



**Velocity of Content and the Coronavirus Outbreak  
Interview with Peter Revill, Clarivate Analytics**

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**KENNEALLY:** With nearly 250,000 of COVID-19 confirmed worldwide, and almost 10,000 deaths to date resulting from the coronavirus, scientists around the world are attempting to develop vaccines and treatments as quickly as possible.

Welcome to Copyright Clearance Center's podcast series. I'm Christopher Kenneally for Beyond the Book. A global health emergency can occur without warning, as we are now seeing with the coronavirus outbreak. Recent examples of the increasing activity to tackle this disease, writes Peter Revill, of Clarivate Analytics, include a collaboration between the Gates Foundation, Wellcome Trust, and MasterCard, to establish \$125 million seed fund to accelerate development of drugs that treat COVID-19, as well as the increasing number of biopharma companies with drug development activities against COVID-19.

Peter Revill is tracking the metrics of scientific innovation in the midst of our pandemic, and he joins me now from Barcelona, Spain. Welcome to the program, Peter.

**REVILL:** Hello.

**KENNEALLY:** We are very happy you can join us at this very serious time for the entire planet, Peter. You are a life sciences product manager at Clarivate Analytics, and you currently coordinate Clarivate's coronavirus resources initiative. We are very fortunate to be able to turn to you and learn more about the velocity of content for published materials related to COVID-19 research, and what that may tell us about the pace of innovation in the fight against this pandemic.

Let's begin by talking about the sources of your information. You have a suite of databases at Clarivate that give you a running total of reported activity. Explain a little more about that.

**REVILL:** Yes, we do. We have several databases that cover life sciences, and also basic research in the sciences, as well. Probably the most popular one that people know of is Web of Science. I come more from the life sciences side, so our databases



cover discovery activities, and then research and development to produce – producing drugs and vaccines for treatment of various conditions.

**KENNEALLY:** We have been through this before – you have been through before, I should say, because the particular coronavirus that causes COVID-19 is not the first such example. There were other outbreaks, less serious, as we look back. There was the case of MERS in 2012. Let's begin by comparing and contrasting. What was the experience as far as research activity and innovation that came out of MERS?

**REVILL:** Sure. So we can take a look back to MERS, and we can take a look even further back to 2003, to the first SARS, also caused by coronavirus. Even before that, coronavirus was known about very much in the context of veterinary science because it caused various conditions in animals. But we really first became aware of it as a potential problem for humans in 2003. With the – really the first event that was of big human significance was some respiratory diseases that were of unknown origin in the Guangdong province in China, and that was in 2002.

And then in 2003, April 2003, almost 17 years now, the cause of that respiratory disease was found, and that was found to be coronavirus. So we had that initial point, if you like, of human contact and human awareness of the disease, and what the causes of it are, as a viral cause.

Then, as you've said already, in 2012 the cause of the Middle East Respiratory Syndrome was found also to be coronavirus. So we've had these triggers before, we've had these warnings, as well, that this virus can cause problems for people in the respiratory effect that it has on us.

**KENNEALLY:** So Peter, thanks for that important history lesson there. We are dealing with something that is not, it's a very important point. And you mentioned the Middle East Respiratory Syndrome that emerged in 2012. You were able to look at the velocity of content there, the number of literature publications, the number of drug development events. What do you see when you scan those numbers?

**REVILL:** Yes. Very little inflection in activity. So when I say activity, what I refer to as we look to try and develop vaccines or treatments for respiratory syndromes caused by coronavirus, we can measure different types of activity that reflect really where the drug development industry and where our health systems are investing their efforts.



So you mentioned patents and you mentioned other metrics of drug development activity. So really at the base of that, there's publications, so these are publications in scientific articles, in conferences, even press released from companies that are developing antivirals. So you might imagine that the publications will – they are the cumulative knowledge of what we have about coronavirus. Now another form of publication is patent, and that's really a knowledge – a community of knowledge of protection of ideas. So following the MERS discovery that coronavirus causes the MERS in 2012, we saw very little uptake of publication of patents, a slight increase in the number of publications of journal articles per year, and a very, very slight increase in the actual activity around drug development. But almost nothing in the way of clinical trials. So it's all pre-clinical, if there is any.

KENNEALLY: And I guess that may reflect that there were relatively few cases of MERS, certainly relative to the situation we face today in 2020 from COVID-19. So contrast the example of MERS with what we are seeing today, and the research patterns that you can detect around COVID-19.

