



**COMPANIES, INC.**  
Discovering Tomorrow's Blue Chips Today™



***SPECIAL REPORT***  
**Global Overview: The Milken Institute  
Global Conference 2021**  
*Charting a New Course*

By: Jim Altenbach, CFA

small-cap  
research  
media  
IR

Fall 2021  
[www.RedChip.com](http://www.RedChip.com)

# Charting a New Course

by Jim Altenbach, CFA

After going virtual in 2020 due to Covid-19, in late October 2021 the 24th annual Milken Institute Global Conference kicked off live in Los Angeles. Over 170 panels and 500 speakers participated. Speakers included Singapore's Minister of Finance Lawrence Wong, former FDA commissioner Scott Gottlieb, Ian Bremmer, Howard Marks, Emmanuel Roman, and other luminaries. We present topics of interest to those with an eye toward growth, progress, and innovation.

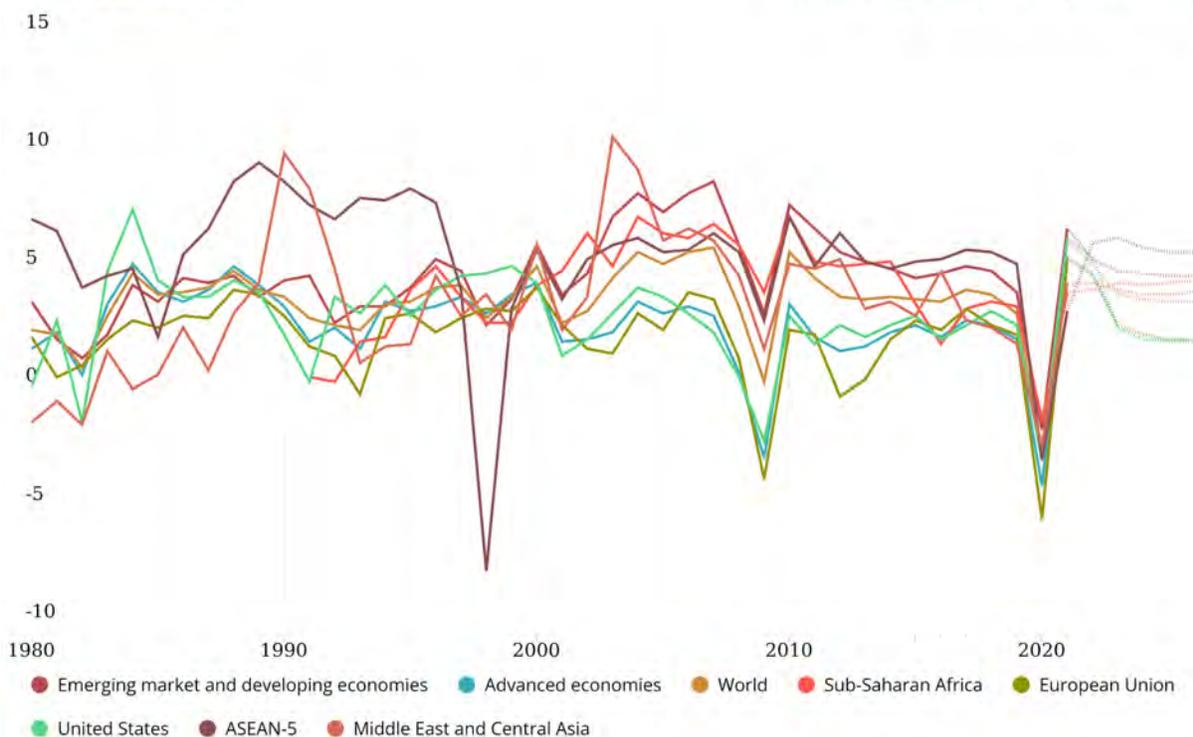


## Global Capital Markets: At a Crossroad

Moderator Scarlet Fu, Anchor, Bloomberg Television, opened the panel by observing: "Last year saw one of the deepest and ultimately shortest recessions in history, thanks in huge part to extraordinary efforts by fiscal and monetary authorities. All of that, of course, intended to blunt the economic burden of this pandemic that is still ongoing. Of course, as with extraordinary efforts, it's rekindled this debate of how much is too much." It feels like we are in this time loop where we're always asking that question. But we have now endured more than a decade of almost constant accommodation, monetary stimulus. How do you get back to a place where markets are independent of all of that?



Video: <https://milkeninstitute.org/video/global-capital-markets-crossroad>



©IMF, 2021, Source: World Economic Outlook (October 2021)

“And if we don't know the answer to because it's a matter of great debate, how do you position in the meantime? How do you hedge against inflation?” posed Lu.

Lu asked about inflation. Scott MinerD, CIO of Guggenheim Partners, responded that “inflation is temporary. Prices are going up in sectors in the economy that were damaged in the pandemic such as air travel, hotels and automobiles. There are fewer cars available due to disruptions in the supply chain.” Hotels that are now open are charging more, a year after they offered large discounts to travelers.

All of these factors will eventually “unwind,” he said. As the supplies return, prices will come down. “Next year we may be talking about deflation,” MinerD said.

Emmanuel Roman, CEO of PIMCO, commented: “there is this sort of dichotomy. When I sit in my office and I look at the sea in Newport Beach, you can see 90 boats who are trying to make their way to the Long Beach Port and the Los Angeles Port. So clearly, you have a supply chain problem.”

“But then again, all of us look at markets on a continuous basis. The 10-year rate is at 1.5%. And there are millions of people trading treasury bonds. The markets are ‘give or take’ efficient. So, it's telling you something about what the world thinks of inflation.”

Roman thinks “the 10-year rate is totally mispriced, in which case [the 10-year T-Bond] is the greatest short we've seen in a long time. Like Scott said, it is temporary and there'll be some adjustment and it will go back to a more normal regime.”

Commenting on whether inflation here to stay, Elizabeth Burton, CIO of the Hawaii Employees' Retirement System, said she doesn't think that inflation is transitory. With winter coming, energy prices are not coming down any time soon, and the end of government checks to workers is not bringing people back to work. The Hawaii pension fund is positioning the portfolio for longer-term inflation. However, doing that is "tricky," she said.

Just because an investment strategy worked in the past doesn't mean those same strategies will work in the future, she noted. But "it's not time to be out of equities," Ms. Burton said.

"I think if you are running a public pension plan and sticking with an asset allocation that has worked for the last 20 years" it will not work, Ms. Burton said.

Hawaii's portfolio is 65% equities and 35% bonds, but the fixed-income component does not look the same as it did 30 years ago, she said. Now included are managed accounts investing in growth, which are hedge fund-style strategies.

## Global Overview: Charting a New Course

In the face of unprecedented challenges across the economy, public health, and society, global leaders are now charting a new course, with cooperation and collaboration catalyzing post-pandemic recovery and growth. However, many challenges face policy makers and corporate executives today, from market stability and global supply chains, to humanitarian crises and geopolitical tensions.



Video: <https://milkeninstitute.org/video/global-overview-new-course>

### Opening remarks by Singapore's Minister for Finance, Lawrence Wong

"Over the past two years, we have seen how the virus has wreaked havoc around in the world, disrupting global economic activity and upending livelihoods. There is growing recognition that the SARS-CoV-2 virus will never be eradicated, but with the help of vaccines and boosters, we can learn to live with this virus and resume normal activities where possible. In a time of crisis, there is always a tendency to turn inwards and to seek refuge from our own tribes. The pandemic has added momentum to this. Last year, the scramble for essential medical supplies reinforced concerns about supply chains. And supply chain bottlenecks have persisted this year and contributed to inflationary pressures."



