IN THE COURT OF CHANCERY OF THE STATE OF DELAWARE

AGILENT TECHNOLOGIES, INC.,	)	
	)	
Plaintiff,	)	
	)	
v.	)	C.A. No. 3512-VCS
	)	
JOSEPH J. KIRKLAND, JOSEPH J. DESTEFANO, TIMOTHY J. LANGLOIS, and ADVANCED MATERIALS TECHNOLOGY, INC.,	)	
	)	
Defendants.	)	

MEMORANDUM OPINION

Date Submitted: November 24, 2009
Date Decided: February 18, 2010

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STRINE, Vice Chancellor.

This action involves claims of breach of contract and misappropriation of trade secrets related to the processes and technology used to create particles and solvents for use in reversed phase high performance liquid chromatography columns ("HPLC"). HPLC is a technique for separating and analyzing complex mixtures of gases, liquids, and dissolved substances by forcing the mixture through a vertical tube packed with specialized particles.[1] According to plaintiff Agilent Technologies, Inc. ("Agilent"), defendants Joseph Kirkland, Joseph DeStefano, and Timothy Langlois, all former employees of Agilent, took proprietary information belonging to Agilent, including Agilent trade secrets, and used it to create HPLC products to compete with Agilent at defendant Advanced Materials Technology, Inc. ("AMT"), a company they founded.

Agilent's claims center on four categories of technology, all involved in the manufacturing of HPLC columns:[2] (1) the size of superficially porous particles

[1] I make no claim to be a chemistry expert. The recitation of science in this decision is my best attempt to grasp the concepts relevant to this case as they can be gleaned from the record developed by the parties.

[2] The following is a glossary of technical terms that I use throughout this opinion:

- Bonding: A process that modifies the surface of silica particles, most commonly using linear hydrocarbon chains, to make the particles more reactive.
- Coacervation: A technique to create HPLC particles by engaging an organic polymer to collect particles so that a liquid polymer coating surrounds the core material.
- High performance liquid chromatography (HPLC): A technique for separating complex mixtures by injecting a liquid sample into a mobile phase solvent, and forcing it through a small tube (or column) containing a stationary phase solvent made up of specialized particles.
- Monolayering: A process for creating superficially porous HPLC particles by depositing a single layer of silica sol onto a solid core in successive coatings; also known as "multilayering" but referred to as "monolayering" in this decision for the sake of clarity.

used to pack HPLC columns; (2) a multilayering process used to coat superficially porous particles with multiple layers of silica sol; (3) the configuration of bonding or surface modification atoms; and (4) the slurry solvent used to pack the HPLC columns.

In this post-trial opinion, I find that Kirkland, DeStefano, and Langlois breached their employment contracts with Agilent by removing Agilent property from Agilent's premises without permission and by using Agilent confidential information outside of their employment at Agilent. Also, Kirkland and Langlois breached their employment agreement with Agilent by failing to assign patent applications they filed on behalf of AMT to Agilent. As a result, the defendants, including AMT, are permanently enjoined from using Agilent confidential information, and must return all Agilent property in their possession. And, the defendants must irrevocably withdraw their pending patent applications or assign them to Agilent, at the defendants' election.

- Multilayering: A process for creating superficially porous HPLC particles by deposing multiple layers of silica sol onto a solid core with each coating or application of sol; also known as "multi-multilayering."
- Silica sol: A water soluble adhesive comprised of fine silica particles dispersed in water.
- Slurry solvent: A solvent into which silica is placed before packing the material into a column in order to keep the silica particles evenly separated.
- Spray drying: A method used for making HPLC particles by which solid cores are sprayed with particles in a fluidized system, and then placed in a drying tower so that water flashes off and allows the particles to aggregate around the core.
- Superficially Porous Particles: A less commonly used particle in HPLC columns comprised of a solid silica core and a "shell" of porous silica particles.
- Totally Porous Particles: The most commonly used type of particle in HPLC columns, made up of fully connected silica particles.

See Expert Report of Dr. Peter Myers ("Myers Report)"; DTX 962 (Expert Report of Dr. John G. Dorsey ("Dorsey Report")).

I also find that the defendants misappropriated Agilent's bonding, slurry solvent, and multilayering trade secrets. Therefore, the defendants must pay Agilent both compensatory damages and damages for unjust enrichment.[3] Also, because the defendants acted willfully and maliciously, they must pay Agilent's attorneys' fees.

This opinion is organized as follows: Part I describes the parties and the nature of Agilent's claims, the HPLC industry, and background facts; Part II sets forth my analysis of the claims and conclusions of law; Part III describes the remedy that I find appropriate; and Part IV summarizes my conclusions.

I. Background Facts

These are the facts as I find them after trial.

A. The Parties

Agilent, the plaintiff in this action, touts itself as the world's premier scientific measuring company in both electronic and bio-analytical measurements.[4] As part of its business, Agilent develops, manufactures, and sells HPLC columns.

Defendant AMT is a relatively new company, formed in 2005, which is solely "dedicated to the continuation of excellence in liquid chromatography

[3] *See* 6 *Del. C.* § 2003 (authorizing the award of compensatory and unjust enrichment damages for trade secret misappropriation).
[4] Agilent — Company Information: Agilent at a Glance, http://www.agilent.com/about/companyinfo/index.html?cmpid=5012.

products."[5] Defendant Joseph DeStefano is the President of AMT; defendant Joseph Kirkland is the Vice-President of Research and Development; and defendant Timothy Langlois is the Vice-President of Manufacturing. Currently, AMT's only product is called "Halo," which is a column containing small superficially porous particles that allow for highly efficient HPLC.[6]

Kirkland, DeStefano, and Langlois collectively possess more than 75 years of experience in the field of chromatography. Kirkland is a distinguished analytical scientist. He obtained his Ph.D. in analytical chemistry in 1953 from the University of Virginia. He has received several prestigious awards in analytical chemistry and chromatography, serves on the Editorial Advisory Board of the *Journal of Chromatographic Science*, and has published eight books in the field of chromatography.[7] Kirkland was first exposed to HPLC in 1964 while visiting labs in Europe, after which he began working on the early concept of HPLC at E.I. du Pont de Nemours and Company ("DuPont").[8]

DeStefano received his Ph.D. in analytical chemistry in 1972 from the University of Delaware, where he wrote his Ph.D. thesis on superficially porous particles. In DeStefano's early career at DuPont, he worked to develop gas and liquid chromatographic methods in the same analytical group as Kirkland.[9]

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[5] Advanced Materials Technology — About Us, http://www.advanced-materials-tech.com/about.html.
[6] Tr. at 9 (Kirkland).
[7] DTX 1070 (Brief Vitae of Dr. Joseph Kirkland).
[8] Tr. at 157-59 (Kirkland).
[9] Tr. at 337-38 (DeStefano).

Kirkland and DeStefano left DuPont in 1990 to form Rockland Technologies ("Rockland"), taking a portion of the DuPont HPLC business private.[10] Rockland was acquired by Hewlett-Packard ("HP") in 1997, and HP's HPLC columns business was spun off to Agilent in 1999. Thus, for all relevant purposes, Agilent owns all the rights that DuPont, Rockland, and HP had to the HPLC work that Kirkland and DeStefano did for those companies. Agilent was the final buyer in the chain of transactions beginning with DuPont's transfer of its intellectual property rights in HPLC technologies to Rockland.

Langlois, who received his Bachelor of Science in chemical engineering from Lehigh University in 1995, began working for HP in 1997 as a research engineer reporting to Kirkland, and went on to work at Agilent for more than seven years, first supervising column packing production and later acting as a technical support manager.[11]

B. High Performance Liquid Chromatography

High performance liquid chromatography is an analytical method for separating chemical mixtures into their individual components.[12] In performing an HPLC analysis, the chemical mixture to be analyzed is first injected into a solvent, called the "mobile phase." Next, pressure is used to push the solvent through a

[10] Kirkland and DeStefano obtained a license for DuPont's intellectual property relating to certain HPLC technologies for use at Rockland. DuPont transferred the remainder of its HPLC intellectual property to another company that was later acquired by Hewlett-Packard.
[11] Tr. at 524, 529, 534 (Langlois).
[12] Tr. at 9 (Kirkland); Myers Report at 2.

stainless steel column packed with specialized particles, called the "stationary phase." As the mixture sample passes through the column, it interacts with the stationary phase particles and is separated into individual molecules.

Stationary phase particles are typically made from silica sols, or particles of silica dissolved in water. The most common HPLC stationary phase particles are totally porous. Less commonly used are superficially porous particles, which have solid silica cores and porous silica shells. Superficially porous particles are more time-consuming to make because the cores and shells are synthesized separately and then must be attached to each other, and are desirable because they do not require as high an operating pressure as totally porous particles of the same diameter. This allows columns containing superficially porous particles to be used in older, less efficient HPLC equipment, and eliminates the need to purchase expensive, high-pressure systems. The porous shell particles can be attached to the solid cores through many methods, including spray drying, coacervation, and monolayering.

Also, in reversed phase HPLC — the more commonly used form of HPLC — the surface of the silica stationary phase particles are modified through "bonding," often with chains of eight or 18 carbon atoms. Bonding makes the stationary phase non-polar, which is desirable because most of the chemical mixtures analyzed in HPLC are polar.[13]

[13] Polar molecules can dissolve other polar molecules; but polar molecules cannot dissolve non-polar molecules. *See* Myers Report at 4 n.1.

C. Kirkland, DeStefano, And Langlois Agreed To Be Bound By Agilent's Confidentiality Policies And Exit Procedures

While at Agilent, Kirkland, DeStefano, and Langlois each signed and agreed to be bound by the terms of an Agreement Regarding Confidential Information And Proprietary Development (the "Confidentiality Agreement").[14] These Agreements form one component of what I find to be a set of commercially reasonable procedures Agilent used to protect its proprietary information. The Confidentiality Agreements require each employee to hold confidential information in confidence, whether the information was acquired or produced by the employee while at Agilent, and to only use trade secrets or confidential information "in the performance of Agilent duties."[15] Importantly, Kirkland, DeStefano, and Langlois agreed to "return all Agilent property to Agilent unless Agilent's written permission to keep it [was] obtained" upon leaving Agilent.[16]

According to Agilent's Standards of Business Conduct, which also applied to Kirkland, DeStefano, and Langlois as Agilent employees, Agilent property includes "[e]veryday information within Agilent, whether specially labeled or not," which can only "be used for Agilent business purposes."[17] The Standards of

[14] PTX 41 (Agreement Regarding Confidential Information and Proprietary Developments between Joseph Kirkland and Agilent (Oct. 9, 1999)); PTX 42 (Agreement Regarding Confidential Information and Proprietary Developments between Joseph DeStefano and Agilent (Oct. 12, 1999)); PTX 43 (Agreement Regarding Confidential Information and Proprietary Developments between Timothy Langlois and Agilent (Oct. 14, 1999)) (collectively, the "Confidentiality Agreements").
[15] *Id.*
[16] *Id.*
[17] PTX 55 (Memo from Bill Sullivan, CEO of Agilent, to Agilent Employees (June 9, 2005)) at AG_00059020.

Business Conduct also explain that "[r]estrictions on the use of Agilent information apply both while [the employee] work[s] for [Agilent] and after [the employee] leave[s]"; failure to comply with the Standards is considered "misconduct, and may result in termination of employment."[18]

Agilent takes further steps to protect the confidentiality of its information by limiting its employees' access to confidential documents, [19] and restricting access to its research and development sites to those with employee badges and certain announced and escorted visitors.[20]

And, as part of its efforts to protect its proprietary information, Agilent also has exit procedures designed to make sure that departing employees do not leave with sensitive information and are reminded of their duties to Agilent. Upon their departures from Agilent, Kirkland, DeStefano, and Langlois each signed a "Functional Exit Interview Memo," in which they again agreed to keep confidential Agilent's non-public technologies, and to "return all memos, papers, lab notebooks" and other Agilent documents.[21] They were reminded of, and agreed, that if they "later [found] other documents relating to [their] Agilent

[18] *Id*. at AG_00059012, AG_0059020.
[19] Tr. at 1092-95 (Fabas); *see also* PTX 55 at AG_00059021 (setting forth guidelines on how to label and use sensitive Agilent information).
[20] Tr. at 1098-1103 (Fabas).
[21] PTX 47 (Functional Exit Interview Memo for Joseph Kirkland (Feb. 1, 2001)), PTX 53 (Functional Exit Interview Memo for Joseph DeStefano (Apr. 15, 2005)), PTX 54 (Functional Exit Interview Memo for Timothy Langlois (Apr. 15, 2005)).

employment," they were responsible for returning the documents "promptly to an Agilent legal department representative."[22]

But Kirkland, DeStefano, and Langlois did not honor their promises to Agilent, and each removed confidential Agilent documents from Agilent's premises upon their departures from Agilent. Kirkland kept a "zip disk and one or two CDs" containing copies of "every Agilent document" he had created, including documents containing confidential technical information.[23] DeStefano and Langlois also took Agilent documents with them upon their departures from Agilent in 2005, at a time when they had already decided to start AMT to compete with Agilent. DeStefano took a batch record or "recipe" detailing the steps in a non-public gel-filtration[24] procedure that was later found in his lab notebook at AMT, and a Rockland technical report about milling[25] Zorbax[26] totally porous particles that was later found in the possession of Jason Lawhorn, an AMT employee.[27] Similarly, Langlois took an Agilent batch record or "recipe" explaining exactly how to make Rx silica, or "type-B" silica,[28] when he left

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[22] *Id.*
[23] Tr. at 32-36 (Kirkland).
[24] Gel filtration is a method used to separate molecules by size by passing the molecules to be separated through a gel medium packed in a column.
[25] Milling is a process used to reduce the size of particles to micron-size and nano-size.
[26] Zorbax is the trade name of a 5 micron totally porous particle used in HPLC which was initially developed at DuPont.
[27] PTX 70 (Rockland Technical Report by Joseph Kirkland (May 4, 1999)); PTX 158 (batch record showing the steps for a gel-filtration procedure (June 7, 2002)); Tr. 325-29 (DeStefano).
[28] PTX 172 (batch record for "type-B" silica (Feb. 9, 2005)); Tr. at 489 (Langlois). Rx, or type-B, silica is a gel with certain structural characteristics that allow it to act as an absorption material.

Agilent, as well as a confidential memo from HP on spray drying, which Langlois gave Lawhorn at AMT after removing the label designating the document as HP "confidential."[29] Kirkland, DeStefano, and Langlois used the information contained in these documents to get a head start on creating their new HPLC columns business at AMT to compete with Agilent.

D. Kirkland, DeStefano, And Langlois Start AMT

DeStefano first thought about starting AMT in the summer of 2004, and wrote an email to a colleague describing his idea to leave Agilent and start a business "manufacturing silica packings and loading and testing HPLC columns" — the same work that DeStefano was involved in at Agilent — because of his frustration with the "sad state of affairs" at Agilent.[30] In fact, DeStefano knew, even then, that products he hoped to produce at his new company could be based on Agilent technology. In his initial email expressing his idea to start AMT, he wrote that "[s]ince most of the pertinent patents for Zorbax silica are expired and the patent for Rx silica can be avoided . . . and there are no patents on XDB [bonding] technology, I can think of no reason we cannot duplicate those products in small-scale facilities to support an analytical column business."[31] DeStefano

[29] *Compare* PTX 5 (HP Monthly R&D Report by Timothy Langlois, marked "confidential" (Aug. 1998)) *with* PTX 265 (memo containing the same language as PTX 5, found at AMT). *See also* Tr. 485-88 (Langlois).
[30] PTX 161 (email from Joseph DeStefano to John Larmann (June 28, 2004)).
[31] *Id.*

also stated his intention to seek out Andre Dams, an Agilent distributor, to help market AMT's products in Europe.[32]

While still at Agilent, in September 2004, DeStefano recruited his Agilent colleague, Langlois, to assist him in developing a business plan geared at giving the company that would later become AMT "full exposure to the 250 million dollar HPLC columns market."[33] Crucially, the business plan contained a disclaimer that DeStefano and Langlois had signed Confidentiality Agreements with Agilent and, "[a]lthough the new company [would] insure to the best of [DeStefano and Langlois'] ability that no proprietary or confidential material [would] be used in the products of [AMT], Agilent . . . could use litigation to protect its on-going HPLC business."[34]

DeStefano also contacted Kirkland, who had retired from Agilent three years earlier in 2001, about helping to start the new company in the fall of 2004. After being contacted by DeStefano, Kirkland began to place selected documents that he had taken from Agilent into a folder called "Memos for New Company" that he used as inspiration for research and development projects at AMT.[35] Kirkland also began to write memos about potential products for the new company, referencing processes and products he had worked with at Agilent. In September 2004, while DeStefano was still at Agilent, Kirkland sent a memo to

[32] *Id*.
[33] PTX 164 (email from Timothy Langlois to Joseph DeStefano (Sept. 9, 2004)).
[34] *Id*. at D2000037.
[35] PTX 264 (folder called "Memos for New Company").

DeStefano called "Proposed New Particles for HPLC Columns," which explained problems he had experienced in preparing superficially porous particles "[w]hile working within Agilent Technologies" and suggested an alternate approach to make the particles.[36] Kirkland recommended that "[t]o further specify differences from exist[ing] Agilent products, the proposed particles should be given a name that suggests their application, rather than a generic name like Poroshell[37]."[38] He also recommended a spray-drying method to coat the particles based on "[p]revious studies within DuPont and Rockland . . . ."[39]

Kirkland sent another memo to DeStefano in December 2004, which suggested that AMT pursue the manufacturing of porous silica particles "prepar[ed] by . . . the Zorbax-SIL process," — a process developed at Agilent — "the patents for which [had] expired."[40] Kirkland also recommended that AMT manufacture superficially porous particles through multilayering; but, Kirkland warned that because "Agilent's Poroshell are produced by a sintering process developed by [himself], it would be prudent to prepare such cores by another process," which would begin "with porous particles of the desired size made by the Zorbax-SIL process."[41]

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[36] PTX 165 (Proposed New Particles for HPLC Columns by Joseph Kirkland (Sept. 20, 2004)).
[37] Poroshell is the brand name for the superficially porous HPLC particle developed by Rockland, and eventually marketed by Agilent in 2001.
[38] PTX 165.
[39] *Id.*
[40] PTX 167; PTX 169 (Suggestions for Manufacturing Procedures by Joseph Kirkland (Dec. 7, 2004)).
[41] *Id.*

DeStefano and Langlois left Agilent to form AMT in April 2005, and, despite their business plan to give AMT "full exposure to the 250 million dollar HPLC columns market,"[42] told Agilent that they were planning to "fulfill niche projects that Agilent is either not involved with at this time or which Agilent is not providing any R & D support for further product development."[43] Agilent believed DeStefano and Langlois, and even helped them in starting AMT by, among other things, allowing an Agilent employee in charge of setting up environmental health and safety precautions to assist AMT,[44] selling the defendants several pieces of HPLC equipment,[45] and giving DeStefano a column packing material that was no longer in use called Zorbax StableBond C8.[46] But, soon after their departure from Agilent, DeStefano and Langlois, along with Kirkland who came out of retirement to join AMT, prepared a "Technology Roadmap for AMT," listing size exclusion/ gel filtration HPLC,[47] small particles for reverse phase chromatography made of type-B silica, and small superficially porous particles as processes and products that AMT would pursue[48] — all of which Agilent and its predecessors had researched or produced.

