, 2004-2014

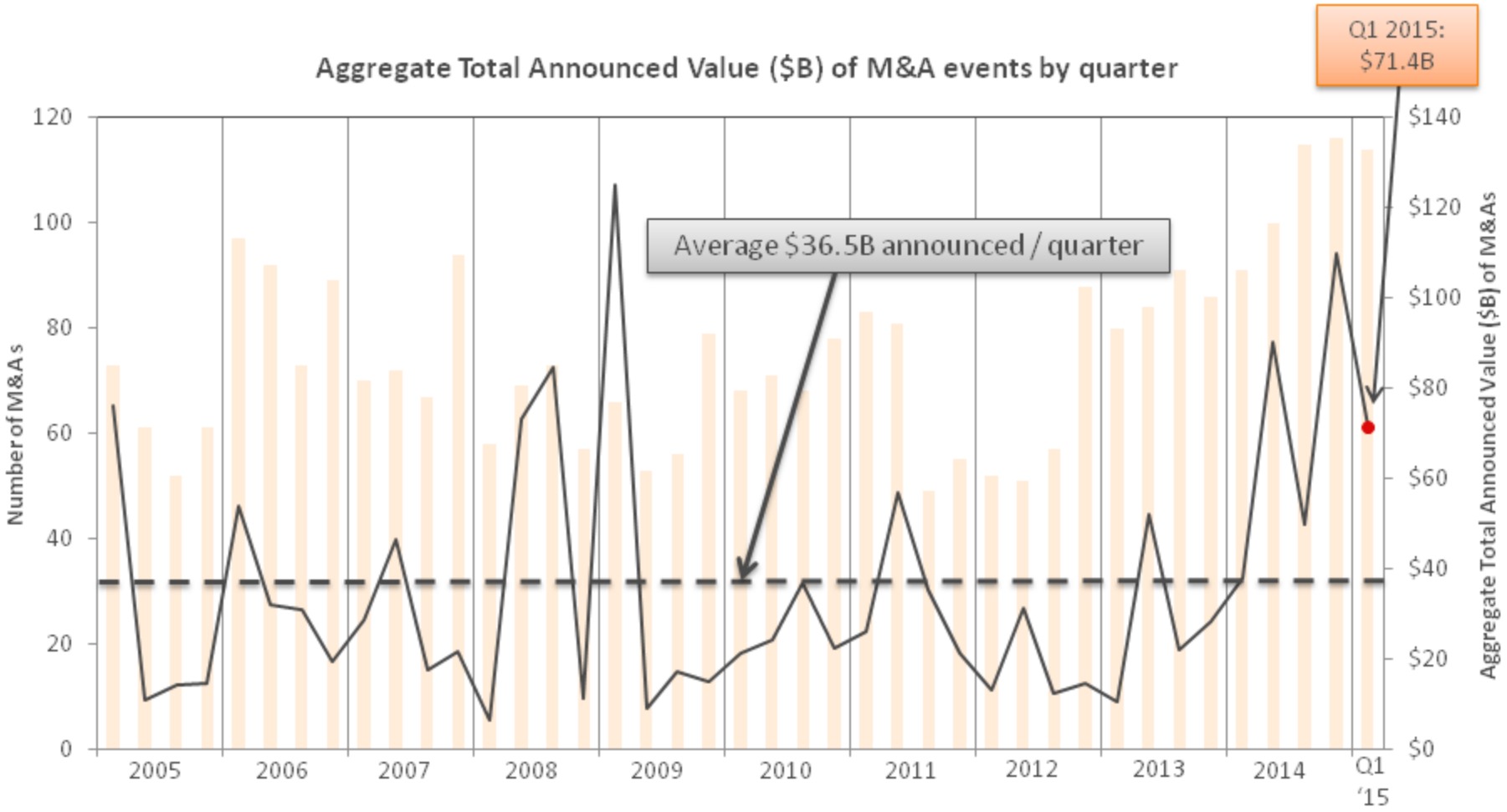



Source: Thomson Eikon

# 10 Years of M&A by Quarter: Volume



# 10 Years of M&A by Quarter: Total Deal Value

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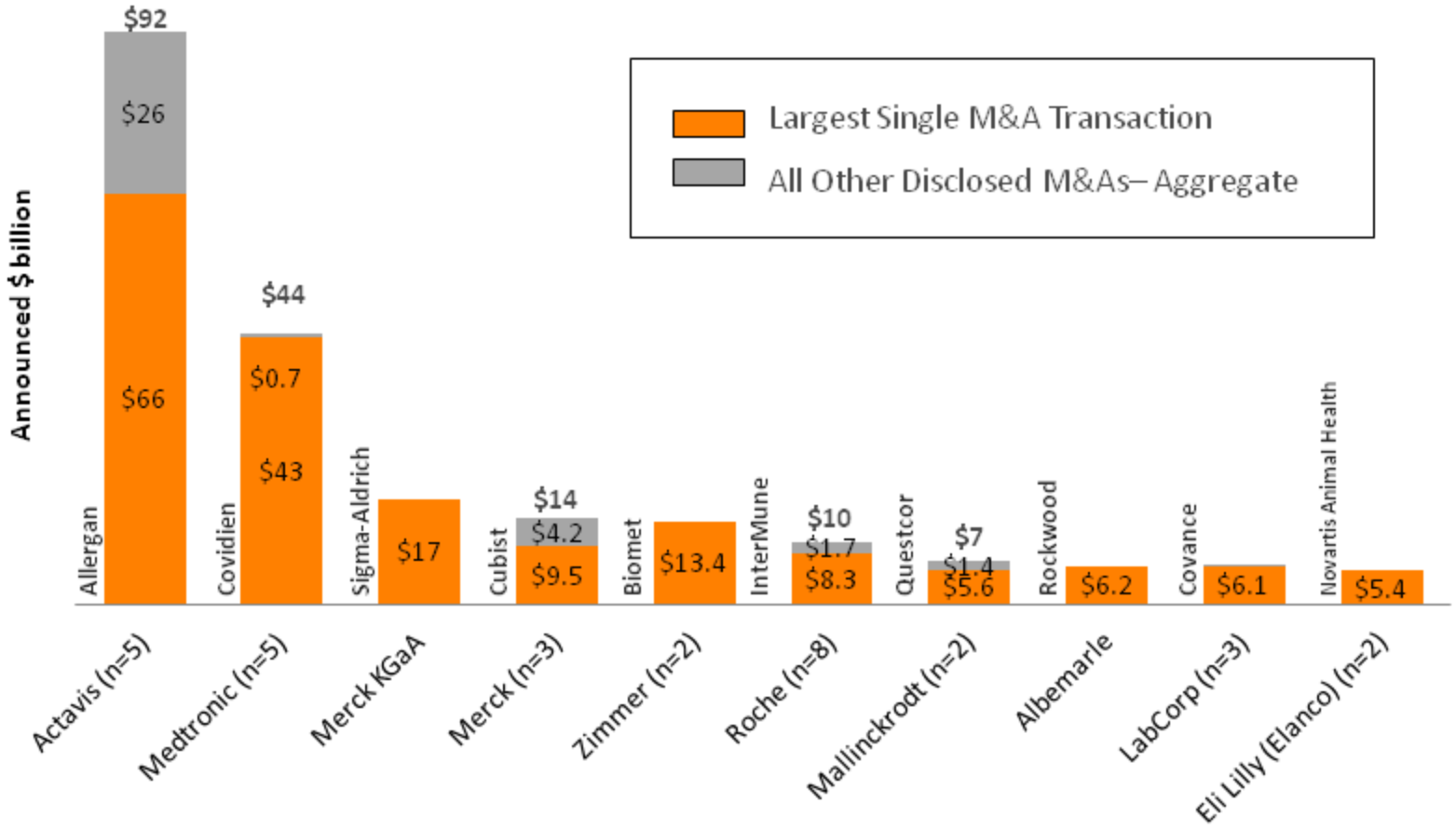
# M&A 2014: Deal Dollars of Top Ten Acquirers

