United States District Court
Northern District of California

UNITED STATES DISTRICT COURT

NORTHERN DISTRICT OF CALIFORNIA

ALIVECOR, INC.,

Plaintiff,

v.

APPLE, INC.,

Defendant.

Case No. 21-cv-03958-JSW

[redacted]

ORDER RESOLVING CROSS-MOTIONS FOR SUMMARY JUDGMENT; ALIVECOR'S MOTION TO EXCLUDE EXPERT REPORT AND TESTIMONY OF SARAH BUTLER; ALIVECOR'S MOTION TO EXCLUDE CERTAIN OPINIONS AND TESTIMONY OF LAUREN J. STIROH, PH.D.; APPLE'S MOTIONS TO EXCLUDE THE TESTIMONY OF DR. ROOZBEH JAFARI AND DR. MICHAEL CRAGG; ALIVECOR'S MOTION TO STRIKE CERTAIN PORTIONS OF THE DECLARATION OF DR. STEPHEN WAYDO; AND ALIVECOR'S MOTION FOR LEAVE TO FILE SURREPLY

Re: Dkt. Nos. 191, 192, 193, 214, 217, 221, 228, 243

Now before the Court are Plaintiff AliveCor, Inc.'s ("AliveCor") Motion for Partial Summary Judgment (Dkt. No. 193) and Defendant Apple, Inc.'s ("Apple") Cross-Motion for Summary Judgment (Dkt. No. 221).

Also before the Court are a number of attendant evidentiary motions: AliveCor's Motion to Exclude Certain Opinions and Testimony of Lauren J. Stiroh, Ph.D. (Dkt. No. 191); AliveCor's Motion to Strike and Exclude the Expert Report and Testimony of Sarah Butler (Dkt. No. 192); Apple's Motion to Exclude Dr. Roozbeh Jafari (Dkt. No. 214); Apple's Motion to Exclude Dr. Michael Cragg (Dkt. No. 217); AliveCor's Motion to Strike Certain Portions of the Declaration of Dr. Stephen Waydo (Dkt. No. 228); and, finally, AliveCor's Motion for Leave to File a Sur-Reply

in Further Opposition to Apple's Motion to Exclude Dr. Roozbeh Jafari.

The Court has considered the parties' papers, relevant legal authority, supplemental authority submitted in response to the Court's questions, the record in this case, and oral argument. For the following reasons, the AliveCor's motions to exclude or strike are DENIED. Apple's Motion to Exclude Dr. Jafari is GRANTED. AliveCor's Motion for Leave to File a Sur-reply is DENIED. Apple's Motion to Exclude Dr. Cragg is DENIED. AliveCor's Motion for Partial Summary Judgment is DENIED. Apple's Motion for Summary Judgment is GRANTED.

BACKGROUND

The following facts are undisputed, unless otherwise indicated.

A. The Apple Watch Provides Mechanisms for Heartrate Detection and Analysis.

Apple released the Apple Watch with a photoplethysmography sensor ("PPG sensor") to detect the wearer's heartrate. Apple's Workout Mode software converts the information picked up from the PPG sensor into useful metrics, including average heartrate value.

The Workout Mode API[1] reports information from one heartrate-interpreting algorithm at a time. From the Apple Watch's launch until the release of watchOS 5, that algorithm was HRPO. HRPO reported an average heartrate value every five seconds, and it was particularly well-suited to determining heart rhythm in addition to heartrate.

HRPO had drawbacks. In order to work reliably for heartrate detection, Workout Mode with HRPO required the Apple Watch wearer to select what kind of workout the wearer intended to perform. This required labor from Apple's engineers for each specific exercise type, and it impaired Apple Watch's reliability for wearers who engaged in multiple forms of exercise or whose exercise involved intervals. According to Apple, HRPO also drained the Apple Watch's battery and occupied valuable storage space.

The parties dispute whether Apple's removal of HRPO was motivated by a desire to address these drawbacks or to cut out competition for medical monitoring apps on the Apple Watch. Whatever the underlying motivation, Apple replaced the heartrate reporting algorithm in

[1] An "API" is an "application programming interface." *See U.S. v. Microsoft Corp.*, 253 F.3d 34, 53 (D.C. Cir. 2001) (explaining APIs).

Workout Mode with the Heart Rate Neural Network ("HRNN") with the introduction of watchOS 5. HRPO remained on the Apple Watch, and Workout Mode would use HRPO values if HRNN failed to report a heartrate within the first minute of activation. After one minute of activation, Workout Mode switched to HRNN, and HRPO continued to run in the background. If HRNN reported a value within the first minute of activation of Workout Mode, HRNN values would be reported instead of HRPO values.

The Apple Watch in watchOS 5 used HRPO for other purposes, including the High Heart Rate Notification feature ("HHRN," not to be confused with HRNN). HHRN alerts users if their heartrate is high during rest.

Apple removed HRPO from the Apple Watch entirely in 2021. In the years since Apple replaced HRPO with HRNN in Workout Mode, the number of third-party apps using Workout Mode grew from [redacted].

With watchOS 5, Apple also introduced the Irregular Rhythm Notification feature ("IRN"). IRN reports to the wearer that the wearer may be experiencing atrial fibrillation ("Afib") if an abnormal rhythm is detected. Upon its release, IRN used inputs from [redacted], an algorithm that uses the PPG signals to generate tachograms. IRN now relies on a different heartrate algorithm, [redacted], which provides periodic, high-confidence measurements of the wearer's heart rhythm when the wearer is completely still. IRN is FDA-approved and has been enabled by up to [redacted] users. However, IRN does not work for individuals who have a diagnosis of Afib, and it does not work if the wearer is in motion.

Both [redacted] are available to third-party app developers through the Tachogram API. The Tachogram API generates tachograms 4-6 times per day, when the watch wearer is at rest. The wearer can obtain a tachogram upon demand by using Apple's Breathe app, but third-party developers do not have a mechanism for activating the Tachogram API to generate a tachogram on demand or continuously.

B. AliveCor Launched and Removed a Heart Rhythm Analysis App Feature.

Two companies, AliveCor and a competitor Cardiogram, used Workout Mode with HRPO to detect Afib prior to the release of watchOS 5. According to AliveCor, Cardiogram was never

able to launch its heartrate analysis app because of the change from HRPO to HRNN, and Cardiogram remains unable to tell wearers if they have Afib. Apple contends that Cardiogram nevertheless provided continuous heartrate monitoring via the Workout Mode API after watchOS 5 and as recently as December 2021.

AliveCor created the Kardia app to help users monitor and record heart-related health data. The Kardia app was free to use, but a premium version was available which required a paid annual subscription. AliveCor developed an algorithm, SmartRhythm, available in the premium version of the Kardia app, to send alerts to the wearer if they may be in Afib and to prompt the wearer to take an electrocardiogram ("ECG").

SmartRhythm worked in concert with AliveCor's KardiaBand, a hardware replacement for the Apple Watch band that was equipped with ECG sensors. SmartRhythm was clinically validated to detect Afib. The KardiaBand was cleared by the Food and Drug Administration ("FDA") as a medical device accessory for the Apple Watch.

As of 2019, AliveCor had sold around 12,000 KardiaBands in the United States. The Kardia app had over 1600 daily users.

When HRNN replaced HRPO in Workout Mode, AliveCor conducted internal tests that, according to AliveCor, demonstrated that SmartRhythm was no longer functioning properly. AliveCor trained SmartRhythm on HRNN, but it did not achieve the same accuracy as it had with HRPO. AliveCor thus withdrew SmartRhythm from its Kardia app and stopped selling KardiaBands in June 2019. Apple disputes that SmartRhythm's performance was impaired by the switch to HRNN.

AliveCor did not invest in retraining SmartRhythm because it feared that the watchOS would continue to change in ways that would degrade the available data's suitability for heart rhythm analysis.