[42] PTX 164.
[43] DTX 773 (email from Morgan Keith to David Bennett (Apr. 1, 2005)).
[44] DTX 773; Tr. at 661-62 (Langlois).
[45] DTX 1055 (email from Kevin Hertzog to Timothy Langlois (May 2, 2005)); Tr. at 571-73 (Langlois).
[46] Tr. at 413-414 (DeStefano).
[47] Size exclusion HPLC is a method for separating mixtures based on their volume.
[48] PTX 180 (email from Timothy Langlois to Joseph DeStefano, John Larmann, and Joseph Kirkland (Apr. 26, 2005)).

Because DeStefano and Langlois knew that AMT would be pursuing gel filtration experiments and the use of type-B silica, it was not a coincidence that they took documents from Agilent that related to those very concepts.[49] As noted previously, DeStefano and Langlois took a number of Agilent technical documents with them when they left, in violation of their contractual duties.[50] This furtive misbehavior was intentional, and the documents they took included several that were directly relevant to the research and development agenda they had been plotting with Kirkland for at least seven months — an agenda that was directly competitive to Agilent.[51]

E. The Defendants Pursue Products At AMT To Compete With Agilent

By pervasively utilizing ideas and empirical evidence of research results showing the effectiveness (and, as important to scientists, ineffectiveness) of certain products and processes that the defendants had taken from Agilent in structuring AMT's research and development approach, the defendants had the know-how to kick-start AMT with product development processes, and to avoid many of the experimental and testing steps that would have otherwise been necessary. Thus, AMT was able to quickly produce and market Halo by October 2006. Specifically, AMT applied four key types of Agilent technology in the creation of its Halo product: (1) a small size for superficially porous particles; (2) a multilayering process to create superficially porous particles; (3) a specific

[49] *See* PTX 5, 70, 172, 158.
[50] *See supra* pages 9-10.
[51] *See supra* notes 27-29.

bonding agent; and (4) a specific slurry solvent. I will next describe, as best as I can discern from the record, how each of these four technologies was researched and developed at Agilent and AMT, and how the defendants were involved.[52]

1. Small Superficially Porous Particles

One of the products that Kirkland, DeStefano, and Langlois decided to pursue at AMT was a superficially porous particle smaller than the particles that Agilent and its competitors had developed. Superficially porous particles for HPLC are less commonly used than totally porous particles, because they are time-consuming to create, and are generally much larger than totally porous particles.[53] DuPont had first commercialized a superficially porous particle called Zipax, which was approximately 35 microns[54] in size, for use in HPLC in the late 1960s. Kirkland and others at Rockland had tried to make the Zipax particle size smaller in order to speed up the separation process, and began researching small superficially porous particles at Rockland in the 1990s.[55]

In 1995, Kirkland applied to the National Institute of Health Department of Health and Human Services for a Small Business Innovation Research grant (the "1995 SBIR Grant") in order to pursue superficially porous particles that were

[52] Because this is a case of allegedly misappropriated trade secrets, the descriptions of Agilent's and AMT's products are purposely vague so that proprietary information is not disclosed.
[53] Myers Report at 5-6.
[54] A micron (μm) is a unit of measurement equal to one-millionth of a meter.
[55] A small, porous particle is desirable because it generally provides more surface area and, thus, more efficient separation, than a totally porous particle. *See* Tr. at 716 (Myers); Myers Report at 6.

between 4 and 10 microns in size.[56] Also, according to a Monthly Research Report written by Kirkland and others in 1996, Rockland was working to create a "smaller (3.5 μm) Poroshell particle with a higher surface area porous shell made with small (11 μm) sol particles."[57]

Kirkland continued his pursuit of a small superficially porous particle at HP and, in 1997, submitted an Invention Disclosure form to HP — marked as "company confidential" — that described the process for preparing superficially porous particles ranging in size from 3 to 10 microns, and included a drawing of a 3.5 micron superficially porous particle. DeStefano witnessed Kirkland's signing of the document.[58] Kirkland was successful in creating a small superficially porous particle and, in his final report regarding the 1995 SBIR grant, Kirkland disclosed that he had created two 3.6 micron (the particles were exactly 3.681 μm)[59] superficially porous particles and four 3.8 micron particles.[60] HP decided not to pursue any patents related to the work at that time.[61]

At Agilent in 1999, Kirkland continued the work that he had started at Rockland and HP, and used his earlier research to pursue his goal of making an

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[56] PTX 71A (Small Business Innovation Research Program Phase I Grant Application by Joseph Kirkland (Nov. 30, 1995)) ("1995 SBIR Grant").
[57] PTX 3 (Rockland Monthly Research Report by Joseph Kirkland and others (Aug. 1996)).
[58] PTX 4 (HP Invention Disclosure by Joseph Kirkland (May 13, 1994)).
[59] The specific size of the particle, as measured by a Coulter counter, was set forth in the lab notebook of Frank Truszkowski, a member of the Analytical Division at Agilent. PTX 319 (Laboratory Notebook of Frank Truszkowski) at AG 00005677.
[60] PTX 76 (Letter from Joseph Kirkland to Twanda Johnson (Aug. 9, 1997)).
[61] *Id.*

approximately 3 micron superficially porous particle.[62] Specifically, Kirkland and his team were attempting to make a Poroshell particle with 11 nanometer silica sol and a 0.5 micron shell so that the particle's surface area would be around 100 square meters per gram, making it a more efficient particle, and targeted an overall particle diameter of 3.5 microns.[63]

Later, at AMT, Kirkland continued his pursuit of a 3.5 micron particle with a 0.5 micron shell — the very same project that he had recommended Agilent continue to research upon his retirement in 2001.[64] In fact, in 2004, before DeStefano left Agilent, Kirkland sent DeStefano a memo called "Technology Ideas for New Company," which, among other things, suggested that the new company (AMT) apply for a SBIR grant for "a 3.5 µm superficially porous particle with a ~.05 µm shell of 600-100 Å [angstrom][65] pores."[66] Kirkland again emphasized the idea of applying for a SBIR grant to work on a small superficially porous particle in a 2005 email to DeStefano, and explained that a "3.5 µm particle with a 0.5 µm shell of 6-10 nm pores" — made by spray drying but not

[62] PTX 126 (Letter from Joseph Kirkland to Frank Truszkowski (Dec. 14, 1999)) ("Your promising attempt of coacervation with 11 nm "good" sol using Zelec needs to be followed up when possible. . . . Eventually, we may want to make 3.5-µm particles of this material."); PTX 154 (Suggested R&D Projects by Joseph Kirkland (Jan. 19, 2001)).
[63] Tr. at 58 (Kirkland); PTX 126.
[64] Tr. at 54-55 (Kirkland).
[65] An angstrom is a unit of measurement equal to 0.1 nanometers.
[66] Tr. at 126-27 (Kirkland); PTX 168 (Technology Ideas for New Company, by Joseph Kirkland (Dec. 24, 2008)).

monolayering — was something that he and "Frank T[ruszkowski] did some preliminary work towards" at Agilent.[67]

Soon after, at AMT in July 2005, Kirkland drafted a SBIR grant application for AMT, pulling the bulk of the language directly from the 1995 SBIR Grant application he had filled out at Rockland (the "2005 SBIR Grant").[68] Kirkland had taken an electronic copy of the 1995 SBIR Grant application with him when he left Agilent,[69] and cut and pasted it into his 2005 SBIR Grant application for AMT.[70] AMT was successful in obtaining the 2005 SBIR Grant to research 3.5 micron superficially porous particles, and used it to research and develop the 2.7 micron superficially porous particle that AMT would later market in its Halo columns. Kirkland and DeStefano used estimates for totally porous particles they had made while at Agilent to establish the 2.7 micron size target for Halo

[67] PTX 160 (email from Joseph Kirkland to Joseph DeStefano (Apr. 2, 2005)).
[68] Tr. at 77 (Kirkland). *Compare* PTX 185 (Small Business Innovation Research Program Phase I Grant Application by Joseph Kirkland (July 19, 2005)) *with* the 1995 SBIR Grant.
[69] Agilent argued in its Opening Post-Trial Brief that DeStefano and Langlois also took copies of the 1995 SBIR Grant application with them when they departed, and that it was not only Kirkland who improperly took a copy. Agilent Op. Post-Trial Br. at 13. But the record citations used to support that argument are ambiguous and do not clearly link copies of the Grant application to DeStefano and Langlois; further, DeStefano and Langlois were not asked at trial whether they took copies of the Grant application. *See* PTX 71; PTX 267. In response to this allegation, the defendants are silent. If Agilent is correct (*e.g.*, because the exhibits they cite came from discovery produced by Langlois and DeStefano), that would make even clearer how deliberately the defendants breached their contracts with Agilent, and how consciously they used Agilent's proprietary information for competitive purposes.
[70] Tr. at 205 (Kirkland).

particles,[71] although Kirkland later claimed at trial that he came up with the target size through a simple physics calculation.[72] To my mind, the pre-litigation business e-mail Kirkland wrote for AMT indicating that the 2.7 micron size was calculated at Agilent is more convincing. Kirkland had made the estimation at Agilent, just as he had outlined at Agilent the overall research agenda for developing the small superficially porous particle that eventually became Halo.[73]

After the Halo product had been on the market for several months and had already begun to develop a customer base,[74] Langlois and Kirkland, on behalf of AMT, applied for a patent on superficially porous particles with a "small particle diameter, such as about 1 μm to 3.5 μm" in February 2007 (the "Small Particle Patent Application").[75] Superficially porous particles with a diameter of greater than 3.8 microns had previously been disclosed in a *Journal of Chromatography* article by Kirkland in 2000,[76] but, as the Small Particle Patent Application explained, there was a "need for superficially porous particles that have a diameter smaller than 3.8 μm."[77] Kirkland and Langlois did not admit in their Small

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[71] PTX 191 (email from Joseph Kirkland to Joseph DeStefano (Sept. 2, 2005)) (explaining that the target size for Halo came from "previous estimates while in Agilent for totally porous particles"). Totally porous particles commonly ranged in size from 3.5 microns to 5 microns. Tr. at 176 (Kirkland).
[72] Tr. at 82 (Kirkland).
[73] PTX 191.
[74] Tr. at 423-24 (DeStefano).
[75] PTX 345 (Porous Microparticles with Solid Cores, US Patent App. No. 11/705,629 (filed Feb. 13, 2007)).
[76] DTX 708 (J.J. Kirkland et al., *Superficially porous silica microspheres for fast high-performance liquid chromatography of macromolecules*, JOURNAL OF CHROMATOGRAPHY, 2000, at 3).
[77] PTX 345.

Particle Patent Application that superficially porous particles in this size range were the subject of a 1997 invention disclosure Kirkland had submitted at HP.[78] At trial, Kirkland tried to justify the omission by stating that particles smaller than 3.8 microns were confidential to Agilent.[79] This was an odd way for Kirkland to protect Agilent, considering that concealment of the fact that Agilent, not AMT, had initiated this research thereby enabled AMT to apply for a patent that would exclude Agilent from using the particle size without paying AMT a royalty. A true act of commercial friendship.

2. Multilayering

In addition to their Small Particle Patent Application, Kirkland and Langlois filed a patent application on behalf of AMT called "Process for Preparing Substrates with Porous Surface" in 2008, which described a method for coating the surface of a particle with multiple layers of sol per application (the "Multilayering Patent Application").[80] Although a layer-by-layer, or monolayering, approach to applying silica sol to a solid core had been made public by Dr. Ralph Iler as early as 1965,[81] the multilayering effect for HPLC was not observed until November 2000 at Agilent.

[78] *Id.*; PTX 4.
[79] Tr. at 80-81 (Kirkland).
[80] PTX 348 (Process for Preparing Substrates with Porous Surface, US Patent App. No. 11/705,620 (filed Feb. 13, 2007)).
[81] *See* DTX 603 (R. K. Iler, *Multilayers of Colloidal Particles*, JOURNAL OF COLLOID AND INTERFACE SCIENCE, 1965). Iler is the author of an authoritative text on the chemistry of silica.

Kirkland had, at first, worked at Agilent to develop superficially porous particles through coacervation but, as late as November 2000, switched to a monolayering method. In November 2000, Agilent was looking to replace a polymer called Zelec DX for its Poroshell product. Kirkland tested a variety of polyethyleneimine polymers as possible replacements for Zelec DX — the same type of polymer that Kirkland referenced in his 2004 memo suggesting products for AMT to develop.[82] The results of the November 2000 experiment were recorded in a memo marked "Agilent Technologies Confidential," which was sent to Langlois, and suggested that one polymer — polyethyleneimine with a molecular weight of approximately 25,000 — may have been "assembling more than one layer of silica sol" per coating.[83] This memo was included in the zip drive that Kirkland removed from Agilent when he retired in 2001, and is part of the same batch of documents that Kirkland reviewed in preparing his outline of ideas for the new company in the fall of 2004. But Kirkland claims he did not reference the document referring to his 2000 polymer experiment at any time after leaving Agilent. I believe he is, at best, mistaken about that.

[82] PTX 167; PTX 169; Tr. at 125-26 (Kirkland).
[83] PTX 147 (Agilent Technical Report from Joseph Kirkland to Timothy Langlois (Nov. 16, 2000)).

According to Dr. Yuri Lvov,[84] a self-described expert in "layer by layer" nanotechnology who testified for the defense at trial, if Kirkland's 2000 memo does show that multilayering had been achieved, it would have been the first time that the possibility of a multilayering process for HPLC was noted, though a less-efficient version of this process had been observed in the nanotechnology industry.[85] But Kirkland claims that he was observing nothing more than an anomaly, and only considered the experimental results as showing that polyethyleneimine could be a possible replacement for Zelec DX.[86]

After Kirkland observed the multilayering phenomenon in 2000, and recorded his observation in a technical report that he sent to Langlois,[87] Langlois supervised experiments at Agilent using a multilayering approach in 2003. John Scone, a technician who worked for Langlois at Agilent, was directed by Langlois to change his experimental approach from coacervating a Poroshell product with

[84] Lvov is the T. Pipes Eminent Endowed Chair on Micro and Nanosystems at the Institute for Manufacturing, Louisiana Tech University. Lvov earned his Ph.D. in Physical Chemistry from M. Lomonosov's Moscow State University in 1979, and has worked in research centers throughout the world. His main areas of study include, among others, "nanoassembly of multilayer films of nanoparticles and polyelectrolytes." He has five U.S. patents on "multilayer nanoassembly." *See* DTX 963 (Expert Rebuttal Report of Yuri Lvov at 1).

[85] *See e.g.*, DTX 687 (Yuri Lvov et al., *Alternate Assembly of Ordered Multilayers of SiO_2 and Other Nanoparticles and Polyions*, 13 LANGMUIR 6195, 6200 (1997)); DTX 692 (Dongsik Yoo et al., *Controlling Bilayer Composition and Surface Wettability of Sequentially Adsorbed Multilayers of Weak Polyelectrolytes*, 13 MACROMOLECULES 4309, 4312 fig. 2 (1998)); Tr. at 1447-48, 1465-67 (Lvov).

[86] Tr. at 223-24 (Kirkland).

[87] PTX 147.

80 angstrom pores ("Poroshell 80") to a multilayering approach.[88] Scone's experiments showed that the shell thickness of Poroshell 80 was increased by the diameter of five sol particles for each coating of sol that was applied.[89] Langlois denies any knowledge of the results of Scone's experiments,[90] but I find it likely that he was well aware of them — Scone testified that Langlois told him to draw a star on the page of Scone's lab notebook that described the steps of the experiment, and Langlois wrote in Scone's 2003 performance review that Scone had "developed a preliminary method to coat the poroshell surface with 14 nm silica sol (Poroshell 80)."[91]

After DeStefano contacted Kirkland in 2004 about the possibility of starting AMT, Kirkland suggested in a memo to DeStefano that AMT pursue the creation of superficially porous particles through multilayering by using a long polymer, such as polyethyleneimine. The language of Kirkland's memo sounds as though Kirkland was already certain that multilayering would work; he explained that "if the proper polymer molecular weight is selected, each treatment with silica sol should result in much more than a monolayer of sol on the bead surface [meaning that] the buildup of porous silica surface will be much faster than would be

[88] Tr. at 1089 (Scone); DTX 956 (Plaintiff's Supplemental Responses to Defendant's First Set of Interrogatories Directed to Plaintiff (Jan. 5, 2009)) at 26 (explaining that Langlois and Scone changed the parameters of their experiment from "the coacervation procedure to a [multilayering] procedure").
[89] Tr. at 832 (Myers); Tr. at 1031-34 (Scone); PTX 330 (Laboratory Notebook of John Scone) at AG_00010980-83.
[90] Tr. at 545, 553 (Langlois).
[91] Tr. at 1060 (Scone); PTX 309 (performance review of John Scone by Timothy Langlois).

predicted by just the size of a layer of individual sol particles."[92] Kirkland cannot point to any evidence showing that his moment of inspiration for a multilayering process was based on knowledge that he obtained after his retirement from Agilent; instead, it is likely that Kirkland was inspired when he came across his 2000 memo showing the potential for polyethyleneimine to multilayer as he was going through his Agilent zip drive and pulling documents to put in his "Memos for New Company" folder.

The other plausible possibility also does not aid Kirkland. Kirkland is a brilliant man. When conjuring up ideas for the new company, it is also possible, given how sharp he is, that he remembered his observation at Agilent in 2000 that polyethyleneimine had the potential to assemble multiple layers of sol in a single coating.[93] By 2004, Kirkland had been retired for three years and had been golfing or gardening or playing tennis. His very specific recommendation to DeStefano and Langlois in 2004 that layering the surface of a particle with the right polymer, such as polyethyleneimine, could "result in much more than a monolayer of sol on the bead surface"[94] is almost identical to his observation at Agilent in 2000. Thus, the inspiration for his recommendation in 2004 most likely came from work he had done and observations he had made at Agilent, and was possibly influenced by discussions between Langlois and himself, given their mutual involvement and interest in this area.