$214B aggregate disclosed deal dollars in 32 acquisitions by these 10 buyers

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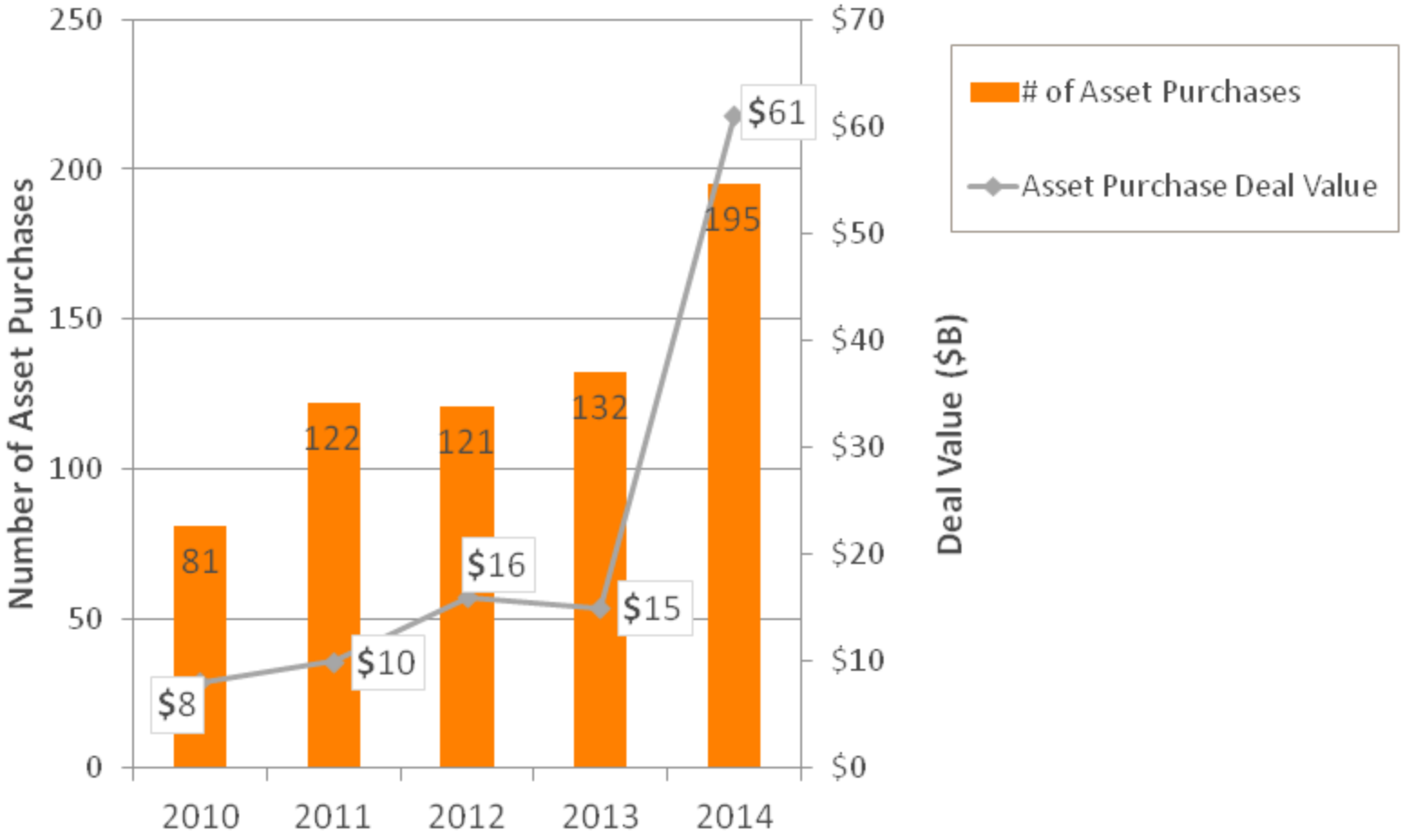
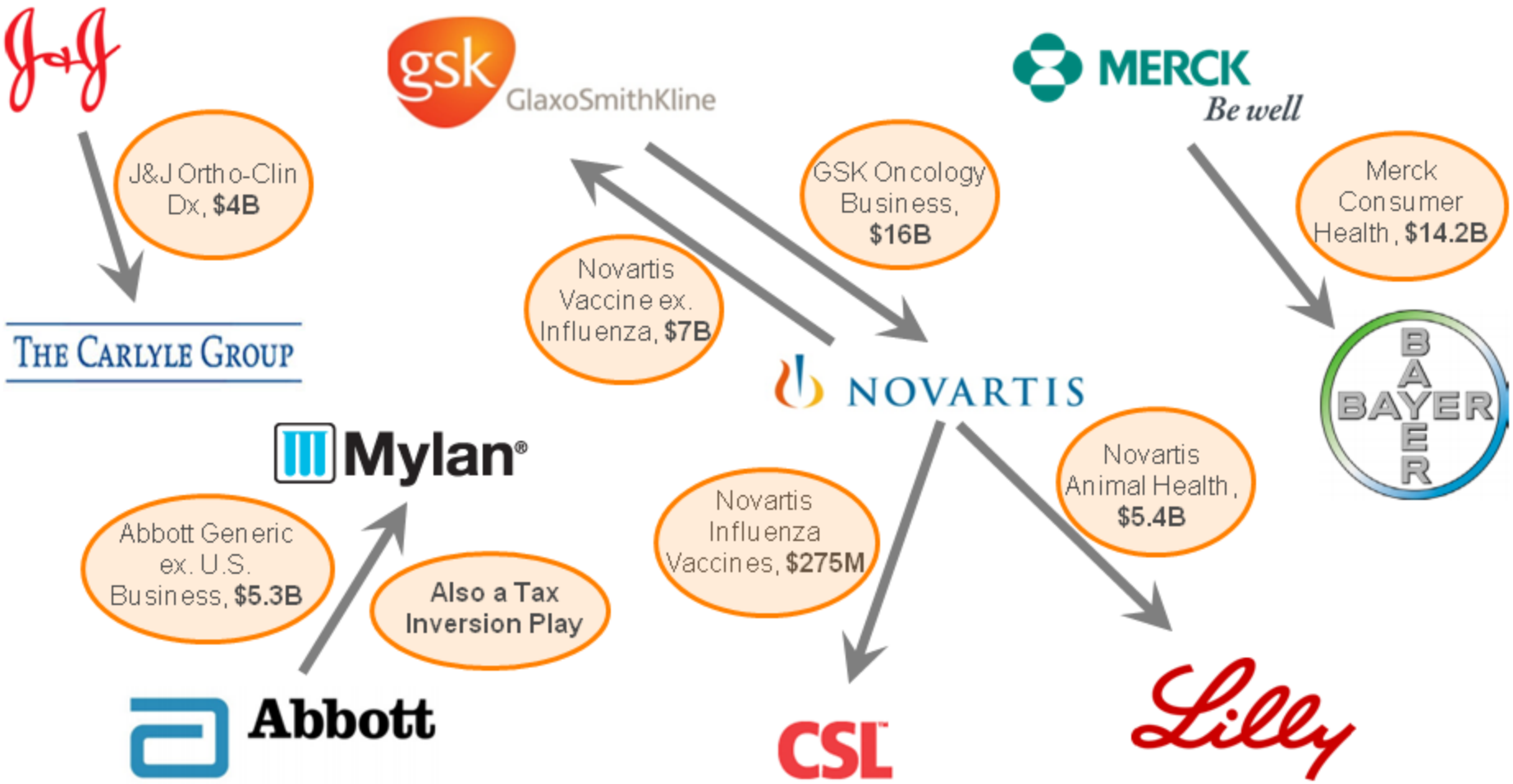
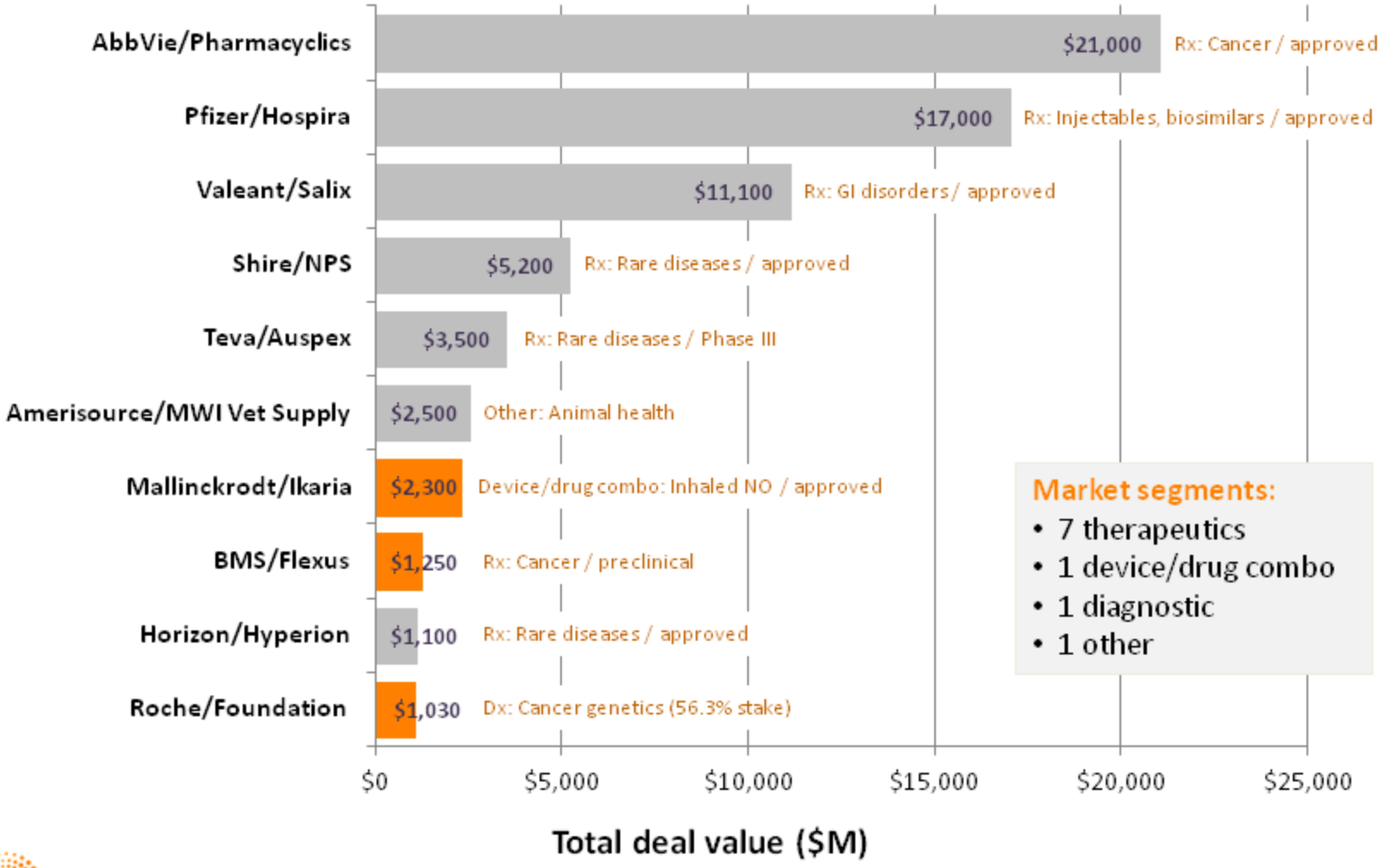
# M&A 2014: Asset Swaps and Divestitures



# M&A 2014: BigCo Portfolio Rationalization



# Q1 M&A: Ten Largest Deals of Q1 2015

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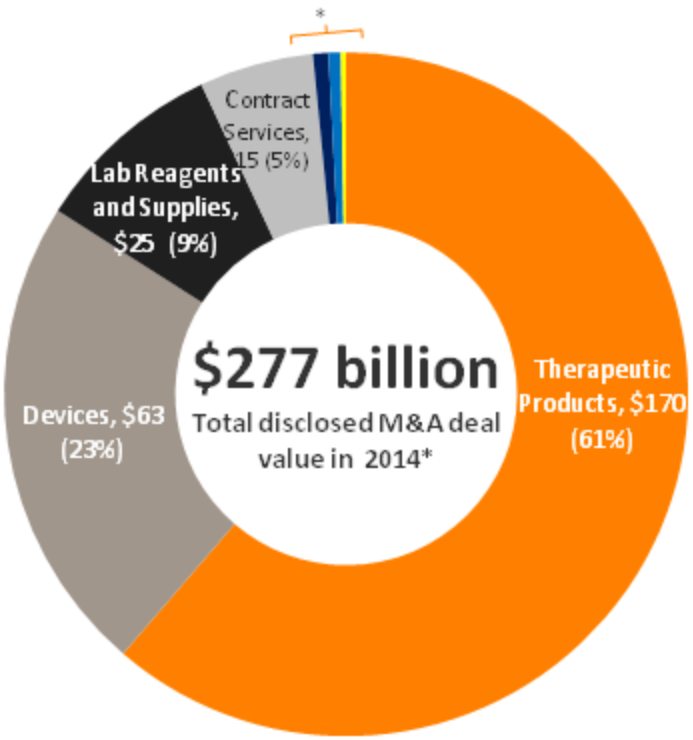
# M&A 2014: Market Segments and Rx Arenas

## 2014 M&A Deals by Market Segment




*Diagnostics ($2B), Instruments & Software ($1.6B) and Tech. Platforms ($.7B)

