UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

MYLAN PHARMACEUTICALS INC.
and PFIZER INC.,
Petitioners,

v.

SANOFI-AVENTIS DEUTSCHLAND GMBH,
Patent Owner

Case IPR2018-01678[1]
U.S. Patent No. 8,992,486

PATENT OWNER'S SUR-REPLY

[1] Pfizer Inc., who filed a petition in IPR2019-01023, has been joined as petitioner in this proceeding.

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2001	Press Release, "Mylan Enhances Partnership with Biocon through Strategic Collaboration for Insulin Products", Feb. 13, 2013 (PR Newswire), available at http://newsroom.mylan.com/press-releases?item=122834
2002	Press Release, "Mylan Commences Phase III Clinical Trials for its Generic Version of Advair Diskus® and Insulin Analog to Lantus®", Sept. 16, 2014 (PR Newswire), available at http://newsroom.mylan.com/press-releases?item=123251
2003	Press Release, "Mylan and Biocon Present Clinical Data on Insulin Glargine at the American Diabetes Association's 77th Scientific Sessions", June 10, 2017 (PR Newswire), available at http://newsroom.mylan.com/2017-06-10-Mylan-and-Biocon-Present-Clinical-Data-on-Insulin-Glargine-at-the-American-Diabetes-Associations-77th-Scientific-Sessions
2004	Complaint for Patent Infringement, Sanofi-Aventis U.S. LLC, Sanofi-Aventis Deutschland GmbH, and Sanofi Winthrop Industrie v. Merck Sharp & Dohme Corp., C.A. No. 1-16-cv-00812-RGA (D. Del), Dkt. No. 1
2005	Stipulation and Proposed Order, *Sanofi-Aventis U.S. LLC v. Mylan, N.V.*, Civil Action No. 17-9105-SRC-SLW (D.N.J. Feb 5, 2018), Dkt. No. 45
2006	Complaint for Patent Infringement, *Sanofi-Aventis U.S. LLC et al. v. Mylan N.V. et al.*, Case No. 2:17-cv-09105-SRC-CLW (D.N.J. Oct. 24, 2017), Dkt. No. 1
2007	Excerpts from Defendants' Invalidity Contentions, dated Jan. 25, 2018, *Sanofi-Aventis U.S. LLC et al. v. Mylan N.V. et al.*, Case No. 2:17-cv-09105-SRC-CLW (D.N.J.)
2008	Excerpts from Mylan GMBH's Amended Invalidity Contentions, dated April 25, 2018, Sanofi-Aventis U.S. LLC et al. v. Mylan N.V. et al., Case No. 2:17-cv-09105-SRC-CLW (D.N.J.)
2009	Excerpts from Mylan GMBH's Exhibit C to Amended Invalidity Contentions, dated April 25, 2018, Sanofi-Aventis U.S. LLC et al. v. Mylan N.V. et al., Case No. 2:17-cv-09105-SRC-CLW (D.N.J.)

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2010	Aug. 13, 2018 Service of Sanofi's Responses to Mylan's Amended Contentions, *Sanofi-Aventis U.S. LLC et al. v. Mylan N.V. et al.*, Case No. 2:17-cv-09105-SRC-CLW (D.N.J.)
2011	MP4 file of Sanofi's Patented Pen animation
2012	[Redacted] Defendants' opening claim construction brief, dated October 12, 2018, Sanofi-Aventis U.S. LLC et al. v. Mylan N.V. et al., Case No. 2:17-cv-09105-SRC-CLW (D.N.J.)
2013	Memorandum Opinion, *Sanofi-Aventis U.S. LLC v. Merck Sharp & Corp.*, Case No. 16-cv-812-RGA (D. Del.), Dkt. No. 192
2014	International Patent WO 99/3855
2015	Animation depicting Møller's first embodiment
2016	Defendants' Opposition to Plaintiffs' Motion to Stay dated Nov. 22, 2017, Sanofi-Aventis U.S. LLC et al. v. Mylan N.V. et al., Case No. 1:17-cv-00181-IMK (N.D. Va.), Dkt. No. 44
2017	Joint Proposed Discovery Plan dated Dec. 14, 2017, Sanofi-Aventis U.S. LLC et al. v. Mylan N.V. et al., Case No. 2:17-cv-09105-SRC-CLW (D.N.J.)
2018	Letter from A. Calmann to Judge Waldor dated Apr. 24, 2018, Sanofi-Aventis U.S. LLC et al. v. Mylan N.V. et al., Case No. 2:17-cv-09105-SRC-CLW (D.N.J.), Dkt. No. 90
2019	Motion to Expedite Defendants' Motion Requesting an Expedited Scheduling Conference dated Nov. 22, 2017 , Sanofi-Aventis U.S. LLC et al. v. Mylan N.V. et al., Case No. 1:17-cv-00181-IMK (N.D. Va.), Dkt. No. 46
2020	Initial Planning Meeting Report and Discovery Proposals dated Dec. 22, 2017, Sanofi-Aventis U.S. LLC et al. v. Mylan N.V. et al., Case No. 1:17-cv-00181-IMK (N.D. Va.), Dkt. No. 61
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2023	Report of the Local Patent Rules Committee, Explanatory Notes for 2016 Amendments

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2025-2099	*Reserved*
2100	Leinsing Deposition Exhibit 2100: Thomas van der Burg, *Injection Force of SoloSTAR® Compared with Other Disposable Insulin Pen Devices at Constant Volume Flow Rates*, J. of Diabetes Sci. and Tech., Vol. 5, Issue 1, 150-155 (Jan. 2001)
2101	Leinsing Deposition Exhibit 2101: Estelle Davis, et. al., *An evaluation of prefilled insulin pens: a focuse on the Next Generation FlexPen®,* Med. Devices: Evidence & Research, 41-50 (2010:3)
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2113	Bradley M. Wright et al., *A Review Of Insulin Pen Devices And Use In The Elderly Diabetic Population,* 3 Clinical Medicine Insights: Endocrinology & Diabetes 54-63 (2010)
2114	Teresa L. Pearson, *A-Practical-Review-of-Insulin-Pen-Devices*, EMJ Diabet., 58-64 (2014:2)
2115	Arthritis & Diabetes, *What do diabetes and arthritis have in common? Plenty.*, https://www.arthritis.org/living-with-arthritis/comorbidities/diabetes-and-arthritis/
2116	Andreas Bode, *Development of the SoloSTAR insulin pen device design verification and validation*, 6 Expert Opinion on Drug Delivery 103-112 (2008)
2117	Sanofi's Patented Pen animation

