



Pricing Supplement

Dated April 11, 2023

To the Product Prospectus Supplement No. CCBN-1, the Prospectus Supplement and the Prospectus, Each Dated September 14, 2021

\$300,000

Auto-Callable Contingent Coupon Barrier Notes Linked to the SPDR® S&P® Biotech ETF, Due April 6, 2026
Royal Bank of Canada

Royal Bank of Canada is offering Auto-Callable Contingent Coupon Barrier Notes (the “Notes”) linked to the SPDR® S&P® Biotech ETF (the “Reference Asset”). The Notes are our senior unsecured obligations, will pay a quarterly Contingent Coupon at the rate and under the circumstances specified below, and will have the terms described in the documents described above, as supplemented or modified by this pricing supplement.

The Notes do not guarantee any return of principal at maturity. Any payments on the Notes are subject to our credit risk.

Investing in the Notes involves a number of risks. See “Selected Risk Considerations” beginning on page P-8 of this pricing supplement, and “Risk Factors” beginning on page PS-4 of the product prospectus supplement dated September 14, 2021 and page S-2 of the prospectus supplement dated September 14, 2021.

The Notes will not constitute deposits insured by the Canada Deposit Insurance Corporation, the U.S. Federal Deposit Insurance Corporation or any other Canadian or U.S. government agency or instrumentality. The Notes are not subject to conversion into our common shares under subsection 39.2(2.3) of the Canada Deposit Insurance Corporation Act.

Neither the Securities and Exchange Commission nor any state securities commission has approved or disapproved of the Notes or determined that this pricing supplement is truthful or complete. Any representation to the contrary is a criminal offense.

Issuer:	Royal Bank of Canada	Stock Exchange Listing:	None
Trade Date:	April 11, 2023	Principal Amount:	\$1,000 per Note
Issue Date:	April 14, 2023	Maturity Date:	April 6, 2026
Observation Dates:	Quarterly, as set forth below.	Coupon Payment Dates:	Quarterly, as set forth below.
Valuation Date:	March 31, 2026	Contingent Coupon Rate:	10.10% per annum

Initial Price: \$76.88, which was the closing price of the Reference Asset on the Trade Date.

Final Price: The closing price of the Reference Asset on the Valuation Date.

Call Price: 100% of the Initial Price.

Trigger Price and Coupon Barrier: \$53.82, which is 70% of the Initial Price (rounded to two decimal places).

Contingent Coupon: If the closing price of the Reference Asset is greater than or equal to the Coupon Barrier on the applicable Observation Date, we will pay the Contingent Coupon applicable to that Observation Date. You may not receive any Contingent Coupons during the term of the Notes.

Payment at Maturity (if held to maturity): If the Notes are not previously called, we will pay you at maturity an amount based on the Final Price:
For each \$1,000 in principal amount, \$1,000 plus the Contingent Coupon at maturity, unless the Final Price is less than the Trigger Price.
If the Final Price is less than the Trigger Price, then the investor will receive at maturity, for each \$1,000 in principal amount, a cash payment equal to: \$1,000 + (\$1,000 x Reference Asset Return).

Investors in the Notes will lose some or all of their principal amount if the Final Price is less than the Trigger Price.

Call Feature: If the closing price of the Reference Asset is greater than or equal to the Call Price starting on June 30, 2023 and on any Observation Date thereafter, the Notes will be automatically called for 100% of their principal amount, plus the Contingent Coupon applicable to the corresponding Observation Date.

Call Settlement Dates: The Coupon Payment Date corresponding to that Observation Date.

CUSIP: 78016HYC8

	Per Note	Total
Price to public ⁽¹⁾	100.00%	\$300,000
Underwriting discounts and commissions ⁽¹⁾	2.00%	\$6,000
Proceeds to Royal Bank of Canada	98.00%	\$294,000

⁽¹⁾ We or one of our affiliates may pay varying selling concessions of up to \$20 per \$1,000 in principal amount of the Notes in connection with the distribution of the Notes to other registered broker dealers. Certain dealers who purchase the Notes for sale to certain fee-based advisory accounts may forego some or all of their underwriting discount or selling concessions. The public offering price for investors purchasing the Notes in these accounts may be between \$980 and \$1,000 per \$1,000 in principal amount. See “Supplemental Plan of Distribution (Conflicts of Interest)” below.

The initial estimated value of the Notes as of the Trade Date was \$972.83 per \$1,000 in principal amount, which is less than the price to public. The actual value of the Notes at any time will reflect many factors, cannot be predicted with accuracy, and may be less than this amount. We describe our determination of the initial estimated value in more detail below.

SUMMARY

The information in this “Summary” section is qualified by the more detailed information set forth in this pricing supplement, the product prospectus supplement, the prospectus supplement, and the prospectus.

General:	This pricing supplement relates to an offering of Auto-Callable Contingent Coupon Barrier Notes (the “Notes”) linked to the SPDR® S&P® Biotech ETF.
Issuer:	Royal Bank of Canada (“Royal Bank”)
Trade Date:	April 11, 2023
Issue Date:	April 14, 2023
Valuation Date:	March 31, 2026
Maturity Date:	April 6, 2026
Denominations:	Minimum denomination of \$1,000, and integral multiples of \$1,000 thereafter.
Contingent Coupon:	<p>We will pay you a Contingent Coupon during the term of the Notes, periodically in arrears on each Coupon Payment Date, under the conditions described below:</p> <ul style="list-style-type: none"> • If the closing price of the Reference Asset is greater than or equal to the Coupon Barrier on the applicable Observation Date, we will pay the Contingent Coupon applicable to that Observation Date. • If the closing price of the Reference Asset is less than the Coupon Barrier on the applicable Observation Date, we will not pay you the Contingent Coupon applicable to that Observation Date. <p><i>You may not receive a Contingent Coupon for one or more quarterly periods during the term of the Notes.</i></p>
Contingent Coupon Rate:	10.10% per annum (2.525% per quarter)

