

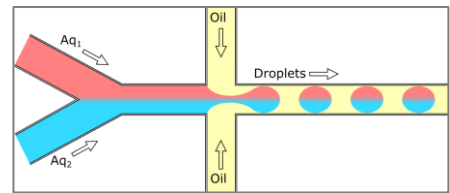
Filing Down the Bars Against the Doctrine of Equivalents

Bio-Rad Labs., Inc., et al. v. 10X Genomics, Inc., Case Nos. 2019-2255, 2019-2285
(*Fed. Cir. Aug. 3, 2020*)

By: Reid Huefner & Ifti Zaim | August 19, 2020

On August 3, 2020, the Federal Circuit [affirmed](#) a determination that 10X Genomics had willfully infringed a patent owned by the University of Chicago and assigned to Bio-Rad Laboratories covering microfluidic test chip technology, rejecting 10X's contentions that the plaintiffs' doctrine of equivalents theory was barred by prosecution history estoppel and claim vitiation. In its comprehensive opinion, a worthy primer for patent litigation, the Court clarified that prosecution history estoppel and claim vitiation—sometimes described as exceptions or bars to the doctrine of equivalents—should not be applied in a rigid and mechanical manner; both require close investigation of the specific invention actually claimed and of matter surrendered in prosecution. This article focuses on the aspects of the case related to the doctrine of equivalents.

The patent of interest, [U.S. Patent No. 8,889,083](#), is directed towards microfluidic systems, i.e. test chips, used by scientists to conduct chemical and biological reactions on extremely small sample droplets consisting of a single cell of test material and the reagents needed for the reaction. The chips consist of strips of material containing hair-width pathways into which a test material fluid (e.g. cells or reagents) is mixed with a carrier fluid (a fluorinated oil) under pressure. This carrier fluid contains a “surfactant,” which is a substance that coats the test material droplets and causes them to repel each other, thus keeping them from coalescing. The specification explains the concept, but as is typical, [Wikipedia presents the easiest way to understand the gist](#):



During prosecution of the patent, the patentee faced a problematic prior art reference, U.S. Patent No. 7,294,503 (“Quake”). Quake, however, disclosed forming or coating the channels with Teflon or other fluorinated oils. To distinguish Quake, the patentee explained that, although not reflected in the pending claims, its invention required that the surfactant and the carrier fluid be chemically similar to each other and that the channel walls be chemically different from the surfactant and carrier fluid to prevent the droplets from sticking to the channel walls. Because the carrier fluid was fluorinated, the surfactant must also be fluorinated, and the channel walls must not be fluorinated. The patentee thus amended its claims to further require a fluorinated surfactant and a non-fluorinated microchannel, thereby disclaiming fluorinated channel wall material, such as Teflon, and distinguishing the claimed invention from Quake.

Presumably in a bid to avoid infringement 10X incorporated a minimally fluorinated coating into the microchannels of its test chips—a low enough concentration not to react with the fluorinated fluids flowing through the channels. In this manner, 10X did avoid a finding of literal infringement, but the jury found that six of 10X's products nonetheless infringed under the doctrine of equivalents (i.e., they performed substantially the same function in substantially the same way to obtain substantially the same result as that claimed by the patent). On appeal, 10X argued that the doctrine

of equivalents was barred for two reasons: (1) prosecution history estoppel, because the patentee had surrendered fluorinated channels; and (2) claim vitiation because extending the claims to cover 10X's devices would entirely read "non-fluorinated" out of the claims.

Prosecution history estoppel relates to the presumption that where a patentee narrowed the scope of its claim to make the claim patentable, such as to overcome prior art, the patentee surrendered all equivalents in the 'territory' between its narrowed claim and what was originally claimed. Thus, these surrendered equivalents cannot be reclaimed via the doctrine of equivalents. 10X sought a mechanical application of this presumption: because the patentee had surrendered everything between microchannels in general and non-fluorinated microchannels, the patentee had surrendered microchannels containing fluorine regardless of its purpose.

However, there are exceptions to the scope of the presumed surrender, including for where "the rationale underlying the amendment bears no more than a tangential relation to the equivalent in question." *Bio-Rad*, at *10. The proper prosecution history estoppel inquiry requires close consideration of not only what was narrowed, but also the objectively apparent reasons for why it was narrowed; that is where 10X's contention failed. The Court held that the objectively apparent reason for the amendment was "to distinguish [the claimed invention] from microchannels that reacted with carrier fluids." *Id.* at *13. Further, Quake did not specifically teach "the use of non-reactive amounts of fluorination in the microchannels." *Id.* Thus, the Court held that the narrowing amendment had only a tangential relation to 10X's equivalent, since 10X's device functionally featured "microchannels with non-fluorinated properties." *Id.*

Claim vitiation is not, in fact, an exception or bar to the doctrine of equivalents. Rather, as the Court explained, it is more accurately described as a determination that the accused device cannot be an equivalent of the claimed invention as a matter of law. Trivially, a device cannot be said to be equivalent to an invention (which requires that it obtain its results in substantially the same way as a claimed invention) if it actually obtains its results in a very different way.

10X argued that finding its products to infringe under the doctrine of equivalents would read "non-fluorinated" out of the claims "because 'fluorinated' and 'non-fluorinated' are 'diametric opposites' and a fluorinated microchannel is the 'antitheses' of a non-fluorinated microchannel." *Id.* at 15. 10X's theory failed because it relied upon the incorrect premise that fluorination, in the context of the claimed invention, was a binary choice—all-or-nothing. The Court held a reasonable juror could find that a "negligibly fluorinated microchannel" performed substantially the same function in substantially the same way and achieve substantially the same result as the claimed invention, rendering 10X's device a valid equivalent to what the patent claimed. *Id.* at 17–18.

This case underscores the hazards, especially in patent law, of oversimplification and reliance upon the apparent text of a rule rather than its essence. The body of patent law adjudicates problems involving substantial technical complexity as they intersect with rights invoking substantial economic nuance (competition versus monopoly). To effectuate its purpose of promoting the progress of science and useful arts while avoiding the creation of unproductive incentives, the law likewise has evolved to be complex and nuanced. There is value in digging in to sift through the minutiae, technical and legal. Here, approximately twenty-four million dollars' worth.