

Archetype IPSM

Federal Circuit Friday

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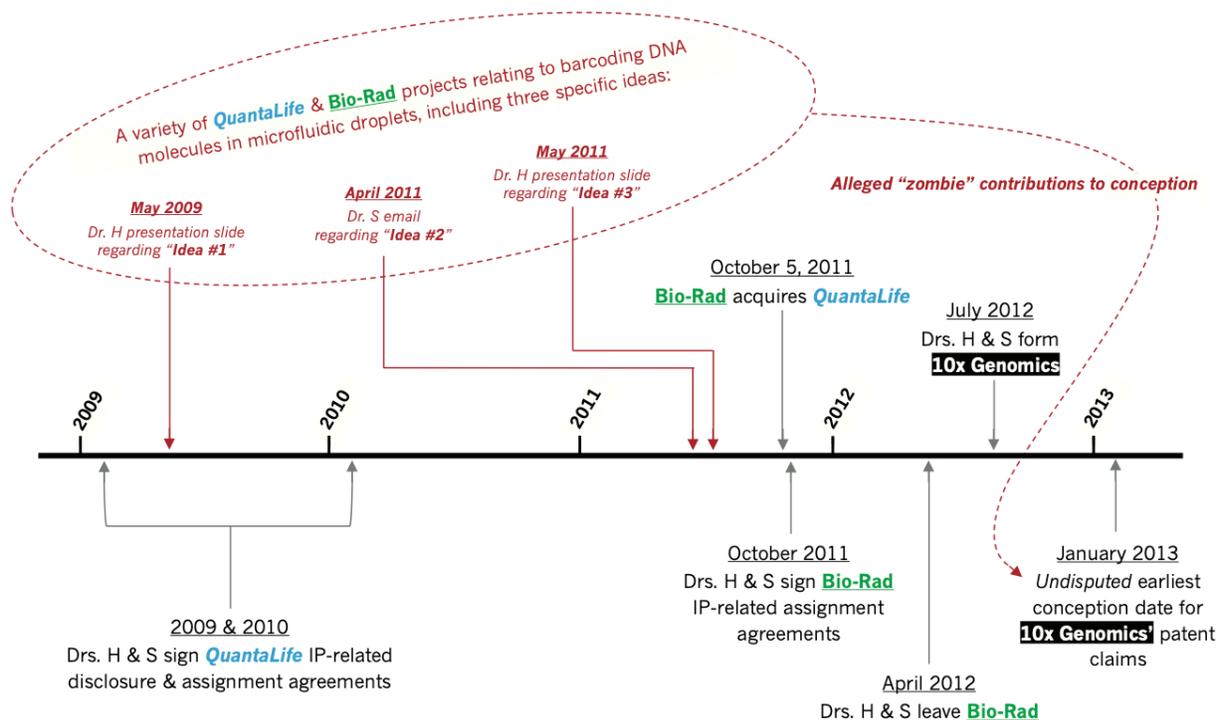
In *Bio-Rad v. ITC* (April 29), the Federal Circuit said “no” to a clever “zombie” patent co-ownership theory.

Background: Facts & The Issue

10X Genomics filed an International Trade Commission action against Bio-Rad to bar importation and sale of Bio-Rad’s microfluidic ddSEQ systems that allegedly infringed three of its droplet-based sample-preparation patents.¹ One of Bio-Rad’s defenses was a claim of co-ownership of the patents based on work done by two of the inventors, Drs. Hindson and Saxonov, when they were employed by Bio-Rad and a predecessor, QuantaLife.

It was undisputed that the earliest date of conception for the inventions claimed in the 10X Genomics patents was after Drs. Hindson and Saxonov had left Bio-Rad and founded 10X Genomics. Bio-Rad therefore argued that “ideas” generated by those inventors earlier, while employed at QuantaLife and Bio-Rad, made their way into the later 10X Genomics’ patents in such a way that Drs. Hindson and Saxonov, *in their prior capacity as employees of QuantaLife or Bio-Rad*, were “co-inventors,” rendering Bio-Rad a co-owner via employee intellectual property assignment agreements.

The ideas at issue include general work by those inventors at QuantaLife and Bio-Rad and three specific examples. A timeline helps encapsulate and summarize the relevant events:



¹ The patents relate to combining, in a microfluidic droplet, a target nucleic acid with porous beads containing releasably-attached oligonucleotides. After release from the beads, the oligos can be attached to or incorporated into the nucleic acid molecule – e.g., by PCR, where the oligos have both primer and barcode sequences and the result is a large number of identically-barcode nucleic acid molecules. This technique allows nucleic acids from a single original source (e.g., a single cell) to be tracked through a multiplexed sequencing process.

