IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF DELAWARE

ARBUTUS BIOPHARMA CORPORATION and GENEVANT SCIENCES GMBH, *Plaintiffs*, v. **MODERNA, INC. and MODERNATX, INC.,** *Defendants*.	**Case No. 1:22-cv-00252-JDW**

MEMORANDUM

Patent litigation is complicated, so expert testimony often has outsized importance to explain complicated issues to juries. With any expert, there's a performative aspect: polished charts; dense terminology; head-spinning numbers; and confident conclusions. But an expert has to have more than vibes for a judge to admit his testimony. Undergirding the confidence, there must be substance. When there's not, the expert testimony is little more than aura farming in the courtroom, projecting confidence and complexity to build credibility. Arbutus[1] challenges three of Moderna's[2] proffered experts, arguing that their opinions lack the right substance. I conclude that Moderna's damages

[1] "Arbutus" refers collectively to Arbutus Biopharma Corp. and Genevant Sciences GmbH. Because Genevant entered into some relevant agreements separately from Arbutus, I will at times in this opinion refer to it separately.

[2] "Moderna" refers collectively to Moderna, Inc. and ModernaTX, Inc.

expert Dr. Christopher Vellturo uses a flawed methodology and therefore cannot offer his reasonable royalty opinions at trial. To the extent they are still relevant in the wake of various summary judgment rulings that I have issued, Dr. Robert Prud'homme and Dr. Daniel Anderson can offer their opinions about the reverse doctrine of equivalents and obviousness, respectively.

I. BACKGROUND

Arbutus claims to have developed lipid nanoparticle ("LNP") technology that allows for the transport of fragile nucleic acids, such as mRNA, across a cell's membrane so that they can help fight off foreign viruses. Arbutus owns two types of LNP patents. One category of patents, referred to as the "Molar Ratio Patents,"[3] claims a particle comprising a nucleic acid and the various lipids in specific molar ratio amounts. The other category of patents, consisting of just the '651 Patent,[4] claims a method of developing LNPs involving continuously and rapidly mixing two solutions to form lipid vesicles that can encapsulate nucleic acids.

After Arbutus's patents issued, Moderna developed a nucleic-acid vaccination that uses mRNA to fight the virus that causes Covid-19. To ensure that the mRNA could safely cross the cellular membrane, Moderna's vaccine utilizes LNP technology, which Arbutus claims infringes its patents.

[3] The Molar Ratio Patents include U.S. Patent Nos. 8,492,359; 9,364,435; and 11,141,378.
[4] U.S. Patent No. 9, 504, 651.

Arbutus filed suit on February 28, 2022. Most of the claims in the case have survived summary judgment. Arbutus now moves pursuant to Federal Rule of Evidence 702 and *Daubert v. Merrell Dow Pharms., Inc.*, 509 U.S. 579 (1993) to exclude certain opinions offered by Moderna's experts, Dr. Vellturo, Dr. Prud'homme, and Dr. Anderson. Arbutus seeks to exclude Dr. Vellturo's reasonable royalty calculation. As for Dr. Prud'homme, Arbutus seeks to exclude portions of his opinion related to the doctrine of equivalents, reverse doctrine of equivalents, the existence of intermediate particles, enablement, and indefiniteness. Lastly, Arbutus seeks to exclude Dr. Anderson's obviousness opinions.

II. LEGAL STANDARD

In a patent case, regional circuit law applies to issues concerning the admissibility of expert opinions. *See Micro Chem., Inc. v. Lextron, Inc.*, 317 F.3d 1387, 1390–91 (Fed. Cir. 2003). The Federal Rules of Evidence "govern[] the admissibility of expert testimony." *Kannankeril v. Terminix Int'l., Inc.*, 128 F.3d 802, 806 (3d Cir. 1997). Federal Rule of Evidence 702 provides that "[a] witness who is qualified as an expert" may testify if the expert's testimony "will help the trier of fact to understand the evidence or to determine a fact in issue," "the testimony is based on sufficient facts or data," "the testimony is the product of reliable principles and methods," and "the expert's opinion reflects a reliable application of the principles and methods to the facts of the case." Fed. R. Evid. 702. In other words, for an expert's testimony to be admissible, it must be reliable. *See Elcock v. Kmart Corp.*, 233 F.3d 734, 745 (3d Cir. 2000). "[S]ubjective belief or unsupported

speculation" is not enough; the expert must have "good grounds" for his or her expert opinions. *Id.* (internal quotation marks omitted).