More worryingly, we continue to face an uneven distribution of vaccines worldwide. This threatens to hinder the global economic recovery and developing countries may fall even further behind. How should countries respond to these trends?

One way is to try to address these challenges alone, embrace nationalism and self-interest. This may appeal to some segments in society, especially when they are disoriented and looking for quick fix solutions. We need to show that this path will only lead to a more divided and insular world. And in the end, we will all be worse off. The alternative is not to go back to business as usual or to settle for how things were before the pandemic. Instead, we should view this crisis as a spur to forge a stronger model of globalization grounded on better cooperation and partnership. Indeed, the pandemic has shown how connected and interdependent we are. And our responses have also proven that we are stronger together.

We see this in our public private partnerships, which have achieved tremendous breakthroughs, including the development of the vaccine. We also see this in our public health responses, which are far more effective when information is shared and when measures are coordinated across borders.

The pandemic has exposed the frailties of our existing global system, but it has shown us that we can change our ways, and it has created the possibilities for change and reform. "It's up to us to seize this opportunity or to squander it. Thank You."

---

Panel Moderator Jim Sciutto, CNN Anchor, opened the panel by asking Ian Bremmer President, Eurasia Group:

"Ian, on big picture, post-World War II, post-Cold War, you had the US as a leader and champion of an international rules-based order. We have seen challenges to that in recent years. One, with challenges, two, that view of the world with China at front.

But also, America's retreat through now a Democratic and Republican administration from many fields of battling, if you could say that, around the world."

Is the US still a credible leader of that and supporter, or is that era over now?"

Bremmer Responded:

I think that era is over, "but American power is not over. I mean, our influence in terms of the percentage of global GDP, in terms of the role of the dollar as global reserve currency, the impact of our tech companies and all these things are not going away."

And yet today, the United States is not only the most politically dysfunctional of the G7 democracies, but it's also the most economically unequal. And as of last month, it's the least vaccinated. And those are all self-inflicted problems.

When you look at others on the panel today, whether you're talking about the view from Latin America, the view from Afghanistan, God help us. The view from Europe, the view from Germany, the fact is that there is a lot less confidence about their ability to rely on the United States going forward, "both under a Biden administration with the possibility of return of a Trump administration, which is very real."

Bremmer stressed: "I don't think that that presages that China takes over. China's internal challenges right now are easily as great on many, many fronts as what the Americans are experiencing right now. But it does mean a lot of other countries feel like they're going to have to take a lot more of their challenges themselves." If you're in the Middle East today, if you're in Southeast Asia today, if you're in Afghanistan today, if you're in Germany today, you're questioning a lot more. This idea of strategic autonomy that comes up from Macron and increasingly Germany, you're going to see a lot of countries around the world talking with their versions of that.

Sciutto commented: You talk about taking some or all of the supply chain out of China, it's interesting. During the Trump administration, I remember Trump officials, Peter Navarro among them, would talk openly about that. At the time, it was received as an alarmist position that was never going to happen. But it's been mainstream to some degree, right? It was described in that time as sort of a punitive step, but you hear it

more commonly as just a fact of life and addressing issues like the supply chain crisis we're going through right now.

Sciutto pondered if there is an unavoidable conflict especially with China? On one hand, China's got its own problems at home. Look at the massive \$300 billion debt problem.

Moderator Sciutto then asked Bremmer "Do folks, when they describe the course of the West and the US versus China in alarmist terms, antagonistic terms, are they exaggerating that threat? What are your views?"

Bremmer responded:

There is the threat. It comes from both countries. It is exaggerated for political purposes on both sides. I mean, it is very clear that there was no trust between the United States and China, mutually, on any issue. "And it is also clear that on virtually every issue of substance, whether it's national security, economics, technology, climate, relations directly between the two countries is deteriorated. I accept all of that."

"But if you were to weigh the risks of number one, impending cold war between the US and China, and number two, the risk of the United States and China increasingly retreating domestically, and therefore not taking action as leaders on global issues like the pandemic, rebuilding the global economy after that, dealing with disruptive technologies and cyber, dealing with climate, I would say that the latter risk is 80% of the ballgame, and the former risk is low," Bremmer said.

He added: "And the former risk is low in part because vested interests in the United States and China understand the deep and persistent interdependence between the United States and China economically."

## Post-Pandemic Recovery: Global Health and the Economy

The COVID-19 pandemic and its accompanying economic challenges have been felt around the world. The recovery has begun, but to date those efforts have produced asymmetrical results. What innovations, technologies, and partnerships are being leveraged to accelerate recovery at the local, national, and global levels?



Video: <https://milkeninstitute.org/video/post-pandemic-recovery-global-health-economy>

Milken Institute Chairman Michael Milken opened by asking Mark McClellan, the former Commissioner of the US Food and Drug Administration, "to compare and contrast the world, when you were the head of the FDA a number of years ago and the world today as if you were still the head of the FDA."

McClellan pointed out that there was significant biomedical innovation capacity in the US then, but now the US had synthetic development capabilities that built on that early success.

McClellan recognized the impressive speed with which the SARS-CoV-2 virus detection test was made available within weeks, with a collaboration between global teams, like between Singapore and Duke University in the US, and how the vaccine was developed in months.

Of concern to McClellan, was the capacity to take that technical capability distribute solutions globally. He was concerned about American president Joe Biden's commitment, with his global partners, to getting 40 percent of the globe vaccinated by the end of 2021, especially since areas like Sub-Saharan Africa were lagging behind drastically.

Anil Soni, CEO, World Health Organization Foundation, observed that the current infrastructure only allowed for 20 per cent of the world's population to be fully vaccinated.

He explained: 'We have got a train on the tracks. We are not moving fast enough given what's at stake. We have got to lay down the tracks faster'.

Soni stated that if one looks at low-income countries, the rate of vaccinations was at just 2.7 per cent (and 70 per cent of the vaccines have gone to just 10 countries). In his words, 'That is epidemiologically self-defeating because the more virus is circulating the more opportunity there are for variants. And it is economically self-defeating', since given the reach of global business and supply chains, one fragile set of countries can impact the rest of the chain or globe."

He shared that 11 vaccine manufacturers around the world were approved, and a large amount of the product already existed. The issue was that it was not being delivered effectively.

Milken put a slide up emphasizing the connection between public health and economic growth:

---

## The Value of Health

Each life is priceless...

but in economic terms, over the past two centuries, as much as **50 percent** of all economic growth can be traced to advances in public health and medical research.

---

Milken continued: "For almost 1000 years, if you go back in history, you can see periods of time no growth in economics and no growth in the population. We forget often just this miraculous change that's occurred with these developments. So in four million years of evolution, we extended life expectancy by 11 years. Four million years average life expectancy increased by 11 years. In the last 120 years on planet Earth, we've increased life expectancy by 42 years, throughout the entire world."

He noted the terrific speed of scientific research that saw Moderna take the virus's DNA sequence and in 63 days was testing a vaccine on humans.

Milken asked Julie Gerberding, chief patient officer at Merck, what was most on her mind these days.

Her answer was 'bio-security' and the impact of the lack of true security around research. She spoke about public health efforts around maintaining health security and galvanizing the appropriate responses so society can take appropriate steps to keep the world well.

