


Music & Medicine



Dr. Ming Wang performed the world's first 3D high-definition image-guided LASIK

Dr. Ming Wang's Inventions & Patents



- 1. LASERACT: All-laser cataract surgery**
U.S. patent filed
- 2. Phacoplasty**
U.S. patent filed
- 3. Amniotic membrane contact lens for photoablated corneal tissue**
U.S. Patent Serial No.5,932,205
- 4. Amniotic membrane contact lens for injured corneal tissue**
U.S. Patent Serial No.6,143,315
- 5. Adaptive infrared retinoscopic device for detecting ocular aberrations**
U.S. Utility Patent Application Serial No. 11/642,226
- 6. Digital eye bank for virtual clinical trial**
U.S. Utility Patent Application Serial No. 11/585,522
- 7. Pulsed electromagnetic field therapy for non-healing corneal ulcer**
U.S. patent filed
- 8. A whole-genome method of assaying in vivo DNA-protein interaction and gene expression regulation**
U.S. patent filed

30 years later, Dr. Ming Wang once again picks up the Chinese violin (*er-hu*) and plays ... but this time, with an entirely different feeling.

It's almost impossible to believe that a young teenager from China, whose education was abruptly cut off after ninth grade and who faced the fate of deportation and a lifetime of hard labor, is now one of the world's foremost cataract and LASIK surgeons, as well as a laser physicist, researcher, inventor, entrepreneur, teacher, writer, champion ballroom dancer, accomplished musician, and a beloved philanthropist. Dr. Wang is the only surgeon in the state who performs 3D LASIK (ages 18+), 3D Forever Young Lens surgery (ages 45+) and 3D laser cataract surgery (ages 60+).

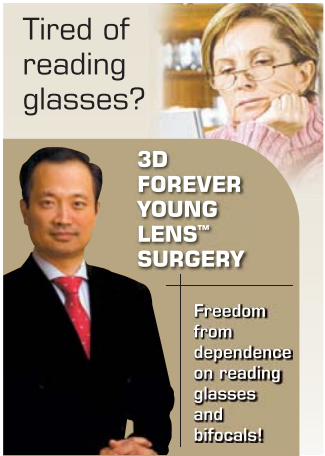
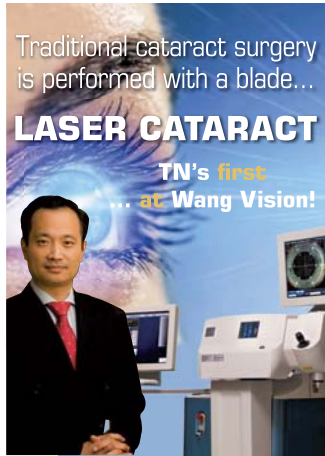
But it's true. And he lives right here in Nashville. Ming Wang grew up in China during the "Cultural Revolution" (1966-1976), when the dictator Chairman Mao Zedong shut down most of the colleges, ending the education of all Chinese youth after high school, and sentenced them for life to peasantry work in remote parts of China. Wang's parents were doctors and were terrified that if their son went to high school, he too would be deported after his graduation, so though they were distraught, but had no choice other than taking him out of school at the end of junior high. Therefore, at the age of 14, Wang's education ended hastily, which caused him to lose all hope of happiness and a good life.

Wang began to play the Chinese violin (called the "er-hu") – a two-stringed musical instrument with a soulful and gentle sound – in a desperate effort to escape deportation. The government of the day still had a need for musicians, since they used them in their song-and-dance troops for communist propaganda. In other words, if you could play a musical instrument, then you might have a chance to stay in the city and avoid being deported.

"So at age 14, I picked up the er-hu, not as a hobby but to survive," Wang says.

He practiced playing his er-hu 15 hours-a-day, as it was his only hope to avoid being sent away. There was no heater in his home, so during the winter, Wang played his er-hu in sub-zero temperatures, which caused him to suffer severe frostbite to all of his fingers.

The piece of music he played most frequently was "Two Springs Reflect the Moon," written by the famous blind Chinese composer, "Blind A-bin." It is one of the most beautiful pieces of music in the



Chinese repertoire, not only because it describes a serene scene at night with two springs merging and reflecting the image of the moon, but since the composer himself was blind, it is also a beautiful scene that he could only imagine. It is a hauntingly enchanting piece, with a touch of melancholy, a deep sense of longing, and unfulfilled desires and dreams.

So at an age when Wang should have been studying and looking forward to a future full of promise like every other young teen, he felt sad and hopeless due to being kept out of school and losing the chance to study. These emotions resonated with those of the elderly composer because, while the blind artist could not physically see, Wang could not mentally see, as far as any possible future for his life. The government then discovered that he and other teenagers were playing musical instruments in order to avoid deportation, so they purposely chose not to accept any musicians from the city where Wang lived, which put an end to his er-hu playing. Once again, Wang's parents were terrified their son would soon be sent away!