**Letters of intent and terminated M&A offers were excluded.

## Rx Areas by Aggregate Deal Dollars

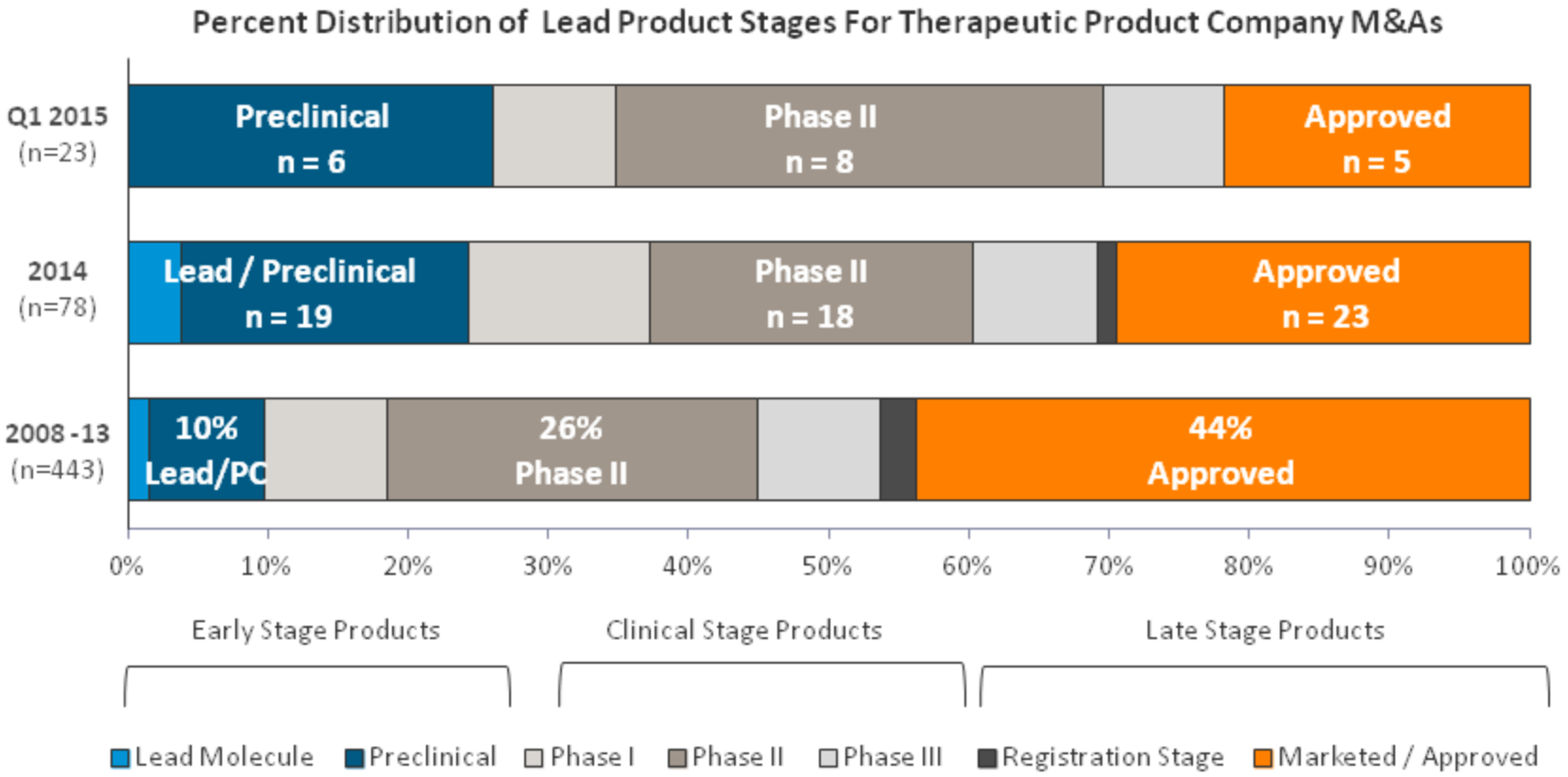
| Therapeutic Area | Total n | Aggregate $B |
|---|---|---|
| Diversified/ Broad focus | 48 | $117.5 |
| Cancer | 18 | $2.7 |
| Neurology | 16 | $8.2 |
| Infectious Disease | 10 | $16.5 |
| Autoimmune/ Inflammatory | 6 | $5.6 |
| Other/ Miscellaneous | 7 | $5.6 |
| Dermatologic | 5 | $0.7 |
| Pulmonary/ Respiratory | 4 | $8.9 |
| Ophthalmic | 4 | $.1 |
| Endocrine/ Metabolic | 3 | $0.6 |
| Gastrointestinal | 2 | $2.9 |
| Genitourinary/ Sexual Function | 1 | $1.1 |

# M&A 2014: Continued Activity in Infectious Disease Sector

| | Acquirer | Target | Total $M | Lead asset |
|---|---|---|---|---|
| 2014 | Merck | Cubist | $9,500 | Bacterial skin infection Rx, Approved |
| | Merck | Idenix | $3,850 | Hepatitis C, Phase II |
| | Johnson & Johnson | Alios | $1,750 | RSV, Phase II |
| | IMPAX | Tower Holdings | $700 | Parasitic infection Rx, Approved |
| | Actavis | Durata | $680 | Bacterial skin infection Rx, Approved |
| | Agenus | 4-Antibody AG | $50 | mAb against Cytomegalovirus , Phase II |
| | Ventrus | Assembly | | Hepatitis B, Preclinical |
| | OnCore | Enantigen | | Hepatitis B, Preclinical |
| | Cocrystal | RFS | | Hepatitis Virus / Influenza, Unknown |
| | BliNK | Valneva | | Vaccine against Japanese encephalitis, Approved |
| Q1 2015 | GlaxoSmithKline | GlycoVaxyn | $190 | Vaccines for bacterial infections, Phase I |
| | Valneva | Crucell | $54 | Vaccines (cholera, typhoid, polio, other), Approved |
| | Biota | Anaconda | $38 | HPV Rx, Phase II |
| | Karo Bio | Tanomed | $2.3 | Common cold Rx, Unknown stage |
| | Pfizer | Redvax | | CMV vaccine, Preclinical |
| | Matinas | Aquarius | | Nanoparticle amphotericin, Reformulation |
| | Vaxin | Immune Targeting Systems | | Vaccines (HIV, flu, FIV), Phase II |
| | Tekmira | OnCore | | HBV Rx, Preclinical |

# Q1 M&A vs. History by Status of Lead Rx Asset

While it remains the case that significant M&A activity occurs in Phase II and at approval, 2014 saw a shift to early-stage M&A events that appears to be continuing into Q1



# Recent Contingent Acquisition Structures

| Buyer | Seller | Date | Total ($M) | Upfront ($M) | Contingent ($M) | % at risk | Stage | Rx Area |
|---|---|---|---|---|---|---|---|---|
| Celyad | OnCyte | Jan 2015 | $207 | $6 | $201 | 97% | Preclinical | Cancer |
| Celgene | Quanticel | Apr 2015 | $485 | $100 | $385 | 79% | Discovery | Cancer |
| BMS | iPierian | Apr 2014 | $725 | $175 | $550 | 76% | Preclinical | Neurology |
| Teva | Labrys | Jun 2014 | $825 | $200 | $625 | 76% | Phase II | Neurology |
| Roche | Trophos SA | Jan 2015 | $551 | $141 | $410 | 74% | Phase III | Diversified |
| Merck | OncoEthix | Dec 2014 | $375 | $110 | $265 | 71% | Phase I | Cancer |
| Biogen Idec | Convergence | Jan 2015 | $675 | $200 | $475 | 70% | Phase II | Neurology |
| Genentech | Seragon | Jul 2014 | $1,725 | $725 | $1,000 | 58% | Phase I | Cancer |
| Sosei | Heptares | Feb 2015 | $400 | $180 | $220 | 55% | Phase I | Diversified |
| Roche | Santaris | Aug 2014 | $450 | $250 | $200 | 44% | Phase II | Diversified |
| AMAG | Lumara | Sep 2014 | $1,025 | $600 | $425 | 41% | Approved | Genitourinary/ Sexual Function |
| BMS | Flexus | Feb 2015 | $1,250 | $800 | $450 | 36% | Preclinical | Cancer |
| BioMarin | Prosensa | Nov 2014 | $890 | $680 | $210 | 24% | Phase III | Neurology |

# Cancer target and biomarker discovery and Celgene call option

Licensor
**Quanticel**

- Quanticel will use its platform for single-cell genomic analysis platform to identify predictive biomarkers for Celgene investigational drugs.
- Quanticel also uses its platform for independent drug discovery, subject to Celgene's Call Option

**Single-cell genomic analysis of patient tumor samples to identify predictive biomarkers for Celgene investigational drugs.**

Therapeutic Area:
**Cancer**
Technology:
**Biomarkers and Companion Diagnostics**
Territory:
**Worldwide**

Stage At Signing:
**Discovery**
License Exclusivity:
**Exclusive**
#Products/Options:
**Multiple - Unknown**

**Total Announced Size (USD): CON**

| *Committed Payments:* | *Contingent Payments:* |
|---|---|
| Upfront: | Total Milestones (up to): |
| - | - |
| Equity: | *Pre-Commercial:* - |
| **CON** | *Sales-based:* - |
| R&D Funding: | Back-End Payment: |
| **$45M** | |

**Notes:**
Celgene will commit $45M funding during the initial 3.5 year term, extendable with additional funding.

Licensee
**Celgene**

- Undisclosed equity stake in Quanticel
- Exclusive option to acquire the company.