AliveCor further opted not to use another of Apple's heartrate algorithms because they did not suit AliveCor's medical monitoring goals. For example, Tachogram API's intermittent activation prevents a third-party app developer from continuously monitoring tachogram outputs to alert users to a potential Afib episode. This differs from Workout Mode API, which AliveCor

was able to use continuously for the SmartRhythm feature of the Kardia app.

The Kardia app remains available on iOS without SmartRhythm.

C. The Current Action.

AliveCor brings claims against Apple relating to its removal of third-party access to HRPO and AliveCor's subsequent withdrawal of SmartRhythm. AliveCor alleges Monopolization and Attempted Monopolization under Section 2 of the Sherman Act, 15 U.S.C. § 2. Included in each of these Section 2 claims are allegations of technological tying, exclusionary design changes, implicit tying, aftermarket monopolization, raising rivals' costs, and leveraging.

AliveCor also alleges that Apple engaged in unlawful and unfair conduct in violation of the California Unfair Competition Law ("UCL"), California Business & Professions Code § 17200 *et seq.*

The Court will address additional facts as needed in its Order.

MOTIONS TO EXCLUDE

A. Legal Standard on Motions to Exclude Expert Opinions and Testimony.

Under Federal Rule of Evidence 702,

> A witness who is qualified as an expert by knowledge, skill, experience, training, or education may testify in the form of an opinion or otherwise if the proponent demonstrates to the court that it is more likely than not that:
>
> (a) the expert's scientific, technical, or other specialized knowledge will help the trier of fact to understand the evidence or to determine a fact in issue;
>
> (b) the testimony is based on sufficient facts or data;
>
> (c) the testimony is the product of reliable principles and methods; and
>
> (d) the expert's opinion reflects a reliable application of the principles and methods to the facts of the case.

Fed. R. Evid. 702.[2] A district court's inquiry into admissibility "is a flexible one." *Alaska Rent-*

[2] Rule 702 was modified, effective December 1, 2023, to clarify that the party proffering the expert testimony bears the burden of demonstrating the admissibility of the expert testimony. The comments to the 2023 Amendments emphasize that the Court must do a preliminary analysis of the basis of the expert's opinions before deciding that challenges to the basis go to weight and not admissibility. *See* Fed. R. Evid. 702 Advisory Committee's Note, 2023 Amend. Because the rule change was a clarification, and not a change in the standard, the new language does not materially alter the admissibility of expert testimony. *See Al Qari v. Am. Steamship Co.*, -- F. Supp. 3d --, 2023 WL 5628583, at *4 (E.D. Mich. Aug. 31, 2023) (discussing revisions).

A-Car, Inc. v. Avis Budget Grp., Inc., 738 F.3d 960, 969 (9th Cir. 2013) (citation omitted). In evaluating proffered expert testimony, the trial court is "a gatekeeper, not a fact finder." *Primiano v. Cook*, 598 F.3d 558, 565 (9th Cir. 2010) (citation and quotation marks omitted). "The district court's gatekeeping can be performed through numerous procedures – such as motion in limine briefing and oral argument, voir dire, and cross-examination at trial." *United States v. Holguin*, 51 F.4th 841, 852 (9th Cir. 2022).

"[T]he trial court must assure that the expert testimony 'both rests on a reliable foundation and is relevant to the task at hand.'" *Id.* at 564 (quoting *Daubert v. Merrell Dow Pharms., Inc.*, 509 U.S. 579, 597 (1993)). "This entails a preliminary assessment of whether the reasoning or methodology underlying the testimony is scientifically valid and whether that reasoning or methodology properly can be applied to the facts in issue." *Daubert*, 509 U.S. at 592-93. A trial court is not required "to admit opinion evidence that is connected to existing data only by the *ipse dixit* of the expert." *Kumho Tire Co., Ltd. v. Carmichael*, 526 U.S. 137, 158 (1999) (quoting *General Elec. Co. v. Joiner*, 552 U.S. 136, 146 (1997)).

"Shaky but admissible evidence is to be attacked by cross examination, contrary evidence, and attention to the burden of proof, not exclusion." *Primiano*, 598 F.3d at 564 (citation omitted). The judge is "supposed to screen the jury from unreliable nonsense opinions, but not exclude opinions merely because they are impeachable." *Alaska Rent-A-Car*, 738 F.3d at 969. "The district court is not tasked with deciding whether the expert is right or wrong, just whether [their] testimony has substance such that it would be helpful to a jury." *Id.* at 969-70. In other words, the Court's role is to evaluate the usefulness of the testimony and the reliability of the expert's process, not to exclude expert testimony merely because it disagrees with the expert's conclusions.

Whether expert testimony is relevant "depends on the particular law at issue" because it must have "a valid connection to the pertinent inquiry." *Messick v. Novartis Pharms. Corp.*, 747 F.3d 1193, 1196-97 (9th Cir. 2014) (quoting *Primiano*, 598 F.3d at 565). Expert testimony is relevant if it "logically advances a material aspect of the proposing party's case." *Daubert v. Merrell Dow Pharms., Inc. ("Daubert II")*, 43 F.3d 1311, 1315 (9th Cir. 1995). A district court must exclude proffered expert evidence on relevance grounds unless "it speaks clearly and directly

to an issue in dispute in the case." *Id.* at 1321 n. 17.

B. AliveCor's Motion to Exclude Certain Opinions and Testimony of Lauren J. Stiroh, Ph.D.

Dr. Lauren Stiroh, Apple's proffered expert economist, has a Ph.D. from Harvard University. (Dkt. No. 191-15, Stiroh Rpt., ¶ 3.) Dr. Stiroh offered an opening expert report analyzing whether Apple's challenged conduct "was consistent with procompetitive practices." (*Id.* ¶ 4.) She also provided a rebuttal report to the testimony of Plaintiff's expert Dr. Michael Cragg. (Dkt. No. 191-16, Stiroh Rebuttal Rpt.)

AliveCor contends that the Court should exclude opinions from Dr. Stiroh regarding (1) Apple's purported procompetitive justifications and (2) Dr. Stiroh's proposed two-sided market definition. AliveCor does not question Dr. Stiroh's qualifications as an economist. Instead, it asserts that Dr. Stiroh failed to reliably apply her expertise to the facts of this case and that her opinions are irrelevant.

For the following reasons, AliveCor's motion is denied.

1. Dr. Stiroh's Opinions Regarding Procompetitive Justifications Are Admissible Under Rule 702.

AliveCor offers several reasons why Dr. Stiroh's competitive justifications are irrelevant and unreliable. None is persuasive.

a. Dr. Stiroh's Procompetitive Justifications "Fit" this Case.

AliveCor takes issue with Dr. Stiroh's opinion regarding procompetitive justifications for removal of HRPO because, it contends, Dr. Stiroh ignores the "core anticompetitive conduct at issue: Apple's decision to eliminate third party access" to HRPO. (Dkt. No. 191-3, at 1.) Apple responds that the crux of AliveCor's motion is that AliveCor simply disagrees with Dr. Stiroh's opinion. Apple contends that Dr. Stiroh correctly analyzed the removal of HRPO alongside the introduction of HRNN as a product improvement, and that *Allied Orthopedic* requires this approach. *See Allied Orthopedic Appliances Inc. v. Tyco Health Care Group LP*, 592 F.3d 991, 998-99 (9th Cir. 2010); *see also* Dkt. No. 42, at 14 ("[T]he Court finds the holding in *Allied Orthopedic* relevant to all of AliveCor's anticompetitive conduct claims").

