

Vontobel Gene Therapy Performance Index Guidelines

As at 8 June 2018

1 Introduction

1.1 Preliminary remarks

These guidelines (the “**Guidelines**”) describe the composition, calculation and publication of the index named below.

Index name:

Vontobel Gene Therapy Performance Index (the “**Index**”)

Index Calculation Agent:

Bank Vontobel AG, Gotthardstrasse 43, 8002 Zurich, Switzerland (the “**Index Calculation Agent**”)

The Vontobel Gene Therapy Performance Index belongs to the family of Vontobel Strategy Indices (the “**Strategy Indices**”). **The Strategy Indices are not recognised financial indices but are indices designed and calculated by Bank Vontobel AG as Index Calculation Agent, the sole function of which is serving as the underlying for a particular type of securities (strategy certificates).**

The Index Calculation Agent is advised by Index Sponsors with regard to the composition of the Strategy Indices. **The Index Sponsors are principally acting at their own discretion and within the index strategy they define themselves and for which they take responsibility** (the “**Index Strategy**” or simply “**Strategy**”; see items 2.2 and 2.3 below).

The Index Calculation Agent will carry out the calculation and composition of the Strategy Indices with the greatest possible care. However, the Index Calculation Agent and the Index Sponsors accept no obligation or liability with respect to the calculation and composition of the Strategy Indices. The Index Calculation Agent is not liable for direct or indirect losses arising from the incorrect calculation of the indices, their composition or the other key figures, unless they are due to gross negligence or wilful intent on the part of itself, its vicarious agents or their legal representatives. The Index Calculation Agent – without prejudice to possible obligations vis-à-vis licensees or Index Sponsors – has no obligation vis-à-vis third parties (including Index Sponsors, investors in strategy certificates and/or financial intermediaries) to draw attention to any mistakes in the Index.

The Index Calculation Agent's Strategy Indices do not represent a recommendation by the Index Calculation Agent to make an investment. In particular, the composition, calculation and publication of the Strategy Indices do not in any way imply an assurance or opinion on the part of the Index Calculation Agent with respect to the purchase or sale of an Index Constituent or of a financial instrument linked to that Strategy Index.

These Guidelines are published on the website indices.vontobel.com and/or certificates.vontobel.com (collectively referred to as “**Information Pages**”).

1.2 Basic principles

The Strategy Indices are calculated and composed, as far as possible, in accordance with the following principles:

- The Strategy Index should reflect the underlying Strategy defined by the respective Index Sponsor as closely as possible.
- Adjustments of the Strategy Index are published without delay.
- The current composition of a Strategy Index is published at least once a day.
- Index Constituents are tradeable and available to an extent appropriate to the Strategy.
- The performance of the respective Strategy Index can be replicated by a real portfolio.
- The Strategy of the respective Strategy Index provides reliability and continuity.
- Changes in the rules are communicated with adequate advance notice (generally at least 5 index calculation days). Amendments to the Guidelines are never made retroactively.

2 Index parameters

2.1 Index Sponsor

The Index Calculation Agent is advised by Bellevue Asset Management AG, Rennweg 57, CH-8001 Zurich, Switzerland (the “**Index Sponsor**”) in connection with the composition of the Index. For this purpose, the Index Sponsor follows a specific procedure, defined and described under 2.2 and 2.3 below, according to which decisions are made with respect to the composition of the Index.

In principle, the Index Sponsor is independently selecting the respective Index Constituents. The Index Calculation Agent is

not responsible for monitoring the Index Sponsor's compliance with the Strategy.

2.2 Index Universe

The Index Universe comprises equities and other dividend-bearing instruments or subscription rights (hereinafter referred to collectively as "**Equities**") issued by companies that meet all of the following requirements:

- (1) The Equity is listed on a Reference Exchange in one of the following countries: Australia, Austria, Belgium, Denmark, Finland, France, Germany, Hong Kong, Ireland, Italy, Japan, South Korea, the Netherlands, Norway, New Zealand, Portugal, Singapore, Spain, Sweden, Switzerland, United Kingdom, United States of America. The "**Reference Exchange**" is the relevant exchange on which the Index member has its primary listing. The Index Calculation Agent may decide on the grounds of tradeability to stipulate an exchange other than the exchange on which the Equities have their primary listing as the Reference Exchange.
- (2) The company having issued the Equity shall have a market capitalisation of no less than USD 500 million.
- (3) All Equities must have sufficient market liquidity as determined at the discretion of the Index Sponsor. In this regard, the Index Calculation Agent shall consider as a threshold an average daily exchange trading volume of more than USD 2.0 million over the past 3 months. An Equity that is already a constituent of the Index (see 2.3.1 below for details of the selection procedure) is only removed from the Index (during an adjustment of the Index) for liquidity reasons if its average daily trading volume over the past 3 months falls below USD 1.5 million.
- (4) The company having issued the Equity shall operate in the healthcare sector.
- (5) The Equity must be part of the Index Sponsor's research universe in the field of gene and cell therapy.