The panel ended with a conversation with former FDA commissioner, Scott Gottlieb on how to defeat the next pandemic.

In his role at the frontline of the COVID-19 crisis in the US, his greatest lesson was a profound organizational insight: Why was the CDC, a deeply scientific, reflective organization, asked to act as a first responder.

Gottlieb said what the US had needed was a combo of the Federal Emergency Management Agency plus the CDC to have taken charge of the frightening pandemic situation.

What a previously never-seen disaster like COVID-19 had required was added capabilities.

Other missteps included, according to Gottlieb, the lack of a simple, cheap test early in the process and the fact that, at the outset, it was not clear that asymptomatic community transmission was possible.

The prevailing theory then was that COVID-19 was touch-related and spread via fomites (inanimate objects that can carry and spread disease and infectious agents), which resulted in mask-related cynicism and rhetoric.

It was all exacerbated by the US being a Western democracy -- not being able to get the strict regimens in place like China did or the disciplined buy-in from the public like it happened in Korea.

More egregiously, political stakeholders acted as if the early spread, and deaths, was inevitable and acted accordingly, rather than trying hard to preserve lives.

Gottlieb fully believed that a few earlier actions could have limited the severity of the pandemic, and he hoped the world would learn from its mistakes once 'we are out of the fog of viral war'.

## Panel: Common Sense from Uncommon Investors

Investors need to adapt or risk falling behind. How are you identifying new market leaders as companies reshape their portfolios and technological innovation is driving entire industries? Some of the savviest investors on the opportunities that will shape markets and society for the next decade weighed in.



Watch Video: <https://milkeninstitute.org/video/common-sense-uncommon-investors>

Of most interest to Redchip readers is the growing software and technology sector.

Panel moderator Michael Milken, Chairman of the Milken Institute introduced Orlando Bravo, Founder of Thoma Bravo - a leading private equity investment firm that provides capital and strategic support to growing software and technology companies.

Milken asked Bravo: You and others have redefined how we supposedly do analysis today. You've convinced us that we need to buy companies based at a multiple of

revenue. Forget EBITDA, forget profitability, but a multiple of revenue in the fast-growing area. The percentage of the world's economy that is digitized is increasing. How do you feel about software? Are valuations significant. Should we still be investing in software?

Bravo explained: We at Thoma Bravo don't have to make that trade-off between revenue multiples and fundamental investing because we're buying the whole company. We operate them and we turn what appears to be a revenue multiple into an EBITDA multiple three to four years later through operational complexity. You're really talking about complexity. We like to buy the number one player in the market in each niche sector within B2B software, companies that are compounding at 15 to 20%. But for some reason, the entire software industry, the entire 2.4 trillion software world today loses money, negative 2% margin. And when you look at private equity firms like us, we typically run these companies for growth, but at 40% EBITDA margins, because it's possible.

Now, public investors have no choice. If you want to participate in software, since the universe on average loses money, you have to think about revenue multiples. Now, the fallacy that they make in the market, we believe, is they say, "Okay, you're growing 30% a year. I'm going to buy you at 10 times revenue in year four alone at about 12 to 13 times EBITDA, because the company told me that their long-term EBITDA margin target is 30%." It just doesn't work that way.

"You have to look at the digital world completely differently than the physical world for investing and for solving some of today's biggest problems that our society's facing. And software just started its run. We estimate that about 5% of all business workflows are digitized right now. If you look at before the year 2010, software expenditures as a percentage of GDP were relatively constant because it was solving back-office problems." You had to sell a product, which you were constrained by the capital expenditure budget of your customers. It was really difficult to buy these things because you needed a whole IT staff, and the implementation cycles were long.

"With SaaS and cloud computing, that all changed. You can put up applications on the cloud immediately. You can rent them. As a result, the industry started really picking up its innovation, and now software is becoming the entire business [of] companies, because it's running the front facing aspect. It's running how you run your business." And that's what we are at the beginning, and that's going to accelerate for the next decade or so," Bravo said.

Asked how he is viewing blockchain and AI in his investments, Bravo observed: There is no pure play AI company that only does AI. Now we have a portfolio of about \$20 billion of software companies and each one of them within their products has AI functionality and machine learning. That's a huge secondary growth area.

Bravo loves cybersecurity. "The threat vectors are really complicated in companies because half of your systems are in-house and half of your systems are on the cloud. Cyber threats are the one thing that is standing in the way of companies going digital faster."

Bravo emphasized: In terms of the disruption on industries, on one hand software is taking over the operating functions of companies. But on the other side, industrial companies are becoming software companies like Capital One in financial services. The CEO says we're really a technology company, but with the financial services business model."

Bravo added "he is becoming a major play in blockchain, a decision he says is even bigger than the decision he made in 2000 to become a software specialist."

## **“A Conversation with Jane Buchan: Who has FOMO?”** by Jim Altenbach, CFA

On the same panel **“Common Sense from Uncommon Investors”** (above) was Jane Buchan.

I had the honor of doing an exclusive interview with Global Conference panelist Jane Buchan who is CEO of Martlet Asset Management and former CEO of Pacific Alternative Asset Management Co. (PAAMCO). In 2020, she was named by Barron's one of the 100 Most Influential Women in U.S. Finance.

I caught up with her after Global Conference via telephone for an exclusive RealClearMarkets interview.



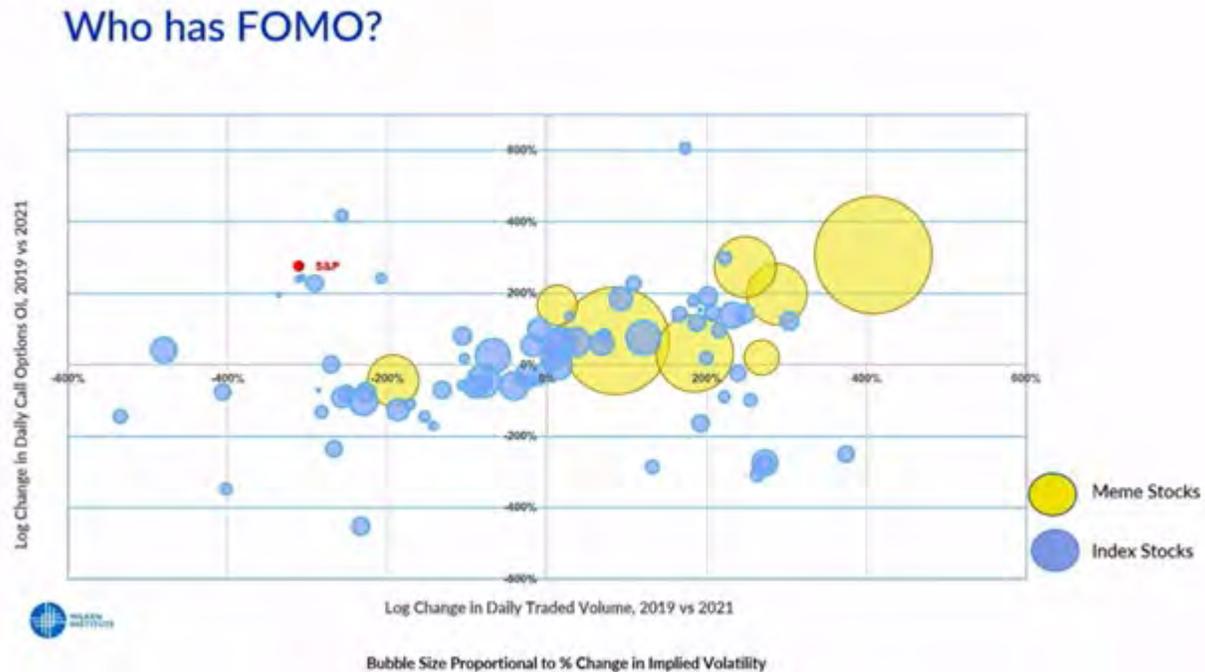
The interview was published recently in RealClearMarkets. I share with RedChip readers highlights. For the full interview see:

[https://www.realclearmarkets.com/articles/2021/12/14/a\\_conversation\\_with\\_jane\\_buchan\\_who\\_has\\_fomo\\_807589.html](https://www.realclearmarkets.com/articles/2021/12/14/a_conversation_with_jane_buchan_who_has_fomo_807589.html)

---

## Who has FOMO?

**Altenbach:** Jane, at the recent Global Conference, you were on a panel with Mike Milken titled “Common Sense from Uncommon Investors.” You commented on FOMO (Fear of Missing Out) and pockets of inefficiency. And you showed this fascinating bubble chart with MEME stocks.



**Altenbach:** You stated that traders of MEME stocks do not play by traditional rules and that creates opportunity. How is that? What is a MEME stock and could you explain the chart?

**Buchan:** Buchan explained that the:

The horizontal X-axis is the change in Stock trading volume (not Option volume) over the past two years and as you can see, it's centered around zero. If you are to the right of the middle vertical line, Stock volume increased.

The vertical Y-axis is the percentage change over the past two years in trading of the Option volume (as measured by the change in Open Interest (OI).)

So, if you're in the middle of that chart ( $X=0, Y=0$ ), the stock volume and options volume hasn't changed much over the past two years.

**Buchan:** “And if you're above the middle line, the Option volumes increased. And if you're below the middle line, the Options volumes decreased. You see Stocks everywhere. I've color

coded the MEME Stocks which are Stocks that you have a lot of talking about on sites such as Reddit and other sites. They're very retail oriented and they're the Stocks that the average person on the street is talking about."

**Buchan:** Buchan explained that most all those MEME Stocks are in the upper right ( $X>0, Y>0$ ), quadrant of the chart which "means the underlying **volume in both the stocks and options has increased significantly.**"

**Altenbach:** Okay. That's an important point.

**Buchan:** Yes.

**Altenbach:** Yes. And the size of the bubble, is that the change in Implied Volatility of the Options over a two-year period?

**Buchan:** Yes. The size of the bubble is proportional to the change in Implied Volatility of the Options over the past two years. A large bubble can be viewed as a window of opportunity. "So, when the bubble is large it is telling me that **people are willing to pay a huge amount to get that Option** and valuation goes out the window."

**Altenbach:** And then Implied Volatility goes through the roof because they start buying the Call Options?

**Buchan:** Correct.

**Buchan:** The important thing is that a large bubble identifies a window of opportunity where you can sell Options, but then hedge yourself against those sold Options by then buying the stock.

**Altenbach:** Yeah. The covered calls.

**Buchan:** "So covered call writing on MEME Stocks looks to be extraordinarily profitable."

"And you probably also want to **purchase a PUT to protect you on the downside because the implied volatility is really going up just in the calls.**"

**Altenbach:** Everybody has FOMO. It's not just retail investors. On another Milken panel, even legendary investor Howard Marks confessed to occasionally having FOMO, declaring he is "human!"

## Rethinking Risk:

**Altenbach:** Okay. Let's go on to the next item, rethinking risk. At the 2016 Global Conference, you were on a panel “**Rethinking Risk**” along with Myron Scholes who made an interesting comment:

“Markets are the only dynamic answer to know what the future is going to hold about risk. Going back to 2008, the levered markets [that's deep out of the money options] of the world were screaming that risks were increasing. Regulators didn't use that information.” Myron was speaking of deep out of the money options.

You took some disagreement with his comment saying: “as a big investor in hedge funds that you would beg to differ in that the Option markets definitely have a lot of information, but they can also be very wrong.” And you've made the point that people adjust their behavior and their rules based on what they saw last time.

Could you clarify your views on the utility of the information to be gained in looking at the levered markets?

**Buchan:** The disagreement was, if you just looked at the Implied Volatility on Options, you could have seen 2008 coming. There's lots of times you'd get big increases in Implied Volatility, and nothing happens. The market is smarter than that.

**Altenbach:** Just for the record, Myron was commenting on the deep out of the money PUT Options not all the series. And there's a difference because he says those are more stable correlations.

**Buchan:** And I would agree. But it's showing risk aversion. It's showing the level of the sentiment of fear. I would argue it shows how much investors think the market is topy, but it doesn't mean it's going to crash. That's the logic.

Buchan also added regarding the regulators using Option market data: “And I've known people at FED and Treasury for over 30 years. I do know they look at these Option markets, and I think that was the other thing that kind of took Myron to task it. Implying that, well, if you just looked at the deep Option markets, you could have predicted the crash and we could have done things about it. I mean, that's a lot of driving in the rearview mirror.”

### **Nassim Taleb:**

**Altenbach:** **Nassim Taleb** has made a name for himself by investing just a little bit of his portfolio in deep out of the money PUTS. Of course, most of them expire worthless, and he just rolls them over. It's a process he describes as “bleeding real slowly,” and basically he says, if you

have patience and you keep doing that and can withstand the pain, the hundred year storm is going to come every 10 years and you'll make windfall profits. That's because the option markets habitually underprice events that are both low probability and high impact.

Question: Have you ever invested with Nassim Taleb or anybody who uses a strategy like he does?

**Buchan:** We have not invested with him. I met him years ago, and I think he's a great options guy. The problem with this strategy is that it requires a tremendous amount of discipline which most people do not have. You have a problem when you get into a portfolio then three years later the client looks and they'll say, I've bled slowly, I've lost money. My three-year trailing numbers are negative 2% per year or something.

**Altenbach:** Yeah, they're bleeding.

**Buchan:** You really have to understand "it's like buying insurance, like buying house insurance. You really have to understand it. And, the difference is when you buy homeowner's insurance, or at least in my case, I write the check for that once a year, not happy the week I write that check, but then I forget about it and I don't get constantly reminded of it."

**Altenbach:** Yeah, I understand. But if you're an investor, you're constantly reminded because as Nassim says, you're bleeding.

**Buchan:** Exactly.

**Altenbach:** So basically, you think strategy could work, but very few human beings could withstand the slow pain?

**Buchan:** Correct.

## **Inflation:**

**Altenbach:** And the last question, of course, a big theme discussed at Global Conference was **inflation**. Is it transitory? Most of the consensus appeared to indicate it was. What are your views on inflation and the supply chain?

**Buchan:** I think there's two fundamental issues here, "Transitory" and "Sustained" inflation. To an economist, transitory has a very specific meaning. And what it means is that any inflation that is occurring is evolving from short term supply and demand and balances. So, we're getting inflation, because people want to buy more gas than we can produce, okay? "Transitory means that it's the market supply and demand that's causing it. And then if you follow that logic

through, what happens as the market corrects, you find a way to get more supply into the system and then the inflation disappears. That's why they call it transitory."

