

Putnam VT Growth Opportunities Fund

Prospectus

4 | 30 | 21

| FUND SYMBOLS | CLASS IA | CLASS IB | |
|--------------|----------|----------|---|
| | | | Fund summary 2 |
| | | | What are the fund's main investment strategies and related risks? 3 |
| | | | Who oversees and manages the fund? 5 |
| | | | How to buy and sell fund shares 6 |
| | | | How does the fund price its shares? 7 |
| | | | Distribution plan and payments to dealers 7 |
| | | | Policy on excessive short-term trading 8 |
| | | | Fund distributions and taxes 10 |
| | | | Financial highlights 10 |

This prospectus explains what you should know about Putnam VT Growth Opportunities Fund, one of the funds of Putnam Variable Trust, which is available for purchase by separate accounts of insurance companies. Please read it carefully. Certain shares of other funds of the Trust are offered through other prospectuses.

These securities have not been approved or disapproved by the Securities and Exchange Commission (SEC) nor has the SEC passed upon the accuracy or adequacy of this prospectus. Any statement to the contrary is a crime.

**Putnam VT Emerging Markets Equity Fund
Putnam VT Growth Opportunities Fund**

Prospectuses dated April 30, 2021

Putnam Investment Management, LLC (“Putnam Management”), the investment manager of Putnam VT Emerging Markets Equity Fund and Putnam VT Growth Opportunities Fund (each, a “fund” and collectively, the “funds”), has recommended, and the funds’ Board of Trustees has approved, and recommended that shareholders approve, a change in each fund’s sub-classification under the Investment Company Act of 1940, as amended, from “diversified” to “non-diversified” and related amendments to each fund’s fundamental investment policies regarding diversification of investments. In order to meet the requirements of the funds’ current diversification classification, the funds currently must limit purchases of certain companies relative to their weights in the corresponding benchmark index, even if Putnam Management finds them to be attractive investment opportunities. As a non-diversified fund, each fund would have greater flexibility to invest more of its assets in the securities of fewer issuers than it currently does as a diversified fund. This means that each fund would be able, if desired for investment purposes, to invest a greater portion of its assets in one or more of the large constituents of the corresponding index. Each fund would be exposed to non-diversification risk, as its ability to invest more of its assets in the securities of fewer issuers would increase its vulnerability to factors affecting a single investment.

Shareholder approval is required to change each fund from “diversified” to “non-diversified” and to make the related amendments to the fund’s fundamental investment policies regarding diversification of investments. A full description of the proposal to change the funds’ sub-classification from “diversified” to “non-diversified” and to make related amendments to the funds’ fundamental investment policies regarding diversification of investments will be contained in a proxy statement that is expected to be mailed to shareholders in May 2022 (the “Proxy Statement”). If shareholders approve the proposal with respect to a fund, it is anticipated that the change to the fund’s sub-classification from diversified to non-diversified, as well as the related amendments to the fund’s fundamental investment policies regarding diversification of investments, would take effect on July 1, 2022. If shareholders do not approve the proposal with respect to a fund, the fund would continue to operate as a “diversified” fund and the fund’s current fundamental investment policies with respect to diversification of investments would remain in effect.

The foregoing is not a solicitation of any proxy. For more information regarding the funds, or to receive a free copy of materials filed with the Securities and Exchange Commission (“SEC”), please visit Putnam’s website at putnam.com/individual. Free copies of these materials can also be found on the SEC’s website at <http://www.sec.gov>. Please read the funds’ proxy statement carefully when it becomes available in the coming weeks because it will contain important information. The funds, their trustees, officers, and other members of management may be deemed to be participants in any future solicitation of the funds’ shareholders in connection with the forthcoming meeting of shareholders. Shareholders may obtain information regarding the names, affiliations, and interests of these individuals in the funds’ proxy statement when it becomes available.

Shareholders should retain this Supplement for future reference.

Putnam VT Focused International Equity Fund
Putnam VT Global Health Care Fund
Putnam VT Growth Opportunities Fund
Putnam VT International Equity Fund
Putnam VT International Value Fund
Putnam VT Large Cap Value Fund
Putnam VT Multi-Cap Core Fund
Putnam VT Research Fund
Putnam VT Small Cap Growth Fund
Putnam VT Small Cap Value Fund

For the funds listed above, the following language is added to the section “What are the fund’s main investment strategies and related risks?”:

ESG considerations. We expect to integrate environmental, social, or governance (“ESG”) considerations, where we consider them material and relevant, into our fundamental research process and investment decision-making for the fund, although ESG considerations do not represent a primary focus of the fund. We believe that ESG considerations, like other, more traditional subjects of investment analysis such as market position, growth prospects, and business strategy, have the potential to impact financial risk and investment returns. We believe that ESG considerations are best analyzed in combination with a company’s fundamentals, including a company’s industry, geography, and strategic position. When considering ESG factors, we use company disclosures, public data sources, and independent third-party data as inputs into our analytical processes. The consideration of ESG factors as part of the fund’s investment process does not mean that the fund pursues a specific “ESG” or “sustainable” investment strategy, and we may make investment decisions for the fund other than on the basis of relevant ESG considerations.

Fund summary

Goal

Putnam VT Growth Opportunities Fund seeks capital appreciation.

Fees and expenses

The following table describes the fees and expenses you may pay if you buy, hold and sell shares of the fund. You may pay other fees, such as brokerage commissions and other fees to financial intermediaries, which are not reflected in the table and example below. The fees and expenses information does not reflect insurance-related charges or expenses borne by contract holders indirectly investing in the fund. If it did, expenses would be higher.

