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Shorting Innovation

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SHORTING INNOVATION

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The high price of prescription drugs is often attributed to the lack of alternative therapies and the costs of drug development and clinical trials. Short attacks are an underdiscussed contributor to both. They divert and deplete a biotech's resources, ultimately reducing competition and keeping new drugs off the market.

Short selling (shorting) involves selling borrowed stock. This Article addresses its impact on small biotech companies, defined here as those with a market capitalization of $2 billion or less. These small biotechs contribute disproportionately to innovative research and development but face many obstacles on the road to regulatory approval. Short attacks exacerbate the challenges faced by small biotechs and impose significant costs on society. This Article's case study on Northwest Biotherapeutics highlights how short selling and algorithmic trading nearly derailed a promising brain cancer vaccine.

The Article contributes to the legal literature on financial markets by explaining how shorting can hinder biotech innovation and contribute to social inequities. To safeguard biotech innovation and offset some of the negative externalities of short selling, this Article proposes a 15 percent surtax on the profits from short selling a small biotech, which would be allocated to the National Institutes of Health to fund further research and development. To implement this proposal, short sales should be reported daily to FINRA, and entities managing more than $20 million and holding short positions in small biotechs should be required to file quarterly audited and certified statements. This proposal aims to curtail market manipulation, increase transparency, preserve legitimate short selling practices, and redistribute the costs and benefits of short selling more equitably.

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INTRODUCTION

In May 2022, Northwest Biotherapeutics (NWBO), a small biotechnology company that had been working for years on a brain cancer vaccine, announced positive results from its Phase III clinical trials.[1] The vaccine treated glioblastoma, the deadliest form of brain cancer.[2] A biotech industry journalist claimed that the trial was a failure and that the vaccine was less effective than a placebo.[3] The company's stock plunged over 70 percent to a 52-week low.[4] Because the company was submitting its data for publication, it was constrained from publicly delving into its results during the months-long peer review process.

In November 2022, the results of the trial were published in a feature article co-authored by seventy physicians from leading institutions around the world in the peer-reviewed journal JAMA Oncology.[5] The journal publication validated the company's earlier announcement, and the stock shot up nearly 30 percent on the news.[6] The

1. Press Release, Nw. Biotherapeutics, Presentation About Phase 3 Trial of DCVax®-L for Glioblastoma (May 10, 2022), https://nwbio.com/presentation-about-phase-3-trial-of-dcvax-l-for-glioblastoma/ [https://perma.cc/6LU4-XYRR]; *see* Jade Passey, *Trial Finds DCVax-L Can Prolong the Lives of Those Living with a Glioblastoma*, BRAIN TUMOR CHARITY (Nov. 18, 2022), https://www.thebraintumourcharity.org/media-centre/news/research-news/trial-finds-dcvax-l-can-prolong-the-lives-of-those-living-with-a-glioblastoma/ [https://perma.cc/CC9W-CQ4Z].

2. Jon Weingart, *Glioblastoma Multiforme (GBM): Advancing Treatment for a Dangerous Brain Tumor*, JOHN HOPKINS MED., https://www.hopkinsmedicine.org/health/conditions-and-diseases/glioblastoma-multiforme-gbm-advancing-treatment-for-a-dangerous-brain-tumor [https://perma.cc/R64E-P5V8].

3. *See* Adam Feuerstein, *It Took Years, but the Failure of Northwest Bio's Brain Cancer Vaccine Is Now in the Open*, STATNEWS (May 10, 2022), https://www.statnews.com/2022/05/10/it-took-years-but-the-failure-and-futility-of-northwest-bios-brain-cancer-vaccine-is-now-in-the-open/ [https://perma.cc/2TNF-D258].

4. Boe Rimes, *Northwest Biotherapeutics, Inc (OTCMKTS: NWBO) Looking to Breakout After Phase 3 Clinical Trial of DCVax®-L for GBM Showed Improved Overall Survival & Favorable Safety Profile*, MICRO CAP DAILY (May 24, 2022), https://microcapdaily.com/phase-3-clinical-trial-of-dcvax-l-for-gbm-showed-improved-overall-survival-favorable-safety-profile [https://perma.cc/34V5-JTC7].

5. Linda M. Liau et al., *Association of Autologous Tumor Lysate-Loaded Dendritic Cell Vaccination with Extension of Survival Among Patients with Newly Diagnosed and Recurrent Glioblastoma*, 9 JAMA ONCOLOGY 112 (2023); Press Release, Nw. Biotherapeutics, Northwest Biotherapeutics Reports Positive Top-Line Results From Phase 3 Trial of DCVax®-L for Glioblastoma (Nov. 17, 2022), https://nwbio.com/northwest-biotherapeutics-reports-positive-top-line-results-from-phase-3-trial-of-dcvax-l-for-glioblastoma/ [https://perma.cc/4ATF-SDEW].

6. Liau et al., *supra* note 5, at 112; *see Northwest Biotherapeutics, Inc. (NWBO)*, YAHOO! FIN., https://finance.yahoo.com/quote/NWBO [https://perma.cc/S2AT-3Y4A].

negative online commentary continued,[7] however, and by the end of the day, the stock had fallen from its highs.

On December 1, 2022, NWBO filed a lawsuit against Citadel Securities and other big traders, alleging that their "relentless and brazen manipulation" drove the company's stock down 78 percent on a day with "extremely positive news" about the company's Phase III clinical trials.[8] According to the complaint, these trading companies made hundreds of millions of dollars and their illegal activities impaired NWBO's ability to raise funds and nearly derailed its progress in getting a life-saving cancer treatment to market.[9]

The episode illustrates the particular vulnerability of small cap biotech companies ("small biotechs")[10] to shorting. Short selling is the sale of stock that an investor does not own or has borrowed.[11] Short sellers profit from the difference between the sale price and the future delivery price.[12]

While there is an ongoing debate regarding whether short selling benefits or harms retail investors *in general*, this Article focuses specifically on negative activists (those who take actions to promote the potential risks and downsides of a company)[13] and the impact of

7. Adam Feuerstein, *Northwest Bio Study of Brain Cancer Vaccine Still Falls Short,* STAT NEWS (Nov. 21, 2022), https://www.statnews.com/2022/11/21/northwest-bio-study-of-cancer-vaccine-still-falls-short/ [https://perma.cc/F2P4-7TNG].

8. Complaint at 20–21, Nw. Biotherapeutics, Inc. v. Canaccord Genuity, LLC, No. 1:22-CV-10185 (S.D.N.Y. Dec. 1, 2022), ECF No. 1.

9. *Id.* at 70–81.

10. I define "small cap" as companies with a market capitalization under $2 billion. Generally, investors consider large cap companies to have a market capitalization of over $10 billion; mid-cap companies to have a market capitalization of $2–10 billion, and small-cap companies to have a market capitalization of $200 million–$2 billion. *Understanding Market Capitalization,* FIDELITY, https://www.fidelity.com/learning-center/trading-investing/fundamental-analysis/understanding-market-capitalization [https://perma.cc/S7QM-RJWE]. I define a "biotech" as a company in the field of biological sciences which is engaged in the development of drugs or medical devices to cure or alleviate the symptoms of human diseases such as diabetes, Alzheimer's, and cancers. A "small biotech" is defined in this paper as a biotech with a market capitalization under $2 billion.

11. *Investor Bulletin: An Introduction to Short Sales*, U.S. SEC. & EXCH. COMM'N (Oct. 29, 2015), https://www.sec.gov/oiea/investor-alerts-and-bulletins/ib_shortsalesintro [https://perma.cc/X8GT-6VPB].

12. *Id.* For example, on July 1, Speculator borrows from its broker 10,000 shares of Company X stock at the market price of $100 a share to be returned by October 1. Speculator immediately sells them at the market price of $100. Before October 1, the stock price drops to $60 a share and Speculator buys 10,000 shares on the open market to return them to the broker. Speculator makes a profit of the difference of $40/share or $40,000. If, however, the stock price goes up to $120/share, then Speculator must buy back those shares at that higher price and loses money ($120,000 – $100,000 = $20,000 plus fees and interest on the loan).

13. Professors Barbara Bliss, Peter Molk, and Frank Partnoy refer to these short sellers as "negative activists." *See* Barbara A. Bliss et al., *Negative Activism,* 97 WASH. U. L. REV. 1333, 1338 (2020) ("In negative activism, the activist typically sells short a company's shares instead of

shorting on innovation in the biotech industry, particularly as it pertains to drug development. I argue that shorting the stock of small biotechs creates incentives to engage in illegal activity that ultimately impedes innovation and costs lives.

Shorting can be part of a prudent investing strategy. Hedge funds[14] and other institutional investors engage in a variety of trading strategies to protect against losses and to meet liquidity needs. Because they take large positions, they can move markets.[15] Short attacks can devastate any company's stock, deplete it of resources, and harm the individual reputation of a corporation's officers and directors.[16] But when that company is a small biotech, the consequences are more dire. Biotech companies are vital to society.[17] The public depends upon them to develop life-saving drugs and devices. They produce drugs that improve human lives and alleviate suffering.

Small biotechs are also uniquely vulnerable and appealing targets for short sellers.[18] These companies spend years developing one or a handful of drugs, and the results of their efforts are dramatic—either they succeed, resulting in approval by the Food and Drug Administration (FDA) and commercialization of a drug worth potentially billions of dollars; or they fail, and the years of effort and resources spent on

buying them. A negative activist thereby seeks to profit from, and has incentives to cause, a decline in share prices—the opposite of a positive activist, who profits when share prices rise."); Peter Molk & Frank Partnoy, *The Long-Term Effects of Short Selling and Negative Activism*, 112 ILL. L. REV. 1, 3 (2022) (noting that "negative activists target companies they see as overvalued or even potentially fraudulent").

14. Hedge funds are entities that hold securities and are distinguished from other funds by their management fee structure, which is typically 1–2 percent of assets and 20 percent of capital gains or capital appreciation. U.S. SEC. & EXCH. COMM'N, IMPLICATIONS OF THE GROWTH OF HEDGE FUNDS ix (2003), https://www.sec.gov/files/implications-growth-hedge-funds-09292003.pdf [https://perma.cc/2AZL-6QBS].

15. *Id.* at 4–5. Although individuals also short stocks, this Article is primarily concerned with hedge fund short sellers because of their ability to affect a company's stock price. This Article will use the term "shorts" and "short sellers" interchangeably.

16. Jeff Katz & Annie Hancock, *Short Activism: The Rise in Anonymous Online Short Attacks*, HARV. L. SCH. F. ON CORP. GOVERNANCE (Nov. 27, 2017), https://corpgov.law.harvard.edu/2017/11/27/short-activism-the-rise-in-anonymous-online-short-attacks/ [https://perma.cc/4HR9-JP9T].

17. *See* NAT'L INTEL. COUNCIL, THE FUTURE OF BIOTECH (2021), https://www.dni.gov/files/images/globalTrends/GT2040/NIC-2021-02494--Future-of-Biotech--Unsourced--14May21.pdf [https://perma.cc/7MC5-NB3W].

18. Brian Scheid, *Biotech Companies Now Most-Shorted US Stocks as Tougher Federal Scrutiny Looms*, S&P GLOBAL MKT. INTELL. (Apr. 19, 2021), https://www.spglobal.com/marketintelligence/en/news-insights/latest-news-headlines/biotech-companies-now-most-shorted-us-stocks-as-tougher-federal-scrutiny-looms-63747008 [https://perma.cc/U248-WW2A].

research are lost.[19] In no other industry is the success or failure of a company so starkly binary.

Their very high risk-reward nature, low volume, and lack of liquidity make small biotechs an appealing target for shorting and market manipulation.[20] Their small market capitalization makes it easier for a deep-pocketed purchaser or seller to strategically move the company's stock price by, for example, timing a large sale with the release of news about the target company.[21] Manipulative tactics associated with short selling enrich already wealthy firms,[22] impede innovation in the biotech sector, and stifle competition, ultimately leading to fewer drugs in the marketplace and higher prices for consumers.[23]

Small biotechs are vulnerable to shorting in a way that Big Pharma companies[24] are not. Big Pharma has greater resources to defend against a short attack[25] The longstanding reputation of a Big Pharma company, well-staffed public relations teams, diversified product lines, substantial cash reserves, and existing revenue streams blunt the damage that short sellers can do. A short attack may temporarily lower the stock price of a Big Pharma target, but it is unlikely to bring down the company or stall its clinical trials.

By contrast, a short attack is likely to drastically lower a small biotech's stock price, create hurdles that slow down progress, impede financings, and may even completely derail the company's drug

19. *Development & Approval Process: Drugs*, U.S. FOOD & DRUG ADMIN. (Aug. 8, 2022), https://www.fda.gov/drugs/development-approval-process-drugs [https://perma.cc/3WGD-SCSG].

20. In 2021, biotech stocks were the most shorted. *See* Scheid, *supra* note 18.

21. Letter from Melanie Sloan, Exec. Dir. of CREW to U.S. Sec. & Exch. Comm'n (July 29, 2014) (on file with author).

22. Citadel, one of the most profitable hedge funds, made a $16 billion profit in 2022. *See* Anviksha Patel, *Ken Griffin's Citadel Made $16 Billion Last Year—the Largest Annual Hedge Fund Profit on Record, Investor Says*, MARKETWATCH (Jan. 23, 2023), https://www.marketwatch.com/story/ken-griffins-citadel-made-16-billion-last-year-the-largest-annual-hedge-fund-return-on-record-investor-says-11674465388 [https://perma.cc/QJW6-SWCQ].

23. Steven Pearlstein, *Northwest Biotherapeutics Stock Woes Highlight the Harm of Short Sales*, WASH. POST (Sept. 27, 2014, 6:14 PM), https://www.washingtonpost.com/business/northwest-biotherapeutics-stock-woes-highlight-the-harm-of-short-sales/2014/09/26/78b99b0a-4507-11e4-b47c-f5889e061e5f_story.html [https://perma.cc/6GS4-HJVR].

24. Although large pharmaceutical companies such as Merck and Pfizer may also be considered part of the biotech sector, this paper refers to them and other large, publicly traded pharmaceutical companies with a market capitalization of over $50 billion as "Big Pharma" to distinguish them from their smaller rivals.

25. Karl Leif Bates, *Big Pharmacy Relies on Small Biotech Firms to Succeed*, UNIV. MICH. (Feb. 18, 2002), https://record.umich.edu/articles/big-pharmacy-relies-on-small-biotech-firms-to-succeed/ [https://perma.cc/4BLW-HKJ4].

development efforts.[26] Given that much of the innovation in drug development increasingly comes from small biotechs and not Big Pharma,[27] short attacks on small biotechs are not only unfair, they also have tragic consequences.

Small biotechs spend years developing one or only a handful of drugs, but if they are successful, the financial payoff for investors can be enormous.[28] The odds of success, however, are slim. One study estimates that there is a less than 12 percent chance that a drug will be approved for marketing.[29] Drug development is a painfully slow and expensive process. The initial research and development is costly,[30] and the FDA approval process is long and burdensome.[31] The stakes are high, the outcome is uncertain, and the results are binary.

Small biotechs are responsible for a disproportionate share of innovative research and development.[32] As cumbersome Big Pharma turns away from actively researching and developing drugs, these companies are turning toward nimbler and more creative small biotechs to help them fill their pipeline.[33] Thus, modern society depends upon small biotechs for new drugs that prolong and enhance the quality of human life.

By drawing attention to the impact of shorting on innovation in drug development, this Article makes an important and novel contribution to the legal literature on financial markets. While the existing literature has focused on the effect of short selling to the financial markets,[34] this Article is the first to examine how short selling affects the

26. Pearlstein, *supra* note 23.

27. *See* discussion *infra* Part II.

28. Thomas Sullivan, *A Tough Road: Cost to Develop One New Drug Is $2.6 Billion; Approval Rate for Drugs Entering Clinical Development Is Less Than 12%*, POL'Y & MED. (Mar. 21, 2019), https://www.policymed.com/2014/12/a-tough-road-cost-to-develop-one-new-drug-is-26-billion-approval-rate-for-drugs-entering-clinical-de.html [https://perma.cc/E8AG-BSQ7].

29. *Id.* Studies generally put the figure between 5 and 14 percent. *See* Allan Haberman, *MIT Study Finds That the Probability of Clinical Trial Success Is Nearly 40% Higher Than Previously Thought*, HABERMAN ASSOCS. (Mar. 14, 2018), https://biopharmconsortium.com/2018/03/14/mit-study-finds-that-the-probability-of-clinical-trial-success-is-nearly-40-higher-than-previously-thought/ [https://perma.cc/43HE-AT27].

30. The estimated cost of developing a drug for approval is approximately $2.6 billion. Rick Mullin, *Cost to Develop New Pharmaceutical Drug Now Exceeds $2.5B*, SCI. AM. (Nov. 24, 2014), https://www.scientificamerican.com/article/cost-to-develop-new-pharmaceutical-drug-now-exceeds-2-5b/ [https://perma.cc/N236-UZT7];

31. *FDA's Drug Review Process: Ensuring Drugs Are Safe and Effective*, U.S. FOOD & DRUG ADMIN. (Nov. 24, 2017), https://www.fda.gov/drugs/information-consumers-and-patients-drugs/fdas-drug-review-process-ensuring-drugs-are-safe-and-effective [https://perma.cc/A75J-HM2W].

32. Bates, *supra* note 25.

33. *See* discussion *infra* Part II.

34. *See infra* Part I.

biotech industry in a way that contributes to social inequities, and it proposes a solution that is corrective and redistributive.

Part I of this article provides an overview of the issues surrounding the practice of short selling, including arguments for and against regulation. Part II explains why biotechs are uniquely vulnerable to short attacks. Part III examines the case of Northwest Biotherapeutics, a company developing a brain cancer vaccine. In Part IV, I outline my proposal which includes reporting requirements and a 15 percent surtax on profits from shorting small biotechs, which would be distributed to the National Institutes of Health.

I. SHORT AND DISTORT

A. The Pros and Cons of Short Selling

In January 2021, several hedge funds reported that they had lost billions of dollars shorting shares of companies such as video game retailer, GameStop.[35] One of the biggest losers was Melvin Capital Management, which reportedly lost over 50 percent on its investments.[36] These sophisticated market players had fallen victim to a "short squeeze"[37] orchestrated by individual investors who had organized their trading on social media sites, most notably a forum on Reddit called WallStreetBets.[38] The incident, with its David-and-Goliath, "take from the rich"[39] undertones, resonated with a pandemic-weary public that had become increasingly aware of the failings of free

35. Juliet Chung, *Melvin Capital Lost 53% in January, Hurt by GameStop and Other Bets*, WALL ST. J. (Jan. 31, 2021), https://www.wsj.com/articles/melvin-capital-lost-53-in-january-hurt-by-gamestop-and-other-bets-11612103117?mod=article_inline [https://perma.cc/MC7S-LH78].

36. *Id.*

37. A short squeeze occurs when the stock price of a company with a significant number of short positions rises upward unexpectedly, putting pressure on short sellers to cover their positions which further raises the price. *What's a Short Squeeze and Why Does It Happen?*, CHARLES SCHWAB (Feb. 1, 2021), https://www.schwab.com/learn/story/whats-short-squeeze-and-why-does-it-happen [https://perma.cc/QXA7-SYJ5]; *Key Points About Regulation SHO*, U.S. SEC. & EXCH. COMM'N (May 31, 2022), https://www.sec.gov/investor/pubs/regsho.htm [https://perma.cc/Z36C-7QJ2].

38. Makena Kelly, *Hill Report: Who Wants to Talk to Reddit?*, VERGE (Feb. 18, 2021, 3:00 PM), https://www.theverge.com/2021/2/18/22290110/house-financial-services-robinhood-gamestop-squeeze-roaringkitty-hearing [https://perma.cc/M2MN-BBG4].