[92] PTX 167 at D1_007782.
[93] PTX 147.
[94] PTX 167.

At AMT, Langlois first attempted a coacervation process but switched to Kirkland's multilayering approach by November 2005. The first multilayering experiment at AMT was conducted in December 2005 and recorded in Langlois' lab notebook, which describes a detailed approach — suggested by Kirkland — geared at depositing multiple layers of sol with each coating.[95] Langlois' very first attempt at multilayering at AMT was a success, and resulted in "multiple sol particles attached to the surface" of the particle after each application of sol.[96] Although other coacervation experiments were conducted, Langlois and two technicians at AMT soon focused exclusively on the multilayering technique, and conducted approximately thirty multilayering experiments from December 2005 until late summer of 2006 when the technique was perfected. The final multilayering approach used for Halo does not use polyethyleneimine as a polymer as Kirkland had initially suggested, but instead uses the polymer PDDA.[97] This multilayering method is the subject of AMT's Multilayering Patent Application.[98]

3. Bonding

Agilent also alleges that the defendants improperly use the same bonding at AMT that is used at Agilent. Linear hydrocarbon chains, particularly linear chains

[95] PTX 331 (Laboratory Notebook of Timothy Langlois) at D1_000480; Tr. at 617 (Langlois).
[96] Tr. at 619-620 (Langlois).
[97] PDDA is a "positively-charged polymer of more than 150,000 molecular weight." Tr. at 232 (Kirkland).
[98] PTX 348.

of eight carbon molecules ("C8") or 18 carbon molecules ("C18"), are popular chemical classes of bondings in chromatography. Both Agilent and AMT use C18 in their bonding agents. But there is a staggering range of configurations and mixtures of molecules that can be used in creating bondings,[99] and the precise combinations and methods are closely guarded by the manufacturers of HPLC products.

The configuration of Agilent's most successful bonding, called XDB-C18, has never been publicly disclosed. Kirkland directed the development of XDB-C18 at Rockland in 1996, which took over one year to perfect.[100] According to Kirkland, the efforts to create a successful bonding with C18 were problematic.[101] It is well-known in the scientific community that C18 experiences "phase collapse" or dewetting problems because, in highly aqueous conditions, the presence of water molecules may cause a C18 chain to fold over onto the surface of the silica, which affects the ability of C18 to act as a bonding agent.[102] Kirkland and five others at Rockland discovered a unique approach to stop the C18 dewetting problem, which Kirkland described as a "reasonable compromise

[99] For example, the length of a carbon chain may vary anywhere from three to 18 or more carbons. Each carbon compound may be a different isomer — meaning that the molecular formula, such as C8, is the same but the structure can be linear or branched. There are over 60,000 isomers of C18 alone (Tr. at 1002 (Myers)). Also, there is a variety of leaving groups or side groups that attach to the chains, which create unique silanes (silicon analogues of alkane hydrocarbons).
[100] Tr. at 1009 (Myers); PTX 72 (Rockland Technologies Technical Report by Joseph Kirkland (Apr. 30, 1996)).
[101] Tr. at 87 (Kirkland).
[102] Tr. at 738 (Myers).

of many technical, manufacturing and marketing virtues,"[103] that forms the basis of Agilent's XDB-C18 product. Agilent spent over a year perfecting this bonding approach through experiments that Kirkland described as "expensive" and "extensive."[104] Kirkland had a copy of the technical report describing his research on C18 when he retired from Agilent, but did not place it in his "Memos for New Company" folder.[105]

When Kirkland went to AMT, he wrote in his laboratory notebook that the composition or process to make Agilent's XDB-C18 had "not been disclosed, either in publications or in patents."[106] Also, in an email to Langlois in February 2006, Kirkland cautioned that using the same concept at AMT may involve "possible proprietary technology" and was something that AMT "should not use for [its] products," but suggested that they instead develop "a C18 column packing . . . *in the manner of XDB-C18*."[107] Despite his reservations, however, Kirkland disclosed Agilent's solution to C18's dewetting problem to both Langlois and DeStefano,[108] and AMT ultimately ended up using the same bonding as Agilent's XDB-C18, calling their product Halo C18.

Langlois had run a few experiments at AMT before settling on the bonding that would be used in Halo, using materials that he ordered from Agilent's supplier

[103] PTX 72 at D2047668.
[104] Tr. at 100-01 (Kirkland).
[105] Tr. at 89-90 (Kirkland).
[106] PTX 334 (Laboratory Notebook of Joseph Kirkland) at D1007692.
[107] PTX 218 (email from Joseph Kirkland to Timothy Langlois (Feb. 24, 2006)) (emphasis added).
[108] *Id.*; PTX 196 (email from Joseph Kirkland to Timothy Langlois and Joseph DeStefano (Oct. 3, 2005)).

using Agilent's internal part numbers.[109] In March 2006, Langlois conducted seven trials of different leaving groups,[110] using Zorbax RX particles that Agilent had given to DeStefano when he left Agilent, to see which would allow for the strongest bonding reaction.[111] Different chemical compounds were also tested as bondings in February 2006. Initially, a bonding different from XDB-C18 was considered for use on the Halo particle, but tests revealed a diffusional problem with the particle.[112] So Langlois, under the guidance of Kirkland, conducted experiments with eight different bondings, including the XDB-C18 bonding, which Langlois tried because he knew it had worked at Agilent.[113]

Typically, Langlois would attempt a bonding, and then give the bonded particle to DeStefano who would run chromatograms[114] of HPLC columns and other tests.[115] But none of the results of these tests were recorded in Langlois' lab notebook as was the usual practice; instead, the pages were left blank.[116] The results of DeStefano's chromatography tests were attached to an email from DeStefano to Kirkland, in which DeStefano described seeing an aging phenomenon with Langlois' bondings that he "ha[d] been seen with all XDB

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[109] Tr. at 513 (Langlois).
[110] A leaving group is a group of molecules that "leaves" to allow a reaction forming a covalent bond to occur. *See* Tr. at 630 (Langlois).
[111] PTX 331 at D1000508-09; Tr. at 631 (Langlois).
[112] Tr. at 635-36 (Langlois).
[113] Tr. at 689 (Langlois); DTX 988 (Bonding Processes Tested by Timothy Langlois).
[114] A chromatogram is the visual recording from chromatographic separation, which portrays the separated components of a mixture in a pattern. *See* Tr. at 1402 (Dorsey).
[115] Tr. at 516 (Langlois).
[116] PTX 336 (Laboratory Notebook of Timothy Langlois) at D1_000363-69 (showing blank pages).

packings at Agilent" and was, therefore, "not surprise[ed] to see" in the test results.[117]

There is no evidence to suggest that any of the bondings other than the one based on XDB-C18 worked well enough to pursue further testing. Instead, Langlois rapidly focused on what he knew worked from his time at Agilent — the bonding based on XDB-C18 — and selected it for use at AMT. Langlois went on to conduct another round of experiments from October to November 2006 to better improve the bonding, and made changes to certain of its characteristics.[118] Nonetheless, AMT's bonding relies critically on XDB-C18, and the defendants' own expert admits that if all the defendants did was to explore variations of XDB-C18, then the bonding that they came up with was derived from use of Agilent's trade secrets.[119] And, as the defendants' expert also acknowledged at trial, the batch record for AMT's bonding follows steps that are "highly similar, if not identical" to those laid out in Agilent' batch record for XDB-C18.[120] AMT has kept the configuration of its Halo C18 bonding a secret because, as Kirkland explained, "[k]eeping that information confidential gives AMT a competitive advantage.[121] AMT's C18 product is currently its best-selling product.

[117] PTX 795 (email from Joseph DeStefano to Joseph Kirkland and Timothy Langlois (Feb. 22, 2006)).
[118] DTX 805 (Bonding Study by Timothy Langlois); Tr. at 1343-45 (Dorsey).
[119] Tr. at 1426 (Dorsey).
[120] Tr. at 1407-08 (Dorsey).
[121] Tr. at 120 (Kirkland).

4. Slurry Solvent Used For Column Packing

Agilent also argues that the defendants are using Agilent's slurry solvent at AMT. The selection of a proper slurry solvent is a crucial factor in manufacturing HPLC columns. As a 2006 *Journal of Chromatography* article by Kirkland and DeStefano on packing columns explained, the "key" to column packing — the final stage of manufacturing HPLC instruments where silica particles are loaded into columns — is "selecting the best solvent for the slurry packing method."[122] Instead of developing their own slurry solvent, Kirkland, DeStefano, and Langlois chose to use the same slurry solvent in their Halo products that they had used at Agilent.

Agilent uses, as Kirkland himself admitted, a unique slurry solvent to pack its HPLC columns which has never been disclosed in any publication or patent.[123] At DuPont, Kirkland had conducted a detailed study on how to improve the packing of HPLC columns through use of an optimal slurry solvent.[124] DeStefano supervised similar experiments at DuPont with a variety of slurry solvents by adding a small amount of powder to a glass vial, putting candidate solvents into the vial, and shaking the vial to see how well the solid powder was wetted by the liquid.[125] DeStefano selected a slurry solvent that was used in Zorbax columns

[122] PTX 356 (Joseph J. Kirkland and Joseph J. DeStefano, *The Art and Science of Forming Packed Analytical High-Performance Liquid Chromatography Columns*, JOURNAL OF CHROMATOGRAPHY, 2006) at 50.
[123] Tr. at 139 (Kirkland).
[124] PTX 356 at 52; Tr. at 134 (Kirkland).
[125] Tr. at 355-56 (DeStefano).

until DuPont decided to better perfect one problematic aspect of the solvent. Although DeStefano did not oversee the next round of experiments, he was aware of the composition of the slurry solvent that was ultimately selected — the same solvent that Agilent still uses today. While at Agilent and its predecessors, Kirkland, DeStefano, and Langlois kept the details of this slurry solvent confidential.[126] When Kirkland retired from Agilent in 2000, a copy of a confidential Agilent document describing Agilent's slurry solvent was included in the zip disk that he removed.[127]

At AMT, DeStefano was in charge of choosing the slurry solvent to use for column packing. DeStefano claimed at trial that he had run tests on a variety of slurry solvents before selecting the solvent used by Agilent. But no research data, test results, or lab notebook entries corroborate this testimony. Crucially, the defendants' technical expert, Dr. John G. Dorsey,[128] testified that the defendants told him they had only tested one solvent — the same one that is used by Agilent[129] — and tweaked certain aspects of the solvent in order to further

[126] Tr. at 140 (Kirkland), 331-32 (DeStefano), 435 (DeStefano).
[127] PTX 141 (Agilent Technical Report from Joseph Kirkland to Joseph DeStefano and Timothy Langlois (Aug. 18, 2000)).
[128] Dorsey is the Katherine Blood Hoffmann Professor of Chemistry and Biochemistry at Florida State University. He obtained his Ph.D. in Analytical Chemistry from the University of Cincinnati in 1979. He has authored over 100 books and articles, mostly in the field of chromatographic science, and has earned several prestigious awards including the Eastern Analytical Symposium Award for Achievements in Separation Science, the American Chemistry Society Award in Chromatography, and the Dal Nogare Award sponsored by the Chromatography Forum of the Delaware Valley. *See* Dorsey Report at 1-2.
[129] Tr. at 1369-73 (Dorsey) (explaining that the defendants decided to use Agilent's slurry solvent without running experiments on other solvents).

improve its performance.[130] AMT uses this slurry solvent in its Halo columns, and the defendants treat it as a trade secret. When asked for details about the slurry solvent by a customer of Halo, DeStefano responded that the details were not available for release because AMT considers "details about [AMT's] procedures for packing columns . . . proprietary to AMT."[131]

This raises a distressing point. At trial, in their depositions, and in their business practices at AMT, Kirkland, DeStefano, and Langlois admit that the bonding and slurry solvent Agilent uses are trade secrets but have allowed their lawyers to file briefs consistently arguing against the very reality they themselves admit. To wit, the defendants' Post-Trial Answering Brief denies that the slurry solvent is a trade secret.[132] But DeStefano's email responding to a customer request about the slurry solvent, the defendants' behavior at Agilent, and AMT's own practices, as well as Kirkland and DeStefano's article about the importance of slurry solvents, belie the argument in their briefs that the slurry solvent is not a trade secret.

F. AMT's Halo Products Are Successful

AMT introduced Halo to the commercial HPLC market in October 2006, and Halo quickly gained a solid customer base. Much of Halo's success and

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[130] PTX 335 (Laboratory Notebook of Joseph DeStefano's Technician at AMT) (showing experiments on different solvent variables, using the same solvent materials used by Agilent).
[131] PTX 243 (email from Joseph DeStefano to Andre Dams (Dec. 19, 2006)) (explaining that details about AMT's slurry solvents were not for release).
[132] Def's Post-Trial Ans. Br. at 32.

popularity has been attributed to the fact that it uses a very small superficially porous particle with a high surface area and a uniform size, which allows it to work as a highly efficient HPLC particle without the need for expensive high-pressure operating equipment.

Agilent first became aware of Halo when the research and development manager for Agilent's columns and supplies division, Dr. William Barber, attended a trade show where Halo was introduced. The day after the trade show, Barber emailed Helen Stimson, a vice president and general manager at Agilent, to raise his concern that Halo had striking similarities to projects that Kirkland and DeStefano had work on at Agilent.[133]

Agilent was alarmed at the threat of Halo as a competitor of Agilent's Zorbax RX product, and set out to develop a new Poroshell product with characteristics similar to Halo, including a 2.7 micron particle size, uniformly sized, with a high surface area.[134] In fact, Barber occasionally referred to the product, which would later be called Poroshell 120, as a "Halo clone."[135] A key difference between Poroshell 120 and Halo, however, is that Poroshell 120 is not made through a multilayering technique. Agilent attempted to develop a

[133] DTX 808 (email from William Barber to Helen Stimson (Nov. 13, 2006)) at AG_00022899.
[134] DTX 838 (Powerpoint presentation by Chen Wu and Ta-chen Wei (Aug. 17, 2009)) at AG_000282242.
[135] Tr. at 1180 (Barber).

commercially useful multilayering technique,[136] but instead decided to use a coacervation method to coat the new Poroshell particle because, according to Agilent, a coacervation approach is more efficient than multilayering.[137] As of the conclusion of trial, Poroshell 120 had not yet been commercially released.

G. Agilent Commences This Litigation

On January 31, 2008, Agilent filed this action against Kirkland, DeStefano, Langlois, and AMT. Agilent claims that Kirkland, DeStefano, and Langlois breached their Confidentiality Agreements with HP and Agilent by using and disclosing Agilent proprietary technology. Agilent also claims that its trade secrets regarding slurry solvents, bonding, and multilayering, have been misappropriated by Kirkland, DeStefano, Langlois, and AMT.[138]

Agilent requests a variety of relief including: permanent injunctive relief to stop AMT from using what is allegedly Agilent's proprietary information; an injunction to prevent AMT's use of Agilent trade secrets; the creation of a constructive trust and assignment of AMT's Small Particle Patent Application and Multilayering Patent Application to Agilent; monetary damages; and attorneys' fees.

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[136] DTX 755 (Laboratory notebook of Wu Chen) at AG_00022876; DTX 831 (Laboratory Notebook of Tai-Chen Wei (July 2, 2007)).
[137] Tr. at 1175-78 (Barber).
[138] Additionally, Agilent initially claimed that Kirkland breached his fiduciary duty to Agilent in recommending that Agilent not develop a 3.5 micron superficially porous particle, but voluntarily dismissed that claim shortly after Kirkland moved to dismiss it.

II. Legal Analysis

I will address Agilent's claims as follows. First, I will address the claim that Kirkland, DeStefano, and Langlois breached their Confidentiality Agreements by taking Agilent property, using Agilent confidential information outside the scope of their employment at Agilent, and not assigning the Small Particle Patent Application and Multilayering Patent Application to Agilent. Second, I address Agilent's claim that the defendants misappropriated Agilent's trade secrets.

To prevail on both of its claims, Agilent bears the burden of proof and must show by a preponderance of the evidence that it is entitled to recovery.[139] "Proof by a preponderance of the evidence means proof that something is more likely than not. It means that certain evidence, when compared to the evidence opposed to it, has the more convincing force and makes you believe that something is more likely true than not."[140]

A. Breach Of The Confidentiality Agreements

Agilent argues Kirkland, DeStefano, and Langlois breached the Confidentiality Agreements, which are ancillary to their employment agreements

[139] *See, e.g.*, *Concord Steel, Inc. v. Wilmington Steel Processing Co., Inc.*, 2009 WL 3161643, at *5 (Del. Ch. Sept. 30, 2009) ("In a post trial opinion . . . 'a claimant asserting a breach of contract must prove the elements of its claims by a preponderance of the evidence.'" (quoting *Estate of Osborn ex rel. Osborn v. Kemp*, 2009 WL 2586783, at *4 (Del. Ch. Aug. 20, 2009))); *NuCar Consulting, Inc. v. Doyle*, 2005 WL 820706, at *5 (Del. Ch. Apr. 5, 2005) ("A plaintiff alleging misappropriation of a trade secret must prove its case by a preponderance of the evidence."); *Del. Express Shuttle, Inc. v. Older*, 2002 WL 31458243, at *17 (Del. Ch. Oct. 23, 2002) (applying a preponderance of the evidence burden of proof to a plaintiff's trade secret misappropriation claims).

[140] *Del. Express Shuttle, Inc.*, 2002 WL 31458243, at *17 (quoting Del. Super. P.J.I. Civ. § 4.1 (2000)).

with Agilent and its predecessors, by taking Agilent property without permission, claiming ownership of Agilent technology, and failing to assign inventions made while at Agilent. To succeed on these claims, Agilent must show the existence of a contract, the breach of a contractual obligation, and damage as a result.[141]

Under the terms of the Confidentiality Agreements, Kirkland, DeStefano and Langlois each agreed to:

> - Not remove "Agilent property from Agilent premises without Agilent's permission," and to "return all Agilent property to Agilent" upon termination of employment "unless Agilent's written permission to keep it [was] obtained."[142]
>
> - Only use Agilent "trade secrets, confidential business and technical information, and know-how not generally known to the public" in the performance of their Agilent duties.[143]
>
> - Disclose and assign to Agilent all "inventions and discoveries (whether or not patentable), designs, works of authorship, mask works, improvements, data, processes, computer programs and software . . . that are conceived or made of by [the employee] alone or with others while [the employee] is employed by Agilent and that relate to the research and development of the business of Agilent, or that result from work performed by [the employee] at Agilent."[144]

Kirkland, DeStefano, and Langlois each violated the first two of these provisions, and Kirkland and Langlois also violated the last provision.

