why i give

Long-time Arizona businesswoman supports research into macular degeneration

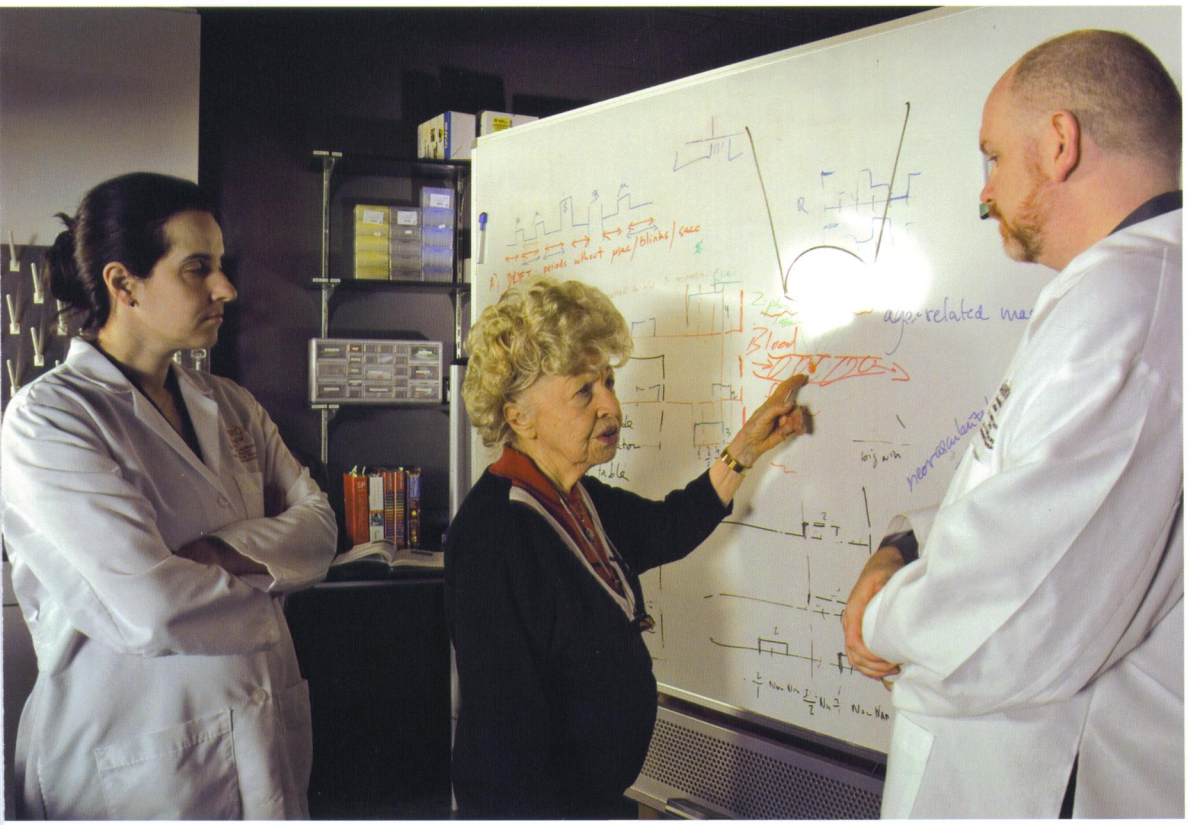
by Catherine Menor

The laser Grace Welton is funding will enable Barrow vision researchers to examine individual blood vessels in living tissue.

Grace Welton, whose career in land and apartment ownership in Phoenix and Prescott began more than 50 years ago, has given $80,000 for the purchase of a highly specialized laser that will enable two Barrow vision researchers to explore blood flow's role in macular degeneration at the microscopic level. Grace recently met with Stephen Macknik, PhD, and Susana Martinez-Conde, PhD, to discuss her gift and their research.

Grace, can you tell us about your own experience with macular degeneration?

Grace: I've had macular degeneration for four or five years. It started out in the right eye. At the time, we had white tile with brown grout, and when I'd look at the floor, the lines were crooked, wavy. After I lost my husband in 2004, my sight got worse. Now, if I look at you straight in the face, you don't have any eyes. But if I put my eyes a little to one side, you do have eyes.



