IN THE UNITED STATES DISTRICT COURT

FOR THE DISTRICT OF DELAWARE

ELAN PHARMA INTERNATIONAL LIMITED, Plaintiff, v. ABRAXIS BIOSCIENCE, INC., Defendant.	)	Civil Action No. 06-438-GMS

ABRAXIS'S RESPONSE TO ELAN'S MOTION IN LIMINE NO. 3
ABRAXIS EXPERTS DRS. ATWOOD AND AMIJI

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Elan's motion in limine No. 3 to exclude expert testimony by Drs. Atwood and Amiji should be denied because it misstates both the opinions and expertise of Drs. Atwood and Amiji. As shown below, they are fully qualified to render the opinions expressed in their reports.

INTRODUCTION

The Court's gatekeeping analysis with respect to expert testimony focuses on the "trilogy" of **"**qualification**,** reliability and fit." *Calhoun v. Yamaha Motor Corp*., 350 F.3d 316, 321 (3d Cir. 2003). As recently explained by the Third Circuit:

> First, the witness must be qualified to testify as an expert**.** Qualification requires that the witness possess specialized expertise**.** We have interpreted this requirement liberally, holding that a broad range of knowledge, skills, and training qualify an expert as such. Second, the testimony must be reliable. In other words, the expert's opinion must be based on the methods and procedures of science rather than on subjective belief or unsupported speculation; the expert must have good grounds for his or her belief. An assessment of the reliability of scientific evidence under Rule 702 requires a determination as to its scientific validity. Third, the expert testimony must 'fit', meaning the expert's testimony must be relevant for the purposes of the case and must assist the trier of fact.

Id. (citations and quotations omitted). Elan's Motion seeks exclusion of testimony by Drs. Atwood and Amiji solely on the first requirement – qualification. Elan could not challenge them on the reliability prong, given that their expert opinions are scrupulously supported in their reports by citation to scientific treatises and publications, not to mention corroborated in key respects by Elan's own scientists and experts. (*See, e.g.*, Kruze Ex. 2[1] (Atwood Rebuttal); Ex. 3 ¶¶ 7, 13, 22, 32 (Atwood Supplemental); Ex. 5 (Amiji Opening); Ex. 6 (Amiji Rebuttal); Ex. 8 at 210:3-13; 216:25-217:13 (Danishefsky Dep.) ("Amiji has actually a very nice description of these other prior art things").) Nor could "fit" be at issue, because the question of crystallinity of the paclitaxel in Abraxane is indisputably relevant in this case.

[1] All references to "Kruze Ex." are to the Declaration of Diana Kruze in Support of Abraxis's Response to Elan's Motion in Limine No. 3.

ARGUMENT

I. DR. ATWOOD IS QUALIFIED TO RENDER HIS ANTICIPATED TESTIMONY

Elan argues that Dr. Atwood is not qualified "to opine on issues pertaining to ssNMR techniques or ssNMR data." (Mot. at 2.) Elan answers the wrong question. Dr. Atwood opines in his expert reports on whether the paclitaxel in Abraxane is crystalline or amorphous, the significance of that difference, and related technological background. (*See* Kruze Exs. 2 & 3.) His opinions rely on an array of analytical techniques, including X-ray powder diffraction ("XRPD"), ssNMR, cryoTEM, and FT-IR. (*See id.*) Dr. Atwood has the requisite expertise regarding all of them. Elan's exclusive focus on ssNMR is wrong -- this case is not about patents on ssNMR but about patents that claim crystalline medicaments.[2]

Elan's attacks also miss the mark with respect to Dr. Atwood's ssNMR opinions. He has not opined that the ssNMR machine was incorrectly operated to generate the raw NMR data, nor offered any other opinion dependent on personally performing ssNMR.[3] (*See id.*) Instead, he has opined whether Elan's ssNMR followed basic tenets of the scientific method such as recordkeeping required for reproducibility, and "living with bad data" rather than hiding it, whether universal sample and control characterization and handling protocols were followed, and whether *interpretation* of the ssNMR data comported with accepted scientific practice. (*See id.*)

For the reasons below, Dr. Atwood is well-qualified to offer those opinions.

