

# IO Session II: Biotech Deal-Making in the Face of IO Frenzy or Fatigue—Same Old or Different New?

Moderator: **Jeffrey M. Bockman**, PhD, EVP, Oncology Practice Head, Cello Health BioConsulting, previously Defined Health

Panelists:

**Jean Chang**, Vice President, Corporate Development & Oncology Project Lead, Dynavax

**Jane Dancer**, Chief Business Officer, F-star Biotech

**Kapil Dhingra**, MD, Managing Member, KAPital Consulting LLC

**Axel Hoos**, MD, PhD, SVP Therapeutic Area Head R&D, Head Immuno-Oncology, GlaxoSmithKline

**Jill O'Donnell-Tormey**, PhD, Chief Executive Officer & Director, Scientific Affairs, Cancer Research Institute

**Helen Tayton-Martin**, PhD, MBA, Chief Business Officer, Adaptimmune



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# 2015: IO Started to Dominate Top Deals

Top 10 Deals by Upfront Value (\$M): 2015

Rank	Company	Deal Partner/ Product Source	Product	Phase	Upfront*	Milestones	Total
1	<a href="#">Celgene</a>	Juno Therapeutics	JCAR017	Phase 1/2	1,000	0	1,000
2	<a href="#">Sanofi</a>	Regeneron Pharmaceuticals	REGN2810	Phase 1	640	375	1,015
3	<a href="#">Celgene</a>	AstraZeneca	Durvalumab	Research	450	0	450
4	Medivation	BioMarin Pharmaceutical	Talazoparib	Phase 3	410	160	570
5	Bristol-Myers Squibb	Five Prime Therapeutics	FPA008	Phase 2	350	1,390	1,740
6	Novartis	GlaxoSmithKline	Arzerra S.C.	Phase 3	300	734	1,034
7	AstraZeneca	Innate Pharma	Monalizumab	Phase 2	250	1,025	1,275
8	Novartis	Aduro Biotech	MIW815	Preclinical	250	500	750
9	<a href="#">Celgene</a>	Nurix	<a href="#">Celgene-Nurix Immuno-oncology Program</a>	Research	150	405	555
10	Bristol-Myers Squibb	Bavarian nordic	Prostvac	Phase 3	140	835	975

Top 10 Deals by Total Value (\$M): 2015

Rank	Company	Deal Partner/ Product Source	Product	Phase	Upfront*	Milestones	Total
1	Amgen	<a href="#">Xencor</a>	Anti CD3 X CD38 MAb Program	Preclinical	45	1,700	1,745
2	Bristol-Myers Squibb	Five Prime Therapeutics	FPA008	Phase 2	350	1,390	1,740
3	<a href="#">Sanofi</a>	BioNTech	<a href="#">BioNTech-Sanofi mRNA Immunotherapy Project</a>	Research	60	1,500	1,560
4	AstraZeneca	Innate Pharma	<a href="#">Monalizumab</a>	Phase 2	250	1,025	1,275
5	Novartis	GlaxoSmithKline	Arzerra S.C.	Phase 3	300	734	1,034
6	Sanofi	Regeneron Pharmaceuticals	REGN2810	Phase 1	640	375	1,015
7	Eli Lilly	Innovent Biologics	Anti-PD-1 Research Project	Preclinical	0	1,000	1,000
8	<a href="#">Celgene</a>	Juno Therapeutics	JCAR017	Phase 2	1,000	0	1,000
9	Bristol-Myers Squibb	Bavarian nordic	Prostvac	Phase 3	140	835	975
10	Merck KGaA	<a href="#">Intrexon</a>	CAR-T Cell Therapy Research Program	Research	115	826	941