**Buchan:** "Sustained inflation is when you get things like labor contracts negotiating higher wage and benefits. I'm negotiating wages for a five-year contract, and each year I am going to get my wages increased by 2% each year so you know you are going to pay more for gas 5 years from now."

"That is, non-transitory inflation because it's baked into the system. The prices are going up regardless of what's happening to short term supply and demand dynamics."

"I think a lot of the problem with the use of the word transitory here is that when they interview people like Janet Yellen, who's an economist, what they're really saying when they say inflation is transitory is it's being driven by short term supply demand problems." That's why they completely link it to what's going on with the ports. It's being driven. As such it's not getting baked into the system.

However, "it does NOT mean it's going to go away in two weeks. It'll take however long the market takes to correct."

"For me, right now, inflation is transitory because it's mostly being driven by supply and demand dynamics, but you're starting to see some of these unions, like the union at Deere negotiate labor contracts, where it's baking it in over several years. And I think that's a very worrisome development."

**Altenbach:** Okay. Well, I think we covered a lot and I really thank you for joining.

**Buchan:** All right. Thank you, Jim.

---

## A Conversation with Oaktree Capital Co-Chairman Howard Marks



Video: <https://milkeninstitute.org/video/conversation-oaktree-capital-chairman-howard-marks>

The discussion opened with moderator Romaine Bostick, Anchor Bloomberg Markets, asking Marks: "A lot of money has been made over the last couple of years. Some would say aided, if not embedded by monetary policy, how does a normalization of that policy change the dynamic?"

Oaktree Capital Co-Chairman Howard Marks responded: "the question is whether we will normalize. By normalize, I mean will the Fed and the Treasury take their hands off the economy and let it run itself, or will they continue to drive it? I think I'd like to see an economy that did its thing uncontrolled by the Fed. I'd like to see what I call, naturally occurring interest rates, because we all believe that the free market is the best allocator of resources. I'd like to see a free market."

Bostick then asked: "What's the balance between a free market and government necessity during a pandemic, during a recession?"

Marks stated: "Well, look, the actions that the Fed and Treasury took last year had some serious possible negative consequences. The worst of which could still be a

strong bout of inflation and igniting inflationary expectations, would then become self-fulfilling. So that's a very negative possibility. On the other hand, you can't argue that those actions should not have been taken. If the Fed and Treasury hadn't done what they did, I think we would be in a serious global depression right now."

Bostick observed there are a lot of people who agree that what they did was certainly right. There's a lot of disagreement about how long they've kept some of these measures in place. Then asked Marks: "Have we reckoned with the ramifications of keeping the stimulus out there too long?"

Marks replied: "Yes. Well, most people, if they were knowledgeable and if a vote were held, would prefer low interest rates to high. The business does better, people can buy stuff cheaper, rates on mortgages go down, a politicians can spend more money. The Treasury has less trouble paying the debt service. All these people like low rates. The only thing is, low rates is kind of like ice cream, it's such a thing as having too much. So not too many people want to see high rates, but if we keep rates artificially low, then perhaps we overstimulate. Perhaps we have inflation, perhaps the dollar weakens, perhaps the dollar loses its role as the global reserve currency. So there has to be a balance."

Bosti then asked Marks: "You've invested through quite a few market cycles, quite a few economic cycles. This is the one that we're in right now. Does that make your job more difficult or easier?"

Marks replied: "It's tough at this time. We're in an unusual circumstance. First, the cycle we've gone through in the last 18 months of the pandemic was not really a normal cycle. Normal cycles in my opinion, are the result of people becoming too optimistic and overshooting intrinsic value, fair value, and then a correction toward fair value, but it carries through to underprice. Then people get too pessimistic and then a correction back toward fair value, but it overshoots and heads to excessive. So excess and correction is the normal source of a cycle. This cycle had nothing to do with the economy."

When asked, "How do you determine intrinsic value?" Marks responded that normally you figure out what the cash flows will be and discount those back to the present at a fair discount rate and apply windage for uncertainty.

He added "First of all we had the lowest interest rates in history, and if something grows faster than the discount rate, then in theory it's worth infinity. So it's hard to operate in a world where things are worth infinity."

Marks observed “on the one hand, you want to invest on the strength of the economy and don’t want to be left behind and FOMO is a concern. And on the other hand, it is a time to be careful because the worst of loans are made in the best of times.”

## Energy and Commodity Markets: Structural Bull or Earthbound?

Few markets have seen more fundamental changes than energy and commodities. Accelerated demand for microchips has led to rising metal prices, decarbonization and electric vehicles are disrupting the energy market, and top companies are supporting initiatives such as the broad deployment of hydrogen. What can energy and commodity firms and investors do to stay ahead and how are they supporting policy?



Video: <https://milkeninstitute.org/video/energy-commodity-markets>

Moderator Brian Sullivan, CNBC anchor, opened the panel stating: "What's the best performing commodity of 2021? The answer is coal. Coal's up 190% to 200%. Who thought 2021 will be the year of the fossil fuel? It's amazing, isn't it?"

Sullivan asked Eric Dresselhuys, CEO of ESS Inc.: What's the right pace between the transition, making sure we eliminate climate change as we can, but also not making sure people freeze to death, because that also is not good?

**A Coordinating Transition Plan:** Dresselhuys responded: "A couple of things. The first is, we're not in the situation Europe (and other places) are in, because we over-invested or we over pivoted to renewables. So sometimes when people say, "Oh, renewables are the problem." Not so much.

"The perfect storm is easily solved. A couple of rolls of Owens Corning insulation would have helped keep gas-fired peaker plants online in Texas." He added "We're going to decarbonize the system, everybody says that, but then we're also going to electrify everything." So that's a bunch of "new load."

800 million people in the world don't have any energy at all and 2.1 billion people who don't have a clean form of cooking fuel. This translates to creating "two and a half times the total electricity consumption that we have today by 2045."

He stressed we won't "get a real moonshot plan without real coordination. Where the failure happens, Putin notwithstanding, is that nobody wants to sit down and do the heavy math of planning that. Anybody who thinks we're going to totally turn off natural gas and petroleum tomorrow, that's not where we are."

"There's a fair amount of subsidy that goes into fossil fuels today, approximately \$6 trillion to \$7 trillion a year globally. We discuss the renewable transition, the first thing asked, is how are we going to pay for it? And the IEA report that's gotten a lot of mentions, magically, that costs \$7 trillion a year!"

**Africa Energy Transition:** Sullivan asked Bryant (ABC) Orjiako, Chairman of Seplat Petroleum: "Two billion people are without clean cooking fuel. A billion and a half of that without clean drinking water." Africa is one of the fastest growing continents in the world, incredible wealth but incredible poverty. "Where do you see the energy transition happening? What's your timeline?"

Orjiako replied: "One of the biggest challenges in energy transition is the discordant tone that people are beginning to sing. We see a bull in commodity prices because there is a completely uncoordinated plan. As we race towards transition, the real message is that energy transition, zero or net carbon emission, is not the same as zero fossil fuels."

"Where we were wrong is there was a massive withdrawal of investible capitals from fossil fuel investments and quite a lot of funds went into renewable. But once you take away the required funds to make sure that you balance the market, with every slightest hiccup, the energy prices went to the roof. That's why you see even coal being as expensive and as high as it is today."

