

**Story
Summary**

Fibrotic diseases can affect virtually **every organ in the body** and account for 45 percent of deaths in the United States.

The Joan & Joel Rosenbloom Research Center for Fibrotic Diseases, founded in 2013, serves as a hub for more than a dozen Jefferson clinicians and scientists seeking to prevent suffering and premature death due to fibrotic disease.

Forward Momentum in Decades-Long Quest to Detect & Disrupt Progression of Fibrotic Disease

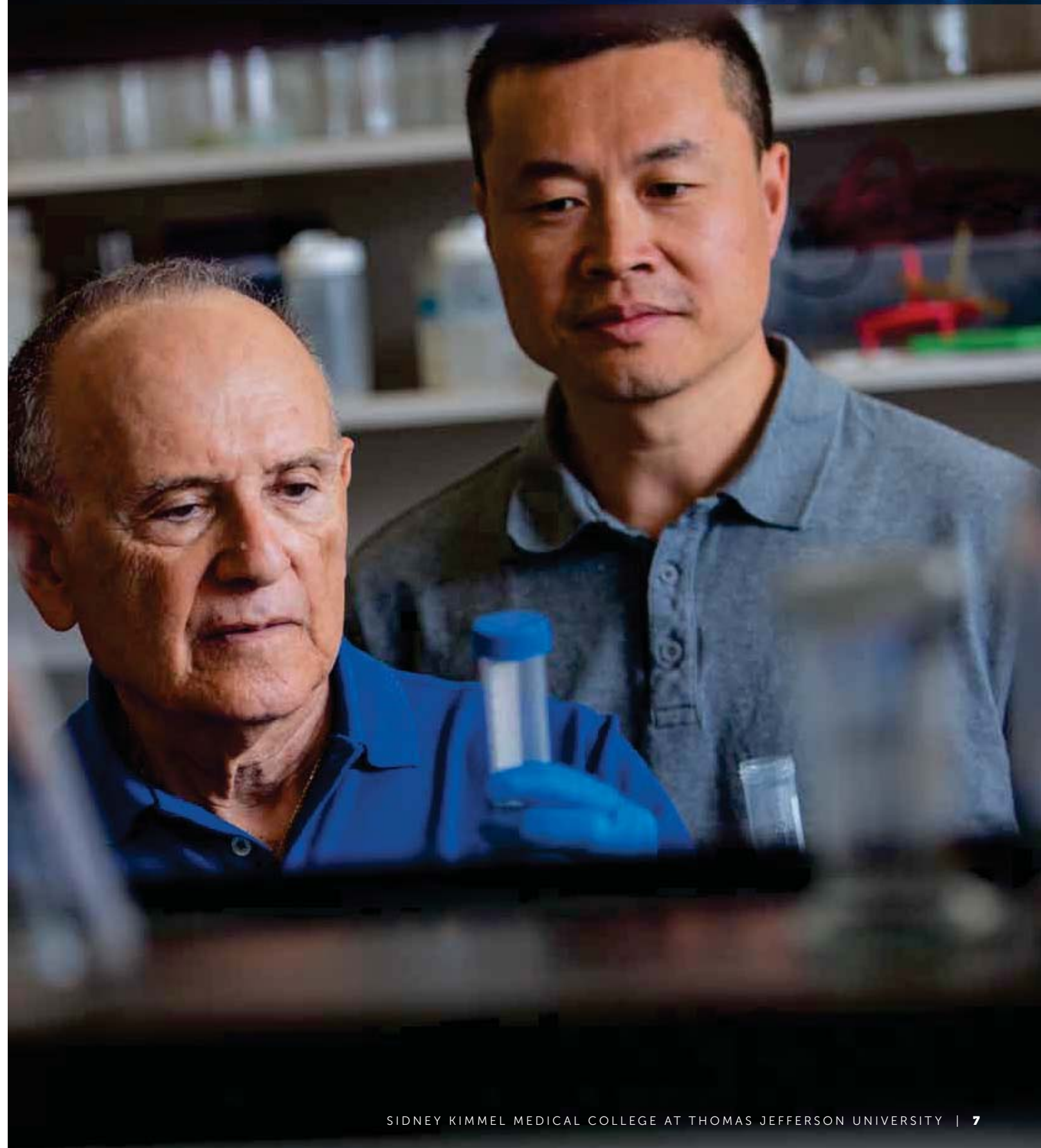
BY JESSICA STEIN DIAMOND

Joel Rosenbloom's life at age 80 encompasses work, love, autonomy and pursuit of his ongoing quest to prevent suffering and premature death due to fibrotic disease.

