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FOCUS AREA: DISEASES OF THE CENTRAL NERVOUS SYSTEM (CNS) AND ORPHAN DISEASES

KEY DATA			SIX: NWRN
MARKET CAPITALIZATION (CHF MN)	324	**PRICE ON OCTOBER 10, 2016**	20.6
ENTERPRISE VALUE (CHF MN)	270	**RISK-ADJUSTED NPV PER SHARE** (CHF)	42
NET CASH (MID-OCT 2016E) (CHF MN)	55	**UPSIDE/DOWNSIDE** (%)	103%
MONTHLY OPERATING EXPENSE (CHF MN)	2.4	**RISK PROFILE**	HIGH RISK
CASH LIFE (YEAR)	THROUGH 2018	**SUCCESS PROBABILITY LEAD PIPELINE DRUG**	90%
BREAK-EVEN (EXCL. MILESTONES) (YEAR)	2018	**EMPLOYEES** (GROUP)	22
FOUNDED (YEAR)	1998	**LISTED** (YEAR)	2006
KEY PRODUCTS:	**STATUS**	**MAJOR SHAREHOLDERS:**	**(%)**
- XADAGO (PARKINSON'S DISEASE)	EU APPROVED / US FILED	- INVESTOR AB	11.2
- SARIZOTAN (RETT SYNDROME)	PHASE III	- ZAMBON GROUP	8.3
- EVENAMIDE (NW-3509) (SCHIZOPHRENIA)	PHASE IIA (POC)	- AVIVA	6.9
		- EXECUTIVE MANAGEMENT	0.5
		- FREE FLOAT	**99.5**
		- AVERAGE TRADING VOLUME (30-DAYS)	41,479
UPCOMING CATALYSTS:	**DATE**	**ANALYST(S):**	BOB POOLER
- EVENAMIDE - POC RESULTS IN SCHIZOPHRENIA	~ YEAR END 2016		BP@VALUATIONLAB.COM
- XADAGO - US APPROVAL & LAUNCH	H1 2017		+41 79 652 67 68
- SARIZOTAN - TOPLINE RESULTS "STARS"	H2 2017		

ESTIMATES AS OF 10 OCTOBER, 2016 SOURCE: VALUATIONLAB ESTIMATES, NEWRON PHARMACEUTICALS

Sarizotan: The Next Big Thing

A bright future written in the STARS

Newron Pharmaceuticals has a product pipeline that targets diseases of the central nervous system (CNS) and rare diseases. The company's key value driver is safinamide (branded “Xadago”), a once daily oral add-on therapy for all stages of Parkinson's disease with a unique dual mechanism of action. Xadago was first launched in the EU in Q2 2015, has been re-filed in the US in September 2016, and is now expected to be approved before the end of Q1 2017. Xadago was licensed to Meiji Seika (Japan & Asian markets) and Zambon (worldwide excluding Meiji Seika territories) in 2012. Substantial revenues are expected from sub-licensing, milestone and royalty payments from Xadago sales. With cash of CHF 55 mn (mid-October 2016) and Xadago revenues, Newron has a cash runway well through 2018, and is adequately funded to advance other pipeline assets, including sarizotan for Rett syndrome, and evenamide (NW-3509) for schizophrenia. We derive a risk-adjusted NPV value of CHF 42 per share, with 56% of the value related to Xadago, 36% to sarizotan, and 8% to cash. The risk profile was upgraded to High Risk (from Speculative) based on first product revenues from Xadago and Newron approaching profitability within 2 years.

Key catalysts:

1) **POC results of evenamide (NW-3509) in schizophrenia (Q4 2016):** Positive proof-of-concept (POC) results lead to an increase of our risk-adjusted NPV for evenamide of CHF 4/share assuming a 15% (POC) success probability, and potential out licensing deal in H1 2017, from currently CHF 0/share.
2) **US approval of Xadago (Q1 2017):** We expect the US approval for Parkinson’s disease before the end of Q1 2017 with the launch by US WorldMeds shortly after. Our risk-adjusted NPV for Xadago rises to CHF 28/share (from CHF 25/share).
3) **Topline results STARS (H2 2017):** On positive topline results, our risk-adjusted NPV for sarizotan will jump by CHF 26/share (65% phase III success probability) from currently CHF 16/share (conservative phase II/III 25% success probability).

Recent Developments

October 7 – CHF 26.1 mn raised in private placement, now cash well through 2018
Newron raised CHF 26.1 mn in a private placement of 1,320,530 new shares or 8.4% of the new total number of outstanding shares amounting to 15,769,168 post transaction. The net proceeds will be used to finance Newron's operations and existing and future R&D programs, including sarizotan in Rett syndrome, and evenamide (NW-3509) in schizophrenia. The funds are expected to support the company's activities well through 2018; well before inflection points of both key development programs. We estimate the company to have cash and short-term investments of approximately CHF 55 mn (EUR 50 mn) at mid-October 2016.

September 22 – Xadago re-filed in US, approval expected before end of Q1 2017
The NDA (New Drug Application) for Xadago to treat Parkinson's disease was re-filed at the FDA. This follows an earlier meeting with the FDA in July, where the agency expressed that new clinical trials to evaluate the potential liability or dependence/withdrawal effects were no longer required. The decision in July was a complete U-turn from the earlier Complete Response Letter (CRL) in March that requested clinical evaluation. The FDA is now expected to complete its review within 6 months of acceptance as this was a so-called Class 2 resubmission. Consequently, US approval of Xadago should occur before the end of Q1 2017.

September 15 – Excellent H1 2016, US re-filing of Xadago no longer requires trials
Newron had an excellent H1 2016, with increasing product sales and royalties from Xadago in the EU supported by an increasing amount of European county launches; and the start of "STARS", the single, potentially pivotal trial of sarizotan in Rett syndrome. The only setback was the unexpected FDA Complete Response Letter (CRL) for Xadago in March. The Controlled Substance Staff (CSS), a subdivision of the agency, suddenly requested clinical evaluation of potential abuse liability and dependence/withdrawal effects related to the use of Xadago. In the meantime, the company has successfully re-filed the NDA for Xadago, where no longer clinical evaluation is required. US approval is now expected before the end of Q1 2017 (resulting in a one year delay).

H1 2016 results in a nutshell:

- Cash and short-term investments of EUR 34.9 mn (EUR 44 mn in H1 2015)
- Cash well through most of 2017, well beyond expected key value inflection points
- Total revenues of EUR 3.9 mn (EUR 2 mn in H1 2015)
    - EUR 3 mn milestone payments from Zambon (EUR 1.8 mn in H1 2015)
    - Xadago royalties of EUR 852,000 (EUR 93,000 in H1 2015)
- Operating expenses of EUR 12.6 mn (EUR 8.8 mn in H1 2015)
- Net loss of EUR 8.9 mn (EUR 5.3 mn in H1 2015)

Xadago was launched in 10 additional European countries, including Switzerland, Spain, Italy, the Benelux, Denmark, Sweden, the UK and Norway, which should lead to a continued sharp uptake of Xadago sales in Europe. Prior to the CRL in March, Zambon, Newron's global partner for Xadago (except for Japan/Asia where Meiji Seiki has the rights) announced that it had signed on US WorldMeds to commercialize Xadago in the US. US WorldMeds is a US specialty pharmaceuticals company with experience in selling

prescription drugs for Parkinson's disease. Newron will receive a milestone payment on FDA approval (now expected before the end of Q1 2017) and a share of upfront and sales milestone payments and royalty payments on US sales made by US WorldMeds to Zambon. US WorldMeds plans to focus more than 60 sales representatives once it launches Xadago in the US.

July 21 - Initiation of STARS study in the US evaluating sarizotan in Rett syndrome
Newron announced the start of the "STARS" (**S**arizotan **T**reatment of **A**pnea in **R**ett **S**yndrome) trial in the US. This is a single, potentially pivotal clinical trial to evaluate the benefit/risk of sarizotan in patients with Rett syndrome suffering from respiratory syndromes. This 6-month randomized, double blind, placebo controlled "STARS" trial is expected to enroll 129 patients (three groups of 43 patients older than 13 years of age receiving daily doses of 10 and 20 mg sarizotan, or placebo) at centers of excellence in the US, Italy and India. The primary endpoint is the reduction in episodes of clinically significant apneas (uncontrolled breath holds of >10 seconds) during waking time by 20%. Newron expects to announce topline results of "STARS" in 2017. Positive results would lead to a considerable jump in our risk-adjusted NPV for sarizotan to CHF 42 per share from currently CHF 16 per share. Our conservative 25% success probability (phase II/III orphan drug) would jump to 65%.

Strategy & Cash Position

Italian biopharmaceutical company specialized in CNS and rare diseases

Newron Pharmaceuticals S.p.A. is an Italian biopharmaceutical company specialized in prescription drugs to treat central nervous system (CNS) disorders and rare, so-called orphan diseases. The company is based in Bresso, near Milan, Italy and was established in December 1998 as a spin-off from Pharmacia & Upjohn (now part of Pfizer). Currently the group has 22 employees. The present clinical focus is on Parkinson's disease (safinamide, branded “Xadago”), schizophrenia (evenamide, previously named NW-3509) and rare diseases such as Rett syndrome (sarizotan). In October 2015, Newron decided to discontinue two orphan drug projects, sNN0031 (severe Parkinson’s disease) and sNN0029 (ALS), stemming from the NeuroNova AB acquisition in 2012, due to ongoing problems and delays of a critical investigational delivery catheter from a third party supplier.

Newron’s current therapeutic focus is a result of:

1) The company's expertise in ion channel research, an important class of CNS drugs (e.g. Xadago, evenamide)
2) A development agreement signed with Merck KGaA in 2011 (sarizotan)

Strategy to develop CNS drugs to optimal value and then out-license and orphan drugs to commercialization

Newron's strategy is to develop drugs originated from earlier discovery capabilities, acquire or in-license CNS disease drugs and develop them to their optimal value, and in case of rare diseases like sarizotan for Rett Syndrome, whenever possible commercialize them. Where necessary, the company seeks co-development and commercialization agreements to reduce research and development costs and generate revenue through R&D funding, milestone payments and royalties on future sales.

Xadago’s European launch is well on its way with many country launches in 2016

In Q1 2015 Newron received EU approval for its key drug Xadago to treat mid-to-late stage Parkinson’s patients in combination with mainstay levodopa or other Parkinson medications (~80% of treated patients). Xadago was first launched in Germany in Q2 2015. Until now, Xadago has been launched in ten more European countries, including Switzerland, Spain, Italy, the Benelux, Denmark, Sweden, Norway and the UK, with more countries to follow soon, including France in 2016.

Xadago issues with FDA resolved, re-filed again with approval before end Q1 2017

In the US, Xadago unexpectedly received a Complete Response Letter (CRL) from the FDA on March 29th, 2016, requesting clinical evaluation of abuse liability and dependence/withdrawal effects, before approving the drug. This was in particular surprising as the FDA did not indicate the lack of this data earlier when the drug had to be re-filed due to technical issues with the documentation in 2014. After a meeting in July, the FDA apparently made a U-turn on its decision that additional small trials are needed to evaluate potential abuse liability and dependence/withdrawal effects of Xadago. In September, Newron re-filed its NDA (New Drug Application) for Xadago to treat Parkinson’s disease. Because this is a so-called Class 2 resubmission, the FDA is expected to complete its review within 6 months after acceptance, indicating a potential US approval before the end Q1 2017, with the launch by US WorldMeds with more than 60

sales representatives following shortly after. US WorldMeds, is a US specialty pharmaceutical company that licensed the US commercialization rights from partner Zambon just before the CRL was issued in March. Newron will receive a milestone payment on FDA approval and a share of upfront and sales milestone payments and royalty payments on US sales made by US WorldMeds to Zambon.

Potential new cornerstone treatment in Parkinson's disease

Xadago is a once daily oral add-on to dopamine agonists (in early stage Parkinson's), and to levodopa and other Parkinson's medications in patients with motor fluctuations (mid-to-late stage disease). Xadago has demonstrated efficacy in the short (6 months primary endpoints in pivotal trials) and long-term (18/24 months extension trials) in early and mid-to-late stage disease. We believe this would position the drug as the new cornerstone treatment in Parkinson's disease. The competitive EU label underscores this belief.

Key priorities in 2016 include the successful launch of Xadago …

Newron's key priorities for 2016 include supporting Zambon and its sublicensing partners with the launch of Xadago in the EU, supporting Zambon with the US approval of Xadago, and supporting Meiji Seika with the Japanese/Asian clinical development of Xadago. In October 2015 partner Meiji Seika announced it had started the Japanese phase II/III confirmatory and long-term trials in Parkinson's disease, making a potential launch in Japan in 2018 likely.

… and advancing its two core pipeline projects up to new value inflection points

With sufficient financial resources available, Newron has stepped up clinical development of its two core pipeline projects: **1) sarizotan**, which targets disordered breathing in Rett syndrome, a rare disease that causes severe disability and reduced life expectancy in girls, and **2) evenamide (NW-3509)**, a novel add-on therapy to current antipsychotic treatments to address poorly responding patients with schizophrenia/mania.

Newron plans to:

1. Conclude a phase IIa proof-of-concept (POC) trial of evenamide as an add-on to current antipsychotic therapy in schizophrenia (Q4 2016)
2. Sign on a (co-) development partner for evenamide on positive POC (H1 2017)
3. Announce topline results of the single, potentially pivotal phase III "STARS" trial of sarizotan in Rett syndrome (2017)

More than EUR 240 mn raised since inception in 1998

Since inception Newron has been quite successful in raising money and has invested significant resources and time mostly in developing Xadago in Parkinson's disease and ralfinamide in neuropathic low back pain. The company raised EUR 243 mn, of which EUR 91 mn in several private placements, most recently in early October 2016, raising EUR 24 mn (CHF 26 mn) with existing and new investors.

MONEY RAISED	EUR MN
PRE-IPO	62
IPO	74
PRIVATE PLACEMENTS	91
NEURONOVA ACQUISITION	16
TOTAL RAISED	**243**

SOURCE: VALUATIONLAB, NEWRON PHARMACEUTICALS

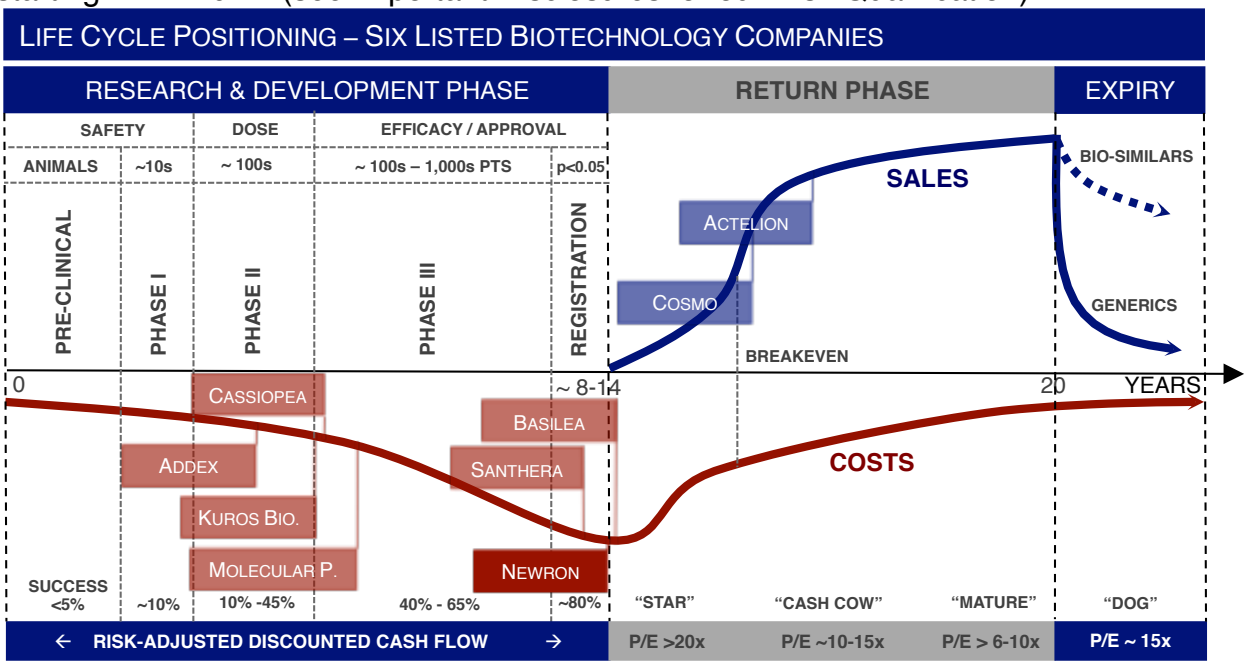
Prior to the IPO in 2006, management raised EUR 62 mn in three financing rounds. Newron was seed funded in 1999 by 3i with the company raising EUR 7 mn, followed with a EUR 25 mn B round (3i, Atlas, Apax) and a EUR 30 mn C round (3i, Atlas, Apax, HBM, TVM). Newron had one of the largest biotech IPO's in 2006 that provided the company with sufficient funds to develop ralfinamide up to phase IIb dose ranging trials in neuropathic low back pain. The NeuroNova acquisition added another EUR 16 mn to the cash position and committed cash-inflows in 2012.

