The 2012 Academy Laureate, Stephen J. Ryan

BY LINDA ROACH, CONTRIBUTING WRITER

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 tephen J. Ryan, MD, has spent the
last four decades harnessing the
power of institutions for the good of
patients and practitioners.

**BUILDING AN INSTITUTION.** In 1974, Dr.
Ryan moved from Johns Hopkins to the
University of Southern California (USC)
to become the department chairman, as
well as the first full-time faculty member
in ophthalmology. In 1975, the Doheny
Eye Institute relocated to the university
and provided Dr. Ryan the opportunity
to recruit and build the institute’s depart-
ment from the ground up.

Thus began the transformation of the
institute into one of the top university-
based ophthalmic teaching, clinical, and
research centers. By wooing charitable
foundations and individuals—including
grateful patients—for capital donations,
and advocating to Congress to increase
funding for research grants, Dr. Ryan
built Doheny into a respected institution.

In 2011 alone, Doheny scientists received
$21.8 million in federal and state grants
and published more than 180 scientific
papers. Moreover, Doheny has seeded
clinics and hospitals around the world
with ophthalmic physicians and vision
scientists who have the medical, surgi-
cal, and intellectual tools required to
deliver excellent patient care and estab-
lish cutting-edge research in their own
institutions.

**MAKING A CLINICAL BREAKTHROUGH.** His
accomplishments at Doheny alone might
explain the Laureate Recognition Award
that Dr. Ryan is receiving during the
Opening Session. However, his impact on
ophthalmology extends well beyond the
role that the Doheny Institute has played
in training over three decades’ worth
of residents, fellows, and international
scholars. In addition, Dr. Ryan’s decades
of behind-the-scenes vision research
continue to provide substantial benefit
to patients today—every time an ophthal-
mologist injects an antiangiogenic drug
into a patient’s eye, every time a patient
with age-related macular degeneration
(AMD) hears the good news that the
neovascularization is regressing, or every
time that a patient thanks his lucky stars
for the drug that is saving his sight.

It was Dr. Ryan who, in the late 1970s
and early 1980s, designed and led the
basic science studies that would pro-
duce the first animal model of choroidal
neovascularization that could be used to
examine the pathogenesis and treatment
of neovascular diseases such as AMD.

This breakthrough set vision research-
cers on a road that eventually led to the
antiangiogenic drug therapies that are
helping patients today.

“This was not the type of work where
drug company X releases drug Y that
helps patients. This is the step prior to
that,” said Ronald E. Smith, MD, professor
and chairman of the Doheny Institute’s
department of ophthalmology. He
and Dr. Ryan have been friends since both
were at Johns Hopkins. “Somebody has
to create the model to study a disease before
effective drugs and other treatments can
be developed and tested.”

But with a busy retina practice to
attend to and his many administrative
duties at USC in building a department,
why did Dr. Ryan not leave the research
to someone else?

“I’m a clinician interested in retinal
diseases, which affect my patients,” Dr.
Ryan said. “As a clinician-scientist, I

A LIFETIME LAYING THE FOUNDATIONS FOR TOMORROW’S DISCOVERIES

**Academy News Interviews Ruth D. Williams, MD, About Her Presidential Award Selections**

As the 2012 Academy president, Ruth D. Williams, MD, has the privilege of in-
viting three individuals to be her Guests of Honor at the Joint Meeting and of
deselecting the recipient of the Academy’s Distinguished Service Award. All of Dr.
Williams’ honorees have influenced her both personally and professionally. Below, Dr.
Williams shares with readers of Academy News her reasons for acknowledging these
influential individuals and the selected organization. Today, Sunday, Dr. Williams recog-
nizes each Guest of Honor and the Distinguished Service Award recipient at the Open-
ning Session, which takes place from 8:30 to 10 a.m. in North Hall B.

**GUIDING GUESTS OF HONOR**

Emily Chew, MD, PhD

Emily Chew is a distinc-
tuished scientist at the National Eye
Institute. She is articulate and deeply
respected by her peers. As deputy direc-
tor of the Division of Epidemiology and
Clinical Applications at the National Eye
Institute, she has amassed extensive ex-
erience in designing and implementing
NIH clinical trials. She has had leader-
sip and data analysis roles in important
studies including ETDRS, AREDS, and
AREDS 2. In addition, she is currently
president of the Macula Society. Of great
importance to me, Emily developed this
impressive career at a time when few role
models existed for women. Along with
her husband, ophthalmologist Robert
Murphy, she has three daughters, now
accomplished young women. Because of
Emily Chew, I knew that I could achieve
excellence in my career as I raised my
own family.

