

Prospectus Supplement No. 2
(To Prospectus dated May 3, 2010)

NOVELOS THERAPEUTICS, INC.

15,601,703 shares of common stock

This prospectus supplement supplements the Prospectus dated May 3, 2010, relating to the resale of 15,601,703 shares of our common stock. This prospectus supplement should be read in conjunction with the Prospectus.

Entry into a Material Definitive Agreement

On July 21, 2010, we entered into securities purchase agreements with institutional investors to sell units consisting of an aggregate of 21,428,576 shares of our common stock and five-year warrants to purchase up to an aggregate of 16,071,434 shares of our common stock at an exercise price of \$0.07 per share, for gross proceeds of \$1.5 million. The estimated net proceeds of the offering, after deducting \$120,000 in placement agent fees and an estimated \$130,000 in other transaction expenses, will be \$1.25 million. Each unit consists of one share of common stock and a warrant to purchase 0.75 shares of common stock. The price per unit at which the units are being sold in the offering is \$0.07.

In connection with obtaining the consent of our preferred stockholders for the transaction, which they have granted pursuant to a consent and waiver dated July 6, 2010, as amended on July 21, 2010, we will issue five-year warrants to them for the purchase of up to an aggregate of 16,071,434 shares of common stock at an exercise price of \$0.105 per share following the consummation of the transaction. The warrants will not be exercisable until we secure stockholder approval to amend our Certificate of Incorporation to increase the number of shares of common stock authorized thereunder to a sufficient number to cover the full exercise of these warrants.

Investing in our common stock involves a high degree of risk.
See Risk Factors beginning on page 7 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 July 22, 2010