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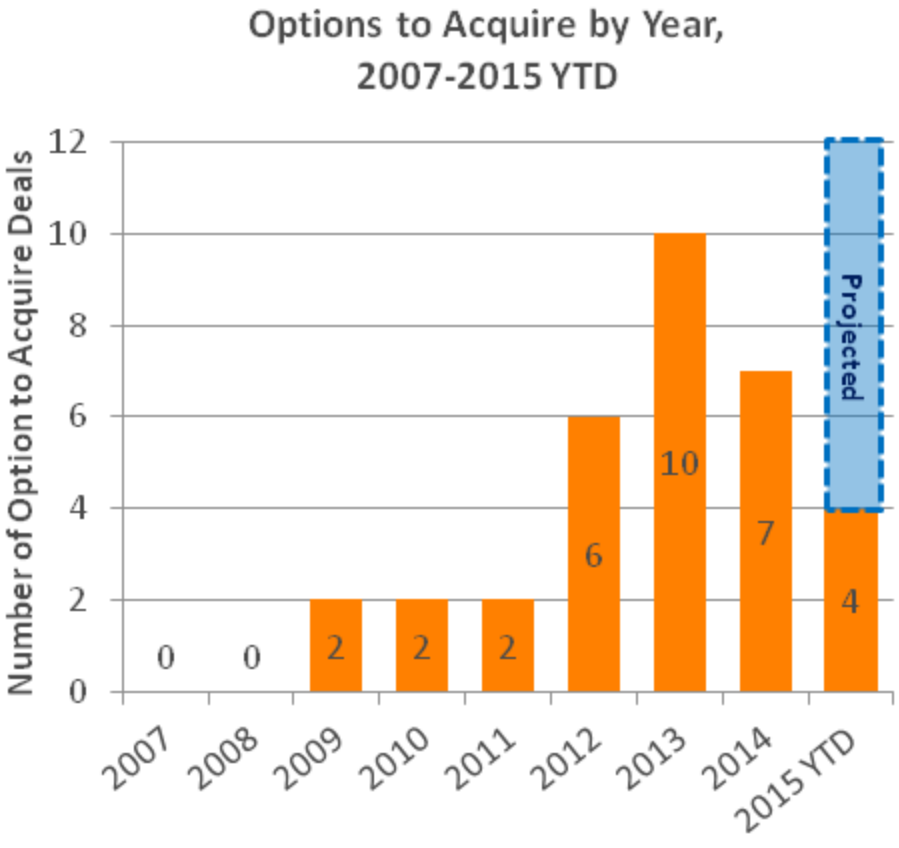
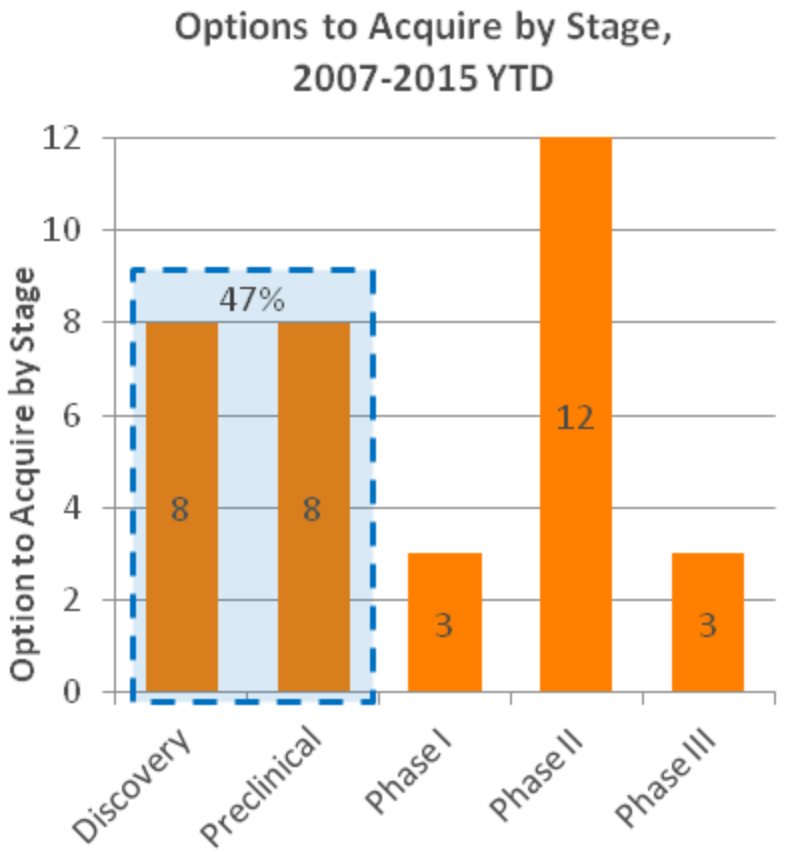
Date Announced: **11/2011**

# Options to Acquire Development Stage Therapeutic Companies

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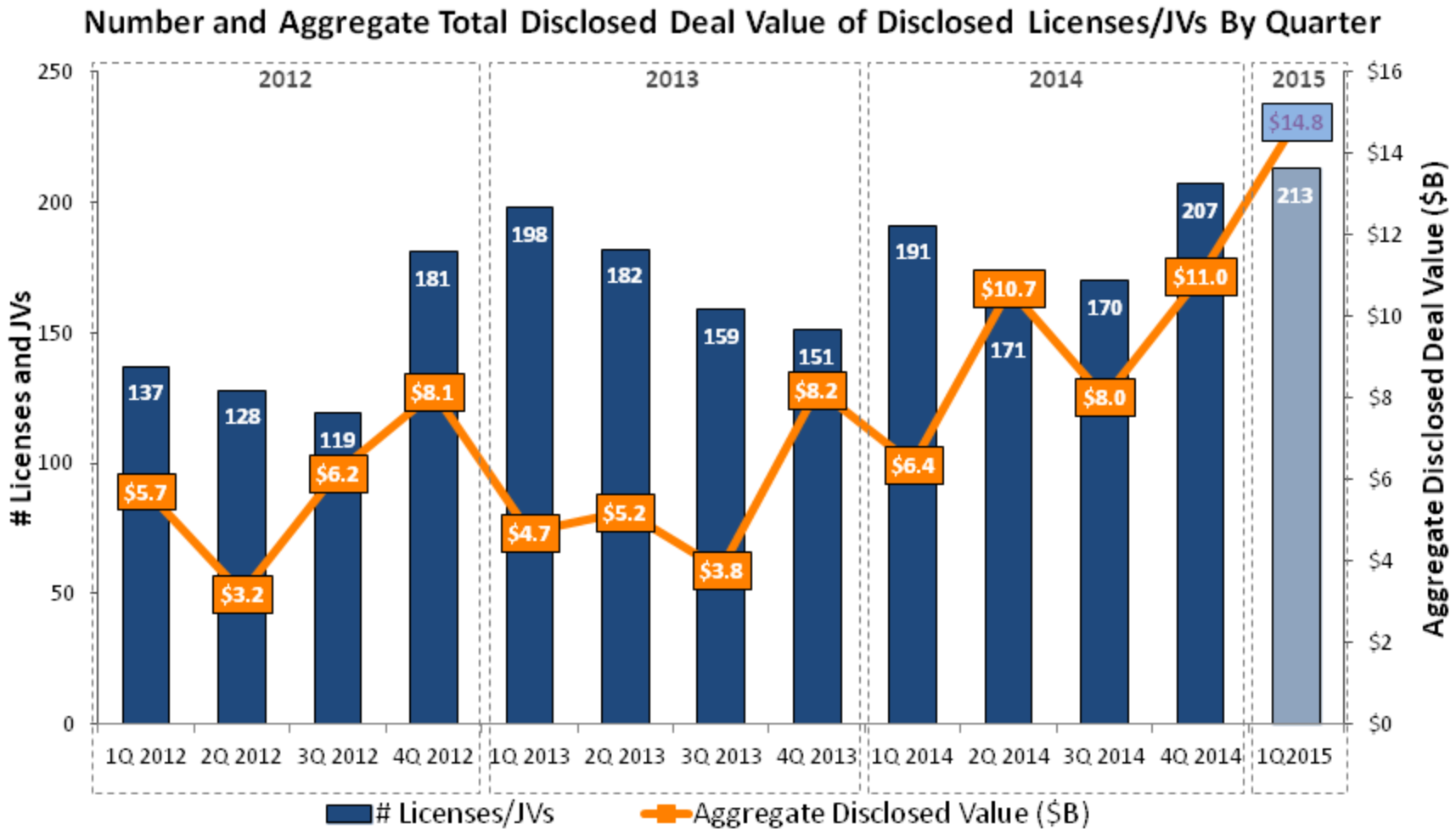
# Licensing and Joint Ventures

# Licenses and Joint Ventures by Quarter




*NOTE: This analysis includes all announced licenses and joint ventures for products or technologies. Licenses for intellectual property or data only are excluded. All dollars are USD.*

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# Top Ten 2014 Licensing Transactions by Announced Total Size

| Rank | Buyer | Seller | Total Size (US $ M) | Upfront (US $M) | Subject | Stage* | Primary Rx Area |
|---|---|---|---|---|---|---|---|
| 1 | Dainippon Sumitomo | Edison | $4,395 | $10 cash + $50 equity | Expansion of license rights to EPI-589 plus a disc and devt collab for up to 10 new cpds for mitochondrial diseases | Phase I | Neurology |
| 2 | Pfizer | Cellectis | $2,855 | $80 | Allogeneic CAR-T immunotherapies with 15 Pfizer and 4 Cellectis targets | Discovery | Cancer |
| 3 | Pfizer | Merck KGaA | $2,850 | $850 | Anti-PD-L1 for cancer; co-promotion of XALKORI (crizotinib) in the U.S. and certain other markets | Phase II; approved | Cancer |
| 4 | Celgene | Giuliani/ Nogra | $2,575 | $710 | GED-0301 oral oligonucleotide vs SMAD-7 for Crohn's disease and other gastrointestinal indications | Phase II | AI/Inflam |
| 5 | Merck | Ablynx | $2,341 | $27 | Nanobody technology to discover nanobody-based immunotherapies | Discovery | Cancer |
| 6 | Merck | Bayer | $2,100 | $1,000 | Adempas, BAY102 and other soluble guanylate cyclase (sGC) modulators for cardiovascular diseases | Approved | CV |
| 7 | Viking | Ligand | $1,564 | $29M in Viking equity upon IPO | FBPase, SARM, TR-Beta, EPOR, DGAT-1 programs for T2D, cancer cachexia, dyslipidemia, obesity | Phase II | Endo/Meta |
| 8 | AbbVie | Calico | $1,500 jointly | | Discovery of new Rx for age-related diseases including neurodegeneration and cancer, with option to license | Discovery | Diversified |
| 9 | BMS | CytomX | $1,242 | $50 | Probodies against up to 4 immuno-oncology targets including CTLA-4 | Discovery | Cancer |
| 10 | Astellas | Proteo-stasis | $1,200 | | Discovery and development of therapies modulating the unfolded protein response with WW a co-promotion option | Discovery | Chromosomal Abnormalities |

