14 THEMES TO FOCUS ON NOW
A HANDBOOK FOR PORTFOLIO MANAGERS
Dear Client,

We are excited to present you with this Handbook, which highlights key investable themes that have been the centerpiece of work Cowen has published in 2017, in differentiated, “deep dive” reports by our analysts across a variety of sectors and asset classes. For each topic, we indicate the Cowen analysts with applicable domain expertise, securities Cowen covers that are leveraged to the theme, and relevant published research and Cowen events. These themes will continue to drive investment controversies and opportunities in 2018, demanding increased attention from active managers seeking alpha.

As we look ahead, our goal at Cowen is to remain steadfast in our focus on insightful research that adds value for our clients, holding true to our Ahead of the Curve™ mission. Our analysts stand at the center of discussion and debate on these investment themes, exploring controversies, traditional orthodoxies and new ideas from a range of perspectives, and with the rigor of a data-driven approach. The intellectual curiosity and analysis that fuel Cowen Research ultimately yield the actionable, non-consensus ideas that we bring to you.

We wish you all the best for a happy holiday season and achievement of your goals in the New Year.

Sincerely,
Robert Fagin
Director of Research
Cowen

AHEAD OF THE CURVE™
is the hallmark of our research effort. Each of our analysts is required to produce an Ahead of the Curve™ report twice a year that focuses on a non-consensus idea, an investment controversy, or a topic we believe investors need to focus on in more depth.

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For 100 years, the auto industry has been hardware-based, but that is rapidly changing with electrification, advanced driver assistance systems and autonomy. We see EV penetration growing from ~1% in 2017 to 7.5% in 2025. Impact of autonomous vehicles for personal use is expected to be muted through 2030, although semi-autonomous level 3 commercial trucks could be ubiquitous on US roadways within 5-10 years. We believe the winners and losers in mobility transformation will be determined by who gets the software right.
80-90% of the 2.5 quintillion bytes of data generated daily is “dark”, or unused. Humans cannot write software programs sophisticated enough to derive insights from all of this data, but machines can. We believe the rise of Machine Learning algorithms and Deep Learning networks will unlock more intelligence from data than ever before possible, fueling an AI-led computing cycle that will revolutionize enterprise IT, with increasingly communicative interfaces and widespread automation of manual tasks.

ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING
In its earliest stages, we believe the best way to play 5G is through companies that will help facilitate network buildouts, particularly companies holding scarce large-scale fiber assets. However, over time, the three pillars of 5G (throughput, massive IoT and low latency) will not just push the performance of handheld devices, but will also catalyze new SMM, new products and services, and new demands not yet imagined. We anticipate disruption in wireline broadband (i.e., cable), content distribution, and gaming consoles.
Recent advances have produced a number of gene editing programs in or near clinical development, implying the dream of curing illness with corrective genes could soon become a reality for ~6,000 diseases caused by genetic mutations, only 5% of which are addressable through approved therapies today. Advancements in sequencing and other genomics tools have driven an exponential increase in the generation of genetic data, accelerating its use in a range of applications and sparking excitement at prospects for a golden age of genetics, which remains in its infancy today.
TRUMPISM AND REGULATION NATION

Although most headlines focus on legislative agenda and outcomes, we have highlighted the level of regulatory rollback realized in the first year of this new Administration, with data showing an ~80% drop in economically significant regulations between 2016 and 2017. Moreover, given an unprecedented number of judicial appointment vacancies and simplified approval requirements, we anticipate a multi-generational legacy that will determine the outcome of many regulations and administrative actions to come.
As IO laboratory and clinical research continues to raise expectations, we have assessed expert physician-scientist sentiment to identify those agents in clinical development that are viewed by leading KOLs as holding the greatest promise: IDO1 inhibitors, LAG-3 checkpoint inhibitors, and oncolytic viruses. Innate immunity is regarded as the most promising mechanism to convert “cold” tumors to “hot.” We also surveyed views on the most clinically meaningful results in a post-IO setting in melanoma.
We are still in the earliest days of e-Commerce disruption in the U.S., and expect growth from 9% of US retail sales to ~14% over the next 5 years. While further physical right-sizing is ahead for many large US retail verticals, Amazon continues to fuel its core business through its Prime offering, which we estimate has grown to 53 million since 2Q13. We explore the impact of Amazon’s success across a range of sectors, with associated opportunities and risks. What is, or is not, un-Amazon-able, and how will consumers engage in a new age of retail?