Annual fund operating expenses

(expenses you pay each year as a percentage of the value of your investment)

| Share class | Management fees | Distribution and service (12b-1) fees | Other expenses | Total annual fund operating expenses |
|-------------|-----------------|---------------------------------------|----------------|--------------------------------------|
| Class IA | 0.55% | N/A | 0.10% | 0.65% |
| Class IB | 0.55% | 0.25% | 0.10% | 0.90% |

Example

The following hypothetical example is intended to help you compare the cost of investing in the fund with the cost of investing in other funds. The example does not reflect insurance-related charges or expenses. If it did, expenses would be higher. It assumes that you invest \$10,000 in the fund for the time periods indicated and then redeem or hold all your shares at the end of those periods. It assumes a 5% return on your investment each year and that the fund's operating expenses remain the same. Your actual costs may be higher or lower.

| Share class | 1 year | 3 years | 5 years | 10 years |
|-------------|--------|---------|---------|----------|
| Class IA | \$66 | \$208 | \$362 | \$810 |
| Class IB | \$92 | \$287 | \$498 | \$1,108 |

Portfolio turnover

The fund pays transaction-related costs, such as commissions, when it buys and sells securities (or "turns over" its portfolio). A higher turnover rate may indicate higher transaction costs. These costs, which are not reflected in annual fund operating expenses or the above example, affect fund performance. The fund's turnover rate in the most recent fiscal year was 48%.

Investments, risks, and performance

Investments

We invest mainly in common stocks of large U.S. companies, with a focus on growth stocks. Growth stocks are stocks of companies whose earnings are expected to grow faster than those of similar firms, and whose business growth and other characteristics may lead to an increase in stock price. We may consider, among other factors, a company's valuation, financial strength, growth

potential, competitive position in its industry, projected future earnings, cash flows and dividends when deciding whether to buy or sell investments.

Risks

It is important to understand that you can lose money by investing in the fund.

The value of investments in the fund's portfolio may fall or fail to rise over extended periods of time for a variety of reasons, including general economic, political or financial market conditions, investor sentiment and market perceptions, government actions, geopolitical events or changes, and factors related to a specific issuer, geography, industry or sector. These and other factors may lead to increased volatility and reduced liquidity in the fund's portfolio holdings. The novel coronavirus (COVID-19) pandemic and efforts to contain its spread are likely to negatively affect the value, volatility, and liquidity of the securities and other assets in which the fund invests and exacerbate other risks that apply to the fund. These effects could negatively impact the fund's performance and lead to losses on your investment in the fund. Growth stocks may be more susceptible to earnings disappointments, and the market may not favor growth-style investing. From time to time, the fund may invest a significant portion of its assets in companies in one or more related industries or sectors, which would make the fund more vulnerable to adverse developments affecting those companies, industries or sectors.

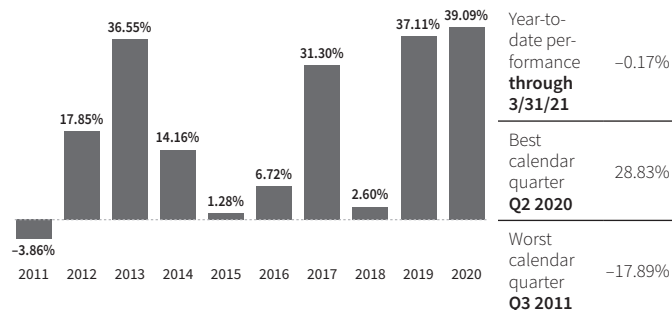
There is no guarantee that the investment techniques, analyses, or judgments that we apply in making investment decisions for the fund will produce the intended outcome or that the investments we select for the fund will perform as well as other securities that were not selected for the fund. We, or the fund's other service providers, may experience disruptions or operating errors that could negatively impact the fund.

The fund may not achieve its goal, and it is not intended to be a complete investment program. An investment in the fund is not insured or guaranteed by the Federal Deposit Insurance Corporation or any other government agency.

Performance

The performance information below gives some indication of the risks associated with an investment in the fund by showing the fund's performance year to year and over time. The performance information does not reflect insurance-related charges or expenses. If it did, performance would be lower. Please remember that past performance is not necessarily an indication of future results.

Annual total returns for class IA shares



Average annual total returns

(for periods ended 12/31/20)

| Share class | 1 year | 5 years | 10 years |
|--|--------|---------|----------|
| Class IA | 39.09% | 22.35% | 17.24% |
| Class IB | 38.71% | 22.04% | 16.94% |
| Russell 1000 Growth Index* (no deduction for fees, expenses or taxes) | 38.49% | 21.00% | 17.21% |

* Frank Russell Company is the source and owner of the trademarks, service marks and copyrights related to the Russell Indexes. Russell® is a trademark of Frank Russell Company.

Your fund's management

Investment advisor

Putnam Investment Management, LLC

Portfolio managers

Richard Bodzy, Portfolio Manager, portfolio manager of the fund since 2017

Greg McCullough, Portfolio Manager, portfolio manager of the fund since 2019

Sub-advisor

Putnam Investments Limited*

* Though the investment advisor has retained the services of Putnam Investments Limited (PIL), PIL does not currently manage any assets of the fund.

Purchase and sale of fund shares

Fund shares are offered to separate accounts of various insurers. The fund requires no minimum investment, but insurers may require minimum investments from those purchasing variable insurance products for which the fund is an underlying investment option. Insurers may purchase or sell shares on behalf of separate accounts by submitting an order to Putnam Retail Management any day the New York Stock Exchange (NYSE) is open. Some restrictions may apply.

Tax information

Generally, owners of variable insurance contracts are not taxed currently on income or gains realized with respect to such contracts. However, some distributions from such contracts may be taxable at ordinary income tax rates and distributions to contract owners younger than 59½ may be subject to a 10%

penalty tax. For more information, please see the prospectus (or other offering document) for your variable insurance contract.

Payments to insurance companies

The fund is offered as an underlying investment option for variable insurance contracts. The fund and its related companies may make payments to the sponsoring insurance company (or its affiliates) and dealers for distribution and/or other services. These payments may create an incentive for the insurance company to include the fund, rather than another investment, as an option in its products and may create a conflict of interest for dealers in recommending the fund over another investment. The prospectus (or other offering document) for your variable insurance contract may contain additional information about these payments.

What are the fund's main investment strategies and related risks?

This section contains greater detail on the fund's main investment strategies and the related risks you would face as a fund shareholder. It is important to keep in mind that risk and reward generally go hand in hand; the higher the potential reward, the greater the risk. As mentioned in the fund's summary, we pursue the fund's goal by investing mainly in growth stocks.