Newron comfortably funded to approach profitability in 2017/18

We estimate that Newron has approximately EUR 50 mn (CHF 55 mn) in cash and short-term investments at hand (mid-October 2016). In Q1 2017 we expect the company to receive an estimated EUR 10 mn milestone on US approval of Xadago. This should be sufficient to fund operating expenses of approximately EUR 49 mn for the next two years to develop sarizotan in Rett syndrome and schizophrenia drug evenamide up to their next value inflection points. Moreover, in the next two fiscal years we expect approximately EUR 38 mn royalties from Xadago product sales in Europe. The company's cash position may be further boosted by the out licensing of evenamide in H1 2017, while Newron wants to partner or monetize non-core assets such as ralfinamide (neuropathic pain). Therefore, we believe Newron is comfortably funded to successfully execute its development plans and reach profitability in 2017/18.

Life Cycle Positioning – High Risk (from Speculative)

Newron's risk profile has been upgraded to High Risk from previously Speculative, thanks to the successful rollout of Xadago in the EU leading to sustained royalties from product revenues. Moreover, "sustainable" profitability - where the company is no longer dependent on partnering milestones to reach profitability – should be reached within 2 years driven by increasing European revenues from Xadago and new US revenues starting in H1 2017. (see Important Disclosures for our Risk Qualification).



SOURCE: VALUATIONLAB

Valuation Overview

Risk-adjusted sum-of-parts NPV points to a fair value of CHF 42 per share

We derive a risk-adjusted NPV of CHF 42 per share, with estimated cash of CHF 4 per share (mid-October 2016), overhead of CHF 3 per share, using a WACC of 7.0% (reflecting the low Swiss interest environment after the decoupling of the CHF/Euro peg).

SUM OF PARTS

PRODUCT NAME	INDICATION	PEAK SALES (EUR MN)	LAUNCH YEAR (EST)	UNADJUSTED NPV/SHARE (CHF)	SUCCESS PROBABILITY	RISK-ADJUSTED NPV/SHARE (CHF)	PERCENTAGE OF TOTAL
XADAGO (SAFINAMIDE)	PARKINSON'S DISEASE	646	2015 (EU) / 2017 (US)	28	90%	25	56%
SARIZOTAN	RETT SYNDROME	438	2018	65	25%	16	36%
EVENAMIDE (NW-3509)	SCHIZOPHRENIA	833	2019	24			
RALFINAMIDE	NEUROPATHIC PAIN	NON CORE		7			
RDPPR VOUCHER * (ON US APPROVAL OF SARIZOTAN)		150		10			
NET CASH POSITION (MID-OCT 2016E)		50		4		4	8%
TOTAL ASSETS				**139**		**45**	**100%**
OVERHEAD EXPENSES				-3		-3	
NPV/SHARE (CHF)				136		**42**	
SHARE PRICE ON OCTOBER 10, 2016						20.6	
PERCENTAGE UPSIDE / (DOWNSIDE)						102%	

* RDPPR VOUCHER = RARE DISEASE PEDIATRIC PRIORITY REVIEW VOUCHER - DECISION TO EXTEND VOUCHER BY 3 YEARS EXPECTED IN Q2 2016

ESTIMATES AS OF 10 OCTOBER, 2016

SOURCE: VALUATIONLAB ESTIMATES

Newron's key value drivers, include:

Xadago (Parkinson's disease) - risk-adjusted NPV of CHF 25 per share

Xadago is Newron's first ever drug to be approved and launched. In 2015 the drug was approved in the EU to treat mid-to-late stage Parkinson's disease with the first launch in Germany. Xadago has now been launched in Switzerland, Spain, Italy, the Benelux, Denmark, Sweden, Norway and the UK, with more European countries to follow, including France this year. US approval is expected before end Q1 2017 following the re-filing in September 2016. US WorldMeds will be responsible for US commercialization. We assume Newron will receive up to EUR 46 mn in milestone payments from its partners Zambon (and sub-licensors) and Meiji Seika, with royalties on sales ranging between 10-15% in EU/ROW, 9% in the US, and 10% in Japan. We calculate a risk-adjusted NPV of CHF 25 per share for Xadago with peak sales of EUR 650 mn based on a 90% success probability.

Sarizotan (Rett syndrome) – risk-adjusted NPV of CHF 16 per share

Newron started the potentially pivotal "STARS" trial evaluating sarizotan in Rett syndrome in July 2016. We forecast sarizotan peak sales of EUR 400+ mn with a conservative 25% success probability (phase II/III orphan drug). Sarizotan targets respiratory disturbances in Rett syndrome, a rare neurological disorder affecting primarily girls. All rights were licensed from Merck KGaA. Newron will market sarizotan through an own specialist field force globally. Orphan drug designation and pediatric exclusivity provides substantial market exclusivity from approval in the EU (12 years) and US (7 1/2 years).

Evenamide (NW-3509) – not in our forecasts, yet

Evenamide, a proprietary discovery project for treating schizophrenia, targets a global USD 23 bn anti-psychotic market opportunity with blockbuster peak sales potential. Proof-of-concept (POC) trials in schizophrenia started early 2016 with results due in Q4 2016. On positive POC our risk-adjusted NPV increases by CHF 4/share assuming a 15% (POC) success probability. Newron plans to out-license evenamide to a strong CNS player in H1 2017. This could lead to a substantial upfront payment, development and sales milestone payments, and royalties on sales.

Sensitivities that can influence our valuation

Regulatory approval: The US re-filing of Xadago in September 2016 is based on the extensive clinical development program that included over 1,500 patients with Parkinson's disease. Xadago demonstrated significant benefits as: 1) an add-on to a stable dose of a single dopamine agonist in patients with early disease, and 2) an add-on to levodopa and other Parkinson's medications at stable doses in patients with motor fluctuations (mid-to-late stage patients). The FDA will base its approval on the perceived risk-benefit of Xadago in early and in mid-to-late stage disease. Xadago could receive a broad US label, covering all targeted patients or a limited label covering a smaller patient group. In February 2015 Newron received EU approval for Xadago to treat mid-to-late stage Parkinson's patients.

Pricing and reimbursement: Following EMA and FDA approval, Xadago must be priced and reimbursed by local health care providers. In the US pricing and reimbursement is typically quite straightforward. In the EU pricing and reimbursement occurs on a country-by-country base, which can lead to different pricing and reimbursement, and potential market launch delays.

Partnering: In 2012 Newron out-licensed Xadago rights to Meiji Seika that gained rights for Japan and Asia, and to Zambon that gained worldwide rights (excluding Meiji Seika territories). Zambon does not have a strong presence in all markets, including the lucrative US market, and will need to secure commercialization partners in these regions. Consequently, there is limited visibility on the timing and terms on which these sub-licensers will be contracted. Positively, Zambon signed on US WorldMeds in March 2016 for the critical US market, where Newron will receive a low double digit US approval milestone payment, sales milestones and high single digit royalties on sales.

Commercialization: Newron's revenues and earnings on Xadago will be entirely dependent on its commercialization partners to successfully position and market Xadago against existing Parkinson's treatments, in particular against Teva's Azilect (rasagiline). Newron plans to build up an own global specialist field force for sarizotan, which potentially could require additional funding.

Patent and market exclusivity: Xadago's composition of matter patent expired in 2010. Patent protection and market exclusivity beyond this period will rely heavily on the combination patent with levodopa that runs until 2024 (EU) and 2026 (US) with extensions up to 5 years. A synthesis patent provides additional protection until 2027. We conservatively assume patent protection for Xadago until 2029 (which includes extension). Sarizotan will be protected by orphan drug and pediatric market exclusivity that offers 12 years protection in the EU and 7 ½ years in the US from the first day of approval. Sarizotan could potentially receive a Rare Pediatric Disease Designation Voucher in the US. In 2015, a voucher was sold for USD 350 mn.

Catalysts

Newron had an excellent start of the year with the launch of Xadago in Switzerland, Spain, Italy, the Benelux, Denmark, Sweden, Norway, and the UK, with France to follow soon. Royalties from European Xadago sales have risen sharply in H1 2016 to EUR 0.9 mn (from EUR 93,000 in H1 2015) and this sharp rise is expected to continue on the broad European rollout.

- In March, US WorldMeds was signed on to commercialize Xadago in the important US market in return for an approval milestone (EUR ~10 mn), sales milestones, and royalties (~9%) on sales.
- In July the potentially pivotal STARS trial of sarizotan in Rett syndrome kicked off
- In September, Newron successfully re-filed Xadago in the US, without having to do additional abuse liability and dependence/withdrawal trials for Xadago.
- In September, CHF 26. 1 mn was raised in a private placement, securing sufficient cash to reach profitability in 2017/18.

CATALYST TIMELINES

TIME LINE	PRODUCT	INDICATION	MILESTONE	COMMENT	IMPACT
2016					
	XADAGO (SAFINAMIDE)	PARKINSON'S	EUROPEAN LAUNCH	LAUNCHED IN SWITZERLAND (JAN), SPAIN & ITALY (FEB), BELGIUM (APR), UK (MAY); SCANDINAVIA, AND FRANCE ALSO EXPECTED IN 2016	
1 MAR			FY 2015 RESULTS	CASH: EUR 41 MN; FUNDED WELL INTO 2017 BEYOND VALUE INFLECTION POINTS; FIRST ROYALTIES OF EUR 0.5 MN FROM ~EUR 5 MN XADAGO SALES (GERMANY ALONE)	
17 MAR	XADAGO (SAFINAMIDE)	PARKINSON'S	US WORLDMEDS ACQUIRES US RIGHTS	ZAMBON SIGNS US COMMERCIALIZATION DEAL WITH US WORLDMEDS; NEWRON ENTITLED TO MILESTONE ON US APPROVAL, SALES MILESTONES AND ROYALTIES ON US SALES	
22 MAR			AGM	POWER TO INCREASE SHARE CAPITAL TO PURSUIT STRATEGY APPROVED	
29 MAR	XADAGO (SAFINAMIDE)	PARKINSON'S	FDA COMPLETE RESPONSE LETTER	FDA REQUESTS CLINICAL EVALUATION OF ABUSE LIABILITY AND DEPENDENCE/WITHDRAWAL EFFECTS (SMALL STUDY IN HUMANS); PUSHES BACK US APPROVAL BY AN ESTIMATED 12-18 MONTHS	
21 JUL	SARIZOTAN	RETT SYNDROME	"STARS" TRIAL	START OF SINGLE POTENTIALLY PIVOTAL PHASE II/III TRIAL "STARS" WITH UP TO 129 PATIENTS, PRIMARY ENDPOINT: REDUCTION APNEA EPISODES DURING AWAKE TIME AT WEEK 24; MAINTENANCE ASSESSED BY 24-WEEK EXTENSION TRIAL.	
26 JUL	XADAGO (SAFINAMIDE)	PARKINSON'S	FDA MEETING	NEWRON TO RESUBMIT US NDA FOR XADAGO - NO ADDITIONAL EVALUATION OF ABUSE LIABILITY OR DEPENDENCE/WITHDRAWAL EFFECTS REQUIRED	
15 SEP			H1 2016 RESULTS	CASH: EUR 34.9 MN; FUNDED WELL INTO 2017 BEYOND VALUE INFLECTION POINTS; ROYALTIES OF EUR 1.3 MN FROM ~EUR 13 MN XADAGO SALES; FY 2016 OUTLOOK CONFIRMED	
22 SEP	XADAGO (SAFINAMIDE)	PARKINSON'S	US REFILING	US REFILING - NO ADDITIONAL STUDIES REQUIRED	
7 OCT			PRIVATE PLACEMENT	CHF 26.1 MN RAISED IN PRIVATE PLACEMENT OF 1,320,530 NEW SHARES	
Q4	EVENAMIDE (NW-3509)	SCHIZOPHRENIA	RESULTS PHASE IIA	RESULTS PHASE IIA PROOF-OF-CONCEPT TRIAL; POSITIVE RESULTS COULD TRIGGER LUCRATIVE PARTNERSHIP	+CHF 4
2017					
Q1	XADAGO (SAFINAMIDE)	PARKINSON'S	FDA APPROVAL	EXPECT RAPID APPROVAL AS MOST DATA HAS ALREADY BEEN REVIEWED BY FDA	+CHF 3
H1	EVENAMIDE (NW-3509)	SCHIZOPHRENIA	PARTNERING	PARTNERING PLANNED AFTER POSITIVE RESULTS POC TRIAL	
H1	XADAGO (SAFINAMIDE)	PARKINSON'S	US LAUNCH	US WORLDMEDS KICKS OFF US LAUNCH WITH >60 DEDICATED SALES REPS	
H2	SARIZOTAN	RETT SYNDROME	"STARS" TRIAL RESULTS	TOP LINE RESULTS SINGLE PIVOTAL PHASE III "STARS" TRIAL AT WEEK 24	+CHF 26
H2	XADAGO (SAFINAMIDE)	PARKINSON'S	PHASE II/III JAPAN	TOP LINE RESULTS JAPANESE PHASE II/III CONFIRMATORY TRIAL	

ESTIMATES AS OF 10 OCTOBER, 2016

SOURCE: VALUATIONLAB ESTIMATES, NEWRON PHARMACEUTICALS

Key catalysts include:

- **POC results of evenamide (NW-3509) in schizophrenia (Q4 2016):** Positive proof-of-concept (POC) results lead to an increase of our risk-adjusted NPV for evenamide of CHF 4/share assuming a 15% (POC) success probability, and potential out licensing deal in H1 2017, from currently CHF 0/share.
- **US approval of Xadago (Q1 2017):** We expect the US approval for Parkinson's disease before the end of Q1 2017 with the launch by US WorldMeds shortly after. Our risk-adjusted NPV for Xadago rises to CHF 28/share (from CHF 25/share)
- **Topline results STARS (H2 2017):** On positive results our risk-adjusted NPV for sarizotan will jump by CHF 26/share (65% phase III success probability) from currently CHF 16/share (conservative phase II/III 25% success probability
- **Out license evenamide (H1 2017):** Out-license evenamide to a major CNS player to fully develop and commercialize the drug in schizophrenia/mania and potentially other CNS disorders.

Technology & Pipeline

Search & Development company focused on CNS and orphan diseases

Currently, Newron has two drugs addressing multibillion-dollar markets including Xadago (Parkinson's) and evenamide (schizophrenia), and one compound, sarizotan, addressing a rare disease, called Rett syndrome. In October 2015, Newron terminated two of its rare disease drugs from the NeuroNova acquisition, namely, sNN0029 for ALS (amyotrophic lateral sclerosis or Lou Gehrig's disease) and sNN0031 for severe treatment-resistant Parkinson's disease. Both compounds were administered through a critical catheter delivery device from a third party, which faced ongoing regulatory issues. This led to considerable development delays and ultimately the discontinuation of both projects.

PRODUCT PIPELINE

PRODUCT	DRUG CLASS	INDICATION	STATUS	LAUNCH DATE (EXPECTED)	PARTNER	PEAK SALES
XADAGO (SAFINAMIDE)	ALPHA-AMINOAMIDE	PARKINSON'S DISEASE	EU: LAUNCHED US: RE-FILED	EU: H1 2015 US: H1 2017	ZAMBON/MEIJI SEIKA/ US WORLDMEDS	EUR 650 MN
SARIZOTAN	DOPAMINE RECEPTOR BLOCKER	RETT SYNDROME (ORPHAN INDICATION)	PHASE III PIVOTAL TRIAL	2018	ESTABLISH OWN FIELD FORCE	EUR 400+ MN
EVENAMIDE (NW-3509)	ION CHANNEL BLOCKER	SCHIZOPHRENIA	PHASE IIA/POC*	2019	TO BE PARTNERED AFTER PHASE I/IB	EUR 800+ MN
RALFINAMIDE	ION CHANNEL BLOCKER	NON-RESPONDING SEVERE NEUROPATHIC PAIN (ORPHAN INDICATION)	POC*		PARTNER BEFORE STARTING TRIALS	NON-CORE

* POC = PROOF-OF-CONCEPT

ESTIMATES AS OF 10 OCTOBER, 2016

SOURCE: VALUATIONLAB ESTIMATES, NEWRON PHARMACEUTICALS

Xadago successfully rolled out in Europe – US faces an unexpected delay

Parkinson's drug Xadago received EU approval in February 2015. In May 2015, Germany was the first member state to launch Xadago. The European roll out of Xadago is well on its way, where it has been launched in Switzerland, Spain, Italy, the Benelux, Denmark, Sweden, Norway, the UK with more European country launches expected, including France in 2016. The Complete Response Letter (CRL) in March has pushed back US approval to ultimately the end of Q1 2017, where US WorldMeds, a US specialty pharmaceutical company, will launch it. With sufficient cash secured, Newron has stepped up its development plans for sarizotan in Rett syndrome and evenamide in schizophrenia.

Non-core projects are up for partnering or to be monetized

Ralfinamide (neuropathic pain), a pipeline project stemming from Newron's own ion channel blocker discovery platform, is considered non-core that the company wants to partner or monetize.

CNS and orphan diseases a good mix for a small biopharmaceutical company

Prior to the acquisition of NeuroNova in 2012, Newron's research programs were primarily focused on the selection of new generation ion channel blockers for the treatment of CNS-related diseases and pain. With existing treatments for CNS disorders lacking efficacy, tolerability and long-term safety, demand is set to rise as the population ages. This is an attractive opportunity for a small, specialized biopharmaceutical company. Moreover, many large pharmaceutical companies have withdrawn from this field due to clinical setbacks and the high risks involved. Successfully developed compounds should attract much interest from Big Pharma, Big Biotech and specialty pharmaceutical companies, seeking profitable new compounds to offset generic sales erosion.

