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11 *[Full Listing on Signature Page]*

12 *Attorneys for Plaintiffs The Regents of the University of Michigan and*  
13 *The University of South Florida Board of Trustees*

14 **UNITED STATES DISTRICT COURT**  
15 **NORTHERN DISTRICT OF CALIFORNIA**  
**SAN JOSE DIVISION**

16 THE REGENTS OF THE UNIVERSITY OF  
MICHIGAN,  
17 and  
18 THE UNIVERSITY OF SOUTH FLORIDA  
BOARD OF TRUSTEES,

19  
20 Plaintiffs,

21 v.

22 NOVARTIS PHARMACEUTICALS  
23 CORPORATION

24 Defendant.

Case No.

**COMPLAINT FOR PATENT INFRINGEMENT**

**JURY TRIAL DEMANDED**

1 This is a civil action for patent infringement of United States Patent No. 10,633,344 (“the  
2 ’344 patent”) under the patent laws of the United States, 35 U.S.C. § 271, *et seq.* Plaintiffs, which  
3 are the corporate entities of two academic institutions, invested in groundbreaking advances in the  
4 fields of chemical engineering and pharmaceutical sciences. As part of Plaintiffs’ investment in  
5 and support of innovative and collaborative research, the named inventors of the ’344 patent—  
6 Drs. Michael Zaworotko, Brian Moulton, and Nair Rodríguez-Hornedo—devoted their individual  
7 expertise in supramolecular technology and pharmaceutical sciences to develop improved  
8 pharmaceutical compounds. Through the inventors’ collaboration, the ’344 patent issued. The  
9 ’344 patent relates to pharmaceutical compositions comprising, among other things,  
10 therapeutically effective amounts of a co-crystal comprising supramolecular synthons with the  
11 claimed elements. Without obtaining a license or permission to use the inventions claimed in the  
12 ’344 patent, Novartis makes, uses, tests, sells, offers for sale and/or imports its co-crystal drug  
13 Entresto®, which directly infringes, literally and/or under the doctrine equivalents, one or more  
14 claims of the ’344 patent.

15 Accordingly, Plaintiffs The Regents of the University of Michigan and The University of  
16 South Florida Board of Trustees (collectively, “Plaintiffs”) file this Complaint and demand for a  
17 jury trial seeking relief for patent infringement by Novartis Pharmaceuticals Corporation  
18 (“Novartis” or “Defendant”). Plaintiffs state and allege the following:

19 **THE PARTIES**

20 1. Plaintiff The Regents of the University of Michigan is a constitutional corporation  
21 of the State of Michigan, having a principal address at Ruthven Building 2300, 1109 Geddes  
22 Avenue, Ann Arbor, Michigan 48109-1079.

24 2. Plaintiff The University of South Florida Board of Trustees is the public body  
25 corporate of the University of South Florida, an academic institution organized and existing under  
26 the laws of the State of Florida, with its principal place of business located at 4202 E. Fowler  
27 Avenue, Tampa, Florida 33620.



1 8. On information and belief, Novartis is a large pharmaceutical company that is  
2 engaged in the business of marketing, distributing, promoting, testing, labelling, and selling the  
3 drug Entresto®.

4 9. On information and belief, Novartis is the holder of the New Drug Application  
5 (NDA) No. 207620 by which the Food & Drug Administration (FDA) granted approval in July  
6 2015 for the commercial manufacturing, marketing, sale, and use of Entresto® (sacubitril and  
7 valsartan) tablets.

9 10. On information and belief, Novartis markets and distributes Entresto® throughout  
10 the world, including all fifty states in the United States, and throughout California, and has  
11 established distribution channels for drug products in California.

12 11. On information and belief, Novartis maintains a campus in Emeryville, California  
13 at 5959 Horton Street, Emeryville, California 94608. On information and belief, Novartis'  
14 Emeryville campus is focused on research and development and employs 50 employees, including  
15 research professionals.