- Common stocks.** Common stock represents an ownership interest in a company. The value of a company's stock may fall as a result of factors directly relating to that company, such as decisions made by its management or lower demand for the company's products or services. A stock's value may also fall because of factors affecting not just the company, but also other companies in the same industry or in a number of different industries, such as increases in production costs. From time to time, the fund may invest a significant portion of its assets in companies in one or more related industries or sectors, which would make the fund more vulnerable to adverse developments affecting those companies, industries or sectors. For example, the fund may invest a significant portion of its assets in companies in the information technology sector (including companies that develop products, processes or services that will provide advances and improvements through information technology to consumers, enterprises and governments). The information technology sector may be significantly affected by technological obsolescence or innovation, short product cycles, falling prices and profits, competitive pressures and general market conditions.

The value of a company's stock may also be affected by changes in financial markets that are relatively unrelated to the company or its industry, such as changes in interest rates or currency exchange rates. In addition, a company's stock generally pays dividends only after the company invests in its own business and makes required payments to holders of its bonds and other debt. For this reason, the value of a company's stock will usually react more strongly than its bonds and other debt to actual or perceived changes in the company's financial condition or

prospects. Stocks of smaller companies may be more vulnerable to adverse developments than those of larger companies.

Growth stocks — Stocks of companies we believe are fast-growing may trade at a higher multiple of current earnings than other stocks. The values of these stocks may be more sensitive to changes in current or expected earnings than the values of other stocks. If our assessment of the prospects for a company's earnings growth is wrong, or if our judgment of how other investors will value the company's earnings growth is wrong, then the price of the company's stock may fall or may not approach the value that we have placed on it. In addition, growth stocks, at times, may not perform as well as value stocks or the stock market in general, and may be out of favor with investors for varying periods of time.

- **Foreign investments.** We may invest in foreign investments, although they do not represent a primary focus of the fund. Foreign investments involve certain special risks. For example, their values may decline in response to changes in currency exchange rates, unfavorable political and legal developments, unreliable or untimely information, and economic and financial instability. In addition, the liquidity of these investments may be more limited than for most U.S. investments, which means we may at times be unable to sell them at desirable prices. Foreign settlement procedures may also involve additional risks. These risks are generally greater in the case of developing (also known as emerging) markets, which typically have less developed legal and financial systems.

Some of these risks may also apply to some extent to U.S.-traded investments that are denominated in foreign currencies, investments in U.S. companies that are traded in foreign markets, or investments in U.S. companies that have significant foreign operations.

- **Derivatives.** We may engage in a variety of transactions involving derivatives, such as futures, options, warrants and swap contracts, although they do not represent a primary focus of the fund. Derivatives are financial instruments whose value depends upon, or is derived from, the value of something else, such as one or more underlying investments, pools of investments, indexes or currencies. We may make use of "short" derivatives positions, the values of which typically move in the opposite direction from the price of the underlying investment, pool of investments, index or currency. We may use derivatives both for hedging and non-hedging purposes, including as a substitute for a direct investment in the securities of one or more issuers. However, we may also choose not to use derivatives based on our evaluation of market conditions or the availability of suitable derivatives. Investments in derivatives may be applied toward meeting a requirement to invest in a particular kind of investment if the derivatives have economic characteristics similar to that investment.

Derivatives involve special risks and may result in losses. The successful use of derivatives depends on our ability to manage these sophisticated instruments. Some derivatives are "leveraged," which means they provide the fund with investment exposure greater than the value of the fund's investment in the derivatives. As a result, these derivatives may magnify or otherwise increase investment losses to the fund. The risk of loss from certain short derivatives positions is theoretically unlimited. The value of derivatives may move in unexpected ways due to the use of leverage or other factors, especially in unusual market conditions, and may result in increased volatility.

Other risks arise from the potential inability to terminate or sell derivatives positions. A liquid secondary market may not always exist for the fund's derivatives positions. In fact, many over-the-counter instruments (investments not traded on an exchange) will not be liquid. Over-the-counter instruments also involve the risk that the other party to the derivatives transaction will not meet its obligations. For further information about additional types and risks of derivatives and the fund's asset segregation policies, see *Miscellaneous Investments, Investment Practices and Risks* in the Statement of Additional Information (SAI).

- **Liquidity and illiquid investments.** We may invest up to 15% of the fund's net assets in illiquid investments, which may be considered speculative and which may be difficult to sell. The sale of many of these investments is prohibited or limited by law or contract. Some investments may be difficult to value for purposes of determining the fund's net asset value. Certain other investments may not have an active trading market due to adverse market, economic, industry, political, regulatory, geopolitical, environmental, public health, and other conditions, including investors trying to sell large quantities of a particular investment or type of investment, or lack of market makers or other buyers for a particular investment or type of investment. We may not be able to sell the fund's investments when we consider it desirable to do so, or we may be able to sell them only at less than their value.
- **Market risk.** The value of investments in the fund's portfolio may fall or fail to rise over extended periods of time for a variety of reasons, including general economic, political or financial market conditions; investor sentiment and market perceptions (including perceptions about monetary policy, interest rates or the risk of default); government actions (including protectionist measures, intervention in the financial markets or other regulation, and changes in fiscal, monetary or tax policies); geopolitical events or changes (including natural disasters, epidemics or pandemics, terrorism and war); and factors related to a specific issuer, geography, industry or sector. Foreign financial markets have their own market risks, and they may be more or less volatile than U.S. markets and may move in different directions. These and other factors may lead to increased volatility and reduced liquidity in the fund's portfolio holdings. During those periods, the fund may experience high levels of shareholder redemptions, and may have to sell securities at times when it would otherwise

not do so, and at unfavorable prices. These risks may be exacerbated during economic downturns or other periods of economic stress.