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2118	John Carter, *Usability, Paticipant Acceptance, and Safety of a Prefilled Insulin Injection Device in a 3-Month Observational Survey in Everyday Clinical Practice in Australia, J. Diabetes Sci & Tech., Vol. 3, Issue 6, 1425-1438 (Nov. 2009)*
2119	Sherwyn Schwartz, *Correct Use of a New Reusable Insulin Injection Pen by Patients with Diabetes: A Design Validation Study*, 4 J. Diabetes Sci. and Tech. 1229-1235 (2010)
2120	*Reserved*
2121	DBA Design Effectiveness Awards 2009
2122	SoloSTAR Disposable Pen Injector (The Grand Prix Oct. 22, 2009)
2123	Arnd Friedrichs et al., *Dose Accuracy and Injection Force of Different Insulin Glargine Pens*, 7 J. Diabetes Sci. and Tech. 1346-1353 (2013)
2124	Stacey A. Seggelke et al., *Effect of Glargine Insulin Delivery Method (Pen Device Versus Vial/Syringe) on Glycemic Control and Patient Preferences in Patients with Type 1 and Type 2 Diabetes*, 20 ENDOCRINE PRACTICE, 536, 536, 538–539 (2014)
2125	Julia Pfutzner et al., *Evaluation of Dexterity in Insulin-Treated Patients with Type 1 and Type 2 Diabetes Mellitus*, 5 J. Diabetes Sci. and Tech. 158-165 (2011)
2126	Jerome S. Fischer et al., *United States Patient Preference and Usability for the New Disposable Insulin Device Solostar® versus Other Disposable Pens*, 2 JOURNAL OF DIABETES SCIENCE AND TECHNOLOGY 1157-1160 (2008)
2127	U.S. Provisional Patent Application 60/073820
2128	Samita Garg et al., *Insulin glargine and glulisine SoloSTAR pens for the treatment of diabetes*, 5 Expert Rev. Med. Devices 113-123 (2008)
2129	Nicolae Hancu et al., *A Pan-European and Canadian Prospective Survey to Evaluate Patient Satisfaction with the SoloSTAR Insulin Injection Device in Type 1 and Type 2 Diabetes*, 5 J. Diabetes Sci. and Tech. 1224-1234 (2011)

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2130	Norbert Hermanns, Bernhard Kulzer & Thomas Haak, *Dosing Accuracy with a Novel Pen Device (SoloSTAR) as Performed by Patients with Diabetes in a Clinical Setting*, 10 Diabetes Tech. & Threapeutics 322-327 (2008)
2131	ISO 11608-1, Pen-injectors for medical use (1st Ed. Dec. 15, 2000)
2132	Meike Krzywon et al., *Study on the Dosing Accuracy of Commonly Used Disposable Insulin Pens*, 14 Diabetes Tech. & Therapeutics 804-809 (2012)
2133	Lantus SoloSTAR Pen Guide
2134	Arlan L. Rosenbloom, *Limitation of Finger Joint Mobility in Diabetes Mellitus*, 3 J. Diabetic Complications 77-87 (1989)
2135	Douglas Merritt et al., *Dose Accuracy and Injection Force of Disposable Pens Delivering Pramlintide for the Treatment of Diabetes*, 4 J. Diabetes Sci. and Tech. 1438-1446 (2010)
2136	Novo Nordisk Form 6-K (Feb. 9, 2009)
2137	Novo Nordisk History
2138	W. Schady et al, *Observations on Severe Ulnar Neuropathy in Diabetes*, 12 J Diabetes and Its Complications 128-132 (1998)
2139	Alfred Penfornis & Kristian Horvat, *Dose Accuracy Compariosn Between SoloSTAR and FlexPen at Three Different Dose Levels*, 10 Diabetes Tech. & Therapeutics 359-362 (2008)
2140	Riccardo Perfetti, *Reusable and Disposable Insulin Pens for the Treatment of Diabetes: Understanding the Global Differences in User Preference and an Evaluation of Inpatient Insulin Pen Use*, 12 Diabetes Tech. & Therapeutics 79-85 (2010)
2141	John Shelmet et al., *Preference and resource utilization in elderly patients: InnoLet versus vial/syringe*, 63 Diabetes Res. and Clinical Prac. 27-35 (2004)
2142	*Prix Galien USA Announces 2009 Final Candidates* (Prix Galien USA, August 7, 2009)

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2143	Thomas Haak et al., *Comparison of Usability and Patient Preference for the New Disposable Insulin Device SoloStar Versus FlexPen, Lilly Disposable Pen, and a Prototype Pen: An Open-Label Study,* 29 CLINICAL THERAPEUTICS, 650-660 (2007)
2144	Alastair Clarke & Geralyn Spollett, *Dose accuracy and injection force dynamics of a novel disposable insulin pen*, 4 EXPERT OPINION ON DRUG DELIVERY 165-174 (2007)
2145	US Lantus SoloSTAR Launch Book, 2007, PTX-0705, Document bates stamped SANOFI_00232909-45
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2153	International Patent Application WO999038554A1
2154	*Reserved*
2155	*Reserved*
2156	*Reserved*
2157	*Reserved*
2158	Geralyn Spollett, *Insulin Devices, Addressing Barriers to Insulin Therapy With the Ideal Pen, 957-967 (The Diabetes EDUCATOR)*
2159	Serpil Savas et al., *The effects of the diabetes related soft tissue hand lesions and the reduced hand strength on functional disability of hand in type 2 diabetic patients*, 77 Diabetes Res. and Clinical Prac. 77-83 (2007)
2160	Jean-Louis Selam, *Evolution of Diabetes Insulin Delivery Devices*, 4 J. Diabetes Sci. and Tech. 505-513 (2010)
2161	SoloSTAR Principles of Operation, PTX-0553, Document bates stamped SANOFI_00406383-94
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2173	Bruce A. Perkins, David Olaleye & Vera Bril, *Carpal Tunnel Syndrome in Patients With Diabetic Polyneuropathy*, 25 Diabetes Care 565-569 (2002)
2174	Jefferson Becker et al., *An evaluation of gender, obesity, age and diabetes mellitus as risk factors for carpal tunnel syndrome*, 113 Clinical Neurophysiology 1429-1434 (2002)
2175	A. Pfutzner et al., *Prefilled insulin device with reduced injection force: patient perception and accuracy*, 24 Current Med. Res. and Opinion 2545-2549 (2008)
2176	Ercan Cetinus et al., *Hand grip strength in patients with type 2 diabetes mellitus*, Diabetes Res. and Clinical Prac. 1-9 (2005)
2177	Ragnhild I. Cederlund et al., *Hand disorders, hand function, and activities of daily living in elderly men with type 2 diabetes*, 23 J. Diabetes and Its Complications 32-99 (2009)
2178	Shubha Gundmi et al., *Hand dysfunction in type 2 diabetes mellitus: Systematic review with meta-analysis*, 61 Annals of Physical and Rehabilitation Med. 99-104 (2018)

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2179	Joule J. Li et al., *Muscle grip strength predicts incident type 2 diabetes: Population-based cohort study*, 65 Metabolism Clinical and Experimental 883-892 (2016)
2180	Considering Insulin Pens for Routine Hospital Use - Consider This... (ISMP article), https://www.ismp.org/resources/considering-insulin-pens-routine-hospital-use-consider
2181	Trigger Finger Overview (Mayo Clinic), https://www.mayoclinic.org/diseases-conditions/trigger-finger/symptoms-causes/syc-20365100
2182	Bone and joint problems associated with diabetes (Mayo Clinic), https://www.mayoclinic.org/diseases-conditions/diabetes/in-depth/diabetes/art-20049314
2183	Peripheral Neuropathy (Mayo Clinic), https://www.mayoclinic.org/diseases-conditions/peripheral-neuropathy/symptoms-causes/syc-20352061
2184	Charles E. Buban, *A pen that seeks to improve diabetes care*, INQUIRER.NET (2008), Document Bates stamped SANOFI_00006282-84
2185	"*Sanofi-aventis' SoloSTAR(R) Insulin Pen for Lantus and Apidra Receives the Prestigious GOOD DESIGN Award*", (PR Newswire Feb. 14), Document Bates stamped SANOFI_00006299-301
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2208	Press Release, *Lantus / Apdira SoloSTAR help to improve patient satisfaction* (June 27, 2011), Document bates stamped SANOFI_00179886-88
2209	Henry Grabowski, John Vernon & Joseph A. DiMasi, *Returns on Research and Development for 1990s New Drug Introductions*, 20 Pharmacoeconomics 15 (2002)
2210	Julie M. Donohue, Marisa Cevasco & Meredith B. Rosenthal, *A Decade of Direct-to-Consumer Advertising of Prescription Drugs*, 357 N. Engl. J. Med. 673 (2007)
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2225	Excerpted trial transcript (5/29/2018), *Sanofi-Aventis U.S. LLC et al. v. Merck Sharp & Dohme Corp.*, Case No. 16-812 (D.N.J.)
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2319	Declaration of Robert Veasey, dated July 15, 2019

The Board should affirm the patentability of claims 1-6, 12-18, 20, 23, 26-30, 32, 33, 36, and 38-40 over Petitioners' challenge.