39. Evgeny Morozov, *Why the GameStop Affair Is a Perfect Example of 'Platform Populism*,*'* GUARDIAN (Feb. 3, 2021, 4:00 AM), https://www.theguardian.com/commentisfree/2021/feb/03/gamestop-platform-populism-uber-airbnb-wework-robinhood-democracy [https://perma.cc/6X8X-VK4M]. Consistent with the populist theme, many of the retail investors traded through their online brokerage accounts with Robinhood, rather than through more established firms. *Id.*

market capitalism.[40] It again brought to the public's attention the practice of short selling and options trading, which had briefly occupied headlines during the 2008 financial crisis and then disappeared from the public's attention. During the 2008 financial crisis, some hedge funds took advantage of the dire position of banks and shorted their stock.[41] In doing so, they exacerbated the precariousness of the financial system and the U.S. economy, prompting the Securities and Exchange Commission (SEC) to temporarily halt short selling of stocks in financial companies.[42] More recently, in May 2023, the American Bankers Association called for the SEC to rein in short sellers who were using social media to instigate a bank run and drive down the stock price of regional banks.[43]

Critics have argued that short selling the stock of publicly traded companies provides little or no societal benefit, destabilizes the marketplace, and harms both target companies and investors.[44] They have referred to the practice as an example of "vulture capitalism," which feasts on a failing economy rather than adding value to it.[45] They claim that short sellers spread false or misleading information to drive down a company's stock price so they can make a profit.[46] CEOs of companies have complained about short and distort attacks against their

40. *See* James Fallows Tierney, *Investment Games*, 72 DUKE L.J. 353, 410–12 (2022) (discussing GameStop and the "gamification" of finance); Kat Lonsdorf, *How the Financial Crisis of 2008 Appeared in the GameStop Trading Frenzy*, NPR (Feb. 8, 2021, 5:28 PM), https://www.npr.org/2021/02/08/965563614/how-the-financial-crisis-of-2008-appeared-in-the-gamestop-trading-frenzy [https://perma.cc/GZ84-63JQ].

41. Simon Bowers, *Banking Crisis: Regulators Look to Curb Naked Ambition of the Short Sellers*, GUARDIAN, (Sept. 17, 2008, 2:01 PM), https://www.theguardian.com/business/2008/sep/17/stockmarkets.marketturmoil [https://perma.cc/8WLV-M8LF].

42. Press Release, U.S. Sec. & Exch. Comm'n, SEC Halts Short Selling of Financial Stocks to Protect Investors and Markets (Sept. 19, 2008), https://www.sec.gov/news/press/2008/2008-211.htm [https://perma.cc/JJV4-KCJ9]; David Goldman, *SEC Bans Short-Selling*, CNN (Sept. 19, 2008, 7:41 AM), https://money.cnn.com/2008/09/19/news/economy/sec_short_selling/index.htm [https://perma.cc/Y3X8-CDAP].

43. Letter from Rob Nichols, President & CEO of the Am. Bankers Ass'n, to Gary Gensler, Chairman, U.S. Sec. & Exch. Comm'n (May 4, 2023) (on file at aba.com).

44. *See* Duncan Lamont, *GameStop: The Ethics of Short Sellers*, SCHRODERS (Jan. 29, 2021), https://www.schroders.com/en/global/individual/insights/are-short-sellers-ethical/ [https://perma.cc/JY8K-GCWE] (acknowledging claims that short selling has a poor reputation).

45. Rob Davies, *GameStop: How Reddit Amateurs Took Aim at Wall Street's Short-Sellers*, GUARDIAN (Jan. 28, 2021), https://www.theguardian.com/business/2021/jan/28/gamestop-how-reddits-amateurs-tripped-wall-streets-short-sellers [https://perma.cc/NLD5-R7SC].

46. Molk & Partnoy, *supra* note 13, at 6 (noting that "studies have found that an increase in short selling is on average closely followed by negative news, and the literature on short selling recently has interpreted this association as a potentially deleterious short-term effect, rather than as a positive aspect of price discovery"); Katz & Hancock, *supra* note 16 (discussing several examples where anonymous short attacks sent stock prices "spiraling").

companies for years.[47] Tesla, Overstock,[48] Shopify[49] and other well-known corporations have all been the target of short attacks. Overstock sued a hedge fund short seller, alleging that it "orchestrated a wide-scale predatory campaign of knowingly distributing false, and covertly biased, written reports about Overstock in order to disparage Overstock and enrich themselves."[50] Elon Musk, the CEO of Tesla, has been vocal about his disdain for short sellers and the damage they cause:

> Too often, sophisticated hedge funds have used short selling and complex derivatives to take advantage of small investors. They will short a company, conduct a negative publicity campaign to drive the stock price down temporarily and cash out, then do it all over again many times. The term for this, as you may be aware, is "short & distort."[51]

Defenders of the practice, however, argue that short selling contributes to more efficient financial markets[52] and provides market liquidity when there are temporary imbalances in the supply and demand for a particular stock.[53] Short sales may also contribute to pricing efficiency and keep a stock from becoming overinflated.[54] Most importantly, they argue that activist short sellers keep companies

47. *See* Lawrence Delevingne, *Short & Distort? The Ugly War Between CEOs and Activist Critics*, REUTERS (Mar. 21, 2018, 5:14 AM), https://www.reuters.com/article/us-usa-stocks-shorts-insight/short-distort-the-ugly-war-between-ceos-and-activist-critics-idUSKCN1R20AW/ [https://perma.cc/5KG6-2HKM].

48. Bethany McLean & Corey Hajim, *Overstock's Phantom Menace*, CNN (Nov. 1, 2005, 8:04 AM), https://money.cnn.com/2005/11/01/news/midcaps/overstock_fortune_111405/ [https://perma.cc/2D58-6G5Y]; CNBC Television, *Overstock.com CEO on How the Company Overcame Short Sellers*, YOUTUBE (Feb. 3, 2021), https://www.youtube.com/watch?v=UI5lMJItrkI [https://perma.cc/EV8Y-JCFP].

49. David George-Cosh, *Shopify CEO Addresses Short-Seller's Claims*, WALL ST. J. (Oct. 31, 2017), https://www.wsj.com/articles/shopify-ceo-addresses-short-sellers-claims-1509464503 [https://perma.cc/6TBK-MYLV].

50. McLean & Hajim, *supra* note 48.

51. Brian Schwartz, *Elon Musk Cheers On Justice Department Probe of Short Sellers*, CNBC (Feb. 23, 2022), https://www.cnbc.com/2022/02/23/elon-musk-cheers-on-justice-department-probe-of-short-sellers.html [https://perma.cc/JA9J-SR6L].

52. Hugo Dante, Opinion, *In Defense of the Misunderstood Short Seller*, HILL (Mar. 16, 2021, 10:30 AM), https://thehill.com/opinion/finance/543345-in-defense-of-the-misunderstood-short-seller/ [https://perma.cc/B96G-C9J7].

53. U.S. SEC. & EXCH. COMM'N, *supra* note 14, at 40.

54. *Id.*; *see also* Mark Gilbert, *Long-Short Hedge Funds Are Necessary, Not Evil*, WASH. POST (Aug. 6, 2020), https://www.washingtonpost.com/business/long-short-hedge-funds-are-necessary-not-evil/2020/08/06/8dfcce08-d7b2-11ea-a788-2ce86ce81129_story.html [https://perma.cc/8L5P-UKNE] (explaining how short sellers serve a vital market function by uncovering malfeasance in an industry that is otherwise skewed away from negativity).

honest and expose corporate fraud.[55] They cite high-profile examples, such as Enron,[56] Valeant,[57] and Wirecard,[58] where short sellers sounded alarm bells and issued warnings that turned out to be well-founded. Law professors Peter Molk and Frank Partnoy suggest that "negative activism can add significant value to the securities markets"[59] and that it "has the potential to provide substantively desirable, albeit perhaps intuitively unappealing disciplining forces to the market."[60]

The primary regulation in this area is Regulation SHO.[61] The purpose of Regulation SHO is to enhance market stability and investor confidence, particularly by prohibiting practices such as "naked shorting."[62] The SEC and the Department of Justice also regulate short sellers under existing securities laws.[63]

Unfortunately, the SEC has been woefully ineffective at curbing illegal market manipulation associated with shorting, largely because of the evidentiary difficulty of identifying fraudulent activity and the SEC's resource constraints.[64] More often, companies and their shareholders are left to fend for themselves by conducting their own investigations and filing lawsuits.[65]

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55. *Id.*

56. Cassell Bryan-Low & Suzanne McGee, *Enron Short Seller Detected Red Flags in Regulatory Filings*, WALL ST. J. (Nov. 5, 2001), https://www.wsj.com/articles/SB1004916006978550640 [https://perma.cc/KJ8V-54PQ]; Tom Petruno, *'Short-Sellers' in Enron Finally Get Their Due*, L.A. TIMES (Jan. 20, 2002, 12:00 AM), https://www.latimes.com/archives/la-xpm-2002-jan-20-fi-petruno20-story.html [https://perma.cc/BX3F-3X3Y] (stating that "short-sellers may be the last bastion of hard-nosed research left on Wall Street").

57. Michael Hiltzik, *Column: Valeant Scandal Shows Why We Need Short-Sellers in the Stock Market*, L.A. TIMES. (Nov. 3, 2015, 4:27 PM) https://www.latimes.com/business/hiltzik/la-fi-mh-valeant-scandal-20151103-column.html [https://perma.cc/9AGG-RQDN].

58. Chris Bryant, *Wirecard Fraud Casts Appreciative Limelight on Short-Sellers*, BUS. TIMES (June 27, 2020), https://www.businesstimes.com.sg/wealth-investing/wirecard-fraud-casts-appreciative-limelight-on-short-sellers [https://perma.cc/FH7Y-HURJ].

59. Molk & Partnoy, *supra* note 13, at 9.

60. *Id.* at 10.

61. *Key Points About Regulation SHO*, *supra* note 37.

62. *Id.* Naked short sales occur when a seller has not borrowed shares before selling them. *Id.*

63. *See* Katia Porzecanski & Tom Schoenberg, *Vast DOJ Probe Looks at Almost 30 Short-Selling Firms and Allies*, BLOOMBERG (Feb. 4, 2022, 8:34 AM), https://www.bloomberg.com/news/articles/2022-02-04/vast-doj-probe-looks-at-almost-30-short-selling-firms-and-allies?leadSource=uverify%20wall [https://perma.cc/5DL2-LZ6G].

64. *See* Thomas M.J. Möllers, *Market Manipulation Through Short Selling Attacks and Misleading Financial Analyses*, 53 INT'L L. 91, 97 (2020).

65. Harrington Glob. Opportunity Fund v. CIBC World Mkts. Corp., No. 21 CIV. 761, 2023 WL 6316252 (S.D.N.Y. Sept. 28, 2023) (shareholder of health company sued under Section 10(b) of the Securities Exchange Act of 1934, alleging defendants engaged in spoofing that caused economic harm); *see also* Ciara Lianne, *Genius Group Hires Former FBI Official to Head Task Force to Investigate Illegal Trading of Stock, to Pay Special Dividend*, MARKETWATCH (Jan.

More recently, the GameStop short squeeze and other meme stock related events prompted the SEC to propose new rules that would require hedge funds to disclose more information about the stocks they short.[66] The SEC adopted these rules on October 13, 2023,[67] which, among other requirements, require institutional investment managers to file monthly reports when they have a gross short position of at least $10 million or the equivalent of 2.5 percent of the shares outstanding.[68] The rationale for more disclosure is that it will diminish the likelihood of market manipulation schemes, allow investors to consider more critically short reports issued by short sellers, and elicit more skepticism and scrutiny from investors when there are dramatic and inexplicable drops in stock price.[69] The National Investor Relations Institute (NIRI) argues that institutional investment managers should disclose their short selling activities because disclosure "would help prevent market manipulation and other abusive trading practices" and provide "valuable information to issuers and the public" by exposing the motivations behind the short investor.[70] Disclosure requirements are also supported by Nasdaq for similar reasons, including market stability.[71]

In this Article, I argue that shorting itself is not the problem. There are legitimate reasons why an investor may short a company's stock.

19, 2022), https://www.marketwatch.com/story/genius-group-names-ex-fbi-official-to-head-task-force-to-investigate-illegal-trading-of-stock-to-pay-special-dividened-01674130361 [https://perma.cc/5BLY-GNNY] (showing how an edtech and education group hired an ex-FBI official to investigate suspected illegal trading).

66. EDUARDO A. ALEMAN, DEPUTY SEC'Y, U.S. SEC. & EXCH. COMM'N, SHORT POSITION AND SHORT ACTIVITY REPORTING BY INSTITUTIONAL MANAGERS 7 (2022), https://www.sec.gov/rules/proposed/2022/34-94313.pdf [https://perma.cc/W7GZ-TWK3].

67. Press Release, U.S. Sec. & Exch. Comm'n, SEC Adopts Rule to Increase Transparency into Short Selling and Amendment to CAT NMS Plan for Purposes of Short Sale Data Collection (Oct. 13, 2023), https://www.sec.gov/news/press-release/2023-221 [https://perma.cc/TL8U-GQ3D].

68. *Id.*; Kevin J. Campion, *The SEC's Proposed New Short Disclosure/Sale Requirements*, HARV. L. SCH. F. CORP. GOVERNANCE (Apr. 2, 2022), https://corpgov.law.harvard.edu/2022/04/02/the-secs-proposed-new-short-disclosure-sale-requirements/ [https://perma.cc/QK9Y-AVVT]. Previously a group of twelve law professors submitted a petition to the SEC seeking a duty to update promptly a voluntary short position disclosure. Letter from Joshua Mitts et. al. to Vanessa Countryman, Sec'y, U.S. Sec. & Exch. Comm'n (Feb. 12, 2020), https://www.sec.gov/files/rules/petitions/2020/petn4-758.pdf [https://perma.cc/PB2C-N4CQ].

69. NAT'L INV. RELS. INST., THE CASE FOR IMPROVED DISCLOSURE OF SHORT POSITIONS 2, https://www.niri.org/NIRI/media/NIRI/Advocacy/NIRI-Case-for-Short-Selling-Disclosure-Rule-final.pdf [https://perma.cc/YNT8-E5JP].

70. *Id.*

71. Letter from Edward S. Knight, Exec. Vice President, Gen. Couns. and Chief Regul. Off. of Nasdaq, to Brent J. Fields, Sec'y, U.S. Sec. & Exch. Comm'n (Dec. 7, 2015), https://www.sec.gov/files/rules/petitions/2015/petn4-691.pdf [https://perma.cc/65UM-7CBW].

An institutional investor may, for example, have short term liquidity needs due to redemptions and may not wish to divest itself of a long position in the same stock. It may also want to hedge against a long position in the same market sector or for timing or other strategic reasons.

Negative activism itself is also not the problem. Negative activists have uncovered many instances of fraud at publicly traded companies. For example, a short report by Hindenburg Research[72] led to the conviction of Nikola founder, Trevor Milton, for fraud.[73] Often, short sellers risk retaliation by companies or investors for their work.[74] For example, after Hindenburg issued its report, Nikola publicly stated that it would consider litigation against the firm.[75]

The problem is the difficulty in identifying and distinguishing good faith shorting from illegal market manipulation. Both good faith shorting and negative activism contribute to a market environment that makes it difficult to separate fact from fiction. In other words, the practice of shorting, even when done for legitimate purposes, provides cover for illegal activity.

B. Distortion, Collusion, and the Principle of Reflexivity

Although a positive step toward restoring trust in the marketplace, the disclosure requirements alone are insufficient at getting at the crux of the problem: shorting creates an incentive for market manipulation through illicit trading practices such as "spoofing" and "pinging."[76] Both involve placing a buy or sell order, also referred to as baiting orders,[77] with the intent to cancel the bid in order to create a false

72. Akanksha Rana & Munsif Vengattil, *Nikola Threatens Hindenburg with Litigation, Short-Seller 'Welcomes It*,*'* REUTERS (Sept. 11, 2020), https://www.reuters.com/article/us-nikola-hindenburg-idUSKBN2621WR [https://perma.cc/EC9H-M2ME].

73. Jack Ewing, *Founder of Electric Truck Maker Is Convicted of Fraud*, N.Y. TIMES (Oct. 14, 2022), https://www.nytimes.com/2022/10/14/business/trevor-milton-nikola-fraud.html [https://perma.cc/3QWQ-ACKS].

74. Michelle Celarier, *Short Sellers Chanos and Quadir Have Been Zooming with Congress in Hopes of Fending Off Regulation*, INSTITUTIONAL INV. (Mar. 11, 2021), https://www.institutionalinvestor.com/article/b1qxnbvg459t31/Short-Sellers-Chanos-and-Quadir-Have-Been-Zooming-With-Congress-in-Hopes-of-Fending-Off-Regulation [https://perma.cc/RT2F-XSX7] (One short seller explained that "companies will retaliate against short sellers if the companies know their positions, detailing how she has been subjected to such attacks.").

75. Rana & Vengattil, *supra* note 72.

76. Tom C.W. Lin, *The New Market Manipulation*, 66 EMORY L.J. 1253, 1288–1290 (2017).

77. Harrington Glob. Opportunity Fund v. CIBC World Mkts. Corp., No. 21 CIV. 761, 2023 WL 6316252, at *1 (S.D.N.Y. Sept 28, 2023) (describing baiting orders as order "not intended to be executed" that "had no legitimate economic purpose" and "sent a 'false and misleading price signal to the marketplace'").

sentiment of a stock.[78] Both are enabled by the use of algorithmic and high frequency trading programs that permit thousands of orders to be placed within milliseconds.[79]

Technology has transformed market manipulation. As law professor Tom Lin writes, "the mechanisms of new media technology and new financial technology" allow the distortion of financial markets on an "unprecedented scale" by spreading faulty information.[80] Lin refers to this "new method of cybernetic market manipulation" as "mass misinformation."[81] Mass misinformation compounds the false sentiment of a company's stock created by spoofing or pinging.[82]

Short reports can have a disastrous effect on a company's stock price. For example, after Spruce Point Capital published a report on Nuvei, claiming the company engaged in questionable business practices, the company's shares dropped 50 percent within a few hours.[83] But as harmful as short reports may be to a company's stock price, they may also be a valuable aspect of price discovery, providing a needed check on an overpriced stock.

However, it may be difficult for the average investor to distinguish between legitimate short reports and research reports intended to spread mass misinformation.[84] Distortive or inaccurate short reports

78. 7 U.S.C. § 6(c)(a)(5)(C) ("It shall be unlawful for any person to engage in any trading, practice, or conduct on or subject to the rules of a registered entity that . . . is of the character of, or is commonly known to the trade as, 'spoofing' (bidding or offering with the intent to cancel the bid or offer before execution)."); Lin, *supra* note 76, at 1288–89 (describing pinging and spoofing as "two new methods of market manipulation that leverage the new financial technologies of the marketplace to distort the ordinary price discovery process in financial markets").

79. For a more detailed discussion of spoofing and how it is affected by high frequency trading, see generally Merritt B. Fox et. al., *Spoofing and Its Regulation*, 2021 COLUM. BUS. L. REV. 1244, 1254 (2021) ("Drawing on microstructure and financial economics, this Article offers a new understanding of a common kind of quote-driven manipulation, often referred to as 'spoofing.'"); Lin, *supra* note 76, at 1288–90 ("The rise of autonomous, high-speed supercomputers running on smart algorithms made both methods of market manipulation possible and profitable since both pinging and spoofing require the rapid submission and cancellation of voluminous orders measured in seconds.").

80. Lin, *supra* note 76, at 1292.

81. *Id.*

82. The Justice Department and the SEC are currently investigating several prominent short selling firms. *See* Porzecanski & Schoenberg, *supra* note 63 ("Investigators have been looking, for example, for signs that money managers might try to engineer startling stock drops to induce selling by market makers or other investors, or engage in other abuses, such as insider trading.").

83. Eddie Pan, *NVEI Stock Alert: Nuvei Plunges 50% After Spruce Point Short Report*, INVESTORPLACE (Dec. 8, 2021, 12:28 PM), https://investorplace.com/2021/12/nvei-stock-alert-nuvei-plunges-50-after-spruce-point-short-report/ [https://perma.cc/FEY3-VVMQ].

84. Evan Hughes, *The Man Who Moves Markets*, ATLANTIC (Feb. 2, 2023) https://www.theatlantic.com/magazine/archive/2023/03/wall-street-muddy-waters-activist-short-sellers-tesla-gamestop/672774/ [https://perma.cc/UZL7-2ENM]. ("Often the author of a short report is only one

are often widely distributed and taken at face value by retail investors,[85] and they can have a catastrophic effect on a targeted company.[86]

On September 2018, the SEC announced that it had charged hedge fund advisor Gregory Lemelson and his investment advisory firm, Lemelson Capital Management, LLC, for issuing false information about Ligand Pharmaceuticals.[87] The SEC charged that Lemelson, after taking a short position in Ligand, issued false information about the company in an effort to "shake investor confidence in Ligand, lower its stock price, and increase the value of his position" and, by doing so, reaped more than $1.3 million in illegal profits.[88] Ligand's stock plunged by more than a third after Lemelson's campaign.[89] A jury ultimately convicted Lemelsen of making false statements that included assertions that Ligand's most profitable drug was on the brink of obsolescence and that the company had engaged in a sham transaction.[90] Brazenly, after the SEC charged Lemelson, his firm increased his short position in Ligand and called for the U.S. Attorney to investigate the company, claiming that the SEC has "botched opportunities for a proper investigation of the company."[91]

Short sellers may also encourage or direct anonymous posters on message boards, bloggers, journalists, and other media influencers to post negative information about a company.[92] These posters may

participant in a coordinated campaign, and the biggest player is usually invisible. . . . An activist short who doesn't have the capital to fully exploit his idea will often link up with a 'balance-sheet provider'—a large hedge fund that puts on a big trade and gives the author a piece of the proceeds.").

