ROTH Capital Partners

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COMPANY NOTE | EQUITY RESEARCH | February 18, 2020

Healthcare: Biotechnology

Oryzon Genomics SA | ORY.SM - €3.24 - MADRID | *Buy*

Transferring Coverage

Rating Changed, Target Price Changed

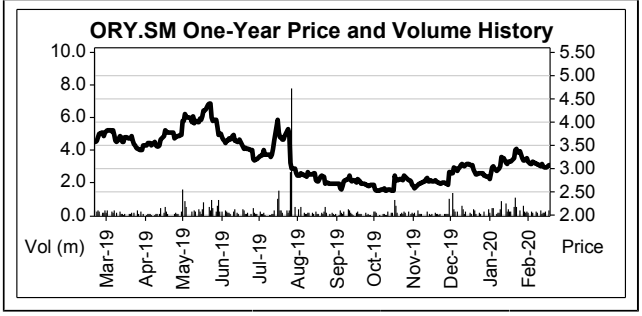
Stock Data	
52-Week Low - High	€2.48 - €4.47
Shares Out. (mil)	45.79
Mkt. Cap.(mil)	€148.36
3-Mo. Avg. Vol.	308,612
12-Mo.Price Target	€15.00
Cash (mil)	$42.6
Tot. Debt (mil)	$13.2

EPS $

Yr Dec	—2019E—	—2020E—	—2021E—
		Curr	Curr
1Q	(0.04)A	(0.12)E	-
2Q	(0.02)A	(0.12)E	-
3Q	(0.02)A	(0.12)E	-
4Q	(0.11)E	(0.13)E	-
YEAR	(0.20)E	(0.49)E	(0.60)E
P/E	NM	NM	NM

Revenue ($ millions)

Yr Dec	—2019E—	—2020E—	—2021E—
		Curr	Curr
1Q	0.0A	0.0E	0.0E
2Q	0.0A	0.0E	0.0E
3Q	0.0A	0.0E	0.0E
4Q	0.0E	0.0E	0.0E
YEAR	0.0E	0.0E	0.0E



ORY.SM: Highly Diversified Epigenetics Play, Many Clinical Catalysts Over 2020

We view Spanish biotech Oryzon (ORY) as the most diversified publicly traded epigenetics play. We believe that epigenetics is best applied to indications where the disease can be reprogrammed through chronic treatment, rather than just confined to late-stage oncology. We therefore recommend ORY both as a fundamental epigenetics play, and a near-to-medium term value play, especially considering its relatively low profile on the Madrid Exchange, despite its broad clinical pipeline (AD, BPD, ADHD, ASD, MS, AML, SCLC).

- **Targeting a well-understood epigenetic pathway.** ORY's two lead drug candidates (vafidemstat and iadademstat) inhibit lysine-specific demethylase 1 (LSD1), which has a wide scientific publication footprint in epigenetics. We are impressed with the consistency of results from the REIMAGINE trial in BPD, ADHD, and ASD, which underscores vafidemstat's broad therapeutic potential in psychiatric diseases. Given the roughly 24 million patients in the U.S. alone that have either AD, ADHD, or BPD, we emphasize that even a thin sliver of these markets represent transformational value to a company of ORY's current valuation. We note vafidemstat's highly favorable safety profile, having been given to 220 patients, some for more than 15 months. Regarding iadademstat, we note the 75% ORR from eight AML patients, versus the historical 27% ORR in this population, and the 50% ORR and 100% DCR rates in eight SCLC patients, versus the historical 15-24% ORR in second-line SCLC.
- **Recent psychiatric deals.** In 1Q19, Biogen (BIIB-NC) licensed Pfizer's (PFE-NC) PF-05251749 in AD and PD ($75M upfront); in 4Q18, Eli Lilly (LLC-NC) licensed AC Immune's (ACIU-NC) AD drug ($80M upfront, $50M equity investment); in 4Q18, Shionogi licensed Japan rights to Tetra Discovery Partners' (private) AD drug ($40M upfront); and in 4Q17 Sanofi licensed Principia Biopharma's (PRNB-NC) MS drug ($40M upfront).
- **Numerous clinical catalysts over 2020 should positively impact valuation.** Over 2020, ORY will begin its Phase 2b trial in BPD in 2Q20, release six-month E.U. cohort ETHERAL trial results in AD in April, release REIMAGINE-AD trial results in AD aggression in April, release CLEPSIDRA results in SCLC at ASCO in June, release ALICE trial results in AML at EHA in June, release additional E.U. cohort ETHERAL results at AAIC in July, release six-month U.S. cohort ETHERAL results in AD at CTAD in November, and release updated ALICE trial results at ASH in December.
- **Well funded.** ORY ended 3Q19 with $42.6M in cash, enough to fund operations into 2H21, and $13.2M in debt, $7M of which is current debt. ORY's capital resources will importantly fund operations through several key clinical catalysts and thus valuation inflection points.