REVILL: Sure. So with MERS, as you mentioned, relatively fewer cases, and we saw a small increase in the numbers of journal articles as a result of the MERS outbreak. But as I said, really what I use to measure drug development activity are what we call milestone events. So if you can imagine to take a drug through from first discovery of a chemical compound or a vaccine, and take that through to a point in which an organization or a company can use it, is allowed to use it in humans to treat the disease, requires several steps for the development of that compound.

Those steps will be initial discovery of some drugs, either a collection or a library of drugs with some indication they may antiviral, anti-coronavirus activity. And then through the process of developing drugs in the pre-clinical context of cell-based assays and testing them in animals to see if, in models of human conditions, whether it is likely to work there for possibly in humans. And then we go from out of animals for the pre-clinical phase into the clinical phases of development.

So each time you move a drug through those phases, these are what are called milestone events, and they're what are used to measure activity, if you like, around drug development.

So as we went through the period around 2012/13, 2014, when once we had understood that the cause of Middle East Respiratory Syndrome is coronavirus, we saw a very slight uptick in the amount of milestone events for drug development, but they were all pre-clinical, so they're discovery and perhaps some testing in animal



models. But there's nothing in the way of studies in humans, or very little, as a result of that outbreak.

But then there's a huge difference as we come to the current one, this pandemic, where immediately in the first two months of this year we've seen a great flurry of activity around those drug milestone events. Large numbers of organizations are really staking their claim and saying that we have these compounds. These compounds, we're taking them into development as potential vaccines or cures for this disease, most remarkably of all, the clinical trials. So that's a real statement of intention to develop a treatment.

And so we've seen, for example, over the years, typically around about two, three, four new clinical trials a year since 2016. 2019, we saw new five new clinical trials added. In the first two months of this year, 244 new clinical trials. And now we're up at 470, reflecting last week since I first published the blog post in the Copyright Clearance Center blog site.

KENNEALLY: So Peter Revill, this is the kind of news that listeners should find heartening. Of course, it is still going to take some time before all of this research activity yields a result, but it is remarkable to see it, and it is happening globally. People are leaving no stone unturned in the effort to attack this disease.

REVILL: Yes. And there's two messages there. Yes, one, it is heartening, you're absolutely right. And really looking at the progression over time since the 17 years that we've known about coronavirus as a cause or potential cause of disease, this big uptick now really means yes, we are ready to make this commitment to develop drugs and vaccines to treat people because committing to a clinical trial is no small deal. And so yes, all around the world, companies, governments, research institutions are pulling together and, as you say, leaving no stone unturned, and that includes what we understand of vaccines and drugs for treating the disease. But also it includes many other clinical trials that combine, perhaps, some natural sources that are known to have antiviral properties and even behavioral therapy. So we're leaving no stone unturned,

KENNEALLY: Well, Peter Revill, as a life science product manager at Clarivate, you've been able to share with us your insights around this research activity. And I want to close our discussion today with asking you to share a little bit about what life is like for you there in Barcelona Spain under what amounts to a national lockdown. We are speaking on Friday, March 20th. For listeners in the United States and other countries who look on Spain and wonder just what daily life is like, give us a sense of how people like yourself are coping at this moment.



REVILL: Yeah, yeah. So here in Spain, I live just outside Barcelona, and we've had – really last Friday was the day that everybody was sent home from work. People who didn't need to travel were asked to stay at home. So we've had now a week of lockdown. It started gradually over the weekend that people who needed to get out and get supplies in were doing so. And then through the weekdays of this week, pretty much everybody's taking this seriously. It's super quiet out on the streets. I look out from my balcony, and there's nobody really around.

We can go out, walk our dogs, and go get supplies. The shops are open – at least the food shops are. I went out a couple of days ago and it was pretty desolate. The aisles were empty of people, though shops were reasonably well-stocked. But as I say, everyone here taking it seriously, staying at home and trying to at least get to a point where we can stabilize the spread of this disease in Spain. A large number of confirmed cases, over 18,000 here.

KENNEALLY: Well we do wish you the very best. We wish everyone in Spain the very best. We appreciate you taking time at this very serious moment in global history to share with us your insights on the research to fight this pandemic.

Peter Revill, Life Sciences Product Manager at Clarivate Analytics. Thank you for joining me on Beyond the Book.

REVILL: Yeah, thank you very much for having me. It's been a pleasure.

KENNEALLY: Beyond the Book is produced by Copyright Clearance Center. Our co-producer and recording engineer is Jeremy Brieske of Burst Marketing. Subscribe to the program wherever you go for podcasts, and follow us on Twitter and Facebook. The complete Beyond the Book podcast archive is available at [beyondthebook.com](http://beyondthebook.com). I'm Christopher Kenneally. Thanks for listening, and join us again soon on CCC's Beyond the Book.

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