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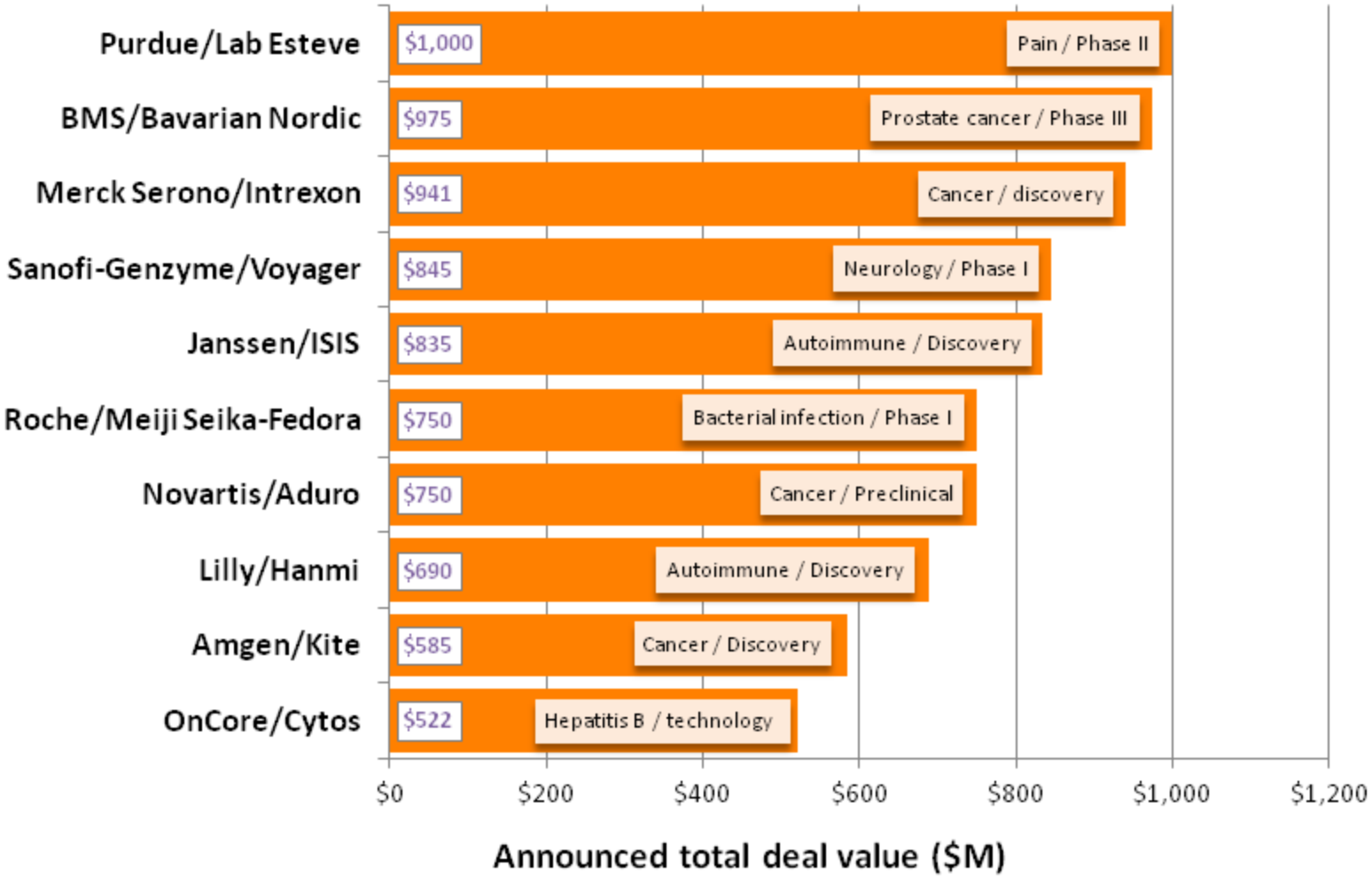
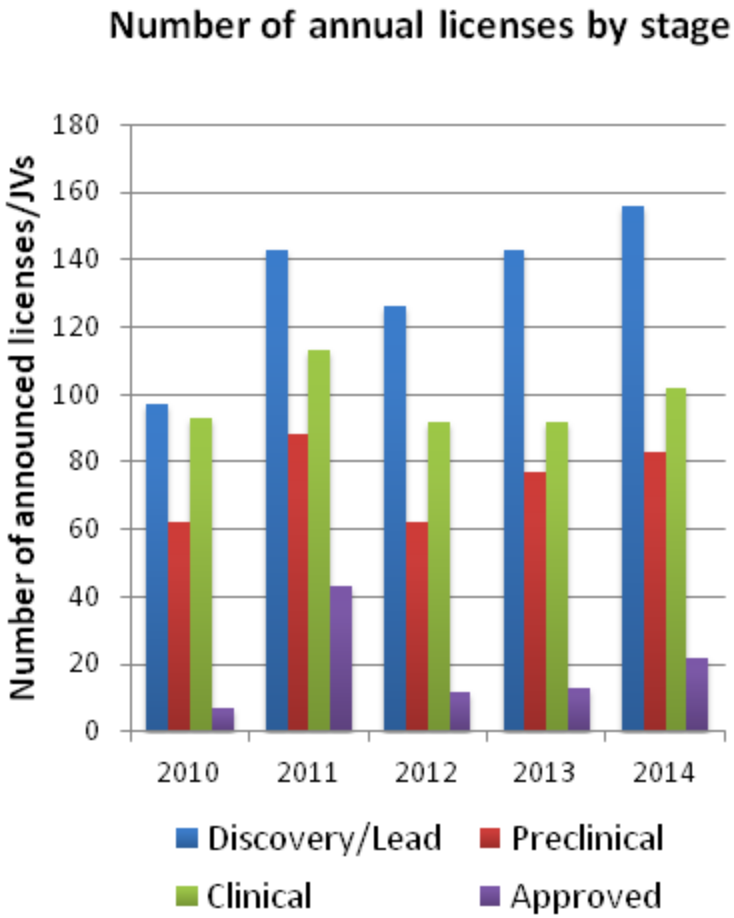
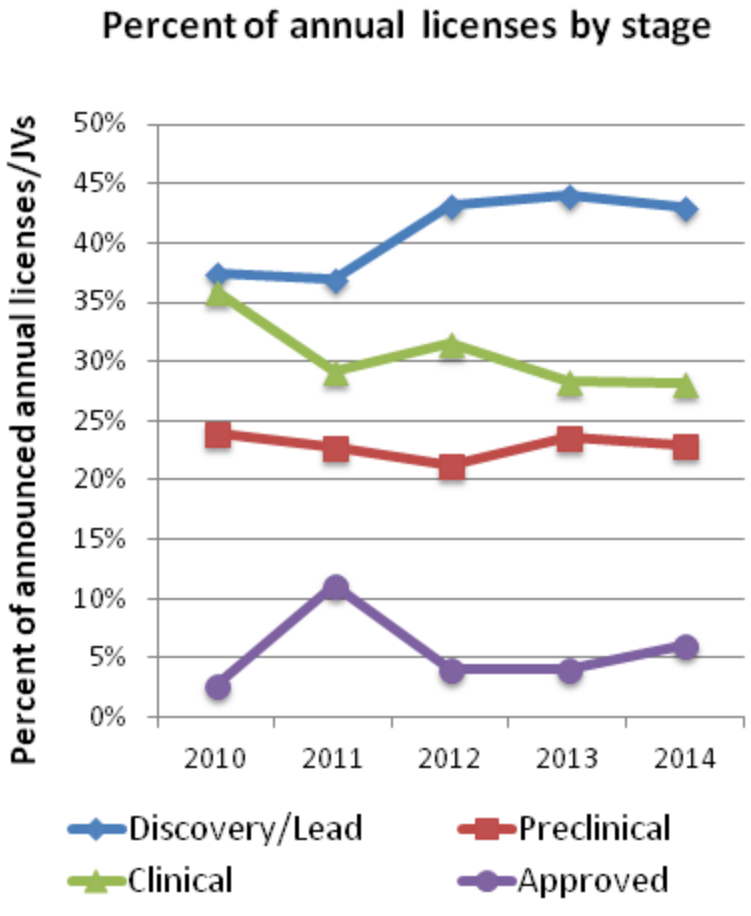
**Stage: Recap classifies clinical development program deals by the highest stage entered by the lead asset at the time of deal signature. E.g., an asset that has completed Phase II but not yet begun Phase III is classified as a Phase II transaction.*

# Q1 2015 Top 10 Licenses by Total Size



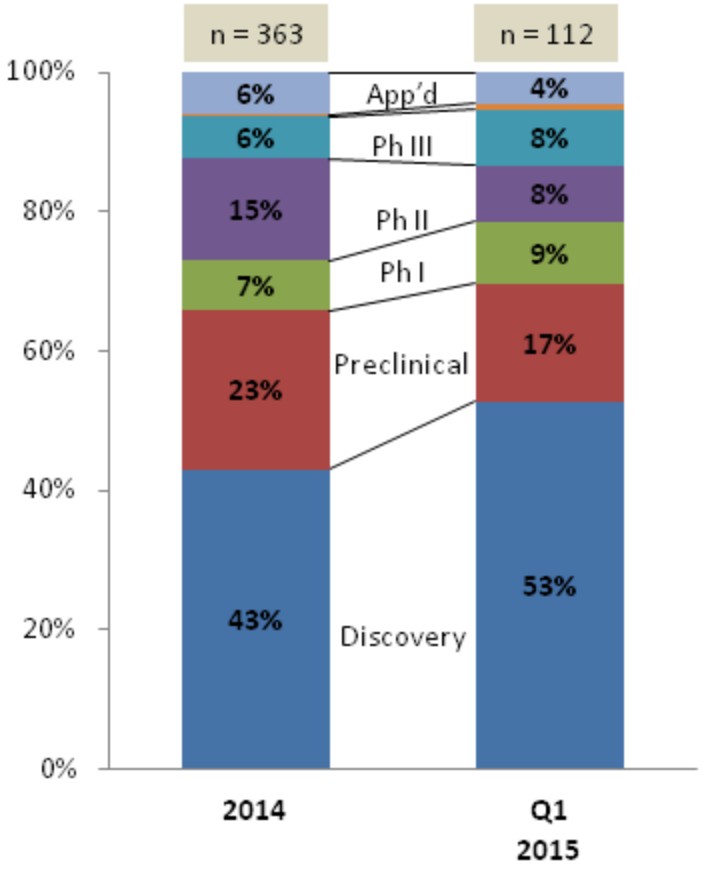
# 5-year Trend in Number of Therapeutics Licensing Deals by Stage of Lead Asset