III. ANALYSIS

A. Dr. Vellturo's Damages Opinions

Moderna offers Dr. Vellturo as a damages expert. Arbutus challenges three of his opinions: his reasonable royalty analysis based on comparable licenses; his opinion about the effect (or lack thereof) of Arbutus's hold-up power in a hypothetical negotiation; and his opinions about available non-infringing alternatives.

1. Reasonable royalty

Arbutus seeks to exclude Dr. Vellturo's damages opinion as to the reasonable royalty to which Arbutus would be entitled if the jury finds infringement. A reasonable royalty is typically "based upon a hypothetical negotiation between the patentee and the infringer when the infringement began." *Unisplay, S.A. v. Am. Elec. Sign Co.*, 69 F.3d 512, 517 (Fed. Cir. 1995). One method for determining a reasonable royalty is called the market approach, which values a hypothetical license based on comparable licenses between unrelated parties. *See Willis Electric Co. v. Polygroup Ltd.*, Case No. 2024-2118, 2026 WL 438657, at *14 (Fed. Cir. Feb. 17, 2026). Of course, any reasonable royalty analysis "necessarily involves an element of approximation and uncertainty." *EcoFactor, Inc. v. Google, LLC*, 137 F.4th 1333, 1340 (internal quotation marks omitted). Indeed, "[a] market approach does not require perfect identity between licensed and asserted patents." *Willis*

Electric Co., 2026 WL 438657, at *14. Nonetheless, "given the great financial incentive parties have to exploit the inherent imprecision in patent valuation, courts must be proactive to ensure that the testimony presented—using whatever methodology—is sufficiently reliable to support a damages award." *Commonwealth Sci. & Indus. Rsch. Organisation v. Cisco Sys., Inc.*, 809 F.3d 1295, 1301 (Fed. Cir. 2015). "When the methodology is sound, and the evidence relied upon sufficiently related to the case at hand, disputes about the degree of relevance or accuracy ... may go to the testimony's weight, ... not its admissibility." *i4i Ltd. P'ship v. Microsoft Corp.*, 598 F.3d 831, 852 (Fed. Cir. 2010).

Dr. Vellturo's reasonable royalty opinion suffers from a fatal flaw—he uses Moderna's sales of the Covid-19 vaccine in his assessment of comparable license agreements. Dr. Vellturo's analysis focuses on 13 license agreements that Genevant entered and that cover the Asserted Patents, at least in part. Those agreements do not have a single running royalty rate, however. Each of them includes lump sum milestone payments and then tiers of royalty rates that apply for marginal sales triggers.[5] For each

[5] Arbutus argues that the Federal Circuit's decision in *EcoFactor, Inc. v. Google LLC*, 137 F.4th 1333 (Fed. Cir. 2025), bars Dr. Vellturo from relying on those agreements. I disagree. In *EcoFactor*, the agreements at issue were lump sum agreements, and an expert proposed to use them as evidence of an arms'-length agreement of a royalty rate because each agreement included a "whereas" clause that indicated that EcoFactor deemed a certain running royalty to be reasonable. The Federal Circuit held that, as a matter of contract interpretation, the nonbinding recital did not indicate agreement on the royalty rate, particularly because two of the agreements disclaimed the royalty rate. In this case,

agreement, Dr. Vellturo attempts to determine an implied running royalty rate. He does so by determining the total payments that Genevant would have received under each agreement, including both milestone payments and royalty payments. He calculates the royalty payments by assuming that the sales levels would have been equal to the levels that Moderna achieved for its Covid-19 vaccine and calculates the royalty payments accordingly. He then divides the total revenue by the total sales of Moderna's Covid-19 vaccine to calculate a royalty rate for each agreement.