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The ITC rejected the “zombie conception” theory, finding that the ideas from the inventors’ days at QuantaLife and Bio-Rad were “too generic,” related to a different technology (droplet-in-droplet versus gel-bead architecture), “did not include the specifics required by the 10x patent claims at issue,” and were in the public domain before the January 2013 conception date for the 10x Genomics patents. Bio-Rad appealed.

Background: Relevant Black Letter Law

1. Joint Invention²
 - a. 35 USC § 116(a): “Inventors may apply for a patent jointly even though (1) they did not physically work together or at the same time, (2) each did not make the same type or amount of contribution, or (3) each did not make a contribution to the subject matter of every claim of the patent.”
 - b. Each joint inventor must contribute to the conception of the claimed invention in a manner “that is not insignificant in quality, when that contribution is measured against the dimension of the full invention.”³
 - i. “Conception is the formation in the mind of the inventor of a definite and permanent idea of the complete and operative invention, as it is therefore to be applied in practice.”⁴
 - ii. A joint inventor cannot “merely explain to the real inventors well-known concepts and/or the current state of the art.”⁵
 - c. Need some “collaboration or concerted effort” among the joint inventors – e.g., “some open line of communication during or in temporal proximity to their inventive efforts.”⁶
 - d. Leads to joint ownership: “[I]n the context of joint inventorship, each co-inventor presumptively owns a pro rata undivided interest in the entire patent, no matter what their respective contributions.”⁷
2. Joint Ownership of Patents: Rights of Co-Owners
 - a. 35 USC §262: “In the absence of an agreement to the contrary, each of the joint owners of a patent may make, use, offer to sell, and sell the patented invention within the United States, or import the patented invention into the United States without the consent of and without accounting to the other owners.”
3. Trade Secret
 - a. *Defined*: Information that (i) derives independent economic value, actual or potential, from not being generally known to the public or to other persons who can obtain economic value from its disclosure or use; and (ii) is the subject of efforts that are reasonable under the circumstances to maintain its secrecy.⁸
 - b. Provides a right against unauthorized disclosure or use of the trade secret information.⁹
 - c. Typical remedies for misappropriation:¹⁰
 - i. Damages for the actual loss caused by misappropriation;
 - ii. Recovery of unjust enrichment that is in excess of the actual damages;
 - iii. Royalties for the period of time the use of the trade secret could have been prohibited;

² There is a *lot of law* on joint inventorship. Federal Circuit Fridays’ background law sections are always focused on the most relevant points, but this particular section is particularly slimmed down and focused.

³ *Fina Oil Chem. Co. v. Ewen*, 123 F.3d 1466, 1473 (Fed. Cir. 1997).

⁴ *Singh v. Brake*, 317 F.3d 1334, 1340 (Fed. Cir. 2003).

⁵ *Bard Peripheral v. WL Gore*, 670 F.3d 1171, 1180 (Fed. Cir. 2012).

⁶ *Eli Lilly & Co. v. Aradigm Corp.*, 376 F.3d 1352, 1359 (Fed. Cir. 2004).

⁷ *Ethicon v. United States Surgical Corp.*, 135 F.3d 1456, 1465 (Fed. Cir. 1998).

⁸ Cal. Civil Code § 3426.1(d).

⁹ See, e.g., *Whyte v. Schlage Lock Co.*, 125 Cal. Rptr. 2d 272, 289 (Ct. App. 2002) (“Misappropriation is, generally speaking, improper acquisition of a trade secret or its nonconsensual use or disclosure.”). One does not “own” a trade secret in quite the same way as one “owns” a patent. A trade secret is a right to control disclosure of information, as opposed to a formal government grant of a right to exclude all others from doing something. Unlike patents, trade secrets do not by statute have the attributes of personal property (nor could they, as everyone is free to develop or reverse engineer a trade secret and then use it to their heart’s desire and, if they wish, instantly destroy its protectible character and value by making it public).

¹⁰ Cal. Civil Code §§ 3426.2(a), 3426.3.

