

Any Color You Want, So Long As It's Red

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"Tell me Jim, what's *new* in the blood world? Still offering it in only one color?" I smiled when my neighbor asked this question, though maybe I was just gritting my teeth. "Yes, you can have any color you want, so long as it's red," I replied. "But in answer to your first question, there is a whole lot new in the world of blood." And there is.

When people think of Puget Sound Blood Center, they conjure up an image of donors on cots. There's truth in that: with the help of a quarter million registered donors we

collect, test and provide blood to more than 70 hospitals in Western Washington. Or they imagine patients in hospitals having surgery, organ transplants, cancer treatment, therapy for blood disorders— all depending on our blood components, in-house transfusion and laboratory expertise. A true picture, too.

But what people *don't* think of is our Research Institute that recently moved into new facilities at 1551 Eastlake. When we say there's "new blood" in the South Lake Union hub of biomedical research in Seattle, it's literally true. We have 40 scientists focused on thrombosis and stroke prevention, hemophilia and hemostasis therapies, transfusion medicine and immunology.

Research was part of our mission from the very beginning, 68 years ago. Today, we're collaborating with some outstanding local partners: UW Medicine, Seattle Children's, Fred Hutchinson Cancer Research Center, Seattle Cancer Care Alliance, and many private companies, including Bayer and Biogen Idec.

Let's consider just three areas with dramatic change and new discoveries underway: genomic testing of

donor and patient blood; sickle cell research; and preventing thrombosis, the leading cause of heart attacks and stroke.

Many people will need a red blood cell transfusion sometime during their lives. Traditional blood typing tests for only a limited number of blood types, even though more than 200 red cell types have been identified. New genetic typing technologies enable deep and precise blood typing to match more specifically defined blood groups with individual patients.

Our lab is among the first in the country using genomic blood typing of some donor blood so we can more closely match it to patient antibodies – better reflecting the individual needs of patients, and the growing ethnic diversity of our communities. Closer matching between donor and patient blood types further reduces the possibility of adverse immune system reactions arising from blood transfusion, especially for patients needing multiple transfusions. What we have introduced here is helping to define a new model for blood typing and transfusion worldwide.

Our Research Institute includes many outstanding leaders in blood

research--recognized nationally and internationally. A recent NIH grant of \$3.73 million to Dr. José López and Dr. Barbara Konkle to advance research investigations into Sickle Cell Disease (SCD) is one example. SCD is a genetic blood disorder caused by an abnormal type of hemoglobin, which can cause red cells to assume crescent ("sickle") shapes and become more "sticky." These misshapen cells get stuck in small blood vessels and interrupt blood flow, causing organ and tissue damage, pain and sometimes stroke. SCD affects eight to 10 percent of African Americans and some people from South and Central America, the Caribbean and Middle East.

This latest grant builds on recent PSBC studies demonstrating that SCD patients have high concentrations of hyper-adhesive von Willebrand factor (VWF), a plasma protein. It is expected that these investigations will yield significant benefits for individuals who have

SCD, potentially producing a new therapy that's safe and inexpensive. The research is cutting edge, complex, and occurring right here in the Pacific Northwest.

The third area of "what's new in blood" is perhaps the biggest challenge we've taken on in our history. What do stroke, heart attacks, cancer, diabetes, malaria and lupus have in common? Thrombosis, or pathologic blood clotting. Stroke and heart attacks are the leading cause of premature death in the world, and thrombosis is the common mechanism linking them. By conducting new research on blood clotting, our researchers will be seeking to identify, prevent and avoid events or conditions that lead to thrombosis.

So, there is a lot new in the blood world! We know more about blood, and are applying genomic technology to type it. We're improving therapies and treatment for disorders like SCD. We continue to discover new things about blood, with

potential and far-reaching benefits for prevention of heart attacks and strokes. And yes, red is still the only color. We do provide components in other colors, mind you: there's plasma, platelets, cryoprecipitate...but that's a story for another time.

James P. AuBuchon, MD, FCAP, FRCP (Edin) joined PSBC in 2008 as president and CEO. Prior to coming to Seattle, he spent 18 years at Dartmouth-Hitchcock Medical Center as Medical Director of the Blood Bank and Transfusion Service, and later as Chair of Pathology and Professor of Medicine at Dartmouth College. AuBuchon's research focus includes transfusion safety and blood components. He is immediate past president of AABB. A University of Michigan graduate, he trained at the National Institutes of Health and served in positions with American Red Cross Blood Services. AuBuchon is a past chair of the Biomedical Excellence for Safer Transfusion Collaborative, an international research group.

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