Epigenetics

We view ORY as a fundamental play in epigenetics and as a near-to-medium term value play when considering its relatively low profile on the Madrid Exchange despite its wide clinical pipeline (AD, BPD, ADHD, ASD, MS, AML, and SCLC). Epigenetic literally means “in addition to changes in genetic sequence.” The term has evolved to include any process that alters gene activity without changing the DNA sequence, and leads to modifications that can be transmitted to daughter cells. Many illnesses, behaviors, and other health indicators already have some level of evidence linking them with epigenetic mechanisms, including cognitive dysfunction, neurobehavioral diseases, and many cancers. Known or suspected drivers behind epigenetic processes include many agents, including toxins, hormones, radioactivity, microbes, basic nutrients, and in the case of ORY, drugs that work via epigenetic pathways. Many types of epigenetic processes have been identified—they include methylation, acetylation, phosphorylation, ubiquitylation, and sumolyation. Epigenetic processes are natural and essential to many organism functions, but if they occur improperly, there can be major adverse health and behavioral effects. Perhaps the best known epigenetic process, in part because it has been easiest to study with existing technology, is DNA methylation. This is the addition or removal of a methyl group, predominantly where cytosine bases occur consecutively. DNA methylation was first confirmed to occur in human cancer in 1983, and has since been observed in many other illnesses. ORY’s lead drugs, iadademstat and vafidemstat, are both inhibitors of lysine-specific demethylase 1 (LSD1).

Vafidemstat

Vafidemstat (a.k.a. ORY-2001) is a potent, fast acting oral drug that been CNS-optimized to cross the BBB and selectively inhibit LSD1, and to a lesser extent MAO-B. Vafidemstat reduces cognitive impairment and is neuroprotective. The drug was able to restore memory and reduce aggressiveness in SAMP8 murine models, a model for accelerated aging and AD, down to normal levels and also reduces social avoidance. Vafidemstat is being investigated in AD, BPD, ADHD, ASD, and MS, and we note that the consistency of efficacy thus far in the REIMAGINE trial underscores vafidemstat’s broad therapeutic potential in psychiatric disease. Vafidemstat has been in more than 220 patients in Phase 1 and Phase 2a trials, with the longest exposure being at least 15 months, thereby giving us confidence in the drug’s continued favorable safety profile.

ETHERAL trial

ORY is conducting its ETHERAL Phase 2a trial in mild to moderate Alzheimer's disease (AD) with its anti-aggression drug vafidemstat. ETHERAL is a randomized, double-blind, placebo-controlled, three-arm (daily dose of placebo, 0.6mg, or 1.2mg) trial. Full enrollment is complete in the E.U. (n=117) and enrollment continues in the U.S. arm (expected n=30). All placebo patients, after 24 weeks on placebo, are able to take vafidemstat for an additional 24-week extension period. Evaluated endpoints include Clinical Dementia Rating Scale Sum of Boxes (CDR-SB), Cohen-Mansfield Agitation Inventory (CMAI), Apathy Evaluation Scale (AES-C), Cornell Scale for Depression in Dementia (CSDD), EuroQOL five dimensions questionnaire (EQ-5D), Alzheimer´s Disease Assessment Scale-Cognitive (ADAScog), Mini-mental State Examination (MMSE), and Computerized Cognitive Test Battery (Cogstate), with volumetric MRI performed at baseline, six, and 12 months.

In 3Q19, ORY announced positive safety data from the first 104 patients (91 of whom completed at least one month of therapy) at the Alzheimer’s Association International Conference (AAIC), showing no clinically relevant effects on platelets, neutrophils or other hematological parameters, which is sufficient time to demonstrate hematological toxicity related to LSD1 inhibition and is consistent with previous vafidemstat safety data from other trials. Four SAEs were reported in three subjects, all suspected to be unlikely related to vafidemstat. The subset of 36 patients that have received at least 24 weeks of vafidemstat have evidenced no significant safety issues, and a blinded analysis performed on certain functional parameters in the first 33 patients dosed for 24 weeks showed that while some patients had disease progression, others had baseline values that were maintained or showed improvement (as per MMSE or in aggressiveness as measured by CMAI). Furthermore, a blinded biomarker analysis showed that cerebrospinal fluid levels of the pro-inflammatory biomarker S100A9, which is highly abundant in the AD brain, followed a pattern similar to functional measures after 24 weeks of treatment, with six of 33 patients showing a strong increase, and 27 remaining stable or showing a significant decrease. We look forward to six-month results in early April 2020 at the AAT-AD/PD conference for the E.U. cohort, as well as a further update at AAIC in 3Q20 on the E.U.

cohort, followed by six-month results from the U.S. cohort at the CTAD conference in 4Q20, and 12 month results at AAIC in 3Q21.