In its summary judgment briefing and associated *Daubert* motions, AliveCor frames its allegations as centering on Apple's withdrawal of third-party access to HRPO in the release of watchOS 5 and with the release of Apple Watch Series 4. However, its operative Amended Complaint includes allegations of misconduct prior to the release of watchOS 5, including changes to Apple's App Store guidelines and review process. (Dkt. No. 106, Am. Compl., ¶ 4.) Dr. Stiroh's discussion of procompetitive features included in Series 4, watchOS 5, and the App Store guidelines thus directly relate to conduct alleged by AliveCor. Dr. Stiroh's brief discussion of Apple's intellectual property incentives is relevant to Apple's argument that changes it has made to the availability of data from the PPG sensor, as interpreted by various algorithms, were procompetitive. Dr. Stiroh need not limit her analysis to solely the removal of access to HRPO.

Moreover, Dr. Stiroh does address the removal of HRPO in her report. (Dkt. No. 191-15, Stiroh Rpt., ¶¶ 46-48, 51.) Dr. Stiroh considers removal of access to HRPO as part of the introduction of HRNN in Workout Mode. (*See id.*)

b. Dr. Stiroh's Procompetitive Justification Analysis Relates to the Foremarket Alleged by AliveCor.

AliveCor next argues that Dr. Stiroh's discussion of procompetitive benefits to the design change is irrelevant because the procompetitive benefits do not occur in the watchOS HRA app market. AliveCor cites an opinion from this District which excluded expert testimony regarding procompetitive benefits in a hypothetical multi-sided market which that court had previously rejected. *In re Nat'l Collegiate Athletic Ass'n Athletic Grant-in-Aid Cap Antitrust Litig. ("Grant-in-Aid")*, No. 14-CV-02758-CW, 2018 WL 1948593, at *3 (N.D. Cal. Apr. 25, 2018), *aff'd sub nom. In re Nat'l Collegiate Athletic Ass'n Athletic Grant-In-Aid Cap Antitrust Litig.*, No. 14-MD-02541 CW, 2018 WL 4241981 (N.D. Cal. Sept. 3, 2018).

Apple, in turn, contends that Dr. Stiroh properly defines the relevant antitrust market and that procompetitive benefits in an unrelated market can be used to justify anticompetitive effects in another market. It points out that, in the same NCAA case cited by AliveCor, the Ninth Circuit later considered both the effect on the single-sided relevant antitrust market and on consumer demand outside of the market, including survey evidence related to viewership and attendance of

college sports games. *Grant-in-Aid*, 958 F.3d 1239, 1258 (9th Cir. 2020), *aff'd sub nom. Nat'l Collegiate Athletic Ass'n v. Alston*, 141 S. Ct. 2141, 210 L. Ed. 2d 314 (2021).

In *Grant-in-Aid*, college athletes brought suit against the NCAA challenging restrictions on scholarships for education-related expenses above the cost-of-attendance. *Id.* at *1. The NCAA proposed a two-sided market definition wherein universities offered services to both students and the public in a similar manner to magazines which manage both advertisements and subscriptions. *Id.* at *2. The court rejected that definition and instead adopted a single-sided relevant antitrust market for student-athlete services and, conversely, college education combined with athletics. *Id.* In excluding the NCAA's proffered expert as irrelevant, the court found that he had analyzed procompetitive benefits in the rejected two-sided market. *Id.*

In her discussion of procompetitive benefits, Dr. Stiroh claims to consider "whether there are procompetitive effects in the relevant markets alleged by AliveCor." (Dkt. No. 191-15, ¶ 66 n. 190), but she evaluates consumer demand and developer innovations in only the wearable heartrate monitoring device market and the smartwatch market, (*e.g.*, *id.* ¶¶ 71, 81), and not the watchOS HRA app market (*see generally*, *id.*). Nevertheless, Dr. Stiroh's discussion of benefits in the foremarket alleged by AliveCor cannot be considered irrelevant. Unlike the expert in *Grant-in-Aid*, who defined an antitrust market before discussing procompetitive benefits in that ill-defined market, 2018 WL 1948593, at *3, Dr. Stiroh's procompetitive benefits analysis links directly to the foremarket definition proposed by AliveCor and does not hinge on the two-sided market definition that she proposes. Indeed, this analysis could not hinge on Dr. Stiroh's market definition because she offers that definition in a separate, later report. (Dkt. No. 191-16, Stiroh Rebuttal Rpt., ¶ 25.)

c. Dr. Stiroh's Procompetitive Justification Analysis Is Reliable.

AliveCor also challenges the reliability of Dr. Stiroh's procompetitive justification analysis on the basis that her opinion is contrary to her prior expert work and general industry principles. AliveCor's reliability argument reiterates that Dr. Stiroh should have limited her analysis to Apple's removal of third-party access to HRPO in Workout Mode. According to AliveCor, Dr. Stiroh misapplies the antitrust concept of the "but-for world" by considering a "but-for world" in

which Apple stopped innovating entirely, rather than a world in which Apple continued to innovate and continued to provide access to HRPO in Workout Mode.

The Court rejects this argument on the basis that Apple's conduct of product modifications in the foremarket is relevant to the procompetitive benefit analysis. *See Epic Games, Inc. v. Apple, Inc.*, 67 F.4th 946, 987 (9th Cir. 2023) (crediting procompetitive justification of security and privacy in the foremarket for device purchase where restraint occurred in aftermarket for mobile-game transactions); *Fed. Trade Comm'n v. Qualcomm Inc.*, 969 F.3d 974, 991 (9th Cir. 2020) (defining a "procompetitive justification" as "a nonpretextual claim that [the monopolist's] conduct is indeed a form of competition on the merits because it involves, for example, greater efficiency or enhanced consumer appeal") (quoting *Microsoft*, 253 F.3d at 59).

AliveCor further contends that Dr. Stiroh is not qualified to opine as to procompetitive justifications because she does not have technical expertise to explain why inclusion of HRNN necessitated removal of third-party access to HRPO, and thus she cannot opine as to causation. Apple responds that Dr. Stiroh's testimony is relevant to the question of "why" Apple made the changes it did to watchOS and the Apple Watch, and that any gap in causation is appropriate for cross-examination rather than exclusion.

Dr. Stiroh's analysis rests on her understanding that introduction of HRNN in Workout Mode required the removal of access to HRPO in Workout Mode, but Dr. Stiroh does not purport to demonstrate the technological mechanics of the change. Instead, Dr. Stiroh takes record evidence as the basis of her understanding and then applies that understanding to analyze competitive effects. (*See* Dkt. No. 191-15, Stiroh Rpt., ¶¶ 47-52 (citing testimony from Dr. Waydo, Dr. Shapiro, and Dr. Tan for her understanding).) Dr. Stiroh's reliance on these sources is properly the subject of cross-examination, not exclusion.

2. Dr. Stiroh's Rebuttal Opinions Regarding Market Definition Are Admissible Under Rule 702.

AliveCor challenges the admissibility of Dr. Stiroh's market definition because Dr. Stiroh allegedly fails to consider the watchOS HRA app market as AliveCor has defined it and as the market where the anticompetitive effects allegedly occurred. Dr. Stiroh's opinion regarding a

two-sided market must be unreliable, according to AliveCor, because it does not include watchOS HRA apps. AliveCor cites to *O'Bannon v. NCAA*, 7 F. Supp. 3d 955 (N.D. Cal. 2014), *aff'd in part, vacated in part*, 802 F.3d 1049 (9th Cir. 2015) for the proposition that the Ninth Circuit has previously determined that Dr. Stiroh's market opinions regarding offsetting the effects of conduct with benefits in an unrelated market are "incoherent" and not supported by the relevant case law.

Apple responds that Dr. Stiroh does not offer an affirmative market definition and instead only rebuts Dr. Cragg's market definition and therefore must be relevant. It contends that AliveCor's disagreement with Dr. Stiroh's critiques and conclusions is not a basis for exclusion.

a. Dr. Stiroh's Market Definition Opinions Fit This Case.

