

# TIP Taiwan Market Biotechnology and Medical Care Index

## I. Introduction

TIP Taiwan Biotechnology and Medical Care Index (TIP Taiwan BIO Index) is a market-value representative index, weighted by free-float adjusted market capitalization, with constituents are selected from biotechnology and medical care companies listed on the Taiwan Stock Exchange Corporation (TWSE) and the Taipei Exchange (TPEX). This index is designed to represent the investment performance of biotechnology and medical care companies in the Taiwan market.

## II. Calculation and Management

1. The index types of TIP Taiwan BIO Index include the “Price Index” and the “Total Return Index”, which are compiled by the Taiwan Index Plus Corporation (TIP). TWSE is designated to provide with the real-time calculation and dissemination.
2. TIP conducts periodic reviews of constituents according to the index rules.
3. TIP retains the closing market capitalization records of all constituents.

## III. Eligibility of Constituents

### 1. Sampling Universe

- A. Index Universe: Common stocks listed on the TWSE and the TPEX (excluding managed stocks, emerging stocks, stock with altered trading method and suspended trading securities; however, those stopped from trading due to capital reduction, conversion to holding companies, or exchange of stocks into new stocks by newly established companies may still be included in the Index Universe).
- B. Sampling Range: Stocks in the index universe and classified to Biotechnology and Medical Care industry of TWSE or TPEX.

### 2. Criteria of Constituent Selection:

- A. The stocks from the Sampling Universe are ranked by their market capitalization in descending order, and selected subject to the total weight being greater than or equal to 90% of the industry market capitalization as the candidates.
- B. Liquidity Criteria:  
In the 12-month period prior to the review, the free-float turnover rate shall reach 3% in at least 8 months; if the date from the IPO listings on TWSE

or TPEX is less than one year, the free-float turnover rate shall reach 3% in the three-month period prior to the review.

Free-float turnover rate = monthly trading volume/number of free-float shares.

Number of free-float shares = free-float coefficient × number of issued shares

C. Candidates that pass the Liquidity Criteria are selected as constituents of the index. If the trading volume in the market is so low that the coverage rate of the constituents is less than 60% of the overall industry, then the 8-month condition to be met in Liquidity Criteria shall be relaxed progressively, until the coverage rate is at least 60% to effectively express the industry performance.

### 3. Weighting Method:

A. The weight of the individual constituent is determined by the free-float adjusted market capitalization.

B. According to the free-float adjusted market capitalization, the weight of individual constituent shall not exceed 20%, and the total weight of the top five constituents shall not exceed 60%.

## IV. Index Calculation

### 1. Index Calculation Frequency:

A. The “Price Index” is calculated and disseminated every five seconds based on the most recent trading prices of the constituents during the trading hours of the TWSE and the TPEX, and the end-of-day (EOD) index is calculated once a day after the daily close.

B. TIP also compiles the “Total Return Index”, which makes an adjustment to the Index taking the cash dividend factor into consideration to reflect the return including reinvesting the cash dividend. The index is calculated and published once a day after the daily close.

### 2. Calculation Formula:

A. TIP Taiwan BIO Index: price index

$$\text{Index} = \frac{\text{total index market values}}{\text{index divisor}} \times \text{base value}$$

$$Index_{(t)} = \frac{\sum_{i=1}^n c_i \times f_i \times s_{i(t)} \times p_{i(t)}}{Divisor_{(t)}} \times 5000$$

$c_i \times f_i \times s_{i(t)} \times p_{i(t)}$  = index market value of constituent i on day t

n = number of index constituents

$p_i(t)$  = latest transaction price of constituent i on day t

$s_i(t)$  = number of issued shares of constituent i on day t

$f_i$  = free-float coefficient of constituent i

$c_i$  = weight-adjustment coefficient of constituent i, which is determined based on the weighting limit of the constituent specified at the data cut-off dates.

*Divisor* = index divisor: After the market close, the index divisor is adjusted according to the “Market-Value Investment Index Category” in the Company's "[TIP Corporate Actions and Events Methodology](#)" to maintain the index continuity. The adjustment method is as follows:

index divisor

= index divisor of the previous day

$$\times \left( \frac{\text{total index market values at the previous day's close} \pm \text{total index market values changes}}{\text{total index market values at the previous day's close}} \right)$$

Note 1: The base date is July 14, 2017, and the base value is 5000 points.

Note 2: The index divisor on the base date is the total index market values at that time.

$$\sum_{i=1}^n c_i \times f_i \times s_{i(\text{launch})} \times p_{i(\text{launch})}, \text{ launch} = \text{base date}$$

B. TIP Taiwan BIO TR Index: total return index

$$Index = \frac{\text{total index market values}}{\text{index divisor of the total return index}} \times \text{base value}$$

$$Index_{(t)} = \frac{\sum_{i=1}^n c_i \times f_i \times S_{i(t)} \times P_{i(t)}}{DivisorTR_{(t)}} \times 5000$$

*DivisorTR* = index divisor of the total return index

The index divisor adjustment formula when constituents go ex-dividend is as follows:

$$\begin{aligned} &\text{index divisor of the total return index} \\ &= \text{index divisor of the total return index on the previous day} \\ &\times \left( \frac{\text{total index market values at the previous day's close} \pm \text{total index market values changes}}{\text{total index market values at the previous day's close}} \right) \end{aligned}$$

## V. Constituent Adjustment and Index Maintenance

### 1. Periodic Review and Adjustment of Constituents:

- A. The constituents are reviewed four times a year, with the 7th trading day of February, May, August and November as the review dates, and the data cut-off dates are the last trading day of January, April, July and October respectively. The number of constituents may be variable after each periodic review.
- B. The results of the constituents periodic review will become effective 5 trading days after the release of the technical notice on the 7th trading day of February, May, August and November.
- C. For the index divisor maintenance, the closing data of the trading day before the effective date of the periodic review is adopted to calculate the difference between the index market value of the new portfolio and the original portfolio (the total market value of the index after the adjustment of the weight adjustment coefficient and the free-float coefficient) to use as the total index market value changes.
- D. For the regular review of holding companies or newly established companies, if the period of the selected data of constituents is insufficient, and if the representative companies of the converted stocks meet the Sampling Universe qualification, the data of representative companies or their stocks may also be used in the review.

### 2. TIP Taiwan BIO Index is a Market-Value Investment Index Category. The related

maintenance such as the non-periodic adjustment of constituents, the weight-adjustment coefficient, the number of issued shares, and the index divisor are handled according to the "[TIP Corporate Actions and Events Methodology](#)".

3. Principles for Implementation of the Free-float Coefficient:

- A. If the free-float coefficient of a stock is less than 10%, it will not be included in the sampling.
- B. The update of free-float coefficients of all constituents shall be in conjunction with the effective date of constituents periodic review.
- C. The free-float coefficients of constituents are updated according to the most recent data generated from TIP's "[TIP Free Float Adjustment Methodology](#)".