H. Dunbar Hoskins Jr., MD

Dunbar Hoskins has
shaped the profession of
ophthalmology. He
has also shaped me. More than 20 years
ago, I was a Shaftor Fellow in glaucoma,
and Dunbar was my teacher. Later, he
provided the opportunity to begin my ca-
reer in organized medicine as the Acad-
emy’s delegate to the American Medical
Association.

Dunbar’s love of ophthalmology in-
spired me, and he modeled how ex-
traordinary this life could be. A man of integ-
ity and principles, Dunbar was fearless
in speaking truth and in challenging me
to think differently, but always with his
winsome manner. Often dropping nuggets
of terrific advice, including one quote
I remember especially well, he said:
“People may not remember what you say,
but they will always remember how you
say it.” Because Dunbar believed in me, I
believed in myself.

Stephen C. Gieser, MD

The first spouse ever
to be recognized as a Guest of Honor,
Stephen Gieser—my husband—is a
fourth-generation physician and a third-
generation ophthalmologist. Steve is a
glaucoma consultant at the Wheaton Eye
Clinic, in Illinois.

A characteristic of our life together—
one fueled by his insatiable curiosity—is
continuous learning. Steve turns every
vacation, every activity, and, indeed, ev-
ey day, into a classroom of discovery. He
is a naturalist, a beekeeper, an amateur
geologist, a classical music expert, a gar-
dener extraordinaire; and he raises chick-
ens. I thank him for tolerating conference
calls, for managing children on the week-
ends when I am traveling, for cheerfully
attending Academy spouse events, and
for pushing me to be my best. Steve
provides the support and teamwork that
makes my career possible.

**Distinguished Service Award**

National Alliance for Eye and Vision
Research (NAEVR)

Led by Board Presi-
dent Stephen J. Ryan, MD, and Execu-
tive Director James Jorkasky, NAEVR
advocates for eye and vision research
sponsored by the National Institutes of
Health and the National Eye Institute.
One of NAEVR’s most effective strategies
is gathering personal stories from eye
patients: Real-life testimony about how
vision research or ophthalmic innovation
has affected a person’s quality of life
presents a powerful message to lawmak-
ers. Steve Ryan has testified before Con-
gress many times over the last 25 years
to advocate for NIH/NEI ophthalmology
funding. Jim Jorkasky dedicates his ca-
reer to promoting vision research and
patient education. NAEVR is an orga-
nization with a well-defined purpose that
affects the careers of ophthalmologists
and researchers; more importantly, it
provides hope for those with ophthalmic
disease.
wanting very much to understand the basic mechanisms and pathogenesis of these blinding disorders and, thereby, learn how best to develop logical therapeutic strategies to treat them.

DEVELOPING MODELS FOR HUMAN APPLICATION. As a researcher, Dr. Ryan had one overarching goal earlier in his career: to advance animal models that could be used to study vitreoretinal disorders such as subretinal neovascularization. Beginning in the late 1970s, Dr. Ryan began publishing papers detailing his lab’s attempts to trigger choroidal neovascularization in these monkeys. It took years for his team to succeed, however. “I was fortunate as a medical student at Johns Hopkins and as a resident at the Wilmer Eye Institute to learn the lesson that you can put in a tremendous amount of effort and not come up with an expected outcome of research,” said Dr. Ryan.

“We tried all sorts of approaches in our neovascularization studies that did not work or were not reproducible,” he added. “I was injecting blood beneath the retina. We were injecting eyes with different lytic enzymes that we thought might result in breaks in Bruch’s membrane. We did a lot of excitement. “ Dr. Ryan and his colleagues then used further experiments to refine the model and to study different therapeutic interventions.

CONNECTING TRAUMA WITH RETINAL DETACHMENT. Dr. Ryan’s lab also produced other animal models useful for studying ocular trauma and its vitreoretinal complications, including retinal detachment and the role of tractional forces on the retina. This effort resulted in his second major contribution to better patient care.