Observation Dates and Coupon Payment Dates: Quarterly, as set forth in the following table:

<u>Observation Dates</u>	<u>Coupon Payment Dates</u>
June 30, 2023	July 6, 2023
September 29, 2023	October 4, 2023
December 29, 2023	January 4, 2024
March 28, 2024	April 3, 2024
June 28, 2024	July 3, 2024
September 30, 2024	October 3, 2024
December 31, 2024	January 6, 2025
March 31, 2025	April 3, 2025
June 30, 2025	July 3, 2025
September 30, 2025	October 3, 2025
December 31, 2025	January 6, 2026
March 31, 2026 (the Valuation Date)	April 6, 2026 (the Maturity Date)

Record Dates:	The record date for each Coupon Payment Date will be one business day prior to that scheduled Coupon Payment Date; provided, however, that any Contingent Coupon payable at maturity or upon a call will be payable to the person to whom the payment at maturity or upon the call, as the case may be, will be payable.
Call Feature:	If, starting on June 30, 2023 and on any Observation Date thereafter, the closing price of the Reference Asset is greater than or equal to the Call Price, then the Notes will be automatically called.
Call Settlement Dates:	If the Notes are called on any Observation Date starting on June 30, 2023 and thereafter, the Call Settlement Date will be the Coupon Payment Date corresponding to that Observation Date.
Payment if Called:	If the Notes are automatically called, then, on the applicable Call Settlement Date, for each \$1,000 in principal amount, you will receive \$1,000 plus the Contingent Coupon otherwise due on that Call Settlement Date.
Initial Price:	The closing price of the Reference Asset on the Trade Date, as set forth on the cover page of this pricing supplement.
Final Price:	The closing price of the Reference Asset on the Valuation Date.
Call Price:	100% of the Initial Price.
Trigger Price and Coupon Barrier:	70% of the Initial Price, as set forth on the cover page of this pricing supplement.
Payment at Maturity (if not previously called and held to maturity):	<p>If the Notes are not previously called, we will pay you at maturity an amount based on the Final Price:</p> <ul style="list-style-type: none"> • If the Final Price is greater than or equal to the Trigger Price, we will pay you a cash payment equal to the principal amount plus the Contingent Coupon otherwise due on the Maturity Date. • If the Final Price is below the Trigger Price, you will receive at maturity, for each \$1,000 in principal amount, a cash payment equal to: $\\$1,000 + (\\$1,000 \times \text{Reference Asset Return})$ <p>The amount of cash that you receive in this case will be less than your principal amount, if anything, resulting in a loss that is proportionate to the decline of the Reference Asset from the Trade Date to the Valuation Date.</p> <p><i>Investors in the Notes will lose some or all of their principal amount if the Final Price is less than the Trigger Price.</i></p>
Reference Asset Return:	$\frac{\text{Final Price} - \text{Initial Price}}{\text{Initial Price}}$
Stock Settlement:	Not applicable. Payments on the Notes will be made solely in cash.
Market Disruption Events:	The occurrence of a market disruption event (or a non-trading day) as to the Reference Asset will result in the postponement of an Observation Date or the Valuation Date, as described in the product prospectus supplement.
Calculation Agent:	RBC Capital Markets, LLC ("RBCCM")
U.S. Tax Treatment:	By purchasing a Note, each holder agrees (in the absence of a change in law, an

administrative determination or a judicial ruling to the contrary) to treat the Notes as a callable pre-paid cash-settled contingent income-bearing derivative contract linked to the Reference Asset for U.S. federal income tax purposes. However, the U.S. federal income tax consequences of your investment in the Notes are uncertain and the Internal Revenue Service could assert that the Notes should be taxed in a manner that is different from that described in the preceding sentence. Please see the section below, “Supplemental Discussion of U.S. Federal Income Tax Consequences” and the discussion (including the opinion of Ashurst LLP, our special U.S. tax counsel) in the product prospectus supplement under “Supplemental Discussion of U.S. Federal Income Tax Consequences,” which apply to the Notes.

Secondary Market:	RBCCM (or one of its affiliates), though not obligated to do so, may maintain a secondary market in the Notes after the issue date. The amount that you may receive upon sale of your Notes prior to maturity may be less than the principal amount.
Listing:	The Notes will not be listed on any securities exchange.
Settlement:	DTC global (including through its indirect participants Euroclear and Clearstream, Luxembourg as described under “Ownership and Book-Entry Issuance” in the prospectus).
Terms Incorporated in the Master Note:	All of the terms appearing on the cover page and above the item captioned “Secondary Market” on pages P-2 and P-3 of this pricing supplement and the terms appearing under the caption “General Terms of the Notes” in the product prospectus supplement, as modified by this pricing supplement.

ADDITIONAL TERMS OF YOUR NOTES

You should read this pricing supplement together with the prospectus dated September 14, 2021, as supplemented by the prospectus supplement dated September 14, 2021 and the product prospectus supplement dated September 14, 2021, relating to our Senior Global Medium Term Notes, Series I, of which these Notes are a part. Capitalized terms used but not defined in this pricing supplement will have the meanings given to them in the product prospectus supplement. In the event of any conflict, this pricing supplement will control. The Notes vary from the terms described in the product prospectus supplement in several important ways. You should read this **pricing** supplement carefully.