REIMAGINE trial

REIMAGINE is an open-label, Phase 2a basket trial for vafidemstat to treat aggressiveness in three adult psychiatric diseases, adult attention deficit and hyperactivity disorder (ADHD), borderline personality disorder (BPD), and autism spectrum disorder (ASD) (total n=30; 11 BPD, 12 ADHD, and seven ASD; all three disease cohorts reported efficacy data in 4Q19 for eight, 10, and six patients, respectively). The primary endpoint, versus baseline, in each disease cohort is to evaluate the safety and tolerability of vafidemstat, with secondary endpoints of reduction in aggression. Other exploratory endpoints are to measure plasma drug levels pre-dose and throughout the trial, and to explore the effect of vafidemstat on LSD1 target engagement in peripheral blood mononuclear cells (PBMCs). Patients are treated for eight weeks with 1.2mg vafidemstat once daily, and the single-site trial is being conducted in Barcelona, Spain. Given the positive results from REIMAGINE discussed below, ORY is preparing a Phase 2b trial in BPD named PORTICO, to most likely begin in 2Q20, and is evaluating conducting additional Phase 2b trials in ADHD and/or ASD. We note that there are about 3.5 million schizophrenics in the U.S. (*https://sardaa.org/resources/about-schizophrenia/*), and with about 1% of them likely to benefit from a drug like vafidemstat, that results in a potentially a highly lucrative market opportunity.

In 4Q19, ORY announced positive efficacy data from eight of 11 BPD patients from the REIMAGINE trial, showing that after eight weeks of daily 1.2mg vafidemstat therapy, statistically significant benefits versus baseline were seen in Clinical Global Impression (CGI) Severity (CGI-S) and CGI Improvement (CGI-I) scales (p=0.0010 and p=0.0027, respectively), Neuropsychiatric Inventory (NPI) total score (12 item assessment; p=0.0071), NPI 4-item Agitation/Aggression subscale (p=0.0050), and the Global BPD checklist (BPDCL) scale score (p=0.0022). Vafidemstat was safe and well tolerated and was even shown to reduce suicidal ideation as per the Columbia-Suicide Severity Rating Scale (p=0.0033). An earlier release of just six BPD patients in 1Q19 showed specific improvement on the 3 aggression-related BPDCL domains combined score (p=0.0029), and improvement on the six non-aggression-related BPDCL domains combined score (p=0.0234).

In 4Q19, ORY announced positive efficacy data from 10 of 12 ADHD patients from the REIMAGINE trial, showing that after eight weeks of daily 1.2mg vafidemstat therapy, statistically significant benefits versus baseline were seen in CGI-S (p=0.0010) and CGI-I (p<0.0001). NPI total score was also statistically significant (p=0.0005), as it was for improvement on the NPI 4-item Agitation/Aggression subscale (p=0.0001). Statistically significant overall improvement in the ADHD Rating Scale (ADHD-RS) total score was also observed (p=0.0496), and was based on eight patients because two patients did not perform the last evaluation.

In 3Q19, ORY announced positive efficacy data from six of seven ASD patients from the REIMAGINE trial, showing that after eight weeks of daily 1.2mg vafidemstat therapy, statistically significant benefits versus baseline were seen in CGI-S (p=0.0006) and CGI-I (p<0.0001) scales, as well as in the NPI 4-item Agitation/Aggression subscale (p=0.0015) and the NPI total score (p=0.0010). Statistically significant benefit was also observed in the aggregated data for all 24 patients (eight BPD, 10 ADHD, and six ASD; p<0.0001 for CGI-S, CGI-I, NPI, and NPI 4-item). The observed benefit in the global psychological state assessed by NPI suggests that vafidemstat may have a broader psychiatric effect beyond treating aggressiveness. Vafidemstat was found to be safe and well tolerated in ASD patients, with only one patient report for each of thrombocytopenia, dry mouth, thirst, and headache, all of which had at least potential drug causality. The reproducible neurological benefits observed across BPD, ADHD, and ASD represents clinical proof-of-concept for vafidemstat and shows therapeutic activity across different neurological indications, suggesting that epigenetic dysregulation may be a treatable underlying cause of disease.