Strategy to complement CNS portfolio with rare disease opportunities

With the acquisition of the privately held Swedish NeuroNova AB at the end of 2012, Newron expanded its development focus with so-called orphan or rare diseases, such as ALS (sNN0029) and severe treatment-resistant Parkinson's disease (sNN0031), now

terminated. Newron had licensed the global rights of sarizotan from Merck KGaA, already in 2011. Sarizotan was originally targeted for Parkinson's disease by Merck KGaA, but failed to demonstrate an effect in two pivotal phase III trials. Newron has repositioned the compound for treating breathing difficulties in patients with Rett syndrome, a rare disease that affects girls. Newron plans to seek new orphan drug opportunities, after the termination of both NeuroNova compounds, to replenish its development pipeline.

Orphan diseases are life-threatening or chronically debilitating diseases with an incidence less than 1 per 2,000/5,000 people. Although individually, orphan diseases may be classified as rare, collectively, they affect a large portion of the population and health care expenditure. The US and EU orphan disease programs have been developed to provide pharmaceutical companies a strong incentive to pursue and develop orphan prescription drugs for these less common disorders.

Key advantages for orphan drugs include:

- High unmet medical need for a relatively small patient population
- Strong orphan disease market exclusivity of 7 years (US) or 10 years (EU) starting from first day of launch – this provides sufficient time for an attractive return
- Competition is not present or limited
- Faster speed to market, lower development costs, lower regulatory hurdles
- Higher selling prices and profit margins
- Specialists can be addressed by a relatively small sales force

However, there are also considerable hurdles, including:

- Insufficient understanding of the history or mechanism of disease
- A very low number of patients to conduct clinical trials – lack of robust clinical data, slow enrollment, study delays
- A lack of widespread expertise in clinical centers
- Absence of a clear regulatory pathway on how to set up the pivotal clinical trial, including what the right endpoints should be
- The small amount of experts who conduct the trials are often banned from advisory panels – they are considered to have a conflict in interest

Renewed interest in orphan drugs with attractive partnering opportunities

Orphan indications typically carry a high development risk. However, the low development costs and fast development times mitigate the financial impact and therefore are quite suitable for small, specialized biopharmaceutical companies to pursue. Moreover, many patient organizations provide valuable (financial) support. In the past, Big Pharma largely discarded orphan indications. Now there seems to be a renewed interest, with Big Pharma desperately seeking new profitable revenue streams to replenish their product portfolios affected by patent expirations. This provides Newron additional partnering opportunities for its emerging pipeline of orphan drugs, next to mid-sized specialty pharmaceutical companies.

In the following section we will provide an in-depth analysis and forecasts for Newron's key drivers including sarizotan for treating breathing disorders in Rett syndrome, and Xadago for treating Parkinson's disease:

Forecasts & Sensitivity Analysis

Sarizotan (Rett syndrome)

Product Analysis

Rett syndrome peak sales of EUR 400+ mn - Risk-adjusted NPV of CHF 16 per share

We forecast peak sales of EUR 400+ mn for sarizotan, assuming first market launches in 2018, orphan drug market and pediatric exclusivity until 2030 (EU: 12 years) and 2025 (US: 7 1/2 years), a treatment cost per patient of between USD 60,000 (US) and EUR 35,000 (EU/ROW), and a market penetration peaking at around 70% of diagnosed patients with disordered breathing. Accounting for M&S costs (starting from EUR 30 mn) and COGS (ranging between 10-14%), our risk-adjusted NPV amounts to CHF 255 mn or CHF 16 per share with a conservative success probability of 25% (phase II/III orphan drug), and a WACC of 7.0% (reflecting the low Swiss interest environment after the decoupling of the Swiss Franc/Euro peg in 2015).

Sarizotan (Rett syndrome) – A bright future written in the STARS

Sarizotan is targeted for the treatment of breathing disturbances in girls with Rett syndrome, a rare disease, where there is a high premature mortality rate and no specific cure. In July Newron started the single, potentially pivotal phase II/III "STARS" (Sarizotan Treatment of Apnea in Rett Syndrome) trial in the US. Although sarizotan targets a smaller rare disease market opportunity, the value of sarizotan should be substantially higher than Xadago due to better economics. Newron plans to maximize the value of sarizotan by the build up an own specialist field force, while Xadago had to be out-licensed at a difficult time for the company at lesser terms. Successful "STARS" results could lead to approval of sarizotan in 2018 and transform the company into a high margin CNS specialty biopharmaceutical company.

Newron has full rights, orphan disease protection, and potential voucher upside

Sarizotan was in-licensed from Merck KGaA in March 2011 and Newron now has the global rights to the compound. Merck KGaA originally developed sarizotan for Parkinson's disease, but it was discontinued following the failure of two pivotal trials in 2006. Positively, there is a large safety database available for sarizotan in (Parkinson's disease) patients, making it easier to start clinical trials in Rett patients. Composition of matter patent protection for sarizotan has already expired. Nevertheless, orphan drug designation and pediatric exclusivity should provide 12 years market exclusivity in the EU and 7 ½ years in the US, from the day of approval. Sarizotan is eligible to receive a Rare Disease Pediatric Priority Review Voucher on US approval, if Congress extends this program that provides drug companies an additional incentive to develop drugs for children with rare diseases for another three years. A decision is expected soon. These vouchers can be sold freely and are quite valuable with prices ranging between USD 68 and USD 350 mn. We currently exclude any value from a potential voucher sale in our forecasts.

Rett syndrome – a severe neuro-development disorder affecting young girls

Rett syndrome is a rare but severe neuro-development disorder primarily affecting females with approximately 15,000 patients in the US and 20,000 in the EU, with an incidence of 1 out of 10,000 to 15,000 live female births. This is a genetic disease that is caused by abnormalities in the MeCP2 (methyl CpG-binding protein 2) gene, which has important

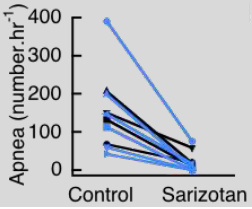
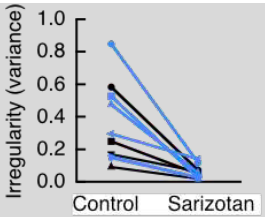
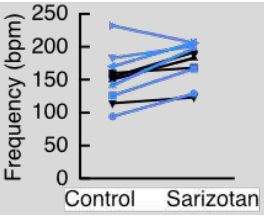
information for the normal functioning of nerve cells. This gene is in the X chromosome, one of the two sex chromosomes (X and Y) that determine the gender. Rett syndrome almost exclusively affects girls (XX). Boys (XY) have only one X chromosome and if affected they usually do not survive until birth. Although the disease is genetic, most girls affected (over 95%) do not inherit it from their parents. Patients develop normally until 6-18 months of life when there is a slowing down or stagnation of skill that includes loss of fine motor skills and speech, stereotypic hand movements, severe digestive problems, irregular heartbeat, seizures, and disordered breathing such as sudden and frequent breath holds. It is estimated that 20-26% of deaths in girls with Rett syndrome are attributed to sudden and severe cardiorespiratory dysregulation (disordered breathing that leads to irregular and often fatal heart beats and sudden death). There is no specific cure for Rett syndrome. Current treatment is limited to the management of symptoms. In 2009 the generic antidepressant desipramine chlorhydrate was granted EU orphan drug designation based on experimental models.

Potential to restore disordered breathing in girls with Rett syndrome

Sarizotan is a new chemical entity from the group of aminomethyl chromanes and is a full agonist at $5HT_{1A}$ receptors and partial agonist/antagonist at (dopamine) D_2 receptors, These are important receptors implicated in many neurological processes in the body including the regulation of blood pressure and heart beat ($5HT_{1A}$ receptors); and mood, cognition, memory and fine movement (D_2 receptors). Hyper-excited expiratory neurons in the brain stem are believed to be involved in the breathing disturbance in Rett syndrome.

Compelling early evidence in preclinical Rett syndrome animal models

EFFECTS OF SINGLE ADMINISTRATION OF SARIZOTAN (5 MG/KG IP) IN RETT FEMALE MICE (MECP2 $^{JAE/+}$ + MECP2 $^{BIRD/+}$)

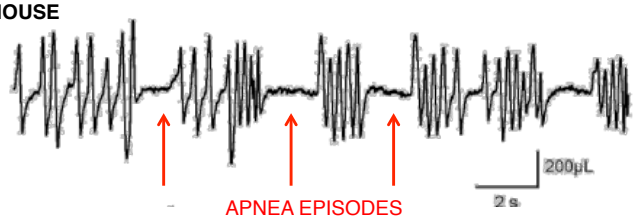
OUTCOMES DEFINITION AND UNITS	MEAN BASELINE DATA IN VEHICLE TREATED RETT MICE	MEAN DATA IN SARIZOTAN TREATED RETT MICE	DATA FROM INDIVIDUAL MICE	CHANGE VS. BASELINE
APNEA INCIDENCE (NUMBER OF APNEAS PER HOUR)	**143** +/- 31	**20** +/- 8		**REDUCED BY 86%** (P=0.001)
IRREGULARITY SCORE (VARIANCE)	**0.34** +/- 0.07	**0.06** +/- 0.01		**REDUCED BY 82%** (P=0.0001)
RESPIRATORY FREQUENCY (BREATHS PER MINUTE)	**153** +/- 12	**177** +/- 10		**INCREASED BY 16%** (P=0.012)

SOURCE: NEWRON PHARMACEUTICALS

Sarizotan has demonstrated a dramatic effect in a genetic knockout model (a null mutant MeCP2 mouse model of Rett syndrome), and there is a strong rationale for restoring the regular respiratory rhythms through the modulation of the medullar respiratory network with

the drug. In the preclinical Rett syndrome mouse model, sarizotan was able to reduce apnea (breath holds) and correct irregular breathing after administering a single dose to these female mice.

PLETHYSMOGRAPH IN A VEHICLE TREATED MECP$^{JAE/+}$ FEMALE MOUSE



PLETHYSMOGRAPH IN THE SAME MECP$^{JAE/+}$ FEMALE MOUSE AFTER ADMINISTRATION OF SARIZOTAN 5 MG/ML I.P.

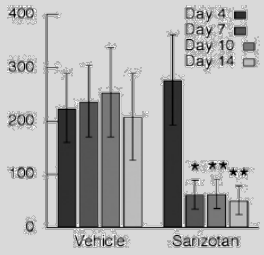
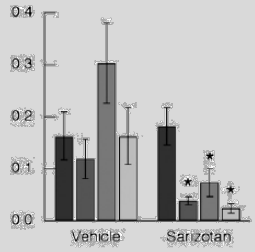
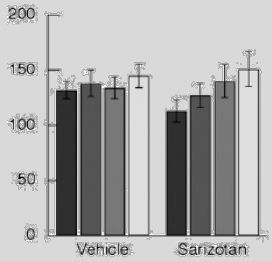
REGULAR BREATHING PATTERN RESTORED

SOURCE: NEWRON PHARMACEUTICALS

The incidence of apnea and irregularity were significantly reduced by sarizotan at 20 minutes compared to vehicle.

No loss of efficacy on respiratory function seen over time with sarizotan

EFFECTS OF 14-DAY TREATMENT WITH SARIZOTAN IN RETT FEMALE MICE (MECP2 $^{R168X/+}$)

OUTCOMES DEFINITION AND UNITS	RESULTS	CHANGE VS. CONTROL (VEHICLE TREATED) GROUP
APNEA INCIDENCE (NUMBER OF APNEAS PER HOUR)		**REDUCED BY 73.9% ON DAY 7** (P<0.05) **REDUCED BY 75.0% ON DAY 10** (P<0.01) **REDUCED BY 75.6% ON DAY 14** (P<0.01)
IRREGULARITY SCORE (VARIANCE)		**SIGNIFICANT DECREASE** (P<0.05)
RESPIRATORY FREQUENCY (BREATHS PER MINUTE)		**NON-SIGNIFICANT**

SOURCE: NEWRON PHARMACEUTICALS

Another preclinical trial spanning over 14 days in female Rett mice showed a prolonged effect of sarizotan. A crossover design was used so that half of the MeCP2$^{R168X/+}$ female

mice (n=4) received vehicle (1.25% DMSO + 0.1% saccharin) in their drinking water, and half (n=4) received sarizotan (0.0625 mg/ml). At the end of 14 days, the treatment was reversed. As can be seen in the table above, sarizotan was effective in improving respiration in MeCP2$^{R168X/+}$ female mice. Thirty minutes monitoring of respiratory pattern with plethysmography was performed on the 4th, 7th, 10th, and 14th day that resulted in statistically significant results in the reduction of the number of apneas per hour ($p<0.01$ to $p<0.05$) and a significant decrease in the irregularity score. Sarizotan had a non-significant effect on respiratory frequency.

Due to its mechanism of action affecting important neurotransmitters, sarizotan could have other potential benefits for Rett syndrome patients impacting behavior, cognition and neurological deficits.

"STARS" – A single, potentially pivotal, phase II/III trial in Rett syndrome patients

In July 2016, Newron started the US enrolment of the international phase II/III single potentially pivotal study, called "STARS" (**S**arizotan **T**reatment of **A**pneas in **R**ett **S**yndrome) in up to 129 Rett syndrome patients with disordered breathing. The "STARS" trial protocol was designed based on extensive discussions with regulatory authorities in Europe (Germany, Spain, and the UK), the US (FDA) and Canada (TPD), a leading advocacy group at Rettsyndrome.com and an international group of physicians specialized in Rett syndrome. The trial will be a double blind, randomized, placebo controlled multi-center trial in about 129 Rett syndrome patients of 13 years or older with breathing disturbances. The 24-week study is designed to evaluate two fixed-dose groups (5 mg twice daily and 10 mg twice daily) against placebo for efficacy (respiratory functioning), safety and pharmacokinetics. Respiratory function will be measured using the BioRadio system, a lightweight and fully configurable wireless system for recording and analyzing physiological data, making at-home monitoring possible. This should enhance enrolment of these young patients, considerably. The primary endpoint is a reduction in the number of apnea episodes from baseline. After 24 weeks, all study patients will be placed on sarizotan and continue in an extension study for up to 48 weeks with at least 30 patients per dose group. Based on the trial start in July 2016 and allowing for 6 – 12 months recruitment, headline data could be available during H2 2017. Assuming priority review (6-months), first country launches of sarizotan are expected to occur in 2018.

Peak sales of EUR 400+ mn in Rett syndrome – build up of own sales force pays off

Peak sales for sarizotan in Rett syndrome could amount to EUR 400+ mn assuming a conservative annual treatment price of EUR 35,000 in the EU and USD 60,000 in the US. Annual treatment prices could be substantially higher depending on the efficacy outcomes of the "STARS" trial. Moreover, most orphan disease drugs command far higher treatment prices in the several hundred thousand dollars range. We estimate there are roughly 15,000 Rett syndrome patients in the US and 20,000 in Europe, with the population growing 2% annually, of which roughly 50% have breathing disturbances that sarizotan addresses. We have conservatively excluded other regions due to the lack of clinical diagnosis and affordability of relatively expensive orphan drug treatments.

It is estimated that around 10-15% of patients in the US are currently diagnosed. An educational effort to increase awareness of Rett syndrome among physicians and parents will be crucial to achieve our sales forecasts. Newron has already stepped up its efforts to increase awareness and understanding of disease progression. The company recently joined the global movement to raise awareness for rare diseases, such as Rett syndrome.

The initiation of the Global Caregiver Outreach Program, in partnership with Rett foundations, collects and distributes data on the impact of respiratory abnormalities to better understand the natural history of the disease. The company is also helping to establish Step Guidelines for Rett syndrome together with Rett experts, and has started discussions with US pharmacy benefit managers and pricing and reimbursement representatives in the EU. Therefore, we have accounted for increased diagnosis in our forecasts with diagnosis rising to and peaking at around 70%. We also assume a 70% peak penetration rate in diagnosed patients, given the impact of disordered breathing on the quality of life for patients (and parents) and premature death due to severe cardiopulmonary dysregulation. Based on these assumptions we forecast peak sales to amount to EUR 438 mn in 2025.

We assume COGS of 14% of sales at the start of launch gradually declining to 10%. We have also accounted for the build up of an own specialist sales force in both regions and substantial marketing/educational spend to increase disease awareness. Nevertheless, EBIT margins should gradually grow to ~60% (EU) and ~80% (US), justifying the decision to build up an own field force.

We conservatively assume a 25% success rate, now the “STARS” trial has kicked off in the US. Typically a 50-65% success rate would apply for a trial in this stage. However, sarizotan has only been tested in the failed Parkinson’s disease trials, and not yet in patients with Rett syndrome. It is therefore difficult to assess efficacy in these patients. Hence, our conservative 25% success probability. We calculate a risk-adjusted NPV for sarizotan of CHF 255 mn or CHF 16 per share.

Our detailed forecasts and sensitivity analysis can be seen on the following page.