This pricing supplement, together with the documents listed below, contains the terms of the Notes and supersedes all prior or contemporaneous oral statements as well as any other written materials including preliminary or indicative pricing terms, correspondence, trade ideas, structures for implementation, sample structures, brochures or other educational materials of ours. You should carefully consider, among other things, the matters set forth in “Risk Factors” in the prospectus supplement dated September 14, 2021 and in the product prospectus supplement dated September 14, 2021, as the Notes involve risks not associated with conventional debt securities. We urge you to consult your investment, legal, tax, accounting and other advisors before you invest in the Notes. You may access these documents on the Securities and Exchange Commission (the “SEC”) website at www.sec.gov as follows (or if that address has changed, by reviewing our filings for the relevant date on the SEC website):

Prospectus dated September 14, 2021:

<https://www.sec.gov/Archives/edgar/data/1000275/000121465921009470/rbc911212424b3.htm>

Prospectus Supplement dated September 14, 2021:

<https://www.sec.gov/Archives/edgar/data/1000275/000121465921009472/rbcsupp911210424b3.htm>

Product Prospectus Supplement dated September 14, 2021:

https://www.sec.gov/Archives/edgar/data/1000275/000114036121031212/brhc10028900_424b5.htm

Our Central Index Key, or CIK, on the SEC website is 1000275. As used in this pricing supplement, “we,” “us,” or “our” refers to Royal Bank of Canada.

HYPOTHETICAL EXAMPLES

The table set out below is included for illustration purposes only. The table illustrates the Payment at Maturity of the Notes (including the final Contingent Coupon, if payable) for a hypothetical range of performance for the Reference Asset, assuming the following terms and that the Notes are not automatically called prior to maturity:

Hypothetical Initial Price:	\$100.00*
Hypothetical Trigger Price and Coupon Barrier:	\$70.00, which is 70% of the hypothetical Initial Price
Contingent Coupon Rate:	10.10% per annum (or 2.525% per quarter)
Contingent Coupon Amount:	\$25.25 per quarter
Observation Dates:	Quarterly
Principal Amount:	\$1,000 per Note

* The hypothetical Initial Price of \$100 used in the examples below has been chosen for illustrative purposes only and is not the actual Initial Price. The actual Initial Price is set forth on the cover page of this pricing supplement.

Hypothetical Final Prices are shown in the first column on the left. The second column shows the Payment at Maturity for a range of Final Prices. The third column shows the amount of cash to be paid on the Notes per \$1,000 in principal amount. If the Notes are called prior to maturity, the hypothetical examples below will not be relevant, and you will receive on the applicable Coupon Payment Date, for each \$1,000 principal amount, \$1,000 plus the Contingent Coupon otherwise due on the Notes.

Hypothetical Final Price	Payment at Maturity as a Percentage of Principal Amount	Cash Payment Amount per \$1,000 in Principal Amount
\$150.00	102.525%*	\$1,025.25*
\$140.00	102.525%*	\$1,025.25*
\$130.00	102.525%*	\$1,025.25*
\$120.00	102.525%*	\$1,025.25*
\$110.00	102.525%*	\$1,025.25*
\$100.00	102.525%*	\$1,025.25*
\$90.00	102.525%*	\$1,025.25*
\$80.00	102.525%*	\$1,025.25*
\$70.00	102.525%*	\$1,025.25*
\$69.99	69.99%	\$699.90
\$60.00	60.00%	\$600.00
\$50.00	50.00%	\$500.00
\$40.00	40.00%	\$400.00
\$30.00	30.00%	\$300.00
\$20.00	20.00%	\$200.00
\$10.00	10.00%	\$100.00
\$0.00	0.00%	\$0.00

* Including the final Contingent Coupon, if payable.

Hypothetical Examples of Amounts Payable at Maturity

The following hypothetical examples illustrate how the payments at maturity set forth in the table above are calculated, assuming the Notes have not been called.

Example 1: The price of the Reference Asset increases by 25% from the Initial Price of \$100.00 to a Final Price of \$125.00. Because the Final Price is greater than the Trigger Price and the Coupon Barrier, the investor receives at maturity, in addition to the final Contingent Coupon otherwise due on the Notes, a cash payment of \$1,000 per Note, despite the 25% appreciation in the price of the Reference Asset.

Example 2: The price of the Reference Asset decreases by 10% from the Initial Price of \$100.00 to a Final Price of \$90.00. Because the Final Price is greater than the Trigger Price and the Coupon Barrier, the investor receives at maturity, in addition to the final Contingent Coupon otherwise due on the Notes, a cash payment of \$1,000 per Note, despite the 10% decline in the price of the Reference Asset.

Example 3: The price of the Reference Asset decreases by 60% from the Initial Price of \$100.00 to a Final Price of \$40.00. Because the Final Price is less than the Trigger Price and its Coupon Barrier, the final Contingent Coupon will not be payable on the Maturity Date, and we will pay only \$400.00 for each \$1,000 in the principal amount of the Notes, calculated as follows:

$$\begin{aligned} &\text{Principal Amount} + (\text{Principal Amount} \times \text{Reference Asset Return}) \\ &= \$1,000 + (\$1,000 \times -60.00\%) = \$1,000 - \$600.00 = \$400.00 \end{aligned}$$

* * *

The Payments at Maturity shown above are entirely hypothetical; they are based on theoretical prices of the Reference Asset that may not be achieved on the Valuation Date and on assumptions that may prove to be erroneous. The actual market value of your Notes on the Maturity Date or at any other time, including any time you may wish to sell your Notes, may bear little relation to the hypothetical Payments at Maturity shown above, and those amounts should not be viewed as an indication of the financial return on an investment in the Notes.

