

Microbiome and IO: All Things Great and Small



Cancer Progress by Defined Health
New York, NY | March 7 - 8, 2017

Microbiome and IO: All Things Great and Small

Moderator:

- *Jeffrey Bockman, PhD*, Senior Vice President, Head of Oncology Practice, Defined Health

Panelists:

- *Luisa Salter-Cid, PhD, VP*, Head Immunoscience, Small Molecule Immunology & Genomics Discovery, Bristol-Myers Squibb
- *Gregory Sieczkiewicz, JD, PhD*, Managing Director & Chief IP Counsel, MPM Capital
- *Laurence Zitvogel, MD, PhD*, Group Leader, Tumor Immunology and Immunotherapy, Institute Gustav Roussy

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The Best Scientific Article Title Ever

Cell Death and Differentiation (2015) 22, 199–214
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www.nature.com/cdd



Review

Gut microbiome and anticancer immune response: really hot Sh*t!

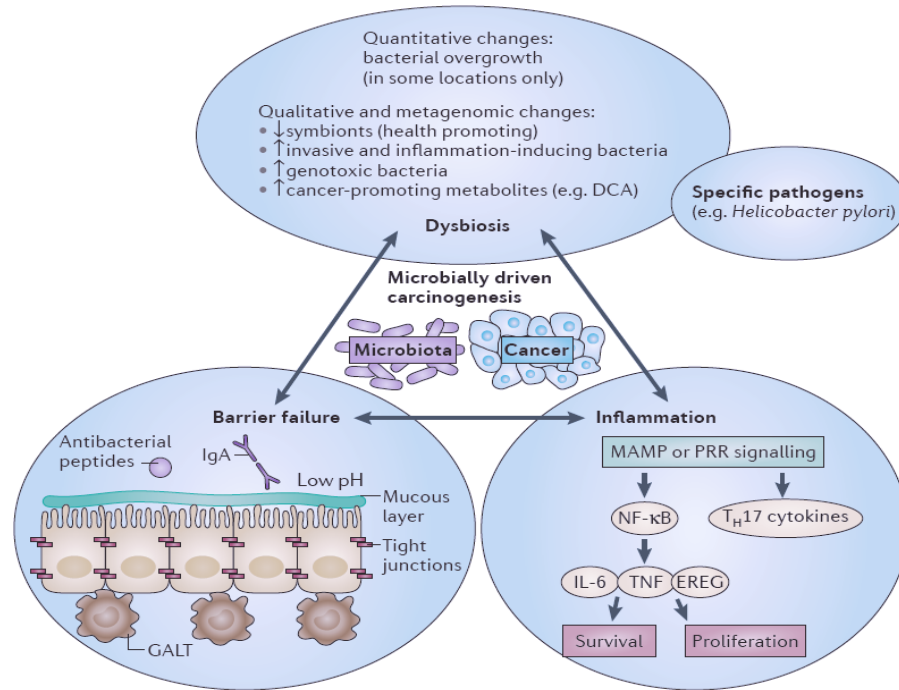
S Viaud^{1,2}, R Daillère^{1,2}, IG Boneca^{3,4}, P Lepage^{5,6}, P Langella^{5,6}, M Chamaillard^{7,8,9,10}, MJ Pittet¹¹, F Ghiringhelli^{12,13,14}, G Trinchieri¹⁵, R Goldszmid¹⁵ and L Zitvogel^{*,1,2,16}

The impact of gut microbiota in eliciting innate and adaptive immune responses beneficial for the host in the context of effective therapies against cancer has been highlighted recently. Chemotherapeutic agents, by compromising, to some extent, the intestinal integrity, increase the gut permeability and selective translocation of Gram-positive bacteria in secondary lymphoid organs. There, anticomensal pathogenic Th17 T-cell responses are primed, facilitating the accumulation of Th1 helper T cells in tumor beds after chemotherapy as well as tumor regression. Importantly, the redox equilibrium of myeloid cells contained in the tumor microenvironment is also influenced by the intestinal microbiota. Hence, the anticancer efficacy of alkylating agents (such as cyclophosphamide) and platinum salts (oxaliplatin, *cis*-platin) is compromised in germ-free mice or animals treated with antibiotics. These findings represent a paradigm shift in our understanding of the mode of action of many compounds having an impact on the host–microbe mutualism.

