The latest vaccine R&D pipeline – flu sets agenda

LONDON, UK----10th August 2009----ExpertREACT. After a previous analysis of the commercial R&D vaccine pipeline back in October 2008, **VacZine Analytics** reviews key changes over the last 10 months. The pipeline again has expanded with influenza R&D programs (pandemic and seasonal) figuring largely in recorded new activity due to the current H1N1 pandemic. Other interesting developments occur in universal *S.pneumoniae* vaccines and those for *S.aureus*

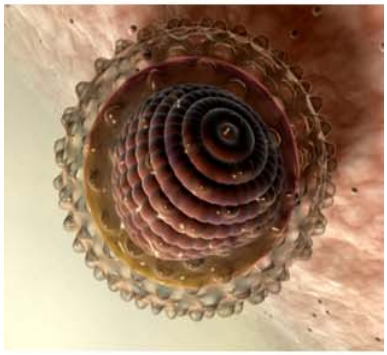
VacZine Analytics has conducted a full vaccine pipeline review in April 2008, October 2008 and now August 2009 **(1)**. Excluding vaccine programs related to secondary market launches, line extensions, biodefense and pandemic influenza we record that at these time points the number of vaccines in clinical development (Western commercial companies), has been 97, 115 and now 121 respectively showing a continued expansion of activity. Again the top six vaccine companies (including AstraZeneca/Medimmune) are responsible for the bulk of vaccine R&D* responsible for around 40-45% of programs. The majority of the vaccine R&D pipeline (~50%) is within Phase I clinical development with a heavy bias to new influenza (seasonal) programs and those focused on "global initiatives", a classification we use to denote diseases such as HIV, malaria and TB.

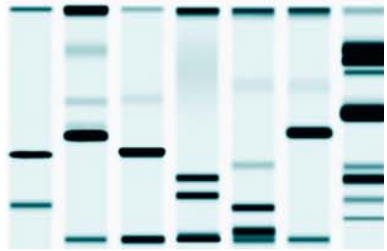
Naturally the emergence of H1N1 "swine flu" back in April 2009 makes the recording of pandemic influenza vaccine R&D now more relevant to overall pipeline metrics. Previously to the "swine flu" outbreak, there were 19 pandemic influenza individual clinical trials in April 2008 and around 21 in October 2008. This figure has increased to 37 in August 2009, with 25 new entries of which H1N1 is about 20-30% of pandemic activity and 5% of the total vaccine pipeline. It appears that H1N1 itself has stimulated further activity into H5N1 and other viruses with pandemic potential, as well as seasonal flu; a pattern that is likely to continue. Key players within H1N1 vaccine development are the usual vaccine producers such as GSK, Novartis and Sanofi Pasteur although Australia based CSL were the first to begin a clinical trial in July **(2).** Smaller technology focused players such as Protein Sciences and Novavax, previously held-back are now making headway as authorities sense the need to be more opportunistic in their funding strategy.

The extent of R&D programs using novel/proprietary adjuvants is another interesting measure of activity when analyzing the vaccine pipeline. This is especially relevant as the industry awaits the FDA's decision regarding GSK's bivalent HPV vaccine, Cervarix™ which contains monophosphoryl lipid A (MPL). We record around 100 active Phase I clinical trials within the vaccine pipeline containing an adjuvant system many of which are undisclosed. Interestingly, pandemic flu also strongly influences the agenda in terms of novel vaccine adjuvants. Note that with H5N1, the US HHS stockpile contains a traditional whole unadjuvanted vaccine produced by Sanofi Pasteur. Since the emergence of H1N1, the US authorities have now placed contracts for adjuvanted vaccines from Novartis and GSK containing MF-59 and AS03 respectively **(3,4).** Such moves are more in line with the European stance previously on H5N1 vaccines, including GSK's Prepandrix™.