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- iv. Injunction against use for period of time necessary to eliminate competitive advantage (e.g., time necessary to independently develop the information); and
 - v. “Head-start” injunction for period of time equal to that required to independently develop the trade secret.
4. Employee Mobility – California
- a. California Business and Professions Code § 16600: Voids “contract[s] by which anyone is restrained from engaging in a lawful profession, trade, or business of any kind.” Afforded broad scope, as it “evinces a settled legislative policy in favor of open competition and employee mobility.”¹¹
 - b. Per *Erie* guesses in California district courts, patent assignment provisions can be unlawful restraints under § 16600 if, for example, they require assignment of inventions (i) conceived after termination of employment that (ii) did not utilize the former employer’s trade secrets or confidential information.¹²

What Bio-Rad v. ITC Adds or Changes:

The Federal Circuit affirmed the ITC’s decision on two grounds, which appear to be independent: First, that the employee intellectual property agreements did not cover “ideas” that only became protectible intellectual property after the term of employment, when they allegedly contributed to conception of a patentable invention. Second, that there was substantial evidence to support the ITC’s fact determinations and those facts did not support a finding of joint invention.

Contract Interpretation – The ideas generated by the inventors at QuantaLife/Bio-Rad were not subject to assignment.

Building upon Bio-Rad’s contention that the QuantaLife and Bio-Rad employee assignment agreements apply to “intellectual property,” the Federal Circuit interpreted the agreements as “limited to subject matter that itself could be protected as intellectual property before the termination of employment (even if any formal government grants needed for protection may not have been acquired).” Under that interpretation, the Federal Circuit agreed with the ITC that the “ideas” at issue did not fall within the employee assignment obligation.

- Apparently, Bio-Rad argued that an “idea” generated by the inventors at QuantaLife and Bio-Rad was protectible intellectual property, and thus subject to assignment, if “it might one day turn out to contribute significantly to a later patentable invention and make the person a co-inventor.”
- The Federal Circuit explained that in such a scenario, the protectible intellectual property comes into being only upon the conception of the patentable invention (which, in this case, happened only after employment terminated – too late to be subject to assignment).
- The panel also relied on California’s strong public policy in favor of employee mobility: “Substantial questions about compliance with that policy would be raised by an employer-employee agreement under which particular subject matter’s coverage by an assignment provision could not be determined at the time of employment, but depended on an unknown range of contingent future work, after the employment ended, to which the subject matter might sufficiently contribute.”

But there’s a problem: Why were the ideas generated by the inventors at QuantaLife and Bio-Rad not trade secrets, a protectible form of intellectual property that would have triggered the employee assignment obligation and rendered their post-employment use not only a redressible breach of the employee agreements but also a potential Bio-Rad-owned contribution to conception?

- In support of this theory, federal district court cases have acknowledged that Cal. B&P Code § 16600 and California’s public policy do not forbid an employer from prohibiting the use of the employer’s trade secrets by an employee after leaving the company.¹³ So, in theory, Bio-Rad *could* have argued trade secret misappropriation. But according to the case report, Bio-Rad did not.

¹¹ *Edwards v. Arthur Andersen LLP*, 44 Cal.4th 937, 946, 81 Cal. Rptr.3d 282, 289 (Cal. 2008).

¹² See *Armorlite Lens Co. v. Campbell*, 340 F. Supp. 273 (S.D. Cal. 1972), *Applied Materials, Inc. v. Advanced Micro-Fabrication Equipment (Shanghai) Co.*, 630 F. Supp. 2d 1084 (N.D. Cal. 2009), *Conversion Logic, Inc. v. Measured, Inc.*, No. 2:19-cv-05546, 2019 WL 6828283, at *6 (C.D. Cal. 2019).

¹³ See Background: Relevant Black Letter Law, section 5.a. and n.11, above.

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- Maybe Bio-Rad decided against the trade secret angle because it thought the ideas were not trade secrets (e.g., see below about how some or all of the ideas were published before the earliest conception date) or that the remedy for misappropriation would not likely include obtaining co-ownership of the patents or would not otherwise sufficiently insulate Bio-Rad's infringing activities.¹⁴

Substantial Evidence Supports Lack of Joint Inventorship.

The Federal Circuit found substantial evidence to support the facts as determined by the ITC and agreed that "Bio-Rad has not shown reversible error in the Commission's rejection of the contention that the work of Drs. Hindson and Saxonov at Bio-Rad (or its predecessor) qualified them for joint inventorship of the patents at issue."