The parties dispute whether the relevant market for antitrust analysis is the market in which the conduct occurred or the market in which the harm to competition occurred. Both are relevant. *See Dreamstime.com, LLC v. Google LLC*, 54 F.4th 1130, 1142 (9th Cir. 2022) (affirming dismissal of antitrust claim where alleged anticompetitive conduct occurred in separate, unalleged antitrust market). Accordingly, Dr. Stiroh's opinion that Apple's alleged anticompetitive conduct occurred in a third, unalleged market is relevant.

b. Dr. Stiroh's Opinions Are Reliable as Limited to Rebuttal.

The Ninth Circuit did not hold, as AliveCor asserts, that Dr. Stiroh's opinions are incoherent. In the district court opinion cited by AliveCor, *O'Bannon*, the Court rejected Dr. Stiroh's theory—after a bench trial—that Plaintiffs had to show harm to consumers and not the student-athlete plaintiffs. 7 F. Supp. 3d at 972. Instead, the *O'Bannon* court explained that a restraint on an input market could be unlawful under Section 1 of the Sherman Act even if downstream consumers did not pay a price premium, in contrast to Dr. Stiroh's theory. *See id.* at 992-93. The court did not exclude Dr. Stiroh's testimony. *See id.* The Ninth Circuit did not address Dr. Stiroh's testimony at all. *See O'Bannon*, 802 F.3d 1049. Plaintiffs do not contend that Dr. Stiroh has resurrected her input-market theory in this action. Instead, they argue that Dr. Stiroh's two-sided market definition contradicts controlling law relating to two-sided markets.

Dr. Stiroh does not provide a complete affirmative market definition for the two-sided app transaction market in which Apple provides services, including APIs, to app developers. (Dkt.

No. 191-16, Stiroh Rebuttal Rpt., ¶¶ 8(a), 19, 22, 25.) Dr. Stiroh discusses why an improvement to heartrate outputs in Workout Mode occurred in this two-sided market, and why such a change was procompetitive because it benefited a large number of developers using Workout Mode API for fitness purposes. (*Id.* ¶¶ 41-46.) Dr. Stiroh addresses market participants and that there are at least two sides, but she does not provide an analysis of cross-elasticity of demand or network effects.

Because Dr. Stiroh's market definition is underdeveloped, Dr. Stiroh would not be permitted to offer an affirmative opinion regarding a two-sided transaction market at trial, but she would be permitted to testify that Dr. Cragg omitted a relevant, undefined market. However, because the Court grants summary judgment to Apple on product improvement grounds, and because Dr. Stiroh's affirmative market definition testimony does not alter the outcome, AliveCor's motion is denied as moot.

C. AliveCor's Motion to Strike and Exclude the Expert Report and Testimony of Sarah Butler.

Apple proffers Sarah Butler as a rebuttal expert to AliveCor's experts Dr. Cragg and Dr. Diehl. Ms. Butler conducted a survey in preparation for her report to consider whether Apple Watch customers were aware of monopolist restrictions on the watchOS HRA app aftermarket at the time they made their purchase. AliveCor seeks to exclude Ms. Butler's survey opinions.

As Apple points out, AliveCor's motion is premature, because neither AliveCor nor Apple refer to Ms. Butler's testimony or expert report in their cross-motions for summary judgment.

The Court denies as moot AliveCor's motion to exclude Ms. Butler.

D. AliveCor's Motion to Strike Paragraphs 40-50 of the Waydo Declaration.

In its Opposition to AliveCor's Motion for Partial Summary Judgment, Apple cites paragraphs 40-50 of the Declaration of Dr. Waydo for the following proposition: "By design, Workout Mode can only report one heartrate value at a time—meaning that Apple had to discontinue access to the values generated by HRPO to make those same (yet more accurate) values available from HRNN."

AliveCor contends that those paragraphs of Dr. Waydo's Declaration should be struck as

improper expert opinion testimony, because Dr. Waydo does not have direct experience with APIs and because Dr. Waydo was not disclosed as a non-retained expert.

Apple responds that AliveCor's motion is procedurally improper under Local Rule 7-3, which requires all evidentiary objections to motions to be contained within the parties' briefs. It also contends that Dr. Waydo has direct knowledge by nature of his role and experience, and that he should therefore be permitted to offer lay opinions about hypothetical modifications to the Workout Mode API.

As is its practice with *Daubert* motions, this Court will not apply Local Rule 7-3 to exclude consideration of AliveCor's Motion to Strike on its merits. The Court agrees with AliveCor that its Motion to Strike is more akin to a *Daubert* motion than to an evidentiary objection to Apple's Cross-Motion for Summary Judgment because it implicates the scope of testimony that Dr. Waydo would be permitted to give at trial. However, the Court denies AliveCor's motion on its merits.

Admission of lay opinion testimony is governed by Federal Rule of Evidence 701. Rule 701 limits lay opinion testimony to testimony "(a) rationally based on the witness's perception; (b) helpful to clearly understanding the witness's testimony or to determining a fact in issue; and (c) not based on scientific, technical, or other specialized knowledge within the scope of Rule 702." Fed. R. Evid. 701. A witness may provide both lay and expert testimony, but any testimony that is based on "scientific, technical, or other specialized knowledge" must be filtered through Rule 702. Fed. R. Evid. 701, Advisory Committee's Note, 2000 Amends. A party cannot use Rule 701 to evade the vetting and disclosure process required by Rule 702. *Hynix Semiconductor Inc. v. Rambus Inc.*, No. C-05-00334 RMW, 2008 WL 504098, at *3 (N.D. Cal. Feb. 19, 2008)

The line between lay and opinion testimony is case-specific. Which side of the line particular testimony falls on "depends on the basis of the opinion, not its subject matter." *United States v. Barragan*, 871 F.3d 689, 704 (9th Cir. 2017). Where a lay witness offers opinion testimony based upon his personal knowledge or familiarity with the facts, the opinion testimony is not expert testimony subject to Rule 702. *Id.*; *see Hynix*, 2008 WL 504098, at *4 (noting "particularized knowledge" exception persists "regarding testimony about one's business," despite

language prohibiting "specialized knowledge").

Dr. Waydo has personal knowledge of the Workout Mode API. Dr. Waydo is the Director of Human Interface Devices, Health, at Apple, and he was responsible for supervising development of the heartrate detection algorithms used in Workout Mode. (Dkt. No. 220-5, Wado Decl., ¶ 2.) Dr. Waydo was also a part of the [redacted] that decided to replace HRPO with HRNN in Workout Mode. (Dkt. No. 193-35, Shapiro Dep., 176:25-177:19.) AliveCor's attempt to distinguish between Dr. Waydo's familiarity with Apple's health-related algorithms from his familiarity with Apple's APIs is severely undercut by AliveCor's concession that "Dr. Waydo demonstrated familiarity with various of Apple's APIs during his deposition[.]" (Dkt. No. 228-3, Mot. to Strike, 2:1.)

Dr. Waydo's opinions are not based upon "specialized knowledge," but rather his own observations of Workout Mode's architecture. Therefore, Dr. Waydo may provide opinion testimony regarding Workout Mode's architecture and the modifications that would be required to report HRPO values in Workout Mode as a lay witness under Rule 701. *Cf. Hynix*, 2008 WL 504098, at *5 (permitting testimony "regarding the types of changes HP would have to make if required to switch technologies. . . [t]o the extent such opinion testimony is based on [the witness's] personal, particularized knowledge[.]")

E. Apple's Motion to Exclude Dr. Roozbeh Jafari.

AliveCor proffers Dr. Roozbeh Jafari to testify regarding the technical changes made to Workout Mode with watchOS 5 and their effect on SmartRhythm's functionality.

