

Prospectus Supplement No. 2
(To Prospectus dated February 12, 2010)

NOVELOS THERAPEUTICS, INC.

19,000,000 shares of common stock

This prospectus supplement supplements the Prospectus dated February 12, 2010, relating to the resale of 19,000,000 shares of our common stock. This prospectus supplement should be read in conjunction with the Prospectus.

Announcement of Discontinuation of Current Development Program for NOV-002 in NSCLC

As previously disclosed, on February 23, 2010, we received a report of the top-line results of our pivotal Phase 3 clinical trial in advanced NSCLC studying our lead product, NOV-002, in combination with first-line chemotherapy. Upon initial evaluation and review of the data contained in the report, we determined that the primary endpoint of improvement in overall survival was not met in the trial. After further analysis of the data in the report, we confirmed that the secondary endpoints also were not met in the pivotal Phase 3 trial, and that adding NOV-002 to paclitaxel and carboplatin chemotherapy was not statistically or meaningfully different in terms of efficacy-related endpoints or recovery from chemotherapy toxicity versus chemotherapy alone. On the basis of these results, we have determined to discontinue development of NOV-002 for NSCLC in combination with first-line paclitaxel and carboplatin chemotherapy.

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 March 18, 2010