Forecasts & Sensitivity Analysis

SARIZOTAN - FINANCIAL FORECASTS FOR RETT SYNDROME

INDICATION	TREATMENT OF BREATHING DIFFICULTIES IN PATIENTS WITH RETT SYNDROME
DOSAGE	5 OR 10 MG TWICE DAILY
PRICE	US: USD 60,000 PER YEAR, EU/ROW: EUR 35,000
STANDARD OF CARE	NO EFFECTIVE TREATMENT AVAILABLE; TOPIRAMATE (ANTI-EPILEPTIC) OR NALTREXONE (OPIATE ANTAGONIST) GIVEN OFF-LABEL BUT OFTEN INEFFECTIVE
UNIQUE SELLING POINT	FIRST EFFECTIVE TREATMENT TO ADDRESS DISORDERED BREATHING, A MAJOR CAUSE OF DEATH IN RETT SYNDROME PATIENTS

7Ps ANALYSIS

PATENT	COMPOSITION OF MATTER PATENT (EXPIRED) - ORPHAN DRUG EXCLUSIVITY INCLUDING PEDIATRIC: EU (12 YEARS) AND US (7 1/2 YEARS) FROM APPROVAL
PHASE	SINGLE POTENTIALLY PIVOTAL PHASE II/III "STARS" TRIAL IN UP TO 129 RETT SYNDROME PATIENTS WITH BREATHING DISORDERS - STARTED JULY 2016, LAUNCH 2018
PATHWAY	ORPHAN DRUG INDICATION - SINGLE PIVOTAL "STARS" TRIAL PROBABLY SUFFICIENT FOR APPROVAL
PATIENT	DISORDERED BREATHING HAS A MAJOR IMPACT ON QUALITY OF LIFE FOR PATIENTS, A GREAT CONCERN FOR PARENTS AND A MAJOR CAUSE OF DEATH
PHYSICIAN	FIRST TREATMENT TO ADDRESS BREATHING DIFFICULTIES THAT OCCURS IN ROUGHLY 50% OF PATIENTS AND IS A MAJOR CAUSE OF DEATH
PAYER	CONSIDERABLE REDUCTION OF COSTS CAUSED BY HOSPITALIZATION, COMPLICATIONS AND RESCUE MEDICATION
PARTNER	WORLDWIDE RIGHTS ACQUIRED FROM MERCK KGAA IN 2011 - NEWRON PLANS TO MARKET SARIZOTAN THROUGH AN OWN SPECIALIZED FIELD FORCE

REVENUE MODEL

EUROPE	**2015E**	**2016E**	**2017E**	**2018E**	**2019E**	**2020E**	**2021E**	**2022E**	**2023E**	**2024E**	**2025E**
NUMBER OF PATIENTS	20,000	20,400	20,808	21,224	21,649	22,082	22,523	22,974	23,433	23,902	24,380
GROWTH (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
PATIENTS WITH BREATHING DISORDERS (50%)	10,000	10,200	10,404	10,612	10,824	11,041	11,262	11,487	11,717	11,951	12,190
PERCENTAGE DIAGNOSED (%)	12%	20%	25%	35%	50%	60%	65%	67%	68%	69%	69%
PATIENTS DIAGNOSED	1,200	2,040	2,601	3,714	5,412	6,624	7,320	7,696	7,967	8,186	8,411
PENETRATION (%)	0.0%	0.0%	0.0%	10.0%	35.0%	50.0%	60.0%	65.0%	67.0%	69.0%	70.0%
NUMBER OF PATIENTS	0	0	0	371	1894	3312	4392	5003	5338	5649	5888
COST OF THERAPY PER YEAR (EUR)	35,000	35,000	35,000	35,000	35,000	35,000	35,000	35,000	35,000	35,000	35,000
SALES (EUR MN)	**0**	**0**	**0**	**13**	**66**	**116**	**154**	**175**	**187**	**198**	**206**
CHANGE (%)					410%	75%	33%	14%	7%	6%	4%
COGS (%)	0%	0%	0%	14%	12%	10%	10%	10%	10%	10%	10%
COGS (EUR MN)	0	0	0	-2	-8	-12	-15	-18	-19	-20	-21
R&D COSTS (EUR MN)	-6.0	-10	-8	-2	0	0	0	0	0	0	0
M&S (%)	0%	0%	0%	115%	62%	37%	35%	33%	31%	29%	27%
M&S COSTS (EUR MN)	0	0	0	-15	-41	-43	-54	-58	-58	-57	-56
PROFIT BEFORE TAX (EUR MN)	**-6**	**-10**	**-8**	**-6**	**17**	**61**	**85**	**100**	**110**	**121**	**130**
TAXES (EUR MN)	0	0	0	1	-3	-19	-27	-31	-35	-38	-41
PROFIT (EUR MN)	**-6**	**-10**	**-8**	**-5**	**15**	**42**	**58**	**68**	**76**	**83**	**89**

UNITED STATES	**2015E**	**2016E**	**2017E**	**2018E**	**2019E**	**2020E**	**2021E**	**2022E**	**2023E**	**2024E**	**2025E**
NUMBER OF PATIENTS (MN)	15,000	15,300	15,606	15,918	16,236	16,561	16,892	17,230	17,575	17,926	18,285
GROWTH (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
PATIENTS WITH BREATHING DISORDERS (50%)	7,500	7,650	7,803	7,959	8,118	8,281	8,446	8,615	8,787	8,963	9,142
PERCENTAGE DIAGNOSED (%)	12%	20%	25%	35%	50%	60%	65%	67%	68%	69%	69%
PATIENTS DIAGNOSED	900	1,530	1,951	2,786	4,059	4,968	5,490	5,772	5,975	6,140	6,308
PENETRATION (%)	0.0%	0.0%	0.0%	15.0%	40.0%	55.0%	65.0%	70.0%	72.5%	73.5%	69.8%
NUMBER OF PATIENTS (MN)	0.0	0.0	0.0	417.9	1623.6	2732.6	3568.5	4040.5	4332.2	4512.7	4404.8
COST OF THERAPY PER YEAR (EUR)	53,640	52,568	52,568	52,568	52,568	52,568	52,568	52,568	52,568	52,568	52,568
SALES (EUR MN)	**0**	**0**	**0**	**22**	**85**	**144**	**188**	**212**	**228**	**237**	**232**
CHANGE (%)					289%	68%	31%	13%	7%	4%	-2%
COGS (%)	0%	0%	0%	14%	12%	10%	10%	10%	10%	10%	10%
COGS (EUR MN)	0	0	0	-3	-10	-14	-19	-21	-23	-24	-23
M&S (%)	0%	0%	0%	60%	35%	33%	31%	29%	27%	25%	20%
M&S COSTS (EUR MN)	0	0	0	-13	-30	-47	-58	-62	-61	-59	-46
PROFIT BEFORE TAX (USD MN)	**0**	**0**	**0**	**7**	**52**	**93**	**126**	**148**	**164**	**176**	**185**
TAXES (EUR MN)	0	0	0	-1	-7	-26	-35	-41	-45	-48	-51
PROFIT (EUR MN)	**0**	**0**	**0**	**5**	**38**	**56**	**76**	**89**	**98**	**106**	**111**

	2015E	**2016E**	**2017E**	**2018E**	**2019E**	**2020E**	**2021E**	**2022E**	**2023E**	**2024E**	**2025E**
GLOBAL SALES (EUR MN)	**0**	**0**	**0**	**35**	**152**	**260**	**341**	**387**	**415**	**435**	**438**
CHANGE (%)					334%	71%	31%	14%	7%	5%	1%
GLOBAL PROFIT (EUR MN)	**-6**	**-10**	**-8**	**0**	**53**	**98**	**134**	**157**	**174**	**189**	**200**
CHANGE (%)	399%	67%	-20%	-99%	-90474%	87%	36%	17%	11%	8%	6%

WACC (%)	7.0%	
NPV TOTAL PROFIT (CHF MN)	**1,018**	
NUMBER OF SHARES (MN)	15.8	
NPV PER SHARE (CHF)	**65**	
SUCCESS PROBABILITY	25%	= PHASE II/III PIVOTAL TRIAL "STARS"
RISK ADJUSTED NPV PER SHARE (CHF)	**16**	

SENSITIVITY ANALYSIS

		WACC (%)							
	CHF/SHARE	5.5	6.0	6.5	7.0	7.5	8.0	8.5	9.0
SUCCESS PROBABILITY	40%	29.0	27.9	26.8	25.8	24.9	23.9	23.1	22.2
	35%	25.4	24.4	23.5	22.6	21.8	21.0	20.2	19.5
	30%	21.7	20.9	20.1	19.4	18.6	18.0	17.3	16.7
	25%	18.1	17.4	16.8	**16.1**	15.5	15.0	14.4	13.9
	20%	14.5	13.9	13.4	12.9	12.4	12.0	11.5	11.1
	15%	10.9	10.5	10.1	9.7	9.3	9.0	8.7	8.3
	10%	7.2	7.0	6.7	6.5	6.2	6.0	5.8	5.6
	5%	3.6	3.5	3.4	3.2	3.1	3.0	2.9	2.8

ESTIMATES AS OF 10 OCTOBER, 2016

SOURCE: VALUATIONLAB ESTIMATES

Unique Selling Point

First effective treatment to address disordered breathing, a major cause of death in Rett syndrome patients.

7P's Analysis

Patent: Composition of matter patent for sarizotan has expired. In the US sarizotan will enjoy at least 7 years orphan drug market exclusivity with an additional 6 months pediatric exclusivity from the date of regulatory approval. In the EU, sarizotan will enjoy at least 12 years orphan drug and pediatric market exclusivity upon approval.

Phase: In July 2016 Newron started the single, potentially pivotal phase II/III "STARS" trial in about 129 Rett syndrome patients with disordered breathing in the US, with other countries to follow soon. The trial protocol was designed following extensive discussions with regulatory authorities in the US, Europe and Canada. Typically a new compound has to start first with phase I safety trials. However, Merck KGaA has largely established the safety of sarizotan in two large phase III Parkinson's disease trials. Moreover, there are no effective treatments for Rett syndrome patients with breathing disorders, a rare disease were enrolment of large patient numbers would be difficult.

Pathway: Sarizotan has received orphan drug designation (ODD) in the US and EU in 2015 due to the small number of Rett syndrome patients, and the lack of an effective treatment to address disordered breathing that affects roughly half of patients. As a result a single, potentially pivotal trial with relatively low patient numbers is most likely sufficient for approval. Sarizotan is entitled shorter, expedited review by the regulatory authorities. Moreover, on US approval Newron may receive a transferable Rare Pediatric Disease Priority Review Voucher, which can be sold freely to a third party.

Patient: Reduction of breathing abnormalities such as apnea (breath stops), hyperventilation, and forced exhalation of air or saliva during awake time will have a significant impact on the quality of life for the patient, as well as reduce the parents concerns. Onset is as early as 3 years of age and may persist for 10-15 years.

Physician: First specific treatment to treat breathing irregularities, which occurs in roughly 50% of patients and is a main cause of death in Rett syndrome. These apneic episodes may occur as frequently as 10-60 times an hour during awake time. It is estimated that approximately 25% of sudden deaths in Rett syndrome patients is caused by cardiorespiratory abnormalities.

Payer: An effective treatment for breathing disorders will lead to substantial savings such as emergency hospital visits or outpatient care.

Partner: Given the relatively small size of the market and target specialists, Newron plans to build up an own global specialist field force to commercialize sarizotan, and maximize long-term profitability with EBIT margins rising up to 60-80%. The company can potentially finance its own sales infrastructure through the royalty and milestone payments it receives for Xadago, potential upfront payments from a licensing agreement for evenamide in early 2017, or alternatively a potential financing round.

Rett Syndrome Market

Currently, the Rett syndrome market is virtually non-existent, with no cure available, and is estimated to be less than USD 50 mn, largely consisting of off-label use of drugs, such as seizure medications, to control the symptoms of the disorder. The market is set to grow once new treatments become available to treat symptoms or the underlying cause of the disease, a mutation of the MeCP2 gene. An effective treatment to address breathing disorders in Rett syndrome, which occurs in roughly 50% of patients points to a USD 875 mn market potential in the US and EU alone, assuming an average annual treatment cost of USD 50,000.

RETT SYNDROME - KEY FACTS	
MARKET SIZE	<USD 50 MN
PREVALENCE	~100,000 GLOBALLY, ~15,000 US; ~20,000 EU; ~60,000 ROW
INCIDENCE	1 OUT OF EVERY 10,000-15,000 LIVE FEMALE BIRTHS
UNDERLYING CAUSE	A PROGRESSIVE DEVELOPMENTAL DISORDER FIRST RECOGNIZED IN INFANCY SEEN ALMOST EXCLUSIVELY IN GIRLS, RARELY IN BOYS, AND IS CAUSED BY MUTATIONS ON THE X CHROMOSOME ON A GENE CALLED MECP2. LESS THAN 1% OF PATIENTS HAVE A HISTORY OF RETT SYNDROME IN THE FAMILY.
SYMPTOMS	SYMPTOMS APPEAR AFTER AN EARLY PERIOD OF NORMAL OR NEAR NORMAL DEVELOPMENT UNTIL 6-18 MONTHS OF LIFE WHEN THERE IS A SLOWING DOWN OR STAGNATION OF SKILLS, AND INCLUDE: - LOSS OF SPEECH AND MOTOR CONTROL - COLD HANDS AND FEET, COLOR RANGES FROM PINK TO BLUE - FUNCTIONAL HAND USE REPLACED BY COMPULSIVE HAND MOVEMENTS - DISORDERED BREATHING: APNEA (BREATH-HOLDING), HYPERVENTILATION, FORCEFUL EXHALATION OF AIR OR SALIVA - SEVERE DIGESTIVE PROBLEMS - ORTHOPEDIC ABNORMALITIES INCL. SCOLIOSIS, FRAGILE BONES - DISRUPTED SLEEP PATTERNS - EXTREME ANXIETY, SEIZURES, TREMOR, IMPAIRED CARDIAC AND CIRCULATORY FUNCTION
DRUG THERAPY (KEY BRANDS)	NO CURE OR SPECIFIC TREATMENTS AVAILABLE - ANTI-EPILPEPTIC (TOPIRAMATE) - GIVEN OFF-LABEL BUT OFTEN INEFFECTIVE - OPIATE ANTAGONIST (NALTREXONE) - GIVEN OFF-LABEL BUT OFTEN INEFFECTIVE - SELECTIVE 5-HT_{1A} RECEPTOR AGONIST & D_2 RECEPTOR ANTAGONIST (SARIZOTAN) - IGF-1 ANALOG (TROFINETIDE) - INSULIN-LIKE GROWTH FACTOR 1 (IGF-1)
MAJOR PLAYERS (KEY BRANDS)	NO CURE OR SPECIFIC TREATMENTS AVAILABLE - GENERIC (TOPIRAMATE) - GENERIC (NALTREXONE) - NEWRON (SARIZOTAN) - SINGLE PIVOTAL PHASE II/III "STARS" TRIAL STARTS IN 2016 - NEUREN PHARMA (TROFINETIDE) - PHASE II TRIAL WITH HIGHER DOSE STARTS IN 2016

SOURCE: VALUATIONLAB, NIH, WHO, IRSF, RSRT, COMPANY REPORTS

Rett syndrome is a neurodevelopmental disorder that occurs almost exclusively in girls. It is characterized by normal early growth and development followed by a slowing of development, loss of purposeful use of the hands, distinctive hand movements, slowed brain and head growth, problems with walking, disordered breathing, seizures, and intellectual disability. Dr. Andreas Rett, an Austrian physician, identified the disorder in 1966. Rett syndrome is estimated to affect one in every 10,000 to 15,000 live female births and in all racial and ethnic groups worldwide. Despite the difficulties with symptoms, many individuals with Rett syndrome continue to live well into middle age and beyond. Because the disorder is rare, very little is known about long-term prognosis and life expectancy.

The course of Rett syndrome, including the age of onset and the severity of symptoms, varies from child to child, and is generally classified in four stages:

1. **Stage I (early onset):** typically begins between 6-18 months of age, and lasts for a few months up to more than a year. Often overlooked because symptoms (e.g. less eye contact, reduced interest in toys, hand-wringing, decreasing head growth) may be vague, and the subtle slowing of development may not be noticed.
2. **Stage II (rapid destructive stage):** usually begins between ages 1-4 and may last for weeks or months. Onset may be rapid or gradual as the child loses purposeful hand skills and spoken language. Characteristic hand movements such as wringing, washing, clapping, or tapping, as well as repeatedly moving the hands to the mouth

often begin during this stage. The movements continue while the child is awake but disappear during sleep. Breathing irregularities such as episodes of apnea (breath holds) and hyperventilation may occur, although breathing usually improves during sleep. Some girls also display autistic-like symptoms such as loss of social interaction and communication. Slowed head growth is usually noticed.

3. **Stage III (plateau or pseudo-stationary stage):** usually begins between ages 2-10 and can last for years. Movement problems, and seizures are prominent. An improvement in behavior, with less irritability, crying, and autistic-like features may occur. Patients may show more interest in their surroundings and alertness, attention span, and communication skills may improve, with most remaining in this stage most of their lives.
4. **Stage IV (late motor deterioration stage):** can last for years or decades. Prominent features include reduced mobility, curvature of the spine (scoliosis) and muscle weakness, rigidity, spasticity, and increased muscle tone with abnormal posturing of an arm, leg, or top part of the body. Girls who were previously able to walk may stop walking.

Doctors clinically diagnose Rett syndrome by observing signs and symptoms during the child's early growth and development, and conducting ongoing evaluations of the child's physical and neurological status. A genetic test is available to complement the clinical diagnosis.

Rett syndrome is caused by a mutation of the MeCP2 gene

Nearly all cases of Rett syndrome are caused by a mutation in the methyl CpG binding protein 2 (MECP2) gene, which is believed to control the functions of many other genes. The MECP2 gene contains instructions for the synthesis of a protein called methyl cytosine binding protein 2 (MeCP2), which is needed for brain development and acts as one of the many biochemical switches that can either increase gene expression or tell other genes when to turn off and stop producing their own unique proteins. Because the MeCP2 gene does not function properly in individuals with Rett syndrome, insufficient amounts or structurally abnormal forms of the protein are produced and can cause other genes to be abnormally expressed.