The novel coronavirus (COVID-19) pandemic and efforts to contain its spread have negatively affected, and are likely to continue to negatively affect, the global economy, the economies of the United States and other individual countries, and the financial performance of individual issuers, sectors, industries, asset classes, and markets in significant and unforeseen ways. The COVID-19 pandemic has resulted in significant market volatility, exchange trading suspensions and closures, declines in global financial markets, higher default rates, and economic downturns and recessions, and these effects may continue for an extended period of time and may increase in severity over time. In addition, actions taken by government and quasi-governmental authorities and regulators throughout the world in response to the COVID-19 pandemic, including significant fiscal and monetary policy changes, may affect the value, volatility, and liquidity of some securities and other assets. Given the significant uncertainty surrounding the magnitude, duration, reach, costs and effects of the COVID-19 pandemic, as well as actions that have been or could be taken by governmental authorities or other third parties, it is difficult to predict its potential impacts on the fund's investments. The effects of the COVID-19 pandemic also are likely to exacerbate other risks that apply to the fund, including the risks disclosed in this prospectus, which could negatively impact the fund's performance and lead to losses on your investment in the fund.

- **Management and operational risk.** The fund is actively managed and its performance will reflect, in part, our ability to make investment decisions that seek to achieve the fund's investment objective. There is no guarantee that the investment techniques, analyses, or judgments that we apply in making investment decisions for the fund will produce the intended outcome or that the investments we select for the fund will perform as well as other securities that were not selected for the fund. As a result, the fund may underperform its benchmark or other funds with a similar investment goal and may realize losses. In addition, we, or the fund's other service providers, may experience disruptions or operating errors that could negatively impact the fund. Although service providers may have operational risk management policies and procedures and take appropriate precautions to avoid and mitigate risks that could lead to disruptions and operating errors, it may not be possible to identify all of the operational risks that may affect the fund or to develop processes and controls to completely eliminate or mitigate their occurrence or effects.
- **Other investments.** In addition to the main investment strategies described above, the fund may make other types of investments, such as investments in preferred stocks, convertible securities, and debt instruments. The fund may also loan portfolio securities to earn income. These practices may be subject to other risks, as described under *Miscellaneous Investments, Investment Practices and Risks* in the SAI.

- **Temporary defensive strategies.** In response to adverse market, economic, political or other conditions, we may take temporary defensive positions, such as investing some or all of the fund's assets in cash and cash equivalents, that differ from the fund's usual investment strategies. However, we may choose not to use these temporary defensive strategies for a variety of reasons, even in very volatile market conditions. These strategies may cause the fund to miss out on investment opportunities, and may prevent the fund from achieving its goal. Additionally, while temporary defensive strategies are mainly designed to limit losses, such strategies may not work as intended.

- **Changes in policies.** The Trustees may change the fund's goal, investment strategies and other policies set forth in this prospectus without shareholder approval, except as otherwise provided in the prospectus or SAI.

- **Portfolio turnover rate.** The fund's portfolio turnover rate measures how frequently the fund buys and sells investments. A portfolio turnover rate of 100%, for example, would mean that the fund sold and replaced securities valued at 100% of the fund's assets within a one-year period.

From time to time the fund may engage in frequent trading.

High turnover may also cause a fund to pay more brokerage commissions and other transaction costs, which may detract from performance. The fund's portfolio turnover rate and the amount of brokerage commissions it pays will vary over time based on market conditions.

- **Portfolio holdings.** The SAI includes a description of the fund's policies with respect to the disclosure of its portfolio holdings. For more specific information on the fund's portfolio, you may visit the Putnam Investments website, putnam.com/individual/annuities, where the fund's top 10 holdings and related portfolio information may be viewed monthly beginning approximately 15 days after the end of each month, and full portfolio holdings may be viewed quarterly beginning on the 8th business day after the end of each calendar quarter. This information will remain available on the website at least until the fund files a Form N-CSR or publicly available Form N-PORT with the SEC for the period that includes the date of the information, after which such information can be found on the SEC's website at <http://www.sec.gov>.

Who oversees and manages the fund?

The fund's Trustees

As a shareholder of a mutual fund, you have certain rights and protections, including representation by a Board of Trustees. The Putnam Funds' Board of Trustees oversees the general conduct of the fund's business and represents the interests of the Putnam fund shareholders. At least 75% of the members of the Putnam Funds' Board of Trustees are independent, which means they are not officers of the fund or affiliated with Putnam Investment Management, LLC (Putnam Management).

The Trustees periodically review the fund’s investment performance and the quality of other services such as administration, custody, and investor services. At least annually, the Trustees review the fees paid to Putnam Management and its affiliates for providing or overseeing these services, as well as the overall level of the fund’s operating expenses. In carrying out their responsibilities, the Trustees are assisted by an administrative staff, auditors and legal counsel that are selected by the Trustees and are independent of Putnam Management and its affiliates.

Contacting the fund’s Trustees

Address correspondence to:
The Putnam Funds Trustees
100 Federal Street
Boston, MA 02110

The fund’s investment manager

The Trustees have retained Putnam Management, which has managed mutual funds since 1937, to be the fund’s investment manager, responsible for making investment decisions for the fund and managing the fund’s other affairs and business.

The basis for the Trustees’ approval of the fund’s management contract and the sub-management contract described below is discussed in the fund’s semiannual report to shareholders dated June 30, 2020.

The fund pays a monthly management fee to Putnam Management. The fee is calculated by applying a rate to the fund’s average net assets for the month. The rate is based on the monthly average of the aggregate net assets of all open-end funds sponsored by Putnam Management (excluding net assets of funds that are invested in, or that are invested in by, other Putnam funds to the extent necessary to avoid “double counting” of those assets), and generally declines as the aggregate net assets increase.

The fund paid Putnam Management a management fee (after any applicable waivers) of 0.55% of average net assets for the fund’s last fiscal year.

Putnam Management’s address is 100 Federal Street, Boston, MA 02110.

Putnam Management has retained its affiliate PIL to make investment decisions for such fund assets as may be designated from time to time for its management by Putnam Management. PIL is not currently managing any fund assets. If PIL were to manage any fund assets, Putnam Management (and not the fund) would pay a quarterly sub-management fee to PIL for its services at the annual rate of 0.35% of the average net asset value (NAV) of any fund assets managed by PIL. PIL, which provides a full range of international investment advisory services to institutional clients, is located at 16 St James’s Street, London, England, SW1A 1ER.