The problem with Dr. Vellturo's analysis is that the various royalty rates that he assigned to each comparable agreement are made up and not tethered to those license agreements. As one court has explained, it is "mere speculation masquerading as quantitative analysis." *Baltimore Aircoil Co., Inc. v. SPX Cooling Tech., Inc.*, Civ. No. CCB-13-2053, 2016 WL 4426681, at * 25 (D. Md. Aug. 22, 2016). When Dr. Vellturo set out to convert the various payments under each agreement to a single royalty rate, his task was to figure out the rate to which Genevant and its counterparty impliedly agreed during arms'-length negotiations. To do that, Dr. Vellturo had to use data connected in some way to the agreement that he was analyzing, either the actual sales numbers under that agreement or the parties' expected sales at the time that they entered into the agreement. Dr. Vellturo did neither. He substituted Moderna's sales for its Covid-19 vaccine, which

in contrast, Dr. Vellturo relies on agreements that Genevant entered with third parties that include running royalties. The agreements therefore provide evidence of the terms to which a willing licensor and willing licensee agreed.

have no connection to those other negotiations because no one has suggested that Genevant negotiated any of the other agreements with an expectation of sales that would come anywhere close to the sales that Moderna achieved (or even for the sales that everyone might have anticipated as of the date of the hypothetical negotiation). Dr. Vellturo's analysis has the effect, at a minimum, of amortizing the lump sum royalty over a much larger sales base, which drives down the average royalty rate that one might imply under each agreement.[6]

Moderna doesn't try to hide what Dr. Vellturo did. As it explains, he "accounted for ***both*** non-running royalties (*i.e.*, upfront and milestone payments) and all applicable tiers of running royalties to determine what Moderna ***would have*** paid under the terms of each Comparable Agreement." (D.I. 662 at 5 (emphasis in original).) That's just the wrong analysis, though. The question is not what Moderna would have paid under a comparable license agreement. The question is the rate, either express or implied, to which Genevant and its counterparty agreed. Dr. Vellturo didn't analyze that rate, so his reasonable royalty rate is therefore inadmissible.

[6] It's not clear to me what effect Dr. Vellturo's use of Moderna's sales has on the overall payments running royalties (*i.e.*, does it drive them up or down), but it doesn't matter. Even if it offsets all or part of the errors with the lump sum milestone payments, the point is not to have the mistakes come out in the wash. The facts on which an expert relies in analyzing a supposedly comparable agreement must tie to that agreement.

2. Hold-up

Dr. Vellturo opines about the significance of the time pressure on Moderna at the time of the hypothetical negotiation (or the lack of its significance). Arbutus argues that Dr. Vellturo's opinion is that the jury cannot consider that information. I don't read his opinion that way, though. Dr. Vellturo opines that the time pressure wasn't a significant factor in the hypothetical negotiation and that it therefore wouldn't have influenced the hypothetical negotiation. (*E.g.*, D.I. 663-1 at 165.) He can offer that opinion. To the extent Moderna strays from that opinion and tries to have him suggest that the jury cannot consider the time pressure in its own assessment of the hypothetical negotiation, I will deal with those specific questions at trial.

3. Non-infringing alternatives

Dr. Vellturo's analysis of non-infringing alternatives arises in the context of his analysis of comparable licenses, which he opines would address the value of the invention over prior technologies. (D.I. 663-1 at 86.[7]) However, I will not permit Dr. Vellturo to present his analysis of those license agreements. Therefore, he will have no occasion to opine on this issue, and I will exclude the opinions.