SELECTED RISK CONSIDERATIONS

An investment in the Notes involves significant risks. Investing in the Notes is not equivalent to investing directly in the Reference Asset. These risks are explained in more detail in the section “Risk Factors,” in the product prospectus supplement. In addition to the risks described in the prospectus supplement and the product prospectus supplement, you should consider the following:

Risks Relating to the Terms of the Notes

- **You May Lose All or a Portion of the Principal Amount at Maturity** — Investors in the Notes could lose all or a substantial portion of their principal amount if there is a decline in the trading price of the Reference Asset between the Trade Date and the Valuation Date. If the Notes are not automatically called and the Final Price is less than the Trigger Price, the amount of cash that you receive at maturity will represent a loss of your principal that is proportionate to the decline in the closing price of the Reference Asset from the Initial Price to the Final Price. Any Contingent Coupons received on the Notes prior to the Maturity Date may not be sufficient to compensate for any such loss.
- **The Notes Are Subject to an Automatic Call** — If on any Observation Date beginning in June 2023, the closing price of the Reference Asset is greater than or equal to the Call Price, then the Notes will be automatically called. If the Notes are automatically called, then, on the applicable Call Settlement Date, for each \$1,000 in principal amount, you will receive \$1,000 plus the Contingent Coupon otherwise due on the applicable Call Settlement Date. You will not receive any Contingent Coupons after the Call Settlement Date. You may be unable to reinvest your proceeds from the automatic call in an investment with a return that is as high as the return on the Notes would have been if they had not been called.
- **You May Not Receive Any Contingent Coupons** — We will not necessarily make any coupon payments on the Notes. If the closing price of the Reference Asset on an Observation Date is less than the Coupon Barrier, we will not pay you the Contingent Coupon applicable to that Observation Date. If the closing price of the Reference Asset is less than the Coupon Barrier on each of the Observation Dates and on the Valuation Date, we will not pay you any Contingent Coupons during the term of, and you will not receive a positive return on, your Notes. Generally, this non-payment of the Contingent Coupon coincides with a period of greater risk of principal loss on your Notes. Accordingly, if we do not pay the Contingent Coupon on the Maturity Date, you will also incur a loss of principal, because the Final Price will be less than the Trigger Price.
- **The Call Feature and the Contingent Coupon Feature Limit Your Potential Return** — The return potential of the Notes is limited to the pre-specified Contingent Coupon Rate, regardless of the appreciation of the Reference Asset. In addition, the total return on the Notes will vary based on the number of Observation Dates on which the Contingent Coupon becomes payable prior to maturity or an automatic call. Further, if the Notes are called due to the Call Feature, you will not receive any Contingent Coupons or any other payment in respect of any Observation Dates after the applicable Call Settlement Date. Since the Notes could be called as early as June 2023, the total return on the Notes could be minimal. If the Notes are not called, you may be subject to the full downside performance of the Reference Asset even though your potential return is limited to the Contingent Coupon Rate. As a result, the return on an investment in the Notes could be less than the return on a direct investment in the Reference Asset.
- **Your Return on the Notes May Be Lower than the Return on a Conventional Debt Security of Comparable Maturity** — The return that you will receive on the Notes, which could be negative, may be less than the return you could earn on other investments. Even if your return is positive, your return may be less than the return you would earn if you purchased one of our conventional senior interest bearing debt securities.
- **Payments on the Notes Are Subject to Our Credit Risk, and Changes in Our Credit Ratings Are Expected to Affect the Market Value of the Notes** — The Notes are our senior unsecured debt securities. As a result, your receipt of any Contingent Coupons, if payable, and the amount due on any relevant payment date is dependent upon our ability to repay our obligations on the applicable payment dates. This will be the case even if the price of the Reference Asset increases after the Trade Date. No assurance can be given as to what our financial condition will be at any time during the term of the Notes.

- **Owning the Notes Is Not the Same as Owning the Securities Represented by the Reference Asset** — The return on your Notes is unlikely to reflect the return you would realize if you actually owned shares of the Reference Asset or the securities represented by the Reference Asset. For instance, you will not receive or be entitled to receive any dividend payments or other distributions on these securities during the term of your Notes. As an owner of the Notes, you will not have voting rights or any other rights that holders of these securities may have. Furthermore, the Reference Asset may appreciate substantially during the term of the Notes, while your potential return will be limited to the applicable Contingent Coupon payments.
- **The Payments on the Notes Are Subject to Postponement Due to Market Disruption Events and Adjustments** — The payment at maturity, each Observation Date and the Valuation Date are subject to adjustment as described in the product prospectus supplement. For a description of what constitutes a market disruption event as well as the consequences of that market disruption event, see “General Terms of the Notes—Market Disruption Events” in the product prospectus supplement.

Risks Relating to the Secondary Market for the Notes

- **There May Not Be an Active Trading Market for the Notes — Sales in the Secondary Market May Result in Significant Losses** — There may be little or no secondary market for the Notes. The Notes will not be listed on any securities exchange. RBCCM and our other affiliates may make a market for the Notes; however, they are not required to do so. RBCCM or any of our other affiliates may stop any market-making activities at any time. Even if a secondary market for the Notes develops, it may not provide significant liquidity or trade at prices advantageous to you. We expect that transaction costs in any secondary market would be high. As a result, the difference between bid and asked prices for your Notes in any secondary market could be substantial.