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[141] *Weichert Co. of Pa. v. Young*, 2007 WL 4372823, at *2 (Del. Ch. Dec. 7, 2007) (citations omitted).
[142] Confidentiality Agreements at 1.
[143] *Id.*
[144] *Id.*

In defense of themselves, the defendants point to the relative informality of the exit interview process.[145] But the inescapable reality is that the individual defendants are each sophisticated people who signed clear contracts. It would be one thing if they were being sued because they happened to keep an Agilent document inadvertently. That is not the situation. Kirkland, Langlois, and DeStefano took a great deal of confidential information in clear breach of their contractual duties, and then used that information to compete with Agilent.

1. Kirkland, DeStefano, And Langlois Removed Agilent Property Without Permission

Kirkland, DeStefano, and Langlois each removed Agilent property from Agilent premises, and kept that property after their employment with Agilent had been terminated, without permission from Agilent. As previously discussed, Kirkland took an entire zip drive and "one or two CDs" with him when he retired from Agilent, which contained numerous confidential documents detailing Agilent trade secrets, research data, and processes.[146] DeStefano removed a batch record and a technical report.[147] Langlois also took a batch record, and a confidential memo.[148] These pieces of Agilent property were not returned when each of the defendants left Agilent, despite the fact that Kirkland, DeStefano, and Langlois were reminded of their obligations to return any Agilent "memos, papers, lab

[145] Tr. at 199 (Kirkland), 388, 393 (DeStefano).
[146] Tr. at 32-36 (Kirkland).
[147] PTX 70; PTX 158; Tr. 325-29 (DeStefano).
[148] PTX 172; PTX 265; Tr. at 485-89 (Langlois).

notebooks . . . etc." during their "Functional Exit Interviews."[149] Agilent's written permission to keep the zip drive, CDs, and documents was not requested or granted.[150] Therefore, the defendants breached the Confidentiality Agreements by taking Agilent property from Agilent premises without permission.

2. The Defendants Used Agilent Confidential Information Outside The Scope Of Their Employment

Kirkland, DeStefano, and Langlois used Agilent technical and business information outside of the scope of the performance of their employment. Importantly, several of the documents that Kirkland took from Agilent were placed into a "Memos For New Company" folder used to inspire products for AMT to compete with Agilent. And, some of the documents that DeStefano and Langlois removed from Agilent premises later turned up in the hands of AMT employees.[151] Perhaps most strikingly, Kirkland copied the exact language used in Rockland's 1995 SBIR Grant application for making 3.5 micron particles in AMT's 2005 SBIR Grant application to pursue the same project.[152]

Not only was this information used outside the scope of the defendants' work at Agilent and its predecessors, but it was used to benefit a *competitor* of Agilent. Therefore, I find that the defendants breached their Confidentiality

[149] PTX 47; PTX 53; PTX 54.
[150] Tr. at 36 (Kirkland), 288-89 (DeStefano), 473 (Langlois).
[151] PTX 5; PTX 70; PTX 158; PTX 172; PTX 265; Tr. at 325-29 (DeStefano), 485-88 (Langlois).
[152] *Compare* PTX 185 *with* the 1995 SBIR Grant.

Agreements by using Agilent confidential information outside the performance of their employment.

3. Kirkland And Langlois Failed To Assign Inventions And Discoveries To Agilent

Kirkland, DeStefano, and Langlois failed to assign "inventions and discoveries," "data," and "processes" that were "conceived of or made" by them while at Agilent and its predecessors in violation of the Confidentiality Agreements.[153] Specifically, Agilent argues that AMT's Small Particle Patent Application and Multilayering Patent Application should have been assigned to Agilent and not AMT. But the defendants claim that most of the research for AMT's Patent Applications was conducted after they had left Agilent, and some of the technology covered by those Patent Applications was publicly known.

By statute, Delaware law permits assignment agreements between employees and employers, so long as the inventions to be assigned are related to the employer's business or result from work performed by the employee for the employer.[154] In other words, such contracts are not invalid or unenforceable as an unreasonable restraint on the employee's rights so long as the agreement was voluntary, and the inventions sought to be assigned are things that the employee

[153] PTX 41; PTX 42; PTX 43.
[154] 19 *Del. C.* § 805 (limiting the inventions that an employee must assign to an employer under an assignment agreement to those that "relate to the employer's business" or "result from any work performed by the employee for the employer").

was hired to create.[155] But, an employee may freely use knowledge that is fully available in her field of work, even if that knowledge is acquired during her employment.[156] Additionally, assignment agreements may be upheld even after employment has been terminated, so long as the invention was created during employment.[157]

I find that Kirkland alone has breached his Confidentiality Agreement by failing to assign the Small Particle Patent Application to Agilent, because he had developed a process to produce approximately 3 micron particles while at Agilent.

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[155] *See Bunnell Plastics, Inc. v. Gamble*, 1980 WL 3041, at *6 (Del. Ch. Sept. 24, 1980) (upholding an assignment agreement where an employee had voluntarily executed an agreement to assign ideas, whether patentable or not, conceived during and related to the employment); 2 Louis Altman, CALLMANN ON UNFAIR COMPETITION, TRADEMARKS AND MONOPOLIES § 14:6 (4th ed. 2005) ("If the employee agrees that all inventions and improvements in the employer's field, patentable or unpatenable, which are developed by the employee during his employment shall be the employer's property, such a contract is not invalid or unenforceable as an unreasonable restraint."); ERNEST BAINBRIDGE LIPSCOMB III, WALKER ON PATENTS §3:5 (1984) ("Where one is employed to make an invention and succeeds during the term of his service in accomplishing that task, the employee is bound to assign any patent which he may obtain to his employer.").

[156] *See SinoMab Bioscience Ltd. v. Immunomedics, Inc.*, 2009 WL 1707891, at *15 (Del. Ch. June 16, 2009) (finding that a former employee had no obligation to assign an invention where it was generally known in his field; applying New Jersey law); 27 AM. JUR. 2D *Employment Relationship* § 177 (2009) ("[A]n employee can use to his or her advantage all the skills and knowledge commonly used in the trade that the employee acquired during his or her tenure of employment.").

[157] *See* 6 WILLISTON ON CONTRACTS § 13:17 (4th ed. 2009) ("Agreements by employees that all patents which they may secure for inventions related to their employment specialty shall belong to their employer will be upheld and specifically enforced in regard to patent applications even after termination of employment, at least when an employee was engaged to exercise his or her inventive ability."); s*ee also U.S. v. Dubilier Condenser Corp.*, 289 U.S. 178, 188 (1933) ("One employee bound to make an invention, who succeeds *during his term of service*, in accomplishing that task, is bound to assign to his employer any patent obtained.") (emphasis added); *SinoMab Bioscience Ltd.*, 2009 WL 1707891, at *15 (holding that a former employee had no obligation to assign an invention to his former employer, where the invention had been conceived of after his employment had terminated; applying New Jersey law).

And both Kirkland and Langlois breached their Confidentiality Agreements by failing to assign the Multilayering Patent Application to Agilent, because they "conceived of" multilayering based upon insights they formed and recorded at Agilent from observing the empirical results of experiments they conducted at Agilent.

a. Kirkland Was Contractually Required To Assign The Small Particle Patent Application To Agilent

Agilent argues that AMT's Small Particle Patent Application covers particle sizes that Kirkland, DeStefano, and Langlois had worked to develop at Agilent, and should be assigned to Agilent under the terms of the Confidentiality Agreements. The Small Particle Patent Application is based upon research the defendants conducted to develop Halo, and covers superficially porous particles sized 1 to 3.5 microns in diameter, with a surface area of 50 to 165 meters squared per gram.[158] But, Kirkland first conceived of and sought to make an approximately 3 micron particle while employed at Agilent and, thus, has an obligation under his Confidentiality Agreement to assign the Small Particle Patent Application to Agilent.

The defendants argue that Agilent is not entitled to assignment of their Small Particle Patent Application because, first, some aspects of this technology were already publicly known in the chromatography field before the Small Particle

[158] PTX 345 at 2.

Patent Application was filed,[159] and, second, Kirkland never successfully made a particle 3.5 microns or smaller while at Agilent. Both of these arguments fail. Kirkland himself admitted at trial that a process used to successfully create superficially porous particles smaller than 3.8 microns is not disclosed in the scientific open literature. [160] He also admitted that the Small Particle Patent Application "sought to cover ranges of work that [he] had done at Agilent."[161] As discussed earlier, he had worked towards the goal of creating an approximately 3 micron superficially porous particle at Agilent and its predecessors.[162] Although there is no evidence that Kirkland ever successfully created a particle smaller than 3.6 microns at Agilent,[163] the facts clearly show that he had conceived of and had worked to invent a process to make a superficially porous particle of approximately 3 microns in diameter with a high surface area, regardless of whether the process worked in practice. And, importantly, the 2.7 micron target size for Halo, which is covered by the Small Particle Patent Application, was selected by Kirkland based on "previous estimates while in Agilent for totally porous particles."[164]

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[159] Agilent notes the inconsistency in AMT's position on this point, arguing that if a particle smaller than 3.5 microns was publicly known, "defendants cannot get a patent on that concept." Agilent's Ans. Post-Trial Br. at 9.
[160] Tr. at 219 (Kirkland) (stating that AMT was "trying to stay away from the prior . . . literature for which the 3.8 [micron particle] was the smallest that had been disclosed in the open literature of that kind" in filing its Small Particle Patent Application).
[161] Tr. at 246 (Kirkland).
[162] *See supra* pages 15-18; PTX 3; PTX 4; PTX 126 .
[163] PTX 76; PTX 391.
[164] PTX 191.

It is not critical that Kirkland never actually made a particle smaller than 3.6 microns at Agilent — a 3.5 micron or smaller particle was the plausible outcome of the "process" that Kirkland conceived of (*i.e.*, "invented")[165] at Agilent for creating small superficially porous particles, which falls within the language of the Confidentiality Agreement.[166] Thus, the Small Particle Patent Application should have been assigned to Agilent by Kirkland.

b. Kirkland and Langlois Were Required To Assign The Multilayering Patent Application To Agilent

Finally, Agilent claims that Kirkland, DeStefano and Langlois breached their Confidentiality Agreements by assigning their Multilayering Patent Application to AMT and not to Agilent. According to the Multilayering Patent Application, filed on February 13, 2007, Kirkland and Langlois had "devised a method for laying down multiparticle layers" that overcomes the inefficiency of applying a single layer of particles per coating (*i.e.*, monolayering).[167]

Two sets of experiments show that the defendants first identified the potential commercial utility of multilayering at Agilent. First, as discussed earlier, Kirkland observed in the 2000 memo that polyethyleneimine of a particular molecular weight may have been "assembling more than one layer of silica sol"

[165] In intellectual property law, an invention is not a tangible thing, but a concept. *See Pyrene Mfg. v. Boyce*, 292 F. 480, 481 (3d Cir. 1923) ("Invention is a concept; a thing evolved from the mind."); *see also* RONALD D. SLUSKY, INVENTION ANALYSIS AND CLAIMING: A PATENT LAWYER'S GUIDE 5 (2007) (explaining that an "invention" for purposes of intellectual property law is "not something physical but a concept" or abstraction).
[166] Confidentiality Agreements at 1.
[167] PTX 348 at 2.

per coating, and considered its potential to solve the inefficiency of monolayering.[168] Second, experiments conducted by John Scone, and supervised by Langlois, in 2003 show that a multilayering process had been attempted, and that multiple layers of sol per coating were achievable.[169]

More likely than not, Kirkland was inspired by the results he achieved at Agilent of laying down more than one layer of sol per application, and recommended that AMT try multilayering as a result. Langlois likely supported Kirkland's suggestion to attempt multilayering at AMT because Langlois knew that it was possible to apply multiple layers of sol in a single coating from his supervision of Scone's 2003 experiment. With Kirkland's idea and Langlois' validating experience — both drawn from Agilent information they were only supposed to use for Agilent's benefit — AMT knew that multilayering could have commercial utility in terms of efficiency. And although Langlois led thirty experiments over a period of months to perfect a multilayering process at AMT,[170] the defendants conceived of the potential for multilayering because of Kirkland's work and memo in 2000, and Scone's 2003 experiment — an experiment that followed Langlois' earlier receipt of Kirkland's 2000 memo highlighting the multilayering effect. Thus, Kirkland and Langlois were required by their Confidentiality Agreements to assign the Multilayering Patent Application to Agilent, because they conceived of multilayering based on their work at Agilent.

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[168] *See supra* pages 21-22; PTX 147; Tr. at 229 (Kirkland).
[169] *See supra* pages 22-23; Tr. at 1060 (Scone).
[170] *Id*. at 1449-50 (Lvov).

Critically, even if they put two and two together after they left Agilent, Kirkland and Langlois' conception involved the misuse of Agilent empirical data and, thus, it was wrongful for them to use that data to compete with Agilent by attempting to wield a patent against it.

B. Trade Secret Misappropriation

Agilent also brings claims for trade secret misappropriation relating to Agilent's bonding, slurry solvent, and multilayering process. Agilent has demonstrated, by a preponderance of the evidence, that Kirkland, DeStefano, and Langlois have misappropriated Agilent trade secrets by using Agilent's confidential information regarding bonding, column packing, and multilayering.[171] A successful claim for misappropriation of a trade secret first requires that trade secrecy be proven. "Trade secret" is defined by the Delaware Uniform Trade Secrets Act ("DUTSA") as:

> [I]nformation, including a formula, pattern, compilation, program, device, method, technique or process, that:
>
> (a) Derives independent economic value, actual or potential, from not being generally known to, and not being readily ascertainable by proper means by, other persons who can obtain economic value from its disclosure or use; and
>
> (b) Is the subject of efforts that are reasonable under the circumstances to maintain its secrecy.[172]

[171] Because I find that the defendants misappropriated Agilent's bonding, slurry solvent, and multilayering trade secrets, I also find that they have violated the provision of their Confidentiality Agreements prohibiting Agilent employees from using trade secrets outside the scope of their employment at Agilent. *See* Confidentiality Agreements at 1.
[172] 6 *Del. C.* § 2001(4).

In other words, to show that its bonding, slurry solvent, and multilayering information qualify as "trade secrets," Agilent must show that they have independent economic value, with the potential to give Agilent some advantage from not being generally known or readily ascertainable, and are subject to reasonable efforts to maintain secrecy.[173]

After proving trade secrecy, a plaintiff alleging trade secret misappropriation must demonstrate that the trade secret has been disclosed or used without authorization.[174] Specifically, the DUTSA defines "misappropriation" as:

> (a) Acquisition of a trade secret of another by a person who knows or has reason to know that the trade secret was acquired by improper means; or
>
> (b) Disclosure or use of a trade secret of another without express or implied consent by a person who:
>
> > (1) Used improper means to acquire knowledge of the trade secret; or
> >
> > (2) At the time of disclosure or use, knew or had reason to know that his knowledge of the trade [secret] was:
> >
> > > (A) Derived from or through a person who had utilized improper means to acquire it;
> > >
> > > (B) Acquired under circumstances giving rise to a duty to maintain its secrecy or limit its use; or
> > >
> > > (C) Derived from or through a person who owed a duty to the person seeking relief to maintain its secrecy or limit its use; or

[173] *See Savor, Inc. v. FMR Corp.*, 812 A.2d 894, 897 (Del. 2002) (quoting 6 *Del. C.* § 2001(4)).
[174] *See Merck & Co., Inc. v. SmithKline Beecham Pharms. Co.*, 1999 WL 669354, at *15 (Del. Ch. Aug. 5, 1999) ("Unauthorized use of trade secret information and unauthorized disclosure of trade secret information constitutes misappropriation.").

> (3) Before a material change of position, knew or had reason to know that it was a trade secret and that knowledge of it had been acquired by accident or mistake.[175]

As the party claiming misappropriation of trade secrets, Agilent must prove these elements by a preponderance of the evidence.[176]

Without belaboring the obvious, I have already found that Agilent took reasonable measures to protect its trade secrets,[177] and this finding applies to each subject I next address. Similarly, it is clear that the defendants acquired Agilent's confidential information when they knew it was proprietary to Agilent and when they were under a contractual obligation not to use that information against

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[175] 6 *Del. C.* § 2001(2); *see also Triton Const. Co., Inc. v. E. Shore Elec. Servs., Inc.*, 2009 WL 1387115, at *20 (Del. Ch. May 18, 2009) ("[T]he liability issue in an action for misappropriation of a trade secret may be divided into four sub-issues: (1) Does a trade secret exist, *i.e.*, have the statutory elements-commercial utility arising from secrecy and reasonable steps to maintain secrecy been shown; (2) Has the secret been communicated by the plaintiff to the defendant; (3) Was such communication pursuant to an express or implied understanding that the secrecy of the matter would be respected; and (4) Has the secret information been improperly (e.g., in breach of that understanding) used or disclosed by the defendant to the injury of the plaintiff." (citing *Wilmington Trust Co. v. Consistent Asset Mgmt. Co.*, 1987 WL 8459, at *3-4 (Del. Ch. Mar. 25, 1987))), *aff'd*, 2010 WL 376924 (Del. Jan. 14, 2010) (TABLE).

[176] *See NuCar Consulting*, 2005 WL 820706, at *5 ("A plaintiff alleging misappropriation of a trade secret must prove its case by a preponderance of the evidence.").

[177] *See supra* pages 7-9; *see also Great Am. Opportunities, Inc. v. Cherrydale Fundraising, LLC*, 2010 WL 338219, at *19 (Del. Ch. Jan. 29, 2010) (finding that a company had made reasonable efforts to maintain secrecy of customer information where the company included provisions in its employer contract and handbook notifying employees of the sensitive nature of the information, and password protected customer information in the company database); *Miles, Inc. v. Cookson Am., Inc.*, 1994 WL 676761, at *12 (Del. Ch. 1994) (finding a process subject to reasonable efforts to maintain secrecy where access to the company plant was restricted, and employees signed confidentiality agreements and were not permitted to remove documents from the plant).

Agilent. The only remaining issue is whether each of these subject involved Agilent trade secrets. I now briefly recite my findings regarding that question.

1. Agilent's Bonding, Slurry Solvent, And Empirical Results Demonstrating The Multilayering Effect Are Trade Secrets

a. Agilent's XDB-C18 Bonding Is A Trade Secret

The configuration of and process to make Agilent's XDB-C18 bonding is a trade secret.