Pursuant to this arrangement, Putnam investment professionals who are based in foreign jurisdictions may serve as portfolio managers of the fund or provide other investment services, consistent with local regulations.

- **Portfolio managers.** The officers of Putnam Management identified below are jointly and primarily responsible for the day-to-day management of the fund’s portfolio.

| Portfolio managers | Joined fund | Employer | Positions over past five years |
|--------------------|-------------|--|---|
| Richard Bodzy | 2017 | Putnam Management 2009–Present | Portfolio Manager Previously, Portfolio Manager, Analyst and Analyst |
| Greg McCullough | 2019 | Putnam Management 2019–Present | Portfolio Manager Previously, Portfolio Manager, Analyst and Analyst |
| | | Loomis, Sayles & Company 2008–2019 | Vice President, Senior Equity Analyst |

The SAI provides information about these individuals’ compensation, other accounts managed by these individuals and these individuals’ ownership of securities in the fund.

How to buy and sell fund shares

The Trust has an underwriting agreement relating to the fund with Putnam Retail Management, 100 Federal Street, Boston, Massachusetts 02110. Putnam Retail Management presently offers shares of the fund continuously to separate accounts of various insurers. The underwriting agreement presently provides that Putnam Retail Management accepts orders for shares at NAV and no sales commission or load is charged.

Shares are sold or redeemed at the NAV per share next determined after receipt of an order. Orders for purchases or sales of shares of the fund must be received by Putnam Retail Management before the close of regular trading on the NYSE in order to receive that day’s NAV. No fee is charged to a separate account when it redeems fund shares.

Please check with your insurance company to determine whether the fund is available under your variable annuity contract or variable life insurance policy. The fund may not be available in your state due to various insurance regulations. This prospectus should be read in conjunction with the prospectus of the separate account of the specific insurance product which accompanies this prospectus.

The fund currently does not foresee any disadvantages to policy owners arising out of the fact that the fund offers its shares to separate accounts of various insurance companies to serve as the investment medium for their variable products. Nevertheless, the Trustees intend to monitor events in order to identify any material irreconcilable conflicts which may possibly arise, and to determine what action, if any, should be taken in response to such

conflicts. If such a conflict were to occur, one or more insurance companies' separate accounts might be required to withdraw their investments in the fund and shares of another fund may be substituted. This might force the fund to sell portfolio securities at disadvantageous prices. In addition, the Trustees may refuse to sell shares of the fund to any separate account or may suspend or terminate the offering of shares of the fund if such action is required by law or regulatory authority or is in the best interests of the shareholders of the fund.

The fund typically expects to send you payment for your shares one business day after your request is received in good order. However, it is possible that payment of redemption proceeds may take up to seven days. Under unusual circumstances, the Trust may suspend redemptions or postpone payment for more than seven days, as permitted by federal securities law. Under normal market conditions, the fund typically expects to satisfy redemption requests by using holdings of cash and cash equivalents or selling portfolio assets to generate cash. Under stressed market conditions, the fund may also satisfy redemption requests by borrowing under the fund's lines of credit or interfund lending arrangements. For additional information regarding the fund's lines of credit and interfund lending arrangements, please see the SAI.

To the extent consistent with applicable laws and regulations, the fund reserves the right to satisfy all or a portion of a redemption request by distributing securities or other property in lieu of cash ("in-kind" redemptions), under both normal and stressed market conditions. The fund generally expects to use in-kind redemptions only in stressed market conditions or stressed conditions specific to the fund, such as redemption requests that represent a large percentage of the fund's net assets in order to minimize the effect of the large redemption on the fund and its remaining shareholders. Any in-kind redemption will be effected through a pro rata distribution of all publicly traded portfolio securities or securities for which quoted bid prices are available, subject to certain exceptions. The securities distributed in an in-kind redemption will be valued in the same manner as they are valued for purposes of computing the fund's net asset value. Once distributed in-kind to an investor, securities may increase or decrease in value before the investor is able to convert them into cash. Any transaction costs or other expenses involved in liquidating securities received in an in-kind redemption will be borne by the redeeming investor. The fund has committed, in connection with an election under Rule 18f-1 under the Investment Company Act of 1940, to pay all redemptions of fund shares by a single shareholder during any 90-day period in cash, up to the lesser of (i) \$250,000 or (ii) 1% of the fund's net assets measured as of the beginning of such 90-day period. For information regarding procedures for in-kind redemptions, please contact Putnam Retail Management.

How does the fund price its shares?

The price of the fund's shares is based on its NAV. The NAV per share of each class equals the total value of its assets, less its liabilities, divided by the number of its outstanding shares. Shares are only valued as of the scheduled close of regular trading on the NYSE each day the exchange is open.

The fund values its investments for which market quotations are readily available at market value. It values all other investments and assets at their fair value, which may differ from recent market prices. For example, the fund may value a stock traded on a U.S. stock exchange at its fair value when the exchange closes early or trading in the stock is suspended. It may also value a stock at fair value if recent transactions in the stock have been very limited or if, in the case of a security traded on a market that closes before the NYSE closes, material information about the issuer becomes available after the close of the relevant market.

The fund translates prices for its investments quoted in foreign currencies into U.S. dollars at current exchange rates, which are generally determined as of 4:00 p.m. Eastern Time each day the NYSE is open. As a result, changes in the value of those currencies in relation to the U.S. dollar may affect the fund's NAV. Because foreign markets may be open at different times than the NYSE, the value of the fund's shares may change on days when shareholders are not able to buy or sell them. Many securities markets and exchanges outside the U.S. close before the close of the NYSE, and the closing prices for securities in those markets or exchanges may not reflect events that occur after the close but before the scheduled close of regular trading on the NYSE. As a result, the fund has adopted fair value pricing procedures, which, among other things, require the fund to fair value foreign equity securities if there has been a movement in the U.S. market that exceeds a specified threshold that may change from time to time. As noted above, the value determined for an investment using the fund's fair value pricing procedures may differ from recent market prices for the investment.