Cell Death and Differentiation (2015) 22, 199–214; doi:10.1038/cdd.2014.56; published online 16 May 2014

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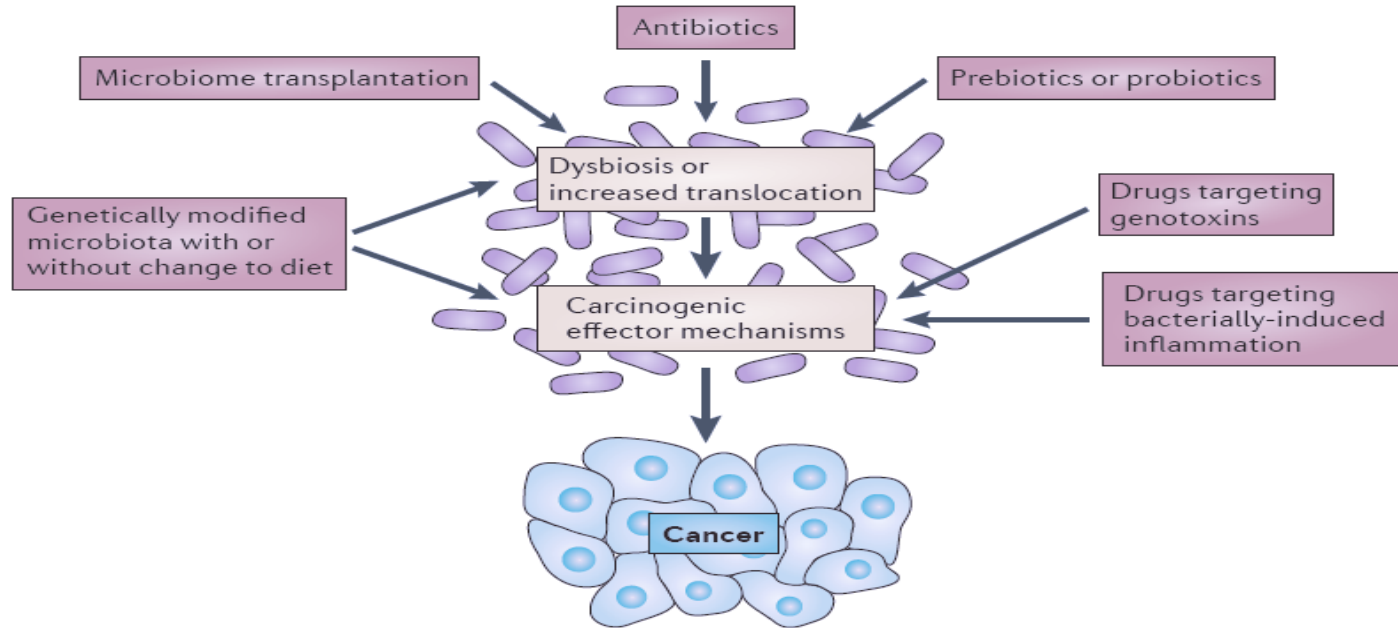
Microbiota Interactions and Associated Dysfunction Implicated in Cancers



Nat Rev Cancer. 2013 Nov;13(11):800-12

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Therapies That May Modulate the Bacterial Microbiota & Hence Modulate Cancer