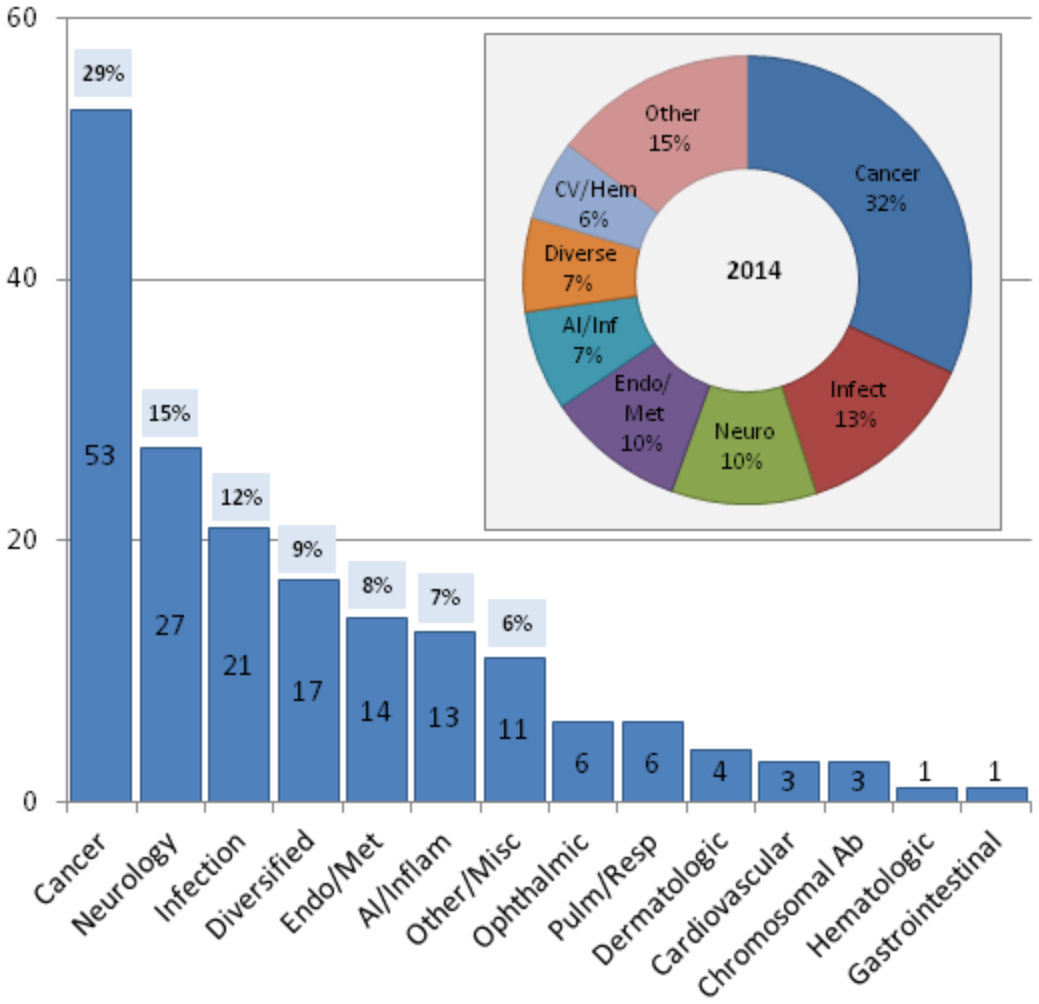



*Stage: Recap classifies clinical development program deals by the highest stage entered by the lead asset at the time of deal signature. E.g., an asset that has completed Phase II but not yet begun Phase III is classified as a Phase II transaction. Charts exclude deals for reformulations of existing drugs, generics, and for which stage at signing was not applicable (diagnostic, device, research tool, etc.) and/or not disclosed.

# Q1 2015 Licenses by Stage and Rx Area




*Charts exclude deals for reformulations of existing drugs, generics, and for which stage at signing was not applicable (diagnostic, device, research tool, etc.) and/or not disclosed/*

*Excludes licenses where Rx area is not applicable or is unknown.*

# Most Active In-licensors in 2014

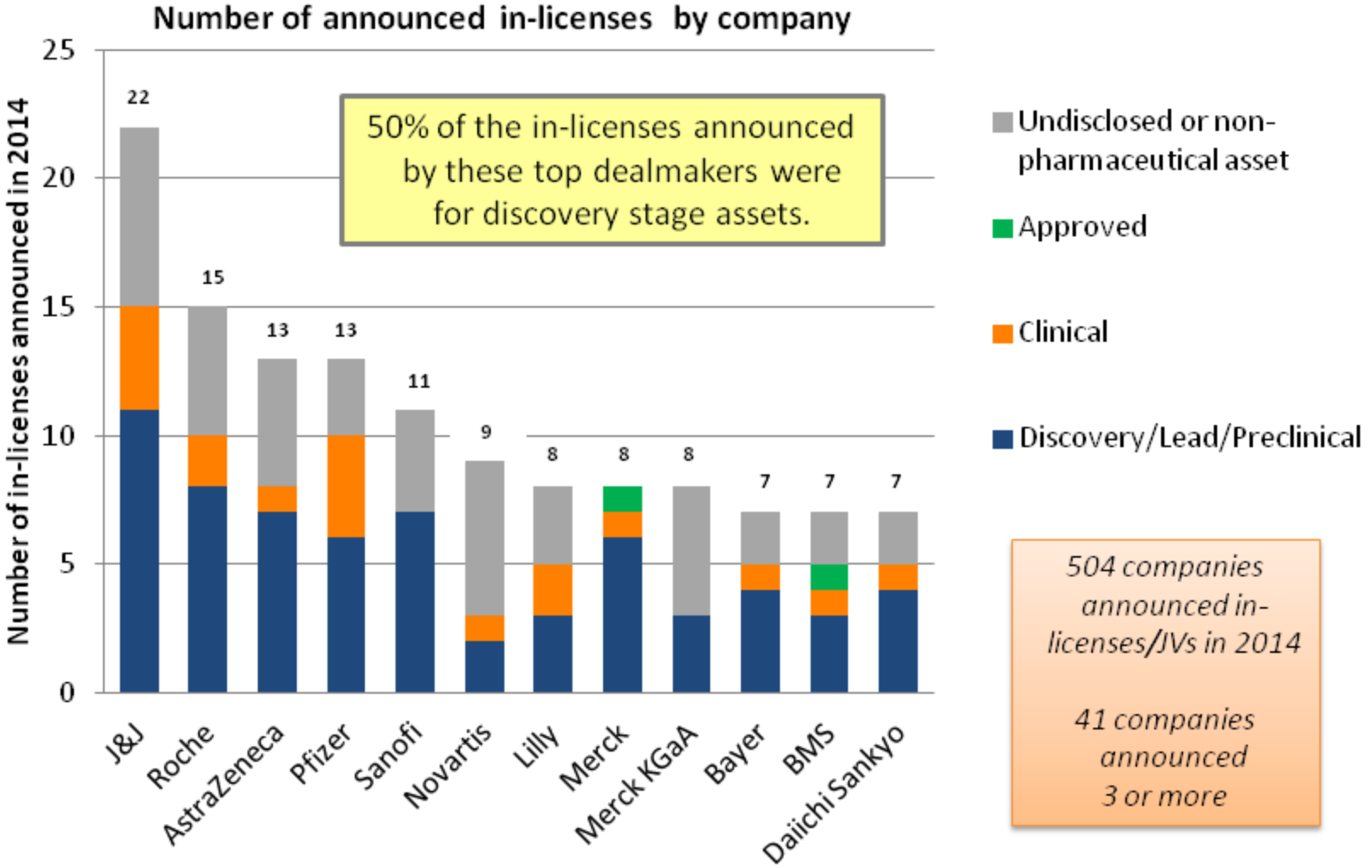



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*Chart includes in-licensing activity of majority and wholly-owned subsidiaries.*

# Licensing Deals in 2014 with Upfronts > $50M

| Licensee/ Buyer | Licensor/ Seller | Upfront + Equity ($M) | Stage at Signing | Primary Rx Area |
|---|---|---|---|---|
| Merck | Bayer | $1,000 | Approved | CV |
| Pfizer | Merck KGaA | $850 | Phase II | Cancer |
| Celgene | Nogra | $710 | Phase II | Autoimm/ Inflam |
| Pfizer | Opko | $295 | Phase III | Endocrine/ Metabolic |
| AbbVie | Infinity | $275 | Phase III | Cancer |
| Novartis[1] | Ophthotech | $200 | Phase III | Ophthalmic |
| Servier[2] | Intarcia | $171 | Reform'n | Endocrine/ Metabolic |
| Genentech | NewLink | $150 | Phase I | Cancer |
| Sanofi | MannKind | $150 | Reform'n | Endocrine/ Metabolic |
| J&J/ Crucell | Bavarian Nordic | $139 ($96 cash + $43 equity | Preclinical | Infectious Disease |
| Alexion | Moderna | $125 ($100 cash + $25 equity) | Discovery | Unknown |

| Licensee/ Buyer | Licensor/ Seller | Upfront + Equity ($M) | Stage at Signing | Primary Rx Area |
|---|---|---|---|---|
| J&J / Janssen | Macro-Genics | $125 ($50 cash + $75 equity) | Preclinical | Cancer |
| Baxter[3] | Merrimack | $100 | Reform'n | Cancer |
| Biogen Idec | Eisai | $100 | Phase II | Neurology |
| Daiichi Sankyo[4] | LOCL | $100 | Reform'n | Neurology |
| Pfizer | Cellectis | $80 | Discovery | Cancer |
| Sun | Merck | $80 | Phase III | Diversified |
| Nant-BioScience | Celgene | $75 | Preclinical | Cancer |
| Bayer | Orion | $68 | Phase II | Cancer |
| BMS | CytomX | $50 | Discovery | Cancer |
| Lilly | Adocia | $50 | Phase II | Endocrine/ Metabolic |

**All deals are for worldwide rights except:**

[1]Novartis/Ophthotech is WW ex-US

[2]Servier/Intarcia is WW ex-US and Japan

[3] Baxter/Merrimack is WW ex-US and China

[4]Daiichi Sankyo/LOCL is US-only

# 2015 YTD Licenses with Upfronts > $50M

| Licensee | Licensor | Upfront ($M) | Equity ($M) | Stage | Rx Area |
|---|---|---|---|---|---|
| Celgene | MedImmune / AZ | $450 | | Phase III | Cancer |
| MedImmune / AZ | Innate | $250 | | Phase II | Cancer |
| Novartis | Aduro | $200 | $25 | Preclinical | Cancer |
| Merck Serono | Intrexon | $115 | | Discovery | Cancer |
| Bayer | ISIS | $100 | | Phase II | Cardiovascular |
| DiaVax | City of Hope | $100 | | Phase I | Viral Infect |
| Merck | NGM | $94 | $106 | Preclinical | Endo/Meta |
| Genzyme/Sanofi[1] | Voyager | $65 | $30 | Phase I | Neurology |
| Bristol-Myers Squibb | uniQure | $65 | $32 | Preclinical | Cardiovascular |
| Bristol-Myers Squibb | Bavarian Nordic | $60 | | Phase III | Cancer |
| Amgen | Kite | $60 | | Discovery | Cancer |
| Lilly | Innovent | $56 | | Unknown | Cancer |
| Hospira | Pfenex | $51 | | Biosimilar | Ophthalmic |
| Lilly[2] | Hanmi | $50 | | Phase I | AI/Inflam |
| Merck | Moderna | $50 | $50 | Discovery | Infection |