Distribution plan and payments to dealers

The Trust has adopted a Distribution Plan with respect to class IB shares to compensate Putnam Retail Management for services provided and expenses incurred by it as principal underwriter of the class IB shares, including the payments to insurance companies and their affiliated dealers mentioned below. The plan provides for payments by the fund to Putnam Retail Management at the annual rate (expressed as a percentage of average net assets) of up to 0.35% on class IB shares. The Trustees currently limit payments on class IB shares to 0.25% of average net assets. Because these fees are paid out of the fund's assets on an ongoing basis, they will increase the cost of your investment.

Putnam Retail Management compensates insurance companies (or affiliated broker-dealers) whose separate accounts invest in the Trust through class IB shares for providing services to their contract holders investing in the Trust.

Putnam Retail Management makes quarterly payments to dealers at the annual rate of up to 0.25% of the average NAV of class IB shares.

Putnam Retail Management may suspend or modify its payments to dealers. The payments are also subject to the continuation of the Distribution Plan, the terms of service agreements between dealers and Putnam Retail Management, and any applicable limits imposed by the Financial Industry Regulatory Authority (FINRA).

In addition to the payments described above with respect to class IB shares, Putnam Retail Management and its affiliates also pay additional compensation to selected insurance companies (or affiliated broker-dealers) to whom shares of the fund are offered (“Record Owners”) and to dealers that sell variable insurance products (“dealers”) in recognition of their marketing and/or administrative services support. These payments may create an incentive for a Record Owner firm, dealer firm or their representatives to recommend or offer shares of the fund or other Putnam funds, or insurance products for which the fund serves as an underlying investment, to its customers. These additional payments are made by Putnam Retail Management and its affiliates and do not increase the amount paid by you or the fund as shown under *Fund summary— Fees and expenses*.

The additional payments to Record Owners and dealers by Putnam Retail Management and its affiliates are generally based on one or more of the following factors: average net assets of the fund attributable to that Record Owner or dealer, sales or net sales of the fund attributable to that Record Owner or dealer, or on the basis of a negotiated lump sum payment for services provided. Payments made by Putnam Retail Management and its affiliates for marketing and/or administrative support services to any one Record Owner or dealer are not expected, with certain limited exceptions, to exceed 0.25% of the average assets of the fund attributable to that Record Owner or dealer on an annual basis. These payments are made for marketing and/or administrative support services provided by Record Owners and dealers, including business planning assistance, educating dealer personnel about the fund and shareholder financial planning needs, placement on the dealer’s preferred or recommended fund company list, access to sales meetings, sales representatives and management representatives of the dealer and administrative services performed by the Record Owner or dealer. Putnam Retail Management and its affiliates may make other payments (including payments in connection with educational seminars or conferences) or allow other promotional incentives to Record Owners and dealers to the extent permitted by SEC and National Association of Security Dealers,

Inc. (as adopted by FINRA) rules and by other applicable laws and regulations.

You can find a list of all Record Owners and dealers to which Putnam made marketing and/or administrative support services payments in 2020 in the SAI, which is on file with the SEC and is also available on Putnam’s website at putnam.com. You can also find other details in the SAI about the payments made by Putnam Retail Management and its affiliates and the services provided by your Record Owner or dealer. In addition, you can ask your Record Owner or dealer for information about any payments it receives from Putnam Retail Management and its affiliates and any services provided by your Record Owner or dealer.

Policy on excessive short-term trading

- **Risks of excessive short-term trading.** Excessive short-term trading activity may reduce the fund’s performance and harm all fund shareholders by interfering with portfolio management, increasing the fund’s expenses and diluting the fund’s NAV. Depending on the size and frequency of short-term trades in the fund’s shares, the fund may experience increased cash volatility, which could require the fund to maintain undesirably large cash positions or buy or sell portfolio securities it would not have bought or sold otherwise. The need to execute additional portfolio transactions due to these cash flows may also increase the fund’s brokerage and administrative costs.

When the fund invests in foreign securities, its performance may be adversely impacted and the interests of longer-term shareholders may be diluted as a result of time-zone arbitrage, a short-term trading practice that seeks to exploit changes in the value of the fund’s investments that result from events occurring after the close of the foreign markets on which the investments trade, but prior to the later close of trading on the NYSE, the time as of which the fund determines its NAV. If an arbitrageur is successful, he or she may dilute the interests of other shareholders by trading shares at prices that do not fully reflect their fair value.

When the fund invests in securities that may trade infrequently or may be more difficult to value, such as securities of smaller companies, it may be susceptible to trading by short-term traders who seek to exploit perceived price inefficiencies in the fund’s investments. In addition, the market for securities of smaller companies may at times show “market momentum,” in which positive or negative performance may continue from one day to the next for reasons unrelated to the fundamentals of the issuer. Short-term traders may seek to capture this momentum by trading frequently in the fund’s shares, which will reduce the fund’s performance and may dilute the interests of other shareholders. Because securities of smaller companies may be less liquid than securities of larger companies, the fund may also be unable to buy or sell these securities at desirable prices when the need arises (for example, in response to volatile cash flows caused by short-term trading). Similar risks may apply

if the fund holds other types of less liquid securities, including below-investment-grade bonds.

- **Fund policies and limitations.** In order to protect the interests of long-term shareholders of the fund, Putnam Management and the fund's Trustees have adopted policies and procedures intended to discourage excessive short-term trading. The fund seeks to discourage excessive short-term trading by using fair value pricing procedures to value investments under some circumstances. In addition, Putnam Management monitors aggregate cash flows in each insurance company separate account that invests in the fund. If high cash flows relative to the size of the account or other information indicate that excessive short-term trading may be taking place in a particular separate account, Putnam Management will contact the insurance company that maintains accounts for the underlying contract holders and seek to have the insurance company enforce the separate account's policies on excessive short-term trading. As noted below, each insurance company's policies on excessive short-term trading will vary, and some insurance companies may not have adopted specific policies on excessive short-term trading.

As noted above, the fund's shareholders are separate accounts sponsored by various insurance companies. Because Putnam Management currently does not have comprehensive access to trading records of individual contract holders, it is difficult (and in some cases impossible) for Putnam Management to determine if a particular contract holder is engaging in excessive short-term trading. In certain circumstances, there currently are also operational or technological constraints on Putnam Management's ability to monitor trading activity. In addition, even in circumstances when Putnam Management has access to sufficient information to permit a review of trading, its detection methods may not capture all excessive short-term trading.