REIMAGINE-AD trial

The REIMAGINE-AD trial is an AD cohort of the REIMAGINE trial, which was fully enrolled in 3Q19 at 12 moderately or severely aggressive patients with moderate AD. A treatment duration of six months will evaluate daily 1.2mg vafidemstat on aggressiveness and other core features in AD. In addition to memory loss, the next greatest impairments in AD are aggression and apathy, with aggression as the leading reason for institutionalization. The trial is being conducted at a single site in Spain (Fundació ACE in Barcelona), and enrolled a single cohort. In AD, more than 20% of outpatients and 40% of long-term care residents exhibit

disruptive behavior, particularly agitation and aggression. Current anti-psychotics have limited activity and are associated with sedation, cerebrovascular accidents, and increased mortality, affording vafidemstat an opportunity to be a safer alternative. We look forward to final REIMAGINE-AD data in early April 2020 at the AAT-AD/PD conference.

SATEEN trial

In 1Q18, ORY enrolled the first patient into its eight-site Phase 2a trial of vafidemstat versus placebo in relapse-remitting and secondary progressive multiple sclerosis and the trial in now fully enrolled. Patients (n=18) will be treated for nine months for the randomized, blinded, placebo-controlled portion of the three-arm trial (placebo, 0.6mg, 1.2mg), and then an 18-month open label expansion portion will be conducted during which all patients will receive vafidemstat. The primary endpoints are safety related, but secondary endpoints include MRI scans, relapse rate, blood level of biomarkers related to inflammation, disease activity free status, and changes in retinal nerve fiber layer thickness and macular volume. We believe that ORY could potentially be able to report full SATEEN results in 2021.

Iadademstat

LSD1 activity is implicated in various cancers and in cancer stemness, which refers to the small population of cancer cells known as cancer stem cells that are responsible for reconstitution and propagation of cancer. These cells can self-renew, differentiate, proliferate like normal stem cells, and are difficult to destroy. Increased levels of LSD1 have often been shown to correlate with aggressive disease and poor prognoses. In an effort to combat this mechanism, ORY is developing iadademstat (a.k.a., ORY-1001), a small molecule that, like vafidemstat, potently and selectively inhibits LSD1. Iadademstat's mechanism is well characterized and is in two ongoing oncology trials in AML and SCLC.

ALICE trial

Acute myeloid Leukemia (AML) is mostly a cancer afflicting the elderly, with the chance of achieving CR and survival rates decreasing with age. The utility of standard chemotherapy remains limited in this setting, with five-year survival rates of at most 20%. LSD1, the target of iadademstat, adds to malignant transformation in AML, and iadademstat has proven effective as monotherapy and in combination with other compounds, including azacitidine. A Phase 1 AML trial has already demonstrated iadademstat’s favorable safety profile and efficacy (including one CRi) as monotherapy, prompting ORY to initiate its single-arm Phase 2 ALICE trial in first-line (prior hydroxyurea allowed) AML patients at least 60 years old who are not eligible for conventional intensive chemotherapy, a fragile population that cannot tolerate much drug toxicity. Patients will receive iadademstat in combination with hypomethylating agent azacitidine. ALICE is expected to enroll 36 patients at sites in Spain, and will evaluate clinical response, time to response, duration of response, and average survival, in addition to safety. An iadademstat dose of 60 µg/m2/day was chosen because it is able to saturate LSD1 target engagement, has a clear biomarker effect, and is more tolerable than the 90 µg/m2/day that proved to have an undesirable safety profile. Toxicity at this lower dose thus far is predictable, manageable and primarily hematologic in nature.

ORY provided updated results at ASH in 4Q19, showing that among the 13 patients enrolled, there were no clinically relevant non-hematological adverse events reported. Regarding efficacy, six of eight patients evaluable for efficacy (i.e., had at least one bone marrow evaluation) achieved a response (ORR 75%; two CR (one durable); three CRi; one PR). Mean follow-up time among the evaluable patients was 20 weeks, and mean time to response (among the six responders) was 32 days. Excluding the patient who died from a domestic accident prior to having a bone marrow assessment, as well as excluding both patients still taking their first therapy course, the intention#to#treat ORR was 60% (six out of 10). Given that historical ORR is about 27% in this elderly population with azacitidine monotherapy, these latest results are evidence of a synergistic effect with iadademstat. Two of five (40%) patients that received more than three cycles of treatment had also become transfusion independent. Three patients died before their first bone marrow evaluation (one by accidental fall not related to disease progression, and two were just starting treatment (partially through cycle one), and as such are likely unrelated to iadademstat, in our view. We look forward to updated data at EHA in late 2Q20, as well as at ASH in 4Q20, and are encouraged that this level of efficacy in AML could lead to broader use in other leukemias. The current results demonstrate the potential of LSD1 inhibition in leukemias other than MLL-rearrangement leukemia and erythroleukemia subtypes.