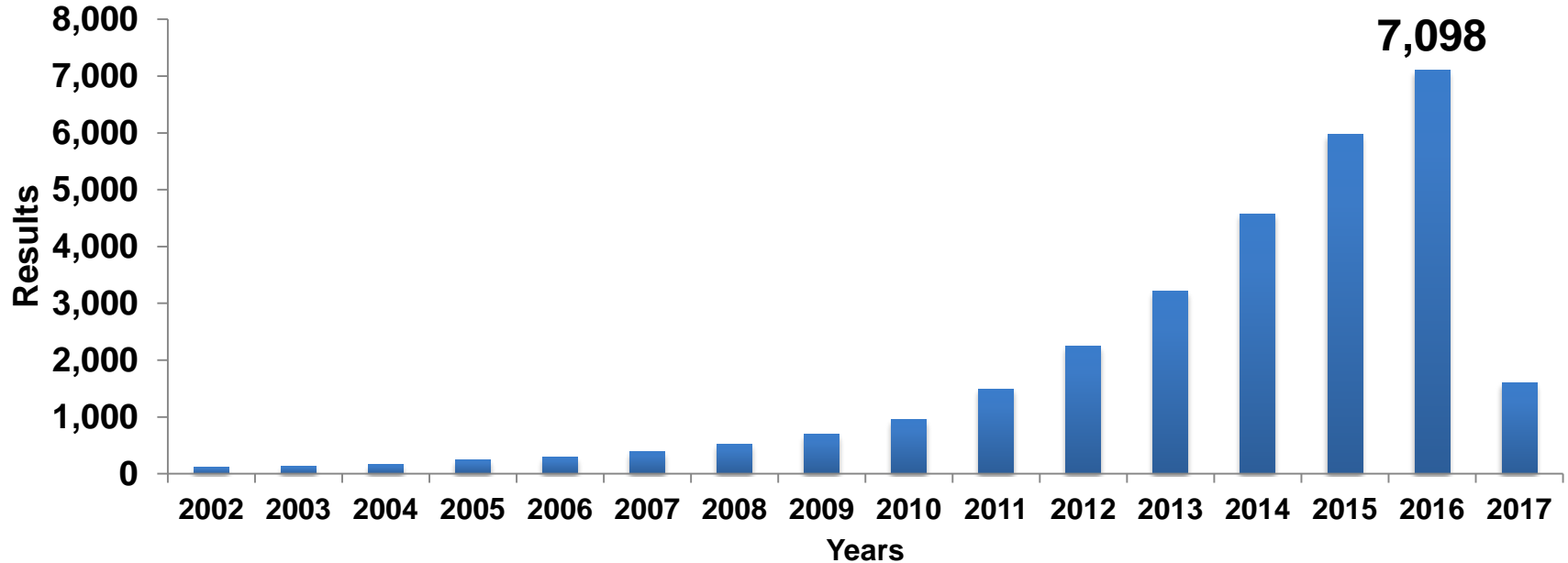


Nat Rev Cancer. 2013 Nov;13(11):800-12

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Pubmed Search “Microbiome”

