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Issue 26

Heads of Terms

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Curative Therapies and Changes in Pharma Landscape

For larger pharmaceutical companies, often the challenge is to maintain a strong clinical pipeline with blockbuster drug candidates. The industry's solution to this challenge so far as been to either access candidates from in-house research or by acquiring them through licensing and M&A. Licensing remains the preferred route, as it is presents with a relatively less risky and costly option. However, finding and getting a hold of good licensing candidates has, in the increasingly competitive pharma deal-making world, been more difficult in recent years as the innovator companies become better funded, capable of taking candidates through to later stages of development on their own and are less likely to out-license rights until a much later value inflexion point.

This, together with the changing landscape of treatment methodologies, such as the rise of gene and cell therapies, means that these larger pharmaceutical companies have to change their strategies at both a therapeutic and transactional level. These new approaches are often one-time, curative treatments, which often come with pricing and reimbursement challenges that must be overcome to realise commercial success.

In a response to these challenges Novartis CEO Vas Narasimhan said recently that the price for these one-time therapies should be based on four key measures of value – (i) improvements they offer to patients clinically and (ii) in terms of their quality of life, (iii) the benefits they offer to the healthcare system and more generally, (iv) to the society. In addition to pricing based on value, Novartis has recently entered into outcomes-based or pay-for-performance contracts, where there is no charge for the therapy unless patients meet certain

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Industry Insight

The Rise of Gene Therapies in Neurological Diseases

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In the recent years, the level of interest in Gene Therapy from both industry and academia has been unparalleled. CNS disorders in particular have gained a lot of attention with a considerable emphasis on neurological targets; and this is especially visible when analysing several high-profile deals that occurred in 2018. The biggest stand-out deal was struck by Novartis, buying AveXis for $8.7 billion giving the Basel based biopharma company access to what could potentially be the first one-time only treatment for Spinal Muscular Atrophy (SMA). On top of this, AveXis will also give Novartis access to a promising platform technology based around a non-replicating adeno-associated virus (AAV) capsid that allows penetrationpenetration of the blood brain barrier.[1]

Gene Therapy was the common feature amongst four major CNS transactions in 2018, all with reported deal values totalling over $1 billion. This group included deals for Biogen,[2] Takeda,[3] Akcea,[4] and Abbvie.[5] In addition to the purer play neurological diseases, RNA therapeutics pioneer Ionis also struck a high value deal with its publicly listed commercialisation subsidiary Akcea for a gene directed therapy play in Amyloidosis.

Date	Licensor/ Seller	Licensee/ Buyer	Lead Indication(s)	Transaction Type	Total Deal Value ($M)
Apr 2018	AveXis	Novartis	Spinal Muscular Atrophy Neurological Diseases	M&A	8,700
Apr 2018	Ionis	Biogen	Neurological Diseases	Strategic Collaboration (Expansion)	2,350[6]
Feb 2018	WAVE	Takeda	Huntington's Disease Amyotrophic Lateral Sclerosis Neurological Diseases	Strategic Collaboration	2,230
Mar 2018	Ionis	Akcea	Familial Amyloid Neuropathy	Strategic Collaboration	1,740
Feb 2018	Voyager	AbbVie	Alzheimer's Disease Tauopathies	Strategic Collaboration	1,179
Jun 2018	Oxford BioMedica	Axovant[7]	Parkinson's Disease	License	843

Table 1
High value CNS Gene Therapy Deals in 2018
Source: Cortellis Deals Intelligence, Company Websites

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Industry Insight

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The Rise of Gene Therapies in Neurological Diseases

Growing Development Pipeline

The Gene Therapy development landscape is dominated by products being developed to treat neurodegenerative diseases such as Huntington's, Parkinson's and ALS, as well as conditions such as pain. Although competition will be fierce, many of the remaining target indications are rare diseases and are difficult to treat, however, these can have shorter development timelines, attractive reimbursement prospects and high concentrated prescribers.

