

From Lepidoptera to uveal melanoma: Finding my career in ocular oncology

Prior to the 1970s, there were no medical specialists in the world who dealt exclusively with the diagnosis and management of ocular tumors such as uveal melanoma, retinoblastoma, and other tumors of the eyelid, conjunctiva, and orbit. These conditions were seen by general ophthalmologists, none of whom had formal training in ocular oncology. Moreover, there were no established guidelines or protocols for the treatment of ocular tumors. Hence, the development of an ocular oncology practice in Philadelphia would have seemed impossible. My role in the development of ocular oncology was totally unexpected. Herein, I describe how the impossible became possible.

Early Days

My background and life course were different from most physicians. I was born in 1937 in Pride Station, Kentucky, and was the youngest of 8 children. My parents were poor and worked as farm-help, when work was available. None of my 7 older siblings finished high school, as at that time it was more important for them to work to help support the family. Similarly, my parents did not attend high school and were married as teenagers. In my early days, they navigated over the countryside by foot or with horse and buggy.

Life was rough in my home state of Kentucky. Work was scarce, money was scant, and my parents searched for employment. They soon migrated to Detroit by greyhound bus to find work in the automobile factories. Life slowly turned around, modest income was generating, and a year or two later, my parents brought home an old used Chevrolet that was purchased for a cheap price. We finally had a family car.

Lepidoptera

While in grade school, I contributed to the family workforce by shining shoes and delivering newspapers on weekends. In the 4th grade, I developed a strong interest in Lepidoptera (butterflies and moths). While this may seem irrelevant, it actually became the key to my future career. My interest in Lepidoptera came about during a chat with a fellow schoolmate. He noted a beautiful butterfly in the nearby field and immediately identified it as a *Red Admiral*, a relatively unusual species. He took me to his home to see his father's butterfly collection. I was immediately enamored by this hobby and started my own collection, labelling each specimen with genus and species, according to the tattered textbook I had found on this topic. I honestly believe that this preoccupation with butterflies in my youth later led me into ocular oncology and the challenge and opportunity to label and classify rare ocular tumors.

Living in Kentucky during high school, I spent every spare moment focused on that butterfly collection. I traveled the countryside on a used red motor scooter, swinging my butterfly net with Darwinian enthusiasm and capturing the colorful, spotted specimens. Later, I would accumulate

over 100 species of butterflies and moths. The other high school boys were working on the farms and in the coal mines. I was a bit of an oddity. Later, I would be more involved in sports like football and basketball with my peers.

College and Medical School

My high school teachers encouraged me to apply to college, so I attended a small college in Kentucky called Murray State University. Knowing that college would be expensive, and my family had no money, I worked several jobs, bussing tables and serving food in the cafeteria and typing.

Biology was my chosen major due to my long interest in nature. Soon, I entered the University of Michigan Medical School with an interest in general medicine. Again, I had little money and I struggled to make ends meet by working in the university blood bank doing typing and crossmatching, providing physical examination for late admissions, and taking histories for the psychiatry ward. My fellow students found it hard to believe that I was working so many part time jobs while attending medical school.

Vietnam War

Initially, I applied for psychiatry residency but later signed for internal medicine residency. Then life changed in a big way. In the mail, I received my draft notice for entry into the United States Navy during the Vietnam War. Boy, was I in for a surprise! Many Navy doctors were assigned to the Marine Corps, and so it was. I was then sent to Vietnam as a battalion surgeon with the 3rd Marine division, caring for gunshot and blast wounds, incredible trauma, amputations, and tropical diseases. Many nights were sleepless as I kept guard in my foxhole.

Residency in Ophthalmology

One night in Vietnam, while in the bunker, I turned to the chaplain and told him that I wanted to specialize in a field that was challenging and interesting and where life was reasonable, without these endless nighttime hours. I applied to ophthalmology, and later visited Wills Eye Hospital in Philadelphia, PA, my soon-to-be home for life. I trained at Wills Eye Hospital and have remained there on staff for 51 years.