I. GROUND 1 DOES NOT RENDER THE CHALLENGED CLAIMS OBVIOUS

A. Steenfeldt-Jensen Does Not Suggest a Threaded Driver Tube

As a threshold matter, Steenfeldt-Jensen nowhere discloses a threaded driver tube. *See* Response, 30-32. Accordingly, the parties' arguments about whether the 7:41-47 applies to the fifth embodiment are beside the point. In Reply, Petitioners argue that Sanofi unduly focuses on 7:41-47 and does not consider three other passages it cites. Reply, 5-6 (citing EX1014, 2:40-53, 3:10-20, 3:41-47). Sanofi, however, discussed these passages in its Response at 30-32, and Petitioners do not rebut Sanofi's arguments. Reply, 5.

B. Even If Steenfeldt-Jensen Did Suggest a Threaded Driver Tube With Respect to Its First Embodiment, It Would Not Apply to the Fifth Embodiment

Even accepting that Steenfeldt-Jensen discloses a threaded driver tube, a POSA would not have applied it to its fifth embodiment (the basis of Petitioners' challenge). Notably, Petitioners concede that 7:41-47 (the passage that purportedly discloses a threaded driver tube), is not a blanket statement covering every Steenfeldt-Jensen embodiment. Reply, 7. Petitioners now argue that despite no recitation that the passage applies to the fifth embodiment, a POSA would have recognized that it applies due to the "analogous structures and functions for driving

the piston rod". Reply, 7. Petitioners explain away the lack of a statement linking the passage to the fifth embodiment arguing that, "Steenfeldt-Jensen frequently avoids redundancy." Reply, 6.

Mr. Leinsing, however, acknowledges differences between the embodiments (EX1095, ¶ 68). Conveniently, he dismisses these differences with the statement, "while certain surrounding components may differ between the first and fifth embodiments, [a POSA] would have understood the driver tubes. . . and nut members . . . were analogous, both structurally and functionally, for driving the piston." EX1106, ¶ 68.

In contrast, Response at 23-26 explains that the embodiments are not analogous and that a POSA would not take a teaching specific to the first embodiment and apply it to the fifth embodiment. The first embodiment, for example, includes a rotatable, threaded ampoule holder 2, while the fifth embodiment includes a fixed end wall 4 with a threaded bore forming a nut member. These differences mandate different methods for dialing and dose dispensing. *Id.*

In Reply, Petitioners argue that Sanofi's nonobviousness arguments are undercut by Dr. Slocum's testimony. Petitioners contend that Sanofi must be wrong about the first embodiment (*i.e.,* why would Steenfeldt-Jensen make that disclosure if it would impair the first embodiment) and therefore wrong about the fifth embodiment. Reply, 9-10. Dr. Slocum, however, opined about *Petitioners'*

modification, a threaded driver tube. Recall that Sanofi and Dr. Slocum do not agree with Petitioners regarding the disclosure at column 7, lines 41-47. *See* Section I.A.

C. Even If Steenfeldt-Jensen Suggested a Threaded Driver Tube With Respect to Its First Embodiment, A POSA Would Not Be Motivated to Make Petitioners' Modification to the Fifth Embodiment

Even assuming that Steenfeldt-Jensen disclosed a threaded driver tube in the context of its first embodiment, Sanofi presented analytical and physical models from Dr. Slocum demonstrating that a POSA would not modify the fifth embodiment to include a threaded driver tube because it would result in 51% higher injection force. Response, 32-47. Petitioners present no rebuttal models or calculations. Instead, Petitioners argued that a higher injection force would not dissuade a POSA from the modification. Reply, 11.

1. A High Injection Force Would Dissuade a POSA From Petitioners' Modification

Dr. Slocum concluded that Petitioners' proposed modification to the fifth embodiment would have detrimentally affected the fifth embodiment—for example, a significantly higher injection force. Response, 32-47. Petitioners, however, argue that Dr. Slocum's findings should be disregarded because they rely on a "flawed assumption that a POSA would have singularly focused on designing an insulin pen injector." Reply, 10. Petitioners, however, identify no other application where a higher injection force would be acceptable. Moreover, Steenfeldt-Jensen is directed

to "syringes [that] are mainly made for users who have to inject themselves frequently, e.g., diabetics." EX1014, 1:16-18. A POSA, when considering whether to combine one embodiment *in Steenfeldt-Jensen* with another embodiment *in Steenfeldt-Jensen*, would consider the context of Steenfeldt-Jensen – *i.e.*, insulin injection pens.

2. Petitioners Argue that Their Modification is Obvious On the Basis of Reasonable Expectation of Success

Petitioners argue that, despite Sanofi's premise that higher injection force is undesirable, "Sanofi never alleges the modification is inoperable or a POSA would not have reasonably expected success." Reply, 11. Obviousness requires "a motivation to combine accompanied by a reasonable expectation of achieving what is claimed in the patent-in-suit." *Intelligent Bio-Sys., Inc. v. Illumina Cambridge Ltd.*, 821 F.3d 1359, 1367 (Fed. Cir. 2016). That injection force would increase—a fact not disputed (only the amount)—demonstrates that a POSA would not be motivated to make Petitioners' modification, even if a POSA *could* do so. *Plas-Pak Indus., Inc. v. Sulzer Mixpac AG*, 600 F. App'x 755, 758-60 (Fed. Cir. 2015).

3. Sanofi Presented Non-Obviousness Arguments Beyond a High Injection Force

Sanofi provided additional evidence that there would have been additional problems with Petitioners' modification. These problems included that the flexible arms of the driver tube 85 get stuck or get pressed into the ring-shaped wall, causing

the flexible arms to break and ruin the device. Response, 45-46. Petitioners argue that fixing these problems would be "straightforward" because "Mr. Leinsing explains that a POSA would address this type of routine task without difficulty." Reply, 16. Beyond saying so, Mr. Leinsing presents no evidence that doing so would be routine.

D. Dr. Slocum's Models Are Not Flawed

Petitioners further argue that Dr. Slocum's models are flawed. Neither Petitioners nor its expert, however, inspected Sanofi's model and Mr. Leinsing presented no model of his own.

1. There is no Bias

Petitioners argue that the models are unreliable due to bias because "they were primarily designed" by Mr. Veasey, an inventor of the 486 Patent. Reply, 12-14. First, Dr. Slocum verified the models, conducted his own experiments, and gathered his own data. EX2107, ¶¶ 242-255, Appendix B, E. Second, Petitioners fail to show how Mr. Veasey is biased because he is an inventor. Mr. Veasey is not an employee of Sanofi nor does he have a financial stake in this IPR. Third, even assuming Mr. Veasey is an interested party, it is well-established that a party's interest alone cannot affect the credibility of scientific evidence when Petitioners have presented no opposing evidence (e.g., no models). *Integra Lifesciences I, Ltd. v. Merck KGaA*, 496 F.3d 1334, 1346 (Fed. Cir. 2007).