17 12. Additionally, Novartis has purposefully availed itself of the benefits and  
18 protections of this state, *inter alia*, by filing a complaint for patent infringement in this judicial  
19 District. *See Novartis Pharmaceuticals Corp. v. Handa Neuroscience, LLC*, 3:21-CV-03397, Dkt.  
20 No. 7 (Complaint), (N.D. Cal. May 6, 2021).

22 13. Venue is proper over Novartis in this judicial District pursuant to 28 U.S.C.  
23 § 1400(b) because Novartis maintains a regular and established place of business at its San Carlos  
24 and Emeryville campuses, and because it has committed acts of patent infringement within this  
25 judicial District.

26 **THE ASSERTED PATENT**



1 which is reflected by its extensive patent portfolio covering a wide range of technologies in many  
2 disciplines, including chemical engineering and pharmaceutical sciences.

3           19. The University of South Florida is a major research institution designated as a  
4 Preeminent State Research University by the Florida Board of Governors and recognized as a top  
5 public research university. In 2019, the University of South Florida was awarded \$525.4 million  
6 in research grants, putting it at the forefront of research in medicine, science, engineering, the arts,  
7 and more.

8           20. As a result of Plaintiffs' investment in and support of innovative and collaborative  
9 research, the named inventors of the '344 patent—Drs. Michael Zaworotko, Brian Moulton, and  
10 Nair Rodríguez-Hornedo—devoted their individual expertise in supramolecular technology and  
11 pharmaceutical sciences to develop improved pharmaceutical compounds.  
12

13           21. Dr. Michael Zaworotko received his Bachelor's in Science from Imperial College  
14 in 1977 and a doctorate degree from the University of Alabama in 1982. Dr. Zaworotko was a  
15 professor in the chemistry department at the University of South Florida from 1999 to 2013 during  
16 the collaborative work that led to the '344 patent. In 2013, Dr. Zaworotko joined the faculty at the  
17 University of Limerick, Ireland.  
18

19           22. Dr. Brian Moulton received his doctorate degree in chemistry from the University  
20 of South Florida in 2003. During his time at the University of South Florida, Dr. Moulton worked  
21 with Dr. Zaworotko, co-authoring several publications related to co-crystal engineering.  
22

23           23. Dr. Nair Rodríguez-Hornedo received a bachelor's degree in pharmacy from the  
24 University of Puerto Rico in 1975, and master (1977) and doctorate (1984) degrees in  
25 pharmaceutical sciences from the University of Wisconsin-Madison. Dr. Rodríguez-Hornedo was  
26 a research scientist in the pharmaceutical industry in 1984-1985, and assistant professor at the  
27 University of Arizona in 1985, before joining the faculty at the University of Michigan in 1989.  
28

1 Dr. Rodríguez-Hornedo was an associate professor in 1994 and professor in 2016. She was  
2 named professor emerita of pharmaceutical sciences at the University of Michigan in 2022.

3 24. The inventions disclosed in the '344 patent were a result of the collaborative  
4 research performed by Drs. Zaworotko, Moulton, and Rodríguez-Hornedo with the support of the  
5 University of Michigan and the University of South Florida. The '344 patent recognizes the  
6 unmet goal of predictable crystal structure from crystal engineering, *see* **Ex. A** at 1:33-35, and the  
7 patented invention applies the concepts of crystal engineering to design new pharmaceutical  
8 compounds, *id.* at 3:29-34. In particular, the '344 patent relates to “multiple-component solids  
9 having at least one active pharmaceutical ingredient” to achieve crystalline assemblies with  
10 “improved drug solubility, dissolution rate, stability and bioavailability.” *Id.* at 3:12-28.  
11

12  
13 **COUNT I**  
**Infringement of the '344 Patent Under 35 U.S.C. § 271(a)**

14 25. Plaintiffs restate and reallege the preceding paragraphs of this Complaint.