Contains IO program

Source: Evaluate Pharma, Cello Health BioConsulting Analysis

# 2016: IO Dominated Total Value Deals But Not Upfronts – Pullback?

Top 10 Deals by Upfront Value (\$M): 2016							
Rank	Company	Deal Partner/ Product Source	Product	Phase	Upfront*	Milestones	Total
1	Celgene	Jounce Therapeutics	JTX-2011	Preclinical	261	2,300	2,561
2	Ipsen	Exelixis	Cometriq	Marketed	200	655	855
3	Baxalta	Symphogen	Baxalta-Symphogen Research Program	Research	175	1,600	1,775
4	Novartis	Xencor	XmAb14045	Preclinical	150	2,410	2,560
5	Incyte	ARIAD Pharmaceuticals	Iclusig	Marketed	140	135	275
6	Incyte	Merus	Incyte-Merus Bi-specific Antibody Research Program	Research	120	2,800	2,920
7	Baxalta	Precision Biosciences	Baxalta-Precision Oncology Project	Research	105	1,600	1,705
8	Johnson & Johnson	TESARO	Niraparib	Phase 1	85	415	500
9	Roche	Hanmi Pharmaceutical	HM95573	Preclinical	80	830	910
10	Teva	Celltrion	Herzuma	Phase 3	80	0	80

Top 10 Deals by Total Value (\$M): 2016							
Rank	Company	Deal Partner/ Product Source	Product	Phase	Upfront*	Milestones	Total
1	Incyte	Merus	Incyte-Merus Bi-specific Antibody Research Program	Research	120	2,800	2,920
2	Celgene	Jounce Therapeutics	JTX-2011	Preclinical	261	2,300	2,561
3	Novartis	Xencor	XmAb14045	Preclinical	150	2,410	2,560
4	Baxalta	Symphogen	Baxalta-Symphogen Research Program	Research	175	1,600	1,775
5	Baxalta	Precision Biosciences	Baxalta-Precision Oncology Project	Research	105	1,600	1,705
6	Roche	Blueprint Medicines	Immunokinase Oncology Project	Research	45	965	1,010
7	Bristol-Myers Squibb	PsiOxus Therapeutics	NG-348	Preclinical	50	886	936
8	Roche	Hanmi Pharmaceutical	HM95573	Preclinical	80	830	910
9	Ipsen	Exelixis	Cometriq	Marketed	200	655	855
10	Les Laboratoires Servier	Sorrento Therapeutics	STI-A1110	Preclinical	28	789	816

Source: Evaluate Pharma, Cello Health BioConsulting Analysis

# 2017: Upfronts in IO Drop, More Backloading – Maturing Vision?

Top 10 Deals by Upfront Value (\$M): 2017							
Rank	Company	Deal Partner/ Product Source	Product(s)	Phase	Upfront*	Milestones	Total (Upfront + Milestones)
1	Merck	AstraZeneca	Lynparza, Selumetinib with PD-L1/PD-1 inhibitors	Marketed	1,600	6,150	7,750
2	Ipsen	Merrimack	Onivyde	Marketed	575	450	1,025
3	Celgene	BeiGene	BGB-A317	Phase 2	413	980	1,393
4	Bayer	Loxo	Larotrectinib	Phase 2	400	1,200	1,600
5	J&J	Genscript	LCAR-B38M	Phase 1/2	350	Undisclosed	350
6	TerSera	AstraZeneca	Zoladex	Marketed	250	70	320
7	Incyte	MacroGenics	MGA012	Phase 1	150	750	900
8	Bristol-Myers	Halozyme	Multiple	NA	105	1,760	1,865
9	Eli Lilly	CureVac	Multiple	Preclinical	103	1,700	1,803
10	Jazz Pharmaceuticals	ImmunoGen	IMGN632, IMGN779	Phase 1	75	Undisclosed	75

  