85. One study found that on the day of a short report's disclosure, media mentions spiked more than 261 percent, which suggested the report reached a wide audience and gained the attention of investors. Janja Brendel & James Ryans, *Responding to Activist Short Sellers: Allegations, Firms, Responses, and Outcomes*, 59 J. ACCT. RSCH. 487, 509 (2021).

86. *See* Katz & Hancock, *supra* note 16 (providing examples of companies whose stock was devastated by short reports).

87. Press Release, U.S. Sec. & Exch. Comm'n, SEC Charges Hedge Fund Adviser with Short-and-Distort Scheme (Sept. 12, 2018), https://www.sec.gov/news/press-release/2018-190 [https://perma.cc/6DCX-RREV].

88. *Id.*

89. *Id.*

90. Press Release, U.S. Sec. & Exch. Comm'n, SEC Wins Jury Trial: Hedge Fund Adviser Liable for Securities Fraud (Nov. 5, 2021), https://www.sec.gov/litigation/litreleases/lr-25258 [https://perma.cc/LZ2W-32N6].

91. *About Us*, LEMELSON CAP. MGMT., https://lemelsoncapital.com/about/ [https://perma.cc/LT8M-S73K].

92. Randall Bloomquist, *DOJ Investigations Raise Concerns over Short-Seller Reports*, TELEGRAPH (Oct. 13, 2022), https://www.nashuatelegraph.com/archive/2022/10/13/doj-investigations-raise-concerns-over-short-seller-reports/ [https://perma.cc/457J-KC7X].

receive financial benefit directly or indirectly from short sellers.[93] For example, a journalist or "independent researcher" writing an article or tweeting about a company may receive direct monetary payment for writing that article.[94] Even if not receiving direct payment in exchange for writing a report, hedge funds may pay these commentators and researchers indirectly, including by subscribing to their Substack or other newsletter or making donations to their Patreon or similar account. They may refer "consulting" work to the researcher. An online commentator may benefit from advertising revenue which gives them an incentive to post content that will go viral. Many stock information websites require that a poster disclose positions in the companies mentioned in the article; however, even if the writer doesn't hold a position, that writer may be paid by someone who does.[95]

When a short report of a target company is authored by an identified short seller of that company's stock, investors may decide to take the information with a grain of salt. They can assess the credibility of the content in light of the self-interest of the firm that authored it. In that case, *caveat emptor*. More troubling is when the self-interest of the writer is *not* disclosed.[96] Social media has amplified both the range and the extent of misinformation.

For example, David Quinton Matthews, writing under the pseudonym Rota Fortunae, admitted that he wrote and published an article on an investing website, *Seeking Alpha*, about Farmland Partners after being asked to do so by hedge fund Sabrepoint Capital Management, which had taken a short position in the company.[97] Matthews had written other articles for Sabrepoint and posted them on the *Seeking Alpha*

93. *Id.* A FUDster is somebody who spreads fear, uncertainty, and doubt or disinformation for amusement or for some kind of financial or political gain. Implicit in the definition, is that that FUDster is not acting sincerely and is trying to manipulate the views of others. Storm filled Eyes, *FUDster*, URB. DICTIONARY (Mar. 23, 2020), https://www.urbandictionary.com/define.php?term=FUDster [https://perma.cc/LV8T-TGKF].

94. Ewing, *supra* note 73.

95. *See* Cary Spivak, *Short on Ethics?*, AM. JOURNALISM REV. (Sept. 2010), https://ajrarchive.org/article.asp?id=4911[https://perma.cc/3Y7S-ZVVL] (exposing a "new, controversial model for funding investigative journalism" where shortsellers finance investigations of publicly traded companies).

96. Law professor Joshua Mitts cautions that "short attacks carried out by pseudonymous authors may indeed be manipulative, which justifies greater regulatory scrutiny." Joshua Mitts, *Short and Distort*, 49 J. LEGAL STUD. 287, 291 (2020).

97. Michelle Celarier, *Stunning Confessions of a Short Seller*, INSTITUTIONAL INV. (June 22, 2021), https://www.institutionalinvestor.com/article/b1sd5rkh2zzyrr/Stunning-Confessions-of-a-Short-Seller [https://perma.cc/SLK3-PU94].

website.[98] Sabrepoint paid Matthews more than $100,000 in fees in 2018.[99]

The spread of this negative information creates fear, uncertainty, and doubt (FUD) and may prompt existing investors of a company's stock to sell their holdings prematurely and deter new investors.[100] Short reports and articles intended to spread FUD may actively cherry-pick information or present it in a way that misleads or distorts a company's activities.[101] Rather than being neutral and balanced, short hit pieces are written and published with the specific purpose of driving down a company's stock price.[102] Matthews, for example, stated that he had never written a *Seeking Alpha* article that did not align with Sabrepoint's position and revealed that he "worked with" Sabrepoint and exchanged "language, information, and ideas" when he wrote his article on Farmland.[103] He also admitted that many of the "key statements" in the Farmland report that he posted were inaccurate.[104] He eventually settled with Farmland and agreed to pay restitution.[105]

One might hope that a rational investor would discount comments by non-professionals or those without the requisite expertise in a given science or field, but the markets consist of human investors who are not immune to the misinformation and distortion that plague the rest of the Internet. FUD moves markets to the benefit of short sellers betting against a company's success.[106] Even when a company or experts rebut the accusations and claims as baseless, they may nevertheless result in the destruction of millions of dollars in value for investors.[107] Studies have demonstrated that people will continue to believe lies even after they learn of their falsity.[108] Social scientists have named

98. *Id.*

99. *Id.*

100. Nina Semczuck, *What Does FUD Mean in Stocks and Crypto?*, BANKRATE (Dec. 5, 2023), https://www.bankrate.com/investing/fud-fear-uncertainty-doubt-in-investing/ [https://perma.cc/F7QP-2KKM].

101. *Id.*

102. *Id.*

103. Celarier, *supra* note 96.

104. Lawrence Delevingne, *'I Regret Any Harm:' Short Seller Compensates Target in Rare Move*, REUTERS (June 22, 2021), https://www.reuters.com/world/us/i-regret-any-harm-short-seller-compensates-target-rare-move-2021-06-21/ [https://perma.cc/34CN-LYBT].

105. Celarier, *supra* note 97.

106. Semczuck, *supra* note 100; Mitts, *supra* note 96, at 287.

107. Celarier, *supra* note 97; Katz & Hancock, *supra* note 16.

108. *See* Hollyn M. Johnson & Colleen M. Seifert, *Sources of the Continued Influence Effect: When Misinformation in Memory Affects Later Inferences*, 20 J. EXPERIMENTAL PSYCH: LEARNING, MEMORY & COGNITION 1420, 1420 (1994).

this phenomenon the "continued influence effect,"[109] and it may explain why misinformation is so persistent online. Correcting such information may not be successful.[110] To the contrary, it may sometimes reinforce the misinformation by drawing attention to it.[111]

Unscrupulous short sellers may try to manipulate the peer review process of scientific journals.[112] In a 2022 editorial, the Editor-in-Chief of The Journal of Clinical Investigation, Dr. Elizabeth M. McNally, expressed concern about the pressure that short sellers exert on editors and the "new means of manipulating the scientific publishing industry":[113]

> Throughout 2022, the Journal has been repeatedly contacted to comment on the 2012 *JCI* paper. Although we cannot be certain, there now appear to be new "short and distorters." A recent round of emails was sent simultaneously to multiple journals and editors, identifying 25 articles with potential problems and providing recommendations on how the journals should respond. Importantly, these accusatory emails do not identify any financial conflicts of interest on the part of the whistleblowers. The emails insist that an investigation begin within 24 hours and request that the journals update them on investigative progress. As an editor, I am expressing concern because this represents a new means of manipulating the scientific publishing industry.[114]

The decline of a company's stock may cause it to be delisted from Nasdaq, which restricts the liquidity of the shares, discourages new investment, and sends a negative signal to the marketplace, thus further depressing the share price.[115] While collapses of companies

109. *Id.*

110. *Id.* at 1432 (suggesting that "one cannot completely discredit information in memory by merely negating the literal content expressed earlier").

111. Andrea N. Eslick et al., *Ironic Effects of Drawing Attention to Story Errors*, 19 MEMORY 184, 184 (2011).

112. Elizabeth M. McNally, *Conflicting Interests: When Whistleblowers Profit from Allegations of Scientific Misconduct*, 132 J. CLINICAL INVESTIGATION 1, 1 (2022).

113. *Id.*

114. *Id.*

115. Gordon Scott, *Delisting: What It Means and How It Works for Stock Shares*, INVESTOPEDIA (June 10, 2023), https://www.investopedia.com/terms/d/delisting.asp [https://perma.cc/43S7-5DE7]; JOSHUA T. WHITE, DIV. OF ECON. & RISK ANALYSIS, U.S. SEC. & EXCH. COMM'N, OUTCOMES OF INVESTING IN OTC STOCKS 2 (2016) (noting that "OTC stocks are owned and traded almost exclusively by individual ('retail') investors" and not institutional investors, and that OTC stocks "tend to have poor liquidity and generate severely negative and volatile returns").

targeted by short selling threaten the stability of the financial system, undermine investor confidence, and increase market inefficiency,[116] they are an ideal scenario for short sellers who will owe nothing because they will not have to return the loaned shares to the broker.[117]

Online media, and the ease with which misinformation can be widely distributed, has facilitated the manipulation of markets and increased the incidence of "short and distort" attacks.[118] Section 230 of the Communications Decency Act essentially immunizes message boards from liability for content posted by third parties, even when those posters are anonymous or pseudonymous and even when their messages are false or defamatory.[119] The result has been an explosion of online misinformation without accountability.[120] Often, these posts are anonymous or pseudonymous and written or financed by short activist hedge funds.[121]

Access to channels of communication is not equal. Those with more money, connections, and influence are able to reach a broader audience and, to a certain extent, they can buy credibility or at least key words that push their desired content to the top of search results. The Internet held the promise of leveling the information playing field but in many ways made it worse.[122] Hedge funds and influential short

116. LLOYD DIXON ET AL., HEDGE FUNDS AND SYSTEMATIC RISK 65 (2012). ("Concern remains that short selling by a hedge fund or multiple hedge funds can result in an unjustified fall in stock prices or can cause a decline in the real value of the firm. The decline might be so rapid that there is no opportunity for the first to dispel rumors about its financial health or for investors to provide additional capital before the firm collapses.").

117. Brian Beers, *Shorting the Stock of a Company That Goes Bankrupt*, INVESTOPEDIA (Mar. 16, 2023), https://www.investopedia.com/ask/answers/maintain-short-position-delisted-stock/ [https://perma.cc/V32P-GV8S] (stating that the bankruptcy of a company being shorted, is the short seller's "best possible scenario").

118. Katz & Hancock, *supra* note 16; *see also* Delevingne, *supra* note 47 (noting that Twitter and Seeking Alpha has created a "small but prominent group of brash public activists" which can have a "noticeable impact on stock prices").

119. Communications Decency Act of 1996, Pub. L. No. 104-104, § 230, 110 Stat. 133, 138. For a summary of the relevant cases and literature, see Joel R. Reidenberg et al., *Section 230 of the Communications Decency Act: A Survey of the Legal Literature and Reform Proposals* 9–10 (Fordham L. Legal Stud. Rsch. Papers, Working Paper No. 2046230, 2012) https://ssrn.com/abstract=2046230 [https://perma.cc/YBC2-WVU9].

120. Professor Joshua Mitts has argued that short activists take advantage of social media outlets, such as Twitter, to induce a "panicked run" on a firm which allows short sellers to cover and lock in profits before the stock recovers. Joshua Mitts, *A Legal Perspective on Technology and the Capital Markets: Social Media, Short Activism and the Algorithmic Revolution* 3 (Colum. L. & Econ., Working Paper No. 615, 2019).

121. Katz & Hancock, *supra* note 16.

122. *Updated Investor Alert: Social Media and Investing—Stock Rumors*, U.S. SEC. & EXCH. COMM'N (Nov. 5, 2015), https://www.sec.gov/oiea/investor-alerts-bulletins/ia-rumors [https://perma.cc/QQ8F-2SK5].

sellers have the resources to disseminate information widely.[123] They can distribute their research reports and post them on multiple websites and then issue press releases to ensure even more media coverage and distribution. They may have connections with the mainstream press and feed journalists "tips."[124] Short sellers may also collaborate with bloggers and journalists by suggesting certain topics and coordinating the publication of market making news with stock trades that benefit them.[125] Sabrepoint Capital, for example, agreed to pay Matthews a retainer of $9,500 a month and then encouraged him to look into Farmland Partners, a real estate company.[126] The Justice Department is currently investigating the possibility of this type of collusion between hedge funds and researchers as well as hedge funds and other hedge funds.[127]

As part of that investigation, on July 26, 2024, a federal grand jury returned an indictment charging Andrew Left, a prominent short seller, with securities fraud.[128] The indictment alleges that Left, conducting business as Citron Research ("Citron") concealed his financial relationships with a hedge fund by "fabricating invoices, wiring payments through a third party, and making false and misleading statements to the public about Citron's relationship with hedge funds."[129] Citron published investment recommendations which, the indictment alleges, "created the false pretense that Left's economic incentives aligned with his public recommendation."[130] The indictment further alleges that Left "knowingly exploited his ability to move stock prices" and posted recommendations on social media to "manipulate

123. Katz & Hancock, *supra* note 16.

124. *Id.*; Robert Bushman & Jedson Pinto, *The Influence of Short Sellers on Negative Press Coverage and Price Discovery*, 70 MGMT. SCI. 1924 (2023).

125. Michelle Celarier, *The Dark Money Secretly Bankrolling Activist Short-Sellers—and the Insiders Trying to Expose It*, INSTITUTIONAL INV. (Nov. 30, 2020), https://www.institutionalinvestor.com/article/b1pgz6k9kjs50v/The-Dark-Money-Secretly-Bankrolling-Activist-Short-Sellers-and-the-Insiders-Trying-to-Expose-It [https://perma.cc/5MN2-R6XP]; Katia Porzecanski et al., *Hedge Funds Face Expansive Short-Selling Probe, Exciting Critics*, BLOOMBERG (Dec. 10, 2021), https://www.bloomberg.com/news/articles/2021-12-10/hedge-funds-ensnared-in-expansive-doj-probe-into-short-selling [https://perma.cc/G9US-8GBM] (noting that funds may pay researchers "handsome subscription fees for fresh insights into possible corporate trouble" and even become "an author's primary source of funding").

126. Porzecanski et al., *supra* note 125.

127. *Id.*

128. Press Release, U.S. Dep't Just., Activist Short Seller Charged for $16M Stock Market Manipulation Scheme (July 26, 2024), https://www.justice.gov/opa/pr/activist-short-seller-charged-16m-stock-market-manipulation-scheme [https://perma.cc/LV6D-DT6D].

129. *Id.*

130. *Id.*

the market and make fast, easy money."[131] The federal prosecutor who brought the case stated that Left "used his platform as a securities commentator to manipulate the markets and enrich himself in the process."[132]

By contrast, public companies are legally constrained in terms of what they can say. They are subject to securities laws that restrict the content and the timing of their communications. Their lawyers may insist upon tempering strong language and adopting a more careful tone. The company may not be able to forcefully respond to accusations in negative reports without revealing confidential information.[133] Even when doing so is legally permitted, companies should refrain from responding to attacks on Twitter (now X) and message boards because of the gloves-off nature of these forums. A press release or an official response from a public company CEO might go viral and have a "Streisand effect,"[134] bringing more unwanted attention to false or distortive claims. Commentators on finance message boards often lob personal attacks directed at individuals associated with the company, attempting to smear their reputation and harm their credibility. Publicly traded companies, however, cannot hit back in the same manner. Unlike anonymous and pseudonymous bloggers, they have a reputation to maintain and must be mindful of being targeted for lawsuits if they misspeak. One study found that only 31 percent of firms responded to a short report.[135] The study found that a company was more likely to publicly respond to a short report if its share price declined but that a public response was correlated with more negative outcomes for the firm.[136] The study suggests that in most cases, it may be better

131. *Id.*; *see also* Tom Schoenberg, *US Accuses Famed Short-Seller Andrew Left of Securities Fraud*, BLOOMBERG NEWS (July 26, 2024), https://www.bloomberglaw.com/product/blaw/bloomberglawnews/bloomberg-law-news/X5KO5VIC000000 [https://perma.cc/65YK-6PCS] ("US authorities accused famed short-seller Andrew Left of committing fraud through stock trades, social media posts and research reports . . . ."); Dave Michaels & Justin Baer, *U.S. Accuses Prominent Short Seller Andrew Left of Fraud*, WALL ST. J. (July 26, 2024), https://www.wsj.com/finance/stocks/u-s-accuses-prominent-short-seller-andrew-left-of-fraud-0161e42f [https://perma.cc/HRE9-JJLZ] (noting that federal prosecutors charged Andrew Left with fraud, "accusing him of routinely making exaggerated or misleading statements about stocks to quickly profit on price moves caused by his reports").

132. Michaels & Baer, supra note 131.

133. Brendel & Ryans, *supra* note 85, at 496.

134. *Streisand Effect*, WIKIPEDIA, https://en.wikipedia.org/wiki/Streisand_effect [https://perma.cc/942S-E8M5].

135. Brendel & Ryans, *supra* note 85, at 498.

136. *Id.* at 494.

for the company to refrain from responding to prevent further damage.[137]

II. THE UNIQUE SITUATION OF BIOTECH COMPANIES

Biotech companies face the same challenges that other companies do addressing anonymous or pseudonymous online attacks.[138] Their characteristics and business model, however, make them uniquely vulnerable to short attacks. Drug development is a high-risk, high-reward business.[139] Small biotechs generally do not generate any product revenue until they have a successful drug. Their lack of product revenue means that their entire value is based upon the potential for success of their clinical trials. Each phase of a clinical trial typically takes many months or even years.[140] There are many challenges with clinical research, including high costs.[141] There are also potential roadblocks related to manufacturing and distribution. Periodically, there is speculation about deals with Big Pharma partners and competition with other companies. The speculative aspect of their assets and their prospects for success mean that although these companies are not valueless, their value is uncertain.

Short sellers take advantage of complexity and uncertainty, and the drug development process is filled with both. Misinformation harms all companies but has a disproportionate impact on small biotech companies because of the complex nature of clinical trials, which require both expertise to understand the underlying science and familiarity with the regulatory process. Short sellers exploit this complexity. Even someone with a background in the relevant science may not be able to determine whether a novel compound or application of an existing one will work. Because of the technical complexity and the

137. Janja Brendel, *Action & Reaction: Firm's Responses to Short Sellers' Reports*, ACCT. FOR TRANSPARENCY (May 27, 2021), https://www.accounting-for-transparency.de/blog/action-reaction-firms-responses-to-short-sellers-reports/ [https://perma.cc/RSF4-7MQQ]. One of the study's authors noted that the study suggests that "companies that lay low and do not respond have a better chance of getting out almost intact." *Id.*

138. *See generally* Katz & Hancock, *supra* note 16 ("Anonymous short attacks have the ability to cripple the stock price of a public company—whether large or small—or, at the very least, cause stock volatility for months or even years.").

139. This Article focuses on biotechs engaged in drug development, not the development of medical devices.

140. *FDA's Drug Review Process*, *supra* note 31.

141. *See* discussion *supra* Section II.B. *See generally* REBECCA A. ENGLISH ET AL., INST. OF MED., NAT'L ACADS., TRANSFORMING CLINICAL RESEARCH IN THE UNITED STATES: CHALLENGES AND OPPORTUNITIES 38 (2010) (explaining the logistical and financial challenges in planning and executing clinical trials).

uncertainty that is an integral part of innovation, biotech companies are more susceptible to distortive or false information.

Furthermore, the unpredictability of clinical trials means that they may need to raise additional capital before the clinical testing process is complete. A short attack may make it more difficult for a biotech to raise additional capital in a secondary offering because it may create a negative sentiment that deters potential new investors or it may require the company to issue additional shares at a lower price, diluting the value of existing shareholders' stock. A drop in stock price may also negatively impact a company's creditworthiness and force it to borrow money at higher interest rates or with more stringent borrowing terms.