Risks Relating to the Initial Estimated Value of the Notes

- **The Initial Estimated Value of the Notes Is Less than the Price to the Public** — The initial estimated value that is set forth on the cover page of this pricing supplement does not represent a minimum price at which we, RBCCM or any of our affiliates would be willing to purchase the Notes in any secondary market (if any exists) at any time. If you attempt to sell the Notes prior to maturity, their market value may be lower than the price you paid for them and the initial estimated value. This is due to, among other things, changes in the price of the Reference Asset, the borrowing rate we pay to issue securities of this kind, and the inclusion in the price to the public of the underwriting discount and the estimated costs relating to our hedging of the Notes. These factors, together with various credit, market and economic factors over the term of the Notes, are expected to reduce the price at which you may be able to sell the Notes in any secondary market and will affect the value of the Notes in complex and unpredictable ways. Assuming no change in market conditions or any other relevant factors, the price, if any, at which you may be able to sell your Notes prior to maturity may be less than your original purchase price, as any such sale price would not be expected to include the underwriting discount or the hedging costs relating to the Notes. In addition to bid-ask spreads, the value of the Notes determined by RBCCM for any secondary market price is expected to be based on the secondary rate rather than the internal funding rate used to price the Notes and determine the initial estimated value. As a result, the secondary price will be less than if the internal funding rate was used. The Notes are not designed to be short-term trading instruments. Accordingly, you should be able and willing to hold your Notes to maturity.
- **The Initial Estimated Value of the Notes that Is Set Forth on the Cover Page of this Pricing Supplement Is an Estimate Only, Calculated as of the Time the Terms of the Notes Were Set** — The initial estimated value of the Notes is based on the value of our obligation to make the payments on the Notes, together with the mid-market value of the derivative embedded in the terms of the Notes. See “Structuring the Notes” below. Our estimate is based on a variety of assumptions, including our credit spreads, expectations as to dividends, interest rates and volatility, and the expected term of the Notes. These assumptions are based on certain forecasts about future events, which may prove to be incorrect. Other entities may value the Notes or similar securities at a price that is significantly different than we do.
- The value of the Notes at any time after the Trade Date will vary based on many factors, including changes in market conditions, and cannot be predicted with accuracy. As a result, the actual value you would receive if you sold the Notes in any secondary market, if any, should be expected to differ materially from the initial estimated value of your Notes.

Risks Relating to the Reference Asset

- The Securities Included in the Underlying Index of the XBI Are Concentrated in One Sector** — All of the securities included in the underlying index of the XBI are issued by companies in the biotechnology industry. As a result, the securities that will determine the performance of the XBI and the level of the underlying index, which the XBI seeks to replicate, are concentrated in one sector. Although an investment in the Notes will not give holders any ownership or other direct interests in the securities included in the underlying index, the return on an investment in the Notes will be subject to certain risks associated with a direct equity investment in companies in this market sector. Accordingly, by investing in the Notes, you will not benefit from the diversification which could result from an investment linked to companies that operate in multiple sectors.
- An Investment in the Notes Is Subject to Risks Associated with the Biotechnology Sector** — All of the stocks held by the XBI and included in its underlying index are issued by companies whose primary lines of business are directly associated with the biotechnology sector. The profitability of these companies is largely dependent on, among other things, demand for the companies' products, safety of the companies' products, regulatory influences on the biotechnology market (including receipt of regulatory approvals and compliance with complex regulatory requirements), pricing and reimbursement from third party payors, continued innovation, talent attraction and retention, maintaining intellectual property rights and intense industry competition. Any negative developments affecting the biotechnology sector could affect negatively the price of the XBI and, in turn, could have an adverse effect on the value of the Notes and the payments on the Notes.
- Adjustments to the Reference Asset Could Adversely Affect the Notes** — The Advisor of the Reference Asset is responsible for calculating and maintaining the Reference Asset. The Advisor can add, delete or substitute the stocks comprising the Reference Asset. The Advisor may make other methodological changes that could change the share price of the Reference Asset at any time. If one or more of these events occurs, the calculation of the amount payable at maturity may be adjusted to reflect such event or events. Consequently, any of these actions could adversely affect the payments on the Notes and/or the market value of the Notes.
- Changes that Affect the Underlying Index Will Affect the Market Value of the Notes and the Amount You Will Receive at Maturity** — The policies of the sponsor of the underlying index (the "Index Sponsor"), concerning the calculation of the underlying index, additions, deletions or substitutions of the components of the underlying index and the manner in which changes affecting those components, such as stock dividends, reorganizations or mergers, may be reflected in the underlying index and, therefore, could affect the share price of the Reference Asset, the amounts payable on the Notes, and the market value of the Notes prior to maturity. The amounts payable on the Notes and their market value could also be affected if the Index Sponsor changes these policies, for example, by changing the manner in which it calculates the underlying index, or if the sponsor discontinues or suspends the calculation or publication of the underlying index.
- We and Our Affiliates Do Not Have Any Affiliation with the Advisor and Are Not Responsible for its Public Disclosure of Information** — We and our affiliates are not affiliated with Advisor in any way and have no ability to control or predict its actions, including any errors in or discontinuance of disclosure regarding its methods or policies relating to the Reference Asset. The Advisor is not involved in the offering of the Notes in any way and has no obligation to consider your interests as an owner of the Notes in taking any actions relating to the Reference Asset that might affect the value of the Notes. Neither we nor any of our affiliates has independently verified the adequacy or accuracy of the information about the Advisor or the Reference Asset contained in any public disclosure of information. You, as an investor in the Notes, should make your own investigation into the Reference Asset.
- We Have No Affiliation with the Index Sponsor and Will Not Be Responsible for Any Actions Taken by the Index Sponsor** — The Index Sponsor is not our affiliate and will not be involved in the offering of the Notes in any way. Consequently, we have no control over the actions of the Index Sponsor, including any actions of the type that would require the calculation agent to adjust the payments on the Notes. The Index Sponsor has no obligation of any sort with respect to the Notes. Thus, the Index Sponsor has no obligation to take your interests into consideration for any reason, including in taking any actions that might affect the value of the Notes. None of our proceeds from the issuance of the Notes will be delivered to the Index Sponsor.
- The Reference Asset and its Underlying Index Are Different** — The performance of the Reference Asset may not exactly replicate the performance of its underlying index, because the Reference Asset will reflect transaction