2.3 Index Strategy

The Index Strategy is closely connected to the Index Sponsor's research activities. Given that the Index Sponsor is generally a leading company in the field of biotechnology and healthcare research, the Index Constituents selected for the Index from the Index Universe comprise those Equities which have been assigned the highest score by the Index Sponsor's analysts in accordance with their Scoring Model (as defined below).

2.3.1 Selection:

The Index comprises 16 Equities (the "**Index Constituents**") selected on each Selection Date (as defined under 3.1 below) from the Index Universe (as defined under 2.2 below) based on the methodology described in the following.

(1) Classification:

In a first step, all Equities from the universe are classified into two segments based on the operating cash flows of the

company having issued the respective Equity. Non-recurring cash flows such as milestone payments and prepayments are not factored into operating cash flows.

Equities issued by companies with positive operating cash flows in the past financial year are classified into the "Established Segment" and those issued by companies with negative operating cash flows during the same period are classified into the "Innovative Segment".

(2) Scoring:

In a second step, the value of the Equities is analysed under the Index Sponsor's Scoring Model.

Each of the companies assigned to the two segments are valued semi-annually on the basis of eight criteria. Four qualitative parameters and four quantitative parameters are used. While the same methodology is applied for the qualitative criteria for companies classified into the "Established Segment" and the "Innovative Segment", different methods apply to the quantitative criteria.

Qualitative criteria:

The four qualitative criteria, which are applied to the Established and the Innovative segments identically, are (1) Assessment of the management, (2) Product pipeline, (3) Operating risks and (4) Country risks. The Index Sponsor assigns these a value between 1 and 4, with 4 being the most positive assessment. Individual factors which are taken into consideration by the Index Sponsor when assessing the respective criteria are:

- Assessment of the management: strategic orientation, implementation of strategy, controlling of strategy (processes and structures), track record, turnover of key employees, IR and media coverage
- Product pipeline: positioning of products and services, product diversification, project life cycle, product development risks, patent situation, sustainable research, innovation, track record
- Operating risks: influence of regulatory changes, cyclical nature of business, currency situation, dependencies on suppliers and raw materials, balance sheet structure, sales structure
- Country risks: political, social and financial stability, environmental risks such as earthquakes, storms and floods, electricity supply, corruption

Quantitative criteria (Established Segment):

The quantitative criteria applied to the Established Segment are the price/earnings to growth ratio, the price/sales ratio, sales growth and the EBITDA margin. Each of these criteria is also rated from 1 to 4. However, this is not done on the basis of the Index Sponsor's assessment, but rather on the basis of effective figures (price/sales, EBITDA margin) and consensus estimates (price/earnings to growth ratio, sales growth). Clearly defined formulae determine which score from 1 to 4 is assigned.

- Price/earnings to growth ratio: the expected price/earnings ratio is compared to multi-year growth
- Price/sales ratio: current market capitalisation is compared to the reported revenue for the year.
- Sales growth: over at least three years
- EBITDA margin: EBITDA margin for the financial year in question.

Quantitative criteria (Innovative Segment):

Since the companies in the Innovative Segment are not profitable, different quantitative criteria are applied to them. The following 4 parameters are assigned a score from 1 to 4 by the Index Sponsor: price/sales ratio, price/cash ratio, product development stage, cash reach. Clearly defined formulae determine which score from 1 to 4 is assigned.

- Price/sales ratio in relation to the year X+4, where X is the current financial year
- Price/cash ratio in relation to the most recently reported cash funds
- Product development stage: phase of clinical development or time to marketing launch for the product candidates
- Cash reach: period over which the operating business can be maintained given the available resources

For both the Established Segment and the Innovative Segment, this provides each Equity a score of between 8 (lowest) and 32 (highest) based on a total of 8 factors. The eight highest-scoring Equities from the Established Segment and the eight highest-scoring Equities from the Innovative Segment are selected as Index Constituents. If the results of the ranking are not unambiguous because several companies qualify due to having received identical scores, the Index Sponsor shall decide at its due discretion which of the Equities will be included in the Index.