CLEPSIDRA trial

In 4Q18, ORY dosed the first patient in CLEPSIDRA, a Phase 2a trial in Spain to evaluate combination therapy with iadademstat/platinum/etoposide in patients with proprietary tumor biomarker-positive relapsed (second-line) extensive disease small cell lung cancer (SCLC; 15% of lung cancers and a cancer which should be sensitive to LSD1 inhibition). CLEPSIDRA is a single-arm trial and will evaluate time to response, duration of response, ORR and OS. The two part trial will first optimize the iadademstat dose, and the second will evaluate efficacy, with a planned total enrollment of up to 36 patients. Patients receive four to six cycles of combination therapy, then iadademstat monotherapy thereafter, each cycle lasting 21 days. Data from the first eight patients evaluable for efficacy were presented at ESMO in 3Q19, showing that the combination therapy drove an ORR of 50% (four PR, one of which is persisting thus far to cycle 12 with an 86% tumor reduction (79% reduction after combination therapy, 86% reduction after the subsequent six cycles of iadademstat monotherapy) and shrinkage of other lesions). There were also two SDs and two notably long duration SDs (>four months), for an overall disease control rate of 100%. In the 10 patients evaluable for safety, the most prevalent toxicity from the combination therapy was hematological (decreases in platelets, neutrophils and anemia; consistent with toxicity profile in the ALICE trial), but notably there was an absence of neurological, hepatic or renal toxicity, and iadademstat did not appear to add to the hematological toxicity of platinum/etoposide. The observed ORR is impressive given the historical response rates reported in second-line SCLC (topotecan (15-24% ORR); pembrolizumab (19% ORR)), thereby highlighting the potential of ORY's biomarkers to predict patients best suited to iadademstat therapy. LSD1 Inhibition makes sense in SCLC given that iadademstat activates the NOTCH pathway, resulting in the suppression of the transcription factor ASCL1, a difficult protein to drug, and the repression of SCLC tumorigenesis (*Source: https://www.ncbi.nlm.nih.gov/pubmed/30723171*). We note that the two patients that progressed after PR or SD had their treatment interrupted due to the investigator's decision to manage hematological toxicity, thereby causing these two patients to endure more than 50% of days without any treatment. We look forward to updated CLEPSIDRA data in SCLC at ASCO in late 2Q20.

VALUATION

Our 12-month price target of $15, is based on a DCF analysis using a 40% discount rate that is applied to all cash flows and the terminal value, which is based on a 5x multiple of our projected 2030 operating income of $1.4 billion. We arrive at this valuation by only projecting future revenue from vafidemstat in AD and iadademstat in AML. We view our valuation to be conservative given that it excludes revenue from vafidemstat in ASD, BPD, and ADHD, and from iadademstat in SCLC. Commercial success outside of the two financially modeled indications would serve as upside to our valuation. We believe that ORY.SM has prudently selected areas of unmet need and therefore market demand.

Factors that could impede shares of ORY.SM from achieving our price target include vafidemstat and iadademstat failing to generate statistically significant Phase 3 results in AD and AML, respectively. Also, regulatory agencies could fail to approve these drugs even if both Phase 3 programs are statistical successes, due to the agency viewing the results as not clinically meaningful. Loss of key management personnel could also impede achieving our price target, as could smaller than projected commercial opportunity due to changes in market size, competitive landscape, and drug pricing and reimbursement.

RISKS

- Clinical risk. ORY.SM's clinical staged products could fail to deliver statistically significant results in late-stage clinical trials, substantially reducing the value of ORY.SM's product candidates and therefore our target price.
- Regulatory risk. Even if successful in the clinic, ORY.SM's products could fail to be approved by domestic and/or foreign regulatory bodies, which would reduce ORY.SM's value and therefore our target price.
- Financing risk. ORY.SM will need additional capital to fund its operations, and such financing may not occur or it could be substantially dilutive to existing investors.
- Competitive risk. For any future approved ORY.SM products, they may not be well adopted in a competitive marketplace, which would adversely affect ORY.SM's value and therefore our target price.
- High stock price volatility. This issue is common among small-cap biotechnology companies with relatively low trading volumes.

COMPANY DESCRIPTION

Founded in 2000 in Barcelona, Spain, Oryzon (ISIN Code: ES0167733015) is a clinical stage biopharmaceutical company considered as a European champion in epigenetics. Oryzon has one of the strongest portfolios in the field. Oryzon's LSD1 program has rendered clinical stage vafidemstat and iadademstat. In addition, Oryzon has ongoing programs for developing inhibitors against other epigenetic targets. Oryzon has a strong technological platform for biomarker identification and performs biomarker and target validation for a variety of malignant and neurodegenerative diseases. Oryzon has offices in Spain and the United States