Apple seeks to exclude the Dr. Jafari's opinion that:

> the changes Apple implemented in beta versions of watchOS 5.0 and subsequently in the publicly released watchOS 5.0 itself degraded SmartRhythm's functionality such that the feature was no longer able to accurately predict potential AFib events with nearly the same degree of accuracy it was able to achieve in watchOS 4.3.2 and in prior versions of watchOS.

(Dkt. No. 222-10, Jafari Rpt., ¶ 69.) Apple does not seek to exclude Dr. Jafari's other opinions, including that Apple's replacement of HRPO with HRNN was not an improvement for medical monitoring purposes, or that the introduction of Tachogram API was not an improvement for medical monitoring purposes.

The Court grants Apple's motion and denies AliveCor's motion for leave to file a sur-reply.

1. The Court Does Not Grant Leave to File a Sur-reply.

AliveCor seeks leave to file a sur-reply to address Apple's characterization of a study that AliveCor introduced in its opposition to Apple's motion. AliveCor does not contend that Apple introduced new evidence or argument beyond the scope of its opening brief or AliveCor's opposition. *See* L.R. 7-3(d). The Court has independently considered the study and does not require further argument from AliveCor regarding interpretation of the study. Accordingly, AliveCor's Motion for Leave to File a Sur-Reply is denied.

2. Dr. Jafari Is Qualified to Offer Opinion Testimony Relating to Computer Science and Biomedical Engineering, Especially with Regard to Wearable Systems and Related Software Intended for Medical Purposes.

Dr. Jafari's credentials are beyond dispute. He teaches at Texas A&M University in the Departments of Biomedical Engineering, Computer Science Engineering, and Electrical and Computer Engineering, as well as in the School of Engineering Medicine. (Dkt. No. 222-10, Jafari Rpt., ¶ 1.) For more than 15 years, Dr. Jafari has served as the Director of the Embedded Signal Processing Lab, which researches "wearable systems that employ advanced signal processing techniques" for medical purposes. (*Id.* ¶ 1.) Dr. Jafari's own research "focuses on digital health, wearable computers, body sensor networks, wireless and mobile health, and sensor and circuit design for light-based and bio-potential based wearable computers." (*Id.* ¶ 3.)

3. Dr. Jafari's Opinion That watchOS 5 "Broke" SmartRhythm Is Unreliable.

Dr. Jafari based his opinion "on documents and testimony produced in this case, as well as experiments conducted at [his] direction to compare the performance of HRPO and HRNN in workout mode [sic], as between Apple Watches running watchOS versions 4.3.2 and 5.0, respectively." (*Id.*) More specifically, Dr. Jafari examined the source code for watchOS 4 and watchOS 5 to evaluate differences in the code, and then ran two historic heartrate samples through Apple Watches that were preloaded with watchOS 4 and watchOS 5 to confirm his hypothesis that heartrate variability was dampened in watchOS 5.

Apple contends that Dr. Jafari cannot offer an opinion as to degraded performance without

first demonstrating a baseline standard, which he does not do. (Dkt. No. 222-56, Jafari Dep., 112:17-19 (explaining that he was "not asked to opine on" the effectiveness of SmartRhythm in watchOS 4).) Apple further contends that Dr. Jafari's is not sound because Dr. Jafari used a sample size of two, which he selected not at random but because they were the most "prominent" of the samples analyzed in 2018 by AliveCor engineer and SmartRhythm creator Alex Valys.

AliveCor responds that Dr. Jafari's opinion was limited to determining the mechanism by which the transition from watchOS 4 to watchOS 5 degraded SmartRhythm's performance, based on AliveCor's internal data which show SmartRhythm became less effective after the transition to watchOS 5. AliveCor explains that Dr. Jafari merely repeated the 2018 Valys experiment while changing one variable—the version of SmartRhythm—to see if retraining SmartRhythm on HRNN could salvage SmartRhythm's effectiveness. According to AliveCor, it needed only to show that SmartRhythm could not reliably alert to Afib in one instance in order to show that SmartRhythm no longer worked.

Dr. Jafari conducted his analysis based upon the assumption that SmartRhythm functioned well, at one point in time. AliveCor contends that other evidence in the record demonstrates SmartRhythm's performance, and that Dr. Jafari may permissibly opine as to the "how" rather than the "if" of SmartRhythm's changed performance on watchOS 5. The Wasserlauf article submitted by AliveCor and relied upon by Dr. Jafari (Dkt. No. 222-10, Jafari Rpt., App'x C), established that SmartRhythm was able to detect Afib for 80 out of 82 episodes, or an episode sensitivity of 97.5 percent. (Dkt. No. 227-5, Ex. 1, Wasserlauf art., '858.)

Experts may rely on facts established in the record that are beyond their area of expertise. *Rearden LLC v. Walt Disney Co.*, No. 17-CV-04006-JST, 2021 WL 6882227, at *4 n. 4 (N.D. Cal. July 12, 2021). Dr. Jafari was not required to independently clinically validate SmartRhythm on watchOS 4 in order to have a valid opinion, because the Wasserlauf study had already done so. It was appropriate for Dr. Jafari to limit his "objective" to "demonstrat[ing] what happened and what created the failure."

The stumbling block for Dr. Jafari is that he cannot have reliably determined whether and how SmartRhythm's performance degraded based upon a sample size of two. In order to accept

Dr. Jafari's argument that he needed only to show that SmartRhythm performed worse on watchOS 5 with one sample, Dr. Jafari would need evidence that SmartRhythm performed as intended on watchOS 4 100 percent of the time. In the absence of such evidence, Dr. Jafari has no basis to conclude that one test with inferior performance on watchOS 5 is representative of SmartRhythm's performance overall. The evidence AliveCor placed in the record indicates that SmartRhythm did not perform with 100 percent accuracy on watchOS 4, even though its performance was highly accurate. (Dkt. No. 227-5, Ex. 1, Wasserlauf art., '858.) Further, Dr. Jafari admitted that he would be "speculating" if he were to opine as to whether SmartRhythm would not function as intended if he had run other heartrate data through his experiment. (Dkt. No. 222-56, Jafari Dep., 113:13-114:1.) Dr. Jafari did not examine sufficient samples to reliably form an opinion about degradation generally. *Cf. Reardon*, 2021 WL 6882227, at *6 (holding sample size of 4 was too small and collecting cases).

However, Dr. Jafari's opinion relating to watchOS 5's impact on heartrate variability and frequency of high confidence value reporting is admissible, based upon both the experiment and his review of the source code. Accordingly, for purposes of summary judgment, the Court considers Dr. Jafari's opinion as to the ways in which the source code in watchOS 5 differed from the source code in watchOS 4 regarding the heartrates reported as inputs to SmartRhythm running in Workout Mode, but it does not consider Dr. Jafari's opinion that watchOS 5 "broke" SmartRhythm.

F. Apple's Motion to Exclude Dr. Michael Cragg.

AliveCor proffers Dr. Cragg to offer opinion testimony as to relevant antitrust markets. Apple moves to exclude the expert report and testimony of Dr. Cragg on the basis that he did not consider the introduction of HRNN or the market in which Apple's alleged anticompetitive conduct occurred. Apple does not challenge Dr. Cragg's qualifications or his application of the Hypothetical Monopolist Test (HMT), including a SSNIP analysis. AliveCor responds that an expert opinion is not excludable under Rule 702 merely because the expert does not adopt an opponent's view of the case. The Court agrees with AliveCor.

