Researchers
Dr. Karen Cruickshanks, left, Dr. Ronald Klein, and Dr. Barbara Klein will address the community at an Appreciation Celebration Aug. 14th, 6:30 p.m. at the Beaver Dam High School Auditorium.
What do three researchers, 4,926 participants and years of hard work add up to? This combination has created a wealth of information for the medical community. Over the last 20 years, the Beaver Dam Eye Study has generated an enormous amount of data that will help generations to come.

Twenty years ago, the husband and wife team of Ronald Klein, MD, MPH, and Barbara Klein, MD, MPH, first targeted Beaver Dam as the location for their special population-based study. Over the years this study has taken on a life of its own. The Kleins, both of whom are research faculty members at the University of Wisconsin’s Department of Ophthalmology and Visual Science, found Beaver Dam to be a model community.

“Everyone was very welcoming,” Dr. Barbara Klein said. “Beaver Dam was like many other American communities in many ways in regard to socio-economic status, education, occupation distribution, and it was also close enough to Madison that we could get there.”

The Beaver Dam Eye Study, funded by the National Eye Institute, set its initial goal as an opportunity to investigate the incidence, progression and other factors of various age-related eye diseases. Having a study run 20 years is somewhat of an anomaly in the scientific world, but it’s been the Beaver Dam community that has made this possible.

“The studies that we are doing are of chronic diseases that take a long time to manifest,” Dr. Ronald Klein said. “One of the strengths of this study is that we can examine people and the changes over the years they have been participants in the study. By the definition of the study, we knew that we would be here a long time.”

Not only has the Beaver Dam Eye Study been the impetus of over 250 published research papers, but it has also generated the Beaver Dam Offspring Study and the Epidemiology of Hearing Loss Study.

As the principal investigator in age-related disorders and diabetes, Dr. Karen Cruickshanks has been looking at age-related hearing loss and other sensory impairments and a study of the impact of atherosclerosis on age-related disorders. Dr. Cruickshanks is a professor of Population Health Sciences and Ophthalmology and Visual Sciences.

“Participation rate in the Beaver Dam Eye Study is one of the things that the scientific community revels about,” Dr. Cruickshanks said. It’s been so high and so consistent – over 82 or 83 percent participate each time. For a community study that is really critical to have a large percentage participating so you don’t have bias creeping into the study. Beaver Dam just really set the bar for other studies around the country.”

Cataracts, macular degeneration and diabetic retinopathy are some of the common eye diseases that affect people as they age. The Beaver Dam Eye Study is an important piece of the puzzle as researchers and doctors aim to answer questions on how these diseases develop and progress.

“Although these studies initially were geared on the central senses of hearing, sight, taste and smell—because it is an aging population, it’s clear that there are many other problems,” Dr. Barbara Klein said. “We have a lot of information that is very informative about all kinds of systemic illnesses. So this population has contributed in so many ways to understanding health issues.”

Beyond the initial focus on vision, the study has helped researchers gain valuable insight on health concerns such as heart disease risks, dental health, urinary symptoms, medication exposure, and quality of life issues.

“It became more and more apparent as people came in that there were many other things that were influence-

continued on page 10
Continued from page 9

ing their participation rate,” Dr. Barbara Klein said. “We asked a battery of questions initially about things that we thought were related to eye disease, but in it of themselves we got a lot of information. For example, heart disease was supposed to predispose to some of the eye conditions, but in order to document that we had to get lipid levels and cholesterol, in particular. So we learned something about heart disease along the way.”

Dr. Ronald Klein added that the main aim continues to be the sensory impairments, which are critical as people get older due to having so much influence on their quality of life.

Community involvement has been key since the very beginning. The Kleins started out by talking to local civic organizations where they received support. There is a community advisory board which has been served by numerous residents in the city. This board acts as a conduit of feedback and advocates for the study. Local doctors and other health care providers have been supportive over the years, along with the local hospital in providing room for the researchers to conduct their testing.

With so many different avenues that the study has taken, it was impossible for the researchers to label just one contribution as the most significant.

“I think there are a number of important contributions, there isn’t a most important,” Dr. Ronald Klein said.

Dr. Cruickshanks added, “When the Klein’s began the study, I don’t think the scientific community appreciated how common these vision problems were in the aging. From my perspective, one of the most important things is that they raised awareness and got other scientists motivated to understand why people are getting macular degeneration and losing their sight. They can use the Klein’s data to find the basis for their own laboratory work and clinical studies to come up with new treatments.”

With so many papers published in peer-reviewed journals, the Beaver Dam Eye Study has really become the standard for other population-based studies of this type. Dr. Ronald Klein explained that the methods they developed for both vision and hearing have been adopted by studies such as the National Health and Nutrition Examination Survey. The same methodology developed in Beaver Dam is now used in research studies from Australia, to Singapore, to Holland.

“The bottom line for all of us is to prevent the conditions or reduce the incidences and use the information to develop strategies for public health,” said Dr. Ronald Klein.

The future of the Beaver Dam Eye Study, like many other research projects, is ever dependant on funding. The Kleins would like to follow the initial group of participants a little longer, because as time goes by, more health conditions become apparent. In what Dr. Barbara Klein called the “genetics explosion,” scientists are learning more about the influence of genetics with environmental and chemical exposure. This opens new doors into the understanding of the human body and the aging process.

“What is very important is following the next generation,” Dr. Barbara Klein said. “Not only because of changing patterns of exposure to risk factors, but also because of the importance of becoming more and more aware of genetic factors. The future of the study is finding out about how these things interact with each other.”

When asked what they would like to tell the study participants from Beaver Dam, all three of the researchers enthusiastically replied at once, “Thank you.”

“I think we are all very grateful for their help,” Dr. Cruickshanks said. “We can sit in Madison and come up with lots of ideas, but without the partnership with the community, we wouldn’t be able to get these answers.”

“Their contributions go well beyond Beaver Dam because of what they are doing,” Dr. Ronald Klein said. “They are not only helpful to the people of Beaver Dam, but their children and their children’s children, and people around the world. Their contributions are magnified many times over. We’d like to thank the entire community for everything they’ve done and we look forward to continue working with them over a long period of time in the future.”

Beaver Dam Studies

Please join us for an evening honoring Beaver Dam Appreciation Celebration Tuesday, Aug. 14th, 6:30 pm Beaver Dam High School Auditorium

Doctors Ronald and Barbara Klein along with Doctor Karen Cruickshanks will present a brief overview highlighting important findings and current initiatives.

A reception will follow.