The MeCP2 gene is in the X chromosome, one of the two sex chromosomes (X and Y) that determine the gender. Rett syndrome almost exclusively affects girls (XX). Boys (XY) have only one X chromosome and if affected they usually do not survive until birth. In girls only one X chromosome is active in any given cell. This means that in a girl with Rett syndrome, only a portion of the cells in the nervous system will use the defective gene. Some of the child's brain cells use the healthy gene and express normal amounts of the protein. The severity of Rett syndrome in girls is in part a function of the percentage of their cells that express a normal copy of the MeCP2 gene. Although Rett syndrome is a genetic disorder, less than 1 percent of recorded cases are inherited or passed from one generation to the next, which means the mutation occurs randomly.

New market entrants expected to spark growth

New compounds that specifically target treating symptoms of the disease should lead to substantial growth in this largely underdeveloped market. These include Newron's **sarizotan** (phase II/III), Neuren Pharma's **trofinetide** (phase IIa POC completed) and **IGF-1** (phase IIa POC completed). New genetic treatments that target the underlying cause of the disease, a mutation of the MECP2 gene, are still many years away from market entry.

Xadago (Parkinson's Disease)

Product Analysis

Parkinson's peak sales of EUR 650 mn - Risk-adjusted NPV of CHF 25 per share

We forecast peak sales of EUR 650 mn for Xadago, based on a strong EU sales uptake, a US launch in H1 2017 and Japanese launch in 2018. We assume global patent protection until 2029 (including patent extensions), a daily treatment cost of USD 7 (US), EUR 3.50 (EU/ROW) and EUR 4 (Japan/Asia), which could prove to be conservative considering Xadago's unique dual mechanism of action, and a market penetration peaking at around 9-10%. Our risk-adjusted NPV amounts to CHF 395 mn, or CHF 25 per share, assuming Newron receives a total of EUR 46 mn milestone payments, royalties on sales ranging between 9-10%, with a success probability of 90%, the average of EU (100% - approved) and the US (80% - re-filed), and a WACC of 7.0% (reflecting the low Swiss interest environment since the decoupling of the Swiss Franc/Euro peg in January 2015).

Xadago – EU launch well underway, re-filed in the US

In February 2015 Newron received EU approval for Xadago to treat mid-to-late stage Parkinson's patients with a competitive label mentioning its dual mechanism of action and proven long-term efficacy up to 2 years of treatment, among others. Xadago is the first NCE (new chemical entity) approved for Parkinson's disease in a decade. EU approval was based on an extensive clinical development program that included over 1,500 patients of who around 1,000 were treated for at least one year, and many for over 4 years. Efficacy was derived from five placebo-controlled studies including assessments performed under double-blind conditions for two years.

Xadago demonstrated significant benefits in Parkinson's patients with:

1) **Early stage disease** as an add-on to a stable dose of a single dopamine agonist
2) **Mid-to-late stage disease** as an add-on to levodopa and other Parkinson's medications at stable doses in patients with motor fluctuations

Excellent launch in Germany with a broad European rollout well on its way

In May 2015 Zambon first launched Xadago in Germany with more European countries to follow in the next 12-18 months. For the overall EU/ROW region, we assume an ex-factory price of EUR 3.50 per day. In 2015, we estimate Xadago sales amounted to approximately EUR 5 mn in Germany alone, indicating an excellent launch. We forecast Xadago sales in 2016 to amount to EUR 28 mn leading to royalty income of EUR ~3 mn for Newron, boosted by the recent launches in Switzerland, Spain, Italy, the Benelux, Denmark, Sweden, Norway, and the UK, with France to follow soon. Last year Zambon acquired the Scandinavian group Niigard to extend its marketing punch to northern Europe.

Unexpected Xadago no go pushes US launch back by approximately 12 months

On March 29th 2016, Newron unexpectedly received a so-called Complete Response Letter (CRL) requesting clinical evaluation of the potential effect of Xadago on behaviors relating to abuse liability and dependence/withdrawal effects as required by the Controlled Substance Staff (CSS) in the Center for Drug Evaluation and Research (CDER) at the FDA. The CRL came as a total surprise, because Xadago has been filed twice in the US with no request from the FDA or its divisions for additional information concerning the potential effect on abuse liability and dependence/withdrawal effects. Xadago was

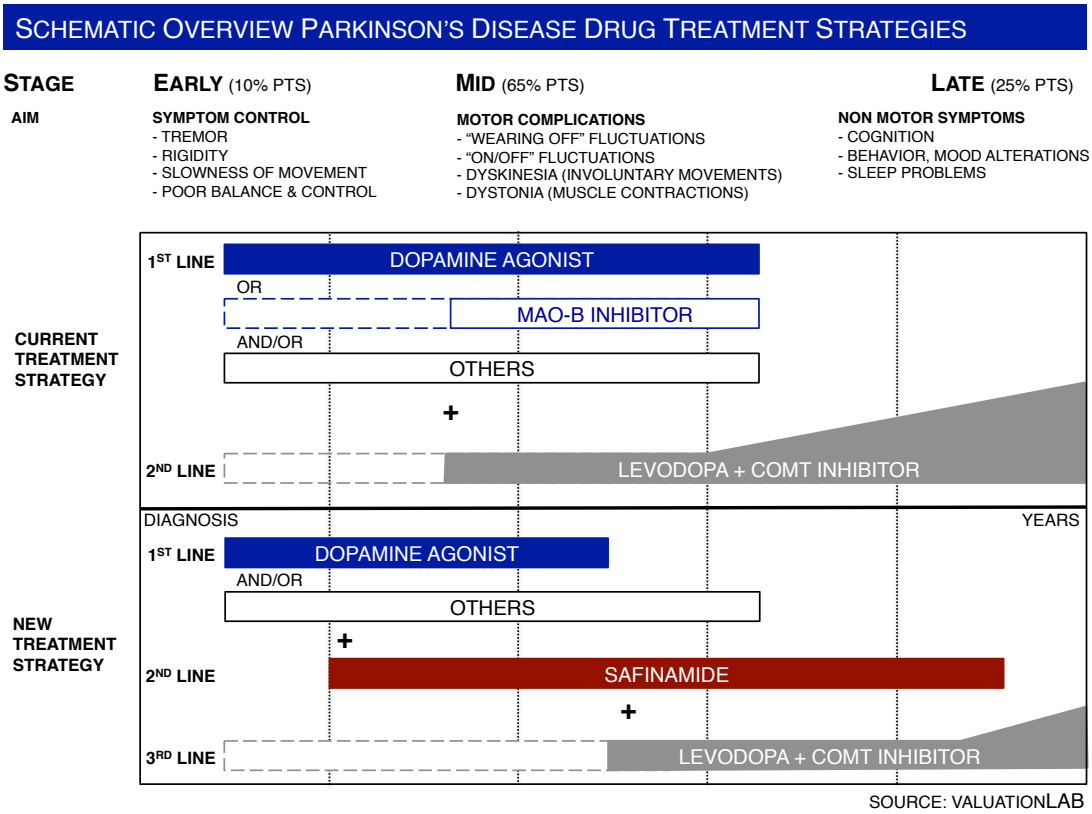
originally filed in May 2014 to treat early and mid-to-late stage Parkinson's patients. In July 2014 Newron received a Refusal-to-File (RTF) letter due to technical documentation issues such as hyperlinking of tables and folders. After resolving these technical issues Newron re-filed Xadago in December 2014 and the company announced the acceptance of filing by the FDA in March 2015, indicating the documentation re-submitted was complete for the FDA to conduct a full review. The lack of missing data concerning abuse liability and dependence/withdrawal effects of Xadago should have been noticed in the original filing and addressed in the RTF letter, in our view.

U-turn at the FDA; Xadago re-filed in September with approval before end Q1 2017
In July 2016, Newron had a meeting with the FDA to discuss the requirements for a re-filing of their NDA for Xadago. Apparently, the FDA made a U-turn as a clinical evaluation of the potential effect of Xadago on abuse liability and dependence/withdrawal was no longer required. Consequently, Newron re-filed its NDA for Xadago in September 2016, in a so-called Class 2 resubmission. The FDA is now expected to complete its review within 6 months from acceptance, indicating a potential US approval before the end of Q1 2107. The US launch by US WorldMeds should follow shortly after.

US WorldMeds remains eager to launch Xadago in the US in 2017
Just two weeks ahead of receiving the CRL in March, Newron announced that partner Zambon had signed on US WorldMeds, a US-based specialty pharmaceutical company, to commercialize Xadago in the US. Newron will receive from Zambon a low double-digit milestone payment on FDA approval (Q1 2017E) and a share of upfront, milestones and royalty payments made by US WorldMeds to Zambon. US WorldMeds plans to focus more than 60 sales representatives once it launches Xadago in the US. The company already sells Apokyn (apomorphine) in the US. Apokyn is an injectable rescue medication for the acute intermittent treatment of hypomobility (patient can barely move or not at all) associated with advanced Parkinson's disease. Therefore, Xadago fits nicely in US WorldMed's product portfolio.

Potential to become a new cornerstone treatment

We believe Xadago has a promising profile in that it has the potential to enhance the efficacy of existing Parkinson's treatments over a longer course of treatment, thereby increasing patients' quality of life and daily activities, and potentially reducing dyskinesia and increasing longevity (further study needed). Xadago can be given to patients early in disease with dopamine agonists. As the disease progresses and patients are switched to levodopa, Xadago can continue to be given in combination with it. Xadago will complement rather than compete against dopamine agonists and levodopa. Moreover, Xadago as a combination treatment pushes back the need and reduces the required dose of levodopa, whose highly effective early outcomes usually wear off with prolonged use. The majority of patients on levodopa develop a number of progressive and severe side effects, primarily daily motor fluctuations and dyskinesia.



SOURCE: VALUATIONLAB

Aim is to limit or delay the onset of levodopa-related complications

These side effects typically develop after 4–10 years of levodopa therapy, and affect approximately 50-75% of all patients. The "wearing-off" effect is the most common type, and "delayed-on," "no-on," and "on-off" fluctuations, as well as dyskinesia and cognitive worsening, may also develop as the disease progresses. Collectively, motor fluctuations represent a significant source of disability in advanced Parkinson's patients, and reducing these is a major goal of patient management. Adjunctive medications, including dopamine agonists, anticholinergics, MAO-B inhibitors, and COMT inhibitors, each may reduce the frequency or duration of "off" periods, but none does so completely, and each contributes its own side effects which may limit optimal dosing. These problems have led to the development of strategies, which aim to limit or delay the onset of levodopa-related complications and have become the key drivers for the Parkinson's disease market.

Teva's Azilect now also competing for cornerstone therapy position

Teva's Azilect (rasagiline), a selective irreversible MAO-B inhibitor, belongs to the same drug class as Newron's Xadago. Azilect was approved in 2005 (EU) and 2006 (US) as a mono-therapy in early stage Parkinson's disease and as an add-on to levodopa in mid-to-late stage disease. In 2015 Teva reported global in-market sales of USD 514 mn (-6%), impacted by generic competition in Europe as well as a slowdown in sales to Lundbeck prior to the transfer of the product back to Teva in early 2016, partially offset by an increase in US revenues. Lundbeck has commercialization rights in Europe and some markets outside Europe including six Asian countries. We consider Azilect to be Xadago's main rival. In particular, because Teva has recently developed Azilect as an add-on therapy to dopamine agonists in early stage Parkinson's, following Newron's positioning of Xadago. Azilect announced positive results in the "ANDANTE" study where Azilect significantly improved total Unified Parkinson's Disease Rating Scale (UPDRS) scores compared to placebo. In June 2014 the FDA expanded Azilect's US label with this indication, giving it a head start in the US. Teva's plans in the EU/ROW are still unclear.

Xadago is a MAO-B inhibitor with unique qualities
Although Azilect and Xadago both belong to the MAO-B inhibitor class, we believe Xadago has distinct properties, which can position the compound as the new cornerstone therapy in treating Parkinson's disease across all disease stages.

Xadago is a unique compound with a novel **dual mechanism** of action based on:

1) **The enhancement of the dopaminergic function** (through potent reversible inhibition of MAO-B and of dopamine uptake)
2) **Ion channel blockade** that leads to inhibition of stimulated release of glutamate (which may be the mechanism underlying potential neuro-protecting and anti-dyskinetic properties).

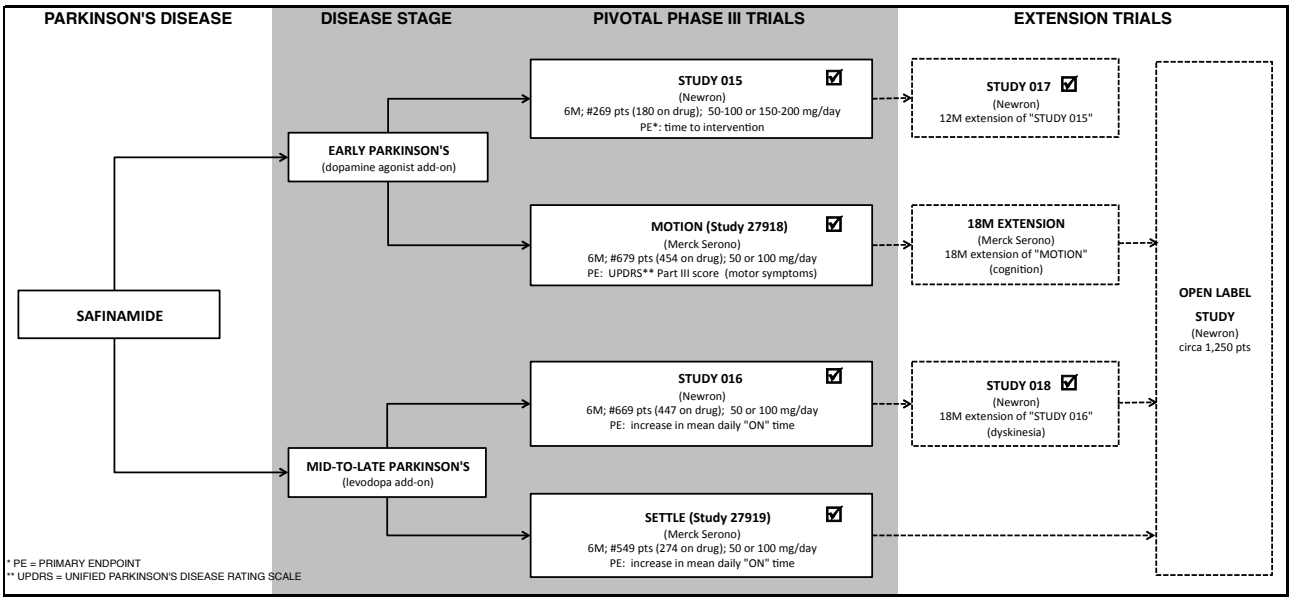
There are no head-to-head clinical studies of Azilect and Xadago, making comparisons difficult. However, certain observations can be made.

- Xadago is a reversible MAO-B inhibitor, whereas Azilect is an irreversible MAO-B inhibitor given its long half-life. This can be an important safety aspect in case of serious side effects caused by e.g. drug interactions; Xadago is cleared faster out of the body
- Xadago has unparalleled 18/24 months clinical data backing long-term efficacy and safety
- Xadago improves "on-time" without troublesome dyskinesia – this is the quality time patients are seeking; reducing "off-time", Azilect's primary endpoint, does not translate directly in improving "on-time" without troublesome dyskinesia
- Xadago has a fast onset of action, which lasts up to 2 years (backed by double-blinded clinical trials)
- Xadago has the potential to reduce (levodopa-induced) dyskinesia due to its unique ability to reduce glutamatergic activity (needs to be further investigated)
- Xadago has the potential to reduce depression due to its unique ability to reduce glutamatergic activity (needs to be further investigated)

Xadago has been developed for all disease stages of Parkinson's disease:

1) **Early disease** as an add-on to dopamine agonists (approximately 20% of patients)
2) **Mid-to-late stage disease** as an add-on to levodopa and other dopaminergic treatments (approximately 80% of patients)

NEWRON - PHASE III TRIAL DESIGN SAFINAMIDE IN PARKINSON'S DISEASE



SOURCE: VALUATIONLAB, NEWRON PHARMACEUTICALS

This is reflected in the phase III trial design with all four phase III trials reaching their primary endpoint. Newron has also performed extension trials. Although they are not necessary for approval, they provide an important insight into the long-term impact of Xadago, including demonstrating long-term efficacy and anti-dyskinetic properties.

Statistically significant results in early Parkinson's disease...

Xadago demonstrated statistically significant results as an add-on to a single dopamine agonist, in three placebo-controlled trials in early Parkinson's disease. Note that the positive effects seen are on top of dopamine agonists that already provide efficacy in early Parkinson's disease. Roughly 30% of Parkinson's patients are on dopamine agonists.

UPDRS II/III primary endpoint met in "Study 015" and "MOTION"

The primary endpoint of both studies was the so-called UPDRS, the Unified Parkinson's Disease Rating Scale, Part II and III. This is a rating tool used to follow the longitudinal course of Parkinson's disease. It is made up of 5 sections with **Part II** being a self-reported evaluation of activities of daily living (ADL) and **Part III** a clinician scored motor evaluation. In the first pivotal phase III **"Study 015"** the low dose range (50-100 mg/day) showed a mean change from baseline of -2.2 (p=0.0248) for UPDRS II and -6.00 for UPDRS III at 6 months. In the 12 month extension "Study 017" there was a mean change from baseline of -4.7 for UPDRS III and a responder rate of 18.1% difference from placebo at 18 months, as well as statistically significant benefits on UPDRS II and EuroQoL (quality of life).