costs and fees that are not included in the calculation of its underlying index. It is also possible that the performance of the Reference Asset may not fully replicate or may in certain circumstances diverge significantly from the performance of its underlying index due to the temporary unavailability of certain securities in the secondary market, the performance of any derivative instruments contained in such Reference Asset or due to other circumstances. The Reference Asset may use futures contracts, options, swap agreements, currency forwards and repurchase agreements in seeking performance that corresponds to its underlying index and in managing cash flows.

- During periods of market volatility, securities underlying the Reference Asset may be unavailable in the secondary market, market participants may be unable to calculate accurately the net asset value per share of the Reference Asset and the liquidity of the Reference Asset may be adversely affected. This kind of market volatility may also disrupt the ability of market participants to create and redeem shares of the Reference Asset. Further, market volatility may adversely affect, sometimes materially, the prices at which market participants are willing to buy and sell shares of the Reference Asset. As a result, under these circumstances, the market value of shares of the Reference Asset may vary substantially from its net asset value per share. For all of the foregoing reasons, the performance of the Reference Asset may not correlate with the performance of its underlying index as well as the net asset value per share of such Reference Asset, which could materially and adversely affect the value of the Notes in the secondary market and/or reduce any payment under the Notes.

Risks Relating to Conflicts of Interest and Our Trading Activities

- **You Must Rely on Your Own Evaluation of the Merits of an Investment Linked to the Reference Asset** — In the ordinary course of their business, our affiliates may have expressed views on expected movements in the Reference Asset or the equity securities that they represent, and may do so in the future. These views or reports may be communicated to our clients and clients of our affiliates. However, these views are subject to change from time to time. Moreover, other professionals who transact business in markets relating to the Reference Asset may at any time have significantly different views from those of our affiliates. For these reasons, you are encouraged to derive information concerning the Reference Asset from multiple sources, and you should not rely solely on views expressed by our affiliates.
- **Our Business Activities May Create Conflicts of Interest** — We and our affiliates expect to engage in trading activities related to the Reference Asset or the securities held by the Reference Asset that are not for the account of holders of the Notes or on their behalf. These trading activities may present a conflict between the holders' interests in the Notes and the interests we and our affiliates will have in their proprietary accounts, in facilitating transactions, including options and other derivatives transactions, for their customers and in accounts under their management. These trading activities, if they influence the share price of the Reference Asset, could be adverse to the interests of the holders of the Notes. We and one or more of our affiliates may, at present or in the future, engage in business with the Reference Asset or the issuers of the securities held by the Reference Asset, including making loans to or providing advisory services. These services could include investment banking and merger and acquisition advisory services. These activities may present a conflict between our or one or more of our affiliates' obligations and your interests as a holder of the Notes. Moreover, we, and our affiliates may have published, and in the future expect to publish, research reports with respect to the Reference Asset or securities represented by the Reference Asset. This research is modified from time to time without notice and may express opinions or provide recommendations that are inconsistent with purchasing or holding the Notes. Any of these activities by us or one or more of our affiliates may affect the share price of the Reference Asset, and, therefore, the market value of the Notes.

INFORMATION REGARDING THE REFERENCE ASSET

Information filed with the SEC relating to the Reference Asset under the Securities Exchange Act of 1934, as amended, and the Investment Company Act of 1940, as amended, can be obtained through the SEC's website at <http://www.sec.gov>. In addition, information regarding the Reference Asset may be obtained from other sources including, but not limited to, press releases, newspaper articles and other publicly disseminated documents. We have not participated in the preparation of, or verified, such publicly available information. None of the forgoing documents or filings are incorporated by reference in, and should not be considered part of, this document.

The following information regarding the Reference Asset is derived from publicly available information.

We have not independently verified the accuracy or completeness of reports filed by the Reference Asset with the SEC, information published by it on its website or in any other format, information about it obtained from any other source or the information provided below.

We obtained the information regarding the historical performance of the Reference Asset set forth below from Bloomberg Financial Markets.

We have not independently verified the accuracy or completeness of the information obtained from Bloomberg Financial Markets. The historical performance of the Reference Asset should not be taken as an indication of its future performance, and no assurance can be given as to the market price of the Reference Asset at any time during the term of the Notes. We cannot give you assurance that the performance of the Reference Asset will not result in the loss of all or part of your investment.

SPDR® S&P® Biotech ETF ("XBI")

The XBI is an investment portfolio maintained and managed by SSgA Funds Management, Inc. ("SSFM"). SSFM is the investment advisor to separate investment portfolios, including the Reference Asset. The XBI seeks to provide investment results that correspond generally to the price and yield performance, before fees and expenses, of the S&P® Biotechnology Select Industry® Index (the "underlying index"). The underlying index represents the biotechnology sub-industry portion of the Standard & Poor's ("S&P") Total Market Index ("S&P TMI"), an index that measures the performance of the U.S. equity market. The XBI holds the shares of companies that are in the biotechnology sector. The XBI trades on NYSE Arca under the ticker symbol "XBI."