Development of Ocular Oncology

While at Wills Eye Hospital, a few lucky events guided my course. I was headed to a general ophthalmology practice but Dr Richard Green, a well-known pathologist, stimulated my interest in pathology and ocular oncology. Later, a one-year pathology fellowship at the Armed Forces Institute of Pathology in Washington DC with Dr. Lorenz Zimmerman confirmed my choice. Dr P. Robb McDonald, Director of the Retina Service, offered me a retina fellowship, and, later, Dr. William Annesley, suggested that my training was ideal for development of an Eye Tumor Service. I began my practice in a single back room of the Retina Service with my charts neatly filed in an orange crate and only one furnished examination room. Diagnostic testing such as ultrasonography, fluorescein angiography, and radioactive phosphorus uptake (P-32) were popular in the assessment of intraocular tumors.

In the early part of our Oncology Service, we were referred approximately 5 patients per year with uveal melanoma and 2 with retinoblastoma. Following years and years of dedicated work, research, chapter, and book writing, and the addition of talented contributing partners, including Carol L. Shields, M.D., our service grew slowly into a tremendous center of excellence, treating annually approximately 500 patients with uveal melanoma and 150 with retinoblastoma. We have since trained hundreds of residents for Ophthalmology and over 200 fellows for Ocular Oncology.

Family

And the best of it all is that we have delivered and raised 7 wonderful children, each at the point in their lives that they are starting their own careers in law as juris doctor and as medical/surgical physicians in psychiatry, orthopedic surgery, radiology, and hopefully ophthalmology.

My life story parallels, to some degree, that of J. D. Vance, famous author, who chronicled his life story in *Hillbilly Elegy: A Memoir of a Family and Culture in Crisis*, released in 2016. This book surprisingly reached the top 10 bestsellers on the New York Times and Amazon.com list. Born and raised in the Appalachian Kentucky to a poor, struggling family, Vance managed to survive, enter the US Armed Services, and later attend Yale Law School for a successful career as an attorney. We both made the impossible possible. And for me,

Lepidoptera was crucial to my fascination with scientific detail and my ultimate 51-year career in Ocular Oncology.

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About the author



Jerry A. Shields, M.D.

Jerry A. Shields entered the doors at Wills Eye Hospital over 50 years ago and he has never stopped working. He began his residency at Wills Eye Hospital in 1967 in the study of ophthalmology, ophthalmic pathology, and ocular oncology. Following ophthalmology residency he studied vitreoretinal surgery and ophthalmic pathology to further refine his interests in ocular oncology. At that time, there were less than 10 physicians worldwide with interest in ocular tumors. Moreover, at that time, Wills Eye Hospital evaluated only 5 patients a year with ocular melanoma and fewer with retinoblastoma.

Here is a short list of Jerry A. Shields accomplishments over the past 50 years.

- He built a strong Ocular Oncology Service at Wills Eye Hospital for patient care and academic endeavors.
- He and his team have published over 1800 scientific reports in peer-reviewed journals.
- He has authored or coauthored 13 major textbooks on ocular tumors. Two of these textbooks have become a standard resource for ophthalmologists
 - Shields JA, Shields CL. *Intraocular Tumors. An Atlas and Textbook*. 3rd edition. Philadelphia, Lippincott Wolters Kluwers, 2016.
 - Shields JA, Shields CL. *Eyelid, Conjunctival, and Orbital Tumors. An Atlas and Textbook*. 3rd edition. Philadelphia, Lippincott Wolters Kluwers, 2016.
- Wills Eye Hospital Ocular Oncology Service has become the leading center of excellence for patients with eye tumors. This team of 4 full-time ocular oncologists provide care for approximately 150 new cases of retinoblastoma each year and 500 new cases of uveal melanoma each year. In addition, they provide service for numerous other tumors of the eyelid, conjunctiva, orbit, and intraocular structures including lymphoma, metastases, hemangioma, and many more.
- He has shared his knowledge worldwide and has fellowship trained nearly 200 fellows, most of whom have risen to leadership positions in Europe, Asia, South America, North America, Africa, and Australia.
- His peers nominated him to be the first President of the International Society of Ocular Oncology.

Only rarely does a person carry such a profound impact on a subspecialty. Jerry A. Shields has been and continues to be a major contributor to the field of ocular oncology.