[7] Paragraph 190 on page 86 of Dr. Vellturo's Rebuttal Report is the only paragraph of his reports that Moderna identifies as addressing the issue, (D.I. 662 at 12) so I assume it's the only one where he does. Litigation is not a truffle hunt, so if it's somewhere else to which Moderna has not pointed me, I have not seen it.

B. Dr. Prud'homme's Infringement Opinions

Arbutus moves to exclude various portions of Dr. Prud'homme's infringement opinions, specifically those related to the doctrine of equivalents, reverse doctrine of equivalents, the existence of intermediate particles, enablement, and indefiniteness. After it filed and briefed the motion, I resolved the Parties' summary judgment motions. In the process of doing so, I ruled on the admissibility of some of Dr. Prud'homme's opinions. For starters, I granted summary judgment for Moderna on Arbutus's doctrine-of-equivalents infringement theories, barring Arbutus from raising such theories. Thus, Dr. Prud'homme will not have to opine on the doctrine of equivalents, so I will deny as moot Arbutus's request to exclude this testimony.

I also ruled on the admissibility of Dr. Prud'homme's opinions related to indefiniteness and enablement. The arguments in this Motion repeat the arguments Arbutus already made. Nothing has changed, though. So, for the reasons I've already given, I will deny Arbutus's request to exclude Dr. Prud'homme's indefiniteness and enablement opinions.

Arbutus also argues that I should exclude Dr. Prud'homme's opinions about intermediate particles. But this argument is just an extension of Arbutus's previous argument during summary judgment briefing that Dr. Prud'homme's opinions read unclaimed properties into the asserted claims. I rejected that argument, explaining that

Arbutus misreads Dr. Prud'homme's opinion.[8] (D.I. 743 at 13–14.) Arbutus makes the same mistake again by interpreting Dr. Prud'homme's opinion to "'read[] a limitation' into the claims." (D.I. 663 at 19.) Dr. Prud'homme does no such thing. Rather, he references the in-process particles when discussing the short duration of time (less than a minute) that they would exist in comparison to the total length of time the manufacturing process takes (over a week). (*See, e.g.*, D.I. 663-21 at 376–78.) This opinion is relevant to the purported value of the patents, so I need not exclude it.

The only novel part of the challenge that Arbutus makes to Dr. Prud'homme's opinions concerns the reverse doctrine of equivalents. Arbutus argues that Dr. Prud'homme based this opinion on "unclaimed features," which "completely misconstrues the RDOE inquiry." (D.I. 663 at 19 (alterations accepted).) But Dr. Prud'homme only considered unclaimed features after "assuming Moderna's [Covid-19] vaccine literally" infringed. (D.I. 663-21 at 471.) In other words, Dr. Prud'homme did not import unclaimed features into the patent. Rather, he cites those features in an attempt to show that Moderna's Covid-19 vaccine literally infringes but "has been so far changed in principle

[8] As I noted in my previous opinion, Arbutus's argument that Dr. Prud'homme imports a stability requirement into the asserted claim takes his opinion out of context. (D.I. 743 at 13–14.) Dr. Prud'homme appears to have only made such arguments in response to prior arguments made by Arbutus. (D.I. 743 at 14.) Moderna affirmed that it would "not present any so-called 'unclaimed properties' if [Arbutus] stand[s] by [its] position that such properties are not required by the claims." (D.I. 557 at 17.) I will take Moderna at its word. If Moderna backtracks and seeks to introduce testimony from Dr. Prud'homme going beyond what it has claimed, Arbutus may renew its request to exclude his testimony.

that it performs the same or similar function in a substantially different way." *SRI Intern. V. Matsushita Elec. Corp. of Am.*, 775 F.2d 1107, 1124 (Fed. Cir. 1985). Whether RDOE applies in this case is a question of fact for the jury to decide. *Id.* Therefore, I will not exclude Dr. Prud'homme's RDOE opinion.[9]