As a result of these limitations, the fund's ability to monitor and deter excessive short-term trading ultimately depends on the capabilities, policies and cooperation of the insurance companies that sponsor the separate accounts. Some of the separate accounts have adopted transfer fees, limits on exchange activity, or other measures to attempt to address the potential for excessive short-term trading, while other separate accounts currently have not. For more information about any measures applicable to your investment, please see the prospectus of the separate account of the specific insurance product that accompanies this prospectus. The measures used by Putnam Management or a separate account may or may not be effective in deterring excessive short-term trading. In addition, the terms of the particular insurance contract may also limit the ability of the insurance company to address excessive short-term trading. As a result, the fund can give no assurances that market timing and excessive short-term trading will not occur in the fund.

In compliance with Rule 22c-2 under the Investment Company Act of 1940, as amended, Putnam Retail Management and Putnam Investor Services, on behalf of the fund, have entered

into written agreements with the fund's financial intermediaries, under which the intermediary must, upon request, provide the fund with certain shareholder identity and trading information so that the fund can enforce its market timing policies.

- **Account monitoring.** In instances where trading records of individual contract holders are made available to Putnam Management, Putnam Management measures excessive short-term trading by the number of "round trip" transactions above a specified dollar amount within a specified period of time. A "round trip" transaction is defined as a transfer into a fund followed, or preceded, by a transfer out of the same fund. A transfer is defined as a transaction requested by the contract owner to reallocate part or all of their contract value among the funds available in the contract. Generally, if a contract holder has been identified as having completed two "round trip" transactions with values above a specified amount within a rolling 90-day period, Putnam Management will request that the separate account's financial intermediary issue a written warning to the contract holder. Putnam Management's practices for measuring excessive short-term trading activity and requesting warnings to be issued may change from time to time. Certain types of transactions are exempt from monitoring, such as transfers that are executed automatically pursuant to a company-sponsored contractual or systematic program such as transfer of assets as a result of "dollar cost averaging" programs, asset allocation programs or automatic rebalancing programs. Also exempt are annuity payouts, loans, and systematic withdrawal programs; payment of a death benefit; any deduction of fees; or payments such as loan repayments, scheduled contributions, withdrawals or surrenders; retirement plan salary reduction contributions or planned premium payments.
- **Account restrictions.** In addition to these monitoring practices, Putnam Management and the fund reserve the right to reject or restrict transfers for any reason. Continued excessive short-term trading activity by a contract holder following a warning may lead to the termination of the transfer privilege for that contract holder or the insurance company separate account. Putnam Management or the fund may determine that a contract holder's trading activity is excessive or otherwise potentially harmful based on various factors, including trading history in the fund, other Putnam funds or other investment products, and may aggregate activity in multiple accounts in the fund or other Putnam funds under common ownership or control for purposes of determining whether the activity is excessive. If the fund identifies a contract holder as a potential excessive trader, depending on the capabilities of the intermediary, it may, among other things, require future trades by the contract holder or the insurance company separate account to be submitted by mail rather than by phone or over the Internet, impose limitations on the amount, number, or frequency of future purchases or exchanges, or temporarily or permanently bar the contract holder or insurance company separate account from investing in the fund or other Putnam funds. The fund may take these steps

in its discretion even if the contract holder's activity does not fall within the fund's current monitoring parameters.

Fund distributions and taxes

The fund normally distributes any net investment income and any net realized capital gains annually. Distributions will be reinvested in additional shares of the fund, unless an election is made on behalf of a separate account to receive some or all of the distributions in cash.

Distributions are reinvested without a sales charge, using the NAV determined on the ex-dividend date. Distributions on each share are determined in the same manner and are paid in the same amount, regardless of class, except for such differences as are attributable to different class expenses.

Generally, holders of variable annuity and variable life insurance contracts are not taxed currently on income or gains realized with respect to such contracts. However, some distributions from such contracts may be taxable at ordinary income tax rates. In addition, distributions made to a contract holder who is younger than 59½ may be subject to a 10% penalty tax. Investors should ask their own tax advisors for more information on their own tax situation, including possible foreign, state or local taxes.

In order for investors to receive the favorable tax treatment available to holders of variable annuity and variable life insurance contracts, the separate accounts underlying such contracts, as well as the funds in which such accounts invest, must meet certain diversification requirements. The fund intends to diversify its assets in accordance with these requirements. If the fund does not meet such requirements, income allocable to the contracts would be taxable currently to the holders of such contracts. In addition, if the Internal Revenue Service finds an impermissible level of "investor control" over the investment options underlying variable annuity or variable life insurance contracts, the advantageous tax treatment provided with respect to insurance company separate accounts under the Internal Revenue Code of 1986, as amended, will no longer be available. Please see the SAI for further discussion.

The fund intends to qualify as a "regulated investment company" for federal income tax purposes and to meet all other requirements necessary for it to be relieved of federal income taxes on income and gains it timely distributes to the separate accounts. For information concerning federal income tax consequences for the holders of variable annuity contracts and variable

life insurance policies, contract holders should consult the prospectus of the applicable separate account.

The fund's investments in foreign securities, if any, may be subject to foreign withholding or other taxes. In that case, the fund's return on those investments would be decreased.

The fund's use of derivatives, if any, may affect the amount and timing of distributions to shareholders, potentially requiring the fund to liquidate other investments, including when it is not advantageous to do so, in order to satisfy its distribution requirements.

The foregoing discussion is very general and is based on the assumption that the shareholders in the fund will be insurance company separate accounts. For further information, please see *Taxes* in the SAI.

Information about the Summary Prospectus, Prospectus, and SAI

The summary prospectus, prospectus, and SAI for a fund provide information concerning the fund. The summary prospectus, prospectus, and SAI are updated at least annually and any information provided in a summary prospectus, prospectus, or SAI can be changed without a shareholder vote unless specifically stated otherwise. The summary prospectus, prospectus, and the SAI are not contracts between the fund and its shareholders and do not give rise to any contractual rights or obligations or any shareholder rights other than any rights conferred explicitly by federal or state securities laws that may not be waived.

