- VOLUME B -

IN THE UNITED STATES DISTRICT COURT

IN AND FOR THE DISTRICT OF DELAWARE

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THE JOHNS HOPKINS UNIVERSITY, A Maryland Corporation, BAXTER HEALTHCARE CORPORATION, A Delaware Corporation, And BECTON DICKINSON AND COMPANY, A New Jersey Corporation,	:	CIVIL ACTION
Plaintiffs	:	
v.	:	
CELLPRO, A Delaware Corporation,	:	
Defendant	:	NO. 94-105 (RRM)

- - -

Wilmington, Delaware
Tuesday, July 25, 1995
9:17 o'clock, a.m.

- - -

BEFORE: HONORABLE RODERICK R. McKELVIE, U.S.D.C.J., and a jury

- - -

APPEARANCES:

POTTER, ANDERSON & CORROON
BY: WILLIAM J. MARSDEN, JR., ESQ.

Counsel for Plaintiffs

Official Court Reporters

years was because we saw something at the end. And at the end would be the ability to isolate these stem cells free of the mature cells that I talked about could be harmful in a bone marrow transplant.

Q. Did you take any steps to tell the scientific community about your discoveries in this respect?

A. Yes, I did.

In 1984 our paper describing these results was published in the Journal of Immunology. This paper described these two years of work and the conclusions we came to, saying that we had -- that we had identified a stem cell-specific antibody and antigen called My-10 antibody and My-10 antigen.

Q. Earlier in these proceedings, Dr. Civin, I -- Dr. Griffin identified what he understood was a copy of the paper that you had prepared, which is Plaintiffs' Exhibit No. 405.

Do you have that in front of you?

A. Yes, I do.

Q. Is that the paper which you prepared?

A. Yes, it is.

Q. Which relates to the discoveries relating to the My-10 antibody and antigen?

A. Yes, it is.

Q. Now, who are the other -- there are several authors on

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experiments, that was the average. It only bound to 1.5 percent of the marrow. So it bound to a tiny percent, about the right number for the stem cells.

When I used the antibody, now, to hook out, to fish out those progenitor cells -- remember using the antibody like a hook to pull out only the cells which had the antigen, which we knew we could name the My-10 antigen, we knew it was there because an antibody must bind to a cell by an antigen, we hooked those cells out and tested that for what kind of cells they were.

And I found that these cells were immature cells by lots of tests and, further, these immature cells contained this tiny one percent of -- immature cells contained all the cells that gave rise to all the mature cells in the blood.

So we did a lot of detailed testing, probably about two or three years of work from the start of this in around 1981. And I became convinced that I had what I set out to do: I had a monoclonal antibody that bound to an antigen specifically expressed on stem cells, and that this would, of course, allow me and others in the field to isolate these immature stem cells from the bone marrow or the blood.

Q. Did any of your research or use of this antibody, once you had identified it -- let me rephrase this, Doctor.

Did you use the antibody to actually separate the

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immature cell population?

A. Yes.

In order to characterize -- in order to study and prove what they were, the cells that bound to the My-10 antibody, the My-10 antibody bound specifically to, I had to purify those cells for some of those tests. So I used the multiple techniques.

You've heard about the F-A-C-S machine?

Q. That's the FACS machine?

A. The FACS machine. You've heard about the affinity techniques. There was a diagram with a black background, where an antibody was attached to a big bead, solid phase. I could hook the antibody onto the solid phase and use the solid phase, whatever you call it, bead, to purify the cells.

We didn't use that particular technique right then, but we used one just like it called row setting. We used another with a solid phase, a flat surface called panning. There were multiple techniques that, once you had the antigen you could purify the cells by what we call immunoaffinity.

Q. Did you see any applications for purified cells at that time?

A. Well, sure, because the reason we had set out on a top project that we weren't sure we could do for two or three

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years was because we saw something at the end. And at the end would be the ability to isolate these stem cells free of the mature cells that I talked about could be harmful in a bone marrow transplant.

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that paper, are there not?

A. Yes, there are.

Q. Now, who are these other people?

A. Well, I was the first author. The next one, two, three, four authors were a technician and three of the young trainees that I described in my laboratory to you earlier.

The final person, Dr. Shaper, is a faculty scientist in the -- in our Cancer Center, and he worked with me on the biochemical characterization of the antigen. I guess I didn't tell you about that.

Also in this paper was the My-10 antigen, later called by the workshops, so we might as well call it now, the CD34 antigen.

In this work, in characterizing a monoclonal antibody and in this paper, we had to, and wanted to, describe the actual thing that this -- the substance that this antibody was binding to. Not only was it important just as a flag to purify cells and to label cells, but it was also important to understand what the nature of the molecule was.

We showed that it was a protein by using the antibody to purify it, much like you purify cells. And we showed that this protein had an apparent molecular size of what's called 115 kilodaltons. It's like putting it on a