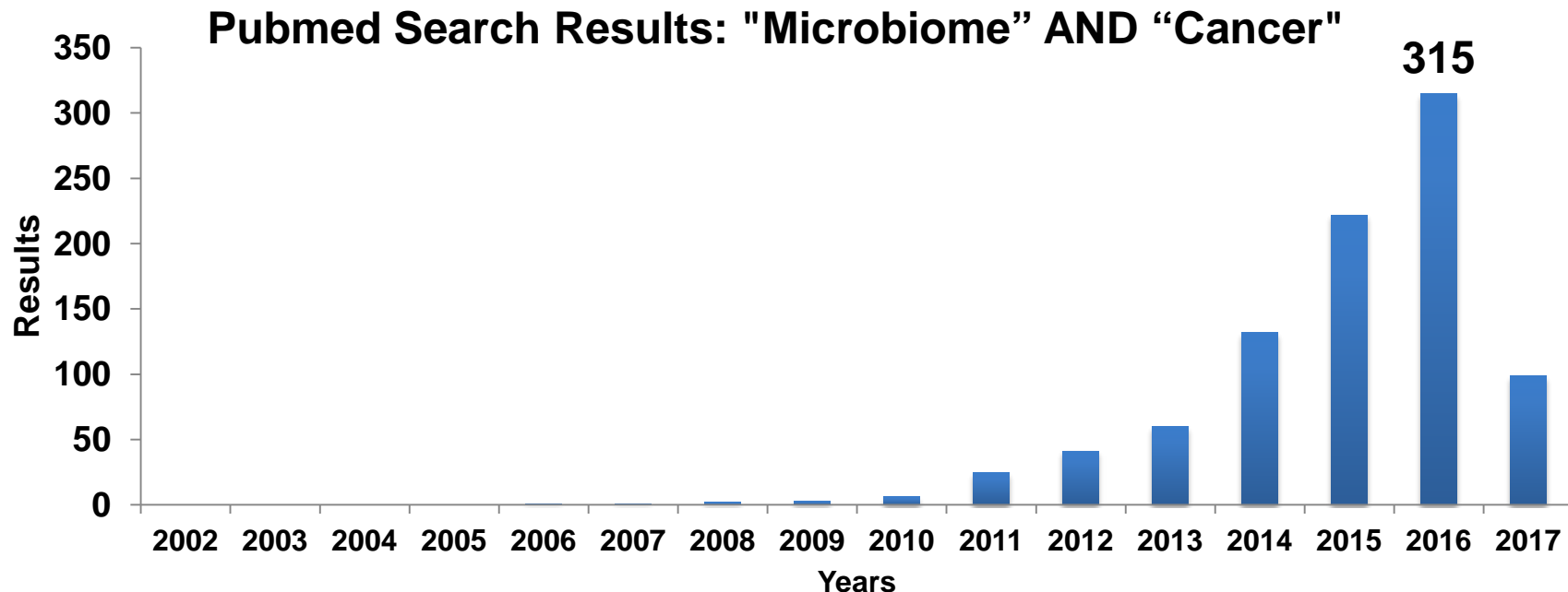
Pubmed Search Results: "Microbiome"



Pubmed

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Pubmed Search “Microbiome” AND “Cancer”