He added "in Nigeria, 200 million people live there. With installed capacity for grid power, 12,500 megawatts, availability of grid power to the population, is only 3,000 megawatts to 4,000 megawatts. In the meantime, you have 25,000 megawatts of grid power supplied by diesel generators. In this same country, more than almost 60% of the population have no electricity."

"Eighty percent of the energy need is actually in the homes, where they are using firewood, kerosene to provide the energy they need for cooking. Added to all of these, is 'the health challenges, the poverty, so how do you prioritize to transit to renewable

energy overnight when you have the abundance of fossil fuels in that environment that can leapfrog the provision of power?”

“We'll continue to do our upstream business, where we introduce efficiency and use every available technology to make sure that we run a very low carbon intensity operation. It's a mix. The midstream business, is where we harness all of the gas resources. We are bringing every opportunity to have renewable, especially in the off-grid possibility,” he added.

**Energy Prices:** Sullivan Asked Angela Rodell, CEO of the Alaska Permanent Fund Corporation: "Where do you see prices going? Because you have to be an oil. Your job is to manage the money and make sure the Alaskans get taken care of?" Rodell responded: "I wouldn't be surprised if we saw oil pop over \$100 for a while. But who would have thought it would be negative a couple of years ago, for a moment? So, that speaks to the volatility. But usually, volatility means opportunity as an investor."

**Carbon Capture:** Sullivan asked Nick Stork, is CEO of Archaea Energy about carbon capture. Stork explained that Archaea Energy's business is to decarbonize existing fossil fuel energy infrastructure take gaseous emissions that would otherwise go into the atmosphere, primarily from landfill gas. "We remove the non-methane components and then we deliver a pipeline quality, chemically-identical, renewable natural gas as a green substitute that can work within existing energy infrastructure. I think the future is clearly going towards electrification, but today it's maximizing the fossil fuel energy."

Stork added: "The attractive Green Premium, is geological sequestration in areas that are also big producers of fossil fuels. It's sequestering the CO2 into the ground, either with enhanced oil recovery, or going the final step and permanent geological sequestration without any sort of enhancement or recovery angle. Geological CO2 sequestration wells at the basins that are the best producers in the United States for fossil fuels, and they are also the best basins for geological sequestration. 'We can still enjoy the base load benefit, or the energy density benefit of fossil fuels by doing CO2 sequestration.'"

## **Cybermania: Managing Information, Disinformation, and Disruptions**

The war for influence and security is being waged on a new front. The last year has seen an unprecedented spike in cyberattacks, data breaches, and troubling falsehoods online. Despite trends towards digitization and disorder, it is still unclear who—if anyone—will take stewardship of the digital frontier. In lieu of security, we are left to grapple with ambiguity and the aftermath of cyberattacks in the meantime. How can we better protect ourselves?

This year's Milken Institute invited some of the world's most notable CEO's and Directors who are moving Information Technology and software and systems to combat information security threats.



Video: <https://milkeninstitute.org/video/cybermania-disinformation-disruptions>

### **Internet Topology**

The group discussed the topology of the internet. The current model is a “wild west” architecture where regulation and protections are limited. The following discussions range from business response and government response to cyber threats.

### **Business**

#### **Phishing for more than Compliments**

The group gave many examples of phishing in email exchanges with employees and outside clandestine interests; where, it's estimated that 40% of ransomware is delivered through email. These ransoms have resulted in an estimated \$5.2 billion of

cryptocurrency as payments according to Niloofar Razi Howe – Senior Fellow, Cybersecurity Initiative, New America Foundation and Senior Operating Partner, Energy Impact Partners.

US company response according to Tim Sadler – Co-Founder and CEO, Tessian- is: "They invest heavily in software to solve business problems compared to maybe some countries in Europe."

Phishing has become a problem that only the non-productivity of looking at one's phone at work will overtake for company costs.

## **Foreign Threat**

The group agreed and discussed government funded groups from China, Russia and North Korea. These authoritarians are attempting to take governance of the open internet.

"The Chinese Government has subsidized Huawei to the tune of 75 billion" and infrastructure to recipient countries. These systems allow the Chinese government access to data and private conversations according to Jacob Helberg – Angel Investor and Senior Advisor, Center on Geopolitics and Technology, Stanford University, and Author of "Wires of War."

Niloofar Razi Howe later stated that "China has exported its surveillance platform to 139 countries around the world on predatory lending terms."

## **Government**

### **Deterrence**

Tim Sadler suggested that the US government needs to build a Cyber force for security of internet by saying "Every single organization really of any size is having to think about "how do we build" a military air force, navy, cyber?"

Examples for government control seemed to really spark the collective hunger for authoritarianism in Karen Kornbluh, Founding Director, Digital Innovation and Democracy Initiative and Senior Fellow, German Marshall Fund of the US. Examples include using Germany's NetzDG law which "forces companies to take down thing that they deem as hate speech."

She expanded: "The Germans who have this background where they've seen what propaganda can do, they've seen what centralized control can do. So they understand monopoly and it's tie towards the rise of fascism. They understand propaganda and it's being tied to the rise of fascism. And they are much more serious, they put in place a law called the NetzDG law, which forces companies to take down content really quickly if it's identified as hate speech." We could never do anything like that. We don't regulate speech, we have no hate speech laws.

## **Control**

It was suggested by Howe: "So instead of defending at the perimeter or inside your network, you have these nodes where all traffic flows." She continued to defend this idea using the bank transaction for \$10,000 as a government reason.

The idea of government having "nodes" or plainly "switches" what they can control for "correct speech" and given the same weight as drug lords and criminal interdiction is alarming.

## **Government and Business Collective**

Helberg suggested "If something is being fanned by a foreign government, if you have better intel coordination between the private and the public sector, you can develop ways to trace back the flow of money, the ties between different accounts and relationships between actors based here and actors based abroad."

The dividing line between private and government mix suggested for a solution could only be topped is alarming for a democratic society.

## **Summary**

This presentation is very important to understand where ideas to control criminal behavior, speech, and information in the age of the internet.

## Things that Will Blow Your Mind

The crises of 2020 disrupted and constrained our lives unlike anything that's come before. However, with great leadership, great disruption can be transformed into great opportunity. Three visionary entrepreneurs will let you in on their breakthrough innovations—and they will blow your mind.



Video: <https://milkeninstitute.org/videos/things-that-will-blow-your-mind>

Moderator, Richard Sandler, Executive Vice President, Milken Family Foundation, prefaced the session: We are going to explore the work that is being done, to understand the most powerful and complex computer there is, our brain, the human brain. Our brains each contain over 100 million neurons. It is these neurons that make us who we are, what we think, how we feel. In 2017, two of our panelists who have joined us today had just formed their companies.

### Introducing the Panel

**Sandler:** Sitting to my immediate left is Bryan Johnson, who was here with us in 2017. Bryan is the founder and CEO of Kernel, a builder of next generation non-invasive brain machine interfaces. Bryan has an MBA and is an investor and entrepreneur. He founded a little company called Braintree Venmo, which he was able to sell to PayPal in 2013 for \$800 million. Bryan has a tremendous interest in science, though he and I are the only non-PhDs up here on the panel. I think Bryan qualifies as a scientist with all

he's learned over the years. And he has put his money to work by personally investing in a fund, which is focused upon the predictable engineering of atoms, molecules, and organisms, out of which comes Kernel.