A. An Overview of the Regulatory Process to Get a New Drug to Market

Although it is the most important one, FDA approval of a new drug application (NDA) is only one outcome in a series required to bring a drug to market.[142] The process generally has multiple stages.[143] FDA approval requires that a company engage in clinical trials.[144] Before undergoing clinical trials, companies must successfully complete preclinical testing on animals.[145] The FDA scrutinizes various aspects of the drug in these preclinical studies before a company can proceed.[146] The company then submits an investigational new drug application (IND) that is reviewed by the FDA and an Institutional Review Board.[147] The FDA has a review team for each IND application, consisting of a project manager, medical officer, statistician, pharmacologist, pharmacokineticist, chemist, and microbiologist.[148] If approved, the company proceeds with Phase I studies conducted with

142. *Development & Approval Process: Drugs*, U.S. FOOD & DRUG ADMIN. (Aug. 8, 2022), https://www.fda.gov/drugs/development-approval-process-drugs [https://perma.cc/3WGD-SCSG]. Biotechs developing medical devices face the same issues raised by this paper as biotechs developing drugs, but I focus specifically on biotechs engaged in drug development. The development process for FDA approval of medical devices is similar to that for FDA approval for drugs, although there are important differences at each stage of the development process. *See Learn About Drug and Device Approvals*, U.S. FOOD & DRUG ADMIN., (June 18, 2018), https://www.fda.gov/patients/learn-about-drug-and-device-approvals [https://perma.cc/4A3A-8LBS].

143. *FDA's Drug Review Process*, *supra* note 31.

144. *Id.*

145. *Id.*

146. *Id.*

147. *Id.*

148. *FDA's Drug Review Process: Continued*, U.S. FOOD & DRUG ADMIN. (Aug. 24, 2015), https://www.fda.gov/drugs/information-consumers-and-patients-drugs/fdas-drug-review-process-continued [https://perma.cc/A2K9-HZMU].

approximately twenty to eighty healthy volunteers.[149] Phase I is intended to assess the drug candidate's safety and its pharamacokinetics, meaning how it is absorbed and metabolized.

If Phase I results show that the drug does not have unacceptable toxicity in humans, Phase II trials may commence. Phase II typically has several dozen to several hundred patients and the purpose is to evaluate the drug's effectiveness, tolerance, and dosage, although safety continues to be scrutinized.[150] After Phase II, the FDA and the company reach an agreement regarding how the large-scale Phase III studies should be conducted, sometimes in writing under a Special Protocol Assessment.[151] Phase III commences only if prior studies have shown acceptable safety margins and some indication of potential effectiveness.[152] Phase III is conducted in large patient populations, with different dosages, and in people who are often taking other drugs.[153] There are typically several hundred to several thousand participants in Phase III trials.[154] If Phase III studies are successful, the FDA and the company might meet to discuss post-market requirement and commitments studies, which are studies that the company gathers after approval for additional information about the product's safety and efficacy.[155] Afterward, the company submits an NDA requesting the FDA to consider approval for marketing the new drug in the United States.[156]

The FDA has sixty days after submission of an NDA to decide whether to file it for review or to refuse to file it for incompleteness[157] If accepted for review, the FDA review team evaluates the clinical data on the drug's safety and effectiveness, considers labeling for specific populations and/or safety warnings, and inspects the facilities where the drug will be manufactured.[158] Then the FDA either approves the application or issues a complete response letter.[159] The length of time

149. *FDA's Drug Review Process*, *supra* note 31.
150. *Id.*
151. *Id.*
152. *Id.*
153. *Id.*
154. *Id.*
155. *Postmarket Requirements and Commitments*, U.S. FOOD & DRUG ADMIN. (July 28, 2023), https://www.fda.gov/drugs/drug-approvals-and-databases/postmarket-requirements-and-commitments [https://perma.cc/VX3E-FQSF].
156. *FDA's Drug Review Process*, *supra* note 31.
157. *Id.*
158. *FDA's Drug Review Process*, *supra* note 148.
159. *Id.*

to review an NDA and issue an action letter is typically six to ten months, with the shorter "fast-track" duration reserved for treatments with a potentially major improvement over existing treatments or where there is currently no treatment at all.[160]

A company's decision to enter into clinical trials necessitates a careful cost-benefit calculation.[161] A report issued by a U.S. government working group noted that "the diversity of stakeholder value judgments" results in clinical trials being conducted in a "'one-off,' narrowly focused fashion."[162] Clinical trials are a critical part of drug development and without them, there would be no advancement in medical treatment.[163] Even if an NDA is unsuccessful, clinical trials may yield valuable information for later treatments. Successful cancer treatments, for example, are often the product of decades of clinical trials, many of them unsuccessful. Each failed trial informs the next one and may eventually lead to effective treatments.[164] Potential volunteers, however, may be reluctant to sign up for a clinical trial due to mistrust or misinformation. A FUD campaign against a biotech may deter both potential participants and potential clinical sites that otherwise would contribute to the medical advancement of the drug candidate and/or an understanding of the disease to be treated.

B. Short Attacks and the Cascade Effect

As outlined above, there are several stages to the drug development process. Each stage of this process creates a catalyst for the stock to move up or down. A clinical trial that meets its endpoints can cause

160. *Frequently Asked Questions About the FDA Drug Approval Process*, U.S. FOOD & DRUG ADMIN., https://www.fda.gov/drugs/special-features/frequently-asked-questions-about-fda-drug-approval-process [https://perma.cc/P8A6-69WN].

161. ENGLISH ET AL., *supra* note141, at 17.

162. *Id.*

163. Jamie Reno, *What We Need to Do to Get More People with Cancer into Clinical Trials*, HEALTHLINE (Aug. 6, 2019), https://web.archive.org/web/20230805110417/https://www.healthline.com/health-news/why-so-many-people-with-cancer-dont-participate-in-clinical-trials [https://perma.cc/AN7Y-TERA] (quoting Dr. Porcu that "[a]lmost all cancer drugs that patients are using and benefiting from today were developed thanks to clinical trials. Simply said, without clinical trials, there would be no progress in cancer care").

164. Dr. Pierluigi Porcu, an oncologist at the Sidney Kimmel Cancer Center-Jefferson Health, noted that the quality of the data collected in the controlled environment of clinical trials is much better than that collected outside of clinical trials and that they are the "best way to shed light on and bring greater public attention to cancer types that are neglected or understudied." *Id.*; *see also* Jane E. Brody, *The Road to Cancer Treatment Through Clinical Trials*, N.Y. TIMES (Mar. 23, 2015), https://archive.nytimes.com/well.blogs.nytimes.com/2015/03/23/the-road-to-cancer-treatment-through-clinical-trials/ [https://perma.cc/3DUV-B3G6] ("Every trial taught doctors something that led to further trials and better results.").

the stock of a biotech to skyrocket within hours, and a failure can cause it to lose nearly all of its value. Anticipation of the announcement itself can cause volatility as rumors and speculation on message boards and social media about the upcoming results proliferate. Thus, each catalyst provides an opportunity for market manipulation.

The results of a clinical trial are difficult for most investors to parse and assess. Even positive results can be spun in a negative way and lead to a broad sell-off. The company is constrained in how it can respond. It should not be too optimistic about a clinical trial or their drug's prospects for success as they cannot promote a drug prior to FDA approval. It must navigate carefully the fine line between addressing and refuting misstatements and false information and making forward looking statements that may not come true and for which their officers may become personally liable. Moreover, it may be difficult to discredit a FUDster given the high failure rate with drug development; FUDsters may appear to be "right" when distorting the facts if the drug ultimately fails, which most do.[165]

A short attack creates more obstacles on the path to FDA approval already strewn with them. A short attack might cause the firm itself to fail or experience difficulties with raising needed capital.[166] Furthermore, because clinical trials take many years, short sellers may be able to conduct several attacks, raising questions about the viability of the company.

The negative publicity surrounding short attacks may make it harder for the targeted biotech to recruit patients for clinical trials. Companies already have a hard time finding volunteers for clinical trials. One study of cancer patients, for example, found that more than half of cancer patients did not enroll in clinical trials.[167] Another study

165. *See* Katz & Hancock, *supra* note 16 (noting that anonymous short sellers "gain legitimacy" with track records of successful short campaigns and broaden their audiences, making it easier for them to "move the market and undermine investor confidence").

166. Pearlstein, *supra* note 23. This is generally true of companies that are the target of a short report. *See* Molk & Partnoy, *supra* note 13, at 8 ("[N]egative activism is associated with real and significant negative long-term effects at targeted companies."). This may be especially true given the challenging economic environment for biotech in recent years. Andrew Dunn, *Bankrupt Biopharmas Are Rare. 2019 Has Some Worried That's Changing*, BIOPHARMADIVE (Nov. 19, 2019), https://www.biopharmadive.com/news/biopharma-bankruptcy-trends-2019-uptick-pharma-biotech/567262/ [https://perma.cc/Z5D3-6T7Q]; Jamie Smyth et al., *Biotechs Face Cash Crunch After Stock Market 'Bloodbath*,*'* FIN. TIMES (Feb. 9, 2022), https://www.ft.com/content/c90d17c6-6196-4c8a-88c2-e2cef9a692f2 [https://perma.cc/86GV-DLFS].

167. *See* Joseph M. Unger et al., *Systematic Review and Meta-Analysis of the Magnitude of Structural, Clinical, and Physician and Patient Barriers to Cancer Clinical Trial Participation*, 111 J. NAT'L CANCER INST. 245, 253 (2019).

estimated that 90 percent of all clinical trials worldwide must extend their enrollment period because they fail to enroll enough patients within the target time, and 27 percent of U.S. investigators fail to enroll any subjects.[168] Without enough participants, the company may be forced to delay or even terminate a trial.[169]

A short attack often causes a drop in share price. Washington Post journalist Steven Pearlstein noted that biotech stocks were "particularly vulnerable to manipulation by the shorts" as they "tend to be small, with low share prices and relatively few shares actively traded."[170] Their high risk made their share prices "volatile" and "easily moved by rumors and news of regulatory action":[171]

> These characteristics make it easy for a handful of hedge funds to anonymously drive down the price by selling borrowed shares into the market at the same time, creating a self-fulfilling momentum that scares off other investors. Even when they can't get ahold of enough borrowed shares, they might sell the shares anyway and simply fail to deliver them three days later when they are due. That's known as a "naked" short, and it's illegal.[172]

Thinly traded stocks are vulnerable to block sales that would have little or no impact on the share price of large cap companies. A large sell order by a short hedge fund could move the stock price downward. When timed with the release of FUD, this drop could unleash a greater wave of selling exacerbated by "stop-loss" orders[173] that are triggered when the stock begins to fall; this in turn may set off other stop-loss orders causing the stock to fall further. Thus, short sellers can create the conditions for a drop in stock price by timing sales with the release of FUD, triggering a wave of selling that gains momentum. They can then point to the subsequent drop as evidence that their false statements were accurate. For example, *after* being found guilty of

168. ENGLISH ET AL., *supra* note 141, at 17.
169. *Id.* at 35–36.
170. Pearlstein, *supra* note 23.
171. *Id.*
172. *Id.*
173. Stop-loss orders are orders to sell a security at a specified price to limit the loss when the stock falls. Nina Semczuk, *What Is a Stop-Loss Order?*, BANKRATE (Nov. 14, 2023), https://www.bankrate.com/investing/stop-loss-order/ [https://perma.cc/ZN3V-TFUY].

spreading FUD to reap profits, Lemelson mentioned the drop in Ligand's stock price as proof of its accomplishments as an activist investor.[174]

The drop in share price often triggers a wave of shareholder lawsuits that rely upon the short reports.[175] Law professor Josh Mitts notes that "short seller reports are often followed by plaintiffs' firms rushing to file a complaint which quotes the short report at great length as revealing of the truth."[176] The shareholder lawsuits invite media attention and regulatory scrutiny,[177] which further divert company resources, causing more investors to sell, and continuing the downward spiral. As Professor Mitts notes:

> The prospect of costly and protracted class action litigation gives investors an additional reason to sell the stock, especially for small firms for which a fight with a short seller can be a dangerous distraction. This can give rise to a self-reinforcing death spiral in which investors' incentive to sell is heightened by the litigation itself, which in turn drives down the share price and drives up the profits enjoyed by short sellers and plaintiffs' firms.[178]

One might think that an investigation by the SEC or the Department of Justice is strong evidence that short sellers were right in calling out fraud, but this ignores the role of political influence. In a letter dated March 18, 2015, the non-profit organization CREW asked Congress to investigate "the ways short sellers are manipulating the government regulatory process for personal financial gain."[179] They explained that hedge fund short sellers used their power to "pressure state

174. *About Us*, *supra* note 91.

175. *See* Molk & Partnoy, *supra* note 13, at 30–36 (describing the increase of class action lawsuits resulting from negative activism). They identified "eighty-four class actions that directly relied upon negative activists' efforts" and found that "none of the suits went to a jury verdict; all ended in a settlement or some sort of dismissal." *Id.* at 32; *see also* Joshua Mitts, *Short Sellers and Plaintiffs' Firms: A Symbiotic Ecosystem*, CLS BLUE SKY BLOG (Oct. 14, 2020), https://clsbluesky.law.columbia.edu/2020/10/14/short-sellers-and-plaintiffs-firms-a-symbiotic-ecosystem/ [https://perma.cc/9WET-QAK5] (noting the "symbiosis" between short sellers and plaintiffs' firms and how a "share price crash accompanied by an allegation of fraud is mutually profitable for both: the former, because they have a short position in the stock; and the latter, because they can bring a class action claiming that the report revealed the truth to the market").

176. Mitts, *supra* note 175.

177. Molk & Partnoy, *supra* note 13, at 42 (noting that negative activist campaigns "provoked a variety of regulator responses from agencies ranging from the SEC to the DOJ to the FDA").

178. Mitts, *supra* note 175.

179. Letter from CREW to Chairman John Thun and Fred Upton and Ranking Members Bill Nelson and Frank Pallopatrne (Mar. 18, 2015) (on file with author).

and federal regulators" to investigate companies, knowing that regulatory action would drive down the stock price.[180] The letter stated that hedge fund short sellers have "organized protests, news conferences and letter writing campaigns" and may even pay for others to join their efforts.[181] One prominent hedge fund manager, Bill Ackman, allegedly had his "team" organize "letter-writing campaigns to the FTC as well as state attorneys general" to urge them to investigate Herbalife, a company he had shorted.[182]

Short sellers may abuse the FDA citizen petition process.[183] The Federal Trade Commission stated, "[a]lthough some citizen petitions raise genuine issues for scientific consideration, many do not and are denied as lacking merit."[184] The CREW letter noted that one short seller, Martin Shkreli, despite lacking a scientific background, "submitted a citizen petition to the FDA asking the agency not to approve a New Drug Application" submitted by a biotech for a lymph node mapping agent for the treatment of cancer.[185] Shkreli admitted he would financially benefit from a decline in the company's stock price.[186] He tried to influence the FDA on other occasions as well, according to the CREW letter:

> In September 2010, while shorting Arena Pharmaceutical's stock, Mr. Shkreli asked an advisory committee to consider a slide show presentation he had prepared claiming the company's weight loss drug, Lorcaserin, had not been properly tested. Similarly, in December 2010, also while shorting the company's stock, Mr. Shkreli sent a presentation via email to 12 FDA officials, including the commissioner, asking the

180. *Id.*

181. DealBook, *Ackman vs. Herbalife, a History*, N.Y. TIMES (Mar. 10, 2014, 6:18 AM), https://archive.nytimes.com/dealbook.nytimes.com/2014/03/10/ackman-versus-herbalife-a-history/ [https://perma.cc/4BVN-GPM3]. Bill Ackman also reportedly agreed to pay a former Herbalife employee $3.6 million over ten years if he lost his job after providing information to government investigators and the media. Matthew Mosk & Brian Ross, *Bill Ackman's Secret $$ Deal for Herbalife Whistleblower*, ABC NEWS (Apr. 22, 2014), https://abcnews.go.com/Blotter/bill-ackmans-secret-deal-herbalife-whistleblower/story?id=23415501 [https://perma.cc/7L5N-SPGT].

182. Letter from CREW, *supra* note 179, at 2.

183. Jaclyn Jaeger, *The Cassava Sciences Saga: Short Sellers, 'Gaming' the FDA, and the Damaging Ripple Effects*, COMPLIANCE WK. (Mar. 2, 2022, 11:48 AM), https://www.complianceweek.com/risk-management/the-cassava-sciences-saga-short-sellers-gaming-the-fda-and-the-damaging-ripple-effects/31416.article [https://perma.cc/S6AG-S4EZ] (discussing a citizen petition filed by short sellers who did not reveal their conflict of interest).

184. *Id.*

185. Letter from CREW, *supra* note 179, at 6.

186. *Id.*

> agency to deny approval of MannKind's insulin drug, Afrezza, arguing the trials had failed to demonstrate its efficacy. Mr. Shkreli acknowledged financial conflicts of interest, recognizing he would have benefitted financially if the FDA adopted his point of view.[187]

Governmental investigations are costly for companies and harmful for their reputations. A company may decide to pay a fine to resolve a matter that is diverting the company's resources. As Warren Buffett once said about the regulatory scrutiny faced by JP MorganChase and its chairman-CEO, Jamie Dimon, "[i]f a cop follows you for 500 miles, you're going to get a ticket. You've had a lot of cops that have been following for a long time. And they're going to write some tickets."[188] But tickets can be issued for a variety of reasons, from minor infractions to more serious violations. A regulator may uncover minor reporting and compliance errors that can be exaggerated in significance by negative activists and online FUDsters. Even if they are ultimately cleared of wrongdoing, companies may not be able to recover from a government investigation. Because of the precariousness of biotechs, the FUD set in motion by short sellers has a cascade effect that may ultimately end in the inability of the company to successfully bring its drug to market—even if it might be safe and efficacious.

C. The Human Costs

Discussions about shorting and its consequences often omit the human costs of market manipulation. There are two different types of human costs involved when shorting small biotechs. The first is literal—the human lives that could be saved by new drugs and medical devices whose approval is delayed or derailed by short attacks. Short attacks divert a company's resources away from research, development, and the progression of clinical trials, all of which could lead to the availability of drugs that alleviate human suffering and save lives. The costs of defending against short attacks are significant, particularly since most biotechs are pre-revenue. The potential harm to society is also significant, given the current lack of innovation among

187. *Id.*

188. Alex Crippen, *Buffet on JPMorgan: Jamie Dimon Will Survive Fine*, CNBC (Oct. 16, 2013), https://www.cnbc.com/2013/10/16/buffett-on-jpmorgan-jamie-dimon-will-survive-fine.html [https://perma.cc/L58P-DFJC].

large, multinational pharmaceutical companies.[189] As researchers Christopher Barden and Donald Weaver bluntly put it, "Big Pharma is failing to deliver."[190] The pipeline of new drugs from Big Pharma has become dangerously depleted even as an aging population has created a need for newer drugs.[191]

Fortunately, small biotechs have stepped into the breach.[192] While Big Pharma, with its quest for the next blockbuster drug, is experiencing a lack of innovation,[193] biotechs are touted as a way to meet society's growing need for new therapies.[194] Unencumbered by the organizational structure and revenue targets that burden Big Pharma, small biotechs can move more nimbly and take bigger risks developing drugs for lesser-known or more intractable diseases.[195]

The second type of human cost is to the lives of the research scientists and site investigators involved in the clinical trials. Short reports and online attacks against biotech companies often include personal attacks against those involved with the company's research and

189. While there is no one definition of the term Big Pharma, the definition generally refers to the largest, publicly traded pharmaceutical companies or the industry sector that includes them. *See Big Pharma*, MERRIAM WEBSTER, https://www.merriam-webster.com/dictionary/Big%20Pharma [https://perma.cc/TES2-YW2G]; *Big Pharma*, CAMBRIDGE DICTIONARY, https://dictionary.cambridge.org/dictionary/english/big-pharma [https://perma.cc/BRA2-NJ29].

190. Christopher J. Barden & Donald F. Weaver, *The Rise of Micropharma*, 15 DRUG DISCOVERY TODAY 84, 84 (2010) (stating that pharmaceutical research is in the midst of an "unprecedented crisis" and the "pipelines of the major pharmaceutical companies are shockingly depleted").