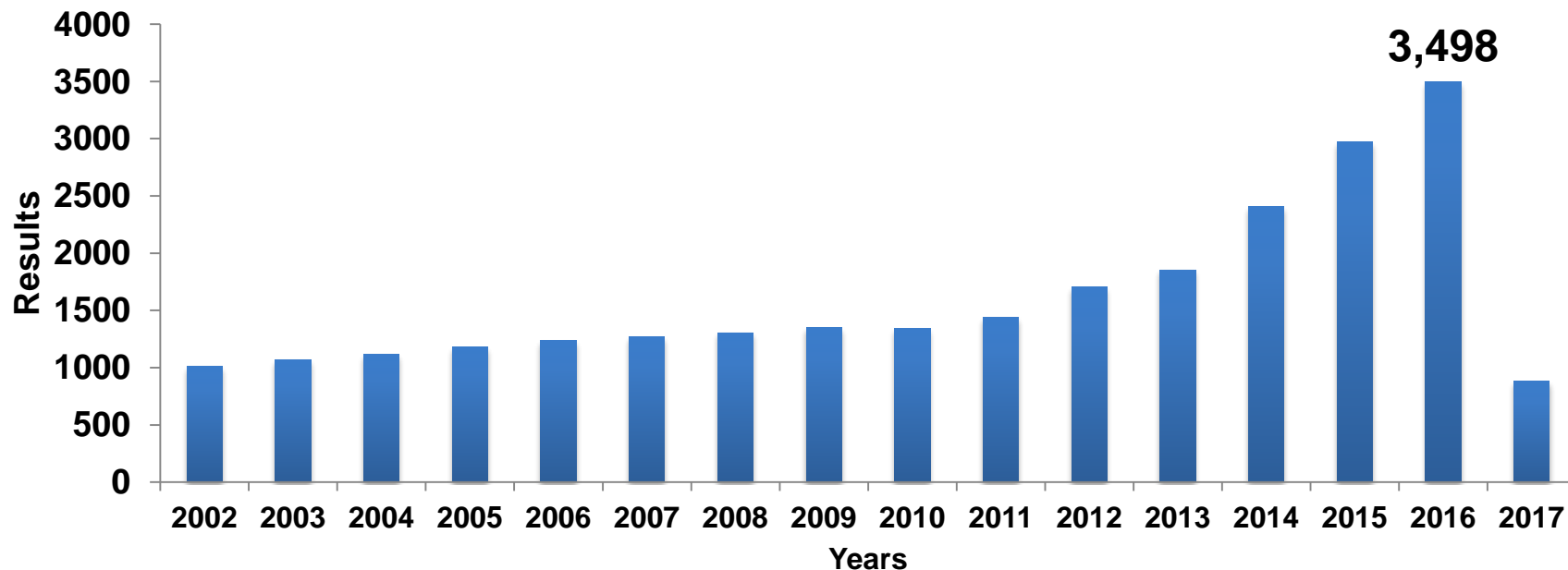


Pubmed

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Pubmed Search “Immunotherapy” AND “Cancer”

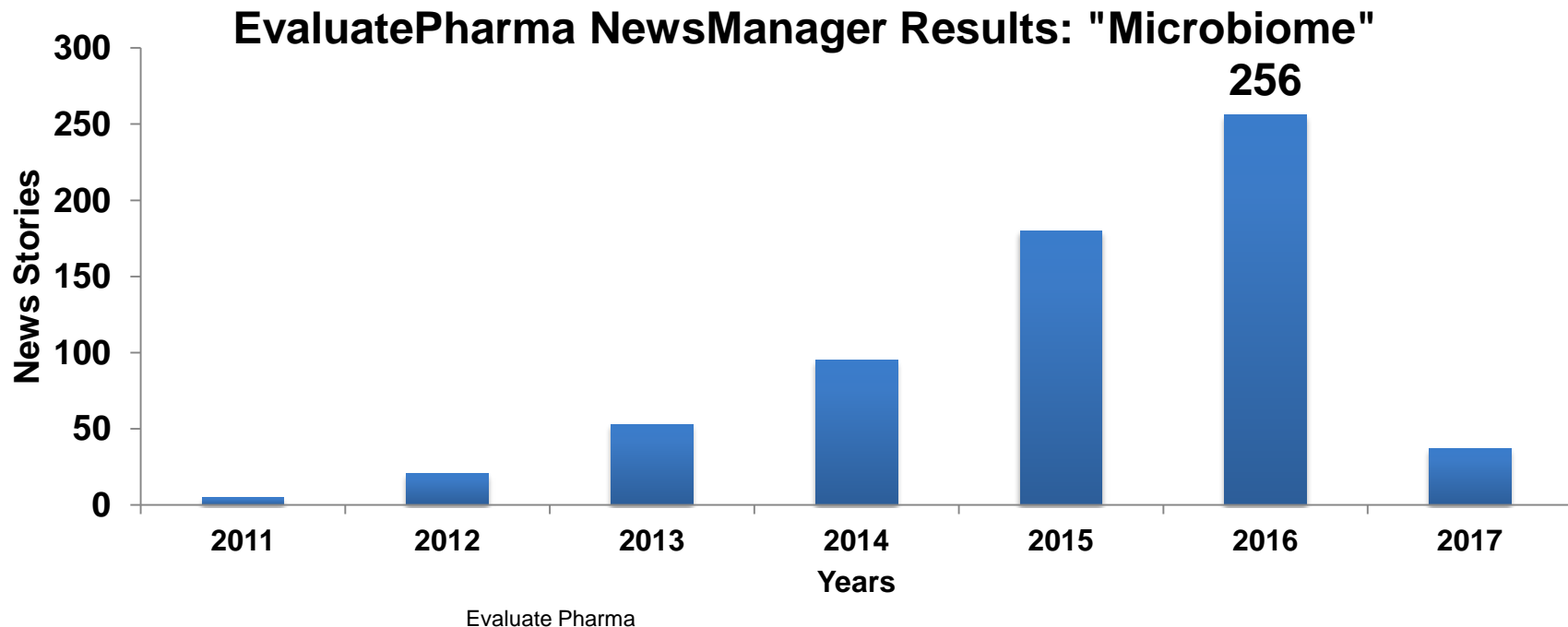
Pubmed Search Results: “Immunotherapy” AND “Cancer”