2.3.2 Weighting:

The Index Constituents shall have equal weightings at the launch of the Index and at each Adjustment Date. In principle, half of the Index Constituents shall be selected from the Established Segment and half shall be selected from the Innovative Segment. In the event it is not possible to select a sufficient number of Index Constituents from one of the segments in order to arrive at the required minimum number of Index Constituents (see 2.3.3. below), the Index Sponsor may generally deviate from this rule when selecting Index Constituents, whereby no segment may make up more than 75% of the total number of all Equities selected from a single Segment.

2.3.3 Minimum number of Index Constituents:

The Index shall comprise a minimum of 10 Index Constituents. If fewer than 10 Equities are selected on a Selection Date, the Index Calculation Agent shall permanently suspend calculation of the Index with effect from the immediately following Adjustment Date.

2.4 Index fee, adjustment fees and other costs

No fees are taken into account or deducted when the Index is calculated or periodically adjusted.

3 Calculation**3.1 Definitions****Adjustment Date:**

shall be the second (2nd) Monday of the calendar months June and November, commencing from 12 November 2018. If an

Adjustment Date is not a Calculation Day, such Adjustment Date shall be postponed to the next following Calculation Day.

Calculation Day:

shall be any day on which commercial banks in Zurich, Switzerland, are open for business.

Valuation Price:

shall be calculated by the Index Calculation Agent as the sum of the Reference Prices obtained for all Index Constituents on the relevant Calculation Day, under consideration of their respective weightings in the Index and – if applicable – converted into the Index Currency, expressed by the following formula:

$$\text{Valuation Price} = \sum_{i=1}^n \text{RP}_i \cdot \text{W}_i \cdot \text{FX}_i$$

where:

- n = number of Index Constituents on the relevant Calculation Day
- RP_i = Reference Price of Index Constituent_i on the relevant Calculation Day
- W_i = Weighting of Index Constituent_i on the relevant Calculation Day
- FX_i = exchange rate between the currency of Index Constituent_i and the Index Currency as determined by the Index Calculation Agent at its discretion on the basis of the interbank exchange rates on the relevant Calculation Day; where the currency of Index Constituent_i is equal to the Index Currency, FX_i shall be 1.0.

Trading Day:

Shall be a day on which an Index Constituent is traded on the Reference Exchange.

Index Identification:

ISIN: CH0420465459
 WKN: A2LOH7
 Valor: 42046545
 Reuters RIC: .VTGENE

Index Start Date:

13 July 2018

Index Currency:

US dollar (USD)

Reference Price:

shall principally be the closing price of the Index Constituent as determined and published by the Reference Exchange (as defined under 3.2 for each Index Constituent). However, the Index Calculation Agent shall be entitled to determine a different Reference Price at its own discretion if it deems the closing price determined by the Reference Exchange for an Index Constituent to insufficiently reflect the market price of the Index Constituent on the relevant Trading Day, in particular with regard to the effected trades in the Index Constituent on the Reference Exchange on that Trading Day.

Selection Date:

shall be the first (1st) Monday of the calendar months June and November, commencing from 5 November 2018. If a Selection

Date is not a Calculation Day, such Selection Date shall be postponed to the next following Calculation Day.

3.2 Index composition on the Index Start Date:

The index is set at 100 points on the Index Start Date. Its initial composition is as follows:

INDEX CONSTITUENT (EQUITIES)	ISIN / □ BLOOMBERG SYMBOL	CURRENCY	REFERENCE EXCHANGE/ □ DERIVATIVES EXCHANGE	WEIGHTING IN %
Abeona Therapeutics Inc.	US00289Y1073 / ABEO UQ Equity	USD	Nasdaq Capital Market / Chicago Board Options Exchange	6.25
Adaptimmune Therapeutics PLC	US00653A1079 / ADAP UW Equity	USD	Nasdaq Global Select Market / Chicago Board Options Exchange	6.25
BioMarin Pharmaceutical Inc.	US09061G1013 / BMRN UW Equity	USD	Nasdaq Global Select Market / Chicago Board Options Exchange	6.25
Bluebird Bio Inc	US09609G1004 / BLUE UW Equity	USD	Nasdaq Global Select Market / Chicago Board Options Exchange	6.25
Celgene Corp.	US1510201049 / CELG UW Equity	USD	Nasdaq Global Select Market / Chicago Board Options Exchange	6.25
Collectis SA	FR0010425595 / ALCLS FP Equity	EUR	Euronext (Paris) / Eurex	6.25
Gilead Sciences Inc.	US3755581036 / GILD UW Equity	USD	Nasdaq Global Select Market / Chicago Board Options Exchange	6.25
Illumina Inc.	US4523271090 / ILMN UW Equity	USD	Nasdaq Global Select Market / Chicago Board Options Exchange	6.25
Intellia Therapeutics Inc.,	US45826J1051 / NTLA UQ Equity	USD	Nasdaq Global Market / Chicago Board Options Exchange	6.25
Lonza Group AG	CH0013841017 / LONN SE Equity	CHF	SIX Swiss Exchange / Eurex	6.25
Novartis AG	CH0012005267 / NOVN SE Equity	CHF	SIX Swiss Exchange / Eurex	6.25
Shire PLC	JE00B2QKY057 / SHP LN Equity	GBP	London Stock Exchange / Eurex	6.25
Spark Therapeutics Inc.	US84652J1034 / ONCE UW Equity	USD	Nasdaq Global Select Market / Chicago Board Options Exchange	6.25
Thermo Fisher Scientific Inc.	US8835561023 / TMO UN Equity	USD	NYSE / Chicago Board Options Exchange	6.25
Ultragenyx Pharmaceutical Inc	US90400D1081 / RARE UW Equity	USD	Nasdaq Global Select Market / Chicago Board Options Exchange	6.25
UniQure N.V.	NL0010696654 / QURE UW Equity	USD	Nasdaq Global Select Market / Chicago Board Options Exchange	6.25

3.3 Corrections

In the event of calculation errors classified as material by the Index Calculation Agent in its reasonable discretion, index levels are corrected, retrospectively if applicable, provided that this is technically possible and makes sense from an economic point of view. Otherwise no correction is made. Corrections are published on at least one of the Information Pages.

4 Adjustments to the index composition

4.1 Ordinary adjustment

An ordinary adjustment of the Index shall occur semi-annually on and/or following an Adjustment Date.

To this end, the Index Sponsor shall notify the Index Calculation Agent of the updated selection on the Selection

Date after reviewing the selection criteria for the Index Universe available on the Selection Date.

The Index Calculation Agent shall on this basis adjust the Index accordingly within a maximum of five (5) Trading Days (including the Adjustment Date; the “**Adjustment Period**”). The Index Calculation Agent shall endeavour to update the index composition as quickly as possible within the Adjustment Period.

Ordinary adjustments concern all Index Constituents, i.e. the weighting of the newly selected Equities by the Index Sponsor is calculated first using the weighting criteria defined above. The Index Calculation Agent then shall determine at its own discretion the prices and, if applicable, the exchange rates for the Equities during the Adjustment Period in order to establish the new composition of the Index, taking into account the new weightings and the most recent Valuation Price of the Index.

The Index Calculation Agent shall base this price calculation on the prices provided on the relevant exchanges for the various Equities, considering the available liquidity as well as the interests of the investors and other market participants. If a relevant exchange is closed on a day that falls within the Adjustment Period, the Adjustment Period shall be extended accordingly.

4.2 Extraordinary Adjustments

The Index Calculation Agent reserves the right to take appropriate action to ensure that the Index can be continued when an extraordinary adjustment event affecting one or more of the Index Constituents occurs or is announced. Such action is referred to as an “**Extraordinary Adjustment**”.

The Index Calculation Agent may be guided with regard to the timing and nature of an Extraordinary Adjustment by the manner in which the relevant futures exchange carries out adjustments for the futures or options contracts traded on it that have the Index Constituent in question as their underlying. However, it is under no obligation to do so. Where doubts arise regarding the application of the futures exchange's adjustment rules, the Index Calculation Agent decides at its own discretion.

An Extraordinary Adjustment may take place on any Extraordinary Adjustment Date.

Term “**Extraordinary Adjustment Event**” may refer to any of the following with respect to an Index Constituent:

- a) capital increase by way of the issue of new shares or other dividend-bearing securities against contributions in cash or in kind with the grant of a subscription right, capital increase from retained earnings, issue of securities with option or conversion rights into shares, distribution of special dividends, capital reduction, share split, subdivision, consolidation or reclassification of the shares;
- b) spin-off of a division of the company in such a manner that a new independent company is created or the division is absorbed by a third company;
- c) probable or definitive cessation of stock exchange trading in the shares as a result of a merger by absorption or new company formation or takeover of the company of the Index Constituent in question by another company;
- d) or another event that, after determination by the Issuer, results in a dilution or concentration of the theoretical value of the relevant share.