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1	Merck	AstraZeneca	Lynparza, Selumetinib	Marketed	1,600	6,150	7,750
2	Bristol-Myers	Halozyme	Multiple	NA	105	1,760	1,865
3	Eli Lilly	CureVac	Multiple	Preclinical	103	1,700	1,803
4	Bayer	Loxo	larotrectinib	Phase 2	400	1,200	1,600
5	Celgene	BeiGene	BGB-A317	Phase 2	413	980	1,393
6	Bayer	PeptiDream	Multiple	NA	0	1,100	1,100
7	Ipsen	Merrimack	Onivyde	Marketed	575	450	1,025
8	Merck KGaA	F-star Biotechnology	FS118	Preclinical	130	Undisclosed	>1,000
9	Incyte	MacroGenics	MGA012	Phase 1	150	750	900
10	Arcus Biosciences	Gloria Pharma, WuXi Biologics	GLS-010	Phase 1	19	798	816
11	Servier	Pieris Pharmaceuticals	PRS-332	Preclinical	32	542	574

Source: Evaluate Pharma, Cello Health BioConsulting Analysis

# 2018: No Fatigue Yet Among Top Total Value Deals – Frenzy Continues?

Top 10 Licensing Deals by Upfront Value (\$M): 2018							
Rank	Licensee	Licensors	Product(s)	Phase	Upfront	Milestones	Total
1	Shire	Servier	Pegaspargase, Multiple	Marketed	2,400	0	2,400
2	Bristol-Myers Squibb	Nektar Therapeutics	NKTR-214	Phase 3	1,000	1,800	3,650
3	Merck & Co.	Eisai	Lenvatinib mesylate	Marketed	300	4,385	5,785
4	Gilead	Sangamo	Multiple	Preclinical	150	3,000	3,150
5	Johnson & Johnson	EUSA Pharma	Siltuximab	Marketed	115	0	115
6	Genentech	Affimed N.V.	Multiple	NA	96	4,950	5,046
7	Merck & Co.	Sutro Biopharma	Multiple	Preclinical	60	1,600	1,660
8	Genmab A/S	Immatics Biotechnologies	Multiple	NA	54	550	1,704
9	Sanofi	Revolution Medicines	RMC-4630, Multiple	Preclinical	50	346	550
10	CStone Pharmaceuticals	Blueprint Medicines Corp.	Avapritinib, BLU-667, BLU-664	Phase 3	40	1,200	386

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1	Merck & Co.	Eisai	Lenvatinib mesylate	Marketed	300	4,385	5,785
2	Genentech	Affimed N.V.	Multiple	NA	96	4,950	5,046
3	Bristol-Myers Squibb	Nektar Therapeutics	NKTR-214	Phase 3	1,000	1,800	3,650
4	Gilead	Sangamo	Multiple	Preclinical	150	3,000	3,150
5	Allogene Therapeutics	Pfizer	UCART19	Phase 1	0	185	2,800
6	Shire	Servier	Pegaspargase, Multiple	Marketed	2,400	0	2,400
7	Genmab A/S	Immatics Biotechnologies	Multiple	NA	54	550	1,704
8	Merck & Co.	Sutro Biopharma	Multiple	Preclinical	60	1,600	1,660
9	Bluebird bio	Gristone Oncology	Multiple	NA	20	1,200	1,230
10	Seattle Genetics	Pieris Pharmaceuticals	Multiple	Preclinical	30	1,200	1,230

BCIQ; NA (not applicable) = Can include deals with multiple agents or platform technologies where phase is not applicable.