191. *Id.*

192. Barden and Weaver use the terms "small pharma" and "micro pharma" to refer to biotechs. They define "small pharma" as "corporate organizations that employ from 25 to 500 employees" and have the capacity for preclinical and early-stage clinical drug development and micro pharma as "academia-originated, biotech start-up companies" that are "efficient, flexible, innovative, product-focused and small (having less than 25, and frequently less than 10, employees)." *Id.* at 85; *see also* Kimberly Steele, *JLL Predicts Big Pharma Will Adopt Agile Approaches to Enhance R&D as Mid-Tier Companies Bring New Products to Market*, JONES LANG LASALLE (Jan. 17, 2019), https://www.us.jll.com/en/newsroom/life-sciences-pharma-trends-2019 [https://perma.cc/JNT8-BKCP] (attributing smaller biopharma companies' success to their focus and flexibility that enables them to respond quickly to market changes and stay concentrated on their core business of bringing new products to market quicky); Bates, *supra* note 25.

193. Barden & Weaver, *supra* note 190, at 84–85 (stating that the "time-honored business and science models employed by Big Pharma are failing to address . . . important health-care and economic needs" and the "core problem is a lack of innovation from Big Pharma").

194. Bates, *supra* note 25 ("The future of big pharmaceutical companies lies in small biotechnology, according to industry experts . . . .").

195. Barden & Weaver, *supra* note 190, at 86. Barden and Weaver state that Big Pharma has a "systemic lack of risk-taking, a corporate culture of emulation rather than innovation, and a neglect of some of the diseases and disorders of developing nations that humankind wants to eradicate." *Id.* at 87.

development.[196] These individuals, typically scientists or doctors, may be ill-prepared to deal with the ad hominem attacks and the damage to their professional reputations. While the CEO of a publicly traded company may not enjoy being called a liar or a fraud, a CEO is better prepared for it than research scientists who have spent their careers out of the public eye. A CEO has an established reputation, D & O insurance, and usually high-profile defenders with a platform. If the attacks become too personal, the CEO may even be able to mount a legal claim and use the company's resources to pay for legal expenses. Academic researchers, by contrast, are in a far different position both professionally and financially. Typically, they have spent their lives working on a mechanism of action or other research that demonstrates promise. As part of a FUD campaign, they may suddenly find themselves thrust in the middle of a Twitter battle accusing them of fraud or questioning their life's work. In the strange world of finance message boards, scientists who have spent decades in a lab toiling away without any question about their integrity can suddenly find themselves the target of online harassment and unfounded claims that tarnish their reputation and make it hard for them to progress in their research.[197] Lawsuits are a poor mechanism for redress. Anonymous or pseudonymous posters on message boards may be difficult to identify or they may be located outside the United States.[198] Furthermore, scientists are often not in a position to file costly lawsuits, especially against deep pocketed investors.

Often the only way for these scientists to overcome these false accusations is if the drug that is supported by their research succeeds in clinical trials and successfully makes it into the marketplace. The odds of that happening, however, are slim. Most drugs that enter clinical trials will not receive FDA approval.[199] Given the probability that the drug won't be approved, the reputation of a targeted academic researcher is perhaps permanently and irreparably damaged. It's a big price to pay for any individual. It's also an injustice: on one side, you have academic researchers who have devoted their lives to scientific inquiry, typically receiving only modest pay for that privilege; on the

196. McNally, *supra* note 112, at 1.

197. Anne Gulland, *'Gagged and Blindsided': How an Allegation of Research Misconduct Affected Our Lab*, NATURE (Aug. 25, 2023), https://www.nature.com/articles/d41586-023-02711-5 [https://perma.cc/C9BL-G2KP].

198. Katz & Hancock, *supra* note 16.

199. *FDA's Drug Review Process*, *supra* note 31.

other, you have pseudonymous or anonymous posters on message boards who may be paid by short sellers (and who may themselves be short sellers) who have done nothing to advance science or contribute to human welfare, but who stand to make obscene amounts of money from betting against the success of a drug that has the potential to save human lives.

But some might ask, what if the academic researcher *is* a fraud? The appropriate channels for making that assertion—one that could destroy someone's professional reputation—are not message boards or Twitter. There are better, more reliable checks on an academic researcher's integrity.[200] The researcher's employer presumably conducts periodic reviews and evaluates the researcher's conduct and work. The researcher's colleagues in the field provide another check. A third check is the peer review process for journal publication of the research underlying the clinical trial.

Allegations of research misconduct cause substantial harm to the individual scientist even when the scientist is ultimately cleared of wrongdoing.[201] A university investigation into misconduct can take years. Ram Sasisekharan, a bioengineering researcher at MIT's Koch Institute for Integrative Cancer Research, endured an investigation that took more than three years before he was exonerated.[202] During this time, not only was his reputation damaged but his research stalled and his laboratory group was "decimated," which meant that he was unable to contribute to the search for treatments during a global pandemic.[203] Furthermore, because the investigation was confidential, Sasisekharan was prohibited from publicly responding and his silence could be misconstrued as incriminating.[204]

Rather than enhancing the integrity of the scientific process, short sellers can undermine it. Academics with ties to industry have been targeted by those with conflicting commercial interests.[205] Morteza Mahmoudi, a professor at the Department of Radiology and Precision Health Program at Michigan State University,[206] observed that in the past few years, a pattern has emerged where academics involved in

200. See McNally, *supra* note 112, at 1.
201. Gulland, *supra* note 197.
202. *Id.*
203. *Id.*
204. *Id.*
205. *Id.*
206. Morteza Mahmoudi, MICH. STATE UNIV., https://precisionhealth.msu.edu/people/faculty/morteza-mahmoudi/ [https://perma.cc/XSC2-P7FC].

industry are accused of violating academic ethics and the accusation is then reported by major news outlets.[207]

Short sellers may also try to breach clinical trials. For example, in 2014, a portfolio manager for SAC Capital, Mathew Martoma, was found guilty of insider trading in a scheme involving approximately $275 million in illegal profits and avoided losses.[208] Martoma contacted doctors involved in clinical drug trials for a new Alzheimer's Drug being conducted by Elan and Wyeth.[209] He arranged "dozens of paid consultations," and through these relationships with doctors involved in the trials, he was able to obtain confidential, inside information.[210] When he learned from his contacts that the results of the trial were negative,[211] he sold all the firm's holdings in the two companies and took substantial short positions before the results were released.[212] The SEC stated that the trading by SAC Capital represented "over 20% of the reported U.S. trading volume in Elan and 11% of the volume in Wyeth."[213]

Short sellers may also seek to influence prominent members of the scientific community, bully editors of scientific journals, and make insinuations about the integrity of the scientists involved in the target company's underlying research.[214] Dr. McNally, the Editor in Chief of The Journal of Clinical Investigation, revealed that scientific journals which had previously published papers supporting a target company's research had been pressured by short sellers to scrutinize and presumably find fault with that work.[215] Ironically, these short sellers revealed their own lack of integrity by failing to divulge their financial

207. Gulland, *supra* note 197.

208. Press Release, U.S. Att'ys Off., S.D.N.Y., SAC Capital Portfolio Manager Matthew Martoma Found Guilty in Manhattan Federal Court of Insider Trading Charges (Feb. 6, 2014), https://www.justice.gov/usao-sdny/pr/sac-capital-portfolio-manager-mathew-martoma-found-guilty-manhattan-federal-court [https://perma.cc/8LFX-2LMG]; *see also* Indictment at 7, United States v. Martoma, No. S1 12 Cr. 973 (PGG) (S.D.N.Y. Dec. 21, 2012), 2012 WL 7829267 ("[A]fter receiving the negative confidential information about the Drug Trial results from Doctor-1 . . . the defendant recommended the sale of . . . stock prior to the Public Announcement).

209. Indictment, *supra* note 208, at 4.

210. Press Release, U.S. Att'ys Off., *supra* note 208; *see also* Indictment, *supra* note 208, at 5–6 ("In connection with certain of these consultations, Doctor-2 provided confidential information about the Drug Trial and other Alzheimer's disease drug trials to MARTOMA with the expectation that Martoma would assist Doctor-2 in obtaining clinical trial business.").

211. Indictment, *supra* note 208, at 6 (stating that the results of that were provided to Martoma were "closely-guarded and still-secret results of the Drug Trial").

212. *Id.* at 7.

213. Press Release, U.S. Att'ys Off., *supra* note 208.

214. *See* McNally, *supra* note 112, at 1.

215. *Id.*

interest.[216] Dr. McNally noted that short sellers allegedly made over $100 million shorting the stock of one biotech company.[217] By contrast, the scientists who have spent their careers working on the research supporting that company's drug are unlikely to ever make anything close to that even if the drug is FDA approved.

Ultimately, the only way that short-attacked scientists can redeem themselves and reclaim their reputations is with FDA approval, which may take years even if successful. Moreover, failure of a clinical trial does not mean the research or the researcher was a fraud. Scientific progress depends upon companies and researchers willing to continue to try. Even if the initial hypothesis fails, much can be learned in the process, contributing to success in the future.

D. Complexity and Confusion

Negative misinformation hurts all companies. It is particularly harmful to small biotechs, which typically have no marketable products or other sources of revenue and have limited resources. They typically have only a handful of employees, no in-house communications team, and only a limited budget for public relations and legal services.[218] Hedge funds, on the other hand, are better resourced and able to get their message to the greater investing public either directly by issuing their own research reports, or through indirect channels, such as outreach to financial blogs, journalists, and other forms of media.[219]

Given the scientific and technical nature of clinical trials, the potential for investor confusion is high. The authority and qualifications of online financial commentators is often dubious at best. It may seem improbable that an investor would be swayed by the words of a non-expert, whether it be an anonymous or pseudonymous blogger or a journalist. But FUD affects investors because investors are human, and subject to the cognitive constraints, heuristic biases, and emotions characteristic of humans. Furthermore, negative reports may provide cover for illegal trading tactics as Professor Mitts explains:

> [P]seudonymous short reports are often preceded by a high volume of put option purchases, which can induce delta-hedging by market makers that mechanically drives down a

216. *Id.*
217. *Id.*
218. *See* Barden & Weaver, *supra* note 190, at 85.
219. *See* DealBook, *supra* note 181.

> share price. And while in theory closing the puts should apply an equally powerful upward force on the price, the reality is that stop-loss orders by retail investors—alongside trading rules like "*always sell a stock if it falls below 7%–8% what you paid for it"*—can trigger an avalanche of additional selling that would not have occurred *but for* the downward price manipulation. This can allow a short seller to crash a stock and profitably close the position regardless of whether investors found the information convincing to begin with.[220]

The initial drop in stock price, subsequent algorithmic trading, and investors' herd mentality can bring down a company. The philanthropist and investor George Soros developed a framework that explains this phenomenon.[221] His framework has two basic pillars or propositions that challenge the notion that markets are rational and efficient.[222] The first proposition—fallibility—is that "thinking participants" (which include investors) have views that "never perfectly correspond to the actual state of affairs."[223] They can acquire knowledge of facts, but their overall view or theory based upon those facts is biased or inconsistent.[224] The second proposition is "reflexivity," which is that "imperfect views can influence the situation to which they relate through the actions of the participants."[225] He explains:

> For example, if investors believe that markets are efficient then that belief will change the way they invest, which in turn will change the nature of the markets in which they are participating (though not necessarily making them more efficient). That is the principle of reflexivity.[226]

FUD works because investors are fallible, fall prey to misinformation, and behave according to their misinformed beliefs; their behavior in turn causes the market to reflect their beliefs.[227] FUD creates the market conditions that it warns against. Thus, while short selling

220. Mitts, *supra* note 175.

221. George Soros, *Fallibility, Reflexivity, and the Human Uncertainty Principles*, 20 J. ECON. METHODOLOGY 309, 310 (2013).

222. *Id.* at 309–10.

223. *Id.*

224. *Id.*

225. *Id.*

226. *Id.* As George Soros acknowledges, he did not coin the term but applied it to financial markets. *Id.*

227. *See id.*

per se is not harmful, it incentivizes FUD, which makes markets unpredictable and inefficient.

III. A CASE STUDY: NORTHWEST BIOTHERAPEUTICS

This Part III discusses the case of Northwest Biotherapeutics, a company that developed a platform technology, DCVax, for dendritic cell-based vaccines, a novel immunotherapy treatment for brain and ovarian cancers.[228] It illustrates how shorting the stock of a company with a potentially life-saving drug can impede innovation at great cost to investors and patients.

A. Background

Northwest Biotherapeutics is a clinical stage biotech based in Bethesda, Maryland developing personalized vaccines for a variety of solid tumor cancers.[229] One of the founders of the company and its Chief Scientific Officer, Dr. Alton Boynton, was the former head of Molecular Oncology Research at the Pacific Northwest Research Foundation and the Director of the Department of Molecular Medicine of Northwest Hospital from 1995 to 2003.[230] The CEO and Chairman of the Board, Linda Powers, is a magna cum laude graduate of Harvard Law School and Princeton University and former Managing Director of Toucan Capital Fund II, an investment fund with a focus on immune therapies.[231] The Senior Vice President of Business Development, Les Goldman, was a partner at Skadden, Arps for over thirty years prior to joining the company.[232] Dr. Marnix Bosch, the company's Chief Technical Officer, was the former head of the Department of Molecular Biology at the Dutch National Institutes of Health and a former professor of Pathobiology who has published over forty peer-reviewed papers.[233]

228. *Overview*, NW. BIOTHERAPEUTICS, https://nwbio.com/about-us/ [https://perma.cc/7S64-TEH9]. Prior to publication of the Phase III results, articles supporting the company's research had been written by experts in the field and published in academic journals. *See* Linda M. Liau et al., *First Results on Survival from a Large Phase 3 Clinical Trial of an Autologous Dendritic Cell Vaccine in Newly Diagnosed Glioblastoma*, 16 J. TRANSLATIONAL MED. 142 (2018); Christopher J. Wheeler & Keith L. Black, *DCVax-Brain and DC Vaccines in the Treatment of GBM*, 18 EXPERT OP. INVESTIGATIONAL DRUGS 509 (2009).

229. NW. BIOTHERAPEUTICS, https://nwbio.com/ [https://perma.cc/5XJT-M55N].

230. *Company Management*, NW. BIOTHERAPEUTICS, https://nwbio.com/company-management/ [https://perma.cc/9QTF-WY3T].

231. *Id.*

232. *Id.*

233. *Id.*

On August 3, 2010, NWBO announced positive long-term follow-up data from its Phase I and Phase II clinical trials of DCVax for patients with newly diagnosed Glioblastoma Multiforme (GBM), which is the most common form of brain cancer. GBM is a rapidly progressing and lethal cancer, with survival rate estimates of 40 percent after the first year and 17 percent after the second.[234] According to NWBO, with standard of care treatment such as surgery, chemotherapy, and radiation, patients have a median survival of only about 14.6 months, and "less than 5%" of patients were alive at five years.[235] With DCVax treatment, the median survival was three years, 33 percent of patients reached four-year survival, and 27 percent reached or exceeded six-year survival.[236] The longest surviving patient had, at that point, exceeded ten years.[237] Furthermore, DCVax was found to be non-toxic and minimally intrusive, requiring an injection "like a flu shot."[238]

The principal investigator for the company's 240-patient Phase II trial was Dr. Linda Liau, Professor and Vice Chair (now Chair) of Neurosurgery and Director of the UCLA Brain Tumor Program,[239] who expressed excitement about the "great potential" of DCVax in a company press release.[240] Given the dearth of options for those with the deadly disease, DCVax sounded extremely promising.[241]

234. *Glioblastoma Multiforme*, AM. ASS'N NEUROLOGICAL SURGEONS, https://www.aans.org/Patients/Neurosurgical-Conditions-and-Treatments/Glioblastoma-Multiforme [https://perma.cc/U75X-PG7Y].

235. Press Release, Nw. Biotherapeutics, Long-Term Follow-Up of DCVax®-Treated Brain Cancer Patients Shows 33% of Patients Reached 4-Year Survival and 27% Have Reached or Exceeded 6-Year Survival (Aug. 3, 2010), https://nwbio.com/long-term-follow-up-of-dcvax-treated-brain-cancer-patients-shows-33-of-patients-reached-4-year-survival-and-27-have-reached-or-exceeded-6-year-survival-2/ [https://perma.cc/KXB3-QBA2].

236. *Id.*

237. *Id.*

238. *Id.*

239. Linda M. Liau, MD, PhD, MBA, UCLA HEALTH, https://www.uclahealth.org/providers/linda-liau [https://perma.cc/8MM2-8G3F].

240. Press Release, Nw. Biotherapeutics, Northwest Biotherapeutics Resuming Enrollment in Promising 240-Patient Clinical Trial of DCVax® for Brain Cancer (Jan. 24, 2011), https://nwbio.com/northwest-biotherapeutics-resuming-enrollment-in-promising-240-patient-clinical-trial-of-dcvax-for-brain-cancer-2/ [https://perma.cc/F2PP-MY4A].

241. Dr. Michael Gruber, Clinical Professor of Neurology and Neurosurgery at the NYU Langone Medical Center, noted that "the median survival of newly diagnosed patients with GBM remains at approximately fifteen months. Phase I studies on DCVax have shown promise, with a number of patients living more than three years. We are hopeful that by completing a larger study these results will be confirmed as statistically significant and lead to better outcomes." *Id.*

On March 16, 2011, NWBO noted "unusual activity" in its stock and stated that it wasn't aware of any business-related reason for it.[242] Over the next few months, the company continued to recruit patients for its clinical trials and present at conferences.[243] On October 6, 2011, NWBO announced it had seventeen clinical trial sites at major medical institutions across the United States and that it was continuing to add new sites across the U.S. and Europe.[244] At this time, NWBO was still a very small company without much attention from Wall Street.[245] On October 25, 2011, the company announced initiation of coverage by Standard & Poor's Market Access Program, an information distribution service to more than 100,000 investment advisors.[246] This meant the company would now be on the radar of many more potential investors.

On December 19, 2011, NWBO issued a public statement refuting the "misleading statements" that it was infringing upon another entity's patent.[247] The CEO, Linda Powers, noted that these statements were made by "certain parties with a vested interest in slowing us down" but that the company was confident that it had freedom to operate.[248] By August 2012, the company had forty-one U.S. clinical trial

242. Press Release, Nw. Biotherapeutics, Northwest Biotherapeutics Addresses Recent Market Activity (Mar. 16, 2011), https://nwbio.com/northwest-biotherapeutics-addresses-recent-market-activity-2/ [https://perma.cc/BYV7-Y7CK].

243. *See* Press Release, Nw. Biotherapeutics, Northwest Biotherapeutics' Ongoing Brain Cancer Trial Recruiting Additional Patients at Four Medical Centers Across US (May 3, 2011), https://nwbio.com/northwest-biotherapeutics-ongoing-brain-cancer-trial-recruiting-additional-patients-at-four-medical-centers-across-us-2 [https://perma.cc/XHB2-5LKN]; Press Release, Nw. Biotherapeutics, Northwest Biotherapeutics Further Expands Ongoing Brain Cancer Trial (May 25, 2011), https://nwbio.com/northwest-biotherapeutics-further-expands-ongoing-brain-cancer-trial-2/ [https://perma.cc/VC3M-UF4C]; Press Release, Nw. Biotherapeutics, Northwest Bio Will Present at the Second Annual "Cancer Immunotherapy: A Long Awaited Reality Conference" at the New York Academy of Medicine, October 6, 2011 (Oct. 4, 2011), https://nwbio.com/northwest-bio-will-present-at-the-second-annual-cancer-immunotherapy-a-long-awaited-reality-conference-at-the-new-york-academy-of-medicine-october-6-2011/ [https://perma.cc/S7P3-YVYZ].

244. Press Release, Nw. Biotherapeutics, Northwest Bio Announces Positive Third Quarter Progress (Oct. 6, 2011), https://nwbio.com/northwest-bio-announces-positive-third-quarter-progress/ [https://perma.cc/GLS5-BMVE].

245. *See* Press Release, Nw. Biotherapeutics, Northwest Bio Announces Initiation of S&P Coverage, with Publication of First Company Stock Report (Oct. 25, 2011), https://nwbio.com/northwest-bio-announces-initiation-of-sp-coverage-with-publication-of-first-company-stock-report/ [https://perma.cc/B438-GFFN].

246. *Id.*

247. Press Release, Nw. Biotherapeutics, Northwest Bio Reaffirms Its Freedom to Operate; Refutes Other Parties Misleading Patent Assertions (Dec. 19, 2011), https://nwbio.com/northwest-bio-reaffirms-its-freedom-to-operate-refutes-other-parties-misleading-patent-assertions-2/ [https://perma.cc/2QKA-CP45].