The above list is not exhaustive. The decisive factor is whether the Derivatives Exchange considers it necessary to adjust the contract size, a contract underlying or the quotation on the relevant Reference Exchange for the determination of the price of the shares, or would consider it necessary if futures or options contracts on the Index Constituent were traded there. If neither futures nor options contracts linked to the shares of the company are traded on the Derivatives Exchange, the adjustment shall be made in the manner in which the Derivatives Exchange would do so if corresponding futures or options contracts were traded there. If doubts arise in this event relating to the application of the adjustment rules

of the Derivatives Exchange, the Index Calculation Agent shall decide such questions in its discretion.

The Index Calculation Agent shall be entitled where appropriate to depart from the adjustments made by the Derivatives Exchange if it considers such a course of action to be necessary in its discretion in order to reflect differences between the Index and the futures and options contracts traded on the Derivatives Exchange. This applies in particular to measures pursuant to items (b) and (c). Irrespective of whether, which and when adjustments are made on the Derivatives Exchange, the Index Calculation Agent may make adjustments with the aim of maintaining the economic value of the Index as far as possible compared to its value prior to the measures pursuant to items (b) and (c).

The “**Extraordinary Adjustment Date**” is the first exchange trading day on which trading in the corresponding futures or options contracts takes place after taking account of the adjustment. If no corresponding futures or options contracts are traded on a derivatives exchange, the Index Calculation Agent shall determine the Extraordinary Adjustment Date in its discretion taking into account the timing of the change, adjustment or other measure.

Such adjustments may in particular concern the weighting of an Index Constituent or its replacement following a merger with an Equity of the absorbing or newly formed company, with an adjusted weighting and possibly with a different trading venue as the new Reference Exchange.

If an Index Constituent is replaced with a basket of Equities as a result of the adjustment by the Derivatives Exchange, the Index Calculation Agent may decide to select just one Equity to replace it in the Index and sell the other Equities in the basket created as the result of the adjustment by the Derivatives Exchange on the next Adjustment Date following the Extraordinary Adjustment Date at a time chosen in its own discretion, reinvesting the proceeds immediately after the sale in the remaining Index Constituents. The Index Calculation Agent may select this (new) Equity in particular on the basis of the market capitalization of the qualifying Equities on the Extraordinary Adjustment Date or on the basis of (other) criteria in the selection procedure. If one or more of the Equities to be sold is/are not traded on a securities exchange until a later date, the Extraordinary Adjustment Date is postponed to the day on which all of the Equities to be sold can be traded on a securities exchange.

If the Index Calculation Agent determines in its own discretion that a particular Index Constituent cannot be properly replaced for any reason, it may replace the Index Constituent in question with a cash allocation. This cash allocation bears no interest.

4.3 Income distributions and interest

The Index is calculated as a performance index. Dividend payments and other distributions are included net of country-specific taxes (“Net Return”). The respective country-specific taxes currently in force are published on at least one of the Information Pages.

In the case of cash distributions on an Index Constituent, the Index Calculation Agent shall reinvest the received cash distributions in the same Index Constituent on the ex-dividend date to ensure that the cash distribution is reflected in the Index. This results in a temporary increase in the Index Constituent's weighting until the next ordinary adjustment of the Index.

5 Changes to the selection procedure

Both the selection criteria described in these Guidelines for the Index Universe and the Index Strategy are binding. However, since the need for amendments cannot be excluded, e.g. due to errors in the rules, changes in the market environment, modifications of the rationale behind the selection procedure or new developments in supervisory, tax or other legislation, the Index Calculation Agent may amend the selection criteria and thus make changes to the Index itself and its calculation method at the request of the Index Sponsor.

The Index Calculation Agent always provides information on changes to the selection criteria with an adequate lead time by publishing the amended description of the selection criteria on at least one of the Information Pages at least five Calculation Days before the amended description of the selection criteria takes effect. When errors in the description of the selection criteria are corrected, immediate correction with simultaneous publication is permitted. Amendments to the selection criteria are never made retroactively.

6 Notices

All notices pertaining to the Index will be published on at least one of the Information Pages. Such notices shall be deemed to have been given on the date on which they are published.

Notices are given purely for informational purposes and do not represent a precondition for legal effectiveness.

Details of the performance and composition of the Index will be published on at least one of the Information Pages.

7 Use of data

The description of the Index and its selection criteria is the intellectual property of Bank Vontobel AG, Gotthardstrasse 43, 8022 Zurich, Switzerland, or companies affiliated with it (collectively referred to as "**Vontobel**"), which reserve all rights pertaining to it.

Vontobel allows its clients, e.g. banks, investment firms and securities issuers, to use its data for the purpose of issuing derivative financial instruments.