Furthermore, while Petitioners argue that Mr. Veasey selected 11 of 15 variables for the analytical model, the only one they complain about is the coefficient of friction, arguing that the selected 0.1 should have been lower. Reply, 12-13. Dr. Slocum, however, explained that 0.1 corresponds to the FlexPen, the commercial embodiment of Steenfeldt-Jensen's fifth embodiment. Response, 37.

Petitioners also complain that the physical model was "designed by Mr. Veasey (or others at Mr. Veasey's company, DCA Design International Ltd.)." Reply, 13. But aside from a conclusory argument that the collar was too big (Reply, 13), Petitioners do not deny the principles underlying the model. Response, 37.

Finally, Petitioners argue that, "Sanofi did not present Mr. Veasey as a witness in this case." Reply, 14. Sanofi, however, provided a declaration from Mr. Veasey in which he discussed the creation of an animation explaining the physical model (EX2211). EX2319, ¶ 5. Petitioners chose not to depose Mr. Veasey and chose not to seek his testimony under 35 U.S.C. § 24.

2. The Analytical Model Tests Total Change in Friction

Petitioners next argue that the models do not test the total change in friction. Reply, 14-15. The 51% increase in injection force is derived from a comparison between the fifth embodiment and the modified fifth embodiment. In contrast, Petitioners present no evidence as to what the difference in injection force would be.

3. The Models Are Not Designed to Fail

Petitioners argue that the analytical and physical models do not use a "POSA's ordinary creativity" like adding lubrication. Reply, 15. However, any "common-sense approaches to mitigating friction" applied to the modified fifth embodiment could be equally applied to the unmodified fifth embodiment and thus would be a wash.

Additionally, Petitioners repeat their criticism that the variables in the analytical model came from the commercial embodiment of Steenfeldt-Jensen's fifth embodiment—and that the collar in the physical model was too big. Reply, 15-16. Yet Petitioners present no models of their own. Moreover, neither Petitioners nor Mr. Leinsing inspected the physical model. And while Mr. Leinsing testified that he made changes to "75 percent" of the inputs to the analytical model "to verify [Dr. Slocum's] calculations," Mr. Leinsing presented no evidence of how they affected injection force. EX2316, 17:17-18:24.

E. Steenfeldt-Jensen Does Not Teach or Suggest an Internally Threaded Driver Tube in the Form of an Integrated Nut Member at Column 3, Lines 41-47

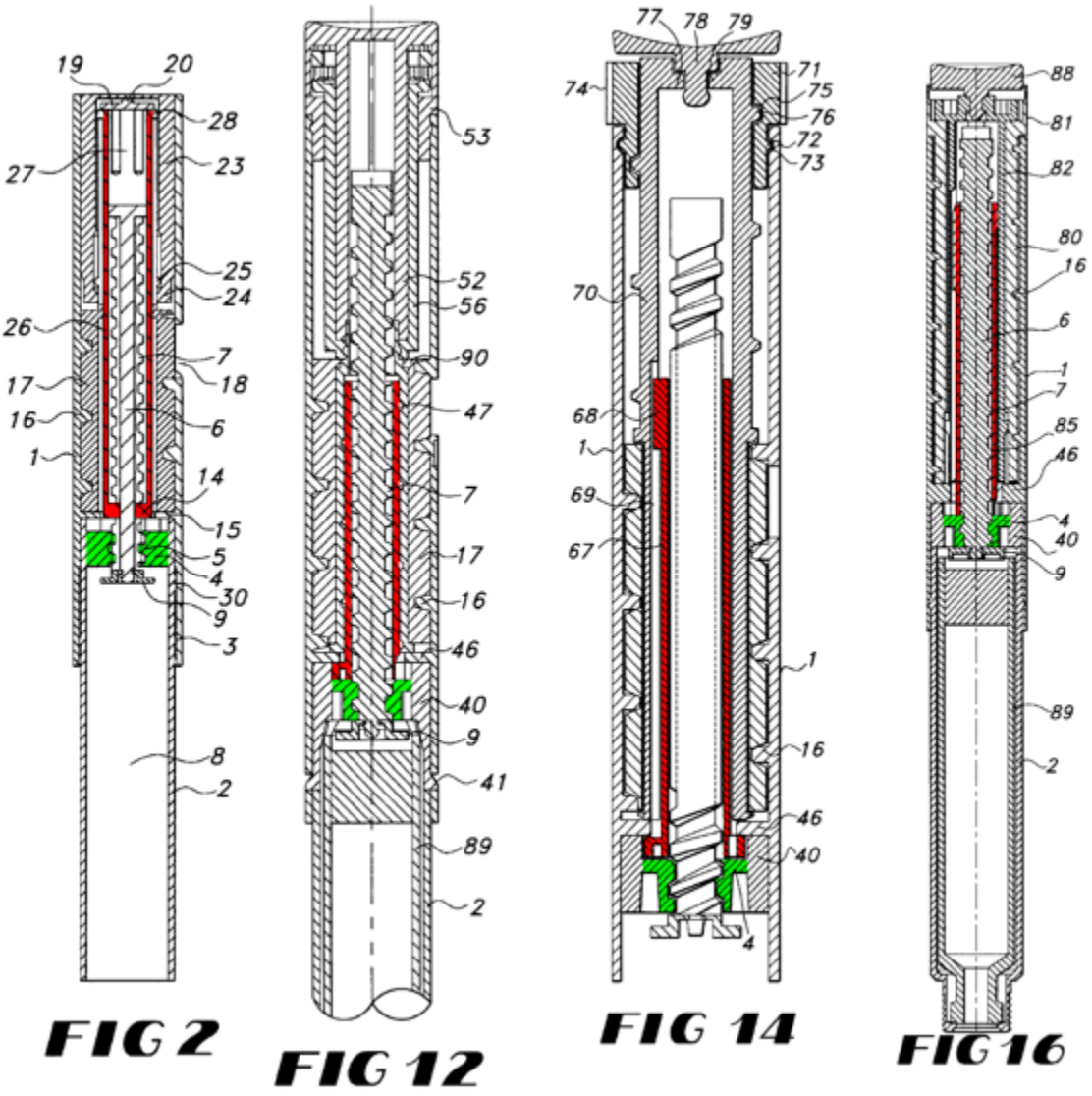
In Reply, Petitioners now argue that a driver tube with an integral nut member is indistinguishable from a threaded driver tube and thus should invalidate. Reply 3, 4.

There are three problems with this argument. First, the claims specifically require a threaded driver tube, not a nut member rotated by a driver tube – thus the distinction is important. Second, nowhere does Steenfeldt-Jensen teach an integrally formed nut member. Steenfeldt-Jensen describes its nut member as a separate component. Third, the leap Petitioners use to demonstrate its integrally formed nut member is predicated on a misreading of Steenfeldt-Jensen at 3:41-47.

1. Steenfeldt-Jensen Does Not Teach a Nut Member Integrally With a Driver Tube

Nowhere does Steenfeldt-Jensen teach a nut member integrally formed with the driver tube. As depicted below in the first, third, fourth, and fifth embodiments[2], the nut member (green) is distinct from the driver tube (red):

[2] The second embodiment does not include a driver tube.