Source: Evaluate Pharma, Cello Health BioConsulting Analysis

# 2019: A Sudden Flip or a Blip – More Upfronts But Least Total Value IO Deals of Past 5 Years (Only 50%!)

Top 10 Deals by Upfront Value (\$M): 2019							
Rank	Company	Deal Partner/Product Source	Product(s)	Phase	Upfront	Milestones	Total (Upfront + Milestones)
1	BMS	Celgene	Multiple	Multiple	35,000	N/A	74,000
2	Eli Lilly	Loxo Oncology	Multiple	Multiple	7,234	N/A	7,234
3	Ipsen	Clementia Pharmaceuticals	Palovarotene	Phase 3	1,000	263	1,263
4	GSK	Merck KGaA	Bintrafusp alfa	Phase 2	343	3,870	4,214
5	Genentech	Adaptive Biotechnologies	Off-the-shelf TCR cell therapies	Preclinical	300	2,000	2,300
6	Merck	Immune Design	Multiple	Multiple	248	N/A	248
7	Aurobindo Pharma	Spectrum Pharma	Multiple	Multiple	160	140	300
8	Genentech	Xencor	IL-15 antibodies	Preclinical	120	340	460
9	AbbVie	Tizona Therapeutics	TTX-030 and CD39 programs	Preclinical	105	N/A	>105
10	AbbVie	TeneoBio	TNB-383B	Preclinical	90	N/A	90>

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1	BMS	Celgene	Multiple	Multiple	35,000	N/A	74,000
2	Eli Lilly	Loxo Oncology	Multiple	Multiple	7,234	N/A	7,234
3	GSK	Merck KGaA	Bintrafusp alfa	Phase 2	343	3,870	4,214
4	NJCTQ	Abpro	Multiple	Preclinical	N/A	4,000	4,000
5	Genentech	Adaptive Biotechnologies	Off-the-shelf TCR cell therapies	Preclinical	300	2,000	2,300
6	Ipsen	Clementia Pharmaceuticals	Palovarotene	Phase 3	1,000	263	1,263
7	Jazz Pharma	Codiak Biosciences	Multiple Exosome Programs	Preclinical	56	1,020	1,076
8	Celgene	Triphase Accelerator	TRPH-395	Preclinical	40	940	980
9	Takeda	LegoChem Biosciences	Undisclosed ADC Targets	Preclinical	7	404	411
10	Aurobindo Pharma	Spectrum Pharma	Multiple	Multiple	160	140	300

Source: BCIQ, Cello Health BioConsulting Analysis

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1	BMS	Celgene	Multiple	Multiple	35,000	N/A	74,000
2	Eli Lilly	Loxo Oncology	Multiple	Multiple	7,234	N/A	7,234
3	Ipsen	Clementia Pharmaceuticals	Palovarotene	Phase 3	1,000	263	1,263
4	GSK	Merck KGaA	Bintrafusp alfa	Phase 2	343	3,870	4,214
5	Genentech	Adaptive Biotechnologies	Off-the-shelf TCR cell therapies	Preclinical	300	2,000	2,300
6	Merck	Immune Design	Multiple	Multiple	248	N/A	248
7	Aurobindo Pharma	Spectrum Pharma	Multiple	Multiple	160	140	300
8	Genentech	Xencor	IL-15 antibodies	Preclinical	120	340	460
9	AbbVie	Tizona Therapeutics	TTX-030 and CD39 programs	Preclinical	105	N/A	>105
10	AbbVie	TeneoBio	TNB-383B	Preclinical	90	N/A	90>

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2	Eli Lilly	Loxo Oncology	Multiple	Multiple	7,234	N/A	7,234
3	GSK	Merck KGaA	Bintrafusp alfa	Phase 2	343	3,870	4,214
4	NJCTTQ	Abpro	Multiple	Preclinical	N/A	4,000	4,000
5	Genentech	Adaptive Biotechnologies	Off-the-shelf TCR cell therapies	Preclinical	300	2,000	2,300
6	Ipsen	Clementia Pharmaceuticals	Palovarotene	Phase 3	1,000	263	1,263
7	Jazz Pharma	Codiak Biosciences	Multiple Exosome Programs	Preclinical	56	1,020	1,076
8	Celgene	Triphase Accelerator	TRPH-395	Preclinical	40	940	980
9	Takeda	LegoChem Biosciences	Undisclosed ADC Targets	Preclinical	7	404	411
10	Aurobindo Pharma	Spectrum Pharma	Multiple	Multiple	160	140	300