Cowen Analyst: John Blackledge

Cowen Analysts: Oliver Chen, CFA, John Kernan, CFA and John Blackledge

Cowen Analysts: John Blackledge and Charles Rhyee

Cowen Analysts: John Blackledge, Gregg Moskowitz, CFA, Bryan C. Bergin, CFA, Colby Smead and J. Derrick Wood, CFA

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With Canada set to begin sale of adult-use cannabis no later than July 2018, and with the announcement of strategic investment in international legal cannabis by large traditional alcohol companies, the legal cannabis industry appears poised for a breakout year in 2018. We analyze risks to traditional alcohol as consumer substitution prompts a mix-shift, and we consider opportunities for tobacco, along with cross-sector implications, also reviewing policy considerations and drivers that could motivate continued proliferation of legal cannabis markets.
We forecast the current Home Services market at $450B, with ~13% online penetration that we believe will grow by 19% each year through 2022, in a fragmented, competitive market. Propelled by related tailwinds, we estimate restaurant home delivery will grow from $43B in 2017 to $76B in 2022, as growing availability of online options fuels demand.
While cities represent only 3% of land mass, they consume ~75% of all energy produced and are responsible for a like amount of carbon dioxide emitted; requiring city planners to address rising populations, crowded environments and dwindling resources through efficient use of assets. With 66% of the world’s population estimated to be in urban centers by 2050, we see a multi-year migration toward “smart city” models, including sensors, software, IoT applications and beyond, intersecting with smart grid and smart building technologies.
As headlines, hacks and breaches abound, we believe cybersecurity motivations and related regulatory actions will continue to drive investment to protect critical infrastructure and the various pieces of the cybersecurity framework, spanning data, devices and apps. This is likely to continue prompting M&A activity as industry participants seek to cover all bases.
Macro indicators are testing pre-recession levels, with key metrics deteriorating, particularly between present and future expectations. These data drive our more cautious view on the lower-income consumer. We believe we could be in the latter innings in the consumer cycle. We prefer share gainers in differentiated categories and concepts that benefit from consumers trading down.
In 2013, the CDC and WHO estimated that someone in the US or EU dies every 11 minutes from an antibiotic-resistant infection, and since then the problem has only gotten worse. We see potential for this profound unmet need to be addressed by emerging biotech and diagnostics companies in the antibacterial space, with their commitment to innovation, opportunity to benefit from an improving regulatory backdrop and sophisticated ability to navigate a complex landscape of regulation, policy and incentives.

Antibiotics

Cowen Analysts: Chris Shibutani, M.D., Ritu Baral, Ken Cacciatore, Joshua Jennings, M.D., Charles Ryan, Steven Scala, M.D., Ph.D., CFA and Doug Schenkel

Initiating Coverage: Spero Therapeutics
November 27, 2017
Cowen Analyst: Ritu Baral

Initiating Coverage: Arsanis
December 15, 2017
Cowen Analyst: Ritu Baral

Akao: Positively Positioned for Gram Negative Leadership
May 4, 2017
Cowen Analyst: Chris Shibutani, M.D.

Mcrb: Advancing the Potential of the Microbiome
May 16, 2017
Cowen Analyst: Chris Shibutani, M.D.

Cowen EVENTS

13th Annual Health Care Conference
March 5-8, 2017 | Boston, MA

Hot Wheels Bus Tour
August 1-3, 2017 | New York, NY

20th Annual Therapeutics Conference
October 2-3, 2017 | New York, NY

Cowen Reports

Ahead of the Curve: The Stars are Starting to Align: Opportunities in the Fight Against Antibiotic Resistance
November 27, 2017
Cowen Analysts: Chris Shibutani, M.D., Ritu Baral, Ken Cacciatore, Joshua Jennings, M.D., Charles Ryan, Steven Scala, M.D., Ph.D., CFA and Doug Schenkel

Cowan Coverage Levered to the Theme

Achaogen — Akao
Arsanis — Arks
Eastick Pharmaceuticals — Eastick
Genmark — Good
Seres Therapeutics — Mcrb
Spero Therapeutics — Spro
There is broad-based support for efforts to address the opioid crisis, alleviating its substantial cost to the US economy and society. We examine the current landscape and a range of potential public and private solutions, including treatment paradigms, alternative therapies and changing service models. We see opportunities in non-opioid alternatives and addiction therapy, as well as potentially in legal cannabis, medical devices and digital health.