First, the XDB-C18 bonding has independent economic value, because it would take a great deal of time and effort on the part of a competitor to produce the same bonding.[178] Agilent's XDB-C18 bonding is a highly successful product that utilizes a unique approach to resolve the C18 dewetting problem.[179] To *begin* to develop Agilent's XDB-C18 bonding, a competitor would have to test thousands of isomers of C18, as well as different leaving groups and side groups. A C18 silane alone could have more than 85 leaving groups, and more than 75 side groups, for a combination of over 6,375 different combinations.[180] Even giving weight to the scientific know-how of Kirkland, DeStefano, and Langlois,

[178] *See NuCar Consulting*, 2005 WL 820706, at *5 (stating that, to show independent economic value, a plaintiff need only show that "a competitor cannot produce a comparable product without a similar expenditure of time and money"); *Merck*, 1999 WL 669354, at *15 (finding independent economic value where much effort had been spent on developing a successful manufacturing process (citing *Salsbury Labs., Inc. v. Merieux Labs., Inc*, 735 F. Supp. 1555, 1569 (M.D. Ga. 1989)), *aff'd*, 908 F.2d 706 (11th Cir. 1990)).

[179] *See supra* pages 26-27; Tr. at 738 (Myers).

[180] *See* Letter from Julia Heaney, Esquire to the Honorable Leo E. Strine, Jr. (Nov. 17, 2009) (describing the various combinations of bondings that a competitor would need to test to develop Agilent's XDB-C18 bonding); *see also* DTX 1036 (defining examples of leaving and side groups, and the isomers of those groups).

and common knowledge in the scientific community that certain silane variables are more successful than others, the defendants' knowledge of Agilent's bonding saved them a substantial amount of time at AMT.

Next, Agilent's XDB-C18 bonding has never been publicly disclosed,[181] as the defendants' own testimony admits,[182] and was not readily ascertainable by proper means. The defendants argue that certain patents and articles have disclosed aspects of the bonding that Agilent uses such that Agilent cannot claim it as a trade secret. But, even if all of the components and techniques used to create and manufacture XDB-C18 were known in the scientific community, the unique configuration of XDB-C18 is not known and could not easily be reverse-engineered.[183] The tedious process of testing different molecular combinations with a variety of other components, such as leaving groups and side groups, and discovering which is the most commercially feasible constitutes a trade secret, even if each step in the process and ingredient used is well-known.[184]

In *Miles Inc. v. Cookson Am. Inc.*, this court found that the process used by a company to develop and manufacture high-performance organic pigments was a

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[181] PTX 218; PTX 334; Tr. at 1423 (Dorsey).
[182] Tr. at 108 (Kirkland), 282 (DeStefano), 511 (Langlois).
[183] *See Merck*, 1999 WL 669354, at *15 ("A trade secret can exist in a combination of characteristics and components, each of which, by itself, is in the public domain, but the unified process, design and operation of which, in unique combination, affords a competitive advantage and is a protectable secret." (citing *Imperial Chem. Indus. Ltd. v. Nat'l Distillers & Chem. Corp.*, 342 F.2d 737, 742 (2d Cir. 1965))).
[184] *See Miles*, 1994 WL 676761, at *12 ("A plaintiff alleging misappropriation of trade secrets need not prove that every element of a method, technique or process is unascertainable from the public domain. The overall combination of the principles and details used to make the product can qualify as a trade secret.").

trade secret, although the defendants had presented patents and other literature disclosing certain aspects of the process, and argued that an experienced scientist could sort through the literature and piece together the exact pigment production process.[185] The court found that, although an experienced scientist could reject many of the thousands of options to create the exact pigment through experience and training, the unique combination of ingredients and methods used to create the pigment was "not generally known or readily ascertainable from the literature cited by [the defendants]" and therefore entitled to protection as a trade secret.[186]

Here, the defendants have done nothing more than point to certain aspects of Agilent's XDB-C18 bonding that are disclosed in patents and scientific articles. But nowhere has Agilent's XDB-C18 bonding been disclosed in its entirety. In fact, Dorsey admits that he was not aware of how Agilent made its XDB-C18 bonding until trial.[187] As important, the defendants themselves understood XDB-C18 to be a trade secret while at Agilent and did not even suggest that they hit on use of AMT's bonding by reading the literature Dorsey cites.[188] In fact, Kirkland cautioned the defendants that the XDB-C18 bonding was proprietary, and something that AMT "should not use for [its] products."[189] The literature search of their expert consultant is an after-the-fact attempt to justify the defendants' clear use of an Agilent trade secret. In sum, the record provides no factual reason

[185] *Id.*
[186] *Id.*
[187] Tr. at 1423 (Dorsey).
[188] Tr. at 107-08 (Kirkland), 282-83 (DeStefano), 477-78 (Langlois).
[189] PTX 218.

to believe that Kirkland, DeStefano, and Langlois could have easily, much less rapidly, discovered the XDB-C18 bonding through their scientific expertise and the vague references to bondings that *may* be similar to Agilent's in the open literature.[190]

Consistent with the defendants' own admissions of reality, I conclude that Agilent's bonding was a trade secret.[191]

b. Agilent's Slurry Solvent Is A Trade Secret

Agilent's unique method and slurry solvent used for packing HPLC columns is also a trade secret.

First, Agilent's slurry solvent has independent economic value derived from the time and expense Agilent and its predecessors expended in creating the

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[190] *See Merck*, 1999 WL 669354, at *17 (noting that there was "no reason to suspect that defendants could have duplicated [a] [p]rocess through skill and effort using the available literature" (quoting *Rohm & Haas Co. v. Adco Chem. Co.*, 689 F.2d 424, 431 (3d Cir. 1982))).

[191] In reaching this conclusion, I reject the defendants' defense that the bonding used at AMT was independently developed. *See Faively Transport Malmo, AB v. Wabtec Corp.*, 572 F. Supp. 2d 400, 406 (S.D.N.Y. 2008) (explaining that "where a defendant in a trade secret case claims independent development, the burden shifts to the defendant to show that this was the case"). Kirkland, DeStefano, and Langlois claim that they decided to test the bonding through a series of experiments, confirmed by published scientific literature. As noted above, I reject the defendants' publication defense because Agilent's bonding has never been publicly disclosed, and because the defendants have not even suggested that they referenced public literature in researching bondings at AMT. Although the defendants made alterations to Agilent's bonding at AMT, they used Agilent's trade secret bonding as a guide. In situations such as this, where a trade secret provides assistance in solving a problem or perfecting a process, courts are skeptical of an independent development defense. *See Merck*, 1999 WL 669354, at *21 (rejecting an independent derivation defense where a trade secret acted as a "guide, charting the way through the many problems and decisions" (citing *Monovis, Inc. v. Aquino*, 905 F. Supp. 1205, 1232 (W.D.N.Y. 1994) (rejecting an independent development defense because, although the defendants developed a unique production method, the plaintiff's trade secrets had given them valuable assistance))).

column packing method. As discussed earlier, DuPont commissioned extensive experiments in the 1970s to develop a successful slurry solvent, which Agilent continues in its products.[192] A competitor of Agilent's could not produce a comparable slurry solvent "without a similar expenditure of time and money."[193] At AMT, however, the defendants did not expend a similar amount of effort in testing various aspects of numerous solvents. Instead, DeStefano tested just *one* slurry solvent — the same slurry solvent used by Agilent — and made minor changes to further improve its performance.[194] The extensive work by Agilent and its predecessors in developing a successful column packing method, on the other hand, demonstrates the slurry solvent's independent economic value.[195]

Furthermore, neither the composition of nor process to make Agilent's unique slurry solvent is generally known or readily ascertainable. The slurry solvent used by Agilent has not been disclosed anywhere in the open literature — in fact, the defendants and their expert all agree that it is not used outside of Agilent and, now, AMT.[196] The defendants raise arguments similar to those they

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[192] *See supra* pages 30-31.
[193] *NuCar Consulting*, 2005 WL 820706, at *5.
[194] DeStefano testified at trial that he tested a variety of slurry solvents before settling on the solvent used by Agilent. Tr. at 415-16 (DeStefano). He claims that he ran a series of "glass vial tests" whereby he mixed particles in different slurry solvents, shook the glass vial, and visually examined whether the solvent evenly dispersed the particles. *Id*. But his testimony is belied by the lack of any recording of DeStefano's experiments or observations, and by the fact that the defendants told Dorsey that they had only tested Agilent's slurry solvent. *See supra* pages 31-32; Tr. at 1369-73 (Dorsey).
[195] *See Merck*, 1999 WL 669354, at *15 (stating that "the choice of individually known components and techniques to create a working manufacturing process" demonstrated that a process had independent economic value).
[196] Tr. at 141(Kirkland), 336 (DeStefano), 446 (Langlois), 1363-65 (Dorsey).

raised about Agilent's bonding — they claim certain aspects of Agilent's slurry solvent are readily available in the public literature, and so one skilled in HPLC would be able to identify the same slurry solvent. It is true that one of the ingredients in Agilent's slurry solvent is commonly used in slurry solvents for HPLC column packing,[197] but the other ingredient only has limited use in other aspects of chromatography separate from column packing.[198] And, as with Agilent's XDB-C18 bonding, the fact that certain components or parts of a process are publicly disclosed does not mean that the combination of steps and ingredients critical to the process is not a trade secret.[199] As with other instances where the defendants copied Agilent's methods, the defendants do not actually claim to have discovered the slurry solvent by reading public literature. They just claim that they might have been able to invent the same slurry solvent with some unexplained and totally speculative investment of time and brain-sweat after a literature search.

Crucially, the defendants treat the slurry solvent as a trade secret at AMT and refuse to share information about it with outsiders because they know it has commercial value.[200] Why they wasted the time of Agilent or the court denying what they admit by their own commercial conduct is beyond me. Agilent's slurry solvent is a trade secret.

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[197] Tr. at 991 (Myers).
[198] *Id.* at 992 (Myers).
[199] *See Merck*, 1999 WL 669354, at *15; *Miles*, 1994 WL 676761, at *12.
[200] *See supra* pages 31-32.

c. Agilent's Empirical Results Demonstrating The Multilayering Effect Were Trade Secrets

Although it is a closer call, Agilent has also met its burden of showing that the empirical results demonstrating the effect of multilayering constituted a trade secret. As the defendants' own expert admitted at trial, nowhere is multilayering for HPLC disclosed in the public literature.[201] Importantly, the Multilayering Patent Application acknowledges that multilayering is not publicly known because it explains that multilayering as described in the patent application is a "*novel* composition[ ] and production method[ ] for packing material used in chromatography columns."[202]

Multilayering also has independent economic value to Agilent. In reaching this finding, it is important to remember that the statutory definition of trade secret includes "information" that "[d]erives independent economic value, actual or *potential*, from not being generally known . . . ."[203] Through experiments at Agilent, results were achieved by Kirkland and Langlois that showed that, with the right polymer, a single application of sol on the core of a particle had the potential to result in the application of multiple layers of sol.[204] The defendants denigrate these empirical observations as being of no importance to Kirkland's recommendation in 2004 that AMT pursue a multilayering approach to manufacturing.

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[201] Tr. at 1369-70.
[202] PTX 348 at 1-2.
[203] 6 *Del. C.* § 2001(4) (emphasis added).
[204] *See supra* pages 21-23.

I do not share their denigration. As previously found, it seems probable to me that the reason Kirkland believed that a multilayering manufacturing approach might be efficient is because of the potential for shortening and rendering less expensive a monolayering process by conducting the method in a way that would result in multiple layers of sol per application.[205] By using multilayering, fewer applications and thus less time and money would be needed to produce the product.

The actual, real world data showing that this was possible, and from which Kirkland drew the idea that replicating multilayering in a commercially valuable way, belonged to Agilent. Indeed, I believe that both the results Kirkland observed at Agilent and the implications he gleaned from them, as well as the later validating results Scone achieved in his work for Langlois, played into AMT's decision to focus on multilayering.

There is no doubt that AMT expended time and resources over a period of approximately six months to develop multilayering that went beyond the work done at Agilent.[206] But the key insight was achieved by use of Agilent's empirical results, not work done at AMT.[207] Absent the economically valuable information

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[205] *See supra* pages 23-24.

[206] PTX 331; Tr. at 617-20 (Langlois).

[207] In other words, the "invention" of the multilayering technique began, if it was not entirely completed, at Agilent. Principles of intellectual property law identify the locus of an invention as the point when the innovation was mentally conceived. For example, under U.S. patent law, an "invention" is defined as an act comprising "(1) *a mental operation involving the conception of an idea*; and (2) a physical operation involving the reduction to practice of the inventive concept." 2 WALKER ON PATENTS § 6.3, at 10 (emphasis added). Furthermore, in a case construing the meaning of the federal patent

that a more efficient manufacturing process could be achieved because multiple layers of sol could result from single applications, AMT would likely not even have pursued multilayering as a technique. The defendants went down that road because Kirkland knew that this advantageous result could be achieved from observing two different rounds of tests at Agilent. Finally, the proposition that this information could not be a trade secret is again belied by the defendants' own commercial behavior. They seek to patent the idea of manufacturing an HPLC particle by depositing multiple layers of sol through each application.

Thus, reality that more than one layer of sol may result from each coating on an HPLC particle was an Agilent trade secret.

2. Kirkland, DeStefano, And Langlois Misappropriated Agilent's Trade Secrets

By using Agilent's confidential trade secrets regarding bonding, slurry solvents, and multilayering in the development of their Halo product, Kirkland, DeStefano, and Langlois misappropriated Agilent trade secrets. The defendants took Agilent's "recipe" for its XDB-C18 bonding and slurry solvent and, using the processes they had observed at Agilent, used the same bonding agent and slurry solvent — with minor changes — in AMT's Halo C18 columns. Likewise, after failing during brief efforts to make a particle by coacervation, the defendants focused on turning multilayering into an efficient manufacturing method. At no

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laws, the U.S. Supreme Court has stated that "the primary meaning of the word 'invention' in the Patent Act unquestionably refers to the inventor's conception rather than to a physical embodiment of that idea." *Pfaff v. Wells Elecs., Inc*., 525 U.S. 55, 60 (1998).

point were the defendants given permission to use Agilent's proprietary technology at AMT.

Misappropriation of Agilent's trade secrets may be found despite the fact that Kirkland and DeStefano had themselves developed the ideas behind the XDB-C18 bonding and slurry solvent while at Agilent, and that Kirkland and Langlois had been the ones who generated the empirical results of multilayering at Agilent. "An employee can be forbidden from appropriating a technical trade secret even though [the] secret was the employee's own idea."[208]

Although the bonding, slurry solvent, and multilayering techniques used at AMT are not identical to those used at Agilent, it is clear that Agilent's trade secrets served as a springboard for the defendants, allowing further development to take place. Misappropriation of a trade secret occurs even in such cases, where a trade secret acts as a starting point for improvements, or a guide by which pitfalls may be avoided.[209] In this regard, Kirkland's 2004 memo to DeStefano is worth remembering: in that memo, Kirkland focused not only on avenues to pursue at AMT based on successes at Agilent, but also indicated that AMT could

[208] 2 CALLMANN ON UNFAIR COMPETITION, TRADEMARKS AND MONOPOLIES § 14.5 (citing *Volcan Detinning Co. v. Assmann*, 173 N.Y.S. 334 (1st Dep't 1918)).
[209] *Merck*, 1999 WL 669354, at *20 ("Misappropriation occurs even where the trade secret is used only as a starting point or guide in developing a process . . . [or] where a defendant uses a plaintiff's trade secrets to understand what pitfalls to avoid" (citing 4 MILGRIM ON TRADE SECRETS § 15.01[1][d][vii] at 15-89 ("[A] plaintiff may prevail on a trade secret claim by establishing that defendant used plaintiff's trade secret as the helpful starting point for defendant's own development efforts.")).

avoid testing things that would not work because they had been tried and had failed at Agilent.[210]

There is a dispute in this case over how much time and effort it took the defendants at AMT to finalize the bonding and slurry solvent used for Halo. But it is clear that the defendants were saved a great deal of time-consuming and expensive experimentation by using Agilent's trade secrets as a starting point.

At AMT, Langlois tested eight bonding agents over a few days, including Agilent's XDB-C18 following the exact process used by Agilent, using materials that he had ordered from Agilent's supplier with Agilent's internal part numbers.[211] He tested XDB-C18 because Kirkland told him that it worked,[212] and, thus, it was selected to be used in AMT's Halo products. Although Langlois ran other experiments on leaving and side groups and tried C8 and C18 bondings in February and March of 2006, AMT quickly focused in on using the XDB-C18 bonding. This is in stark contrast to the bonding experiments at Agilent and its predecessors, where Kirkland and his team engaged in numerous bonding experiments with a variety of different components and in different conditions before discovering a solution to the C18 dewetting problem, and, after selecting a bonding, tested it for an additional period of time before recommending it to Rockland for commercialization. Kirkland does not remember how long this

[210] PTX 165.
[211] Tr. at 513 (Langlois).
[212] Tr. at 689 (Langlois).

effort took; but, according to Agilent's technical expert, Dr. Peter Myers,[213] and given the dates in Kirkland's technical report, Kirkland and his team studied bonded phases in excess of a year, from at least January 1995 to April 1996.[214]

Also, AMT only tested one slurry solvent — the slurry solvent used by Agilent — to verify its success in packing columns.[215] By contrast, at DuPont, Kirkland and DeStefano tested a variety of slurry solvents over a period of many months before DuPont perfected the slurry solvent used by Agilent today. And, even after DuPont had identified this slurry solvent, Agilent went on to run approximately 38 experiments on the use of this packing technique for Poroshell 300, which may have taken anywhere from three weeks to 38 days.[216] Myers opined that AMT would have taken approximately an additional year to develop a suitable column packing slurry system had the defendants not used Agilent's technology.[217]

And, after attempting coacervation for a short time at AMT, Langlois switched to a multilayering method in November 2005.[218] Myers opined that it

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[213] Myers is a Professor of Separation Science in the Department of Chemistry at the University of Liverpool, United Kingdom. He obtained his Ph.D. in Maths, Physics and Chemistry from the University of Salford in 1972, and was granted a Fellowship of the Royal Society of Chemistry in 1966. He has been awarded the Chromatographic Society's Jubilee Medal for his achievements in chromatography, and acts as an independent consultant in a variety of areas in the field of chromatography. *See* Myers Report Ex. 1.
[214] Tr. at 790 (Myers); PTX 72 (describing as "background" a technical report on bonding from January 13, 1995, in a technical report dated April 30, 1996).
[215] *See* Tr. at 1372-73 (Dorsey).
[216] Tr. at 1357-58 (Dorsey).
[217] Tr. at 858 (Myers).
[218] PTX 331 at D1000480.

would have taken the defendants approximately one year to develop multilayering without the assistance of the defendants' knowledge from Agilent.[219] According to Myers, it took Langlois about 10 months to create a commercially useful multilayering process.[220] This is supported by Langlois' own testimony that experimentation on multilayering was conducted from November 2005 until the "late summer or fall" of 2006,[221] just before Halo was publicly released. Although the defendants did spend months of valuable lab time to perfect the multilayering process, it is probable that without their knowledge from Agilent, they would not have had the intuition to attempt the process at all. It is reasonable, therefore, that the defendants would have needed at least a year, if not much longer, to develop and refine multilayering without having first conducted testing at Agilent, and having considered the empirical results of those tests showing that multiple layers of sol were deposited with each application of sol.