**Sandler:** Sitting to the left of Bryan is Dr. Mary Lou Jepsen, who's a CEO and founder of Openwater, a breakthrough medical technology company. Mary Lou has been named as one of the 100 most influential people in the world by Time Magazine. In addition to CNN top 10 thinkers in science and technology. She was the executive director of engineering at Facebook. She held a similar role at Google, in addition to being a professor at MIT. Besides her work at Openwater, today she serves as a director on the board of Lear Corporation of Fortune 150 automotive components supplier and Luminar technology, a pioneer in LIDAR being used in autonomous driving.

**Sandler:** And last and certainly not least, our youngest of our panel members, Dr. Trevor Martin. Trevor co-founded and is the CEO of Mammoth Biosciences. It has a mission to enable the next generation of CRISPR based transformative uses. His areas focus includes a novel class of affordable, effective, and rapid CRISPR enabled molecular diagnostics and therapeutics, that will allow individuals worldwide to better understand their health and live their lives through novel families of nano sized CRISPR proteins.

Trevor earned his PhD in Biology from Stanford and has been a featured healthcare honoree on Forbes 30 under 30 list, is on that was Forbes 30 under 30 list. He's been on Fortunes 40 under 40 list and was EY's Entrepreneur of the Year in 2021. One of the co-founders of Mammoth Bioscience with Trevor is Dr. Jennifer Doudna, of UC Berkeley, who won the Nobel Prize in Chemistry in 2020 for her role in the discovery of CRISPR. So let us focus our brains, whether it's 3%, 48% or whatever percent of our brains we're allowed to use. For this next hour to try to understand the fascinating and life changing work, these three talented individuals are doing through nonprofit. I mean, through for-profit, excuse me. Through their for-profit companies to better understand and positively affect our lives and the lives of our loved ones.

## **Kernel**

**Sandler** asked Bryan Johnson Founder and CEO, Kernel, please tell us what advances and work you've been doing at Kernel that we should know about.

**Johnson:** We have come up with an instrument called Kernel Flow (Cap placed on your head) which via lasers, enables measurement of the effect of various forms of stimuli on the brain and the creation of reference ranges for those measurements. If we want to

know the time we have watches, if we want to know our heart rate, we look at our wearables. One of the only things we cannot consistently measure is our brain and our minds. When we take a baby to the doctor and the doctor says, "Your child is in the 75th percentile for height and the 37th percentile for weight." They say that because there's a statistical basis for the reference range creation. If there's not enough measurement, you can't say meaningful things about a given measurement. And a device like Kernel Flow enables this statistical range creation by providing a basis of measurement for the brain.



## Openwater

**Sandler:** Okay. Mary Lou so what has been going on in Openwater? Last time you were here you were talking about imaging and MRIs and shrinking and wearables that actually could read thoughts and read what's going on in your brain. So, tell us what you've been doing at Openwater these last several years.

**Mary Lou:** Four years ago, I stood on this stage as I was just starting Openwater and talked about the journey to devices aimed at reading our minds. And four years later, I'm here to tell you we have changed our focus from reading your mind to saving your mind. It's more urgent. We're now doing diagnostics and therapeutics with our devices. But our long-term goal is unchanged from four years ago. Reading and writing our bodies and brains, and massively lowering the cost of medical imaging.

**Mary Lou:** We have developed new medical modalities and are using them to more quickly change the outcomes of dreaded brain diseases like **Stroke** and **Alzheimer's**. We are in human trials in hospitals now, as we look to achieve dramatic outcomes here. Outcomes that could save millions of lives, even hundreds of millions of lives over our lifetimes.

We are trying to exploit advances in technology to improve the resolution of medical imaging and lower the cost of devices. We are using \$1 CMOS high resolution camera chips in ways they not designed for, to capture the time information of infrared light passing through your body, not just its brightness but by using the waves and the wavelength of light. We're the first and only to do it. It's new has enabled us to capture high resolution detailed blood flow, better than anything in the recorded literature.

## **Stroke**

**Stroke is** the number two cause of death worldwide more than COVID. **And worse, it's the number one cause of long-term disability.** After strokes, regions of the brain are starved of blood of oxygen and start dying. It's a race against time. For most people that race is lost, hours, literally hours are lost waiting for diagnosis while the brain is dying. Each of us in this room know someone for whom that delay caused ghastly damage that can never be reserved. 60% of severe strokes leave the patients either dead or not able to walk, talk or care for themselves. This is absolutely a time to diagnosis this crisis.

But as far as our progress at Openwater, we've been in hospitals for a year now in the ICU on these carts. We've gathered data on the impaired right left hemisphere blood flow state of stroke victims, and fine tune the system and shrunk it into a **headset**. So, we have this headset headed into many more hospitals early next year. This existing headset is small enough to go into every ambulance or clinic or emergency room, doctor's offices, at home use. Cost structures, in volume production, are projected to be equivalent to the cost of a decent mobile phone.



But we can create different outcomes in two ways. **First, proper and prompt care within two hours means stroke victims have a 90% chance of no neural deficit.** I'm going to repeat that. Speedy diagnosis can eliminate deficits in 90% of stroke victims. So, this **headset** is doing the diagnosis in the ambulance to get you to the right hospital quickly and get you the therapy you need. **Seconds. Because we can see blood flow anomalies in the brain using gear that can be low cost and portable, we believe that we may be able to predict strokes,** and thus prevent strokes altogether with our home use, really. So, for a year now we've been in human trials in hospitals and are now expanding to more hospitals. We're working with the FDA and other regulatory agencies to speed bringing this to all. In reach, there is no reason a stroke has to kill anymore or permanently disable. But also in consequence, the value to society from this will be vast. **This is an immense lifesaving opportunity and a multi-billion dollar one. Reimbursements of \$1,000 per stroke diagnosis already exists in the US via Medicare Medicaid, that was approved last year.**

### **Alzheimer's, Glioblastoma, and bursting clots**

So, what else can we do with the new modalities that don't just look at the intensity of light and sound, but also the wave structure. **Our next focus in R&D is, well three. Alzheimer's, Glioblastoma and actually bursting clots in the ambulance** so you can do it even before you get to the hospital. But with respect to Alzheimer's, hundreds of drugs have failed. It seems time to try something else. We have promising early results in the lab, about being able to restore neuron growth in Alzheimer's by touching the neurons with a new kind of device for building. This may be able to slow the advance or

even prevent Alzheimer's. And we're also looking at glioblastoma (an aggressive brain cancer), we seem to be able to selectively destroy fast growing cancer cells that have different membrane and nucleus properties compared to healthy cells. And thus have different resonant frequencies that may enable us to kill those cells and leave the healthy cells untouched. Unlike chemo and radiation that do damage to all the cells, healthy and unhealthy

## **Mammoth Biosciences**

**Sandler** asked Trevor Martin, Co-Founder and CEO, Mammoth Biosciences, "Tell us about your work at Mammoth Biosciences."

**Martin:** We have developed the CRISPR-Cas9 (Clustered Regularly Interspaced Short Palindromic Repeats) system which is a tool for cutting DNA at specifically targeted locations. You think of it as a kind of programmable search engine that can be used to detect DNA and RNA.

So, it really enables you to search through very complex biological, kind of millions of chemicals, whether that's a cell or a test tube that has a bunch of different DNA and RNA molecules in it. And easily kind of control F sequence so that you can then do kind of whatever you want with it, as we'll see. Now for a short story. Bacteria are much like us, they have to fight infections, they have an immune system, basically. In particular, they're fighting off viruses, they don't want exogenous genetic material entering into them. So CRISPR provides the means for the bacteria to program the Cas9 protein with the guide RNA to hunt and kill a specific virus like Covid19.

