Prospectus Supplement No. 8 (To Prospectus dated May 9, 2013)

CELLECTAR BIOSCIENCES, INC. 28,458,734 shares of common stock

This prospectus supplement supplements the Prospectus dated May 9, 2013, relating to the sale of 28,458,734 shares of common stock consisting of shares underlying warrants to purchase common stock. The underlying shares consist of warrants to purchase up to 9,248,334 shares of our common stock at an exercise price of \$0.60 per share, expiring on December 6, 2016, warrants to purchase up to 2,710,400 shares of our common stock at an exercise price of \$1.25 per share, expiring on June 13, 2017, warrants to purchase up to 5,500,000 shares of our common stock at an exercise price of \$0.50 per share, expiring February 20, 2014, and warrants to purchase up to 11,000,000 of our common stock at an exercise price of \$0.50 per share, expiring February 20, 2018. This prospectus supplement should be read in conjunction with the Prospectus.

Change in Corporate Name

On February 11, 2014, we changed our name from Novelos Therapeutics, Inc. to Cellectar Biosciences, Inc. The name change was effected pursuant to the short form merger of a wholly-owned Delaware subsidiary named Cellectar Biosciences, Inc. with and into Novelos Therapeutics, Inc. which resulted in the change to the name of the parent company to Cellectar Biosciences, Inc.

The ticker symbol of our common stock was changed from NVLT to CLRB in connection with the name change.

Investing in our common stock involves a high degree of risk. See Risk Factors beginning on page 6 of the Prospectus.

Neither the Securities and Exchange Commission nor any state securities commission has approved or disapproved of these securities or passed on the adequacy or accuracy of this prospectus supplement. Any representation to the contrary is a criminal offense.

The date of this prospectus supplement is February 13, 2014.