

**Prospectus Supplement No. 5
(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.

Increase in Authorized Shares of Common Stock

On October 18, 2010, we held a special meeting of stockholders. At the meeting, our stockholders approved an amendment to our certificate of incorporation to increase the total number of authorized shares of our common stock from 225 million shares to 750 million shares. Of 111,931,182 shares of common stock outstanding and entitled to vote at the special meeting, 67,279,781 shares were voted in favor of the proposal and 8,617,627 shares were voted against the proposal, 30,293 shares abstained and there were no broker non-votes. All 408,264,045 shares of our Series E convertible preferred stock outstanding and entitled to vote at the special meeting were voted in favor of the proposal. 83,300,087 shares of common stock and shares of Series E convertible preferred stock, voting on an as-converted basis, were voted together, as a single class, in favor of the proposal; 8,612,627 shares were voted against the proposal; 30,293 shares abstained; and there were no broker non-votes. Following the conclusion of the meeting an amendment to our certificate of incorporation effecting the increase in authorized common stock was filed with the Delaware Secretary of State.

**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 October 19, 2010