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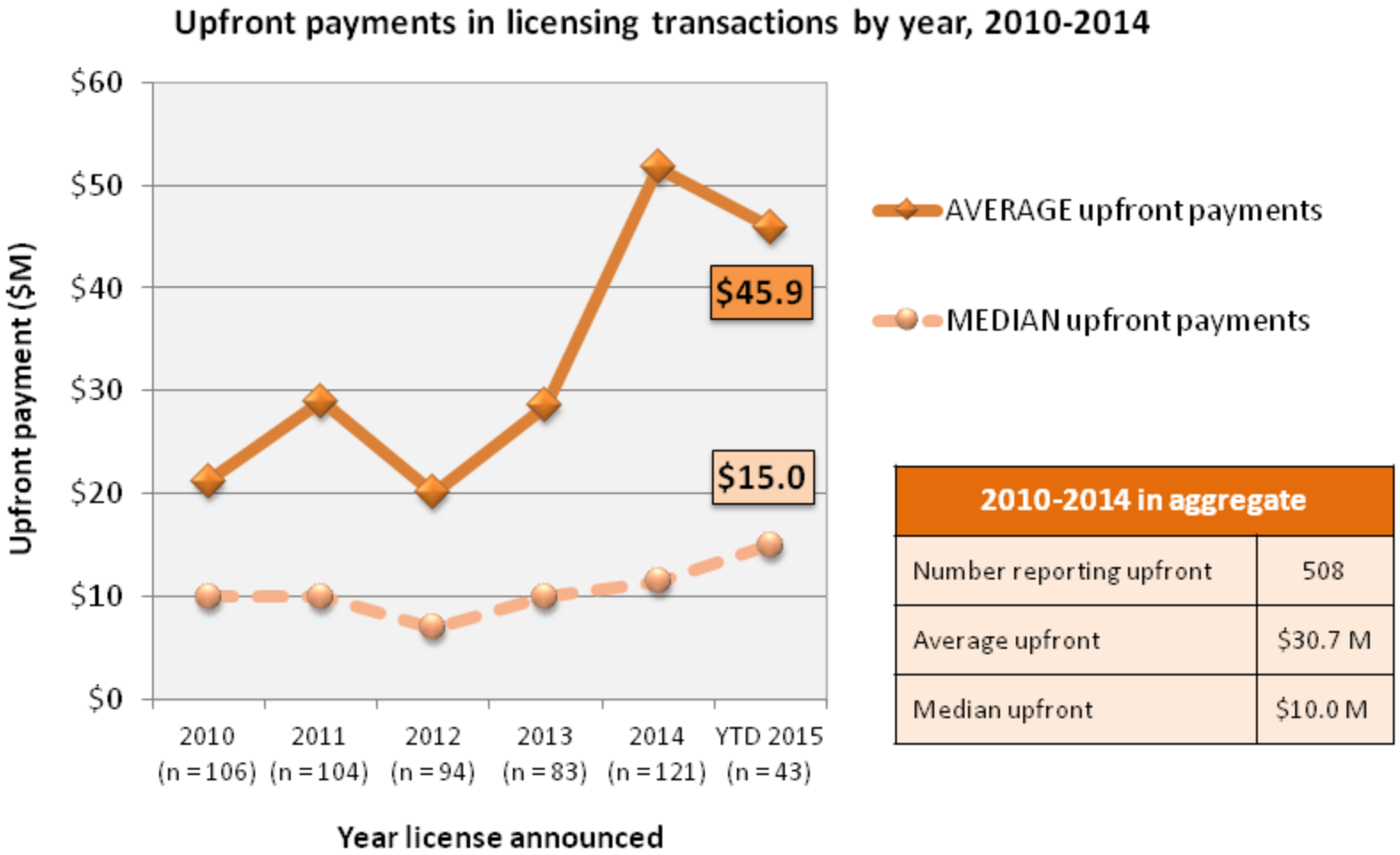
**All deals are for worldwide rights except:**

[1]Genzyme/Voyager is WW ex-US

[2]Lilly/Hanmi is WW ex-China, Hong Kong, Taiwan, and Korea

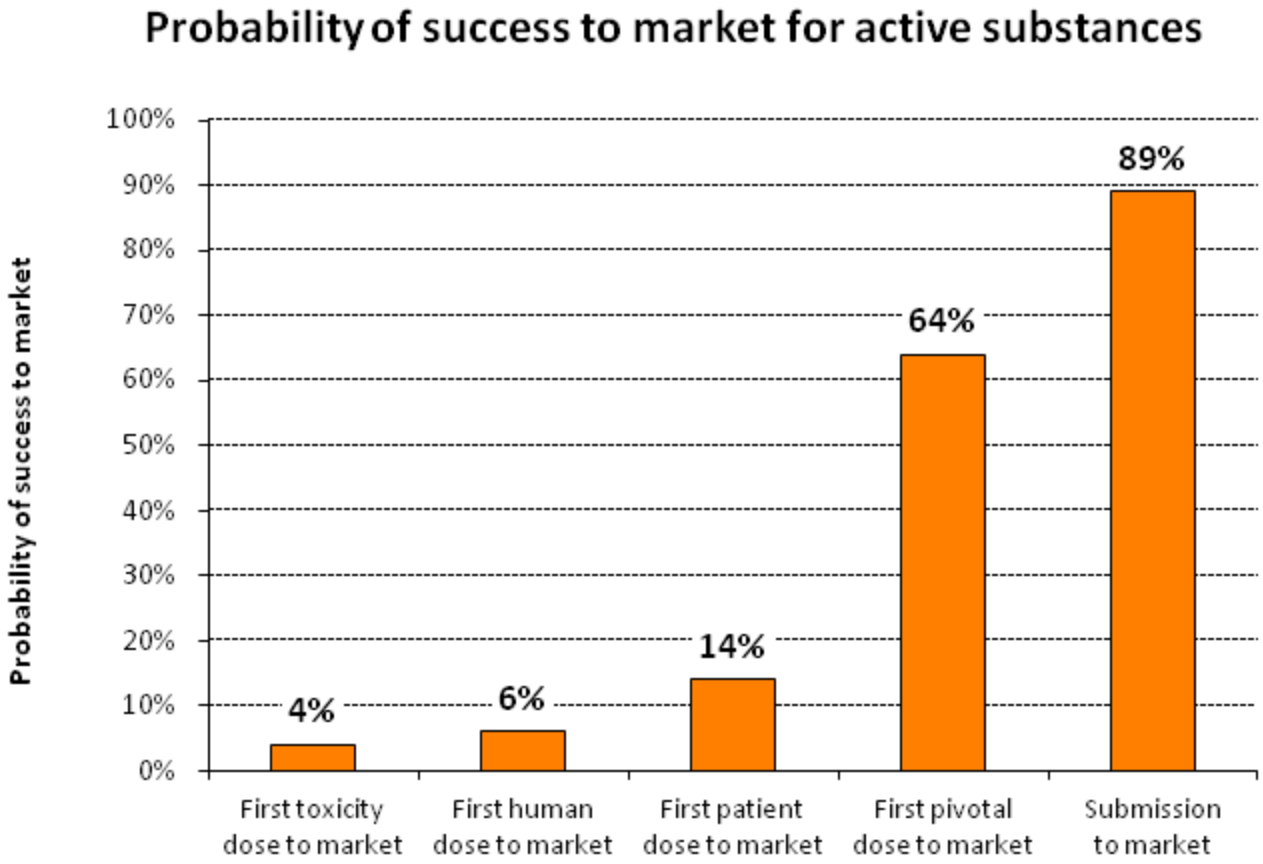
# 5-year Trend in Upfront License Payments




| 2010-2014 in aggregate | |
|---|---|
| Number reporting upfront | 508 |
| Average upfront | $30.7 M |
| Median upfront | $10.0 M |

*NOTE: Analysis includes upfront cash payments only. Equity investments and near-term milestones are excluded.*

# Reduction of Risk with Progression of Stage




*Probabilities of success to market were calculated using success rates between phase for active substances entering phase between 2007 and 2009 and year of assessment 2012.*


*Source:* CMR International, a Thomson Reuters business. CMR is a unique source of data, collected directly from pharmaceutical companies, focusing on global pharmaceutical research and development performance measurements and trends.

# Licensed Territory by Stage

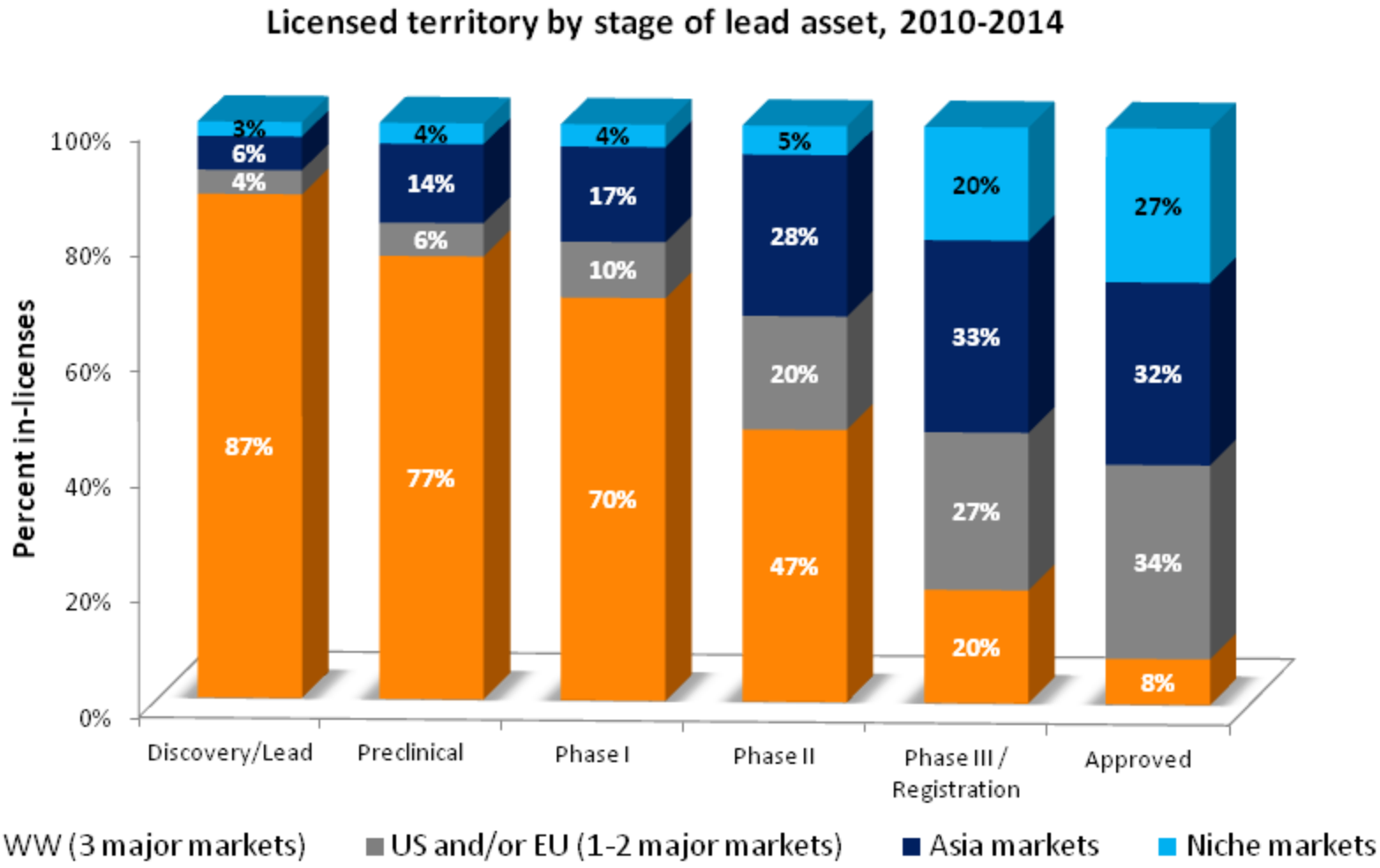



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*Chart includes 1055 discovery through approved stage licensing/JV deals from 2010-2014 for which the licensed territory was disclosed. "Niche markets" means any licensed territory that does not include the U.S., Europe, or Japan.*

# Technology-driven spaces: Selected 2014 T cell immunotherapy licensing transactions

*$80M UP FRONT, $32M EQUITY INVESTMENT, $2.8B MILESTONES*

## Cellectis stock surges 50 percent on Pfizer chimeric antigen receptor T-cell cancer deal

*By Cormac Sheridan, Staff Writer*

Shares in Cellectis SA surged more than 50 percent during trading in Paris Wednesday after Pfizer Inc. unveiled a strategic collaboration in cancer based on the French firm's allogeneic chimeric antigen receptor T-cell (CAR T-cell) platform, which will involve an initial outlay of about $112 million, as well as research funding, milestones that could reach as much as $2.775 billion in total, and tiered royalties on any products that reach the market.