He exercises for an hour early most weekdays while scanning a favorite TV show, Squawk Box, for stock tips. Five days a week, Rosenbloom, MD, PhD, drives to work. As director of the eponymous Joan & Joel Rosenbloom Research Center for Fibrotic Diseases at Jefferson, Rosenbloom leads a highly productive hub for collaborative research, papers and grants aimed at reducing suffering and premature death due to fibrotic disease.

The Center is a productive fount of research, publications and grants aimed at **defining the precise pathomechanisms of fibrotic disease**—dysregulated tissue growth and scarring that disrupt function in organs such as the heart, lung, kidney, liver and skin. Long-term goals include developing early diagnostic tools and better ways to measure and halt fibrotic disease progression.

Faculty members across many departments at Jefferson are collaborating to accelerate research involving fibrosis in different organ systems.



FROM LEFT: UITTO, ROSENBLOOM AND JIMENEZ HAVE BEEN FRIENDS AND PEERS FOR MORE THAN FOUR DECADES.

Rosenbloom regularly confers with colleagues Jouni Uitto, MD, and Sergio Jimenez, MD, whom he first met in the early 1970s as fellow postdoctoral students. Today, as chair of dermatology and associate director of the Jefferson Institute of Molecular Medicine, respectively, they're among a diverse group of more than a dozen preeminent clinicians and scientists on campus who are active in fibrotic disease research. Together, they strive to understand and unlock the deadly mechanisms of fibrotic disease; to find early diagnostic tools and ways to measure its progression; and to identify existing approved drugs that might halt, slow and (in a more perfect world) reverse its ravages.

"A lot of people ask me, 'What are you doing? Why aren't you retired?'" Rosenbloom says. "I think of (my late wife) Joan and what she would want me to do. I'm doing work that I think she would be really pleased about. This is a group of diseases for which there is no specific or effective treatment. These affect a sizeable number of people and are collectively a source of major healthcare costs with significant morbidity and mortality."

Forty-five percent of U.S. deaths can be attributed to forms of fibroproliferative disease that occur when dysregulated tissue growth and scarring destroy healthy tissue. Deadly mechanisms of fibrotic disease



disrupt function in virtually every organ in the body, including the heart, lungs, kidney, liver and skin. “These are cruel, terrible diseases,” says Rosenbloom. “For instance, with idiopathic pulmonary fibrosis, people’s lungs fill with collagen and then they die; by the time slowly developing symptoms are noticeable enough to visit a doctor, the time-line to death is three to five years. Nobody knows what to do for these patients because nobody understands the etiology and precise pathomechanisms. Defining cause is part of the spectrum of discovery we’re leading as we search for common pathways that would allow us to treat fibrotic disease.”

Rosenbloom founded the Center in 2013 with \$500,000 that he and Joan pledged soon after she was diagnosed with inoperable lung cancer in 2012. He credits several of his research breakthroughs to Joan, who worked as his lab manager—a long-deferred career change decades after her 1961 acceptance to a physics PhD program at Penn was derailed by parenthood. Quite possibly the world’s only research entity dedicated to the group of fibrotic diseases that affect organs throughout the human body, the Rosenbloom Center also received start-up funds from Jefferson; future funding will come from grants and philanthropy.

“Joel is clearly a guy who loves research, who enjoys his role as a teacher and the satisfaction of passing knowledge on to the next generation of scientists. He gives sage advice at our weekly joint laboratory meetings,” says Uitto, chair of the Department of Dermatology and Cutaneous Biology and a connective tissue molecular biologist who

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has more than 800 publications, recently had his longest-running NIH grant renewed for years 33 through 38 and has trained 16 departmental chairs.

Creating a short list of the Rosenbloom Center’s many research collaborations is challenging because fibrosis—when tissues lose elasticity and become so stiff and overgrown as to stifle organ function—occurs in nearly every tissue and organ in the body. A few productivity metrics: In August 2015, the Rosenbloom Center had numerous papers in the pipeline for publication, was on track for submitting several interdepartmental grants by the close of 2015 and had contributed findings to close to a dozen papers published in the Center’s first two years.

Post-surgical adhesions are a huge, understudied problem and a key focus for collaborative work with Jefferson’s Department of Surgery. “Billions of dollars of healthcare costs go to fix the consequences of those adhesions,” says Uitto. His lab focuses primarily on fibrotic skin diseases, such as keloids, and wound healing with a focus on fibrosis and heterotopic ossification in severe burns. Uitto has identified promising leads for a new treatment for severe burn patients and anticipates clinical trials within a few years for specialized diets with potential to reduce ectopic mineralization. Developed via collaborations on and off campus, the

treatment builds on Uitto’s efforts to help patients who suffer from ectopic mineralization disorders, a group of genetic conditions that tragically lead to calcifications of arterial blood vessels that prove fatal as early as six months after birth.