Pandemic flu should not detract from other interesting developments within the vaccine R&D pipeline. The nosocomial, novel and travel/endemic segments continue to show enormous potential. For the nosocomial sector, back in February 2009, Sanofi Pasteur began a Phase II study with the *Clostridium difficile* antigens they had gained from the Acambis acquisition. Sanofi is the only company with such a vaccine in development although ACE Biosciences have recently added a discovery candidate for C.diff (ACE820). Given the high interest in this pathogen, many of the larger vaccine players are also likely to be researching C.diff. Merck & Co are still forecast to launch the first nosocomial vaccine focused on *Staphylococcus aureus* (V710) in 2012/13. Currently Phase II interim data is expected later in 2009 which is around the same time Novartis (Intercell AG) may report on their *Pseudomonas aureginosa* vaccine. Recently, GSK Biologicals bought NABI's StaphVAX pentavalent *S.aureus* program which signals the company's intention to pursue nosocomial vaccines **(5).**

CONTINUED……..





CONTINUED……..

Lastly, for *S.pneumoniae* vaccines, at the more advanced stages **VacZine Analytics** has previously covered the antagonism between GSK and Wyeth regarding their new vaccines PCV-13 and Synflorix™ **(6).** In their recent second quarter results presentation GSK stated that with Synflorix™ the company had a "strong launch" in Turkey. Overall, Synflorix™ recorded £12m in revenues with £10m of sales with Europe **(7).** Earlier in development it appears that the search for a universal protein-based pneumo vaccine is being taken seriously. This approach would avoid the issues of shifting *pneumococcal* serotypes but is a long-term investment. GSK is now developing a range of S.*pneumoniae*/NTHi protein recombinant vaccines for adults and elderly with COPD (GSK2189242A/GSK2254233) but in June also has licensed rights to a *S.pneumoniae* vaccine from Protea Vaccine Technologies Ltd. (Protea), an entity affiliated with NasVax Ltd. Novartis (Intercell AG) and Sanofi Pasteur also have clinical programs for universal pneumo vaccine approaches. It seems most companies do not believe PCV-13 and Synflorix™ will last forever and are looking beyond these product technologies.

References and Notes:

***** *Excluding vaccine programs related to secondary market launches, line extensions, biodefense and pandemic influenza*

1) Vaccine Pipeline/IP Review, August 2009 (CAT No: VAVS016). Published by **VacZine Analytics.**

2) CSL. Corporate Website. 29th June 2009. Available at: http://www.csl.com.au/s1/cs/auhq/1182280826145/news/1244834451885/prdetail.htm. Accessed August 2009.

3) Novartis Vaccines. Corporate Website. June 12th 2009. Available at: http://www.novartis.com/newsroom/media-releases/en/2009/1322241.shtml. Accessed August 2009.

4) US Department of Health and Human Services (HHS). Main Website, July 13th 2009. Available at: http://www.hhs.gov/news/press/2009pres/07/20090713b.html. Accessed August 2009

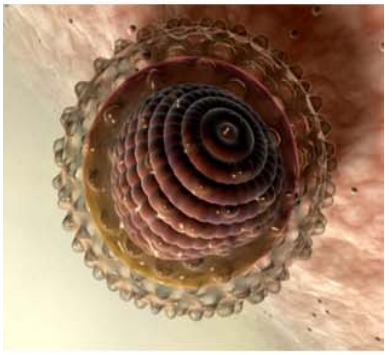
5) NABI Corporate Press Release. August 6th 2009. Available at: http://phx.corporate-ir.net/phoenix.zhtml?c=100445&p=irol-newsArticle&ID=1318313&highlight=. Accessed August 2009

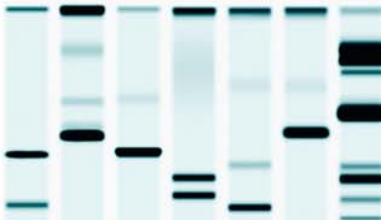
6) Prevnar and PCV-13 versus Synflorix - waging war at ESPID with antibody levels. **ExpertREACT Premium.** June 23rd 2009. Published by **VacZine Analytics**

7) NasVax corporate press release. June 2009. Available at: http://www.nasvax.com/Content.aspx?Page=releases&id=74. Accessed August 2009.

8) GSK corporate. 2nd quarter financial results. Available at: http://www.gsk.com/investors/reports/q22009/q22009_us$.pdf. Accessed August 2009.

For more information please contact: info@vaczine-analytics.com





© 2009 VacZine Analytics. All rights reserved.