It's a late, but dramatic entry to the cancer immunotherapy stage for the big pharma

## Glaxosmithkline inks $350M oncology deal with Adaptimmune

*By Nuala Moran, Staff Writer*

LONDON – Six weeks after divesting its portfolio of marketed cancer drugs, Glaxosmithkline (GSK) plc is stepping up investment in oncology R&D, in a $350 million deal with T-cell immunotherapy specialist, Adaptimmune Ltd., for its lead program NY-ESO-1.

Money aside, for James Noble, CEO of

*SOON-SHIONG STEPS UP AGAIN*

## 'CAR' lots: $50M class A joins Conkwest, Sorrento in allogeneic cancer bid

*By Randy Osborne, Staff Writer*

Another vote for cancer immunotherapy came in the form of $50 million in class A stock-sale money for Conkwest Inc., including $48 million from Nantworks Inc. founder and well-known biotech entrepreneur Patrick Soon-Shiong plus

## Another 'CAR-T' on the track: Transposagen lures Janssen to global deal

*By Marie Powers, Staff Writer*

Genome engineering firm Transposagen Biopharmaceuticals Inc. will seek to segue into a long-planned run at drug development as it joins the increasingly crowded race to develop chimeric antigen receptor T cells (CAR-T) through a research collaboration and global license deal with Janssen Biotech Inc., a unit of Johnson & Johnson.

**Juno Therapeutics Inc.**, of Seattle, signed an agreement to obtain a license from **Opus Bio Inc.**, of Greenwich, Conn., for a CAR-T cell product candidate targeting CD22, a protein expressed on most B-cell leukemias and lymphomas. The product candidate was developed by the National Cancer

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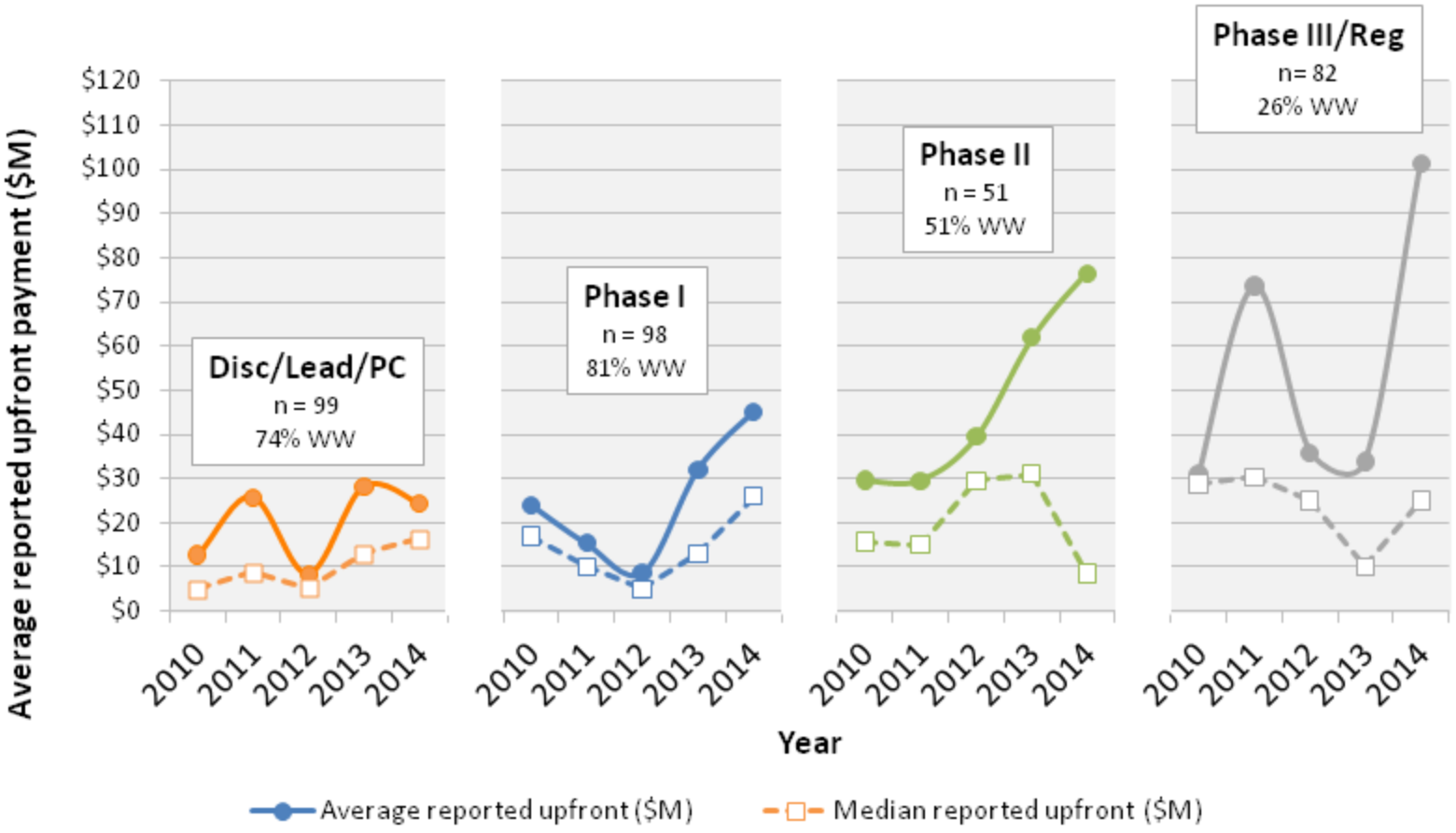
# 5-year Trend in Upfront Payments by Stage

**Average and median announced upfront payments by year and stage of lead asset, 2010-2014**



# Summary: 2014 Activity And Total Deal Value By Stage of Licensed Asset

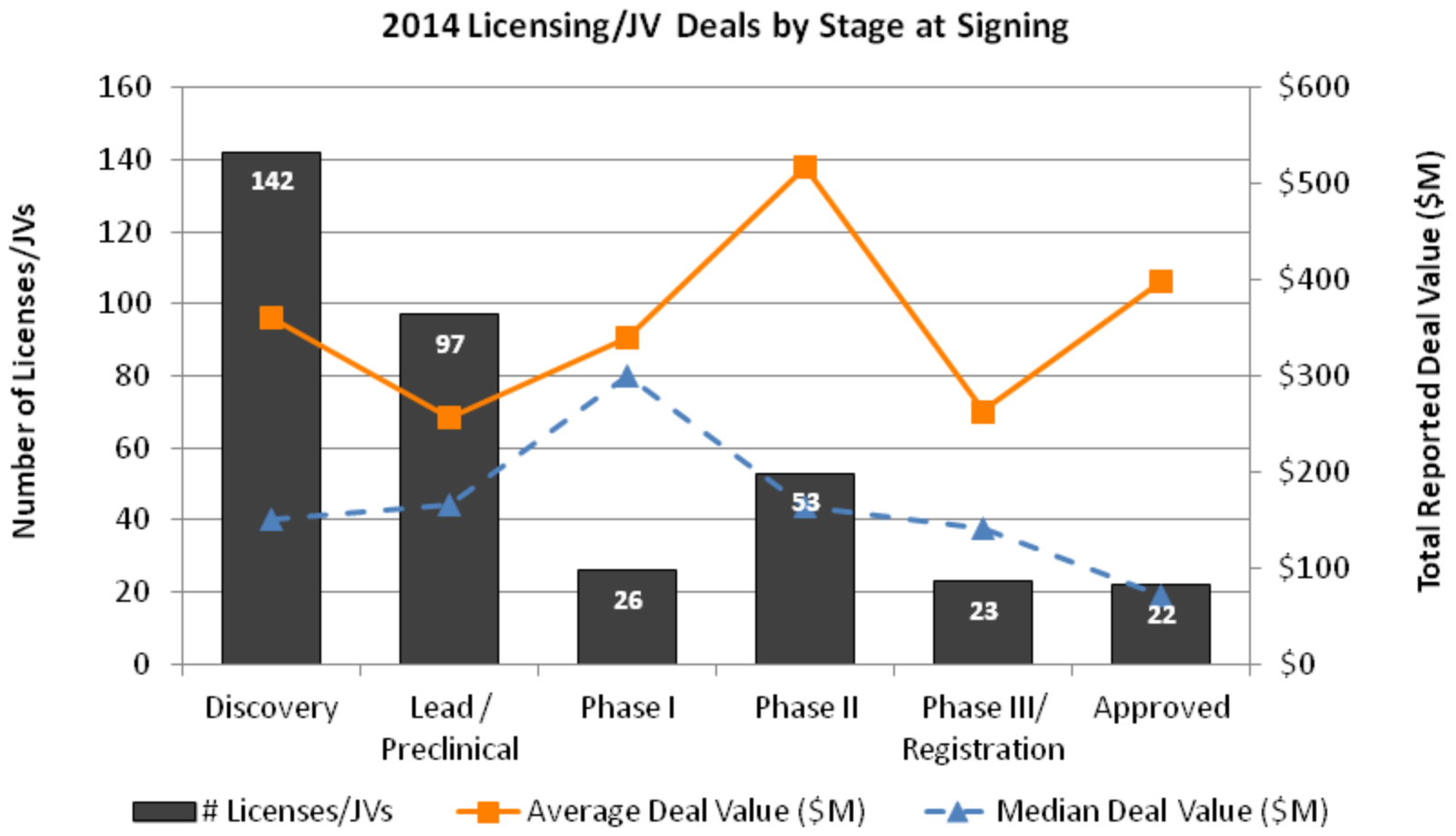



*Chart excludes the 366 licenses and JVs in 2014 for which a stage at signing was not applicable and/or not disclosed.*

# Conclusions

# Conclusions

- MOMENTUM!
- Licensing activity up, everywhere but especially in cancer, endocrine/metabolic, and infectious disease
- Licensing values are up, everywhere but especially in Phase II, as measured by biodollars and upfront payments
- Licensing in the early stages has been and remains very active
- Long anticipated megamergers arrived; but in the form of "Tax Inversions" and Asset Swaps as Spec Pharma and Big Pharma look to reposition themselves for the future
- Tail-winds from surging IPO market pushed private target (especially early-stage) M&A deal activity to highest levels seen in over 7 years
- M&A activity, like did licensing deals last year, shifted further upstream

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