In the second pivotal phase III **"MOTION"** trial the 100 mg/day dose showed a -2.06 (p=0.0396) mean change from baseline on UPDRS III at week 24, which was statistically significant (p=0.040) compared to the placebo group that showed a mean change from baseline of -1.04 in the DA-ITT (dopamine agonist intent-to-treat) population. The 50

mg/day showed a -1.93 mean change from baseline that did not reach statistical significance compared to placebo.

Patients and physicians see improvements in quality of life scores
In two other secondary endpoints, the **EQ-5D** (patient scored European Quality of Life index) and the **PDQ-39** (patient scored Parkinson's Disease Quality of Life index), the 100 mg/day dose of Xadago reached statistical significance as well.

So in early Parkinson's disease adding 100 mg of Xadago on top of a dopamine agonist statistically improves motor fluctuations and activities of daily living (physician rated), and several quality of life scores recorded in both caregiver and patient evaluations.

Xadago was well tolerated with the majority of patients completing the trials
In both phase III trials Xadago was well tolerated with most side effects similar to placebo with almost all patients (approximately 90%) completing the trials. In the "MOTION" trial nausea (9.7% vs. 6.7%) at the 100 mg/day dose occurred more frequently in the Xadago group compared to the placebo group and dizziness (8.0% vs. 6.2%) at the 50 mg/day dose. Drowsiness and back pain (4.8% vs. 8.0%) were lower than placebo with Xadago 100 mg/day.

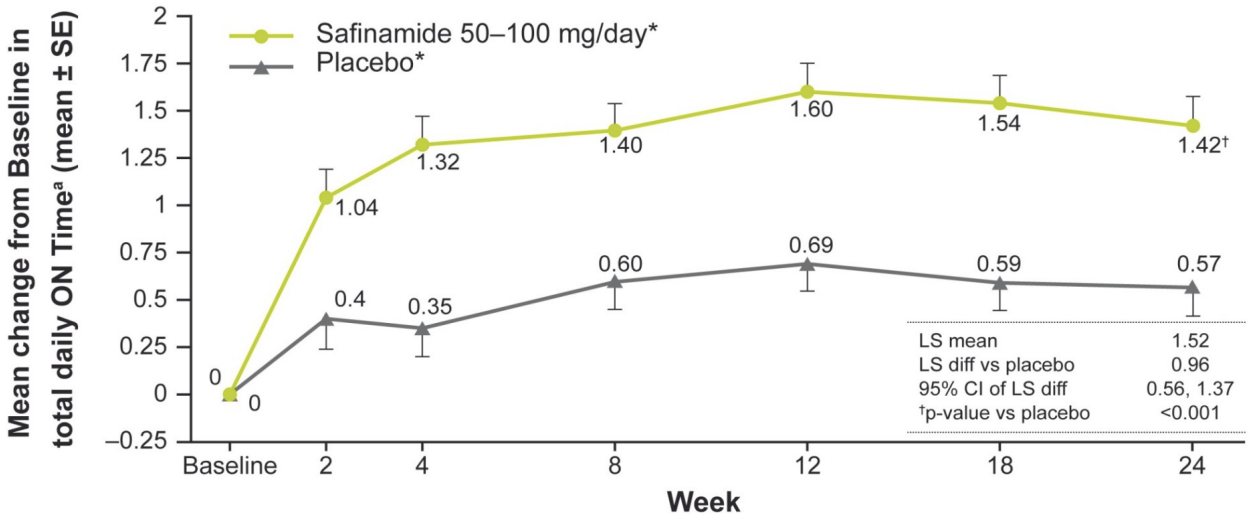
...as well as in mid to late stage Parkinson's disease

Xadago also showed statistically significant results in its two pivotal phase III trials as an add-on to stable doses of levodopa and/or other stable dose dopamine agonists/anticholinergics in mid to late stage Parkinson's disease. Roughly 70% of PD patients are on levodopa regimens.

Daily ON time primary endpoint met in "Study 016" and "SETTLE"
The primary efficacy endpoint was to evaluate the change from baseline to week 24 in daily ON time (ON time without dyskinesia plus ON time with non-troublesome dyskinesia)

In the first pivotal phase III **"Study 016"** both the 50 and 100 mg dose met the primary endpoint of improving ON time (+0.6 hours vs. placebo, p=0.02 at 50 mg, p=0.013 at 100 mg). Importantly, the increase in ON time was not associated with any increase in troublesome dyskinesia. Key secondary endpoints were also met, including **OFF time**, **UPDRS III**, and **PDQ-39** at 6 months.

A consistent result occurred in the second pivotal phase III **"SETTLE"** trial where Xadago showed a significant improvement in its primary endpoint of ON time of almost an hour (+0.96 hours vs. placebo, p<0.001).



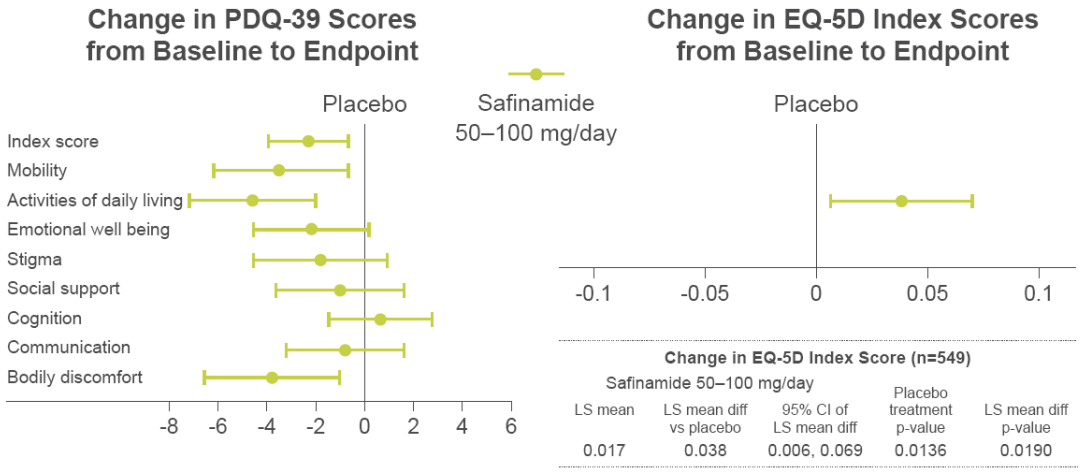
[a]ON Time is defined as ON Time without dyskinesia plus ON Time with non-troublesome dyskinesia
*As add-on to L-dopa and PD medication

SOURCE: NEWRON PHARMACEUTICALS

In the graph above one can clearly see that adding Xadago (safinamide) on top of levodopa therapy adds approximately one hour ON time, already after 2 weeks and this statistically significant effect is continued throughout the trial. Importantly, the increase in ON time was not associated with any increase in troublesome dyskinesia.

...and patients and physicians see improved quality of life scores and less OFF time

Statistically significant results in secondary endpoints were also reported, including total daily **OFF time** (-1.03 hours vs. placebo, p<0.001), mean change from baseline in **UPDRS III** during ON phase (-1.82 vs. placebo, p=0.003), **PDG-39** (-2.33, p=0.006) and **EQ-5D** (0.06, p<0.001) scores, and in **OFF time post morning dose of levodopa**. The latter is important for patients and caregivers as PD patients are often "frozen" in the morning requiring immediate-release levodopa.



SOURCE: NEWRON PHARMACEUTICALS

In the graphs above one can clearly see that adding Xadago (safinamide) to levodopa therapy improves a broad range of scores that improve patients' quality of life and daily activities.

Well tolerated with slight transient dyskinesia seen at start of therapy

In both trials Xadago was well tolerated with most side effects similar to placebo and almost all patients (approximately 90%) completing the trials. In "SETTLE" dyskinesia (14.6% vs. 5.5%) was seen more frequently in the Xadago group than in the placebo group, but was this not a reason for patients to stop treatment, nor to reduce the treatment dose. Dyskinesia occurred at the start of treatment but this was mostly transient and mild. Fall (6.6% vs. 3.6%) and urinary tract infection (6.2% vs. 4.4%) were also slightly higher than placebo, while headache (4.4% vs. 6.2%) and back pain (3.3% vs. 5.1%) occurred less in the Xadago group compared to placebo.

"Study 016/018" shows benefits maintained for at least 2 years

This double blind, placebo-controlled extension study, which was presented in 2011, shows the benefit of adding 50 or 100 mg/day of Xadago (safinamide) to levodopa in mid to late stage Parkinson's patients are maintained for at least 2 years. Several patient and physician-rated outcomes reached statistical significance including, total ON time, OFF time, PDQ total, UPDRS II, III & IV total.

"STUDY 016/018"	PLACEBO (N=69)	SAFINAMIDE 50 MG/DAY (N=78)	SAFINAMIDE 100 MG/DAY (N=74)
DYSKINESIA RATING SCALE			
- VALUE AT MONTH 24	7.0 +/- 3.53	6.6 +/- 3.54	6.4 +/- 4.45
- LS DIFFERENCE VS. PLACEBO	0.0	**-0.7**	**-1.22**
- P-VALUE VS. PLACEBO	N/A	0.1999	0.0317

SOURCE: NEWRON PHARMACEUTICALS

Importantly, in Parkinson's patients with moderate dyskinesia (DRS>4) at baseline "Study 016/018" showed under double-blind, placebo-controlled conditions that Xadago (safinamide) 100 mg/day reduces dyskinesia. Currently there are no drugs on the market that have shown reducing dyskinesia over such a period. However, Newron would have to prove this important finding in a prospective phase III trial. This would add significantly to our sales forecasts for Xadago.

Xadago has a peak sales potential of EUR 650+ mn

In our detailed Xadago forecasts we have accounted for Newron's three major commercialization regions, namely:

1) **Europe/ROW (Zambon & partners):** we forecast peak sales to amount to approximately EUR 350 mn assuming a daily treatment price of EUR 3.50 and a peak penetration rate of ~9%. We assume a tiered royalty rate from 10% to 15%.
2) **US (US WorldMeds):** peak sales could amount to almost EUR 250 mn assuming a launch in H1 2017 and a daily treatment price of USD 7. We assume a EUR 10 mn milestone payment on approval in Q1 2017, sales milestones of up to EUR 26 mn, and royalties of 9%.
3) **Japan/Asia (Meiji Seika):** we forecast a launch in 2018 with peak sales amounting to EUR 60 mn. We assume a EUR 10 mn milestone payment on Japanese approval and royalties on sales to amount to 10%.

Our detailed forecasts and sensitivity analysis can be seen on the following page.

Forecasts & Sensitivity Analysis

XADAGO (SAFINAMIDE) - FINANCIAL FORECASTS FOR PARKINSON'S DISEASE

INDICATION	ADJUNCT TO LEVODOPA OR IN COMBINATION WITH OTHER PARKINSON'S DISEASE (PD) DRUGS IN MID-TO-LATE STAGE PD (EU LABEL)
DOSAGE	50 OR 100 MG / DAY
PRICE	US: USD 7 PER DAY; JAPAN: EUR 4 PER DAY; EUROPE/ROW: EUR 3.50 PER DAY - NOTE: IN EU/ROW PREMIUM PRICING DUE TO THE UNIQUE DUAL MECHANISM OF ACTION
STANDARD OF CARE	DOPAMINE AGONISTS (EARLY STAGE PD), LEVADOPA (MID-TO-LATE STAGE PD)
UNIQUE SELLING POINT	ONCE DAILY ADD-ON THERAPY FOR ALL STAGES OF PARKINSON'S DISEASE WITH A UNIQUE DUAL MECHANISM OF ACTION WITH POTENTIAL ANTI-DYSKINETIC PROPERTIES

7Ps ANALYSIS

PATENT	PROTECTION IN EU & US UNTIL 2029: LEVODOPA COMBINATION PATENT 2026 (US) / 2024 (EU) + UP TO 5 YEAR EXTENSION I SYNTHESIS PATENT: 2027
PHASE	EU: APPROVED FEB 2015; US: CLR MARCH 2016, RE-FILED SEP 2016, APPROVAL Q1 2017E; JAPAN: PHASE II/III CONFIRMATORY TRIAL STARTED OCT 2015
PATHWAY	1) AT LEAST ONE POSITIVE PHASE III TRIAL (6 MONTHS TREATMENT), 2) AT LEAST 100 PATIENTS TREATED FOR 1 YEAR, 3) A TOTAL OF AT LEAST 1,500 TREATED PATIENTS
PATIENT	IMPROVING QUALITY OF LIFE IN EARLY DISEASE AND DELAYING IRREVERSIBLE SIDE EFFECTS SUCH AS DYSKINESIA RELATED TO LONG-TERM LEVODOPA USE
PHYSICIAN	HELPS DELAY USE OF MAINSTAY LEVODOPA TREATMENT THAT LEADS TO IRREVERSIBLE SIDE EFFECTS SUCH AS DYSKINESIA AND "WEARING OFF"
PAYER	DELAYS SIGNIFICANT COSTS RELATED TO DYSKINESIA AND "WEARING OFF" WHERE PATIENTS NEED EXTENSIVE CARE OR HAVE TO BE INSTITUTIONALIZED
PARTNER	ZAMBON (WORLDWIDE EXCL. JAPAN & KEY ASIAN MARKETS), MEIJI SEIKA PHARMA (JAPAN & KEY ASIAN MARKETS) - NEWRON SHARES IN MILESTONE & ROYALTY PAYMENTS

REVENUE MODEL

EUROPE / REST OF WORLD (ZAMBON & PARTNERS)	2015E	2016E	2017E	2018E	2019E	2020E	2021E	2022E	2023E	2024E	2025E
NUMBER OF PATIENTS (MN)	3.4	3.5	3.6	3.6	3.7	3.8	3.9	3.9	4.0	4.1	4.2
GROWTH (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
PATIENTS ON MEDICATION (%)	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%
PATIENTS TREATED (MN)	2.4	2.4	2.5	2.5	2.6	2.6	2.7	2.8	2.8	2.9	2.9
PENETRATION (%)	0.1%	0.9%	2.9%	4.4%	5.4%	6.4%	6.9%	7.4%	7.9%	8.4%	8.7%
NUMBER OF PATIENTS (MN)	0.0	0.0	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.3
COST OF THERAPY PER YEAR (EUR)	1,460	1,278	1,278	1,278	1,278	1,278	1,278	1,278	1,278	1,278	1,278
SALES (EUR MN)	**5**	**28**	**92**	**143**	**179**	**216**	**238**	**260**	**283**	**307**	**323**
CHANGE (%)		492%	229%	55%	25%	21%	10%	9%	9%	8%	5%
ROYALTY (%)	10.0%	10.0%	12.0%	14.0%	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%
ROYALTIES (EUR MN)	0.5	3	11	20	27	32	36	39	43	46	48
UPFRONT & MILESTONE PAYMENTS (EUR MN)	1.8	3									
PROFIT BEFORE TAX (EUR MN)	**2**	**6**	**11**	**20**	**27**	**32**	**36**	**39**	**43**	**46**	**48**
TAXES (EUR MN)	0	0	-1	-4	-4	-10	-11	-12	-13	-14	-15
PROFIT (EUR MN)	**2**	**6**	**11**	**16**	**23**	**22**	**24**	**27**	**29**	**32**	**33**

UNITED STATES (ZAMBON PARTNER US WORLDMEDS)	2015E	2016E	2017E	2018E	2019E	2020E	2021E	2022E	2023E	2024E	2025E
NUMBER OF PATIENTS (MN)	1.1	1.1	1.1	1.2	1.2	1.2	1.2	1.3	1.3	1.3	1.3
GROWTH (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
PATIENTS ON MEDICATION (%)	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%
PATIENTS TREATED (MN)	0.9	0.9	0.9	0.9	1.0	1.0	1.0	1.0	1.0	1.1	1.1
PENETRATION (%)	0.0%	0.0%	0.3%	2.8%	4.8%	6.3%	7.3%	7.8%	8.3%	8.8%	9.0%
NUMBER OF PATIENTS (MN)	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1
COST OF THERAPY PER YEAR (EUR)	2,284	2,239	2,239	2,239	2,239	2,239	2,239	2,239	2,239	2,239	2,239
SALES (EUR MN)	**0**	**0**	**5**	**58**	**102**	**136**	**161**	**176**	**191**	**207**	**216**
CHANGE (%)				1022%	76%	34%	18%	9%	9%	8%	4%
ROYALTY (%)	0.0%	9.0%	9.0%	9.0%	9.0%	9.0%	9.0%	9.0%	9.0%	9.0%	9.0%
ROYALTIES (EUR MN)	0	0	0	5	9	12	15	16	17	19	19
UPFRONT & MILESTONE PAYMENTS (EUR MN)	0	0	10		9					18	
PROFIT BEFORE TAX (EUR MN)	**0**	**0**	**11**	**5**	**18**	**12**	**15**	**16**	**17**	**36**	**19**
TAXES (EUR MN)	0	0	-1	-1	-3	-4	-5	-5	-5	-11	-6
PROFIT (EUR MN)	**0**	**0**	**10**	**4**	**15**	**8**	**10**	**11**	**12**	**25**	**13**