1. Dr. Cragg Reliably Applied His Expertise to the Facts of This Case.

In his expert report, Dr. Cragg applied the HMT to consider whether watchOS HRA App market is a relevant antitrust market, and he determined that it is. (Dkt. No. 193-42, Cragg Rpt., ¶ 100.) Dr. Cragg considered alternative applications for watchOS and other platforms and determined that competition in those markets would not prevent a SSNIP in the watchOS HRA App market. (*Id.* ¶¶ 129, 130.) Dr. Cragg repeated this exercise in defining a foremarket for smartwatches and an alternative, broader market for wrist wearables. (*Id.* ¶¶ 132-144, 199-228.) Dr. Cragg considered Apple's market share in these relevant antitrust markets and determined that Apple possesses monopoly power in each. Dr. Cragg did not consider HRNN.[3]

Dr. Cragg's report reliably applies his expertise and the appropriate legal frameworks in reaching these conclusions. Whether or not an additional relevant market exists does not change the usefulness or accuracy of the markets defined by Dr. Cragg—the existence of which Apple does not contest at this stage. (*See* Dkt. No. 238-3, Mot. to Exclude Dr. Cragg, 11:21-22 (conceding, "[a]t most, Dr. Cragg focused on *one* 'area of effective competition' relevant to AliveCor's claims.")) To the extent Apple contends that Dr. Cragg should have considered an additional market or HRPO's replacement with HRNN, those omissions go to weight, not admissibility. *See Alaska Rent-A-Car, Inc.*, 738 F.3d at 970 (holding defendant's objections to expert's methodology "go to the weight of the testimony and its credibility, not its admissibility.").

Therefore, Apple's motion is denied.

CROSS-MOTIONS FOR SUMMARY JUDGMENT

AliveCor moves for partial summary judgment on the basis that replacing HRPO with HRNN was not a product improvement under *Allied Orthopedic Appliances Inc. v. Tyco Health Care Group LP*, 592 F.3d 991 (9th Cir. 2010) for medical monitoring purposes or, even if it were a product improvement, that there is a genuine dispute of material fact regarding whether there is "associated conduct" making the change a violation of the Sherman Act. Apple cross-moves for

[3] AliveCor represents that Dr. Cragg considered HRNN in his analysis. Discussion of HRNN does not appear in Dr. Cragg's opening report. (*See generally*, Dkt. No. 193-42, Cragg Rpt.) In his rebuttal report to the opening report of Dr. Stiroh, Dr. Cragg opines that HRNN is "irrelevant" because Apple maintained HRPO on watchOS 5. (Dkt. No. 222-43, Cragg Rebuttal Rpt., ¶ 33.)

summary judgment on the basis that replacing HRPO with HRNN was a product improvement, and that AliveCor has no evidence of unlawful associated conduct.

Apple moves for summary judgment as to the Section 2 claims on the additional bases that AliveCor failed to define all relevant antitrust markets and cannot establish causal antitrust injury. The Court has reviewed the record and finds genuine issues of material fact remain on these points. However, because the Court's finding that replacing HRPO with HRNN was a genuine product improvement is dispositive, it does not address Apple's alternate Section 2 arguments.

Apple also moves for summary judgment as to AliveCor's California Unfair Competition Law ("UCL") claim because AliveCor cannot establish that Apple's conduct was unlawful or unfair. Apple also argues on that an injunction would be unworkable and AliveCor is not entitled to injunctive relief.

A. Legal Standard Applicable to Motions for Summary Judgment.

Summary judgment is proper where the pleadings, discovery and affidavits show that there is "no genuine issue as to any material fact and that the moving party is entitled to judgment as a matter of law." Fed. R. Civ. P. 56(c). Material facts are those which may affect the outcome of the case. *Anderson v. Liberty Lobby, Inc.*, 477 U.S. 242, 248 (1986). A dispute about a material fact is genuine if there is sufficient evidence for a reasonable jury to find for the non-moving party. *Id.* at 248-49.

The party moving for summary judgment bears the initial burden of identifying those portions of the pleadings, discovery, and affidavits which demonstrate the absence of a genuine issue of material fact. *Celotex Corp. v. Cattrett*, 477 U.S. 317, 323 (1986). When the moving party has met its burden, the nonmoving party must go beyond the pleadings and, by its own affidavits or discovery, set forth specific facts to show that there is a genuine issue for trial. *Id.* The nonmoving party must make a showing that there is more than "some metaphysical doubt as to the material facts." *Matsushita Elec. Indus. Co., Ltd. v. Zenith Radio Corp.*, 475 U.S. 574, 587 (1986). If the nonmoving party fails to produce enough evidence to show a genuine issue of material fact, the moving party wins. *Celotex*, 477 U.S. at 323.

At summary judgment, the court must view the evidence in the light most favorable to the

nonmoving party and make all reasonable inferences in favor of the nonmoving party. *Tolan v. Cotton*, 572 U.S. 650, 656-57 (2014). If the evidence produced by the moving party conflicts with the evidence produced by the nonmoving party, the court must assume the truth of the evidence set forth by the nonmoving party with respect to that fact. *Id.*

B. AliveCor Cannot Prevail on Its Section 2 Claims as a Matter of Law.

Section 2 of the Sherman Act prohibits monopolization and attempted monopolization of "any part of the trade or commerce among the several States." 15 U.S.C. § 2. A monopolist is liable under Section 2 if it "(1) possess[es] monopoly power and (2) use[s] that power to 'foreclose competition, to gain a competitive advantage, or to destroy a competitor.' " *Aerotec Int'l, Inc. v. Honeywell Int'l, Inc.*, 836 F.3d 1171, 1183 (9th Cir. 2016) (quoting *Eastman Kodak Co. v. Image Tech. Servs., Inc.*, 504 U.S. 451, 482-83 (1992)).

Under *Allied Orthopedic Appliances Inc. v. Tyco Health Care Grp. LP*, 592 F.3d 991 (9th Cir. 2010), "a design change that improves a product by providing a new benefit to consumers does not violate Section 2 absent some associated anticompetitive conduct." *Id.* at 998-99. "There is no room in [*Allied Orthopedic*] analysis for balancing the benefits or worth of a product improvement against its anticompetitive effects. If a monopolist's design change is an improvement, it is 'necessarily tolerated by the antitrust laws,' . . . unless the monopolist abuses or leverages its monopoly power in some other way when introducing the product." *Id.* at 1000 (quoting *Foremost Pro Color, Inc. v. Eastman Kodak Co.*, 703 F.2d 534, 545 (9th Cir. 1983)).

"A monopolist's discontinuation of its old technology may violate Section 2 if it effectively forces consumers to adopt its new technology." *Id.* at 1002. A monopolist may show that it did not force consumers to adopt its new technology by, among other things, providing evidence of market share and product alternatives. *Id.*

AliveCor seeks an order finding that *Allied Orthopedic* does not impede its claims because (1) the removal of HRPO was not a product improvement, and (2) even if the removal of HRPO is a product improvement, there is sufficient record evidence of "associated conduct" for a jury to find that Apple violated Section 2 of the Sherman Act. Apple responds that AliveCor improperly considers only part of the product change by not including the introduction of HRNN in its

analysis and that the uncontroverted evidence shows HRNN was an improvement over HRPO. Apple also challenges AliveCor's proof of "associated conduct."

1. The Undisputed Evidence Shows Apple's Decision to Replace HRPO with HRNN Was a Product Improvement.

AliveCor argues that HRNN was not an improvement over HRPO for exercise purposes because, when HRNN was first introduced, HRPO sometimes produced a high-confidence heartrate value faster in the first minute of activation of Workout Mode. AliveCor also argues that HRNN could not have been a product improvement because Apple did not advertise HRNN to the public and because the public continued to complain about Workout Mode. These arguments of counsel falter in light of the record.