EX1014, FIGS. 2, 12, 14, 16.

Similarly, the passage relied on by Petitioners, 3:41-47, makes no mention of an *integrally formed* nut member:

> The thread connection by which the injection button is screwed out from the housing by setting a dose may be the thread connection between the dose scale drum and the housing. In this case the dose scale drum must be coupled to a driver rotating the piston rod (or the nut member) relative to the nut member (or the piston rod) when the injection button is pressed.

EX1014, 3:41-47. Steenfeldt-Jensen does not teach an integrally formed nut member, much less a threaded driver tube.

2. Steenfeldt-Jensen Does Not Suggest an Nut Member Integrally Formed With a Driver Tube

Petitioners' apparent argument that Steenfeldt-Jesen discloses an integral nut member is based on 3:41-47, from which Petitioners seemingly draw a parallel between the piston rod guide and the nut member; and, because the piston rod guide is elsewhere described as integrally formed, conclude the nut member may therefore be integrally formed. *See* Reply, 3-4, citing EX1014, 3:41-47 ("Steenfeldt-Jensen describes two driver configurations: a driver rotating a 'piston rod guide' or a 'nut member.'"); *Id*., 4 ("Embodiments with the driver rotating a piston-guide show the guide is not a separate component"); *Id*., 4 ("Just as no meaningful distinction exists between a driver tube with an integral piston-rod guide and a driver tube with a rectangular bore, no meaningful distinction exists between a driver tube with an integral nut member and a driver tube with a threaded bore.")

These logical gymnastics are predicated on Steenfeldt-Jenson at 3:41-47 purporting to equate the piston rod guide and nut member. Reply, 3-4, EX1014, 3:41-47 ("Steenfeldt-Jensen describes two driver configurations: a driver rotating a 'piston rod guide' or a 'nut member.'"). But, Steenfeldt-Jensen does not equate the piston rod driver and nut member. Steenfeldt-Jenson recites:

> The thread connection by which the injection button is screwed out from the housing by setting a dose may be the thread connection between the dose scale drum and the housing. In this case the dose scale drum must be coupled to a driver rotating the ***piston rod*** (or the nut member) relative to the nut member (or the ***piston rod***) when the injection button is pressed.

EX1014, 3:41-47 (emphasis added). The passage, at best, draws a parallel between a piston rod (not a piston rod guide) and nut member, but does not suggest an integrally formed nut member.

Petitioners also point to Steenfeldt-Jensen, 7:41-47 for support. Reply, 4. Nothing in this passage suggests that the nut member is integrally formed with the driver tube. The passage teaches that "end wall 4 with its threaded bore forms a nut member". EX1014, 7:41-43. End wall 4 is not the driver tube.

Petitioners have not proven the unpatentability of any challenged claim.

F. The Board Should Reject Petitioners' New Argument that Steenfeldt-Jensen Suggests a Threaded Driver Tube Because of Disclosures in Giambattista

Petitioners add a new argument in Reply that Steenfeldt-Jensen suggests a threaded driver tube because Giambattista, which is at issue in IPR2018-01680, includes a threaded driver tube. Reply, 16-18. To the extent Petitioners rely on Giambattista as part of the combination, they cannot because Petitioners failed to make this argument in the Petition. Similarly, to the extent Petitioners rely on Giambattista to demonstrate a motivation, they cannot because Petitioners did not rely on Giambattista in the Petition to support obviousness.

Moreover, this argument cannot save Petitioners. There is no evidence that Giambattista would motivate a POSA to modifying Steenfeldt-Jensen's fifth embodiment to have a threaded driver tube.

G. Steenfeldt-Jensen Does Not Render Obvious a Dose Dial Sleeve That "comprises at least one radial stop, said radial stop positioned near an end of said helical groove" (claims 30 and 32)

Steenfeldt-Jensen does not render obvious claims 30 and 32. The fifth embodiment *already provides* a maximum dose stop using outer wall hooks 86 of driver tube 85 that abut against the needle end of slot 84 of bushing 82 when the dose scale drum 80 is fully dialed out. Response, 47.

Petitioners argue (1) that this explanation "concedes unpatentability" (Reply, 18) and (2) that a POSA might still make its combination because there might be some axial play in the fifth embodiment that its combination might be able to address. Reply, 18.

As to (1), Petitioners overlook that the claim requires that the *dose dial sleeve* includes the radial stop and the hooks 86 and slot 84 are not part of the dose dial sleeve in the fifth embodiment.

As to (2), Petitioners concede that the hooks 86 and slot 84 provide a maximum dose stop (EX1011, ¶ 329; EX2164, 271:7-16), but newly rely on conjecture from Mr. Leinsing in his deposition that hooks 86 and slot 84 "would result in some axial play between the bushing and the dose scale drum," where "the

hooks *may* engage the end of the slots of the bushing before the dose scale drum has been dialed to its maximum dosage position, introducing *potential* reliability issues." Reply, 18 (citing EX1095, ¶ 80) (emphasis added); *see* EX2164, 271:13-16. Yet nowhere does Steenfeldt-Jensen discuss "axial play" issues caused by the hooks 86 and slot 84. Moreover, even if "axial play" were an issue, Petitioners provide no argument why a POSA would modify the fifth embodiment to have a completely different maximum dose stop rather than address the play in the hooks-and-slot.

Petitioners next argue that pawl 13 of the third embodiment can replace the hooks-and-slot of the fifth embodiment because both embodiments permit axial but not rotational movement. Reply, 19. First, this is attorney argument; Mr. Leinsing's declaration provides no support for this argument. *See id*. (citing EX1095, ¶¶ 80-81). Second, Petitioners include no explanation of how the fifth embodiment would be modified to accommodate the pawl of the third embodiment or how the pawl would replace the existing functionality of the hooks-and-slot. Third, the modification is predicated on the analogous function of the hooks-and-slot of the fifth embodiment and the pawl of the third embodiment, but contrary to Petitioners' contention, the hooks-and-slot are not completely free to move axially. Once the maximum dose is dialed, the hooks-and-slot no longer permit axial movement during dose dialing. Response, 47. Fourth, a POSA would not be motivated to make Petitioners' modification because it would result in a wider pen. Response, 50. In

its Reply, Petitioners do not challenge that the pen would be wider, just that "Dr. Biggs explains that wider pens exist and, for some patients, facilitate gripping." Reply, 20. Widening injector pens, however, simply is not desirable in this art. *See* EX2163, 169:12-170:20, EX2107, ¶ 261.