In summary, a very short development period occurred at AMT before a bonding and a slurry solvent for packing columns were selected for commercial use, and AMT was able to produce a successful multilayering process in just ten months, which would have been impossible without misappropriation of Agilent's trade secrets. Therefore, the defendants misappropriated Agilent's trade secrets in order to save themselves the time and expense of testing new bondings and slurry

[219] Tr. at 932-33 (Myers).
[220] Myers Report at 29.
[221] Tr. at 621-22 (Langlois).

solvents suitable for commercial manufacturing, and creating the starting point for a multilayering process.

III. Agilent Is Entitled To Relief

Agilent requests a variety of relief from the defendants' breaches of contract and misappropriation of trade secrets, including: a permanent injunction for breach of the Confidentiality Agreements to keep the defendants from using Agilent confidential information, and requiring the return or destruction of Agilent's property; a constructive trust on AMT's Small Particle and Multilayering Patent Applications; a three-year injunction on the use of Agilent trade secrets; monetary damages based upon lost sales, unjust enrichment, and punitive damages; and attorneys' fees.

In response, the defendants have continued their refusal to acknowledge the reality that they consciously and pervasively utilized Agilent's confidential information to develop a product that they intended to compete with and take sales from Agilent's HPLC business. Rather than admit that their product development efforts were completely suffused with Agilent information, the defendants have buried the court and Agilent in briefs that deny facts that the defendants' own trial testimony and conduct plainly admits. Refusing to accept that their product development efforts were based almost entirely on files and information they improperly took, the defendants seek to have me believe that they could have rapidly developed Halo without that information. That is, the defendants basically say that although their actual business development activity involved the

consistent and comprehensive use of information and data from Agilent, none of that information really mattered. Heck, these defendants are so smart, they could have simply gone to the library for a couple of days, read the literature on HPLC, and pushed out Halo in the same amount of time.

Of course, what people do, especially smart people who know that they are under legal constraints, is often more telling than what they say after they are exposed and have to answer for their conduct. Had it been as easy and quick for the defendants to develop a product like Halo without taking legal risks, I have no doubt they would have done so. Had it been as easy and quick to just use knowledge out of their heads and not refresh their memories with data from Agilent experiments, they would have done so. Had it been as easy and quick to whip up a bonding and a slurry solvent without using ones they regarded as Agilent trade secrets, the defendants would have done so. Had it been as easy and quick for Kirkland to outline a research grant idea for AMT without using a fully-baked grant proposal he wrote while on Agilent's payroll, he would have done so. The fact is that time after time the defendants turned back to Agilent information to help them along, in ways that might seem small individually, but that collectively saved the defendants huge amounts of time and money. Indeed, Langlois needed to use Agilent internal parts numbers to order materials for testing relevant to Halo! And even at a time after Agilent had raised concerns with AMT over its use of Agilent trade secrets, Kirkland continued to use Agilent's information for improper purposes, sending DeStefano a memo from HP

on "the ageing (storing) properties of bonded phase packings."[222] Kirkland sent this memo because DeStefano was having problems with aging at AMT, even though Kirkland viewed the memo as something he would not have shared with an AMT competitor.[223]

Because the defendants have failed to meaningfully accept responsibility for their misconduct, their arguments have been less helpful to me than they might have been in my consideration of the appropriate remedy. That said, the defendants' failure to come to grips with the plain facts of their sweeping misuse of Agilent's information does not relieve me of the duty to put in place a balanced remedy that is equitable and reasonably tailored to address the precise nature of the misconduct at issue.

In the pages that follow, I outline such a remedy. The remedy is not one comprised of severable parts. Instead, the balance of monetary and injunctive relief it reflects is designed to come as a single equitable remedial package. If one were to, for example, be less generous in awarding monetary damages, the remedial calculus, in my view, would require a more stringent injunction pulling Halo off the market for at least a year. Given that cases of this kind present a variety of uncertainties at the remedial stage about what might have happened had the defendants not breached their contractual duties and not stolen trade secrets, the remedy I implement necessarily involves some degree of imprecision and

[222] PTX 259 (email from Joseph Kirkland to Joseph DeStefano (December 3, 2007)).
[223] Tr. at 155 (Kirkland).

depends on assumptions that are arguable. The law recognizes this reality by enabling trial courts to shape remedies that bear a reasonable relationship to the breach and the factual record,[224] and that impose the burden of uncertainties on the wrongdoers.[225]

With those thoughts in mind, I now outline the remedy that I impose. That remedy consists primarily of an award of monetary damages to make Agilent whole and to deprive AMT of economic advantage from its misuse of Agilent's property and trade secrets. That award is intended to be substantial enough so that I can avoid the imposition of a severe injunction that would require AMT to refrain from selling Halo, and that would involve injuring AMT's innocent customers. To further ensure that Agilent is made whole, I award it its attorneys' fees and costs. Furthermore, to prevent any further misuse of its property, I find that Agilent is entitled to a permanent injunction to stop the defendants from using Agilent confidential information, and to return the Agilent property that the defendants possess. Perhaps most charitably to AMT, I do not require that they assign their Small Particle Patent Application and Multilayering Patent Application to Agilent. Rather, I enter a more restrained remedy requiring AMT

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[224] In particular, this court of equity has "broad discretion to shape and adjust the remedy to best achieve justice under the facts of the particular case." DONALD J. WOLFE, JR. & MICHAEL A. PITTENGER, CORPORATE AND COMMERCIAL PRACTICE IN THE DELAWARE COURT OF CHANCERY § 12.01[a], at 12-4 to 12-5 (2009).

[225] *See, e.g.*, *Boyce v. Soundview Tech. Group, Inc.*, 464 F.3d 376, 391 (2d Cir. 2006) ("[W]here 'the existence of damage is certain, and the only uncertainty is as to its amount, . . . the burden of uncertainty as to the amount of damage is upon the wrongdoer." (quoting *Schonfeld v. Hilliard*, 218 F.3d 164, 182 (2d Cir. 2000))).

to withdraw those Applications. If AMT refuses, then I will order their assignment to Agilent.

I now address each element of the remedy, beginning with the issue of monetary relief.

A. Money Damages Are An Appropriate Remedy

Agilent requests money damages based on the defendants' unjust enrichment, and compensatory damages for Agilent's lost profits due to Halo's competition with Agilent's RRHT[226] products. The DUTSA authorizes this court to award money damages for misappropriation of trade secrets based on "the actual loss caused by misappropriation and the unjust enrichment caused by misappropriation that is not taken into account in computing actual loss."[227] To recover monetary damages for the misappropriation of trade secrets, "the plaintiff must show either unjust enrichment of the defendant or economic harm to himself."[228] Agilent has demonstrated that it is entitled to both the profits that it lost due to competition from Halo in the market place, and unjust enrichment damages for the monetary gain that the defendants reaped by misappropriating Agilent's trade secrets.

Agilent also seeks damages for breach of contract. This theory essentially overlaps with its trade secret misappropriation theory in terms of lost profits, but

[226] Agilent's RRHT, or "Rapid Resolution High Through-Put Columns" product is a Zorbax column packed with 1.8 micron totally porous particles. Tr. at 323 (DeStefano).
[227] 6 *Del. C.* § 2003(a).
[228] 2 CALLMANN ON UNFAIR COMPETITION, TRADEMARKS AND MONOPOLIES § 14.42.

also has grounding in the broader contractual duties the defendants had not to use any of Agilent's information except for Agilent purposes. In coming up with a single remedy, I confessedly give weight to the fact that the defendants basically transferred their Agilent files to AMT and regularly used compilations of data from Agilent to conduct AMT business. This saved the defendants a lot of time and money.

In approaching the issue of monetary damages, I also acknowledge that I have endeavored to shape an award that alleviates the need for an injunction that will interrupt the availability of Halo in the marketplace, both because of the adverse effect that remedy would have not only on AMT but also on its customers. Having approached the remedy issue in this manner favorably to AMT, I am not inclined to give the defendants, as clear wrongdoers, slack on the question of monetary damages. Because, as I find, Agilent has presented a reasonable estimate of its damages and of the unjust enrichment enjoyed by AMT, I adopt that estimate in the face of the quibbling and counter-historical speculation the defendants advance as mitigating factors.[229]

[229] *See Am. Gen. Corp. v. Cont'l Airlines Corp.*, 622 A.2d 1, 10 (Del. Ch. 1992) (explaining that because the acts of a wrongdoing defendant created uncertainties, "fundamental justice requires that, as between [the plaintiff] and [the defendant], the perils of such uncertainty should be laid at the defendant's door" (quoting *Madison Fund, Inc. v. Charter Co.*, 427 F. Supp. 597, 608 (S.D.N.Y. 1977))).

1. The Defendants Were Given A Three Year Head Start From Using Agilent's Trade Secrets

Monetary damages for trade secret misappropriation may be calculated under the "head start rule," which allows a plaintiff to recover damages for "the time it would have taken the defendant to discover the secret without misappropriation."[230] Agilent, supported by the testimony of Myers,[231] claims that the defendants were given an approximately three-year head start at AMT by misappropriating Agilent's trade secrets — one year for each of the trade secrets that were misappropriated.[232] Therefore, if Agilent's estimate of one year "head start" time per trade secret is correct, Agilent would be entitled to damages from October 2006 to approximately October 2009.

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[230] *Id.* Although Delaware courts apparently have not adopted the "head start" rule by that moniker, this court has limited money damages for trade secret misappropriation by the time it would have taken the defendants to develop a comparable product without the use of the plaintiff's trade secrets. *See NuCar Consulting*, 2005 WL 820706, at *13 (granting unjust enrichment damages limited to the amount of time it would have taken the defendants to develop the trade secret through proper means). The "head start" rule is also advocated by the Uniform Trade Secrets Act, which Delaware has largely enacted, and is well-supported in other jurisdictions and in various publications. *See* UNIF. TRADE SECRETS ACT § 3 cmt. (amended 1985) ("Like injunctive relief, a monetary recovery for trade secret misappropriation is appropriate only for the period in which information is entitled to protection as a trade secret, plus the additional period, if any, in which a misappropriator retains an advantage over good faith competitors because of misappropriation."); *see also Sokol Crystal Products, Inc. v. DSC Commc'ns Corp.*, 15 F.3d 1427, 1433 (7th Cir. 1994) ("It is true that, where a misappropriation of a trade secret only gives a competitor a 'head start' in developing a product, damages should be limited to the injury suffered in that 'head start' period.") (citation omitted); *Schiller & Schmidt, Inc. v. Wallace Computer Servs., Inc.*, 1991 WL 270170, at *6 (N.D. Ill. 1991) (explaining that a plaintiff "is only entitled to protection for the period of time it would take a legitimate competitor to acquire the secret information on his own"), *aff'd in part, vacated in part, United States v. Sanchez*, 969 F.2d 1410 (7th Cir. 1992); RESTATEMENT (THIRD) OF UNFAIR COMPETITION § 45 cmt. h (1995) ("Monetary remedies, whether measured by the loss to the plaintiff or the gain to the defendant, are appropriate only for the period of time that the information would have remained unavailable to the defendant

The defendants argue that Agilent's estimated head start period of one year per trade secret is excessive. According to Dorsey, the defendants were saved, at most, two months on bonding, and between three weeks and thirty-eight days on column packing for a total of three and a half months.[233] But the defendants estimate their head start time by comparing the number of experiments run at Agilent on a particular technology with the number of experiments run at AMT, and estimating the amount of time that each experiment took. This approach does not account for the fact that the defendants knew where to begin in their experimentation at AMT based on their work at Agilent, and experimented only to perfect a concept that they already knew worked. And Lvov's argument that the defendants were saved no time at all by using Agilent's information on multilayering is not persuasive, because it is based upon his assumption that multilayering was not an Agilent trade secret.[234]

On the other hand, Myers considered the amount of time spent at Agilent researching bondings, slurry solvents, and multilayering, the number of employees conducting experiments at Agilent versus AMT, and the limited resources

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in the absence of the appropriation. This period may be measured by the time it would have taken the defendant to obtain the information by proper means such as reverse engineering or independent development."); Douglas G. Smith, *Application of Patent Law Damages Analysis to Trade Secret Misappropriation Claims: Apportionment, Alternatives, and Other Common Limitations on Damages*, 25 SEATTLE U. L. REV. 821, 864 (2002) ("Because a plaintiff is entitled to recover damages only so long as the information may remain a secret, a number of courts have ruled that a plaintiff cannot recover damages beyond the head start period.").

[231] Tr. at 805, 858 (Myers).

[232] Tr. at 822-24 (Myers).

[233] Tr. at 1346, 1357-58, 1415 (Dorsey).

[234] Tr. at 1449 (Lvov).

available to AMT in estimating the defendants' head start time.[235] Considering these factors, he reasonably estimated that the defendants were given a head start period of approximately one year per trade secret. I adopt that time estimate.

In reaching the conclusion to do so, I also give weight to the fact that it took Agilent about three years to research and develop Poroshell 300, one of Agilent's key HPLC products, at a time when Kirkland and DeStefano were working on that project,[236] and that it took another HPLC competitor, Phenomenex, three years and a team of 19 people to develop and market a small superficially porous particle called Kinetex.[237] More generally, I find unpersuasive the defendants' contentions that they would have rapidly found a bonding solution, invented a new slurry solvent, or come up with the inspiration for multilayering absent their knowledge from Agilent. As noted, at every turn, the defendants looked at Agilent files and data to help them move forward, even after they knew Agilent was likely to sue them. Although I have no doubt that the defendants are good scientists, nothing in their testimony or that of their experts gives me any confidence that the defendants could have launched Halo in less than three years if they had to proceed without using Agilent's confidential information.

In that regard, it is extremely telling that the defendants keenly appreciated the legal risks they faced if they used Agilent's bonding. Yet, they could not come

[235] Myers Report at 36-37.
[236] Tr. at 837 (Myers).
[237] PTX 500 (brochure about Kinetex by Phenomenex); Tr. at 841-42 (Myers).

up with anything else that worked, and used Agilent's bonding to move forward quickly. If it was, as I said previously, easy to proceed without using trade secrets and Agilent documents, these smart men of business and science would have done so. The defendants' blithe assurances that they would have intuited and deployed all the things they did without any material delay by a literature search and deep thinking are not evidence; they are the sort of mythical speculation that scientists like the defendants find unpersuasive. The empirical facts are that virtually everything the defendants did at AMT was deeply and pervasively influenced by information from Agilent.

2. Agilent Is Entitled To Damages Beyond The Three Year Head Start Period

Although the "head start period" is an acceptable way to limit the amount of damages available to a plaintiff in a trade secret misappropriation case, such a limitation is not mandatory.[238] And, limiting Agilent's monetary damages would not be appropriate because, as will be discussed further below, Agilent's request for injunctive relief is denied, and to grant Agilent monetary relief only for the three year "head start" period would risk leaving Agilent with an insufficient remedy. The defendants have continued to enjoy an increased market share in the HPLC columns market from their use of Agilent's trade secrets after the three year "head start" period ended, and will continue to gain customers and profits from using Agilent's technology. To prevent underenforcement and to remedy the

[238] *See RRK Holding Co. v. Sears, Roebuck and Co.*, 563 F. Supp. 2d. 832, 836 (N.D. Ill. 2008) (finding that monetary damages for trade secret misappropriation need not be limited by the "head start" period).

defendant's increased market share, therefore, it is equitable to grant Agilent monetary damages beyond the three year "head start" period. To accomplish that, I use the calculations that Agilent provided for the period that Agilent's expert calculated its claims for compensatory and unjust enrichment damages — from October 2006 to July 2009 — and run the lost profits out until October 2010. By this means, I take into account the market niche that AMT was able to unfairly carve out and provide relief to Agilent for that prospective harm. By doing so, I avoid the need for an injunction against the future sales of Halo.

I now quantify that award.

3. Agilent Is Entitled To Compensatory Damages For Lost Profits

Agilent seeks monetary damages to compensate it for the profits allegedly lost by Agilent as a result of the defendants' conduct. Compensatory damages in actions for trade secret misappropriation, and in analogous patent infringement cases,[239] are generally determined by "the difference between the plaintiff's position before and after the misappropriation of his secret."[240] The loss suffered by the plaintiff, such as lost profits, is the usual indicator of damage;[241] but, in

[239] *See Univ. Computing Co. v. Lykes-Youngstown Corp.*, 504 F.2d 518, 535 (5th Cir. 1974) (noting that the appropriate measure of damages in trade secret misappropriation cases may be determined by analogy to patent infringement cases).
[240] 2 CALLMANN ON UNFAIR COMPETITION, TRADEMARKS AND MONOPOLIES § 14.42.
[241] *See Phillips Petroleum Co. v. Rexene Corp.*, 1997 WL 781856, at *14 (D. Del. Sept. 4, 1997) (stating that, in the context of patent infringement, "[t]he appropriate measure of compensatory damages may be determined by one of three methods: (1) lost profits; (2) an established royalty; or (3) a reasonable royalty") (citations omitted).

cases where a specific injury to the plaintiff cannot be established, the defendant's actual gain may be considered.[242]

At trial, Agilent claimed that it has lost profits because Halo is in direct competition with Agilent's RRHT product.[243] In presenting this argument, Agilent's damages expert, Dr. Gregory Leonard,[244] compared the estimated market share of Agilent's RRHT product to the Halo unit sales to determine the amount of sales that Agilent would have made had Halo not been on the market.[245] Based upon his calculations, Leonard estimates that Agilent lost $945,058 in RRHT sales from October 2006 to July 2009, plus pre-judgment interest, because customers who would have purchased RRHT bought Halo instead.[246]

The defendants argue that Agilent is not entitled to compensatory damages, because Agilent has failed to point to "a single actual lost sale."[247] But AMT failed to provide Agilent with the identification of its Halo customers because AMT sells its products through third-party distributors, leaving Agilent without

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[242] *See id*. (citations omitted); *see also* 54A AM. JUR. 2D *Monopolies and Restraints of Trade* § 1082 (2009) ("There are two basic methods for assessing damages for the misappropriation of trade secretes: the damage sustained by the victim, such as by lost profits, which is the traditional common-law method, and the profits earned by the wrongdoer by the use of the misappropriated material.").
[243] Tr. at 1199 (Leonard).
[244] Dr. Leonard is a senior vice president with NERA Economic Consulting. He received his Ph.D. in Economics from the Massachusetts Institute of Technology in 1989. Before joining NERA, Leonard was a senior vice president with Lexecon Inc., a founding member and director of Cambridge Economics, Inc., and an assistant professor at Columbia University. *See* Expert Report of Dr. Gregory K. Leonard at 1 ("Leonard Report").
[245] Tr. at 1199 (Leonard).
[246] Tr. at 1200; Supplemental Expert Report of Dr. Gregory K. Leonard at 2 ("Leonard Supplemental Report").
[247] Defs. Op. Post-Trial Br. at 63.

any basis to prove lost profits through a traditional analysis.[248] Therefore, Leonard used a market share analysis approach to determine whether Agilent is entitled to lost damages.

