UNITED STATES DISTRICT COURT
DISTRICT OF MASSACHUSETTS

AMGEN INC.,
Plaintiff,
vs.
F. HOFFMANN-LA ROCHE LTD., a Swiss Company, ROCHE DIAGNOSTICS GmbH, a German Company, and HOFFMANN-LA ROCHE, INC., a New Jersey Corporation
Defendants.

Civil Action
No. 05-12237 WGY

REDACTED

DEPOSITION OF AJIT VARKI, M.D.
FRIDAY, JUNE 29, 2007

REPORTED BY:
LINDA D. WHITE
CSR NO. 12009

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DEPOSITION OF AJIT VARKI, M.D., taken on behalf of Defendant, at 333 West Harbor Drive, Suite Los Angeles, San Diego, California, 8:03 a.m., Friday, June 29, 2007, before LINDA D. WHITE, Certified Shorthand Reporter Number 12009 for the State of California, pursuant to Notice.

EXHIBIT B

APPEARANCE:

For the Plaintiff:
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Also Present:
Michael Bullerman
John Arel, Videographer

(This Transcript contains testimony designated confidential as per Section 5(c) of the Amended Protective Order. Please treat the entire transcript in accordance with the protective order.)

BY MR. JAGOE:

Q Okay. Look at your third report. You can keep that aside.

Look at your third report.

A 3 supplemental. Second supplemental?

Q Second supplemental report.

A Should I keep this here? I might get in trouble. Close it over there.

Q Okay.

A Okay.

Q And paragraph 25 on Page 11 and 12.

A 25 on Page 11 and 12. 11 and 12. Sorry. Okay.

Q All right. And at the end of paragraph 25, you have six bulletpoints, right?

A Right.

Q And you list isoelectric points of glycoforms, sulfation, polylactosamine, repeat content?

A Correct.

Q Old glycan structure, presence of N-glycolylneuraminic acid and absence of alpha 2-6 sialic acid linkages, correct?

A Correct. N-glycolyl, G-L-C-O-L-Y-L.

Q Would those six points summarize the

differences between the prior art EPO that you analyzed and compounds that fall within the scope of claims of the 933 Patent?

A I think those are the ones that -- yes, I think we -- I tried to summarize there what all the issues I looked at. I can't think of any other. But of course, a lot of these differences are not based on what was known in 1983. But subsequent analysis of either Miyake or Miyake-like preparations.

Q All of these differences would be differences in the carbohydrate component of the erythropoietin, right?

MR. LOEB: Objection. Vague and ambiguous.

THE WITNESS: Carbohydrates refers to molecules that have a particular composition, a CHO composition. The sulfate, for example, would not fall in the category of carbohydrates. The N-glycolyl, I suppose, could, but it becomes a semantic issue or technical issue.

All the differences -- perhaps better to put it as all the differences are related to things that are components of the glycans that are attached to the polypeptide. That is the way of summarizing all of the difference I looked at. So everything

beyond the glyco -- peptide -- polypeptide itself.

BY MR. JAGOE:

Q Are any of the differences related to the folding of the polypeptide?

A Not directly, but the -- it's well known that the glycans would -- could have a dramatic effect on the folding of the polypeptide during biosynthesis. I believe I addressed that in some other places in the reports.

Q The sulfation difference, the sulfation takes place on the carbohydrate as opposed to on the amino acid residues; is that right?

MR. LOEB: Objection. Vague and ambiguous.

THE WITNESS: The presence of the sulfate esters, based on the data I've seen, especially the results of using the PNGase F enzyme. The data suggests. But again, sulfation is extremely difficult to study and has been very poorly studied in most of this work. It seems like it's on -- attached to the sugar chains.

BY MR. JAGOE:

Q Okay. Now, the -- let me just ask you.

So do you agree with the statement that urinary EPO and recombinant EPO are the same product?

MR. LOEB: Objection. Vague and ambiguous.

THE WITNESS: Can you define "the same product"? Is it the source or is it the production method or is it --

BY MR. JAGOE:

Q The substances themselves are the same.

MR. LOEB: Objection. Vague and ambiguous.

THE WITNESS: The substance -- they're not. From everything I've seen, there is a lot of differences between them.

BY MR. JAGOE:

Q And are you intending to offer an opinion that urinary EPO and recombinant EPO can be distinguished?

A If you define recombinant EPO as all the recombinant EPOs that have been made to date, and all the ones I've seen -- and there seems to be a lot of them that have been studied -- yes, I have not seen a single recombinant EPO prep that -- well, if you just look at the -- the way it's used in -- in -- you know, looking for EPO doping in sports, it's very obvious they never have a problem telling them apart right from there.

And since the differences they're looking at directly reflect differences in the glycan