Pubmed

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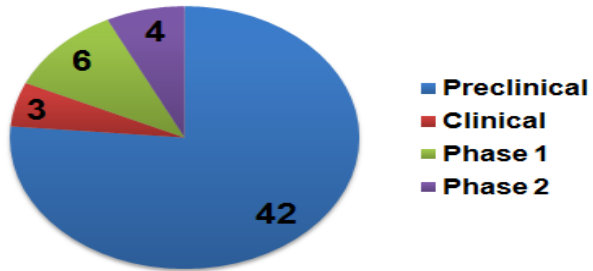
EvaluatePharma NewsManager Word Search



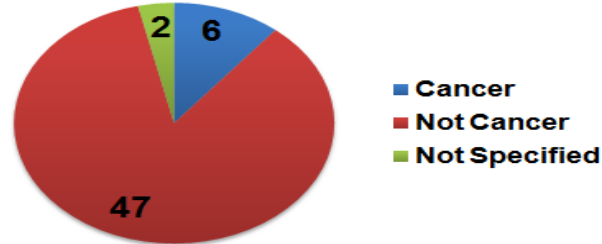
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Pipeline

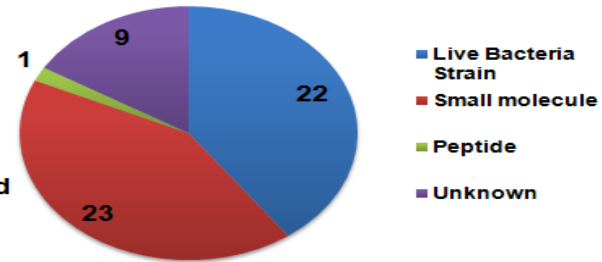
Microbiome Phase Distribution (n=55)



Microbiome Cancer Program Distribution (n=55)



Microbiome MOA Distribution (n=55)



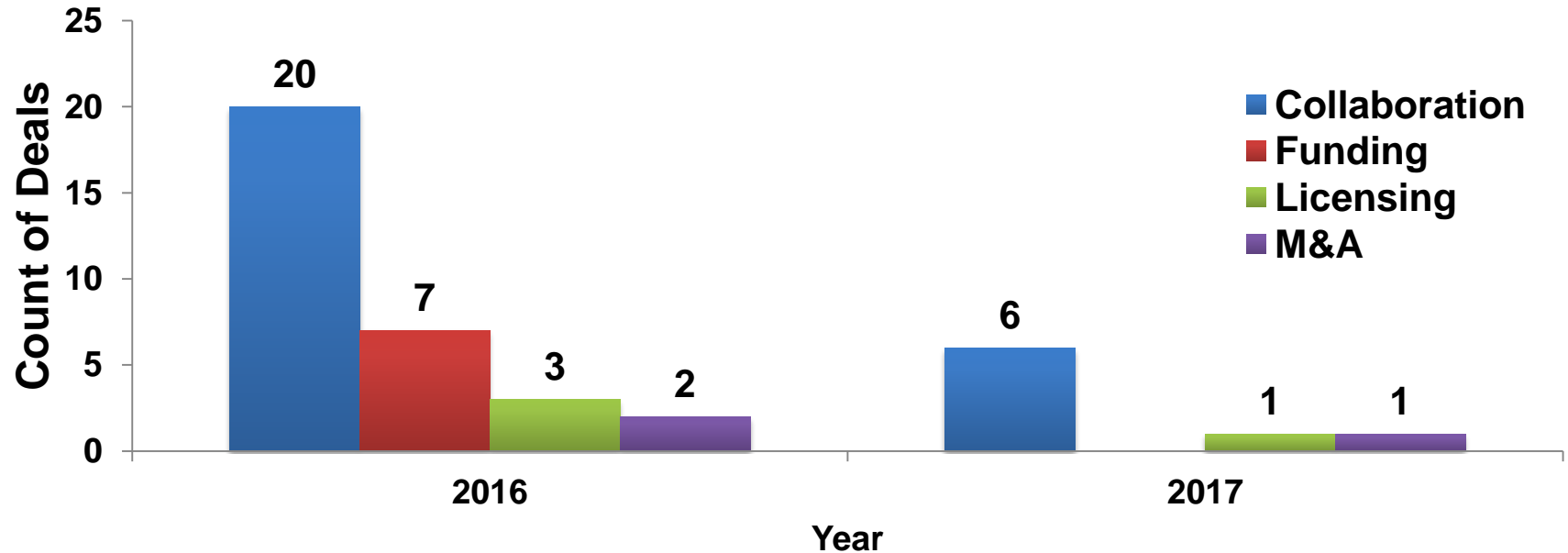
- ◆ The pipeline analysis was based on text searches of “microbiome” in both databases and hand-curated to ensure programs were microbiome therapeutics.
- ◆ The microbiome therapeutics were then analyzed as being in development in cancer, or not in cancer.