248. *Id.*

sites operating,[249] had regulatory approval to proceed with Phase III clinical trials in the United Kingdom,[250] and was expanding worldwide production capacity for its DCVax-L therapy to respond to growing demand from the clinical sites.[251] In September 2012, it announced that it was proceeding with Phase I/II clinical trials for another product, DCVax-Direct, for all types of solid tumor cancers.[252]

On September 26, 2012, NWBO announced a 16-1 reverse stock split as part of a planned public offering and listing of its stock on Nasdaq.[253] It also increased the number of authorized shares of preferred stock to 40,000,000 shares.[254] The CEO stated that the reverse split was part of a "major program of strengthening the Company's finances, expanding its resources and raising the Company's market profile."[255] On December 7, 2012, NWBO started trading on the Nasdaq stock exchange.[256]

In April 2013, NWBO announced that a patient from the Phase I/II trial who was treated with DCVax-L in 2003 had surpassed the tenth-year cancer-free.[257] When he was first diagnosed, his doctors had given him only two months to live.[258] He was the second patient

249. Press Release, Nw. Biotherapeutics, Northwest Bio Provides Update on DCVax®-L Brain Cancer Trial (May 17, 2017), https://nwbio.com/northwest-bio-provides-update-on-dcvax-l-brain-cancer-trial-2/ [https://perma.cc/Z5RG-JXVV].

250. Press Release, Nw. Biotherapeutics, Northwest Bio Receives Regulatory Approval to Proceed with Its Phase III Trial in the UK (Aug. 23, 2012), https://nwbio.com/northwest-bio-receives-regulatory-approval-to-proceed-with-its-phase-iii-trial-in-the-uk-2/ [perma.cc/P2WB-J7GD].

251. *See* Press Release, Nw. Biotherapeutics, Northwest Bio Expands Worldwide Production Capacity for DCVax®-L (Aug. 8, 2012), https://nwbio.com/northwest-bio-expands-worldwide-production-capacity-for-dcvax-l/ [https://perma.cc/LSX4-JP8Z]; Press Release, Nw. Biotherapeutics, Fraunhofer IZI Receives Official Certification for Manufacturing of Northwest Bio's DCVax®-L Product (July 25, 2012), https://nwbio.com/fraunhofer-izi-receives-official-certification-for-manufacturing-of-northwest-bios-dcvax-l-product/ [https://perma.cc/776R-S8V8].

252. Press Release, Nw. Biotherapeutics, Proceeding with a Phase I/II Clinical Trial of DCVax®-Direct for All Solid Tumor Cancers (Sept. 20, 2012), https://nwbio.com/northwest-bio-proceeding-with-a-phase-iii-clinical-trial-of-dcvax-direct-for-all-solid-tumor-cancers/ [https://perma.cc/9V65-4P2A].

253. Press Release, Nw. Biotherapeutics, Northwest Biotherapeutics Announces Reverse Split of Common Stock (Sept. 26, 2012), https://nwbio.com/northwest-biotherapeutics-announces-reverse-split-of-common-stock-2/ [https://perma.cc/9QDQ-RJW9].

254. *Id.*

255. *Id.*

256. Press Release, Nw. Biotherapeutics, Northwest Biotherapeutics to Ring the Nasdaq Stock Market Opening Bell (Dec. 17, 2012), https://nwbio.com/northwest-biotherapeutics-to-ring-the-nasdaq-stock-market-opening-bell-2/ [https://perma.cc/8GVS-DVEG].

257. Press Release, Nw. Biotherapeutics, NW Bio Announces That Another Brain Cancer Patient from Phase I/II DCVax®-L Trials Has Surpassed Ten-Year Cancer-Free Survival (Apr. 18, 2013), https://nwbio.com/nw-bio-announces-that-another-brain-cancer-patient-from-phase-iii-dcvax-l-trials-has-surpassed-ten-year-cancer-free-survival/ [https://perma.cc/JL6D-LJ6F].

258. *Id.*

to survive the ten-year mark cancer-free.[259] The data also showed that other patients from the Phase I/II trials had exceeded their expected survival rates as well.[260] On May 31, 2013, NWBO was added to the MSCI Global MicroCap Index.[261] The index is used by exchange-traded funds as benchmarks, and inclusion means that funds that track the index will buy the stock, resulting in higher volumes and greater liquidity.

On July 31, 2013, NWBO announced that it was entering into an agreement with Cognate BioServices, Inc. (Cognate), the contract manufacturer of its vaccine. This was to convert the $11.6 million of accounts payable to Cognate into shares of the company's stock at a price of $4/share and to establish an ongoing arrangement for payment of each invoice at least half in stock and the rest in cash.[262] Cognate had provided manufacturing and regulatory assistance to NWBO over several years.[263] According to the company, Cognate was willing to provide "favorable terms and to accept a substantial portion of its billings in NW Bio stock" to allow the company to "reduce its cash burn while building its two operations in Europe as well as the U.S., and while aggressively pursuing two major clinical programs . . . simultaneously."[264]

On December 10, 2013, NWBO announced the start of the first interim analysis of its Phase III GBM trial, which it anticipated would take approximately six to eight weeks.

B. FUD Rising

On February 15, 2013, an online journalist wrote that it was difficult to take NWBO seriously given the company's "checkered past and present":[265]

259. *Id.*

260. *Id.*

261. Press Release, Nw. Biotherapeutics, NW Bio Added to the MSCI Global MicroCap Index (June 3, 2013), https://nwbio.com/nw-bio-added-to-the-msci-global-microcap-index-2/ [https://perma.cc/EVW5-JWRJ].

262. Press Release, Nw. Biotherapeutics, NW Bio Announces Above-Market Conversion of Its $11.6 Million Debt to Its Manufacturer, Cognate Biosciences (July 31, 2013), https://nwbio.com/nw-bio-announces-above-market-conversion-of-its-11-6-million-debt-to-its-manufacturer-cognate-biosciences/ [https://perma.cc/DB6V-NPZ4]. The shares were subject to a lock-up period of eighteen months. *Id.*

263. *Id.*

264. *Id.*

265. Adam Feuerstein, *Biotech Stock Mailbag: Northwest Bio, Amarin, Titan Pharma*, THESTREET (Feb. 15, 2013, 6:30 AM), https://www.thestreet.com/investing/stocks/biotech-stock-mailbag-northwest-bio-amarin-titan-pharma-11842742 [https://perma.cc/9GE5-ZTWY].

> Northwest Bio operates today with a veneer of respectability. The company's balance sheet is healthier (but far from robust) and the stock now lists on the Nasdaq. Scratch the surface, however, and Northwest Bio still carries the heavy baggage that's made it a pariah for so many years.
>
> Linda Powers remains CEO and dominant shareholder through two intertwined entities she controls—Toucan Capital and Cognate Biosciences. (The latter is Northwest Bio's manufacturing partner, which puts more money in her pocket.) Institutional investor ownership is essentially nonexistent at 6%. Even the current stock price of $3.36 is an illusion. Adjust for the recent 1-for-16 reverse stock split and Northwest Bio is a penny stock.[266]

The stock plunged.[267] The company forged ahead, notching several notable wins over the next several months, including being certified by the United Kingdom as part of its promising innovative medicines program.[268] The online journalist remained unconvinced and was persistent and vociferous in his skepticism about the company's progress, publishing more than half a dozen negative posts about the company in the following year and many more in the years to follow.[269]

On several occasions, NWBO responded to the statements in his articles.[270] On March 12, 2014, NWBO issued a press release that "refuted false statements and material distortions" made by the journalist in an article he had written on March 11.[271] On March 28, 2014, the company responded when the same online journalist wrote an article with a headline that the company said contained "false and misleading

266. Adam Feuerstein, *Biotech Stock Mailbag: Northwest Bio, Amarin, Titan Pharma*, THESTREET (Feb. 15, 2013, 6:30 AM), https://www.thestreet.com/investing/stocks/biotech-stock-mailbag-northwest-bio-amarin-titan-pharma-11842742 [https://perma.cc/9GE5-ZTWY].

267. *Northwest Biotherapeutics, Inc. (NWBO)*, *supra* note 6.

268. John Carroll, *U.K. Picks a Controversial Brain Cancer Vaccine as Its First New 'Innovative Medicine*,*'* FIERCE BIOTECH (Sept. 16, 2014), https://www.fiercebiotech.com/regulatory/u-k-picks-a-controversial-brain-cancer-vaccine-as-its-first-new-innovative-medicine [https://perma.cc/G6RQ-E782].

269. *See, e.g.*, Feuerstein, *supra* note 3.

270. *See, e.g.*, Press Release, Nw. Biotherapeutics, NW Bio Refutes False Claims by Adam Feuerstein (Mar. 12, 2014), https://nwbio.com/nw-bio-refutes-false-claims-by-adam-feuerstein/ [https://perma.cc/4R77-7BWH].

271. *Id.* ("Feuerstein falsely accused NW Bio of manipulating its news by delaying announcement of the Hospital Exemption approval by the Paul Ehrlich Institute. . . . Feuerstein's accusations were factually wrong, materially misleading, and reflect a lack of knowledge on Feuerstein's part . . . .").

claims."[272] The article claimed there were problems with ongoing clinical trials when the news was, in fact, entirely positive.[273] In 2014, NWBO issued at least six press releases refuting his statements.[274] For example, on April 7, 2014, NWBO issued a release refuting the journalist's claim that the company had warned that the FDA might throw out its Phase III brain cancer study.[275] NWBO defended itself by stating that "the Company's 10-K says no such thing and the Company has issued no such warning":[276]

> Contrary to . . . false claims, the Company's Phase III clinical trial in brain cancer continues to progress. . . . [The] misrepresentation of NW Bio's annual report appears to be another conscious effort to mislead and panic readers.[277]

The online journalist continued to publish articles with headlines such as "Prestigious Cancer Hospital Rebukes Northwest Bio for 'Inappropriate' Data Disclosures," "Northwest Bio Can't Keep Its DC-Vax Claims Straight," and "Why Northwest Bio is Shunned by Savvy Heath Care Investors."[278] In total, the same online journalist appears to have written at least twenty-five articles about NWBO or its management.[279] The commentary in his article was leveraged by bloggers and anonymous and pseudonymous posters, which seems to have negatively affected the stock price.[280]

The company's responses to the negative articles may have only aggravated the initial damage. Online media and search engines

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272. Press Release, Nw. Biotherapeutics, NW Bio Refutes Further False and Misleading Claims by Feuerstein (Mar. 28, 2014), https://nwbio.com/nw-bio-refutes-further-false-and-misleading-claims-by-feuerstein/ [https://perma.cc/D7FA-JNXV] (statement "refuted false and misleading claims by Adam Feuerstein in an article posted Thursday, March 27, after NW Bio's public presentation of significant positive news about all of the Company's programs").

273. *Id.* ("On the contrary, Ms. Powers announced entirely positive news about the Company's Phase III trial as well as its other programs . . . . [T]he Phase III trials is progressing well, and further centers of excellence are joining the trial.").

274. Search Results for 'Feuerstein,' NW. BIOTHERAPEUTICS, https://nwbio.com/?s=feuerstein [https://perma.cc/F4M8-UBMD].

275. Press Release, Nw. Biotherapeutics, NW Bio Again Sets Feuerstein Record Straight (Apr. 7, 2014), https://nwbio.com/nw-bio-again-sets-feuerstein-record-straight/ [https://perma.cc/GH58-RTXD].

276. *Id.*

277. *Id.*

278. Search Results for "Northwest Bio," THESTREET, https://www.thestreet.com/search?query=northwest%20bio [https://perma.cc/Z4CK-7TJ9].

279. *Id.*

280. *See* Ali Berri, *Northwest Biotherapeutics Shares Trade Lower Following Seeking Alpha Article*, BENZINGA (July 7, 2014, 1:41 PM), https://www.benzinga.com/news/14/07/4684346/northwest-biotherapeutics-shares-trading-sharply-lower [https://perma.cc/7CQF-8EFR].

operate by automatically distributing headlines across sites and each press release may have only refreshed and reinforced the negative articles, keeping them at the top of search results about the company. Certainly, the company could not be blamed for vigorously defending itself, but in the online world, each retort only tracks back to his original article and refreshes its relevance.

Retail investors are bombarded by too much information and often don't have the time or resources to conduct more thorough due diligence, especially if the information is dense or complex, as it is with clinical trials. The information in NWBO's case was particularly complex given the dynamic nature of learning about immunotherapy, as well as the complicated financing structure, which was intended to provide NWBO with better financing terms than would an unaffiliated party. These two different types of complexity—scientific and financial—made the company particularly vulnerable to negative commentary.

On July 29, 2014, the non-profit organization Citizens for Responsibility and Ethics in Washington (CREW) wrote a letter to the SEC requesting that it investigate the short selling of stock in NWBO to determine "if there has been illegal manipulation of the market price of the company's stock" and noting that "[p]ublicly available information suggests a concerted effort to manipulate the price of shares in Northwest Biotherapeutics in a way that furthers the interests of short sellers."[281] The letter noted that, on June 11, 2014, NWBO issued a press release that there was data that indicated its vaccine was working to shrink tumors.[282] Its stock rose to $8.97 on June 18, 2014.[283] Before the start of the trading day on June 19, 2014, the same online journalist who had previously raised doubts about NWBO tweeted hints that bad news was forthcoming about NWBO.[284] The tweets then linked to an article he had written, which insinuated that one of the clinical sites, MD Anderson, might file a formal complaint against NWBO.[285] The impact of the post on the stock was "immediate and dramatic"[286] and caused it to plunge 20 percent in one day and continue sliding.[287]

281. Letter from Melanie Sloan, *supra* note 21.

282. *Id.*

283. *Id.*

284. *Id.* ("They included the cryptic tweet '$NWBO uh oh . . . ' and 'MD Anderson said what about $NWBO? Shocking!'").

285. *Id.*

286. *Id.*

287. Letter from Melanie Sloan, *supra* note 21.

According to CREW:

> Taken as a whole, this evidence suggests actions intended to manipulate the market in order to protect the interests of short sellers in the stock of Northwest Biotherapeutics, who faced the possibility of great financial exposure given the volume of their shares and the then-current market price of the stock.[288]

Questions raised about the integrity of NWBO's management and the viability of their product left investors vulnerable to social influence. As psychologist Robert Cialdini noted, "[i]n general, when we are unsure of ourselves, when the situation is unclear or unambiguous, when uncertainty reigns, we are most likely to look to and accept the actions of others as correct."[289] A short seller could exploit this human tendency to succumb to social influence by, for example, selling a large block of stock to drive down the company's price upon the release of a negative online article. The downward pressure could be exacerbated by stop-loss triggers. Investors who were not convinced by the initial negative news from a journalist or blogger might be swayed by the perception of consensus among other investors and decide to sell, which would further depress the stock price and continue the downward spiral.

The movement in Northwest Bio's stock caught the attention of Washington Post journalist, Steven Pearlstein, who referred to the saga as the "eye-opening tale of how hedge funds and their Wall Street allies stifle innovation and damage the economy in their relentless pursuit of short-term trading profits."[290]

C. The Downward Spiral

In November 2014, NWBO announced that it was entering into a financing arrangement with C.F. Woodford Equity Income Fund (Woodford) who purchased 4,317,790 shares at $5.79/share.[291] The money raised from the financing would be used to expand and

288. *Id.*

289. ROBERT CIALDINI, THE PSYCHOLOGY OF PERSUASION 98 (rev. ed. 2009).

290. Pearlstein, *supra* note 23.

291. Press Release, Nw. Biotherapeutics, NW Bio Announces Financings Totaling $35 Million to Expand and Accelerate DCVAX®-L and DCVAX®-Direct Programs (Nov. 19, 2014), https://nwbio.com/nw-bio-annouces-financings-totaling-35-million-expand-accelerate-dcvax-l-dcvax-direct-programs/ [https://perma.cc/9J4T-VGJL].

accelerate clinical trials.[292] Woodford subsequently made additional sizable investments of $40 million in April 2015,[293] and then, in October of that year, $30 million, raising his total holding to about 28.1 percent of the Company.[294] NWBO looked like it was in a good situation financially.

However, the stock drops triggered several lawsuits, including one that was filed on August 26, 2015.[295] The lawsuit, *Lerner v. Northwest Biotherapeutics,* alleged that the company made fraudulent statements, and, as support, plaintiffs referenced the unsubstantiated information that was published online by the company's critics.[296]

On October 28, 2015, an equities research group, Phase Five Research, released a report with the title, "Northwest Biotherapeutics House of Cards is Ready to Collapse."[297] The report alleged financial irregularities in the dealings between NWBO and entities related to Powers, its CEO:

> The lack of corporate governance has allowed NWBO's CEO, Chairperson and President Powers (formerly VP Global Finance at Enron) to unscrupulously use the company as her personal checking account to financially support her investment in NWBO and other private companies, mostly Cognate Bioservices, by transferring massive amounts of cash, shares and warrants to herself and companies she owns and controls. In addition, we believe NWBO has been involved in various undisclosed transactions with (i) Powers and her companies; (ii) at least one major shareholder and with (iii) its 'independent director' Dr. Navid Malik.[298]

The report sought to sully Powers by association with Enron even though she had left the company prior to the corporate accounting

292. *Id.*

293. Press Release, Nw. Biotherapeutics, NW Bio Announces $40 Million Financing (Apr. 2, 2015), https://nwbio.com/nw-bio-announces-40-million-financing/ [https://perma.cc/Z9MC-LKAX].

294. Press Release, Nw. Biotherapeutics, NW Bio Has Entered into an Agreement For $30 Million of New Equity Funding from Woodford Investment Management (Oct. 21, 2015), https://nwbio.com/nw-bio-has-entered-into-an-agreement-for-30-million-of-new-equity-funding-from-woodford-investment-management/ [https://perma.cc/7BRF-TNB8].

295. Lerner v. Nw. Biotherapeutics, 273 F. Supp. 3d 573 (D. Md. 2017).

296. *Id.* at 583–84.

297. PHASE FIVE RSCH., NORTHWEST BIOTHERAPEUTICS HOUSE OF CARDS IS READY TO COLLAPSE (2015), https://docplayer.net/storage/26/8855355/1711784391/kpSmeXtdWKbGLHKXFbV0fw/8855355.pdf [https://perma.cc/QPR7-AFJX].

298. *Id.* at 3.

scandal and was not implicated in it. The report then sought to buttress the credibility of its claims by claiming they were made by "Phd's and analysts with strong medical background, together with financial experts with extensive backgrounds in uncovering fraudulent companies."[299] Phase Five Research did not identify those individual experts,[300] including where and in what subjects they obtained their PhDs and whether their "strong medical background"[301] meant that they were actually MDs or otherwise qualified experts. Nevertheless, the report was distributed and published on websites such as Seeking Alpha, where Phase Five disclosed that it held a short position in NWBO.[302]

Shortly afterward and presumably as a consequence of the report by Phase Five Research, Woodford requested the appointment of an independent director.[303] Powers referred to the allegations as "baloney"[304] but agreed to an internal investigation and independent director, although ultimately not the one that Woodford recommended.[305] On December 7, 2016, NWBO announced that it was delisting from Nasdaq and would begin trading in the over-the-counter market.[306]

The lawsuit filed by Lerner against the company was dismissed on March 31, 2017.[307] Most of the other lawsuits were also subsequently dismissed or settled with "no monetary damages

299. *Id.*

300. Denise Roland, *Major Shareholder Wants Inquiry into Northwest Biotherapeutic Allegations*, WALL ST. J. (Nov. 28, 2015, 5:19 PM), https://www.wsj.com/articles/major-shareholder-wants-inquiry-into-northwest-biotherapeutics-allegations-1448747062 [https://perma.cc/6WQP-BVXM] (noting that the identities of the research group's analysts weren't cited).

301. *The Northwest Biotherapeutics House of Cards Is Ready to Collapse*, SEEKING ALPHA (Oct. 29, 2015), https://seekingalpha.com/article/3618336-northwest-biotherapeutics-house-of-cards-is-ready-to-collapse [https://perma.cc/8JDY-TFQH].

302. *Id.*

303. Northwest Biotherapeutics, Inc., Information to Be Included in Statements Filed Pursuant to § 240.13d-1(a) and Amendments Thereto Filed Pursuant to § 240.13d-2(a) (Schedule 13D) 8 (Nov. 24, 2015), https://www.sec.gov/Archives/edgar/data/1072379/000121390015009081/sc13d1115a2woodford_north.htm [https://perma.cc/6B4H-SAXA].