Susana Martinez-Conde, PhD, and Stephen Macknik, PhD, discuss their research with Grace Welton. Both Dr. Martinez-Conde and Dr. Macknik receive support from Barrow Neurological Foundation.

Dr. Martinez-Conde, what is macular degeneration?

Dr. Martinez-Conde: Macular degeneration is the most common cause of vision loss among people over 60. Macular degeneration gradually destroys sharp, clear vision by affecting the macula, the part of the eye that allows us to see fine detail. In its early stages, macular degeneration is characterized by yellow deposits in the back of the eye called drusen, which seem to have little effect on vision.

In later stages of macular degeneration, a process called neovascularization occurs—new abnormal blood vessels grow under the macula. These new blood vessels tend to be very fragile and often leak blood and fluid, causing swelling within the macula and damaging it. That leads to the death of the neurons in the retina and to vision loss.

Grace, is your own disease what brought about your interest in vision research?

Grace: No, I decided to support research into blindness long before I developed this problem. I remember asking myself years ago, "What is the worst thing that could happen to me? Being in a wheelchair? No, I'd get by. Oh…to be blind. That was the worst."

I never thought of that until a few years ago when I thought I'd better set up a will. I wanted to give now while I can still see the results. I set it up then so that it went to general blind causes. When I met my husband, we delved further into research for the eye.

It's almost as if it [my ability to fund vision research] was planned. I don't know how many times—I get goose bumps just thinking about it—my husband and I would be looking at some property, but there would be something wrong with the property, the title, for instance, that would prevent us from moving forward. Shortly afterward, a better opportunity would come along and we would end up with a better deal. That happened again and again, as though my life was guided.

Doctors, tell us about the research you are planning into macular degeneration.

Dr. Macknik: Our main goal is to find out if abnormal blood flow in new retinal blood vessels leads to

vision loss in macular degeneration. Our hypothesis is that the new blood vessels that grow during macular degeneration are linked to blood flow problems in the retina. These new vessels, which are fragile and bleed easily, may be killing neurons and causing vision loss.

What we're going to do is measure how abnormal the blood flow is. And if we find out it's indeed abnormal, we're going to try to see if drugs that regulate blood flow might ameliorate the problem. Medications now used in treating stroke, for instance, might help patients keep their vision longer by regulating their blood flow and preventing neovascularization.

It's a hypothesis and in a way we would never have studied this if it weren't for Grace. Dr. Martinez-Conde and I both have different programs of research to study amblyopia and other disorders that impair vision. When we met with Grace, she asked if we could do research into macular degeneration. We thought about it and realized we are in a unique position to do research that isn't being done by anybody else. It was really Grace's idea to do this type of work.

So this is a very high-tech piece of equipment?

Dr. Macknik: This microscope in this particular configuration will truly be one of a kind. In the world there are fewer than 200 labs with this equipment and maybe a few dozen in this country. I just can't express how important this donation is.

Grace: So in other words, this laser and microscope can be used for a long time? I realize you have to keep getting new equipment.

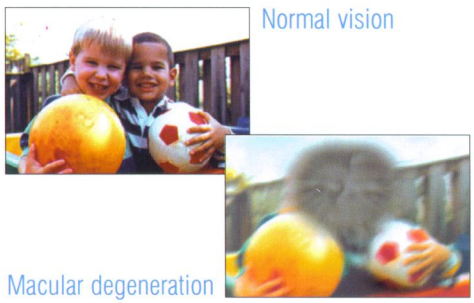
Grace Welton presents a gift for vision research to Stephen Macknik, PhD, Susana Martinez-Conde, PhD, and Xoana Troncoso, PhD.

Why is the laser being funded by Grace important to this research?

Dr. Martinez-Conde: The laser is essential to our research. It will provide a very special beam of light for a custom microscope that will allow us to view the individual blood vessels in living tissue. Most microscopes can view things at the surface. This one can magnify structures beneath the surface of the living brain.

Dr. Martinez-Conde: Yes, this equipment will be used for many, many years.

Grace: That makes me feel really good. ■



Normal vision

Macular degeneration