Leonard's method of determining lost profits based on a market share is an acceptable approach of demonstrating the causal relationship between misappropriation and lost profits.[249] A market share approach is centered on the principle that, "but for" the defendant's misappropriated product, the product sales would be divided among the remaining competitors according to their market shares.[250]

The first step in evaluating lost profits based upon a market share is to determine which products in the market are comparable to the misappropriated product.[251] Although Halo and RRHT are different products — Halo particles are 2.7 microns and superficially porous, while RRHT particles are 1.8 microns and totally porous — both are intended to provide fast liquid chromatographic

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[248] Tr. at 1234, 1237-38, 1282 (Leonard).

[249] *See Ericsson, Inc. v. Harris Corp.*, 352 F.3d 1369, 1377 (Fed. Cir. 2003) (finding an economic experts' approach of reconstructing "the 'but for' market by segmenting the market and determining [the plaintiff's] lost profits based on its market share" to be acceptable, and a method that had "met with [the] court's approval on previous occasions") (citations omitted); Ryan Sullivan, *A Holistic Approach to Patent Damages Analysis*, *in* ECONOMIC DAMAGES IN INTELLECTUAL PROPERTY 133, 134-45 (Daniel Slottje, ed., 2006) (describing an evolution in the way that courts determine lost profits, and that a market-based analysis for lost profits is an increasingly accepted approach).

[250] *See* Sullivan, *supra* note 249, at 139; *see also State Indus. v. Mor-Flo Indus.*, 883 F.2d 1573, 1577-80 (Fed. Cir. 1989) (assessing damages for patent infringement based on the market-share approach).

[251] *See* Sullivan, *supra* note 249, at 140; Tr. at 1198-99 (Leonard).

analysis, and would have appealed to the same customers.[252] And, AMT intended to position Halo against Agilent's sub-2 micron columns, including RRHT, and asked its distributors market Halo against fast HPLC columns with sub-2 micron totally porous particles.[253] Thus, Halo and RRHT are competing for the same customers.

The next step in a market share analysis is to determine what portion of Halo's sales would have gone to Agilent.[254] Specifically, to reconstruct Agilent's share of the HPLC columns market, the number of HPLC systems in use, the number of columns used by each system annually, and the number of columns sold by Agilent must be established. Leonard estimated that Agilent's share of fast liquid chromatography columns between 2006 when Halo was placed on the market and 2008 is in the range of 18% to 27%, and uses a "conservative" 20% market share as the basis for his analysis.[255]

Specifically, in 2006, Leonard estimated that Agilent sold 19% of the total fast HPLC columns that were sold world-wide. In reaching this number, he relies upon a report by Strategic Directions International, Inc. estimating the number of

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[252] Tr. at 1201 (Leonard).
[253] PTX 450 (email from Joseph DeStefano to Sunil Kamath (May 15, 2007)) (stating that AMT was "positioning Halo against the sub-2 micron columns from . . . Agilent"); *see also* Tr. at 323 (DeStefano) (stating that Halo and RRHT would be "of interest to the same customers"); Dep. of Maureen J. Joseph, Ph.D. (Jan. 9, 2009) (testifying that "RRHT sub-2 micron competes against Halo, because it is an approach to fast LC").
[254] *State Indus.*, 883 F.2d at 1576 (finding that a patent owner had a 40% market share and, therefore, it would have made 40% of the infringer's sales); Tr. at 1205 (Leonard).
[255] Leonard Report at 11.

active liquid chromatography systems that use liquid chromatography columns.[256] He estimated the number of columns used by each system, and the percentage of systems that use fast liquid chromatography columns (such as Halo or RRHT) based upon data given to him by Dr. Maureen Joseph, the liquid chromatography production manager at Agilent.[257]

Leonard followed the same approach for 2007, and estimated Agilent's market share of the fast liquid chromatography columns industry to be 26%, relying on data given to him by Joseph.[258] In calculating the 2007 market share, Leonard added the number of new liquid chromatography systems sold in 2007 to those that were already active in 2006.[259] In 2008, Agilent estimated the fast

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[256] *See id*. at 11-12. According to a January 2007 study by Strategic Directions International, Inc., 131,400 "conventional" HPLC systems were in world-wide operation, and 2,952 "fast" HPLC systems were in operation. PTX 400 (Strategic Directions International, Inc., *High Performance Liquid Chromatography: New Opportunities in a Reinvigorated Market* (Jan. 2007)). Leonard, relying on a conversation with Maureen Joseph, the liquid chromatography production manager at Agilent, estimated that less than 2% of conventional liquid chromatography systems, and 60% of fast liquid chromatography systems, use "fast" liquid chromatography columns, such as the smaller RRHT columns and Halo columns. Joseph also told Leonard that each system used approximately six columns per year. Given these estimates, Leonard calculated that there were 4,384 active systems that use fast liquid chromatography columns, and that the worldwide sales of columns for those systems was 26,298. Because Agilent sold 4,897 RRHT columns in 2006, he found their market share to be 19% (though the number is actually 18.6%, to be precise). Leonard Report at 12 (citing PTX 427 (Agilent Sales Data) at AG_00147997).

[257] Leonard Report at 12.

[258] Specifically, Leonard found that, in 2007, there were 6,163 liquid chromatography systems using fast columns. If, again, each instrument used six columns, as Joseph claims, the world-wide sales of fast liquid chromatography columns was approximately 36,977 units. In 2007, Agilent sold 9,487 RRHT columns, which is 25.6% of the estimated fast liquid chromatography columns sold. *Id*. (citing PTX 427 at AG_00147998).

[259] Leonard added to the base of 131,400 conventional and 2,929 fast liquid chromatography instruments in 2006 shipments new HPLC instruments in 2007 —

liquid chromatography market to be $20 million, and estimated its current market share of that industry to be 18%.[260] Using these estimates, Leonard found Agilent's market share to be approximately 20%.

The defendants argue that Leonard's estimate of Agilent's 20% market share must be rejected because it is partially based upon conjecture, and without firm evidentiary support. For example, Leonard relies on Joseph's data for the number of columns used for reach HPLC system without explaining how that number was calculated. The defendants also claim that Leonard's 20% estimate is not reliable because he does not explain why he chose 20% as the appropriate share Agilent held in the fast liquid chromatography columns market, or show what effect alleged customer concerns with the quality of RRHT columns had on Agilent's market share. But Leonard's market share approach is based upon sales of RRHT that were actually made, and thus accounts for the possibility that customers chose columns other than RRHT due to quality concerns.[261] Furthermore, there is no such thing as a perfect lost sales analysis, especially where the plaintiffs have been deprived of the defendant's sales data, and the fact that Agilent's data rests in part on estimates should not bar it from recovery.[262]

15,500 conventional and 2,800 fast instruments — for a total of 136, 388 conventional and 5,725 fast HPLC instruments worldwide in 2007. *Id.* (citing PTX 430 (Strategic Directions International, Inc., *Global Assessment Report, 10th Edition: The Laboratory Analytical & Life Sciences Instrumentation Industry* (Sept. 2008)) at 59).

[260] PTX 420 (Poroshell 100 Marketing Planning Discussions, Agilent Technologies (Feb. 2008)) at AG_00147427.

[261] Tr. at 1206-07 (Leonard).

[262] *See Check 'n Go of Virginia, Inc. v. Laserre*, 2005 WL 1926609, at *2 (W.D. Va. Aug. 9, 2005) (granting a plaintiff reasonable damages for trade secret misappropriation

Instead, any uncertainty should be construed against the defendants as the wrongdoers.[263]

Additionally, the defendants' own damages expert, Dr. William R. Latham,[264] failed to present a compensatory damages calculation of his own, and did not even attempt to reconstruct Agilent's market share. Instead, the defendants do little more than point out potential flaws in Leonard's analysis. The defendants do not show that Agilent's estimated damages are unreasonable. In fact, the defendants admit that Agilent is a major player in the HPLC market,[265] and that

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despite the plaintiff's failure to prove actual damages because "[w]here damages are uncertain, such uncertainty should not preclude recovery"); *Weston v. Buckley*, 677 N.E.2d 1089, 1093 (Ind. Ct. App. 1997) ("Although [a damages award for trade secret misappropriation] cannot be based upon mere speculation or guesswork, no degree of mathematical certainty is required in the damages calculation."); RESTATEMENT (FIRST) OF TORTS § 912 (1939) cmt. a ("It is . . . desirable . . . that an injured person shall not be deprived of substantial compensation merely because he cannot prove with complete uncertainty the extent of harm he has suffered."); 2 CALLMANN ON UNFAIR COMPETITION, TRADEMARKS AND MONOPOLIES § 14:42 (explaining that if a plaintiff successfully shows unjust enrichment or economic harm from misappropriation of its trade secrets, "the plaintiff should be entitled to recover such damages even though they may, to a certain degree, be uncertain, dependent on some contingency, or only approximately measurable or subject to probable estimate").

[263] *See Great Am. Opportunities, Inc.*, 2010 WL 338219, at *23 ("[P]ublic policy suggests that the wrongdoer should be required to 'bear the risk of uncertainty of a damages calculation where the calculation cannot be mathematically proven.'" (citing *Story Parchment Co. v. Paterson Parchment Paper Co.*, 282 U.S. 555, 565 (1931))).

[264] Latham is an Associate Professor of Economics at the University of Delaware. He received his Ph.D. in economics from the University of Illinois in 1973. He has served as a visiting professor at Clemson University, Hankuk University in Seoul, Korea, the University of Lyon in Lyon, France, and the Hanken University in Helsinki, Finland. Latham was the Chair of the Economics Department at the University of Delaware from 1990 to 1996, and served as director of the Delaware Econometric Model Group from 1976 to 1982.

[265] *See* Leonard Report at 8 (citing Deposition of Joseph J. DeStefano (Dec. 12, 2008) at 294-295, 303) (explaining that the major competitors in the HPLC market are Waters Associates, Phenomenex, Agilent, and Thermo)).

they targeted Agilent's customer base.[266] Agilent has, therefore, demonstrated that 20% is a reasonable estimate of its market share.

After calculating Agilent's market share, Leonard applied Agilent's 20% market share to the total number of columns sold by AMT from October 2006 to July 2009.[267] Leonard also calculated a weighted average of the net unit price and unit cost for Agilent's RRHT columns and other Agilent HPLC columns similar to Halo.[268] Based on this data, Leonard calculated that but for competition from Halo, Agilent would have made profits of $945,058.[269] Agilent should be given pre-judgment interest on its lost profits in the amount of $11,047 as of July 2009.[270] In total, Leonard calculated Agilent's compensatory damages to be $956,105. Because nothing in Leonard's calculations is unreasonable, and because the defendants have failed to reconstruct a plausible alternate market share, Agilent is awarded compensatory damages in the amount of $956,105 for the period from October 2006 to July 2009. In keeping with the prior discussion, I award Agilent an additional $582,263.75 for the period from July 2009 to October

[266] PTX 450; Tr. at 323 (DeStefano).
[267] AMT provided Leonard with its unit sales and revenues data. According to that data, AMT sold 12,000 columns from October 2006 to December 2008. PTX 435-PTX 440 (Halo Unit Sales Data). AMT sold another 4,937 columns from January 2009 to July 2009. PTX 467 (Halo Unit Sales Data). Agilent's market share of the total Halo columns sold by AMT from October 2006 to July 2009 is 3387.4 columns.
[268] Leonard calculated Agilent's weighted average net prices and unit costs using Agilent sales data from October 2006 to July 2009. PTX 406 (RRHT Sales Data 2006-2008); PTX 468 (Agilent Sales Data for RRHT Columns (July 2009)). Using this data, Leonard calculated that Agilent lost between $120 and $551 per column to AMT, depending on the diameter, length, and bonded phase of the column. *See* Leonard Report at 15.
[269] Leonard Supplemental Report at 2.
[270] *Id*. Leonard based this number on the three-month constant maturity U.S. Treasury bill rate.

2010.[271] I award pre-judgment interest on the damages awarded for the period from July 2009 until the date of the final order implementing this judgment. The parties shall calculate that amount in their discussions to settle the final order.

4. Damages For Unjust Enrichment Are Appropriate

Agilent is also entitled to an award of unjust enrichment damages, based upon AMT's gross profits from October 2006 to July 2009. In addition to compensatory damages, the DUTSA authorizes the imposition of unjust enrichment damages "caused by misappropriation that is not taken into account in

[271] The general rule, followed in Delaware law and elsewhere, is that future lost profits must be established by "substantial evidence" and not by speculation. *Mobile Diagnostics, Inc. v. Lindell Radiology, P.A.*, 1985 WL 189018, at *4 (Del. Super. July 29, 1985) ("The general rule is that loss of future profits must be established by substantial evidence and can't be left to speculation."); *Re v. Gannett Co., Inc*., 480 A.2d 662, 668 (Del. Super. 1984) ("Courts have required that loss of future profits be established by substantial evidence and not be left to speculation."(citing 25A C.J.S. Damages §§ 162(2), 162(4); 22 AM. JUR. 2D Damages § 172, at 242-45)). Agilent's future lost profits can be established by "substantial evidence" because Agilent's lost profits can be proven from October 2006 to July 2009. As discussed earlier, Agilent's market share is relatively stable at about 20%, and AMT's sales for the year covering August 2008 to July 2009 are also stable. There is no reason to believe that AMT has not continued to make sales which cut into Agilent's market share. It is reasonable, therefore, to apply Agilent's average monthly sales of $38,817.53 from August 2008 to July 2009 to the period covering July 2009 to October 2010, which results in a lost profits award of $582,263.75. *See Square D Co. v. Breakers Unlimited, Inc.*, 2009 WL 1468700, at *3 (S.D. Ill. May 21, 2009) ("Proof of the fact of damages in a lost profits case means proof that there would have been some profits. If the plaintiff's proof leaves uncertain whether plaintiff would have made any profits at all, there can be no recovery. But once this level of causation has been established for the fact of damages, less certainty (perhaps none at all) is required in proof of the amount of damages. While proof of the fact of damages must be certain, proof of the amount can be an estimate, uncertain, or inexact." (quoting Robert L. Dunn, RECOVERY OF DAMAGES FOR LOST PROFITS (6th ed. 2005) § 1.3 at 11)). This award is also conservative because it ignores that AMT has been and will continue to be unjustly enriched from July 2009 until October 2010, and I do not award any unjust enrichment damages for that period.

computing actual loss."[272] Unjust enrichment considers "the unjust retention of a benefit to the loss of another, or retention of money or property of another against the fundamental principles of justice or equity and good conscience,"[273] and is proven based on the following elements: (1) an enrichment; (2) an impoverishment; (3) a relationship between the enrichment and the impoverishment; (4) lack of a justification; and (5) the absence of a remedy at law.[274]

Agilent has proven that the defendants gained an unjust enrichment caused by their use of Agilent's trade secrets.[275] But for Agilent's trade secrets, the defendants would not have had Halo on the market as early as October 2006, and would likely not have developed a product as successful as Halo. Halo is currently AMT's only source of profit and, because AMT relies on the use of Agilent's trade secrets, Agilent is entitled to the net profits that AMT gained at Agilent's expense.[276]

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[272] 6 *Del. C.* § 2003(a).
[273] *Schock v. Nash*, 732 A.2d 217, 232 (Del. 1999).
[274] *See Triton Const.*, 2009 WL 1387115, at *24 (citing *Cantor Fitzgerald, L.P. v. Cantor*, 1998 WL 3266686, at *6 (Del. Ch. June 16, 1998)).
[275] *See* 6 *Del. C.* § 2003(a) (explaining that unjust enrichment damages must be "caused by" misappropriation); *Total Care Physicians, P.A. v. O'Hara*, 2003 WL 21733023, at *2 (Del. Super. July 10, 2003) ("Although the causation element is not defined further in the [DUTSA], and case law on the subject is sparse, statutory construction and deductive reasoning lead to the clear conclusion that the causation referred to in the Act is proximate causation.").
[276] *See NuCar Consulting*, 2005 WL 820706, at *11-12 (awarding unjust enrichment damages where a plaintiff had proven that it suffered a loss and that the defendant enjoyed a gain proximately caused by the defendants' misappropriation of trade secrets).

Leonard calculated Agilent's unjust enrichment damages by subtracting the cost of goods sold associated with Halo from AMT's total revenues from Halo sales.[277] Leonard applied AMT's gross profit margin from October 2006 to July 2009 to the 80% of AMT worldwide Halo unit sales that were excluded from the lost profits calculation in order to offset the amount of unjust enrichment damages from Agilent's award of compensatory damages. Using this calculation, Leonard found that Agilent is entitled to approximately $2,991,649 in unjust enrichment damages in addition to the $956,105 of lost profits damages.