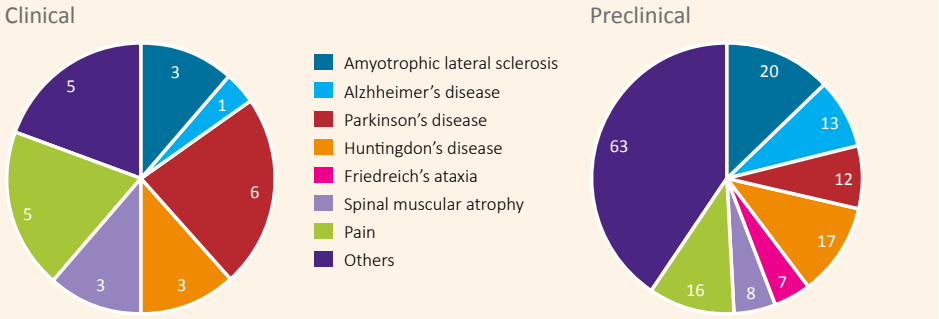

Figure 1
CNS Gene Therapy Products in Preclinical and Clinical Development
Sources: Evaluate, Cortellis and Company websites and presentations

The later-stage pipeline consists largely of molecules discovered outside of large Pharma. Pfizer for example acquired its Phase II Giant Axonal Neuropathy product in the two-step buyout of Bamboo Therapeutics in 2016 for $193M upfront and up to $495 million more of milestones.[6] Through this acquisition, Pfizer acquired recombinant adeno-associated virus (rAAV) based treatments for Duchenne's Muscular Dystrophy, Friedreich's Ataxia and Canavan disease which Bamboo was developing. Pfizer is not a new comer to Gene Therapy transactions, as in 2014 it had entered into an agreement with Spark Therapeutics to develop and commercialise an AAV based treatment for Haemophilia B ($20M upfront, $260 additional development and commercialization milestone payments).[7]

The majority of Gene Therapy drugs targeting neurodegeneration are already engaged with larger Pharmaceutical partners in the form of strategic collaborations, M&A activity or being the focus for forming new collaborations in 2018. In recent years, large-cap biopharma companies have invested heavily in both non-viral and viral delivery methods as well as gene transfer and gene disrupting technologies. Another notable feature of this analysis is the current market expectations for fast development timelines, with several jumping straight from P1/2 programmes into pivotal studies.

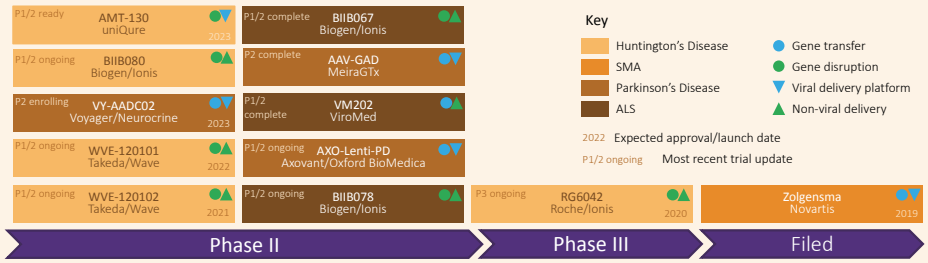

Figure 2
Late Stage Neurodegenerative Gene Therapy Programmes
Sources: Evaluate, Cortellis and Company websites and presentations

1 Novartis, Press Release, April 2018
2 Ionis Pharmaceuticals, Press Release, April 2018
3 Wave Life Sciences, Corporate Presentation, January 2019
4 Ionis Pharmaceuticals, Press Release, March 2018
5 Abbvie, Press Release, February 2018
6 Pfizer, Press Release, August 2016
7 Spark Therapeutics, Press Release,, December 2014

To access the full article, visit:
http://www.pharmaventures.com/content/rise-gene-therapies-neurological-diseases

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clinical milestones. Such an arrangement would mean that Novartis would only get a full return on the price if such one-time therapies improve patients both clinically and in terms of their quality of life as well as providing benefits to the healthcare system and society more generally. Whilst providing some balance between value vs pricing, measuring and determining such outcomes could be a difficult task.

If such changes occur to pricing, then licensing agreements may need to be adapted to ensure that there is an appropriate return to both parties. But before this, large pharmaceutical companies need to gain confidence that such pricing methodologies could be both acceptable and achievable. Once this is achieved then a significant boom is likely in place for the upcoming years, in both the acquisition and licensing of these new innovative gene and cell-based therapies.

Dr Fintan Walton
Chief Executive, PharmaVentures Ltd.

Meet the Team

Mark Ashworth
Associate

Mark joins PharmaVentures as an Associate, bringing experience from healthcare consulting, pharmaceutical R&D and academic research.