Jimenez’s laboratory is working to define and disrupt the role of fibrosis in scleroderma, a disease in which close to 50 percent of patients die within five years from the time of diagnosis due to excessive amounts of connective tissue and scarring. Related work on campus includes research with Jefferson cardiologists on cardiac fibrosis and myocardial infarction, with pulmonologists on pulmonary fibrosis and with nephrologists on mechanisms through which diabetes triggers kidney fibrosis and chronic renal disease.

Grappling with mortality and reinvention of the self are enduring themes in Rosenbloom’s life. His parents ran a pawn shop near a military base in Washington, D.C., during World War II; their customers’ injuries and ailments inspired Rosenbloom to become a doctor. He also recalls, as “a singularity,” a particular day in 1947 when he was 12: Rosenbloom grew up with Yiddish as a second language (“mostly to argue with my grandmother”) and spent a day showing a Yiddish-speaking relative around Washington. A recently arrived Holocaust survivor, the man had lost his wife and children to Nazi genocide. Reflecting on that day and a childhood in wartime, he says, “This may sound

ROSENBLUM IN HIS LAB WITH RESEARCHERS SHUMEI REN, MD, PHD, AND DEEPIKA KOGANTI, MD.

corny—but I believe you have an obligation to do your best when so many people died so that you can live.”

Fast-forward through undergraduate years at Harvard and an MD-PhD from the University of Pennsylvania, where Rosenbloom taught for 40 years and most recently directed the Center for Oral Health Research. He recalls his first attempt at retirement in the 1990s with wry wit: “That was a fairly evil experience that drove my wife crazy and me, too, so I decided to come here to Jefferson as a professor of unwanted advice.”

In 2004 his life became a scientific version of a buddy movie: Rosenbloom jumped at Uitto’s invitation to run a lab within the dermatology department and to work closely with Uitto and Jimenez on fibrotic disease topics each has grappled with scientifically ever since the early 1970s when they met as postdoctoral students.

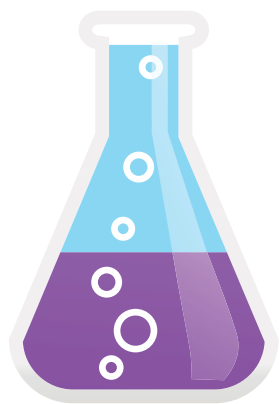
Rosenbloom worked at Jefferson gratis for nine years—simply for the joy of meaningful work and the chance to add to his 350-plus peer-reviewed scientific publications. Then, when he established the Rosenbloom Center, he was required to begrudgingly accept Jefferson’s minimum salary so the Center would qualify for grant support.

Powered by abundant curiosity, intelligence, energy and collaboration-inspiring charisma, the Rosenbloom Center today is a font of publications and grant submissions to obtain funding required to identify and target the biochemical pathways common to



Hurdles to Overcome:

- Complexity of the disease's molecular events
- More than one drug required for treatment
- Slow progression makes detection difficult
- Clinical trials' financial and logistical snags



all forms of fibrotic disease. These efforts focus on overcoming hurdles that include the complexity and closely intertwined nature of molecular events that drive fibrotic disease; how that complexity makes it likely that more than one drug will be needed at a time for its successful treatment; the slow and subtle progression of fibrotic disease, which makes it difficult to detect symptoms of onset, disease progression and treatment efficacy; and the considerable financial and logistical hurdles associated with getting prospective new fibrotic disease treatments into the clinical trials pipeline.

“This is a badly underfunded area,” says Rosenbloom, estimating that fibrotic diseases in aggregate account for twice as many deaths per year as all forms of cancer combined, yet receive significantly less research funding. “Greater investment in fibrotic disease research would have a very high impact not just on the health of individuals but on the cost of healthcare in the U.S. These chronic diseases are a serious economic burden to society and a terrible

fate for the individuals affected. Once a person gets them, they cannot be cured because there is currently no effective treatment.”

As for the love in Rosenbloom's life, he has two adult children and five grandchildren plus the new light of his life: Sondra Johnson, who was likewise widowed after 50-plus years of marriage. A dear friend of his sister's, Sondra also happens to be the first girl he ever dated (he was 16 and she was 14 at the time).

Together, they enjoy dancing and travel, and occasionally visit Philadelphia's aptly named “Time” whiskey bar. She even joined him on a science-focused journey to China in October. There, Rosenbloom met with Chinese pulmonologists with whom he is working to identify better treatments for the estimated 10,000 to 20,000 Chinese coal miners diagnosed annually with pneumoconiosis (black lung disease)—a chronic, incurable disease that leads to devastating pulmonary fibrosis and respiratory failure. 🧑‍🔬

For more information about fibrotic diseases research at Jefferson or to support the Joan & Joel Rosenbloom Research Center, contact Jonathan Agree, Assistant Vice President for Clinical Programs, at 215-503-6058 or jonathan.agree@jefferson.edu.