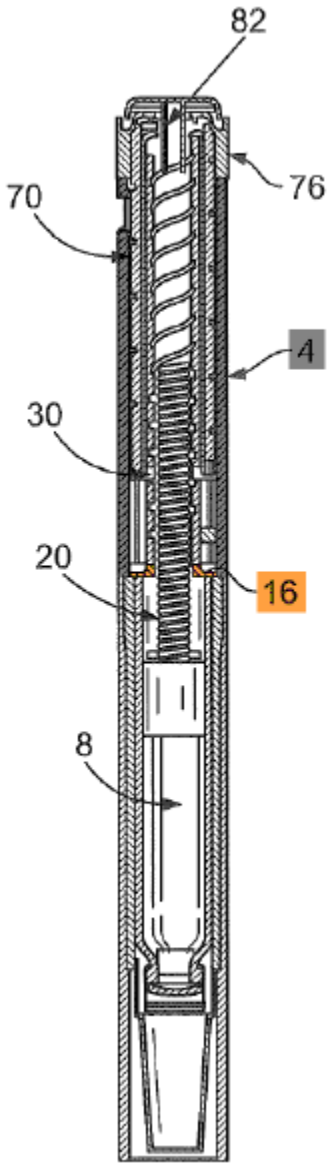
II. GROUND 2 DOES NOT RENDER THE CHALLENGED CLAIMS OBVIOUS

A. Møller And Steenfeldt-Jensen Do Not Teach Or Suggest A Dose Dial Sleeve Comprising A Helical Groove Configured To Engage A Threading Provided By A "Main Housing"

1. A "Main Housing" Must Be "Exterior"

The correct construction of "main housing" under BRI is "an exterior unitary or multipart component configured to house, fix, protect, guide, and/or engage with one or more inner components." Response, 9-13. Petitioners, however, contend that the term should be given its ordinary meaning, consistent with the specification, but do not expressly state what that meaning is, asserting only that it is broader than Sanofi's construction. Reply, 1-3.

Regardless of the scope of the plain and ordinary meaning, however, the 486 Patent makes clear that the "main housing" does not encompass an internal housing as an internal housing is not a primary structure. *See* Response, 11-13. For example, as seen in Fig. 3 of the 486 Patent, "main housing 4" is solely exterior (gray, below), as distinct from the "insert 16" (orange, below):



EX1003, Fig. 3 (annotated)

2. Møller's Tubular Element 5 Is Not Part Of A "Main Housing"

As shown below, Møller's tubular element 5 (in yellow) is an *internal* component:

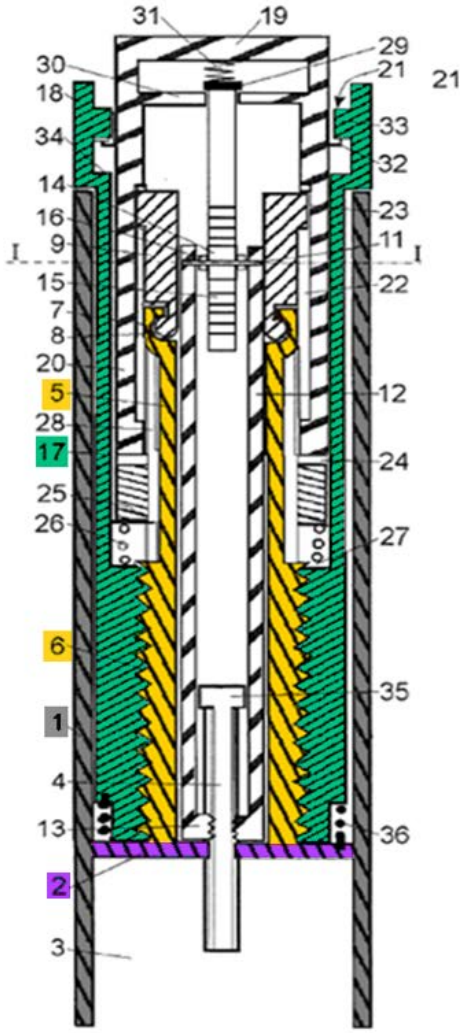


Fig. 1

EX1015, Fig. 1 (annotated)

Thus, under Sanofi's proposed construction, the tubular element 5 is not a part of the "main housing" because it is not an exterior component. Petitioners do not dispute this; they merely assert that Sanofi's construction is wrong. Reply, 20.

Similarly, even if Sanofi's construction is incorrect, the specification at least confirms that the ordinary meaning of "main housing" excludes an internal

component that does not serve as the primary structure to house pen injector's components. *See, e.g.,* EX1003, Fig. 3; Response, 11-13.

B. Møller and Steenfeldt-Jensen Do Not Render Obvious A Helical Rib On An Inner Surface Of An Outer Housing [Claim 4]

Petitioners concede that Møller does not disclose a helical groove on the inner surface of the main housing. Response, 60. Petitioners assert, however, that a POSA would have modified the inner threads of Møller's dose-setting drum 17 and the outer thread 6 of tubular element 5 to provide a "high-pitch rib-to-groove connection taught by Steenfeldt-Jensen between the inner surface of housing 1 and the outer surface of drum 17…." Petition, 80. Petitioners have failed to show that a POSA would have been motivated to make this modification.

As explained in the response, Møller disparages Steenfeldt-Jensen's high-pitch thread. A POSA, therefore, would have been deterred from implementing such in Møller. Response, 61. In Reply, Petitioners argue that "[t]he art did not consider Møller's preference a teaching away." Reply, 20. Even if Møller's preference is not a teaching away, it is nonetheless relevant to whether a POSA would have been motivated to make the combination. *Polaris Indus. Inc. v. Arctic Cat, Inc.*, 882 F.3d 1056, 1069 (Fed. Cir. 2018) ("[E]ven if a reference is not found to teach away, its statements regarding preferences are relevant to a finding regarding whether a skilled artisan would be motivated to combine ….").

Disregarding Møller's statements concerning Steenfeldt-Jensen, Petitioners argue that their combination would reduce friction. Response, 61. But to the extent that friction is an issue in Møller, Møller discloses its own solution: a helical reset spring 36 that compensates for undesirable thread friction. Response, 62; EX2107, ¶ 317. Petitioners argue that this "ignore[s] the combination." Reply, 21. To the contrary, Sanofi addresses whether a POSA would have been *motivated* to make the combination. Here, not only does Møller disparage the combination, the purported problem highlighted by Petitioners is dealt with by Møller's helical reset spring 36. Petitioners offer no reason *why* a POSA would ignore Møller's proffered solution in favor of a combination specifically avoided by Møller.

C. Møller and Steenfeldt-Jensen Do Not Render Obvious A Clicker With A Flexible Arm And Splines [Claims 18 and 20]

Møller and Steenfeldt-Jensen do not render obvious a clicker having a flexible arm and splines, as required by dependent claims 18 and 20. The Petition failed to establish a *prima facie* obviousness case for this limitation, failing to explain whether, why, and how a POSA would have been motivated to substitute the clicker in Møller (comprised of interacting "V-shaped teeth") with a clicker comprised of a flexible arm and splines, as well as whether, why, and how a POSA would have incorporated a clicker comprised of a flexible arm and splines into Møller. Response, 63-64.