As a strategic consultant prior to joining the company, Mark worked on projects encompassing market access, real-world evidence, regulatory assessment and competitor analysis for some of the world's leading pharmaceutical companies. Mark also has experience working in R&D for GlaxoSmithKline in the UK and DSM in the Netherlands, as well as a stint working in IP & technology transfer for the University of Manchester. Whilst completing his postgraduate studies, Mark was successful in several entrepreneurial competitions and has experience in establishing and securing funding for a technology startup.

Mark graduated MBiolSci (1st Class Hons) in Molecular Biology from the University of Sheffield and obtained a PhD in Biochemistry from the University of Manchester, where he researched novel enzyme engineering approaches for the production of high-value molecules.

mark@pharmaventures.com

PharmaVentures in Action

12th Annual European Life Sciences CEO Forum

Zurich, Switzerland

Dr Fintan Walton, Founder and CEO of PharmaVentures, hosts the "Pharma DealMakers Roundtable" panel at the 12th Annual European Life Sciences CEO Forum in Zurich, Switzerland.

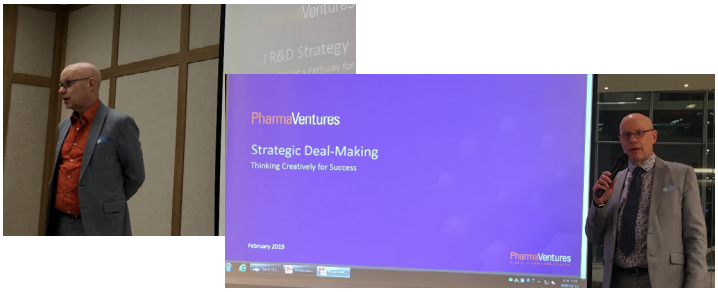
Panellists:
Constantine Chinoporos, CBO, Boston Pharmaceuticals, Inc.
Nathalie ter Wengel, European Head External R&D and Innovation, Pzer, Inc.
Olivier Reinhard, VP, Head of Execution for China and Emerging Markets, Sano
Susanne Wiegel, Senior Director, Deputy Head BD, MorphoSys AG

LSX World Congress 2019

London, UK

Dr Adrian Dawkes, Managing Director of PharmaVentures, hosts the "Fireside Chat: Structuring a Win-Win Platform Tech Deal" with Yochi Slonim, CEO of Anima Biotech, at the LSX World Congress 2019.

PharmaVentures Invited to Speak at Seminars in South Korea



Dr Adrian Dawkes, Managing Director of PharmaVentures, addresses audiences in Pangyo and Daejeon, South Korea on the topics: "Strategic Deal-Making" and "R&D Strategy". PharmaVentures would like to thank James Lee of Innovation New Drug Salon for inviting us to speak and network with the South Korean pharmaceutical, biotechnology, medical technology and investor communities.

Join the Team

Opportunities to join our world class team

Head of M&A

PharmaVentures is seeking to appoint an individual to take a leadership role in the winning and executing M&A manadates. The role requires a proven track record of winning M&A mandates, preferably in the healthcare industry. Crucial to the role is the ability to build strong relationships with clients at corporate and board level. The ability to manage multiple project teams is essential.

For more information, visit the job page.

VP Transactions

PharmaVentures is seeking to appoint an individual to take a leadership role in the winning and executing M&A, Licensing and Fundraising mandates. The role requires a proven track record of winning these types of mandates, preferably in the healthcare industry. Crucial to the role is the ability to build strong relationships with clients at corporate and board level.

For more information, visit the job page.

Conference Update

ON Helix
Cambridge UK, 9-10 July 2019

CPhI Worldwide
Frankfurt Germany, 5-7 November 2019

BIO-Europe 2019
Hamburg Germany, 11-13 November 2019

Genesis 2019
London UK, 11 December 2019

J.P. Morgan 38th Annual Healthcare Conference
San Francisco, 13-16 January 2020

If you would like to meet with PharmaVentures at any of these events, please contact Summer Park, Business Development Director

summer@pharmaventures.com

Charles MacFarlane

PharmaVentures is sorry to announce the passing of our Non-Executive Board Member Charles Macfarlane. He passed away on Saturday 15th June.

Charles was an exceptional man and truly unique. The combination of high intellect and wonderful charm made him an exceptional professional.

To have such a man as Non-Executive Board Director of PharmaVentures was a true privilege.

He will be sorely missed.

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PharmaVentures
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