Adis R&D Insight; Clarivate Analytics Cortellis; DH Analysis

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Deals Analytics (Not Cancer Specific)

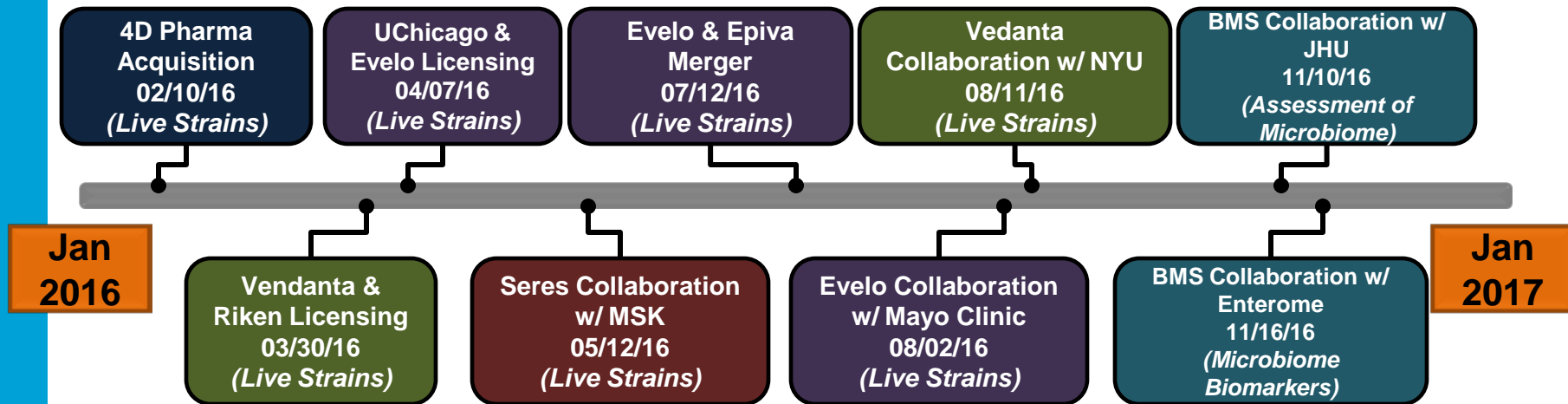
Microbiome Deal Analysis



EvaluatePharma NewsManager

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Recent Cancer Microbiome Deals (2016-2017)



EvaluatePharma NewsManager

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Panel Topics:

- Definitions – what exactly are we talking about this, why are we talking about this?
- Where is the field now and where does it need to go to gain POC?
- How does this become a product – bacteria themselves, or modulating bacteria and/or host with small molecules, antibodies, etc.
- How are biotechs and pharma thinking about the druggability of this space?
- What are the pros and cons of different approaches?
- How does one study this in trials relative to or with IO agents (checkpoints or other MOAs, modalities)?
- With what agents/regimens/modalities will microbiome-modulating agents likely be combined?
- How can precision medicine, stratification be deployed in this emerging field?

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