15 26. Novartis has directly infringed, and continues to directly infringe, literally and/or  
16 under the doctrine of equivalents, one or more claims of the '344 patent by making, using, testing,  
17 selling, offering for sale and/or importing into the United States the Accused Products under 35  
18 U.S.C. § 271(a). The Accused Products include the Entresto® tablets at various dose strengths:  
19 low strength (24.3 mg sacubitril, 25.7 mg valsartan); middle strength (48.6 mg sacubitril, 51.4 mg  
20 valsartan); and/or high strength (97.2 mg sacubitril, 102.8 mg valsartan).  
21

22 27. The Accused Products practice all of the elements of at least exemplary claim 10 of  
23 the '344 patent.

24 28. Each dosage strength of Entresto® is a pharmaceutical composition indicated to  
25 reduce the risk of cardiovascular death and hospitalization for heart failure in adult patients with  
26 chronic heart failure, and for the treatment of symptomatic heart failure with systemic left  
27  
28

1 ventricular systolic dysfunction in pediatric patients aged one year and older. *See Exhibit B,*  
2 Entresto® Drug Label.

3 29. Each dosage strength of Entresto® comprises a pharmaceutically acceptable  
4 carrier. For example, Entresto® is a tablet comprising microcrystalline cellulose and other  
5 inactive ingredients. *See id.* at 14.

6 30. Each dosage strength of Entresto® comprises a therapeutically effective amount of  
7 a co-crystal comprising supramolecular synthons, containing sacubitril-valsartan co-crystals  
8 comprising supramolecular synthons. *See Exhibit C* at 1, “LCZ696: A Dual-Action Sodium  
9 Supramolecular Complex,” *Tetrahedron Letters*, 53 (2012) 275-76.

10 31. Each supramolecular synthon is formed from stoichiometric amounts of at least one  
11 active pharmaceutical ingredient, for example sacubitril, and one co-former, for example  
12 valsartan. **Exhibit B** at 13.

13 32. As one example, an active pharmaceutical ingredient, sacubitril, has a first  
14 chemical functionality, a carboxamide, that permits formation of API homosynthons through non-  
15 covalent hydrogen bonding when sacubitril is in its pure form. **Exhibit C** at 1.

16 33. As one example, a co-former, valsartan, has a second chemical functionality, a  
17 tetrazole, that is complimentary to sacubitril’s first chemical functionality, a carboxamide, via  
18 non-covalent hydrogen bonding. *See Exhibit C* at 1.

19 34. As one example, the co-former, valsartan, is a solid at room temperature and  
20 atmospheric pressure when valsartan is in its pure form.

21 35. Supramolecular synthons are formed between, as one example, the first chemical  
22 functionality of sacubitril, a carboxamide, and the second chemical functionality of valsartan, a  
23 tetrazole, via non-covalent hydrogen bonding. *See Exhibit C* at 1.

24 **PRAYER FOR RELIEF**



1 WHEREFORE, Plaintiffs The Regents of the University of Michigan and The University of  
2 South Florida Board of Trustees respectfully request that this Court:

- 3 1) Enter judgment that Novartis has infringed one or more claims of the Asserted Patent;  
4 2) Award Plaintiffs damages in an amount sufficient to compensate it for Novartis'  
5 infringement of one or more claims of the Asserted Patent, together with pre-judgment and  
6 post-judgment interest costs, and all other damages permitted under 35 U.S.C. § 284;  
7 3) Declare that this be an exceptional case within the meaning of 35 U.S.C. § 285;  
8 4) Award Plaintiffs their costs in this action, together with reasonable attorneys' fees and pre-  
9 judgment and post-judgment interest;  
10 5) Perform an accounting of Novartis' infringing activities through trial and judgment;  
11 6) Award Plaintiffs such other and further relief, including other monetary and equitable  
12 relief, as this Court deems just and proper.  
13  
14  
15  
16

17 **DEMAND FOR JURY TRIAL**

18 Pursuant to Federal Rule of Civil Procedure 38(b), Plaintiffs demand a jury trial on all issues  
19 so triable.

20 Dated: August 29, 2022

21 Respectfully Submitted,

22 FISH & RICHARDSON P.C.

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