JAPAN (MEIJI SEIKA)	2015E	2016E	2017E	2018E	2019E	2020E	2021E	2022E	2023E	2024E	2025E
NUMBER OF PATIENTS (MN)	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
GROWTH (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
PATIENTS ON MEDICATION (%)	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%
PATIENTS TREATED (MN)	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3
PENETRATION (%)	0.0%	0.0%	0.0%	2.0%	5.0%	7.0%	8.0%	8.5%	9.0%	9.5%	9.4%
NUMBER OF PATIENTS (MN)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
COST OF THERAPY PER YEAR (EUR)	1,460	1,460	1,460	1,460	1,460	1,460	1,460	1,460	1,460	1,460	1,460
SALES (EUR MN)	**0**	**0**	**0**	**11**	**27**	**39**	**45**	**49**	**53**	**57**	**57**
CHANGE (%)					155%	43%	17%	8%	8%	8%	1%
ROYALTY (%)	0.0%	0.0%	0.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%
ROYALTIES (EUR MN)	0	0	0	1	3	4	5	5	5	6	6
UPFRONT & MILESTONE PAYMENTS (EUR MN)				10							
PROFIT BEFORE TAX (EUR MN)	0	0	0	1	3	4	5	5	5	6	6
TAXES (EUR MN)	0	0	0	0	0	-1	-1	-2	-2	-2	-2
PROFIT (EUR MN)	**0**	**0**	**0**	**1**	**2**	**3**	**3**	**3**	**4**	**4**	**4**

	2015E	2016E	2017E	2018E	2019E	2020E	2021E	2022E	2023E	2024E	2025E
GLOBAL SALES (EUR MN)	**5**	**28**	**98**	**211**	**308**	**392**	**445**	**485**	**527**	**571**	**596**
CHANGE (%)		492%	247%	117%	46%	27%	14%	9%	9%	8%	4%
GLOBAL PROFIT (EUR MN)	**2**	**6**	**21**	**21**	**40**	**33**	**38**	**41**	**45**	**60**	**50**
CHANGE (%)	75%	157%	258%	2%	88%	-17%	13%	9%	9%	35%	-16%

WACC (%)	7.0%	
NPV TOTAL PROFIT (CHF MN)	**439**	
NUMBER OF SHARES (MN)	15.8	
NPV PER SHARE (CHF)	**27.8**	
SUCCESS PROBABILITY	90%	= AVERAGE OF APPROVAL IN EU (100%) AND RE-FILING IN US (80%)
RISK ADJUSTED NPV PER SHARE (CHF)	**25**	

SENSITIVITY ANALYSIS

PEAK SALES \ WACC (%)	5.5	6.0	6.5	7.0	7.5	8.0	8.5	9.0
100%	31.0	29.9	28.8	27.8	26.9	26.0	25.1	24.3
95%	29.5	28.4	27.4	26.4	25.5	24.7	23.8	23.1
90%	27.9	26.9	26.0	**25.1**	24.2	23.4	22.6	21.8
85%	26.4	25.4	24.5	23.7	22.8	22.1	21.3	20.6
80%	24.8	23.9	23.1	22.3	21.5	20.8	20.1	19.4
75%	23.3	22.4	21.6	20.9	20.2	19.5	18.8	18.2
70%	21.7	20.9	20.2	19.5	18.8	18.2	17.6	17.0
65%	20.2	19.4	18.8	18.1	17.5	16.9	16.3	15.8
60%	18.6	17.9	17.3	16.7	16.1	15.6	15.1	14.6

ESTIMATES AS OF 10 OCTOBER, 2016

SOURCE: VALUATIONLAB ESTIMATES

Unique Selling Point

Once daily oral add-on therapy together with dopamine agonists in early stage Parkinson's disease and in combination with levodopa in mid-to-late stage disease, with a unique dual mechanism of action. Delays introduction of levodopa in early Parkinson's, while in mid-to-late stage disease, Xadago reduces levodopa dose and increases "on-time" without troublesome dyskinesia. There is a potential to reduce dyskinesia owing to Xadago's unique dual mechanism that has to be further established in blinded clinical trials.

7P's Analysis

Patent: Granted combination patents protect Xadago until 2024 in the EU and 2026 in the US with a likely 5-year patent extension. A synthesis patent protects until 2027. We assume patent protection in both regions up to 2029. As the first product launch occurred in 2015, the drug has an effective patent life of approximately 14 years.

Phase: Approved in the EU in February 2015 followed by the first country launch in Germany in May with more country launches occurring in 2016. CRL pushes back US launch by ~12 months (Q1 2017E), re-filed in September 2016, with a 90% success probability; the average of 100% (approved in EU) and 80% (re-filed in US).

Pathway: To receive US approval, Xadago needs at least one positive phase III trial for each Parkinson's indication (early and mid-to-late stage disease), at least 1,500 patients treated with Xadago of which several hundred treated for six months and at least 100 treated for one year. With two positive phase III trials for each Parkinson's indication and more than 1,500 patients treated with Xadago, including over 1,000 patients treated for at least one year and several hundred treated for four years, Newron comfortably fulfills these requirements.

Patient: The major benefit for patients is that they can shift back the use of mainstay levodopa that causes irreversible side effects related to long-term use of this drug. In early disease, Xadago in combination with dopamine agonists helps improve motor fluctuations. Furthermore, in late stage patients, improvement is seen of multiple domains without any increase in troublesome dyskinesia.

Physician: Xadago adds a new treatment option for Parkinson's disease that fits nicely in current levodopa-sparing treatment strategies with the aim to reduce the burden of the long-term side effects from this effective drug. Potential anti-dyskinetic effects of Xadago would add to the use of the drug (needs further study in blinded clinical trials).

Payer: The largest share of direct costs in Parkinson's comes from inpatient care and nursing homes, while the share from medication is substantially lower. Any delay in the progression of the disease or reduced debilitating side effects, in particular dyskinesia, has a substantial impact on total treatment costs.

Partner: Zambon acquired the global rights (excluding Japan & Asian territories owned by Meiji Seika) for Xadago in May 2012. The company has a strong presence in Southern Europe, France and Latin America, where it will market the drug. US WorldMeds will commercialize Xadago in the US. US approval in Q1 2017E triggers an estimated EUR 10 mn milestone payment. Newron shares in the milestone and royalty payments.

Parkinson's Disease Market

Parkinson's disease is the second most common neurodegenerative disorder after Alzheimer's disease. Nevertheless, the Parkinson's disease market is relatively small in terms of sales at around USD 4 bn, reflecting the lack of new efficacious treatment introductions, with most drugs no longer patent protected. Major players included Novartis, Bristol-Myers Squibb and GlaxoSmithKline. Several smaller players have developed new formulations (extended/controlled-release, patches, orally disintegrating tablets) extending the patent life of some existing branded drugs. The combined direct (medication, inpatient care) and indirect cost (inability to work) of Parkinson's disease is estimated to be nearly USD 25 bn per year in the US alone.

PARKINSON'S DISEASE - KEY FACTS	
MARKET SIZE	USD 4 BN
PREVALENCE	7-10 MN GLOBALLY, 1 MN IN US, > 1 MN IN EU
INCIDENCE	300,000 GLOBALLY, 100,000 IN US, >100,000 IN EU; 0.3% OF POPULATION
UNDERLYING CAUSE	- LOSS AND DEGENERATION OF DOPAMINERGIC NEURONS IN STRIATA NIGRA - LOSS OF STRATIAL NEUROTRANSMITTER DOPAMINE
SYMPTOMS	- TREMOR (SHAKING OF HANDS, ARMS, LEGS, JAW, FACE) - RIGIDITY (LIMBS, TRUNK) - BRADYKINESIA (SLOWNESS OF MOVEMENT) - POSTURAL INSTABILITY (POOR BALANCE AND COORDINATION)
DRUG CLASS (KEY BRANDS)	- LEVODOPA/CARBIDOPA (MADOPAR, SINEMET CR, PARCOPA, STALEVO, DUODOPA) - DOPAMINE AGONIST (MIRAPEX, REQUIP, APOKYN, PARLODEL, NEUPRO PATCH) - MAO-B INHIBITORS (AZILECT, ELDEPRYL, ZELAPAR ODT, XADAGO) - COMT INHIBITORS (COMTAN, TASMAR) - ANTICHOLINERGICS (COGENTIN, ARTANE) - OTHER (SYMMETREL FOR DYSKINESIA, EXELON FOR DEMENTIA)
MAJOR PLAYERS (KEY BRANDS)	- NOVARTIS (STALEVO, PARLODEL, COMTAN) - BRISTOL MYERS SQUIBB (SINEMET CR) - GLAXOSMITHKLINE (REQUIP) - TEVA (AZILECT) - UCB (NEUPRO PATCH) - BOEHRINGER INGELHEIM (MIRAPEX ER) - US WORLDMEDS (APOKYN, XADAGO) - VALEANT (ZELAPAR ODT, TASMAR) - ABBVIE (DUODOPA) - ENDO PHARMACEUTICALS (SYMMETREL) - ZAMBON/MEIJI SEIKA (XADAGO)

SOURCE: VALUATIONLAB, NIH, WHO, PARKINSONS.ORG, PDF.ORG, COMPANY REPORTS

Parkinson's disease affects an estimated 7-10 million people globally with about 1 million patients in the US and a similar amount in the EU, with significant prevalence growth expected due to an aging population. The disease is a slowly progressive degenerative disorder of the central nervous system that initially affects movement, and later cognition and behavior. Dementia commonly occurs in the advanced stage of disease. The mean age of onset is typically around 60 years (rare in people under the age of 40 years). In people taking medication (levodopa), the progression time of symptoms to a stage of high dependency from caregivers may range from 8 to 15 years.

Three stages of severity are usually distinguished;

1) **Early stage**, in which the patient has developed some disability and where drug treatment may be required (dopamine agonists, anticholinergics, MAO-B inhibitors)
2) **Mid stage**, where the symptoms can be rather severe and include the inability to walk straight or stand, with a noticeable slowing of movements (bradykinesia).
3) **Late or advanced stage**, in which an individual develops severe motor complications (dyskinesia) related to levodopa use. Most patients are unable to complete day-to-day tasks and usually cannot live on their own.

Early in the disease the most obvious symptoms are movement-related. These include tremor, rigidity, slowness of movement, and difficulty with walking and gait. The motor symptoms of the disease result from the death of dopamine-generating cells in the

substantia nigra, a small tract of neurons in the brain containing dopamine, which control voluntary movements. The cause of this cell death is still unknown.
The severity and progression of Parkinson's disease is measured using several rating scales such as the Hoehn and Yahr (focus on movement symptoms) or **UPDRS** (United Parkinson's Disease Rating Scale - more comprehensive than Hoehn and Yahr, taking into account cognitive difficulties, daily activities and treatment complications).

Current drug treatment aims to delay symptoms and use of levodopa
Because there is no cure for Parkinson's disease, the primary aim of treatment is to relieve symptoms and keep the patient functional as long as possible. Current treatments are effective at managing the early motor symptoms, mainly through the use of (generic) levodopa and dopamine agonists. Mainstay treatment is levodopa, an oral precursor of the neurotransmitter dopamine. It is well established as the most effective treatment for Parkinson's disease for over 30 years, with most patients noticing an immediate improvement. However, as the disease progresses and dopamine generating cells continue to be lost, these drugs eventually become ineffective at treating the symptoms and at the same time produce **dyskinesia**, a complication marked by involuntary jerking and twisting movements. Other treatment related complications include end-of-dose deterioration, unpredictable "on/off" motor fluctuations, hypotension, nausea, anorexia and psychiatric effects. These problems have led to the development of strategies that aim to limit or delay the onset of levodopa-related complications and have become the key drivers for the Parkinson's disease market with the introduction of dopamine agonists, MOA-B and COMT inhibitors. Dopamine agonists and MAO-B inhibitors are primarily used as mono-therapy in the early stages of the disease to delay the use of levodopa. **Dopamine agonists** work by directly stimulating the dopamine receptors to bypass degenerating brain cells. **MOA-B inhibitors** block a key enzyme that is responsible for the breakdown of dopamine. **COMT-inhibitors** block an enzyme responsible for the breakdown of levodopa in the body, thereby increasing the amount of levodopa available to reach the brain. Consequently COMT inhibitors are prescribed together with levodopa. When drug treatment is no longer sufficient to control symptoms, lesional surgery or deep brain stimulation (DBS), through implantation of a so-called brain pacemaker can be of use. In the final stages of disease, palliative care is provided to enhance quality of life.

New market entrants expected to spark growth
The introduction of new drugs, improved formulations of existing drugs, and the ageing of the population (higher prevalence) should drive growth in the Parkinson’s disease market.

Improved formulations of existing drugs, including: Abbvie's **Duodopa**, a carbidopa/levodopa intestinal gel (approved in EU & US), Impax’s **Rytary**, an extended-release capsule formulation of carbidopa/levodopa (approved), and NeuroDerm's **ND0611/0612**, a carbidopa/levodopa subcutaneous patch pump (phase II).

New molecules and novel approaches, including: Newron/Zambon's **Xadago** (approved in EU, CRL in US) a dual mechanism of action drug that provides both MAO-B and glutamate inhibition, adenosine 2a (A2a) agonists such as Kyowa-Kirin's **istradefylline** (US: phase III SPA, Japan approved as Nouriast) and Biotie's **tozadenant** (phase III), and Addex's **dipraglurant** (phase II), which targets metabotropic glutamate receptor 5 (mGluR5), and Santhera's **fipamezole,** an adrenergic alpha2 receptor antagonist (phase II).

Pipeline – Substantial upside could come soon

With sufficient funding at hand and Xadago being rolled out in the EU, Newron has also stepped up its development efforts for evenamide (NW-3509) in treating schizophrenia. Newron will complete a phase IIa proof-of-concept trial in in schizophrenia in Q4 2016 and then seek a major CNS player. This may trigger a substantial upfront milestone payment in 2017, and future development and sales milestone payments and royalties on sales.

NOTE: We have excluded evenamide from our forecasts, as the compound does not have proof-of-concept, yet.

Evenamide (NW-3509) – The next CNS blockbuster opportunity

Evenamide (previously named NW-3509) stems from Newron's own ion channel discovery efforts and has shown benefit in a range of models of positive symptoms, aggression, cognition (in schizophrenia), mania, depression and obsessive behavior. This novel, small molecule, oral drug has a rapid onset of action and has a high availability in the brain. Evenamide targets a large anti-psychotic market worth more than USD 23 bn with many drugs losing patent protection in the next few years. The drug can be added to current therapy for patients who no longer respond (roughly 65% of patients). Therefore evenamide has the potential to be developed in fixed-dose combinations with existing treatments extending their patent life substantially. Evenamide enjoys an extensive patent life running until at least 2028 (excluding patent term extensions), thanks to the US Patent and Trade Organization that granted a solid composition of matter patent in 2013.

Lead indication schizophrenia targets a USD 9 bn market with blockbuster potential

The schizophrenia market is currently worth about USD 9 bn, despite low patient compliance and many patients responding poorly to current antipsychotic therapy. Evenamide would become a first-in-class voltage gated, selective sodium channel blocker specifically developed for schizophrenia therapy.

Unique profile as add-on therapy to current antipsychotic treatment regimens

The drug is being developed as an add-on therapy to current antipsychotic medication for schizophrenia patients who respond poorly. In August 2011 Newron received an IND approval from the FDA as an add-on to antipsychotics for patients with psychosis. Results from the ongoing phase I safety trial were disclosed at the SIRS (Schizophrenia International Research Society) meeting in April 2014. Evenamide was well tolerated, exposure increased with dose, and exposure overlaps with exposure in animals at doses proven to be efficacious. In April 2016 Newron presented at the SIRS meeting additional findings in animal models of psychosis that the addition of ineffective doses of both evenamide and typical and atypical antipsychotics, showed significant benefit. This finding, if confirmed in poorly responding patients, would suggest that evenamide could be added to the treatment regimen to enhance response, instead of switching the treatment regimen with another, which leads to discontinuation effects, anti-dopaminergic, metabolic and sexual side effects or the need to hospitalize patients.

Clinical trial program – Develop up to POC in schizophrenia and then out license

In December 2015 Newron started a phase IIa proof-of-concept trial with evenamide as an add-on therapy to current antipsychotics in positive symptoms of schizophrenia. Results are expected by end 2016. Evenamide will be given to patients with stable and adequate dose of standard antipsychotic therapy who experience break-through symptoms. The

study is a 4-week, double blind, placebo controlled randomized in/outpatient trial in two US sites. Minimally 60 patients will be enrolled receiving evenamide 15-25 mg per day in two doses or placebo.

The endpoints include symptoms of schizophrenia, as assessed by:

- Positive and Negative Syndrome Scale (PANSS)
- Clinical Global Impression (change from baseline (CGI-C) and severity of illness (CGI-S))

Peak sales of EUR 800+ mn in schizophrenia alone (not included in our valuation)
Newron plans to develop evenamide up to phase IIa proof-of-concept in schizophrenia and then seek a strong CNS player in return for significant milestone and royalty payments. We believe this could occur in H1 2017 presenting a fast value creation step not captured in our risk-adjusted NPV of Newron, yet. On positive POC results, we will include schizophrenia forecasts of EUR 800+ mn in our forecasts for evenamide. Assuming a 15% (proof-of-concept) success rate and a conservative 10% royalty rate our risk-adjusted NPV would increase by CHF 4 per share. Evenamide's potential could be substantially larger than our forecasts given the size of the market and the high unmet medical need.