Latham takes issue with Leonard's decision to only subtract cost of goods sold from AMT's total sales, and points out that AMT has additional costs which must be subtracted from AMT's gross revenues. According to Latham, these expenses include: research and development costs for future products or sales not associated with Halo, legal costs associated with Agilent's lawsuit, the implicit interest expense that AMT would have paid to a bank had it not been given funding from AMT's principals, AMT's imputed tax liability, and the economic value of AMT employees' labor (because several of AMT's principals have

[277] Leonard uses 2007 profit margins for calculating 2006 profits, because AMT's profit margins for 2006 are not available. For October to December 2006, Leonard estimated that, after subtracting the cost of goods sold, AMT's gross profits from Halo were $47,658. He calculated AMT's gross profits from worldwide sales of Halo to be $828,790, or 55% of sales, in 2007, and $1,692,778, or 64% of sales, in 2008. PTX 431 (AMT Profit & Loss Data 2007); PTX 432 (AMT Balance Sheet (Dec. 31, 2007)); PTX 434 (AMT Profit & Loss Data 2008). For January to July 2009, Leonard found that AMT's gross profits were $1,147,881.87, or 69.1% of AMT's total sales. PTX 466 (AMT Profit and Loss Data Jan. to July 2009). In total, AMT earned a gross profit of $3,669,450. Leonard Report at 17-18; Leonard Supplemental Report at 2.

worked with a salary lower than they could have received elsewhere).[278] By adjusting Leonard's calculations of AMT's gross profits with the amount of these expenses, Latham calculates Agilent is only entitled to $1,271.331.[279]

But Latham's estimate is not persuasive, because the defendants, who were in a good position to do so, failed to put forth any fact testimony explaining their entitlement to these deductions. Because Agilent has shown that AMT made a profit from the sale of Halo, which was produced by using Agilent's trade secrets, the burden was on the defendants to demonstrate the costs that should be deducted in calculating net profit.[280] Nowhere is it explained why, for example, the principals of AMT chose to take lower salaries and to loan AMT money, or why their decision to do so should have any effect on Agilent's recovery. The defendants chose to form AMT as a corporation and the unjust enrichment enjoyed

[278] DTX 961 (Expert Report of Dr. William R. Latham at 18-20 ("Latham Report")).
[279] Specifically, Latham found that AMT's adjusted net profits were -$31,167 in 2006, $283,611 for 2007, $956,825 for 2008, and $61,951 for the month of January 2009 — for a total of $1,271,331. Latham Report at Table 3. Latham did not calculate net profits for February to July 2009.
[280] *See Cartel Asset Mgmt. v. Ocwen Financial Corp.*, 249 Fed. Appx. 63, 79 (10th Cir. 2007) ("Once a plaintiff demonstrates that a defendant made a profit from the sale of products produced by improper use of a trade secret, the burden shifts to the defendant to demonstrate those costs properly to be offset against its profit and the portion of the profit attributable to factors other than the trade secret." (quoting *USM Corp. v. Marson Fastener Corp.*, 467 N.E.2d 1271, 1276 (Mass. 1984))); RESTATEMENT (THIRD) OF UNFAIR COMPETITION § 45 (1995) ("The general rules governing accounting of profits are applicable in trade secret actions. The plaintiff is entitled to recover the defendant's net profits. The plaintiff has the burden of establishing the defendant's sales; the defendant has the burden of establishing any portion of the sales not attributable to the trade secret and expenses deducted in determining net profits.").

by AMT as a wrongdoer was reasonably calculated by Leonard.[281] The corporate structure and planning choices of the individual defendants are ones that they presumably made for economic advantage and ones that do not diminish the economic advantage unfairly reaped by their corporate baby, AMT.

Therefore, I find Leonard's calculation of unjust enrichment damages to be a more reliable calculation, and award Agilent $2,991,649. I do not award unjust enrichment damages for the period after July 2009, as I do not believe I can do that reliably, even though the failure to do is another charitable choice to the wrongdoer. As noted, this refusal renders the damages award for this period conservative in AMT's favor. Thus, I reach a total award of $4,530,017.75, by combining the sum of the offset unjust enrichment damages calculation of $2,991,649 and lost profits calculation of $956,105 for the period of October 2006 to July 2009 with the $582,263.75 in lost profits from July 2009 to October 2010. To that, the pre-judgment interest on Agilent's lost profits from July 2009 to the date of the final order must be added, because Leonard only calculated pre-judgment interest on Agilent's lost profits from October 2006 to July 2009.

B. Agilent Is Not Entitled To An Injunction That Would Pull Halo Off The Market But Is Entitled To More Limited Injunctive Relief

Agilent asks that the award of damages for the period from October 2006 to July 2009 be supplemented with an injunction preventing the defendants from

[281] *See Great Am. Opportunities, Inc.*, 2010 WL 338219, at *23 (explaining that uncertainties must be construed against the wrongdoer).

using Agilent's trade secrets for one year per misappropriated trade secret. In practical terms, Agilent wants Halo off the market for three years. Under the DUTSA, this court is authorized to grant a request for an injunction to remedy the misappropriation of trade secrets.[282] The purpose of an injunction in a trade secrets misappropriation action is to "protect the secrecy of the misappropriated information, eliminate the unfair advantage obtained by the wrongdoer, and reinforce the public policy of commercial morality."[283] Agilent also asks that the defendants be enjoined from breaching their Confidentiality Agreements with Agilent. As to these requests, the traditional injunctive test applies. "To merit a permanent injunction, a plaintiff must show: (1) actual success on the merits; (2) irreparable harm, and (3) the harm resulting from a failure to issue an injunction outweighs the harm to the opposing party if the court issues the injunction."[284]

Here, Agilent has clearly shown actual success on the merits. This is also the kind of situation that presents the potential for irreparable harm. As the previous damages analysis illustrates, quantifying the precise amount of harm done by the defendants' misconduct is difficult and monetary damages may never restore the injured party to precisely the position it should have been in. Given these realities, it is clearly within my discretion to award an injunction of the kind Agilent seeks.

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[282] 6 *Del. C.* § 2002(a) ("Actual or threatened misappropriation may be enjoined.").
[283] *Miles*, 1994 WL 676761, at *20.
[284] *COPI of Del. v. Kelly*, 1996 WL 633302, at *4 (Del. Ch. Oct. 25, 1996) (citing *Draper Commc'ns, Inc. v. Del. Valley Broadcasters, L.P.*, 505 A.2d 1283, 1288 (Del. Ch. 1985)).

But to do so, in my view, would strike the wrong balance of equities.[285] An injunction taking Halo off of the market would greatly harm the defendants, because it would effectively put AMT out of business. In considering that factor, I give weight to the fact that the Halo product did not simply emerge because the defendants had access to Agilent's confidential information. Rather, the product also involved the application of ingenuity by the defendants at AMT, ingenuity that was independent of the defendants' misuse of Agilent property. Although it is true that an injunction would allow Agilent to regain, at least in part, the market share that it has lost to AMT, and give Agilent time to finalize and market its Poroshell 120 product without competition from Halo, I have shaped a monetary damages award that should go a long way toward compensating Agilent for the harm that it has suffered from the defendants' misappropriation, especially because Agilent has been awarded damages for unjust enrichment. However tempting it might be to put the defendants to the real world test of reinventing Halo without using Agilent's trade secrets in order to see just how quickly they could actually do it, I resist that impulse in favor of a more measured remedial approach. In so inclining, I give weight to the interests of innocent third parties

[285] *See, e.g.*, *Cantor Fitzgerald, L.P. v. Cantor*, 724 A.2d 571, 587 (Del. Ch. 1998) ("[I]n order to obtain . . . injunctive relief, [a plaintiff] must prove that this Court's failure to grant the injunction will cause [the plaintiff] greater harm than granting the injunction will cause [the defendants]. It is also appropriate to consider the impact an injunction will have on the public and on innocent third parties."); WOLFE & PITTENGER § 12.02[f], at 12-31 ("[T]he balancing of the equities analysis entails a determination whether the harm that would result to the applicant if an injunction does not issue would outweigh the harm that will befall the opposing party (or others with a legitimate interest in the matter, including in some instances the public) if such relief is requested.").

whose interests might be harmed by an injunction. AMT has a customer base that relies on Halo and may suffer commercial harm if Halo is no longer available.

In declining to award an injunction of the kind Agilent seeks, I reach an outcome consistent with well-reasoned precedent. "If a damage award represents the amount the trier of fact believed would fairly compensate the plaintiff for damages to the date of the decision and in the future, an injunction against the defendant's future sales would be redundant."[286] Agilent has been awarded compensatory and unjust enrichment money damages for the three year "head start" period, as well as additional reasonable lost profits damages to remedy the increased market share that AMT holds and will continue to hold by using Agilent's trade secrets.[287] This monetary relief is sufficient and need not be supplemented by an injunction against the continued marketing of Halo.

Agilent's other more limited requests for injunctive relief, however, will be largely granted. Most obviously, Agilent is entitled to an injunction preventing the defendants from any further misuse of Agilent's confidential information or

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[286] 2 CALLMANN ON UNFAIR COMPETITION, TRADEMARKS AND MONOPOLIES § 14:39.

[287] In *3M v. Pribyl*, 259 F.3d 587, 609-610 (7th Cir. 2001), the United States Court of Appeals for the Seventh Circuit upheld the decision of the United States District Court for the District of Wisconsin to award money damages for a defendant's misappropriation of trade secrets, and not to award an injunction, because the "head start" period had already run. The court stated that:

> [B]y the time the district court was faced with determining whether to enjoin [the defendant's] use of [the plaintiff's] trade secret, the court believed that [the plaintiff] would have discovered [the defendant's] trade secret. Hence, the district court properly determined that once payment to [the plaintiff] had been made to alleviate any commercial advantage, there would be nothing further gained by enjoining [the defendant] from using the trade secret which they would have by that time developed.

3M, 259 F.3d at 609.

further breach of contract. Thus, I will enter a permanent injunction requiring the defendants to (1) immediately return any and all Agilent property which the defendants took from Agilent upon termination of their employment, including Kirkland's zip drive and CDs, the batch records and memos taken by DeStefano and Langlois, and any copies or records that have been made of or derived from Agilent's property — such as Kirkland's "Memos for New Company" folder; and (2) not conduct any research on, make disclosure of, or file grant applications or patent applications based upon the confidential information that Kirkland, DeStefano, and Langlois wrongly removed from AMT until such a time when that information is generally known in the HPLC industry.[288]

The remaining knotty issue is what to do about the pending patent applications. In addressing this issue, I understand why Agilent finds these applications particularly disturbing. The defendants' conduct was blatant, but their attempt to then patent ideas that they had conceived of at Agilent to exclude Agilent from using its own ideas without paying AMT a royalty was brazen. To remedy this conduct, which is both a breach of contract and a misuse of trade secrets, Agilent asks that the provision of the Confidentiality Agreements requiring the defendants to disclose and assign all "inventions and discoveries" to Agilent be specifically enforced by placing a constructive trust over Agilent's

[288] *See SKF USA, Inc. v. Bjerkness*, 636 F. Supp. 2d 696, 716 (N.D. Ill. 2009) (ordering defendants to destroy all proprietary data that they had taken from their former employer, where the defendants had saved large amounts of both personal and proprietary company data on USB drives and had taken the drives with them upon the termination of employment).

property rights in both the Small Particle Patent Application and the Multilayering Patent Application.

Generally, a constructive trust may be imposed where one has, through fraud, acquired the title to property of another.[289] In *ID Biomedical Corp. v. TM Technologies, Inc.*, this court imposed a constructive trust on patent applications filed by defendant TM Technologies, Inc. ("TM Technologies") where TM Technologies had filed two patent applications on improvements to a form of medical diagnostic technology, despite the fact that TM Technologies had entered into an agreement with plaintiff ID Biomedical Corporation ("ID Biomedical") promising to assign any developments of the diagnostic technology that TM Technologies created to ID Biomedical.[290] The court held that "TM [Technologies'] property rights under the patent applications may only be exercised by [ID Biomedical], 'the one who is in good conscience entitled to it.'"[291]

In this case, Agilent should have been assigned the Small Particle Patent Application, because Kirkland conceived of the process for making superficially

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[289] *See Adams v. Jankouskas*, 452 A.2d 148, 152 (1982) ("If one party obtains legal title to property, not only by fraud or by violation of confidence or of fiduciary relations, but in any other unconscientious manner . . . equity carries out its theory of double ownership . . . by impressing a constructive trust upon the property in favor of the one who is in good conscience entitled to it . . . ."); 79 AM. JUR. 3D *Proof of Fact* § 269 (2009) ("A constructive trust . . . arises against one who, by actual or constructive fraud, by duress or abuse of confidence, by commission of wrong, or by some other form of unconscionable conduct, has obtained or holds legal title to property which in equity and good conscience he ought not to hold and enjoy.").

[290] 1995 WL 130743, at *4.

[291] *Id.* at 17 (quoting *Adams*, 452 A.2d at 152).

porous particles 3.5 microns and smaller while employed by Agilent. And, Kirkland and Langlois should have assigned the Multilayering Patent Application to Agilent because the empirical results of experiments that both had conducted at Agilent led them to identify the commercial utility of multilayering.

In my discretion, I could award specific performance but I choose not to do so for the following reason. Although I have little doubt that it was wrongful and inequitable for Kirkland and Langlois to try to exclude Agilent from using these ideas, I am also convinced that the defendants did important additional work on these subjects at AMT and that it would be inequitable to simply require them to hand over the entirety of the ideas in the Patent Applications to Agilent. In support of a more limited remedy, the defendants have convinced me that they did innovative new work that is described in the patents.[292] What they have not convinced me of, however, is that their Patent Applications are narrowly tailored. Indeed, it is clear that they cover ideas that, under the Confidentiality Agreements, were ones belonging to Agilent. Kirkland even confessed to "covering" work he had done at Agilent with the Small Particle Patent Application.[293]

To balance Agilent's legitimate contractual and trade secret interests against the independent work that AMT did, I will order AMT to withdraw both its Small Particle Patent Application and Multilayering Patent Applications. This remedy will allow Agilent to compete in the HPLC market using the small

[292] *See supra* pages 25, 41-42, 44.
[293] Tr. at 246 (Kirkland).

superficially porous particles and multilayering technology that its confidential information inspired. And, AMT will be able to benefit from the more fully-baked concepts that the defendants developed after their employment at Agilent had ended. If, however, the defendants refuse to withdraw their Small Particle and Multilayering Patent Applications, I will enter an order requiring the assignment of these Patent Applications to Agilent and allow Agilent to extract a royalty from AMT for future use of these ideas.

C. Agilent Is Entitled To An Award Of Attorneys' Fees For The Defendants' Willful And Malicious Misappropriation

Agilent also argues that it is entitled to punitive damages and attorneys' fees for the defendants' willful and malicious misappropriation of Agilent's trade secrets.[294] Under the DUTSA, a prevailing party in a trade secret misappropriation case may be entitled to punitive damages and attorney's fees where "willful or malicious misappropriation exists."[295] Under Delaware law, willfulness is defined as "an awareness, either actual or constructive, of one's conduct and a realization of its probable consequences,"[296] and malice is defined as "ill-will, hatred or intent

[294] Compl. at 11.
[295] 6 *Del. C.* §§ 2003(b), 2004 (allowing a court to award punitive damages and reasonable attorneys fees for willful and malicious misappropriation); *see also Miles*, 1994 WL 676761, at *22 (finding that a plaintiff was entitled to reasonable attorneys' fees where the defendant had willfully and malicious misappropriated trade secrets by hiring six of the plaintiff's former employees for the purpose of developing products like the plaintiff's).
[296] *NuCar Consulting*, 2005 WL 820706, at *14 (quoting *Jardel v. Hughes*, 523 A.2d 518, 530 (Del. 1987)).

to cause injury."[297] A plaintiff claiming willful and malicious misappropriation must prove that the misappropriation was both willful *and* malicious.[298]

Agilent has met its burden of demonstrating that the conduct of Kirkland, DeStefano, and Langlois was both willful and malicious. First, the defendants acted willfully because they knew that Agilent's bonding, slurry solvent, and multilayering information were confidential, and were aware of the potential consequences of using those trade secrets. Kirkland, DeStefano, and Langlois all testified that they kept Agilent's XDB-C18 bonding confidential.[299] Kirkland even pointed out to DeStefano and Langlois that Agilent's XDB-C18 bonding was "possible proprietary technology" and, thus, something that AMT "should not use for [its] products."[300] Similarly, the defendants admit that they kept Agilent's slurry solvent confidential, and that they still keep it confidential at AMT.[301] As to multilayering, the defendants knew that Agilent's empirical results from experimentation are proprietary, and they knowingly used them as the basis for pursuing multilayering at AMT.

Second, Kirkland, DeStefano, and Langlois acted maliciously. They acted with the intent to cause commercial injury to Agilent by creating a product based on Agilent's trade secrets to compete with Agilent. The defendants began

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[297] *Id.* (quoting *Casson v. Nationwide Ins. Co.*, 455 A.2d 361, 368 (Del. Super. 1982)).
[298] *See Marsico v. Cole*, 1995 WL 523586, at *8 (Del. Ch. Aug. 15, 1995) (denying attorneys' fees and exemplary damages where a plaintiff had proven willful misappropriation, but not malicious misappropriation).
[299] Tr. at 89, 107-08 (Kirkland), 282 (DeStefano), 507 (Langlois).
[300] PTX 218.
[301] Tr. at 141 (Kirkland), 331 (DeStefano).

conspiring against Agilent while DeStefano and Langlois were still at Agilent, and were misusing Agilent information for that illicit purpose even before DeStefano and Langlois left their employment at Agilent. Although DeStefano and Langlois told Agilent that they were going to pursue "niche products" that Agilent was not involved in,[302] they fully intended to market products in the full $250 million dollar HPLC market in which Agilent was a major player.[303] In fact, the defendants tried to poach Agilent's distributor to market Halo in Europe.[304] The defendants consciously breached their Confidentiality Agreements with Agilent, and misused confidential documents that allowed them to set up shop with Agilent's confidential information and trade secrets, and to market products to compete with Agilent.[305]

I therefore find that Kirkland, DeStefano, and Langlois acted willfully and maliciously with intent to cause commercial harm to Agilent by using Agilent confidential information and trade secrets.

In my discretion, I decline to award punitive damages although the misconduct at issue arguably warrants such an unusual act by this court. Having taken an approach to monetary damages designed to make Agilent whole and to deprive AMT of its unjust rewards, I decline to enter into the realm of punishment,

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[302] DTX 773.
[303] PTX 164.
[304] PTX 161.
[305] *See Great Am. Opportunities*, 2010 WL 338219, at *28 (finding that a defendant had willfully and maliciously misappropriated trade secrets, where the defendant "used . . . trade secrets to pursue an aggressive course calculated to lure away members of [their former employer's] sales force and customer base").

believing that I am putting in place a stringent remedy that will sufficiently vindicate the interests of Agilent and those more generally protected by the Delaware Uniform Trade Secrets Act.

For that logic to hold, however, I must award Agilent its full attorneys' fees and costs, lest it be, by virtue of suffering enforcement costs, left in a worse position than it should be. To avoid quibbling, I order the defendants to provide Agilent with a full accounting of their own fees and costs in defending the entirety of this litigation. Unless Agilent's fees and costs exceed the defense costs in some unusual manner, I will enter an award reflecting the amounts actually billed by Agilent's attorneys and experts. That is, I will assume that if each side's expenditures are reasonably similar, that Agilent's fees and costs were reasonably incurred.

IV. Conclusion

For the foregoing reasons, I find that: 1) defendants Kirkland, DeStefano, and Langlois are liable for breach of contract; 2) all of the defendants are liable for misappropriation of Agilent's trade secrets under the DUTSA; 3) the defendants are jointly and severally liable for monetary damages in the amount set forth previously in this decision; 4) the defendants shall be subject to injunctive relief of the nature set forth previously in this decision; and 5) the defendants are jointly and severally liable for Agilent's reasonable attorneys' fees and costs. The parties shall collaborate on a form of implementing final judgment and submit it within fifteen days. IT IS SO ORDERED.