First, AliveCor's contention that Apple's design choice to maintain HRPO for the first 60-seconds of Workout Mode means that HRPO was superior to HRNN is pure conjecture that is contradicted by the evidence. Workout Mode would report a HRPO value in the first 60 seconds after activation of Workout Mode only if it produced a high-confidence value before HRNN. (Dkt. No. 220-5, Waydo Decl., ¶ 27.) If HRNN produced a high-confidence value in that interval, Workout Mode would report the HRNN value, not the HRPO value. (*Id.*) Workout Mode always used HRNN and not HRPO after that initial interval or after the first HRNN value, whichever occurred first. (*Id.*) The only reasonable inference the Court may draw from this hybrid design choice is that HRPO sometimes produced a high-confidence value faster than HRNN when HRNN was first introduced, not that HRPO was better than HRNN for use during exercise.

Second, AliveCor's contention that Apple did not advertise HRNN has no bearing on whether HRNN was a product improvement. AliveCor provides no authority for the conclusion that a product improvement is only an improvement if it is publicized.[4]

Third, AliveCor's only support for its contention that the public continued to complain

[4] Apple produced what appears to be internal notes for its press team to discuss when promoting watchOS 5, and it includes mentions of "auto workout detection" and "an enhanced workout API for improved performance for fitness apps." (Dkt. No. 222-57, "Apple Watch: watchOS 5 WWDC press briefings and summer tours," APL-ALVCOR_00823193, '203.) Apple does not explain what this document is or how it was used, but it uses the document to support a contention that it did publicize updates to Workout Mode to developers. (Dkt. No. 236-3, 5:9-10.) The other evidence cited by Apple for this contention does not show that the change was advertised. Nevertheless, the Court is unaware of a requirement to advertise product improvements.

about heartrates in Workout Mode is a compilation of screen captures showing online discussions. These message board discussions do not address whether HRNN or HRPO is better or worse for measuring heartrates during exercise, but instead center on user problems with the Apple Watch not displaying heartrates during workouts. Moreover, these discussions are inadmissible hearsay, largely date from after the removal of HRPO, and do not compare performance between HRNN and HRPO.

AliveCor all but concedes that HRNN may be better than HRPO for exercise purposes. Dr. Cragg testified that whether HRNN was more useful than HRPO depended on the purpose for which it was used by developers. (Dkt. No. 191-22, Cragg Dep., 65:4-5.) Dr. Jafari declined to testify that he reached an opinion regarding whether HRPO or HRNN is superior for measuring heartrate during exercise. (Dkt. No. 222-56, Jafari Rebuttal Dep., 70:2-71:1.)

There is no genuine dispute that the replacement of HRPO with HRNN was a product improvement. The record produced by Apple shows that Apple set out to address the inefficiencies in using HRPO for Workout Mode, which required the user to select an exercise type to function properly and which created corresponding costs in developing and maintaining exercise-specific programming. (Dkt. No. 220-5, Waydo Decl., ¶ 19.) Apple began developing HRNN in 2015, more than a year before the first version of SmartRhythm was released or clinically validated, to address those inefficiencies and improve performance. (*Id.* ¶ 20; Dkt. No. 193-46, Valys Dep., 14:6-13 (SmartRhythm released in December 2017); Dkt. No. 227-5, Wasserlauf art. (pub'd June 2019).) At the time Apple ramped up work on HRNN, Apple's engineering team believed it may have reached a point where it could no longer make significant improvements to user experience by continuing to evolve HRPO, meaning Apple believed it needed to alternative ways to generate more accurate heartrates. (Dkt. No. 222-15, Shapiro Dep., 167:23-168:19.)

Apple conducted a study using over [redacted] in order to develop HRNN. (Dkt. No. 220-5, Waydo Decl., ¶ 21.) Apple's internal testing determined that, as compared to HRPO, heartrate accuracy improved during workouts by greater than [redacted] for walking, HIIT, yoga, and weightlifting exercises, and that heartrate was

reported more frequently for all exercise types. (Dkt. No. 220-11, "Recurrent Neural Network for Realtime Heart Rate During Apple Watch Workouts in WatchOS 5," APL-ALVCOR_00611827.)

AliveCor claims that Apple's removal of access to HRPO was independent of its introduction of HRNN. Like the plaintiffs in *Allied Orthopedic*, who argued that Tyco's decision to discontinue its older technology violated antitrust laws, AliveCor argues that Apple's decision to stop making HRPO available to third-party developers was unlawful whether or not HRNN was better than HRPO for some purposes. *See Allied Orthopedic*, 592 F.3d at 1002. AliveCor's arguments fail for the same reason that the plaintiffs' arguments in *Allied Orthopedic* failed: Apple has the right to implement a product change that is detrimental for some purposes so long as it is an improvement for consumers in some other way. And as *Allied Orthopedic* counsels this Court, it must not weigh the benefits of a product improvement against harm to competitors. *Id.* at 1000.

AliveCor explained at oral argument that, to satisfy antitrust laws, Apple would not need to maintain HRPO indefinitely. Instead, "in the competitive world Apple would need to keep up an algorithm that just reported heart rates in the same fidelity level or even better, if it wanted to, as HRPO." (Dkt. No. 276, Hr'g Tr., 77:5-8.) The uncontroverted evidence in the record shows Apple did just that.

2. AliveCor Has Not Produced Evidence of "Associated Conduct" Under *Allied Orthopedic*.

Because the Court finds there is no genuine dispute of material fact that the replacement of HRPO with HRNN was a product improvement, AliveCor needed to make a showing of "associated conduct" to avoid summary judgment on its Section 2 claims. In other words, AliveCor needed to demonstrate that a material issue of fact exists as to whether the proffered business justification played any role in Apple's decision to act. Evidence of intent to harm competitors is not "associated conduct." *Allied Orthopedic*, 592 F.3d at 1001. Forcing consumers to adopt new technology may be "associated conduct." *Id.* at 1002.

The only "associated conduct" alleged by AliveCor is Apple's removal of third-party developer access to HRPO in Workout Mode. AliveCor argues that, with access to HRPO removed, Apple's IRN feature obtained and maintains a 100 percent market share for watchOS

HRA apps, effectively forcing consumers to adopt Apple's IRN product. AliveCor urges that *Allied Orthopedic* requires the removal of third-party access to HRPO to be a "necessary consequence" of introduction of HRNN in order to foreclose a finding of associated conduct. *See id.* at 1002. AliveCor's arguments fail for several reasons.

First, the logical conclusion of AliveCor's position is that Apple would have to maintain any algorithm used by a single developer on watchOS if removal of dated algorithms would disrupt third-party apps and give Apple increased market share. HRPO was only one of many algorithms in Workout Mode API, and Workout Mode API is only one of many APIs on watchOS. Each occupies space and requires battery life to run, meaning that overinclusion would slow down the Apple Watch and drain the battery faster. Such an outcome would be untenable and would stymie the innovation that the antimonopoly laws are intended to promote.

Second, AliveCor has access to the same Tachogram API that Apple uses in its IRN feature. (Dkt. No. 193-34, Waydo Dep., 33:6-21.) AliveCor may prefer the discontinued HRPO algorithm from Workout Mode in order to continuously monitor heart rhythm, but it could enter the watchOS HRA app market today by relying on the exact same heartrate information used by Apple to monitor for irregular heart rhythm on the Apple Watch.

Third, *Allied Orthopedic* makes clear that "a monopolist has no duty to help its competitors survive or expand when introducing an improved product design," even if the monopolist could have made alternate design choices that would be compatible with a competitor's products. 592 F.3d at 1002; *see also*, *Qualcomm*, 969 F.3d at 989-90 (holding product improvement is not anticompetitive because it harms competitors, but rather must harm competition). In *Allied Orthopedic*, Tyco Health Care Group LP ("Tyco") intentionally modified its pulse oximetry product to foreclose competition before its patent protection expired. 592 F.3d at 994. It modified the components of its product as competitively priced generics became available for sale so that consumers could not use generic components with Tyco's product, thereby protecting Tyco's market share. *Id.* at 995. Even so, because the design change provided a benefit to consumers in some way, it was not unlawful. *Id.* at 1002. Like Tyco, which could have made its product change compatible with competitors' products but chose not to, Apple was under no antitrust

obligation to make its improvements to Workout Mode compatible with AliveCor's app, such as by designing a mechanism to enable AliveCor or other competitors to access HRPO data.