In seeking to track the performance of the underlying index, the XBI employs a sampling strategy, which means that the Fund is not required to purchase all of the securities represented in the underlying index. Instead, the underlying index may purchase a subset of the securities in the underlying index in an effort to hold a portfolio of securities with generally the same risk and return characteristics of the underlying index. The XBI will normally invest at least 80% of its total assets in the common stocks that comprise the underlying index.

The S&P® Biotechnology Select Industry® Index

The underlying index represents the biotechnology segment of the S&P Total Market Index ("S&P TMI"). The S&P TMI is designed to track the broad U.S. equity market. The biotechnology segment of the S&P TMI comprises the Biotechnology sub-industry. The underlying index is one of 21 of the S&P Select Industry Indices (the "Select Industry Indices"), each designed to measure the performance of a narrow sub-industry or group of sub-industries determined based on the Global Industry Classification Standard ("GICS"). Membership in the Select Industry Indices is based on the GICS classification, as well as liquidity and market cap requirements. Companies in the Select Industry Indices are classified according to GICS which determines classifications primarily based on revenues; however, earnings and market perception are also considered. The underlying index consists of the S&P TMI constituents belonging to the Biotechnology sub-industry that satisfy the following criteria:

- have a float-adjusted market capitalization greater than or equal to \$500 million with a float-adjusted liquidity ratio (defined by dollar value traded over the previous 12 months divided by the float-adjusted market capitalization as of the index rebalancing reference date) greater than or equal to 90% or have a float-adjusted market capitalization greater than or equal to \$400 million with a float-adjusted liquidity ratio (as defined above) greater than or equal to 150%; and
- are U.S. based companies.

To evaluate liquidity, the dollar value traded for initial public offerings or spin-offs that do not have 12 months of trading history is annualized. If there are fewer than 35 stocks, stocks from the Life Sciences Tools & Services sub-industry that meet the market capitalization and liquidity thresholds are included in order of their float-adjusted market capitalization from largest to smallest. If there continues to be fewer than 22 stocks, the market capitalization threshold may be relaxed to ensure that there are at least 22 stocks in the underlying index as of the rebalancing effective date. Existing index constituents are removed at the quarterly rebalancing effective date if either their float-adjusted market capitalization falls below \$300 million or their float-adjusted liquidity ratio falls below 50%. The market capitalization threshold and the liquidity threshold are each reviewed from time to time based on market conditions.

The underlying index rebalances and reconstitutes quarterly on the third Friday of the quarter ending month. The reference date for additions and deletions is after the close of the last trading date of the previous month. The S&P TMI tracks all eligible U.S. common equities listed on the NYSE, NYSE Arca, NYSE American, NASDAQ Global Select Market, NASDAQ Select Market, NASDAQ Capital Market, Cboe BZX, Cboe BYX, Cboe EDGA, or Cboe EDGX exchanges.

The underlying index is modified equal weighted.

Historical Information

The graph below illustrates the performance of the Reference Asset from January 1, 2013 to April 11, 2023, reflecting the Initial Price of \$76.88. The red line represents the Coupon Barrier and Trigger Price of \$53.82, which is equal to 70% of the Initial Price (rounded to two decimal places).



SUPPLEMENTAL DISCUSSION OF U.S. FEDERAL INCOME TAX CONSEQUENCES

The following disclosure supplements, and to the extent inconsistent supersedes, the discussion in the product prospectus supplement under “Supplemental Discussion of U.S. Federal Income Tax Consequences.”

Under Section 871(m) of the Code, a “dividend equivalent” payment is treated as a dividend from sources within the United States. Such payments generally would be subject to a 30% U.S. withholding tax if paid to a non-U.S. holder. Under U.S. Treasury Department regulations, payments (including deemed payments) with respect to equity-linked instruments (“ELIs”) that are “specified ELIs” may be treated as dividend equivalents if such specified ELIs reference, directly or indirectly, an interest in an “underlying security,” which is generally any interest in an entity taxable as a corporation for U.S. federal income tax purposes if a payment with respect to such interest could give rise to a U.S. source dividend. However, the IRS has issued guidance that states that the U.S. Treasury Department and the IRS intend to amend the effective dates of the U.S. Treasury Department regulations to provide that withholding on dividend equivalent payments will not apply to specified ELIs that are not delta-one instruments and that are issued before January 1, 2025. Based on our determination that the Notes are not delta-one instruments, non-U.S. holders should not be subject to withholding on dividend equivalent payments, if any, under the Notes. However, it is possible that the Notes could be treated as deemed reissued for U.S. federal income tax purposes upon the occurrence of certain events affecting the Reference Asset or the Notes (for example, upon a rebalancing of the Reference Asset), and following such occurrence the Notes could be treated as subject to withholding on dividend equivalent payments. Non-U.S. holders that enter, or have entered, into other transactions in respect of the Reference Asset or the Notes should consult their tax advisors as to the application of the dividend equivalent withholding tax in the context of the Notes and their other transactions. If any payments are treated as dividend equivalents subject to withholding, we (or the applicable withholding agent) would be entitled to withhold taxes without being required to pay any additional amounts with respect to amounts so withheld.

SUPPLEMENTAL PLAN OF DISTRIBUTION (CONFLICTS OF INTEREST)

Delivery of the Notes will be made against payment for the Notes on April 14, 2023, which is the third (3rd) business day following the Trade Date (this settlement cycle being referred to as "T+3"). See "Plan of Distribution" in the prospectus. For additional information as to the relationship between us and RBCCM, please see the section "Plan of Distribution—Conflicts of Interest" in the prospectus.