Oryzon Genomics SA
Vafidemstat Revenue Build

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U.S. Alzheimer's disease market	2022E	2023E	2024E	2025E	2026E	2027E	2028E	2029E	2030E
Incidence of Alzheimer's disease in U.S. (000)			6,136	6,179	6,221	6,263	6,304	6,345	6,385
Percent market penetration			0.4%	0.8%	1.2%	1.6%	1.7%	1.8%	1.8%
Number of patients treated (000)			25	49	75	98	108	114	116
Annual vafidemstat net price			$ 10,000	$ 10,200	$ 10,404	$ 10,612	$ 10,824	$ 11,041	$ 11,262
U.S. vafidemstat revenue to Oryzon (000)		**$ -**	**$ 245,444**	**$ 504,174**	**$ 776,659**	**$ 1,036,787**	**$ 1,170,965**	**$ 1,262,210**	**$ 1,308,511**

E.U. Alzheimer's disease market	2022E	2023E	2024E	2025E	2026E	2027E	2028E	2029E	2030E
Incidence of Alzheimer's disease in E.U. (000)				6,752	6,784	6,815	6,847	6,880	6,912
Percent market penetration				0.4%	0.6%	0.9%	1.2%	1.3%	1.4%
Number of patients treated (000)				27.0	40.7	61.3	80.1	88.5	93.4
Annual vafidemstat net price			$	$ 7,500	$ 7,500	$ 7,500	$ 7,500	$ 7,500	$ 7,500
E.U. vafidemstat revenue (000)			$	$ 202,570	$ 305,268	$ 460,042	$ 600,864	$ 664,069	$ 700,582
royalty rate				15%	15%	15%	15%	15%	15%
E.U. vafidemstat royalty revenue to Oryzon			**$**	**$ 30,385**	**$ 45,790**	**$ 69,006**	**$ 90,130**	**$ 99,610**	**$ 105,087**

Total global vafidemstat revenue to Oryzon	**$ -**	**$ -**	**$ 245,444**	**$ 534,560**	**$ 822,449**	**$ 1,105,793**	**$ 1,261,094**	**$ 1,361,821**	**$ 1,413,598**

Source: SEC filings, company press releases, and ROTH Capital Partners

Oryzon Genomics SA
Iadademstat Revenue Build

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U.S. first-line AML market	2022E	2023E	2024E	2025E	2026E	2027E	2028E	2029E	2030E
Incidence of new AML patients in U.S. (000)		22.3	22.5	22.7	22.8	23.0	23.1	23.3	23.4
Incidence of AML patients taking chemo in U.S. (000)		21.2	21.4	21.5	21.7	21.8	22.0	22.1	22.2
Percent market penetration		1.0%	2.0%	4.0%	6.0%	7.8%	8.6%	9.0%	9.1%
Number of patients treated (000)		0.21	0.43	0.86	1.30	1.70	1.88	1.99	2.02
Annual iadademstat net price		$ 100,000	$ 102,000	$ 104,040	$ 106,121	$ 108,243	$ 110,408	$ 112,616	$ 114,869
U.S. iadademstat revenue to Oryzon (000)		**$ 21,225**	**$ 43,603**	**$ 89,567**	**$ 137,973**	**$ 184,185**	**$ 208,022**	**$ 224,232**	**$ 232,457**

E.U. first-line AML market	2022E	2023E	2024E	2025E	2026E	2027E	2028E	2029E	2030E
Incidence of new AML patients in E.U. (000)			24.6	24.8	24.9	25.0	25.1	25.2	25.3
Incidence of AML patients taking chemo in E.U. (000)			23.4	23.5	23.6	23.7	23.9	24.0	24.1
Percent market penetration			1.0%	2.0%	3.0%	4.5%	5.9%	6.4%	6.8%
Number of patients treated (000)			0.2	0.5	0.7	1.1	1.4	1.5	1.6
Annual iadademstat net price		$	75,000	$ 75,000	$ 75,000	$ 75,000	$ 75,000	$ 75,000	$ 75,000
E.U. iadademstat revenue (000)		$	17,559	$ 35,281	$ 53,167	$ 80,124	$ 104,650	$ 115,659	$ 122,018
royalty rate			15%	15%	15%	15%	15%	15%	15%
E.U. iadademstat royalty revenue to Oryzon		**$**	**2,634**	**$ 5,292**	**$ 7,975**	**$ 12,019**	**$ 15,698**	**$ 17,349**	**$ 18,303**

Total global iadademstat revenue to Oryzon	**$ -**	**$ 21,225**	**$ 46,237**	**$ 94,859**	**$ 145,949**	**$ 196,204**	**$ 223,719**	**$ 241,580**	**$ 250,760**

Source: SEC filings, company press releases, and ROTH Capital Partners

Oryzon Genomics SA

Income Statement

Fiscal Year ends December

(in 000, except per share items)