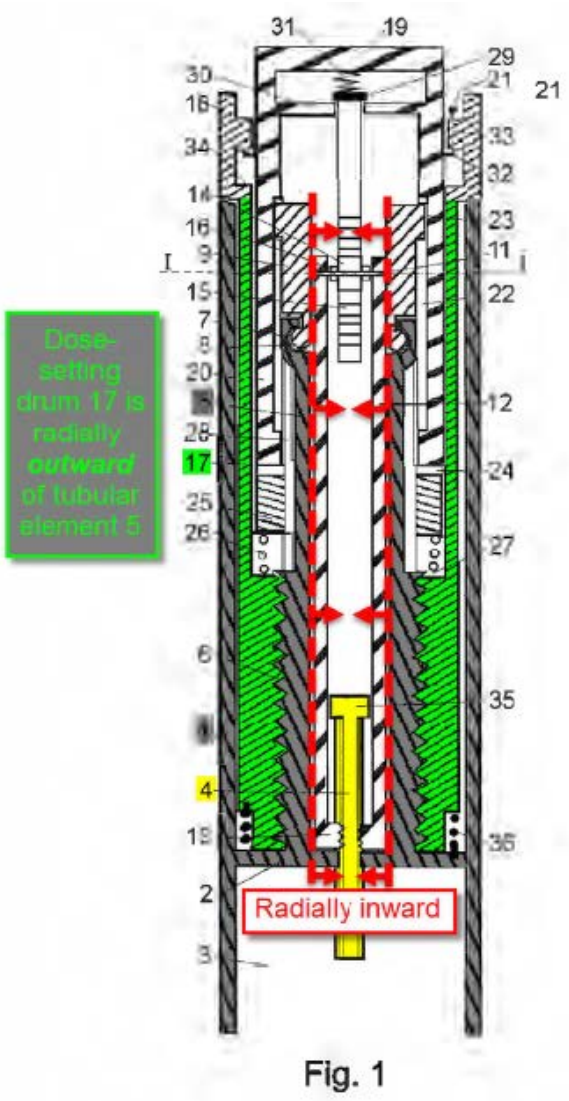
Petitioners contend that the "petition explained the clickers in both references were 'interchangeable' with predictable function." Reply, 23. This is incorrect. Møller's clicker also serves a clutching function – when the user injects a dose, the V-shaped teeth of Møller's clicker engage to reversibly lock Møller's cup-shaped element and ring 25 in rotation. *See* EX1015, ¶ [0027]; EX2206. Steenfeldt-Jensen's clicker provides no such function. Thus, the two clickers are *not* interchangeable, and replacing Møller's clicker with Steenfeldt-Jensen's clicker would disable Møller's injector pen.

Further, a patent claim "is not proved obvious merely by demonstrating that each of its elements was, independently, known in the prior art." *KSR Int'l Co. v. Teleflex, Inc.*, 550 U.S. 398, 418 (2007). Here, Petitioners have merely shown that Møller's clicker and Steenfeldt-Jensen's clicker were independently known in the prior art. Petitioners failed to show that a POSA would have been motivated to combine these elements, how a POSA would have done so, or that a POSA would have had a reasonable expectation of success in doing so. Petitioners have therefore failed to meet their burden of establishing obviousness. *Intelligent Bio-Sys.*, 821 F.3d at 1367-68.

Accordingly, Petitioners have failed to show that Møller with Steenfeldt-Jensen renders claims 18 and 20 obvious.

D. Møller and Steenfeldt-Jensen Do Not Teach Or Suggest A Dose Dial Sleeve That Is Radially Inward Of The Main Housing [Claim 26]

As claim 26 depends from claim 1, claim 6 is patentable for the same reasons discussed in Section III.A. To the extent that the Board concludes that Møller's tubular element 5 is part of the "main housing", Møller fails to teach that the dose dial sleeve is radially inward of the main housing, as required by claim 26, because Møller's dose-setting drum is radially outward of tubular element 5, as shown below:



EX1015, Fig. 1 (annotated)

Petitioners argue that the claim scope allows for "some housing portion" to be "also within the drum." Reply, 23. Petitioners seemingly argue that "radially inward of said main housing" means "radially inward of at least a portion of said main housing," such that the claim permits the dose dial sleeve to be simultaneously radially inward ***and*** outward of the main housing. Petitioners, however, have made no showing that this is a ***reasonable*** interpretation of the claims (a requirement under BRI). Thus, Petitioners have not shown that claim 26 is obvious.

E. Møller and Steenfeldt-Jensen Do Not Render Claims 32-33 Obvious.

Petitioners' arguments on Reply for claims 32 and 33 refer to their arguments for claim 1. For the reasons discussed in Section III.A, Petitioners' arguments are incorrect.

F. Møller and Steenfeldt-Jensen Do Not Render Claims 38-40 Obvious.

Petitioners' Reply arguments for claims 38-40 refer to their claim construction arguments for "main housing" and assert that wall 2 of Møller is the "insert" recited in claims 38-40. Reply, 24. As explained in Section III.A.1, the 486 Patent (including the claims) distinguishes the "main housing" from the "insert," and thus, any single component cannot be both an "insert" and part of the "main housing." Because the Petition relies on wall 2 as being part of the "main housing" for purposes

of claim 1, Petition at 61, wall 2 also cannot be the "insert." Conversely, if the Board agrees with Sanofi that a "main housing" must be an exterior component, then claim 1 (and therefore dependents 38-40) is not obvious for the reasons discussed in Section III.A.

III. OBJECTIVE INDICIA OF NONOBVIOUSNESS

A. SoloSTAR® Is Commercially Successful

Petitioners' own data demonstrates that Lantus® SoloSTAR® has been the number one prescribed insulin or insulin analog product with the greatest market share in every year since 2014, and overall the third most-prescribed insulin product of the last twenty years. *See* EX1060, Attachment B-10; EX2318, 31:14-17, 31:25-32:8. Notwithstanding, Petitioners question this data (their *own* data), alleging that (i) Sanofi did not set forth evidence of profitability, (ii) Sanofi overstates SoloSTAR®'s market share, (iii) SoloSTAR® had the same growth rate as the inferior OptiClik® pen, and (iv) SoloSTAR®'s strong formulary placement does not show commercial success. *See* Reply, 27-28. None of this diminishes the vast and long-standing adoption of SoloSTAR® within the diabetes community.

First, Petitioners' own economist Dr. McDuff acknowledged the billions of dollars in sales of SoloSTAR® and admitted that a separate profitability analysis was not required to prove its commercial success. EX2318, 15:10-13, 28:7-19,

29:20-30; *see also In re Sernaker*, 702 F.2d 989, 996 (Fed. Cir. 1983) (discussing *sales*, not profits).

Second, even considering the much broader market that Petitioners identify, SoloSTAR® *still* has the largest market share of any insulin product. See EX1060, Attachment B-10; EX2318, 31:14-17, 31:25-32:8.

Third, while SoloSTAR® and OptiClik® enjoyed similar growth *rates* in their first four years on the market, even though OptiClik® was an inferior pen, the number of SoloSTAR® prescriptions more than quadrupled that of OptiClik® in the first four years of each product's respective launch. *See* EX1060, Attachment B-10; EX2318, 18:23-19:20. SoloSTAR® prescriptions and strong market share greatly overshadow that of OptiClik® and provide further evidence of commercial success. Petitioners cannot deny that SoloSTAR® substantially grew the overall Lantus® market and remains the number one product. EX2318, 21:22-22:8.

Finally, Petitioners argue without explanation or support[3] that "formulary status does not separately demonstrate commercial success." Reply, 27. But Petitioners do not deny that SoloSTAR® enjoys favorable placement in health plans,

[3] Petitioners cite to the declaration of a medical doctor, William Biggs, who provided no testimony whatsoever about formulary status.

and its economist Dr. McDuff admitted that SoloSTAR®'s mechanical features and attributes would have contributed to that favorable placement. EX2318, 33:7-36:3.

B. The Board Should Reject Petitioners' Unsupported Nexus Arguments

1. SoloSTAR® Is the Commercial Embodiment of the Challenged Claims

While Sanofi showed how SoloSTAR® practices certain challenged claims (EX2107, ¶¶ 551-611), Petitioners provide no credible evidence rebutting these facts, or that the challenged claims enable SoloSTAR®'s low injection force and other features identified in the POR. *See* Reply, 24-25. Petitioners' citation to the declaration of a medical doctor provides no analysis of the challenged claims, the features they enable, or whether SoloSTAR® embodies them. *See* EX1048, ¶¶ 25, 27-30, 52-56. Petitioners also cite Mr. Leinsing's declaration, but he argues against nexus because he believes the claims cover the prior art pens disclosed in Burroughs and Møller. EX1095, ¶ 156. The argument fails for the reasons discussed in Section II of this Sur-reply (rebutting Moller) and Sanofi's Sur-reply in IPR2019-00122 (rebutting Burroughs). Mr. Leinsing also provides no analysis of any unclaimed features of SoloSTAR® that are responsible for its low injection force and other attributes. *See* EX2107, ¶ 650. Thus, Mr. Leinsing's sole paragraph on nexus simply fails to rebut Sanofi's considerable evidence.