We will deliver the Notes on a date that is greater than two business days following the Trade Date. Under Rule 15c6-1 of the Exchange Act, trades in the secondary market generally are required to settle in two business days, unless the parties to any such trade expressly agree otherwise. Accordingly, purchasers who wish to trade the Notes more than two business days prior to the original issue date will be required to specify alternative arrangements to prevent a failed settlement.

In the initial offering of the Notes, they will be offered to investors at a purchase price equal to par, except with respect to certain accounts as indicated on the cover page of this document. In addition to the underwriting discount set forth on the cover page, we or one of our affiliates will also pay an expected fee to a broker-dealer that is unaffiliated with us for providing certain electronic platform services with respect to this offering.

The value of the Notes shown on your account statement may be based on RBCCM's estimate of the value of the Notes if RBCCM or another of our affiliates were to make a market in the Notes (which it is not obligated to do). That estimate will be based upon the price that RBCCM may pay for the Notes in light of then prevailing market conditions, our creditworthiness and transaction costs. For a period of approximately three months after the issue date of the Notes, the value of the Notes that may be shown on your account statement may be higher than RBCCM's estimated value of the Notes at that time. This is because the estimated value of the Notes will not include the underwriting discount or our hedging costs and profits; however, the value of the Notes shown on your account statement during that period may initially be a higher amount, reflecting the addition of RBCCM's underwriting discount and our estimated costs and profits from hedging the Notes. This excess is expected to decrease over time until the end of this period. After this period, if RBCCM repurchases your Notes, it expects to do so at prices that reflect their estimated value.

We may use this pricing supplement in the initial sale of the Notes. In addition, RBCCM or another of our affiliates may use this pricing supplement in a market-making transaction in the Notes after their initial sale. ***Unless we or our agent informs the purchaser otherwise in the confirmation of sale, this pricing supplement is being used in a market-making transaction.***

STRUCTURING THE NOTES

The Notes are our debt securities, the return on which is linked to the performance of the Reference Asset. As is the case for all of our debt securities, including our structured notes, the economic terms of the Notes reflect our actual or perceived creditworthiness at the time of pricing. In addition, because structured notes result in increased operational, funding and liability management costs to us, we typically borrow the funds under these Notes at a rate that is more favorable to us than the rate that we might pay for a conventional fixed or floating rate debt security of comparable maturity. Using this relatively lower implied borrowing rate rather than the secondary market rate, is a factor that reduced the initial estimated value of the Notes at the time their terms were set. Unlike the estimated value that is set forth on the cover page of this pricing supplement, any value of the Notes determined for purposes of a secondary market transaction may be based on a different funding rate, which may result in a lower value for the Notes than if our initial internal funding rate were used.

In order to satisfy our payment obligations under the Notes, we may choose to enter into certain hedging arrangements (which may include call options, put options or other derivatives) on the issue date with RBCCM or one of our other subsidiaries. The terms of these hedging arrangements take into account a number of factors, including our creditworthiness, interest rate movements, the volatility of the Reference Asset, and the tenor of the Notes. The economic terms of the Notes and their initial estimated value depend in part on the terms of these hedging arrangements.

The lower implied borrowing rate is a factor that reduced the economic terms of the Notes to you. The initial offering price of the Notes also reflects the underwriting discount and our estimated hedging costs. These factors resulted in the initial estimated value for the Notes on the Trade Date being less than their public offering price. See “Selected Risk Considerations—The Initial Estimated Value of the Notes Is Less than the Price to the Public” above.

VALIDITY OF THE NOTES

In the opinion of Norton Rose Fulbright Canada LLP, the issue and sale of the Notes has been duly authorized by all necessary corporate action of the Bank in conformity with the Indenture, and when the Notes have been duly executed, authenticated and issued in accordance with the Indenture and delivered against payment therefor, the Notes will be validly issued and, to the extent validity of the Notes is a matter governed by the laws of the Province of Ontario or Québec, or the laws of Canada applicable therein, will be valid obligations of the Bank, subject to equitable remedies which may only be granted at the discretion of a court of competent authority, subject to applicable bankruptcy, to rights to indemnity and contribution under the Notes or the Indenture which may be limited by applicable law, to insolvency and other laws of general application affecting creditors' rights, to limitations under applicable limitations statutes, and to limitations as to the currency in which judgments in Canada may be rendered, as prescribed by the Currency Act (Canada). This opinion is given as of the date hereof and is limited to the laws of the Provinces of Ontario and Québec and the federal laws of Canada applicable thereto. In addition, this opinion is subject to customary assumptions about the Trustee's authorization, execution and delivery of the Indenture and the genuineness of signatures and certain factual matters, all as stated in the letter of such counsel dated September 14, 2021, which has been filed as Exhibit 5.3 to Royal Bank's Form 6-K filed with the SEC dated September 14, 2021.

In the opinion of Ashurst LLP, when the Notes have been duly completed in accordance with the Indenture and issued and sold as contemplated by the prospectus supplement and the prospectus, the Notes will be valid, binding and enforceable obligations of the Bank, entitled to the benefits of the Indenture, subject to applicable bankruptcy, insolvency, fraudulent transfer, reorganization, moratorium and similar laws of general applicability relating to or affecting creditors' rights and subject to general principles of equity, public policy considerations and the discretion of the court before which any suit or proceeding may be brought. This opinion is given as of the date hereof and is limited to the laws of the State of New York. This opinion is subject to customary assumptions about the Trustee's authorization, execution and delivery of the Indenture and the genuineness of signatures and to such counsel's reliance on the Bank and other sources as to certain factual matters, all as stated in the legal opinion dated September 14, 2021, which has been filed as Exhibit 5.4 to the Bank's Form 6-K dated September 14, 2021.