- *Ideas insufficient for conception.* Most of the ideas at issue were too generic to contribute to conception of the inventions claimed in the 10x Genomics patents. "To accept Bio-Rad's contention after we give the required deference to the Commission's factual . . . rulings would require that we find joint inventorship simply because Drs. Hindson and Saxonov, while at Bio-Rad (or QuantaLife), were working on the overall, known problem—how to tag small DNA segments in microfluidics using droplets—that was the subject of widespread work in the art. We see no sound support for such a conclusion."¹⁵
 - Recall that conception is "a definite and permanent idea of the complete and operative invention" and that joint invention requires a contribution to conception "that is not insignificant in quality, when that contribution is measured against the dimension of the full invention."
- *Ideas in the prior art.* Many of the ideas at issue were disclosed publicly by Bio-Rad (in a patent application) and thus became part of the prior art freely available for use by everyone, including 10x Genomics and the inventors.¹⁶
 - Recall that joint invention requires more than "merely explain[ing] to the real inventors well-known concepts and/or the current state of the art."

As to the three specific ideas cited by Bio-Rad:

- **Idea #1:** May 2009 Dr. Hindson presentation slide regarding "using a microfluidic device containing a double junction to combine nucleic acid samples with reagents," which relates to the claims of one of the 10X Genomics patents. The panel found this insufficient to support joint invention because "[t]he evidence indicated . . . that the experiment was not an idea that Dr. Hindson came up with, but rather was an attempt to recreate an experiment already described in the prior art" and because "the double-junction arrangement appeared in published prior art long before the conception date of the patents at issue here."
- **Idea #2:** April 2011 Dr. Saxonov email regarding "using oligonucleotides as barcodes to tag single cells within droplets," which relates to the claims of two of the 10X Genomics patents. The panel found this insufficient to support joint invention because there was evidence that "using oligonucleotide molecules as barcodes was publicly known."
- **Idea #3:** May 2011 Dr. Hindson presentation slide regarding "delivering oligonucleotide barcodes contained within an inner droplet to the sample cell within the droplet, referred to as a 'droplet-in-droplet' architecture." The panel found this insufficient to support joint invention because "droplet-in-droplet architecture is materially different from the architecture used in the 10X patents at issue here, which deliver the oligonucleotide barcodes via gel beads" and because, per testimony from Bio-Rad's expert, the idea was in the prior art before the January 2013 conception date.

The panel concluded that "[t]he common core of the inventions in the asserted 10X patents is the use of gel beads with releasably attached oligonucleotide barcode molecules as a system for delivery of barcodes to

¹⁴ There is also a potential preemption issue: If argued as a trade secret misappropriation case, then trade secret law might preempt application of patent law (e.g., joint inventorship, co-ownership) to some or all of the operative facts. See, e.g., *SunPower Corp. v. Solarcity Corp.*, Case No. 12-CV-00694-LHK (N.D. Cal., Dec. 11, 2012) (dismissing claims for misappropriation of non-trade secret proprietary information as preempted by the California Uniform Trade Secrets Act (CUTSA) because they arose out of the same operative facts as the plaintiff's trade secret misappropriation cause of action); *Chang v. Biosuccess Biotech Co., Ltd.*, No. LA CV14-00310 JAK (ANx), 2014 WL 7404582 (C.D. Cal. Dec. 29, 2014) (common law claims were subject to preemption under the California Trade Secrets Act because claimant "failed to allege wrongdoing that is distinct from the alleged improper use of trade secrets."). The risk of preemption might have persuaded Bio-Rad to choose the patent theory over a trade secret theory.

¹⁵ Note how this issue is a mixed question of fact and law – the Federal Circuit defers to the ITC as to facts for which there is substantial evidence but evaluates *de novo* the legal issue of the kind of work or idea that would qualify as a joint invention contribution.

¹⁶ Public disclosure would also destroy trade secret status such that, as to this set of ideas, the trade secret theory would necessarily fail.



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nucleic acid segments” and “[t]he Commission could reasonably find that this invention was not conceived at QuantaLife or Bio-Rad.”

Overall, the “zombie conception” theory was clever, and evinces a careful reading of the relevant law combined with creativity in marshalling the facts around the unique theory. The ITC and Federal Circuit disagreed with it here based on problems regarding the assignment obligation and conception. But I suspect there was also a policy issue in the minds of the judges: Approving the zombie conception theory might create extraordinary uncertainty in patent ownership, a proliferation of patent ownership counterclaims (not just to obtain joint ownership, but to challenge patent validity on the basis of omitted inventors), and concomitant increases in patent case cost and complexity.