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	2017A	2018A	1Q19A	2Q19A	3Q19A	4Q19E	2019E	1Q20E	2Q20E	3Q20E	4Q20E	2020E
Global iadademstat revenue												
Global vafidemstat revenue												
Collaboration revenue	20											
Total revenue	**20**											
Cost of revenue												
R&D	6,363	8,489	2,610	3,022	3,462	3,981	13,075	4,379	4,598	4,828	5,070	18,876
G&A	4,502	2,993	876	1,042	742	757	3,417	764	772	780	788	3,104
Total operating expenses	**10,865**	**11,482**	**3,486**	**4,064**	**4,204**	**4,738**	**16,492**	**5,144**	**5,370**	**5,608**	**5,857**	**21,980**
Operating income	**(10,845)**	**(11,482)**	**(3,486)**	**(4,064)**	**(4,204)**	**(4,738)**	**(16,492)**	**(5,144)**	**(5,370)**	**(5,608)**	**(5,857)**	**(21,980)**
Other income (net)	5,659	8,143	2,497	2,516	3,208		8,221					-
Net income (pretax)	**(5,186)**	**(3,339)**	**(989)**	**(1,548)**	**(996)**	**(4,738)**	**(8,271)**	**(5,144)**	**(5,370)**	**(5,608)**	**(5,857)**	**(21,980)**
Net financial & tax	1,047	(1,991)	368	(924)	73							
Net income	**(6,233)**	**(1,348)**	**(1,357)**	**(624)**	**(1,069)**	**(4,738)**	**(8,271)**	**(5,144)**	**(5,370)**	**(5,608)**	**(5,857)**	**(21,980)**
EPS basic	**(0.20)**	**(0.04)**	**(0.04)**	**(0.02)**	**(0.02)**	**(0.11)**	**(0.20)**	**(0.12)**	**(0.12)**	**(0.12)**	**(0.13)**	**(0.49)**
EPS diluted	**(0.20)**	**(0.04)**	**(0.04)**	**(0.02)**	**(0.02)**	**(0.11)**	**(0.20)**	**(0.12)**	**(0.12)**	**(0.12)**	**(0.13)**	**(0.49)**
Basic shares outstanding	31,711	34,638	38,455	38,638	43,677	44,114	41,221	44,555	45,000	45,450	45,905	45,228
Diluted shares outstanding	31,711	34,638	38,455	38,638	43,677	44,114	41,221	44,555	45,000	45,450	45,905	45,228
share growth rate		9%		0%	13%	1.0%	19.0%	1.0%	1.0%	1.0%	1.0%	9.7%

Source: SEC filings, company press releases, and ROTH Capital Partners

Oryzon Genomics SA
Income Statement
Fiscal Year ends December
(in 000, except per share items)