“His model of ocular trauma of the posterior segment of the eye led to our understanding of how retinal detachments occur following trauma,” Dr. Smith said. “Prior to his animal work, many considered a rhegmatogenous mechanism. Dr. Ryan and his colleagues showed that it was not primarily rhegmatogenous, but rather the wound-healing response that led to a tractional retinal detachment.”

Dr. Smith added, “There was a big argument many years ago about removing the blood after a vitreous hemorrhage. The animal model clarified when to remove the blood via vitrectomy. That was another very important outgrowth of his research in animals that was directly translated into human care in patients undergoing vitrectomy after penetrating ocular injuries.”

When Dr. Ryan was invited to deliver the Edward Jackson Memorial Lecture at the Academy’s Annual Meeting in 1992, he chose to present his work on the mechanisms of wound healing and resultant tractional retinal detachment as a big-picture discussion, covering traction and the existing ocular injuries and proliferative diabetic retinopathy, as well as vitreoretinopathy after rhegmatogenous retinal detachments.

“When I was a resident, the prevalent view was that a rhegmatogenous component was the main mechanism of retinal detachment after penetrating injuries to the posterior segment,” Dr. Ryan said. “We were able to demonstrate that tractional—not rhegmatogenous—detachment was the key mechanism. That’s a fundamentally important distinction, because that means that it’s the wound-healing process that leads to the detachment.”

Dr. Ryan added, “When the myofibroblasts proliferate, they contract and pull on the vitreous collagen or on the retina itself, and via that mechanism, their force is exerted and the retina detaches. We were able to sort out that pathogenesis and show that by interrupting the process—by removing the stimulus, i.e., the blood from the injury—we had removed the trigger for the wound-healing response and resultant retinal detachment.”

LEADERSHIP ON MANY FRONTS: EDUCATION, RESEARCH, AND PUBLISHING. Dr. Ryan now holds the Grace and Emery Beardley Chair of Ophthalmology at USC’s Keck School of Medicine. He is also well known for editing Retina, an authoritative three-volume reference work with more than 3,000 pages and hundreds of contributors, soon to appear in its fifth edition in 2012.

“I am a proud believer that Retina is the standard in the field,” Dr. Ryan said. “Since our field of retina is so dynamic, my fellow authors and editors have done a great job [for the book] to still be at the top of the field 20 years later.”

And most of his research has taken place while he juggled major administrative roles at USC and elsewhere. In addition to leading Doheny since 1975, Dr. Ryan chaired USC’s department of ophthalmology from 1974 to 1995 and he was dean of the medical school, and senior vice president of the university from 1991 to 2004. His efforts on behalf of ophthalmology also include founding the National Alliance for Eye and Vision Research to advocate for research funding.

He currently serves as president of both Doheny and the National Alliance for Eye and Vision Research; chairman of the board of the Arnold and Mabel Beckman Foundation; and as a board member of Allergan, Johns Hopkins Medicine, Johns Hopkins International, and the W. M. Keck Foundation. Dr. Ryan is also home secretary of the prestigious Institute of Medicine (IOM) of the National Academy of Sciences; former chairman of the IOM Membership Committee; and a board member of the International Council of Ophthalmology.

TRACING HIS ROOTS. Dr. Ryan credits his interest in research, education, and international ophthalmology to a giant of academic and clinical ophthalmology: A. Edward Maumenee, MD, director of the Wilmer Eye Institute at Johns Hopkins from 1955 to 1978. “Everything for me started when I was a medical student at Johns Hopkins in the 1960s. I was very fortunate to be under the influence of Ed Maumenee,” Dr. Ryan said.

In his introduction to an oral history of Dr. Maumenee’s professional recollections, Dr. Ryan credited “The Prof” with influencing his medical career from the very beginning:

“As a first-year Hopkins medical student, I entertained thoughts of being a cardiac or neurosurgeon. However, once The Prof made a summer research job available to me at Wilmer, my future course in following my ultimate role model and mentor, Ed Maumenee, had begun. On a very personal basis, he is the reason I look forward to going to work every day in academic ophthalmology.”

Today, Dr. Ryan continues to steer the Doheny Eye Institute as its president, and in the lab, he is trying to make yet another big contribution to clinicians. The target this time is intraocular cellular proliferation.