Income Statement

NEWRON PHARMACEUTICALS

SHARE PRICE (CHF) 20.6

IFRS

INCOME STATEMENT (EUR MN)	2015	2016E	2017E	2018E	2019E	2020E	2021E	2022E	2023E	2024E	2025E
PRODUCT SALES (INCLUDING PARTNERS)	**5**	**28**	**98**	**246**	**537**	**947**	**1,255**	**1,468**	**1,614**	**1,722**	**1,788**
CHANGE (%)		492%	247%	153%	118%	76%	32%	17%	10%	7%	4%
PRODUCT SALES (BY NEWRON)	**0**	**0**	**0**	**35**	**152**	**260**	**341**	**387**	**415**	**435**	**438**
CHANGE (%)					334%	71%	31%	14%	7%	5%	1%
ROYALTIES	**0.5**	**3**	**12**	**26**	**47**	**78**	**102**	**119**	**132**	**142**	**149**
CHANGE (%)		492%	311%	127%	77%	68%	30%	17%	11%	7%	5%
LICENCE, UPFRONT & MILESTONE INCOME	**1.8**	**3**	**35**	**10**	**59**	**0**	**0**	**0**	**0**	**18**	**0**
OTHER INCOME & GRANTS	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
REVENUES (EXCL. PARTNER SALES)	**2.4**	**5.9**	**46.6**	**71.3**	**256.9**	**337.8**	**443.0**	**506.8**	**546.8**	**594.5**	**586.7**
CHANGE (%)	53%	147%	694%	53%	261%	31%	31%	14%	8%	9%	-1%
COGS	**0.0**	**0.0**	**0.0**	**-4.9**	**-18.2**	**-26.0**	**-34.1**	**-38.7**	**-41.5**	**-43.5**	**-43.8**
CHANGE (%)					272%	43%	31%	14%	7%	5%	1%
AS % REVENUES	0%	0%	0%	7%	7%	8%	8%	8%	8%	7%	7%
GROSS PROFIT	**2.4**	**5.9**	**46.6**	**66.4**	**238.7**	**311.8**	**408.8**	**468.0**	**505.3**	**551.0**	**542.9**
CHANGE (%)	53%	147%	694%	43%	260%	31%	31%	14%	8%	9%	-1%
MARGIN	100%	100%	100%	93%	93%	92%	92%	92%	92%	93%	93%
R&D	**-18.4**	**-18.0**	**-13.0**	**-9.0**	**-9.0**	**-10.0**	**-10.4**	**-10.9**	**-11.4**	**-12.0**	**-12.6**
CHANGE (%)	207%	-2%	-28%	-31%	0%	11%	5%	5%	5%	5%	5%
AS % REVENUES	775%	307%	28%	13%	4%	3%	2%	2%	2%	2%	2%
S,G&A	**-8.3**	**-8.8**	**-9.3**	**-37.5**	**-80.3**	**-99.6**	**-121.3**	**-128.7**	**-128.7**	**-126.0**	**-111.3**
CHANGE (%)	23%	6%	6%	302%	114%	24%	22%	6%	0%	-2%	-12%
AS % REVENUES	350%	151%	20%	53%	31%	29%	27%	25%	24%	21%	19%
OPERATING EXPENSES	**-26.8**	**-26.8**	**-22.3**	**-51.4**	**-107.5**	**-135.5**	**-165.8**	**-178.4**	**-181.6**	**-181.4**	**-167.6**
CHANGE (%)	110%	0%	-17%	130%	109%	26%	22%	8%	2%	0%	-8%
AS % REVENUES	1125%	457%	48%	72%	42%	40%	37%	35%	33%	31%	29%
EBITDA	**-24.3**	**-20.9**	**24.3**	**20.0**	**149.5**	**202.3**	**277.2**	**328.5**	**365.2**	**413.2**	**419.2**
CHANGE (%)	118%	-14%	-216%	-18%	649%	35%	37%	19%	11%	13%	1%
MARGIN (%)	-1022%	-356%	52%	28%	58%	60%	63%	65%	67%	69%	71%
DEPRECIATION & AMORTISATION	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**
AS % REVENUES	3%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%
EBIT	**-24.4**	**-21.0**	**24.2**	**19.9**	**149.4**	**202.3**	**277.1**	**328.4**	**365.1**	**413.1**	**419.1**
CHANGE (%)	118%	-14%	-216%	-18%	651%	35%	37%	19%	11%	13%	1%
MARGIN (%)	-1025%	-357%	52%	28%	58%	60%	63%	65%	67%	69%	71%
NET FINANCIAL INCOME/(EXPENSE)	**-0.6**	**-0.1**	**0.9**	**1.9**	**2.9**	**3.9**	**4.9**	**5.9**	**6.9**	**7.9**	**8.9**
PROFIT BEFORE TAXES	**-25.0**	**-21.0**	**25.2**	**21.8**	**152.3**	**206.2**	**282.0**	**334.3**	**372.0**	**421.0**	**428.0**
CHANGE (%)	133%	-16%	-220%	-13%	599%	35%	37%	19%	11%	13%	2%
MARGIN	-1050%	-359%	54%	31%	59%	61%	64%	66%	68%	71%	73%
TAXES	**2.2**	**0.0**	**-1.1**	**-4.9**	**-26.5**	**-69.4**	**-93.0**	**-109.2**	**-120.9**	**-136.1**	**-138.1**
TAX RATE (%)	9%	0%	4%	23%	17%	34%	33%	33%	32%	32%	32%
NET PROFIT/LOSS	**-22.8**	**-21.0**	**24.0**	**16.9**	**125.8**	**136.7**	**189.0**	**225.1**	**251.1**	**284.9**	**289.8**
CHANGE (%)	126%	-8%	-214%	-30%	646%	9%	38%	19%	12%	13%	2%
MARGIN (%)	-959%	-359%	52%	24%	49%	40%	43%	44%	46%	48%	49%
NET PROFIT/LOSS (EXCLUDING MILESTONES)	**-24.6**	**-24.1**	**-11.0**	**6.9**	**67.1**	**136.7**	**189.0**	**225.1**	**251.1**	**267.3**	**289.8**
MARGIN (%)	-1034%	-411%	-24%	10%	26%	40%	43%	44%	46%	45%	49%
PROFIT/(LOSS) PER SHARE (IN EUR)	**-1.66**	**-1.33**	**1.53**	**1.07**	**7.98**	**8.67**	**11.99**	**14.27**	**15.93**	**18.07**	**18.38**
PROFIT/(LOSS) PER SHARE (IN CHF)	**-1.80**	**-1.46**	**1.65**	**1.16**	**8.65**	**9.40**	**12.99**	**15.47**	**17.26**	**19.58**	**19.92**

ESTIMATES AS OF 10 OCTOBER, 2016

SOURCE: VALUATIONLAB ESTIMATES

Ratios & Balance Sheet

NEWRON PHARMACEUTICALS

SHARE PRICE (CHF) 20.6

RATIOS	2015	2016E	2017E	2018E	2019E	2020E	2021E	2022E	2023E	2024E	2025E
P/E		-14.1x	12.4x	17.7x	2.4x	2.2x	1.6x	1.3x	1.2x	1.0x	1.0x
P/S		50.5x	6.4x	4.2x	1.2x	0.9x	0.7x	0.6x	0.5x	0.5x	0.5x
P/NAV		7.7x	4.8x	3.8x	1.5x	0.9x	0.6x	0.4x	0.3x	0.2x	0.2x
EV/EBITDA		-11.8x	10.2x	12.5x	1.7x	1.2x	0.9x	0.8x	0.7x	0.6x	0.6x

PER SHARE DATA (CHF)	2015	2016E	2017E	2018E	2019E	2020E	2021E	2022E	2023E	2024E	2025E
EARNINGS	**-1.80**	**-1.46**	**1.65**	**1.16**	**8.65**	**9.40**	**12.99**	**15.47**	**17.26**	**19.58**	**19.92**
CHANGE (%)	111%	-19%	-213%	-30%	646%	9%	38%	19%	12%	13%	2%
CASH	**3.23**	**3.70**	**6.15**	**8.41**	**19.66**	**34.62**	**54.81**	**78.61**	**105.15**	**135.20**	**165.89**
CHANGE (%)	49%	14%	66%	37%	134%	76%	58%	43%	34%	29%	23%
DIVIDENDS	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
PAYOUT RATIO (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
NET ASSET VALUE	**2.93**	**2.68**	**4.31**	**5.47**	**14.12**	**23.52**	**36.51**	**51.99**	**69.25**	**88.83**	**108.76**
CHANGE (%)	19%	-8%	61%	27%	158%	67%	55%	42%	33%	28%	22%

BALANCE SHEET (EUR MN)	2015	2016E	2017E	2018E	2019E	2020E	2021E	2022E	2023E	2024E	2025E
NET LIQUID FUNDS	**40.9**	**53.3**	**89.4**	**122.4**	**286.0**	**503.7**	**797.3**	**1,143.5**	**1,529.6**	**1,966.8**	**2,413.3**
TOTAL ASSETS	**44.4**	**56.8**	**92.9**	**125.8**	**289.5**	**507.1**	**800.8**	**1,147.0**	**1,533.1**	**1,970.3**	**2,416.7**
SHAREHOLDERS' EQUITY	**37.1**	**38.7**	**62.7**	**79.6**	**205.4**	**342.1**	**531.2**	**756.3**	**1,007.4**	**1,292.3**	**1,582.1**
CHANGE (%)	27%	4%	62%	27%	158%	67%	55%	42%	33%	28%	22%
RETURN ON EQUITY (%)	-61%	-54%	38%	21%	61%	40%	36%	30%	25%	22%	18%
FINANCIAL DEBT	**0.7**	**0.7**	**0.7**	**0.7**	**0.7**	**0.7**	**0.7**	**0.7**	**0.7**	**0.7**	**0.7**
FINANCIAL DEBT AS % OF TOTAL ASSETS	2%	1%	1%	1%	0%	0%	0%	0%	0%	0%	0%
EMPLOYEES	**25**	**22**	**22**	**22**	**23**	**23**	**23**	**23**	**24**	**24**	**24**
CHANGE (%)	3%	-11%	1%	1%	1%	1%	1%	1%	1%	1%	1%

CASH FLOW STATEMENT (EUR MN)	2015	2016E	2017E	2018E	2019E	2020E	2021E	2022E	2023E	2024E	2025E
NET PROFIT / (LOSS) BEFORE TAX	-25.0	-21.0	25.2	21.8	152.3	206.2	282.0	334.3	372.0	421.0	428.0
DEPRECIATION & AMORTIZATION	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
OTHER NON-CASH ITEMS	7.9	7.9	7.9	7.9	7.9	7.9	7.9	7.9	7.9	7.9	7.9
CASH FLOW	**-17.0**	**-13.1**	**33.1**	**29.8**	**160.3**	**214.1**	**290.0**	**342.3**	**380.0**	**429.0**	**436.0**
NET INCREASE/(DECREASE) IN WORKING CAPITAL	2.7	2.8	3.0	3.1	3.3	3.4	3.6	3.8	4.0	4.2	4.4
OPERATING FREE CASH FLOW	**-12.9**	**-10.3**	**36.0**	**32.9**	**163.6**	**217.5**	**293.6**	**346.1**	**385.0**	**435.1**	**443.3**
NET CASH FLOWS FROM INVESTING ACTIVITIES	2.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	1.1	2.1	3.1
NET CASH USED IN OPERATING ACTIVITIES	**-10.8**	**-10.2**	**36.1**	**32.9**	**163.6**	**217.6**	**293.7**	**346.2**	**386.1**	**437.2**	**446.5**
NET CASH FLOWS FROM FINANCING ACTIVITIES	28.0	22.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NET INCREASE/(DECREASE) IN CASH AND CASH EQUIVALENTS	**17.3**	**12.4**	**36.1**	**32.9**	**163.6**	**217.6**	**293.7**	**346.2**	**386.1**	**437.2**	**446.5**

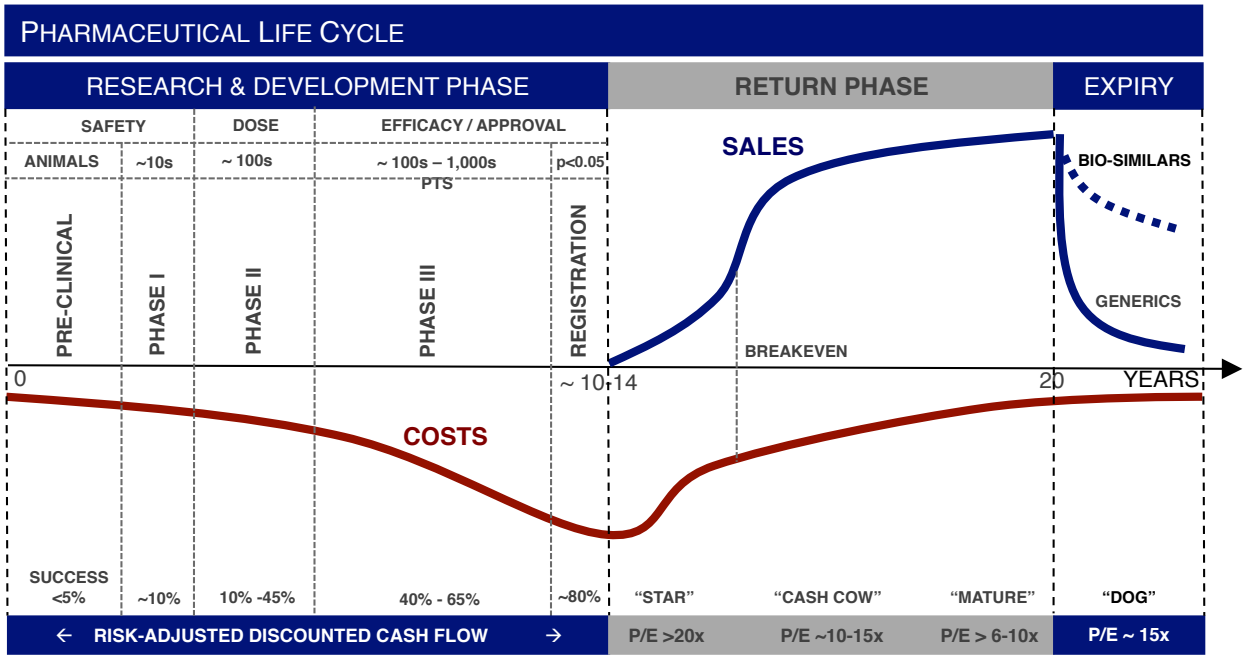
ESTIMATES AS OF 10 OCTOBER, 2016

SOURCE: VALUATIONLAB ESTIMATES

APPENDIX

Pharmaceutical life cycle

To determine the value of a prescription (bio)pharmaceutical compound, it is critical to understand its life cycle. Fortunately, all compounds follow the same life cycle. The clock starts ticking after the compound is patented, providing 20 years of protection from generic competition. Market exclusivities can extend this protection period. The average Research & Development Phase takes 10-14 years, leading to an effective Return Phase of 6-10 years. The Development Phase has 3 distinct Phases, focused on safety (Phase I), dose (Phase II) and efficacy/clinical benefit (Phase III). The compound is filed for registration/approval at the FDA (US) or EMA (EU). The Return Phase is characterized by a star, cash cow, and mature phase. After patent expiry (or loss of market exclusivity) generic manufacturers may copycat the branded prescription drug, at significantly lower costs, leading to a sales and earnings implosion of the branded drug.



SOURCE: VALUATIONLAB

Success probabilities & Royalties

In our risk-adjusted NPV calculations, we use standardized success probabilities based on historical clinical success rates. The success rate increases as the project progresses through development. Sales and earnings forecasts are based on the clinical and competitive profile of the compound. The more advanced the compound is, the more accurate the forecasts become as the target market can be defined. We conservatively exclude projects that lack Phase IIa proof-of-concept data in our valuations.

SUCCESS PROBABILITIES & ROYALTIES

DEVELOPMENT STAGE	AIM	WHAT / WHO	SUCCESS PROBABILITY (%)	COSTS (USD MN)	ROYALTIES (%)
PRE-CLINICAL	SAFETY & PHARMACOLOGY DATA	LAB TESTS / ANIMALS - NO HUMANS!	< 5	3	
PHASE I	SCREENING FOR SAFETY	HEALTHY VOLUNTEERS (10'S)	5-10	3	< 5
PHASE IIA	PROOF-OF-CONCEPT	PATIENTS WITH DISEASE (10'S)	10-15		
PHASE II	ESTABLISH THE TESTING PROTOCOL	PATIENTS WITH DISEASE (100'S)	10-35	5	5-15
PHASE IIB	OPTIMAL DOSAGE	PATIENTS WITH DISEASE (100'S)	20-45	5-10	
PHASE III	EVALUATE OVERALL BENEFIT/RISK	PATIENTS WITH DISEASE (1,000'S)	40-65	> 20-1,000	10-25
REGULATORY FILING	DETERMINE PHYSICIAN LABELING	CLINICAL BENEFIT ASSESSMENT	80-90		
APPROVAL	MARKETING AUTHORIZATION	PHYSICIANS FREE TO PRESCRIBE	100		15-30

SOURCE: VALUATIONLAB, TUFTS, FDA, EMA, CLINICALTRIALS.GOV

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Our financial analyses are based on the "Directives on the Independence of Financial Research" issued by the Swiss Bankers Association in January 2008.

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Risk Qualification

Speculative	less than 1 year cash and breakeven beyond 1 year
High Risk	profitable within 2 years and 1 approved product/key indication (patent expiry > 5 years)
Medium Risk	profitable and/or sales from at least 2 marketed products/key indications (patent expiry > 5 years)
Low Risk	profitable and sales from >2 marketed products/key indications (patent expiry > 5 years)

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