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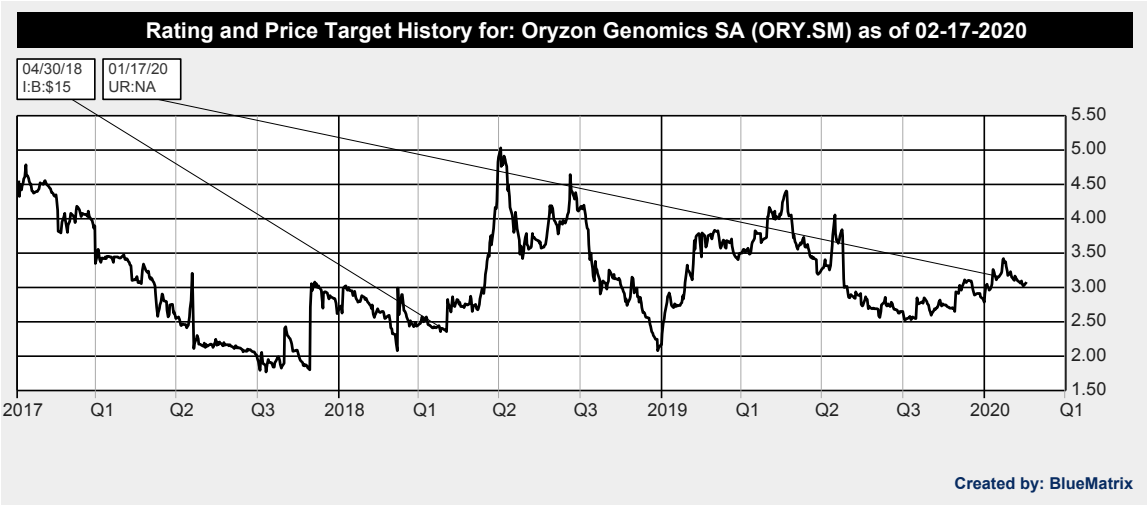
	2017A	2018A	2019E	2020E	2021E	2022E	2023E	2024E	2025E	2026E	2027E	2028E	2029E	2030E
Global iadademstat revenue							21,225	46,237	94,859	145,949	196,204	223,719	241,580	250,760
Global vafidemstat revenue								245,444	534,560	822,449	1,105,793	1,261,094	1,361,821	1,413,598
Collaboration revenue	20													
Total revenue	**20**						**21,225**	**291,681**	**629,419**	**968,398**	**1,301,997**	**1,484,814**	**1,603,401**	**1,664,358**
Cost of revenue							3,184	40,467	77,186	109,756	134,307	151,689	148,644	154,097
R&D	6,363	8,489	13,075	18,876	25,482	33,127	43,065	53,832	59,215	50,333	50,836	51,344	51,858	52,376
G&A	4,502	2,993	3,417	3,104	3,259	3,422	8,555	25,665	33,364	38,369	42,205	46,426	48,747	51,185
Total operating expenses	**10,865**	**11,482**	**16,492**	**21,980**	**28,741**	**36,549**	**54,804**	**119,963**	**169,765**	**198,457**	**227,348**	**249,459**	**249,249**	**257,658**
Operating income	**(10,845)**	**(11,482)**	**(16,492)**	**(21,980)**	**(28,741)**	**(36,549)**	**(33,579)**	**171,719**	**459,653**	**769,941**	**1,074,649**	**1,235,355**	**1,354,152**	**1,406,700**
Other income (net)	5,659	8,143	8,221	-										
Net income (pretax)	**(5,186)**	**(3,339)**	**(8,271)**	**(21,980)**	**(28,741)**	**(36,549)**	**(33,579)**	**171,719**	**459,653**	**769,941**	**1,074,649**	**1,235,355**	**1,354,152**	**1,406,700**
Net financial & tax	1,047	(1,991)						-	114,913	192,485	268,662	308,839	338,538	351,675
Net income	**(6,233)**	**(1,348)**	**(8,271)**	**(21,980)**	**(28,741)**	**(36,549)**	**(33,579)**	**171,719**	**344,740**	**577,455**	**805,986**	**926,516**	**1,015,614**	**1,055,025**
EPS basic	**(0.20)**	**(0.04)**	**(0.20)**	**(0.49)**	**(0.60)**	**(0.72)**	**(0.63)**	**3.08**	**5.88**	**9.39**	**12.48**	**13.66**	**14.26**	**14.11**
EPS diluted	**(0.20)**	**(0.04)**	**(0.20)**	**(0.49)**	**(0.60)**	**(0.72)**	**(0.50)**	**2.46**	**4.75**	**7.64**	**10.25**	**11.32**	**11.91**	**11.88**
Basic shares outstanding	31,711	34,638	41,221	45,228	48,200	50,610	53,141	55,798	58,588	61,517	64,593	67,823	71,214	74,774
Diluted shares outstanding	31,711	34,638	41,221	45,228	48,200	50,610	67,178	69,835	72,625	75,554	78,630	81,860	85,251	88,812
share growth rate		9%	19.0%	9.7%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%

Source: SEC filings, company press releases, and ROTH Capital Partners

Disclosures:

Shares of Oryzon Genomics SA may be subject to the Securities and Exchange Commission's Penny Stock Rules, which may set forth sales practice requirements for certain low-priced securities.



Each box on the Rating and Price Target History chart above represents a date on which an analyst made a change to a rating or price target, except for the first box, which may only represent the first note written during the past three years. **Distribution Ratings/IB Services** shows the number of companies in each rating category from which Roth or an affiliate received compensation for investment banking services in the past 12 month.

Distribution of IB Services Firmwide

			IB Serv./Past 12 Mos. as of 02/18/20	
Rating	**Count**	**Percent**	**Count**	**Percent**
Buy [B]	**270**	**78.26**	**152**	**56.30**
Neutral [N]	**41**	**11.88**	**18**	**43.90**
Sell [S]	**5**	**1.45**	**2**	**40.00**
Under Review [UR]	**26**	**7.54**	**15**	**57.69**

Our rating system attempts to incorporate industry, company and/or overall market risk and volatility. Consequently, at any given point in time, our investment rating on a stock and its implied price movement may not correspond to the stated 12-month price target.

Ratings System Definitions - ROTH employs a rating system based on the following:

Buy: A rating, which at the time it is instituted and or reiterated, that indicates an expectation of a total return of at least 10% over the next 12 months.

Neutral: A rating, which at the time it is instituted and or reiterated, that indicates an expectation of a total return between negative 10% and 10% over the next 12 months.

Sell: A rating, which at the time it is instituted and or reiterated, that indicates an expectation that the price will depreciate by more than 10% over the next 12 months.

Under Review [UR]: A rating, which at the time it is instituted and or reiterated, indicates the temporary removal of the prior rating, price target and estimates for the security. Prior rating, price target and estimates should no longer be relied upon for UR-rated securities.

Not Covered [NC]: ROTH does not publish research or have an opinion about this security.

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