Citations:

- 1) For a full discussion of the Philips Curve, see: Jim Altenbach, "The Global Economy In a Time of Transition," RealClearMarkets, [https://www.realclearmarkets.com/articles/2019/07/25/the\\_global\\_economy\\_in\\_a\\_time\\_of\\_transition\\_103833.html](https://www.realclearmarkets.com/articles/2019/07/25/the_global_economy_in_a_time_of_transition_103833.html) (July 25, 2019)
- 2) For a discussion of the then pending tax proposal, see: Jim Altenbach, "The Trump Tax Plan: Cutting the Gordian Knot of Tax Policy Debate?," RealClearMarkets, [https://www.realclearmarkets.com/articles/2017/05/15/the\\_trump\\_tax\\_plan\\_cutting\\_the\\_gordian\\_knot\\_of\\_tax\\_policy\\_debate\\_102687.html](https://www.realclearmarkets.com/articles/2017/05/15/the_trump_tax_plan_cutting_the_gordian_knot_of_tax_policy_debate_102687.html) (May 15, 2017)
- 3) For a discussion of the Trump trade policy, see: Jim Altenbach, "Trump Trade Policy: Navigating a Changing Paradigm in Global Trade," RealClearMarkets, [https://www.realclearmarkets.com/articles/2018/06/12/trump\\_trade\\_policy\\_navigating\\_a\\_changing\\_paradigm\\_in\\_global\\_trade\\_103300.html](https://www.realclearmarkets.com/articles/2018/06/12/trump_trade_policy_navigating_a_changing_paradigm_in_global_trade_103300.html) (June 12, 2018)
- 4) For a discussion of the challenges of labor participation, see: Jim Altenbach, "Globalization in the Crosshairs?," RedChip Special Report, RedChip Companies, <https://www.redchip.com/articles/920/globalization-in-the-crosshairs> "Panel: Labor Participation and Underemployment" (Fall 2017, p.5)

Also see:

- 5) David Ranson, "Synopsis: Briefing Points on the Global Market Outlook as of April 2018," HCWE & Co., April 24<sup>th</sup>, 2018
- 6) Altenbach, "Globalization in the Crosshairs?," Panel: Beyond the Dollar, op. cit., p. 22.
- 7) David Ranson, "Brexit: policy errors, political terror, economic opportunities," Economy Watch, HCWE & Co., July 15, 2016, p.2-3.
- 8) Wayne Jett, "The Fruits of Graft: Great Depressions Then and Now," Launfal Press (2011), p.93
- 9) Gwynn Guilford, "Everything we thought we knew about free trade is wrong," QUARTZ, <https://qz.com/840973/everything-we-thought-we-knew-about-free-trade-is-wrong/> (2016)
- 10) Nathan Lewis, "China Is Laying The Foundation For The Next World Gold Standard System," Forbes.com, <https://www.forbes.com/sites/nathanlewis/2016/05/05/china-is-laying-the-foundation-for-the-next-world-gold-standard-system/#2b44bd72689e> (May 5<sup>th</sup>, 2016)
- 11) W.J. Mason, "What We Get Wrong When We Talk Trade," Jacobin, <https://www.jacobinmag.com/2017/01/trump-mexico-trade-tariff-import-pena-nieto> (2017)

## About the Author

James Altenbach, CFA is an investment advisory professional in the Los Angeles area. He has been principal of Florentez Investment Management. Since the firm's inception, he served as an advisor to the President on strategic matters including research and proprietary analysis and product development on ETFs. He writes published articles and reports on the global economy, financial markets, and investing. He possesses over 26 years of research, financial advisory, institutional relationship, and management experience, and has authored numerous published reports and articles. Previously, he was an equity research analyst with RedChip Companies. He did his undergraduate work in business administration (Finance) at California State University, Los Angeles, with distinction, and holds the designation of Chartered Financial Analyst (CFA). He can be reached at [j.altenbach@outlook.com](mailto:j.altenbach@outlook.com)



# About RedChip

*RedChip Companies, an Inc. 5000 company, is an international small -cap research, investor relations, and media company headquartered in Orlando, Florida; with affiliate offices in San Francisco, Seoul, Hong Kong and Singapore. RedChip delivers concrete, measurable results for its clients through its extensive global network of small -cap institutional and retail investors. RedChip has developed the most comprehensive platform of products and services for small -cap companies, including: RedChip Research(TM), Traditional Investor Relations, Digital Investor Relations, Institutional and Retail Conferences, "The RedChip Money Report"(TM) television show, Shareholder Intelligence, Social Media and Blogging Services, and Webcasts. RedChip is not a FINRA member or registered broker/dealer. The information contained herein is not intended to be used as the basis for investment decisions and should not be construed as advice intended to meet the particular investment needs of any investor. The information contained herein is not a representation or warranty and is not an offer or solicitation of an offer to buy or sell any security. To the fullest extent of the law, RedChip Companies, Inc., our specialists, advisors, and partners will not be liable to any person or entity for the quality, accuracy, completeness, reliability or timeliness of the information provided, or for any direct, indirect, consequential, incidental, special or punitive damages that may arise out of the use of information provided to any person or entity ( including but not limited to lost profits, loss of opportunities, trading losses and damages that may result from any inaccuracy or incompleteness of this information). Investors are expected to take full responsibility for any and all of their investment decisions based on their own independent research and evaluation of their own investment goals, risk tolerance, and financial condition. Investors are further cautioned that small-cap and microcap stocks have additional risks that may result in trading at a discount to their peers. Liquidity risk, caused by small trading floats and very low trading volume can lead to large spreads and high volatility in stock price. Small -cap and microcap stocks may also have significant company-specific risks that contribute to lower valuations. Investors need to be aware of the higher probability of financial default and higher degree of financial distress inherent in the small-cap and microcap segments of the market. The information, opinions, data, quantitative and qualitative statements contained herein have been obtained from sources believed to be reliable but have not been independently verified and are not guaranteed as to accuracy, nor does it purport to be a complete analysis of every material fact regarding the company, industry, or security. The information, opinions, or recommendations are solely for advisory and informational purposes and are only valid as of the date appearing on the report and are subject to change without notice. Statements that are not historical facts are "forward-looking statements" that involve risks and uncertainties. "Forward looking statements" as defined under Section 27A of the Securities Act of 1933, Section 21B of the Securities Exchange Act of 1934 and the Private Securities Litigation Act of 1995 include words such as "opportunities," "trends," "potential," "estimates," "may," "will," "could," "should," "anticipates," "expects" or comparable terminology or by discussions of strategy. These forward looking statements are subject to a number of known and unknown risks and uncertainties outside of the company's or our control that could cause actual operations or results to differ materially from those anticipated. Factors that could affect performance include, but are not limited to those factors that are discussed in each profiled company's most recent reports or registration statements filed with the SEC. Investors should consider these factors in evaluating the forward looking statements contained herein and not place undue reliance upon such statements. Investors are encouraged to read investment information available at the websites of the SEC at <http://www.sec.gov> and FINRA at <http://www.finra.org>*

*Additional information about the subject security or RedChip Companies Inc. is available upon request. To learn more about RedChip's products and services, visit <http://www.redchip.com>, call 1 -800-RedChip (733-2447), or email [nfo@redchip.com](mailto:nfo@redchip.com).*