- Dr. Atwood obtained his Ph.D. from University of Illinois, with a thesis in chemistry, in 1968. He became a Full Professor of Chemistry in 1978, and has been Chair of the Department of Chemistry at University of Missouri since 1994. (Chiarini Ex.[4] 4 at 2.)
- Dr. Atwood is among the top 50 most-cited chemists (*see* Kruze Ex. 15) and has

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[2] Similarly wrong-headed is Elan's remarkable assertion that ssNMR is a "very specialized branch of analytic chemistry." (Mot. at 3.) Solid state NMR spectroscopy is one technique for using NMR equipment. It is not a "branch of chemistry."

[3] For that matter, Elan's Dr. Munson could not testify that the machine was *correctly* operated because he did not personally perform the ssNMR analysis and did not know if he was there when it was done. (Kruze Ex. 9 at 30:17-35:23, 44:20-45:7 (Munson Dep.).)

[4] All references to "Chiarini Ex." are to the Declaration of Lisa A. Chiarini in Support of Plaintiff Elan Pharma International Ltd.'s Motion in Limine No. 3.

received many honors (*see id.* Ex. 4 at 2, and Kruze Ex. 1 ¶¶ 4, 8, 9, and 11).

- Dr. Atwood has published over 600 peer-reviewed articles; many concern nanostructures (*e.g.*, Chiarini Ex. 4 at 68-71, publication Nos. 589, 590, 593, 601, 603, 607-8, 617, 619, 623, 625, 627, 629, 631, & 635) and solid state chemistry (*see* Kruze Ex. 1 ¶ 7).
- Dr. Atwood has authored and/or edited several treatises concerning supramolecular (including nano-) chemistry. (Kruze Ex. 1 ¶ 10.)
- Dr. Atwood sits on the editorial boards of several chemistry journals concerning crystal structure and supramolecular chemistry. (*Id.*; *see also* Chiarini Ex. 4 at 1.)
- Dr. Atwood has more than 40 years' experience characterizing the crystalline and amorphous solid states. Since the mid-1980s he has focused on supramolecular chemistry, particularly with respect to solid-state organic chemistry (the study of solid organic chemicals). (*See* Kruze Ex. 1 ¶ 5.)

Dr. Atwood has the requisite expertise on ssNMR. He has supervised and interpreted ssNMR in his laboratory, and has published papers describing ssNMR results. (*Id.* at 93:24-94:24, 43:22-44:14, 125:3-15, 231:4-22; Ex. 11 (collecting selected Atwood ssNMR articles).) Indeed, a database search identified 81 Atwood articles referencing NMR. (*Id.* Ex. 10; *see also* Ex. 11.) He also has edited multiple treatises with chapters discussing ssNMR. (*E.g.*, *id.* Ex. 12.) Dr. Atwood has even testified as an expert in other patent cases regarding interpretation of ssNMR results. (*Id.*, Ex. 6 at 52:21-53:11 and 119:16-120:10); *Abbott Labs. v. Apotex, Inc.*, 455 F. Supp. 2d 831, 835-36 (N.D. Ill. 2006); *reversed on other grounds by*, 503 F.3d 1375 (Fed. Cir. 2007) (accepting Atwood testimony on analysis of ssNMR results); *Abbott Labs. v. TorPharm, Inc.*, 309 F. Supp. 2d 1043, 1044-45 &1054 (N.D. Ill. 2004) (same).

Dr. Atwood also has specific expertise with deconvolution -- the mathematical approach (improperly) used by Dr. Munson for his crystallinity opinion. Dr. Atwood has used deconvolution many times to analyze experimental results. (Kruze Ex. 6 at 303:18-24, 44:15-22,

107:2-108:17, 309:13-22.) As Atwood explains, deconvolution is a general mathematical method of data analysis and is not specific to ssNMR. (*Id*. at 121:25-122:11, 304:3-6, 305:3-9.)

Elan's attempt to smear Dr. Atwood because Elan produced its ssNMR data in unusable form (Mot. at 3) is inexcusable. As the declarations of Dr. Atwood and Emily Evans submitted in support of Abraxis's MIL No. 2 explain, Elan's ssNMR data was not produced as ordinarily kept, and was readable only by out-of-date software that would run only on antiquated Sun computer workstations. (*See* Kruze Exs. 13 & 14.) The software was not normally sold separately, but rather was part of the "firmware" that came with NMR machine that Dr. Munson used. (*Id*.) Neither was "industry standard" – various NMR machines and deconvolution software are used in the field. (*See, e.g. id.*, Ex. 6 at 40:23-41:21.) None of this has anything to do with Dr. Atwood's qualifications, and everything to do with Elan's recidivist ball hiding.