C. AliveCor's UCL Claim Fails Because AliveCor Is Not Entitled to Injunctive Relief.

California's UCL prohibits "any unlawful, unfair or fraudulent business act or practice." Cal. Bus. & Prof. Code § 17200. The unfair prong of the UCL is "intentionally framed in its broad, sweeping language," to enable courts to address "the innumerable 'new schemes which the fertility of man's invention would contrive.' " *Epic*, 67 F.4th at 1000 (quoting *Cel-Tech Commc'ns, Inc. v. L.A. Cellular Tel. Co.*, 20 Cal.4th 163, 180 (1999)). "While the scope of conduct covered by the UCL is broad, its remedies are limited." *Korea Supply Co. v. Lockheed Martin Corp.*, 29 Cal.4th 1134, 1144 (2003). Because "[a] UCL action is equitable in nature," the only relief available to a prevailing plaintiff is injunctive relief or restitution. *Id.*

Federal courts apply federal common law regarding equitable remedies to UCL claims. *Sonner v. Premier Nutrition Corp.*, 971 F.3d 834, 837 (9th Cir. 2020). Therefore, a plaintiff must show "(1) that [the plaintiff] has suffered an irreparable injury; (2) that remedies available at law, such as monetary damages, are inadequate to compensate for that injury; (3) that, considering the balance of hardships between the plaintiff and defendant, a remedy in equity is warranted; and (4) that the public interest would not be disserved by a permanent injunction." *Epic*, 67 F.4th at 1002 (quoting *Galvez v. Jaddou*, 52 F.4th 821, 831 (9th Cir. 2022)).

AliveCor alleges that Apple's conduct in removing third-party access to HRPO on watchOS is prohibited by the "unlawful" and "unfair" prongs of the UCL. (Dkt. No. 106, Am. Compl., ¶¶ 159-160.) AliveCor seeks an order from this Court requiring Apple to "reinsert [HRPO] into Workout Mode to run in parallel to HRNN. . . and provide HRPO-based heart rates to third-party developers that select such rates." (Dkt. No. 229-3, AliveCor Opp. to Mot. Summ. J., 45:2-3.)

Apple argues that the Court should enter summary judgment on AliveCor's derivative UCL claim because equitable relief is not available. Apple claims that any harm to AliveCor occurred years in the past when HRPO was removed from watchOS and that AliveCor has an adequate remedy at law. AliveCor counters that reinserting HRPO would be a simple remedy, and

that it may seek injunctive relief because it has not yet been awarded damages. Because the unavailability of injunctive relief is dispositive, the Court does not reach the parties' remaining arguments.

1. The Injunctive Relief Sought by AliveCor Is Unadministrable.

AliveCor's contention that it would be within this Court's purview to order Apple to reinsert HRPO to Workout Mode lacks merit. AliveCor does not provide the Court with practical limits for such an injunction.

AliveCor does not, for example, describe in detail what its proposed design change would be. The only evidence regarding a possible reconfiguration is a hypothetical toggle for developers to choose between HRPO and HRNN values in Workout Mode, described by Dr. Jafari. But the detail ends there. Dr. Jafari does not provide a sample algorithm to insert his hypothetical toggle into the source code, nor does he explain where the values generated by HRPO and HRNN could be stored. AliveCor makes no attempt to quantify the cost of its proposed solution in dollars, battery life, or storage.

Moreover, there is no practical end to an injunction to keep an out-of-use algorithm in Workout Mode. AliveCor states that Apple does not need to indefinitely maintain HRPO, so long as Apple replaces HRPO with "an equivalent or an improved algorithm." (Dkt. No. 276, Hr'g Tr., 73:5-8.) The Court's role is not to analyze, indefinitely, the quality of algorithms that Apple develops for use by each individual third-party developer in order to ensure that the quality never degrades for any purpose. Such an order could restrain competition by discouraging companies from making product improvements that benefit consumers as a whole to the detriment of certain parties who prefer the status quo. *See Theme Promotions, Inc. v. News Am. Mktg. FSI*, 546 F.3d 991, 1009 (9th Cir. 2008) ("[A] district court might appropriately deny a motion for injunctive relief where the injunction would hinder, rather than promote, competition in the market.").

The Court simply cannot accept AliveCor's invitation to micromanage the algorithms Apple maintains on watchOS by ordering Apple to modify its Workout Mode API to reintegrate HRPO and provide third-party developer access to HRPO values. The Court is not an industry expert in algorithms for biometric devices, and it gives a "wide berth" to Apple's business

judgement to remove HRPO and replace it with a more efficient algorithm. *See Alston*, 141 S.Ct. at 2163 (noting that "[j]udges must be sensitive to the possibility that the 'continuing supervision of a highly detailed decree' could wind up impairing rather than enhancing competition") (citing *Trinko*, 540 U.S. at 415).

2. AliveCor Has an Adequate Remedy at Law for Past Harms.

Where a plaintiff "may" obtain a legal remedy by the nature of the claims alleged, "equitable relief is unavailable." *Huynh v. Quora, Inc.*, 508 F. Supp. 3d 633, 662 (N.D. Cal. 2020) (quoting *Rhynes v. Stryker Corp.*, No. 10-5619 SC, 2011 WL 2149095, at *4 (N.D. Cal. May 31, 2011)). Here, Apple contends that AliveCor has an adequate remedy at law because it primarily pursues Sherman Act claims, and because AliveCor has submitted expert testimony relating to its alleged monetary damages.

AliveCor does not contend that it lacks an adequate remedy at law, only that it may possibly not recover monetary damages in the event of trial. AliveCor does not attempt to rebut Apple's contention that AliveCor can reasonably quantify its claimed losses or that it has lost some other, intangible benefit that could not be remedied with monetary damages. Instead, AliveCor points out that the *Epic* court affirmed a permanent injunction under the UCL even where it found no violation of the antitrust laws. *See Epic*, 67 F.4th at 1003. However, Epic produced expert testimony that damages caused by Apple's anti-steering provision could not be ascertained, *see id.*, whereas AliveCor has produced an expert by Ms. Yvette Austin to quantify its alleged harms. (Dkt. No. 193-43, Austin Rpt.) Among other things, Ms. Austin represents that it is "common practice" for experts to evaluate damages from competitive harms in similar antitrust cases. (*Id.* ¶ 24.)

Accordingly, AliveCor has not met its burden of production on this point. *See Huynh*, 508 F. Supp. 3d at 662-63 (granting summary judgment on UCL claim for injunctive relief where plaintiff brought negligence claim for damages on same facts and did not produce evidence to rebut defendant's showing of adequate remedy at law).

CONCLUSION

For the foregoing reasons, the Court GRANTS Apple's Motion for Summary Judgment

and DENIES AliveCor's Motion for Partial Summary Judgment. AliveCor's Motion to Exclude Certain Opinions and Testimony of Lauren J. Stiroh, Ph.D., Motion to Strike and Exclude the Expert Report and Testimony of Sarah Butler, Motion to Strike Certain Portions of the Declaration of Dr. Stephen Waydo, and Motion for Leave to File Sur-Reply are DENIED. Apple's Motion to Exclude Dr. Michael Cragg is DENIED. Apple's Motion to Exclude Dr. Roozbeh Jafari is GRANTED.

This Order is filed provisionally under seal. The parties shall submit a joint sealing motion setting forth which portions, if any, of the Order shall remain under seal. The parties are ORDERED to file their joint sealing motion within 21 days of this Order.

IT IS SO ORDERED.

Dated: January 31, 2024

JEFFREY S. WHITE
United States District Judge