304. Roland, *supra* note 300.

305. Press Release, Nw. Biotherapeutics, NW Bio Statement Regarding Appointments (Dec. 8, 2015), https://nwbio.com/nw-bio-statement-regarding-appointments-2/ [https://perma.cc/8FZ8-8R9E] (noting that "Mr. Leary has never served on any board, has no biotech experience ad no pharma experience other than certain government investigations, has no experience working with companies subjected to stock manipulation, has no experience interacting with investors or helping with corporate fundraising" and that the Company was in "advanced discussions" with other candidates).

306. Press Release, Nw. Biotherapeutics, NW Bio Announces Decision to Voluntarily Withdraw from Nasdaq Listing and Begin Trading on OTC Market (Dec. 7, 2016), https://nwbio.com/nw-bio-announces-decision-to-voluntarily-withdraw-from-nasdaq-listing-and-begin-trading-on-otc-market/ [https://perma.cc/X2KK-W4FF].

307. Lerner v. Nw. Biotherapeutics, 273 F. Supp. 3d 573, 573 (D. Md. 2017).

contemplated."[308] In 2018, the company disclosed that it was the subject of an SEC investigation into its internal control practices and its delisting from Nasdaq, among other issues.[309] In October 2019, NWBO announced that it had entered into a settlement agreement with the SEC relating to "material weaknesses" with its Form 10-K filings over a period of twelve years, and would pay a fine of $250,000 without admitting or denying wrongdoing.[310]

D. Success or Failure?

On May 10, 2022, Northwest Biotherapeutics announced its Phase III clinical trial results for its brain cancer vaccine.[311] That day, the same online journalist that had previously written negative articles about the company, published an article with the headline, "It took years, but the failure of Northwest Bio's brain cancer vaccine is now in the open."[312] The first few lines—the only ones visible without paying for a subscription to read the rest—stated, "The treatment's data are as bad as expected—performing worse than a placebo."[313]

However, Northwest Biotherapeutic's presentation stated that the primary and secondary endpoints *were met*.[314] Nevertheless, the company's stock plunged to a 52-week low.[315]

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308. Press Release, Nw. Biotherapeutics, NW Bio Reports Favorable Results and Progress Resolving Lawsuits (Oct. 25, 2017), https://nwbio.com/nw-bio-reports-favorable-results-progress-resolving-lawsuits/ [https://perma.cc/ED6A-QMDT].

309. Northwest Biotherapeutics, Inc., Annual Report (Form 10-K) 20 (Apr. 17, 2018), https://www.sec.gov/Archives/edgar/data/1072379/000114420418020971/tv491101_10k.htm [https://perma.cc/RQ8G-PE3W].

310. Press Release, Nw. Biotherapeutics, NW Bio Moves Forward with SEC Settlement (Oct. 10, 2019), https://nwbio.com/nw-bio-moves-forward-sec-settlement/ [https://perma.cc/BFL7-RXWA]; *SEC Files Settled Action Against Biotechnology Company Related to Unremediated Material Weaknesses Spanning Twelve Years*, U.S. SEC. & EXCH. COMM'N (Oct. 20, 2019), https://www.sec.gov/enforce/34-87281-s [https://perma.cc/7ZSP-D6V4].

311. Press Release, Nw. Biotherapeutics, Presentation About Phase 3 Trial of DCVax®-L for Glioblastoma (May 10, 2022), https://nwbio.com/presentation-about-phase-3-trial-of-dcvax-l-for-glioblastoma/ [https://perma.cc/6LU4-XYRR].

312. Feuerstein, *supra* note 3.

313. *Id.*

314. Paul Mulholland, Univ. Coll. Hosp., Autologous Tumor Lysate-Loaded Dendritic Cell Vaccination for Glioblastoma, 23, 47 (May 10, 2022) (noting "primary endpoint" was met with a "statistically significant" difference and "secondary end point" was met with a "statistically significant extension of overall survival" and an "excellent safety profile").

315. Dulan Lokuwithana, *Northwest Bio Plunges After Late Stage Data for Lead Candidate in Brain Cancer*, SEEKING ALPHA (May 10, 2022), https://seekingalpha.com/news/3836107-nwbo-stock-plunges-on-data-for-lead-asset-in-brain-cancer [https://perma.cc/69GW-QANN]; Larry Smith, *Northwest Biotherapeutics: Debunking Silly, Fictitious Adam Feuerstein Article Falsely Claiming Phase 3 Trial of DCVax-L in Glioblastoma Multiforme Was a Failure*, SMITHONSTOCKS (May 25, 2022), https://smithonstocks.com/northwest-biotherapeutics-debunking-silly-fictitious

The market response to what should have been fantastic news illustrates the vulnerability of biotech companies to negative news. The company's stock plunged over 70 percent.[316] This resulted in headlines such as "Northwest Bio plunges after late-stage data for lead candidate in brain cancer,"[317] and head-scratching reports on investor websites with discordant statements such as the following:

> The shares of Northwest Biotherapeutics (OTCQB:NWBO) reached a 52-week low on Tuesday after the clinical-stage immunotherapy company announced a presentation with Phase 3 data for its lead asset DCVax-L in Glioblastoma multiforme (GBM) brain cancer . . . . According to overall results, the 331-patient trial has met the primary endpoint of overall survival (OS) in newly diagnosed GBM patients after the progression-free survival (PFS), the initial primary endpoint of the trial, was found to be unviable. OS is the "gold standard" for measuring the clinical benefits of a cancer drug.[318]

The timing of the online journalist's response is noteworthy. Dr. Paul Mulholland, a medical oncologist who exclusively treats brain cancer, started his forty-minute presentation (including Q & A) at 11:10 a.m. (EST) on May 10.[319] It was 9:18 a.m. (PST) on May 10 that the journalist tweeted, "My take on $NWBO: As expected. When you throw the dart first AND THEN paint a bullseye, it's very easy to claim a win. It's not, of course. The data are scientifically, methodologically and statistically ludicrous, but this is what we've come to expect from NWBO."[320]

The online journalist posted the link to his article on Twitter, and then reposted it several days later "in case anyone had doubts or

-adam-feuerstein-article-falsely-claiming-phase-3-trial-of-dcvax-l-in-glioblastoma-multiforme-was-a-failure/ [https://perma.cc/Z3N5-BVGX] (stating that Northwest Bio's "stock decline on May 10, 2022 was correlated with Adam Feuerstein's article on Stat News," which was "widely circulated to news outlets, some of whom reiterated Feuerstein's demonstrably false claims that the trial failed without bothering to read, let alone analyze, the report").

316. Rimes, *supra* note 4.

317. Lokuwithana, *supra* note 315.

318. *Id.*

319. Press Release, Nw. Biotherapeutics, *supra* note 256; Dr. Paul Mulholland, UNIV. COLL. LONDON HOSPS. NHS FOUND. TR., https://www.uclh.nhs.uk/our-services/find-consultant/dr-paul-mulholland [https://perma.cc/BC9S-URTH]; DCVAX®-L, MUSELLA, https://virtualtrials.org/dcvax.cfm [https://perma.cc/SM58-DZVE].

320. Adam Feuerstein (@adamfeuerstein), TWITTER (May 10, 2022, 9:18 AM), https://twitter.com/adamfeuerstein/status/1524061415857963008 [https://perma.cc/G9B5-AQ44].

questions."[321] NWBO's supporters charged him with bad faith and an intent to spread FUD in an effort to bring down the company's stock.[322] One commentator noted that the online journalist's "usual MO" is to claim that a company missed its primary endpoint and that he "coordinates his attacks . . . around the timing of the announcements."[323] The controversy obscured the answer to the only question that mattered—did the company meet its primary endpoints or not?

As previously noted, science is complicated and researchers conducting clinical trials with novel therapeutics should incorporate new findings as their studies progress in a way that conforms to the objectives of the trial. NWBO designed its clinical trials in 2007; since then, studies of immunotherapy treatments observed a phenomenon referred to as "pseudoprogression," where tumors increased in size initially and then decreased afterward.[324] Pseudoprogression is *not* progression and does not mean that the tumor has progressed. On the contrary, the tumor often eventually responds, resulting in lasting improvement for the patient.[325] The phenomenon was not anticipated by the researchers in 2007 when the clinical trials were designed.[326] The first reported observation of pseudoprogression seems to have been in 2009.[327]

321. Adam Feuerstein (@adamfeuerstein), TWITTER (May 25, 2022, 9:10 AM), https://twitter.com/adamfeuerstein/status/1529495208563462145 [https://perma.cc/K3C7-HLZS].

322. Alex Carlson, *Northwest Bio About to Cross the Finish Line*, INSIDER FIN. (Oct. 12, 2020), https://insiderfinancial.com/northwest-bio-about-to-cross-the-finish-line/180533/ [https://perma.cc/NGM7-2LQC].

323. Chris Sandburg, *Feuerstein's Flab on Northwest Bio (NWBO) Dives on Stock on Meritless Claims After Nailing Primary Endpoint*, INSIDER FIN. (June 12, 2022), https://insiderfinancial.com/feuersteins-flab-on-northwest-bio-nwbo-dives-stock-on-meritless-claims-after-nailing-primary-endpoint/183278/ [https://perma.cc/9JWU-SXPY].

324. Lynne Eldridge, *Pseudo-Progression with Cancer Treatment: When Cancer Only Appears to Worsen on Checkpoint Inhibitors*, VERYWELL HEALTH (June 13, 2022), https://www.verywellhealth.com/pseudoprogression-with-cancer-treatment-4692751 [https://perma.cc/BD5C-VJV6].

325. *Id.* (noting that pseudoprogression should be distinguished from true progression and as treatment continues tumors "will eventually respond to these drugs, sometimes with dramatic and durable responses"); *see also* Maximilian J. Hochmair et al., *Symptomatic Pseudo-Progression Followed by Significant Treatment Response in Two Lung Cancer Patients Treated with Immunotherapy*, 113 LUNG CANCER 4, 4 (2017) (finding pseudoprogression linked to favorable survival for patients treated with immunotherapy).

326. Eldridge, *supra* note 324 (referring to pseudoprogression as a "relatively new concept in cancer treatment" and that "it wasn't until the introduction of immunotherapy drugs . . . that it became relatively common to see tumors increase in size on imaging studies initially, only to decrease in size (or number of metastases) later on").

327. Jed D. Wolchok et al., *Guidelines for the Evaluation of Immune Therapy Activity in Solid Tumors: Immune-Related Response Criteria*, 15 CLINICAL CANCER RSCH. 7412, 7412 (2009); *see also* Hochmair et al., *supra* note 325, at 5 ("Pseudo-progression was first described in patients with malignant melanomas treated with ipilimumab, a CTLA 4 inhibitor. In this population, pseudoprogression was observed in up to 10% of patients.").

Because it was difficult to distinguish progression-free survival from pseudoprogression, the company specified overall survival as the primary endpoint before unblinding the data. Overall survival is considered the "gold standard" primary end point for evaluation of cancer drugs in clinical trials.[328]

The complexity and uncertainty that is an inherent part of the scientific discovery process created an opening for criticism, which catalyzed algorithmic trading, cratered NWBO's stock, and led to a spate of lawsuits.

E. A Rigged System?

A confused retail investor is left with two possible and alternate realities. Either the system is functioning the way it should, or short sellers and their accomplices are gaslighting retail investors and manipulating the market.[329] To some, the lack of regulatory action itself means that the financial system is corrupt, unfair, and tragically rigged against the ordinary investor.[330]

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328. James Driscoll & Olive Rixe, *Overall Survival: Still the Gold Standard: Why Overall Survival Remains the Definitive End Point in Cancer Clinical Trials*, 15 CANCER J. 401 (2009).

329. A good example of the suspicion that retail investors feel about Wall Street is the post written by Larry Smith on his blog *SmithOnStocks* after NWBO's stock dropped 30 percent on October 16, 2015. He noted that the volume for that day was 3 million shares or ten times the average daily trading volume for the previous eleven days. He concluded that there was "only one reasonable explanation for the decline and that was a coordinated short selling attack on the Company." He noted that the company had been an "ongoing target of a group of hedge funds" who operate as a "wolfpack" to short emerging biotechnology companies such as NWBO in a "broad conspiracy" to profit from short sales:

> The wolfpack's playbook is to induce bloggers (friendly to them or employed by them) to write articles which attack and put a negative spin on every aspect of the targeted company. A cornerstone of this blogging is to allege that management is unscrupulous, duping investors and running a pump and dump scheme.
>
> Essential to the wolfpack is to attack any news release (especially one containing good news) with blogs and simultaneously, aggressively shorting the stock. The objective is to make good news appear bad by causing the stock to decline . . . . Another important touch is a coordination with tort lawyers who cite the stock decline to bring class action suits alleging misconduct and misrepresentations by the Company. Ironically, these tort lawyers usually cite negative blogs or research written (by) friends or employees of the hedge funds.

Larry Smith, *Northwest: Analysis of a Coordinated Short Selling Attack Against the Stock (NWBO, $4.69)*, SMITHONSTOCKS (Oct. 20, 2015), https://smithonstocks.com/northwest-analysis-of-a-coordinated-short-selling-attack-against-the-stock-nwbo-4-69/ [https://perma.cc/5R4T-FBXJ]. Smith admits that he has "no direct proof on which hedge funds are involved" but that it is "pretty easy to deduce who the ringleaders are and the techniques that they use." *Id.*

330. *See* Pearlstein, *supra* note 23 ("Maybe it's time for the Justice Department and the Securities and Exchange Commission to be siding" with biotech companies.); Letter from CREW, *supra* note 179, at 6–7 ("Americans already believe Wall Street and Washington are rigged to the benefit

On August 23, 2022, Northwest Biotherapeutics announced approval from the UK Medicines and Healthcare Products Regulatory Agency of the company's Pediatric Investigation Plan (PIP).[331] The approval of a PIP is a "pre-requisite for application for approval of a new medicine for adult patients, such as DCVax-L."[332]

On November 17, 2022, the British newspaper The Guardian reported that a "global clinical trial" had shown that DCVax had "astonishing" results that enhanced survival for patients with deadly cancerous brain tumors.[333] The results of the trial were published in JAMA Oncology in a featured article co-authored by more than seventy physicians from leading institutions around the world.[334] These were the same results that had been announced by the company in May and derided by online FUDsters.[335] The publication of the results in the prestigious peer-reviewed journal validated the company's previously announced findings, but in the following days, online commentators were again raising doubts about the likelihood of regulatory approval.[336]

DC-Vax-L (also known as murcidencel)[337] must still obtain regulatory approval, but it has already been credited with prolonging the

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of the rich and powerful and the detriment of nearly everyone else. Watching billionaire hedge fund managers utilize their vast resources to instigate government investigations to increase their wealth can only lead to even further decreased confidence in the country's financial markets and government leaders.").

331. Press Release, Nw. Biotherapeutics, Northwest Biotherapeutics Announces Approval of Pediatric Investigation Plan (PIP) by MHRA: PIP Approval Is a Pre-Requisite for Application for Approval of a New Medicine for Adult Patients (Aug. 23, 2022), https://nwbio.com/northwest-biotherapeutics-announces-approval-of-pediatric-investigation-plan-pip-by-mhra-pip-approvalis-a-pre-requisite-for-application-for-approval-of-a-new-medicine-for-adult-patients/ [https://perma.cc/N8FQ-Y4RE].

332. *Id.*

333. Denis Campbell, *Vaccine Shown to Prolong Life of Patients with Aggressive Brain Cancer*, GUARDIAN (Nov. 17, 2022, 10:00 AM), https://www.theguardian.com/science/2022/nov/17/vaccine-shown-to-prolong-life-patients-aggressive-brain-cancer-trial-glioblastoma [https://perma.cc/YF56-5A27].

334. Liau et al., *supra* note 5.

335. Larry Smith, *Northwest Biotherapeutics' Day Has Come at Last*, SMITHONSTOCKS (Nov. 16, 2022), https://smithonstocks.com/northwest-biotherapeutics-day-has-come-at-last/ [https://perma.cc/WLA2-K53X] (noting that NWBO has been "ignored by institutional investors" because of a "coordinated and criminal attack by hedge funds and market makers . . . to manipulate the stock price . . . . [W]olfpack fomenters have repeatedly alleged that murcidencel failed the phase 3 trial and that CEO Linda Powers [was] running a Ponzi scheme. This lying has been used as cover for massive illegal shorting that has been employed every time that NWBO makes a positive announcement").

336. *See* Feuerstein *supra* note 7.

337. *See* Smith, *supra* note 315.

lives of brain cancer patients.[338] If not for the persistence of the company's CEO, Linda Powers, and the company's management team who have withstood long years of personal attacks, online smear campaigns, and great financial cost, this cancer vaccine would not exist. During those long years, hedge funds and other market makers may have made hundreds of millions of dollars shorting the company's stock.[339]

On December 1, 2022, Northwest Biotherapeutics sued Citadel Securities and other big traders alleging that these firms "deliberately engaged in repeated spoofing that interfered with the natural forces of supply and demand, and drove NWBO's share price downward repeatedly."[340] The complaint alleged that these trading firms made "at least hundreds of millions in aggregate profits by purchasing hundreds of millions of shares of NWBO at artificially depressed prices."[341] The complaint stated that the defendants' "relentless and brazen manipulation" drove the stock down 78 percent on a day with "extremely positive news" about the company's Phase III clinical trials.[342]

On December 21, 2023, Northwest Biotherapeutics announced that it had submitted a Marketing Authorization Application for the UK Medicines and Healthcare Products Regulatory Agency, which is similar to submitting a New Drug Application to the U.S. FDA.[343] The company's CEO noted that the application was the "culmination" of "more than 20 years of research and clinical development."[344] That same day, the journalist who had been persistently providing negative commentary about the company for years tweeted, "It's a Christmas miracle! $NWBO submitted a marketing application for the DCVax

338. Ben Quinn, *'I'm Just Carrying On': Vaccine Gives Brain Cancer Patient Years of Extra Life*, GUARDIAN (Nov. 17, 2022), https://www.theguardian.com/science/2022/nov/17/im-just-carrying-on-vaccine-gives-brain-cancer-patient-years-of-extra-life [https://perma.cc/DLZ6-DL4S].

339. Nw. Biotherapeutics, Inc. v. Canaccord Genuity LLC, No. 1:22-CV-10185-GHW-GS, 2023 WL 9102400 (S.D.N.Y. Dec. 29, 2023). *See* Justin Baer, *Biotech Company Says Citadel Securities, Other Big Traders Manipulated Its Stock Price*, WALL ST. J. (Dec. 1, 2022, 1:09 PM), https://www.wsj.com/articles/biotech-company-says-citadel-other-big-traders-manipulated-its-stock-price-11669901683 [https://perma.cc/E4F8-JUR7].

340. Complaint, *supra* note 8, at 1.

341. *Id.* at 70.

342. *Id.* at 20–21.

343. Press Release, Nw. Biotherapeutics, Northwest Biotherapeutics Announces That a Marketing Authorization Application Has Been Submitted to the UK MHRA for DCVax®-L for Glioblastoma (Dec. 21, 2023), https://nwbio.com/northwest-biotherapeutics-announces-marketing-authorization-applications-submitted-uk-mhra-dcvax-l-glioblastoma/ [https://perma.cc/SA9K-MN2N].

344. *Id.*

brain tumor therapy to the UK regulators. We can now start the clock on its rejection."[345]

IV. PROPOSALS

Much has been written about the high cost of prescription drugs.[346] The high cost of drugs can be attributed in large part to the expense of clinical trials and to the lack of competition.[347] Short attacks leave a small biotech more vulnerable to bankruptcy or acquisition by Big Pharma, which reduces competition and may lead to higher consumer drug prices.[348] Short attacks also make it harder for small biotechs to raise critical funding to complete clinical trials, obtain FDA approval, and manufacture and market a new drug.

A small biotech company's success in drug development is binary, its future revenue is speculative, and its research is complex. There are also uncertainties associated with the execution of the business even if the drug trials show promising results. These conditions combined with the potential for financial profit create fertile grounds for collusion and market manipulation.[349]

Shorting may provide some benefits to investors and the marketplace, but those benefits are underwhelming when the target company is a small biotech. Biotech investors understand that their investments are binary—either the FDA approves the drug, or it doesn't. Given the complexity of the science involved in drug trials, non-expert opinions provide negligible or no benefit and may increase distortion, misinformation, inefficiency, and volatility in the marketplace. Publicly traded small biotechs are subject to the SEC's regulatory authority and must

345. Adam Feuerstein (@adamfeuerstein), TWITTER (Dec 21, 2023, 7:15 AM), https://twitter.com/adamfeuerstein/status/1737854199738835227 [https://perma.cc/4G6W-39AS].