C. Dr. Anderson's Obviousness Opinions

Arbutus moves to exclude Dr. Anderson's opinion related to whether the Molar Ratio Patents and the '651 Patent were obvious in light of prior art. In a prior decision, I held that collateral estoppel bars Moderna from arguing that (a) it would have been routine for a POSA to optimize the lipid particle formulations in the prior art to match the claimed molar ratios or (b) prior art taught a phospholipid range that overlaps with the claimed ranges in the Molar Ratio Patents. (*See* D.I. 743 at 8–11.) Because those issues are no longer in the case, the motion to exclude Dr. Anderson's obviousness opinions regarding the Molar Ratio Patents are moot.

As to the '651 Patent, Arbutus bases its argument on Dr. Anderson's deposition testimony that he analyzed the various patents through the "lens" of the patents in suit.

[9] While it is true, as Arbutus points out, that the Federal Circuit has described RDOE as an "anachronistic exception" to infringement, the Federal Circuit has never declared that it no longer exists. *Steuben Foods, Inc. v. Shibuya Hoppmann Corp.*, 127 F.4th 348, 356–57 (Fed. Cir. 2025). To the extent Arbutus argues that I should exclude Dr. Prud'homme's RDOE opinion because RDOE is an "exception" that is rarely applied, I am not persuaded. Just because a doctrine is unusual or applies only rarely is not a basis to exclude an expert opinion on it. Arbutus did not move for summary judgment on the issue, so it remains in the case, and a jury may decide that this is the rare instance in which its application is appropriate.

(*E.g.*, D.I 663-23 at 126.) Certainly, Arbutus is correct that Dr. Anderson cannot rely on the '651 Patent or the hindsight that it provides to establish obviousness. *See Univ. of Strathclyde v. Clear-Vu Lighting, LLC*, 17 F.4th 155, 165 (Fed. Cir. 2021). However, I don't read Dr. Anderson's testimony that way. Instead, I read it, consistent with the disclosures in his expert report, to reveal that Dr. Anderson looked at the '651 Patent to determine the level of specificity (or generality) in its disclosures. He then conducted his obviousness analysis at that same level of specificity. But there's nothing in the record suggesting that Dr. Anderson used the '651 Patent's teachings to inform his obviousness analysis.

In its Motion, Arbutus makes much of the fact that during his deposition Dr. Anderson could not remember the details of various prior art references that he cites in his report. That's true. Dr. Anderson couldn't seem to remember much during his deposition. Maybe those memory lapses were benign, or maybe they were by design. But they are not enough for me to exclude his opinions. The expert reports that he issued disclose his opinions. The fact that he couldn't remember details at a deposition doesn't undermine that disclosure. Instead, it provides fodder for cross-examination. I will therefore not exclude Dr. Anderson's obviousness opinions as they relate to the '651 Patent.

IV. CONCLUSION

Dr. Vellturo's reasonable royalty opinion uses an unreliable methodology, so I will exclude it. He can, however, opine about the economic significance of time pressure. Dr.

Prud'homme's RDOE opinion and Dr. Anderson's opinion about the obviousness of the '651 Patent are reliable opinions that the jury can hear. An appropriate Order follows.

BY THE COURT:

/s/ Joshua D. Wolson
JOSHUA D. WOLSON, J.

February 24, 2026

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ORDER

AND NOW, this 24th day of February, 2026, upon consideration of Plaintiffs' Motion To Exclude Expert Testimony (D.I. 657) and for the reasons stated in the accompanying Memorandum, it is **ORDERED** that the Motion is **GRANTED IN PART** and **DENIED IN PART.** The Motion is **GRANTED** as to (a) Plaintiffs' request to exclude Dr. Vellturo's reasonable royalty opinion and (b) Plaintiffs' request to exclude Dr. Vellturo's opinion on non-infringing alternatives. The Motion is **DENIED** in all other respects.

BY THE COURT:

/s/ Joshua D. Wolson
JOSHUA D. WOLSON, J.