Financial highlights

The financial highlights tables are intended to help you understand the fund's recent financial performance. Certain information reflects financial results for a single fund share. The total returns represent the rate that an investor would have earned or lost on an investment in the fund, assuming reinvestment of all dividends and distributions. Total returns and expense ratios do not reflect insurance related charges or expenses; if these charges and expenses were reflected, performance would be lower and expenses would be higher. This information has been derived from the fund's financial statements, which have been audited by PricewaterhouseCoopers LLP. The Independent Registered Public Accounting Firm's report and the fund's financial statements are included in the fund's annual report to shareholders, which is available upon request.

Financial highlights (For a common share outstanding throughout the period)

| Period ended | INVESTMENT OPERATIONS: | | | | LESS DISTRIBUTIONS: | | | | RATIOS AND SUPPLEMENTAL DATA: | | | | | |
|-----------------|--------------------------------------|---|--|----------------------------------|----------------------------|---------------------------------------|---------------------|------------------------------|--------------------------------|--|--|--|--|------------------------|
| | Net asset value, beginning of period | Net investment income (loss) ^a | Net realized and unrealized gain (loss) on investments | Total from investment operations | From net investment income | From net realized gain on investments | Total distributions | Non-recurring reimbursements | Net asset value, end of period | Total return at net asset value (%) ^{b,c} | Net assets, end of period (in thousands) | Ratio of expenses to average net assets (%) ^{b,d,f} | Ratio of net investment income (loss) to average net assets (%) ^f | Portfolio turnover (%) |
| Class IA | | | | | | | | | | | | | | |
| 12/31/20 | \$11.54 | — ^h | 4.11 | 4.11 | (.03) | (.71) | (.74) | — | \$14.91 | 39.09 | \$841,545 | .65 | (.01) | 48 |
| 12/31/19 | 9.76 | .03 | 3.31 | 3.34 | (.04) | (1.52) | (1.56) | — | 11.54 | 37.11 | 666,225 | .66 | .31 | 40 |
| 12/31/18 | 10.14 | .02 | .24 | .26 | (.01) | (.63) | (.64) | — | 9.76 | 2.60 | 558,404 | .67 | .20 | 56 |
| 12/31/17 | 7.84 | .03 | 2.40 | 2.43 | (.01) | (.12) | (.13) | — ^g | 10.14 | 31.30 | 606,169 | .66 | .38 | 59 |
| 12/31/16 | 8.15 | .04 | .44 | .48 | (.06) | (.73) | (.79) | — | 7.84 | 6.72 | 517,274 | .74 ^e | .53 ^e | 71 |
| Class IB | | | | | | | | | | | | | | |
| 12/31/20 | \$11.28 | (.03) | 4.02 | 3.99 | (.01) | (.71) | (.72) | — | \$14.55 | 38.71 | \$284,659 | .90 | (.26) | 48 |
| 12/31/19 | 9.57 | .01 | 3.24 | 3.25 | (.02) | (1.52) | (1.54) | — | 11.28 | 36.74 | 222,155 | .91 | .06 | 40 |
| 12/31/18 | 9.97 | — ^h | .23 | .23 | — | (.63) | (.63) | — | 9.57 | 2.38 | 178,062 | .92 | (.05) | 56 |
| 12/31/17 | 7.73 | .01 | 2.36 | 2.37 | (.01) | (.12) | (.13) | — ^g | 9.97 | 30.90 | 187,395 | .91 | .13 | 59 |
| 12/31/16 | 8.04 | .02 | .44 | .46 | (.04) | (.73) | (.77) | — | 7.73 | 6.51 | 159,870 | .99 ^e | .33 ^e | 71 |

^a Per share net investment income (loss) has been determined on the basis of the weighted average number of shares outstanding during the period.

^b The charges and expenses at the insurance company separate account level are not reflected.

^c Total return assumes dividend reinvestment.

^d Includes amounts paid through expense offset and/or brokerage/service arrangements, if any. Also excludes acquired fund fees and expenses, if any.

^e Reflects a voluntary waiver of certain fund expenses in effect during the period. As a result of such waiver, the expenses of each class reflect a reduction of less than 0.01% as a percentage of average net assets.

^f Reflects an involuntary contractual expense limitation in effect during the period. As a result of such limitation, the expenses of each class reflect a reduction of the following amounts:

| | Percentage of average net assets |
|----------|----------------------------------|
| 12/31/16 | <0.01% |

^g Reflects a non-recurring reimbursement pursuant to a settlement between the Securities and Exchange Commission (the SEC) and JPMorgan Chase which amounted to less than \$0.01 per share outstanding on September 29, 2017.

^h Amount represents less than \$0.01 per share.

[THIS PAGE INTENTIONALLY LEFT BLANK]

For more information about Putnam VT Growth Opportunities Fund

The fund's SAI and annual and semiannual reports to shareholders include additional information about the fund. The SAI, and the auditor's report and the financial statements included in the fund's most recent annual report to shareholders, are incorporated by reference into this prospectus, which means they are part of this prospectus for legal purposes. The fund's annual report discusses the market conditions and investment strategies that significantly affected the fund's performance during its last fiscal year. You may get free copies of these materials, request other information about any Putnam fund, or make shareholder inquiries, by contacting your financial representative, by visiting Putnam's website at putnam.com/individual/annuities, or by calling Putnam toll-free at 1-800-225-1581.

You may access reports and other information about the fund on the EDGAR Database on the Securities and Exchange Commission's website at <http://www.sec.gov>. You may get copies of this information, with payment of a duplication fee, by electronic request at the following E-mail address: publicinfo@sec.gov. You may need to refer to the fund's file number.

Putnam Investments
100 Federal Street
Boston, MA 02110
1-800-225-1581

Address correspondence to:

Putnam Investments
PO Box 219697
Kansas City, MO 64121-9697

putnam.com

Variable Product Funds

70100 Ameriprise Financial Center
Minneapolis, MN 55474

PRSRT STD
U.S. POSTAGE
PAID
RIVERSOURCE
LIFE INSURANCE
COMPANY