346. S. Vincent Rajkumar, *The High Cost of Prescription Drugs: Causes and Solutions*, 10 BLOOD CANCER J. 1 (2020).

347. *Id.* at 2 (noting that drug development is "a long and expensive endeavor: it takes about 12 years for a drug to move from preclinical testing to final approval").

348. *See* Phillip Meylan, *Why Are Drug Prices So High in the U.S.?*, FACTUAL (May 3, 2022), https://www.thefactual.com/blog/why-are-drug-prices-so-high-in-the-u-s/ [https://perma.cc/EC7A-DMTK]. In the past year also, there have been several acquisitions of biotechs by Big Pharma companies. For example, in October 2022, Astra-Zeneca acquired LogiBio Therapeutics for $68 million in a deal that caused its stock to skyrocket over 600 percent. Tomi Kilgore, *LogicBio's Stock Skyrockets After Buyout Bid for a 667% Premium*, MARKETWATCH (Oct. 3, 2022), https://finance.yahoo.com/m/2b8d417d-2cff-3596-b849-af0f1b30ed88/logicbio-s-stock-skyrockets.html [https://perma.cc/2XMJ-A83F].

349. *See* discussion *supra* Section II.B.

comply with securities law. Shareholders do not need a short report to sue companies for violations of securities laws.[350]

More importantly, small biotechs are under the regulatory scrutiny of the FDA. As discussed earlier, the FDA works with companies conducting clinical trials.[351] The drug approval process is a years-long, intensive process, and FDA regulators are consulted, involved, and oversee each step in the process.[352] Although the FDA gives companies "wide latitude in clinical trial design," it is wise for a biotech to consult with the FDA as the FDA continuously monitors companies throughout the clinical trial process.[353] The FDA often requests more information about a trial and may place a trial on hold.[354] The FDA is viewed as deliberate, careful, and a "protector" of the people[355] that prioritizes safety over innovation.[356] It has been described as "super vigilan[t]."[357]

In light of the regulatory oversight already provided by the FDA, a short report on a biotech engaged in clinical trials does more harm than good. In high-profile cases where short reports led to the uncovering of corporate fraud, the targeted company did not have a drug or device in clinical trials. Even Valeant Pharmaceuticals was not primarily engaged in research and development at the time of its corporate misdeeds; rather, it had shifted its corporate strategy to acquiring small biotechs and then raising the prices of their already-developed drugs.[358] The FDA is better qualified to assess the process and the

350. *See* discussion *supra* Section II.B.

351. *See* discussion *supra* Part II.

352. *The Drug Development Process Step 3: Clinical Research*, U.S. FOOD & DRUG ADMIN. (Jan. 4, 2018), https://www.fda.gov/patients/drug-development-process/step-3-clinical-research [https://perma.cc/S7NS-TFD9].

353. *Id.*

354. *Id.*

355. David Sable, *How the FDA Works: A Primer for the Novice Biotech Investor*, FORBES (Aug. 19, 2015), https://www.forbes.com/sites/davidsable/2015/08/19/how-the-fda-works-a-primer-for-the-novice-biotech-investor/?sh=11a99df12e45 [https://perma.cc/873M-ZRU9] (describing the FDA as a "protector of U.S. citizens").

356. *See, e.g.*, *id.* (discussing the slow and science-affirming nature of the FDA). Some biotech CEOs argue that the FDA may even be *too* careful. Lisa Richwine, *Biotechs Say FDA Ranges from Good to 'Horrifying*,*'* REUTERS (Aug. 9, 2007, 2:10 PM), https://www.reuters.com/article/us-summit-fda-idUSN2424388320060224/ [https://perma.cc/TZ2A-3X6X].

357. *See* Sable, *supra* note 355.

358. Linette Lopez, *Wall Street Is Starting to Believe What Jim Chanos Has Been Saying About Valeant All Along*, BUS. INSIDER (Nov. 4, 2015, 9:33 AM), https://www.businessinsider.com/is-valeant-an-accounting-roll-up-2015-11?op=1 [https://perma.cc/L3S6-ZGFK]; Aswath Damodaran, *Valeant Pharmaceuticals' Dizzying Fall from Investors' Good Graces*, FORBES (Nov. 11, 2015, 4:48 PM), https://www.forbes.com/sites/aswathdamodaran/2015/11/11/valeant-pharmaceuticals-plunge-valuation/?sh=3bb0aa503e56 [https://perma.cc/6ETH-TMMV].

underlying science than financially motivated parties. Furthermore, shorting may impede the efficiency of the FDA by diverting the agency's limited resources. Although it is unlikely that short sellers (and those who work for them) are knowledgeable enough about a given clinical trial to provide the FDA with useful information, their persistent calls for action may force the FDA to expend time and money on an investigation or a response. Given the FDA's expertise and oversight of clinical trials and the rigorousness of the FDA approval process, any potential usefulness of a short report is outweighed by its potential to distract the FDA and delay the clinical trial process.

Given that nearly the entire value of a small biotech hinges upon the success or failure of a drug in clinical trials, it is much too easy for short sellers to manipulate the stock price of a small biotech. Investors should understand the binary risks of investing in biotech; what they should not have to contend with are the wild swings due to FUD, because those wild swings are unpredictable and irrational.[359] This increased volatility creates marketplace inefficiency.

Currently, the negative externalities from shorting are borne by the public, while the gains are reaped entirely by short sellers.[360] Most of the concerns raised in this paper could be resolved with better policing of already illegal practices such as spoofing, naked shorting, and market manipulation. The primary reasons for underenforcement are the lack of resources and the difficulty in proving fraud, market manipulation, and collusion. Market panic can be induced with innuendo and opinion, and both are protected by the First Amendment. But the

359. The post by Larry Smith of *SmithonStocks* is a representative comment:

> One would expect a high level of volatility in the high-risk stocks in which I specialize. However, this could not always explain the demoralizing collapse of a meaningful number of stocks that I am involved with following some news event. Suddenly and without a major change in the fundamental outlook, I would see stock prices cut in half in a short period of time. During this time there was invariably a steady day by day price erosion (naked shorting at work) accompanied by an unending stream of contrived negative news flow that was demoralizing to me and other investors . . . . I am truly outraged that greedy hedge fund managers are trying to drive the Company into financial distress or even bankruptcy without regard to the potential medical value of the dendritic cell cancer vaccines. This is why I have been so staunch in defense of Northwest. I want the trials of DCVax-L and DCVax Direct to be funded; this is in the interest of society. My small role in this may be helping all interested parties understand the depth of the hedge fund conspiracy.

Smith, *supra* note 329.

360. Arguably, retail investors may be deterred from a bad investment, but existing retail investors in that company will suffer losses. Accordingly, the overall benefit to retail investors generally is dubious.

stakes are too high to allow the status quo to continue. Given the long odds of bringing a new drug successfully to market, the high costs of doing so, and the great societal need that small biotechs fill, short selling the stock of small biotech companies without further regulation is not justified by a short seller's desire for profits.

To offset some of the negative externalities caused by short selling small biotechs, I propose a surtax of 15 percent on profits from shorting a small biotech.[361] To ensure the accuracy of the surtax, short sale transactions (opening or closing) of the stock of small biotechs should be transmitted electronically to the Financial Industry Regulatory Authority (FINRA) on a daily basis.[362] The daily reporting of trades enhances transparency,[363] and as an additional benefit, makes illegal trading practices such as spoofing more difficult to conceal.[364] The burden of compliance would be low as brokerages already have this information. As the National Investor Relations Institute (NIRI) stated, "Given the advances in recordkeeping and reporting technologies . . . there is no practical reason why institutions cannot provide public disclosure of their short positions."[365] This requirement also aligns with the petition filed by a coalition of law professors urging the SEC to impose a duty to update promptly a short position disclosure that is no longer accurate.[366] That petition also asked the SEC to clarify that rapidly closing a short position after issuing a short report without disclosing an intent to do so would constitute "fraudulent scalping."[367]

In addition, investors managing more than $20 million in assets holding short positions in small biotechs should be required to fill out audited quarterly reports of trades of that company's stock, including profits, losses, and a statement of holdings of that biotech's stock for the quarter. These reports should be reconciled with the daily electronic trading records transmitted to FINRA. Senior managers at reporting short seller firms should attest to the accuracy of this report

361. This tax would be in addition to the taxes that investors are legally obligated to pay and is equivalent to the cannabis excise taxes in many states, including California and Colorado.

362. FINRA is the regulatory body for securities firms. *See About FINRA*, FINRA, https://www.finra.org/about [https://perma.cc/J338-Y9AR].

363. Press Release, Sec. & Exch. Comm'n, *supra* note 67.

364. NAT'L INV. RELS. INST., *supra* note 70, at 2.

365. *Id.* (noting the Biotechnology Innovation Organization, which represents biotech companies, also urged public disclosure of short selling).

366. Letter from Joshua Mitts et al., *supra* note 68, at 3.

367. *Id.*

and the firm's adherence to rules and regulations governing short selling. This requirement is a much less onerous one than that imposed on public companies and their managers under the Sarbanes-Oxley Act,[368] and some of these trading entities have an impact on the financial markets greater than most public companies.[369] The reporting and filing requirements would simplify and improve the accuracy of the assessment of the surtax amount and subject short sellers to the scrutiny of another government agency, the Internal Revenue Service.

The proceeds from the proposed surtax would be allocated to the National Institutes of Health to fund research and innovation that would offset some of the negative externalities created by short selling. Some of those funds would be allocated to small biotechs to fund drug development, but some would also be allocated to universities and to nonprofit entities conducting research on nutrition and prevention of disease, an important but underfunded area.[370]

In addition to redistributing some of the gains from short selling, my proposal and the reporting requirements would enhance transparency and fairness in the marketplace, strengthen enforcement and accountability, preserve legitimate short selling practices, and assign some of the burden and costs of enforcement to the entities that benefit from short selling (who would pay for the costs of independent auditors).

My proposals are narrowly tailored to apply only to a small slice of a specific market sector. They do not prohibit short selling of companies in the biotech sector with a market capitalization over $2 billion. Moreover, these proposals permit the free flow of information. Short sellers argue—and courts have agreed—that they have a First Amendment right to express their views about companies[371] and that

368. Sarbanes-Oxley Act of 2002, H.R. 3763, 107th Cong. § 103 (2002).

369. Ram Yamarthy & Ron Alquist, *Hedge Fund Activities Can Influence the U.S. Treasury Yield Curve*, OFF. FIN. RSCH. (Dec. 27, 2022), https://www.financialresearch.gov/the-ofr-blog/2022/12/27/hedge-fund-activities-can-influence-the-us-treasury-yield-curve/ [https://perma.cc/H9H4-V9VZ]; RSRV. BANK OF AUSTL., THE IMPACT OF HEDGE FUNDS ON FINANCIAL MARKETS (1999), https://www.rba.gov.au/publications/submissions/financial-sector/inquiry-international-financial-markets-effects-on-govt-policy/pdf/impact-hedge-funds-on-financial-markets-1999.pdf [https://perma.cc/X7TA-4C4G]; SEBASTIAN MALLABY, MORE MONEY THAN GOD: HEDGE FUNDS AND THE MAKING OF A NEW ELITE (2010).

370. Bates, *supra* note 25. Private companies typically do not conduct research on non-pharmaceutical interventions even though changes in lifestyle and nutrition may have a positive impact on health and longevity and may be more effective and cost-effective remedies than prescription drugs.

371. *See* Silvercorp Metals Inc. v. Anthion Mgmt. LLC, No. 22182, slip op. at 660 (N.Y. Sup. Ct. July 10, 2012) (defamation claim against short seller dismissed on grounds that reports were

their reports contribute to a better-informed marketplace.[372] The gullibility of some investors should not deter commentators from reporting and commenting on biotech companies. My proposals should have no impact on legitimate media coverage and commentary. A functioning and efficient marketplace requires a variety of perspectives and opinions; it is harmed, however, by misinformation intended to deceive investors. Bloggers, researchers, journalists, hedge funds—*anyone*—may continue to post or write about a small biotech under my proposal.

Moreover, the SEC whistleblower program provides a potentially lucrative financial incentive for short sellers to continue to investigate corporate misdeeds. Under that program, a person who voluntarily provides the SEC with information about a violation of a federal securities law may be entitled to an award of 10 percent to 30 percent of the monetary sanctions collected.[373] One short seller reportedly received $14 million under this program.[374]

My proposals are limited to small biotechs whose stock price is easily manipulable.[375] It is self-limiting and expires naturally when the biotech's market capitalization reaches $2 billion. This built-in termination provides a safeguard against overexuberance. Fraud exposed

constitutionally protected opinion)*; see also, e.g.*, Noam Noked, *Lawsuit Against Short Sellers Dismissed on Constitutional Grounds*, HARV. L. SCH. F. ON CORP. GOVERNANCE (Oct. 18, 2012), https://corpgov.law.harvard.edu/2012/10/18/lawsuit-against-short-sellers-dismissed-on-constitutional-grounds/ [https://perma.cc/Q2KU-7AS8] (highlighting how a court dismissed defamation claims based on the finding that the reports were constitutionally protected opinion); Delevingne, *supra* note 47.

372. Jacob Wolinsky, *Unphased by DOJ Probe, Hedge Funds Continue to Issue Short Reports*, FORBES (Dec. 31, 2021), https://www.forbes.com/sites/jacobwolinsky/2021/12/31/unphased-by-doj-probe-hedge-funds-continue-to-issue-short-reports/?sh=7b075fe46bfa [https://perma.cc/2XLU-MCKK].

373. *Frequently Asked Questions*, U.S. SEC. & EXCH. COMM'N (Apr. 6, 2023), https://www.sec.gov/whistleblower/frequently-asked-questions#faq-1 [https://perma.cc/N5TC-FCQM].

374. Mengqi Sun, *Short Seller Carson Block Sued over $14 Million Whistleblower Award*, WALL ST. J. (July 28, 2022, 7:10 PM), https://www.wsj.com/articles/short-seller-carson-block-sued-over-14-million-whistleblower-award-11659049816 [https://perma.cc/6JHL-Q78P].

375. Although this Article focuses on small biotechs, my proposal may be more broadly applied to small cap companies in other industries.

by short sellers in cases such as Valeant,[376] Nikola,[377] and Enron[378] involved companies with market valuations well over $2 billion. These companies would not have been subject to my proposal's restriction. The market capitalization of Valeant alone was at one time $90 billion; even at its nadir, it was worth billions.[379]

Given the negative effects of shorting the stock of small biotechs, why not simply institute a ban? The primary reasons are liquidity and risk hedging. An institutional investor may have a long position in a small biotech but may have liquidity needs to cover redemptions. If it has a substantial position in a stock and needs to sell a portion to meet redemption requests, the selling pressure may cause the stock price to drop. Shorting a stock allows the investor to avoid significantly impacting the market for a stock in which it may have a substantial position. Another legitimate reason for shorting is to hedge against market risk or risk in that particular sector in the short term. Of course, there may also be bad faith shorting, where a long investor in one company seeks to destabilize the stock of another by shorting it. My proposals would curb the last scenario while preserving the legitimate use of shorting in the first two scenarios. Finally, if these proposals prove to have a positive impact in the marketplace, they may be applied more broadly to small-cap companies in other market sectors.

CONCLUSION

Society increasingly relies upon small biotechs to innovate in areas that Big Pharma has deemed too risky or simply not profitable enough to pursue.[380] In addition, small biotechs may offer cheaper

376. Gretchen Morgenson, *Figuring Out What Valeant Is Really Worth*, N.Y. TIMES (Mar. 15, 2016), https://www.nytimes.com/2016/03/16/business/figuring-out-what-valeant-is-really-worth.html [https://perma.cc/U9RW-XTZC].

377. Jody Godoy, *Nikola Founder Lied to Investors About Tech, Prosecutor Says in Fraud Trial*, REUTERS (Sept. 13, 2022), https://www.reuters.com/legal/nikola-founders-trial-us-fraud-charges-get-under-way-2022-09-13 [https://perma.cc/4DS8-VMBD]. The founder of Nikola was recently convicted of fraud after a short seller report led to an investigation of the company. Corinne Ramey & Ben Foldy, *Nikola Founder Milton Convicted of Securities Fraud*, WALL ST. J. (Oct. 14, 2022, 6:21 PM), https://www.wsj.com/articles/nikola-founder-trevor-milton-convicted-of-securities-fraud-11665779578 [https://perma.cc/5LWQ-5SJU].

378. Simon Constable, *How the Enron Scandal Changed American Business Forever*, TIME (Dec. 2, 2021), https://time.com/6125253/enron-scandal-changed-american-business-forever/ [https://perma.cc/2YNA-DY94].

379. Bethany Mclean, *The Valeant Meltdown and Wall Street's Major Drug Problem*, VANITY FAIR (June 5, 2016), https://www.vanityfair.com/news/2016/06/the-valeant-meltdown-and-wall-streets-major-drug-problem [https://perma.cc/EL7R-S67W].

380. Bates, *supra* note 25.

alternatives to existing drugs. NWBO, for example, had expressed concern with the high price of immunotherapies and indicated that their treatments "offer the potential for real cost-effectiveness," and would be "substantially below the price range of most antibody drugs and 'targeted' drugs for cancer."[381] It noted that it had developed a proprietary batch manufacturing process that lowered costs and would give it a pricing advantage.[382] It also cited the ease of administration of DCVax that could be injected under the skin in "any physician's office or clinic."[383]

A biotech seeking to develop a novel therapeutic faces daunting odds. The research and development costs are high,[384] the FDA regulations and testing requirements are rigorous, and the time horizon is long. Small biotech companies are vulnerable to FUD in a way that larger companies are not, and shorting creates an incentive for FUD. The stock of small biotechs is volatile, and a precipitous drop in price often sets off a cascade of problems. It triggers the filing of shareholder lawsuits,[385] which can cost millions in legal fees and consumes the time and energy of key employees. Even if the lawsuits are ultimately dismissed (as so many are),[386] the negative publicity they attract may deter new investors. They may also deter patients from enrolling in clinical trials, prolong the time it takes to complete the trial, and increase costs.[387] The siphoning of resources to defend the spate

381. Press Release, Nw. Biotherapeutics, NWBT Highlights Cost Effectiveness of DCVax® in View of Recent Immunotherapy Pricing Concerns (Aug. 10, 2011), https://nwbio.com/nwbt-highlights-cost-effectiveness-of-dcvax-in-view-of-recent-immunotherapy-pricing-concerns/ [https://perma.cc/A8JW-K87G].

382. *Id.*

383. *Id.*

384. The costs of drug development are generally estimated to be around $2 billion dollars. *See, e.g.*, Duxin Sun et al., *Why 90% of Clinical Drug Development Fails and How to Improve It?*, 12 ACTA PHARMACEUTICA SINICA B 3049, 3050 (2022) (estimating the "long, costly, and high-risk process" of drug development and discovery to take "over 10–15 years" with an "average cost of over $1–2 billion for each new drug to be approved for clinical use"); *see also* Joseph A. DiMasi et al., *Innovation in the Pharmaceutical Industry: New Estimates of R&D Cost*, 47 J. HEALTH ECON. 20, 21 (2016) (estimating the cost was approximately $2,870 million in 2013 dollars).

385. Molk & Partnoy, *supra* note 13, at 30–41 (discussing the impact of negative activism on class actions and identifying "eighty-four class actions that directly relied upon negative activists' efforts").

386. *Id.* at 32 ("Unsurprisingly, none of the suits went to a jury verdict; all ended in a settlement or some kind of dismissal.").

387. Patient recruitment for clinical trials is the "single biggest cause" of clinical trial delay. Mette Brøgger-Mikkelsen et al., *Online Patient Recruitment in Clinical Trials: Systematic Review and Meta-Analysis*, 22 J. MED. INTERNET RSCH. 724, 724 (2020). One study in India found that "negative publicity by media" negatively affected both recruitment and retention efforts. Rashmi

of lawsuits triggered by a drop in stock price may lead to a downward spiral for the company, impeding the development of life-saving drugs.

The stakes are too high to allow Wall Street profiteers to hinder the progress of clinical trials and new drug development. The success or failure of a drug should be determined by the FDA and science—not by financial shenanigans that precipitate a cascade of events that derail promising biotechs and force them into failure. My proposed surtax and reporting requirements are reasonable ways to offset some of the negative externalities of shorting small biotechs and to redistribute a small portion of the gains to benefit society more broadly.

Ashish Kadam et al., *Challenges in Recruitment and Retention of Clinical Trial Subjects*, 7 PERSPS. CLINICAL RSCH. 137, 137 (2016).