Dr. Atwood's broad expertise regarding crystallinity will aid the jury, who will hear about various analytical methods used to assess crystallinity in Abraxane. (*See, e.g. id.*, at 149:3-152:11 (XRPD, not ssNMR, is scientifically accepted methodology for assessing crystallinity); 300:6-303:11; *see also* Exs. 2 & 3.) Dr. Atwood's lucid presentation (Exs. 2 & 3, Atwood Rebuttal and Supplemental) also would be helpful in view of Dr. Munson's evasive and convoluted testimony and his inability to explain the experiments in his report. (*See, e.g.*, Ex. 9 at 226-232, 247-254, and 264-272 (Munson Dep.).)

II. DR. AMIJI IS QUALIFIED TO RENDER HIS ANTICIPATED TESTIMONY

Elan argues that Dr. Amiji is not qualified to testify "regarding conclusions of obviousness and materiality, nor [sic] on XRPD issues." (Mot. at 5.) Elan misstates Dr. Amiji's expertise and opinions, and applies an incorrect legal standard.

Dr. Amiji has participated in nanoparticulate drug delivery system development since 1984. He is Co-Director of the Nanomedicine Education and Research Consortium (NERC) at Northeastern University. He teaches Introduction to Nanomedicine and Nanosystems Design for Biology and Medicine. Dr. Amiji is author or co-author on over 70 peer-reviewed articles, several books, and numerous meeting abstracts and other publications, the majority relating to

nanotechnology applications in biology and medicine. He is an editor of "Nanotechnology for Cancer Therapy" published by CRC Press in 2007, a 38-chapter treatise covering all aspects of nanotechnology applications for cancer. Dr. Amiji is on the editorial boards for the peer-reviewed journals Expert Opinion on Drug Delivery and Journal of Nano Education. He has "an intimate knowledge of the state of nanoparticulate drug delivery systems in the mid-1980s and 1990s and [is] qualified to explain the understanding of the technology at that time." (Kruze Ex. 4 ¶¶ 12-14; *see also* Ex. 7 at 377:6-19.)

Elan's argument that Dr. Amiji was not previously aware of the prior art patents that invalidate the '363 and '025 patents misses the mark. First, as an academic researcher he does not normally look to the patent literature. (*Id.*, Ex. 7 at 378:2-23.) Second, while the hypothetical "person of ordinary skill" is presumed to be aware of all pertinent prior art, that standard does not apply to any particular individual (nor could it). *See Endress + Hauser, Inc. v. Hawk Measurement Sys. Ltd.*, 122 F.3d 1040, 1042 (Fed. Cir. 1997). Contrary to Elan's contention, Dr. Amiji *did not* concede that he was unfamiliar with the prior art technology, just that he had not previously been aware of these prior art patents and did not use their exact methodologies in his laboratory. Again, Elan's definition of expertise is absurdly narrow.

Elan's argument that Dr. Amiji "is not competent to testify … on XRPD issues" mistakes the substance of his testimony. Dr. Amiji qualifies to offer his rebuttal report XRPD opinions because he has performed X-ray crystallography analysis and has interpreted such results in his review of peer-reviewed journal articles. (Kruze Ex. 5 ¶¶ 35-38; *see also* Ex. 7 at 113:1-114:24.)

CONCLUSION

For the foregoing reasons, this Court should deny Elan's motion in limine No. 3.

Dated: April 4, 2008

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CERTIFICATE OF SERVICE

I, Karen E. Keller, Esquire, hereby certify that on April 4, 2008, I caused to be electronically filed a true and correct copy of the foregoing document with the Clerk of the Court using CM/ECF, which will send notification that such filing is available for viewing and downloading to the following counsel of record:

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I further certify that on April 4, 2008**,** I caused a true and correct copy of the foregoing document to be served by e-mail on the above-listed counsel of record and on the following non-registered participants in the manner indicated:

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