

Prospectus Supplement No. 2  
(to Prospectus dated April 29, 2024)



## Up to 1,682,045 Shares of Common Stock

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This prospectus supplement supplements the prospectus, dated April 29, 2024, or the Prospectus, which forms a part of our registration statement on Form S-1 (No. 333-278829). This prospectus supplement is being filed to update and supplement the information in the Prospectus with the information contained in our Current Report on Form 8-K filed with the Securities and Exchange Commission on July 9, 2024, or the Current Report. Accordingly, we have attached the Current Report to this prospectus supplement.

The Prospectus and this prospectus supplement relate to the proposed offer and resale or other disposition from time to time by the selling stockholders identified in the Prospectus of up to an aggregate of 1,682,045 shares of common stock, par value \$0.0001 per share, of Q32 Bio Inc.

We are registering the resale of the shares of common stock pursuant to the selling stockholders' registration rights under a registration rights agreement between us and the selling stockholders. Our registration of the resale of the shares of common stock covered by the Prospectus does not mean that the selling stockholders will offer or sell all or any of the shares of common stock. The selling stockholders may offer, sell or distribute all or a portion of their shares of common stock from time to time directly or indirectly through one or more underwriters, broker-dealers or agents, and in one or more public or private transactions. The shares of common stock may be sold in one or more transactions at fixed prices, at prevailing market prices at the time of the sale, at varying prices determined at the time of sale or at negotiated prices. These sales may be effected in transactions, which may involve crosses or block transactions. See the section entitled "*Plan of Distribution*" in the Prospectus for more information.

We will not receive any proceeds from any sale of common stock by the selling stockholders pursuant to the Prospectus. We have agreed to bear the expenses in connection with the registration of the resale of the shares of common stock to be offered by the Prospectus by the selling stockholders other than any underwriting discounts and commissions or transfer taxes relating to the sale of common stock, which will be borne by the selling stockholders.

Our common stock is listed on the Nasdaq Global Market, or Nasdaq, under the symbol "QTTB." On July 8, 2024, the closing price for our common stock, as reported on Nasdaq, was \$19.00 per share.

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**See the section entitled "Risk Factors" beginning on page 8 of the Prospectus to read about factors you should consider before buying our securities.**

**Neither the Securities and Exchange Commission nor any state securities commission has approved or disapproved of these securities or determined if this prospectus is truthful or complete. Any representation to the contrary is a criminal offense.**

**The date of this prospectus supplement is July 9, 2024.**

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