2. Lantus®, Blocking Patents, and Sanofi's Marketing Do Not Solely Explain SoloSTAR®'s Commercial Success

Petitioners claim that the features of SoloSTAR® enabled by the challenged claims do not drive commercial success, and instead assert that any commercial success is attributable to the Lantus® drug, so-called blocking patents thereon, and Sanofi's marketing efforts. Each of these arguments fails.

Sanofi set forth extensive evidence that SoloSTAR®'s commercial success is due at least in part to the elegant features that the challenged claims enable, such as low injection force. EX2109 ¶ 53; EX2107, ¶¶ 472-512. Dr. Goland, for example, an endocrinologist and Co-Director of the Columbia University Diabetes Center, which treats 14,000 patients annually, testified that she has transitioned numerous patients to SoloSTAR®, "[a]nd injection force is one of the reasons." EX1056, 16:3-14, 66:9-15. The nexus between SoloSTAR®'s lower injection force and its commercial success is further confirmed by comparison to OptiClik®, which had a higher injection force, delivered *the same Lantus® drug*, but performed significantly worse than SoloSTAR® and was discontinued. EX2109, ¶¶ 19, 35-39; EX2111, ¶ 28. Petitioners' economist Dr. McDuff did not even consider the benefits of SoloSTAR® over OptiClik® in forming his opinions. EX2318, 26:11-23. He also agreed that Lantus® is not solely to credit, and the technical features of SoloSTAR® helped drive its commercial success. EX2318, 65:7-15.

Regarding the "blocking patents", Petitioners' economist Dr. McDuff confirmed that the blocking patents are directed to insulin glargine rather than delivery devices, and thus would not have discouraged anyone from developing a device for use with non-glargine insulin. EX2318, 80:2-81:15. Second, even if the blocking patents did serve as some barrier, they expired by 2015, and thus, could not account for SoloSTAR®'s continued success beyond that date. *See, e.g.*, EX2318, 79:7-11.

Finally, Petitioners state that Sanofi's marketing efforts drove commercial success, not product features. But it is hardly surprising that Sanofi would highlight SoloSTAR®'s features in marketing materials and encourage patients to switch to SoloSTAR®. Such marketing efforts followed the successful design of a superior pen with the needed features that prior pens lacked. *See e.g.* EX1048, ¶ 43; EX2318, 64:11-22. Dr. McDuff agreed that marketing alone does not account for commercial success (EX2318, 64:23-65:6), and that the same marketing strategy with a poorly designed pen could have resulted in lower market share for SoloSTAR®. EX2318, 65:7-15, 69:3-8. Moreover, Prof. Grabowski explained that Sanofi's marketing efforts and expenditures were on par with or lower than its competitors, and thus, would not solely be responsible for commercial success. EX2109, ¶¶ 64-68.

C. SoloSTAR® Satisfied The Long-Felt Need For an Easy-to-Use Injection Device with Low Injection Force

Petitioners claim that SoloSTAR® did not satisfy any long-felt need because other available pens were "fungible" and met patient needs. *See* Reply, 26. But in Dr. Goland's experience running a facility with 14,000 diabetes patients, not a single patient preferred the earlier OptiClik® device to SoloSTAR®, and the earlier FlexPen was "very hard to push." EX1056, 34:3-17, 35:16-36:12. In fact, the prior devices were so problematic that patients did not want to take their insulin at all. *Id*., 35:7-15; *see also* EX2111, ¶¶ 31-43; EX2100, EX2113, EX2116, EX2121, EX2123, EX2126, EX2128, EX2140, EX2143, EX2144, EX2184, EX2185. SoloSTAR® addressed these problems, and Dr. Goland transitioned her patients to SoloSTAR® in part due to its lower injection force. EX1056, 66:9-15.

Petitioners' device expert Mr. Leinsing acknowledged that "there's a lot of focus in pen injectors to reduce the force of injection." EX2163, 80:24-81:1. Petitioners' own experts are thus at odds on injection force.

Remarkably, Dr. Biggs also suggests that any long-felt need was satisfied by the Lantus® vial and syringe, that any patients complaining of injection force could simply have caregivers come into their homes to administer their treatments with injection needles, and that patients could carry around mini-refrigerated cases with preloaded syringes as an alternative to carrying pens. EX1048, ¶¶ 31-32; EX2317, 70:10-19, 84:24-85:14; EX1048, ¶¶ 31-32. Dr. Goland responds that any such suggestion is "horrific" and "frighten[ing]" to patients, who overwhelmingly dislike

using a vial and syringe to administer diabetes treatments. EX1056, 52:23-53:25; *see also id*., 58:18-59:24 (describing the needles in 2001-2003 as painful). Dr. Biggs also admitted that such a solution would not be covered under Medicare or insurance if it were not medically necessary. EX2317, 38:7-39:3. His opinion is further undermined by his testimony that the majority of his Lantus® patients have switched from the Lantus® vial to Lantus® SoloSTAR®, and most patients prefer to stay with SoloSTAR® after switching. EX2317, 115:23-116:6, 118:19-22.

D. Industry Praise and Awards Provide Further Objective Indicia

Contrary to Petitioners' suggestion, Sanofi did not make up the SoloSTAR® awards or bestow upon itself industry praise. Nor does Dr. McDuff deny that SoloSTAR® won the awards. EX1060, ¶¶ 57-60. As for the industry articles, although many such articles were sponsored by Sanofi or authored by Sanofi employees, they still appear in academic journals that, in some cases, were double-blind peer reviewed by anonymous (presumably non-Sanofi) experts. *See, e.g.*, EX2116; EX2224; EX2318, 72:11-73:18. Sanofi's involvement in the articles thus does not diminish their relevance. The articles also reference the low injection force of SoloSTAR® and thus support nexus. *See, e.g.*, EX2318, 76:2-77:4; EX2223.

IV. CONCLUSION

For the reasons set forth above, the patentability of the challenged claims should be affirmed.

Dated: October 30, 2019

Respectfully submitted,

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CERTIFICATE OF COMPLIANCE

1. The undersigned certifies that this brief complies with the type volume limitations of 37 CFR § 42.24(a)(1)(i). This brief contains 5,486 words (excluding the table of contents, the table of authorities, mandatory notices under 37 CFR § 42.8, the certificate of service, certificate of compliance, and appendix of exhibits), as calculated by the "Word Count" feature of Microsoft Word 2016, the word processing program used to create it.

2. The undersigned further certifies that this brief complies with the typeface requirements of 37 CFR § 42.6(a)(2)(ii) and typestyle requirements of 37 CFR § 42.6(a)(2)(iii). This brief has been prepared in a proportionally spaced typeface using Microsoft Word 2016 in Times New Roman 14 point font.

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CERTIFICATE OF SERVICE

The undersigned hereby certifies that on October 30, 2019 the foregoing Patent Owner's Sur-reply and accompanying exhibits were served via electronic mail upon the following:

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