Smuggled into school

Not willing to give up and allow their son to face a life of destitution, Wang's parents came up with another plan – they would illegally smuggle him into the university where they were teaching (it was one of a small number of universities that were still open in China at that time), and he studied medicine, hoping to blend in with the other students so he would not be noticed by the government. But Wang's 15-year-old mind couldn't wrap itself around studying medicine, since he knew the government would never allow him to actually become a doctor. When Wang asked his father why he should be studying with no purpose, his father replied, "Knowledge is good, and knowledge will always be useful!" Wang complied, and he studied medicine illegally for about a year before he was once again discovered by the government and expelled from the university, stripping him of the chance of even "acquiring knowledge for the sake of knowledge."

Just as Wang and his family were finally about to give up the struggle, and reluctantly accept his inevitable fate of imminent deportation and a lifetime of hard labor, the dictator Mao Zedong died, and so did what Wang refers to as the "Cultural Holocaust."

It was 1976, the Cultural Revolution was over, and China realized what a tragic mistake it had made with the brutal 10-year deportation program, as it had destroyed the future for so many! The universities throughout China were opened for the first time in 10 years, and millions of youth competed fiercely to earn one of the precious few freshman class spots that would be available. To have

even a chance to get into college, Wang had to not only learn the entire high school curriculum that he had missed since his junior high graduation, but he also had to score among the top few percentile of the graduating high school seniors, and he had to accomplish all of this in just two months.

Realizing how seemingly impossible a feat this was, but also acknowledging that it might possibly be their son's only chance in his lifetime to attend college, since the communist government could very well shut them all down again, they called on a number of local high school teachers, offering free medical care to them and their family members if they would tutor Wang through all the necessary courses in such a short amount of time.

"I ended up being drilled 15-18 hours-a-day for two months, in order to get through the entire high school curriculum so I could take part in the college entrance exams," Wang remembers.

Fortunately, the intense studying paid off, as Wang did well on the exam and was admitted into the prestigious Chinese University of Science and Technology (the "MIT of China"). During his senior year there, he met a visiting American professor, Dr. James McNesby, who was impressed by the youngster's persistence and tenaciousness in asking him a question over and over, yet having no idea what the professor was saying to him in response (since Wang's knowledge of English was very limited). Wang knew that his only chance to be free and come to America was to impress the visiting American professor, and hopefully get him to help Wang get into an American college.

Wang's plan worked. McNesby arranged a teaching assistant position for Wang at the University of Maryland. So on Feb. 3, 1982, Wang arrived at the National Airport in Washington, DC, with \$50 and a Chinese-English dictionary in his pocket, knowing no one in this vast new country, but carrying a "big American dream" in his heart. He worked very hard, realizing how precious the opportunity to learn is in life, and how close he once was to giving up all hope for studying and for a better life. Five years later, Wang graduated with a doctorate degree in laser physics and completed a post-doctoral fellowship at the Massachusetts Institute of Technology (MIT).

Dr. Wang then went on to receive his second doctorate degree – this time in medicine – from Harvard Medical School and MIT, graduating with an MD (magna cum laude). His graduation thesis received the award as the best thesis of his graduating class from Harvard that year. He then received his training in ophthalmology at three of the nation's top four ophthalmic institutions – Harvard Medical School in Boston, Wills Eye Hospital in Philadelphia (ophthalmology residency), and Bascom Palmer Eye Institute in Miami (corneal fellowship).

Pioneer eye surgery

Dr. Wang is the only surgeon in the state who performs three state-of-the-art eye surgeries: 3D LASIK, 3D Forever Young Lens surgery, and 3D laser cataract surgery. Dr. Wang has performed well over 70,000 cataract and LASIK procedures, including on over 5,000 doctors, and is known as the "doctors' surgeon." He is also well-known in celebrity circles, having operated on stars such as Dolly Parton, Kenny Chesney, Charlie Daniels, Naomi Judd and Jo Dee Messina, to name just a few. He was chosen as a designated LASIK surgeon by ABC's national hit reality TV show "Extreme Makeover."

Dr. Wang is a researcher, pioneer and inventor. In all, he has



Charlie Daniels, who had 3D Forever Young Lens laser cataract surgery, with Dr. Ming Wang

performed more than 20 "first-of-its-kind" surgeries, including the world's first laser-assisted artificial cornea implantation, the world's first 3D image-guided high-definition LASIK, the state's first 3D premium Forever Young Lens™ surgery and the state's first 3D laser cataract surgery. He has restored sight to numerous blind patients, many who came to him after being told for years – or even decades – that they would never be able to see again.

Dr. Wang was the principle investigator, supported by an NIH grant, in the development of the world's first amniotic membrane contact lens. He has published seven major textbooks – Corneal Topography in the Wavefront Era, Irregular Astigmatism, Keratoconus and Keratoectasia, Corneal Dystrophies and Degenerations, Corneal Topography (2nd edition), Atlas and Clinical Reference Guide for Corneal Topography, and LASIK Vision Correction – and holds or co-holds several U.S. patents, including the amniotic membrane contact lens for injured and photoablated corneas, the phacoplasty technique for cataract surgery, phaco-free all-laser cataract surgery, an adaptive infrared retinoscopy device for detecting ocular aberrations, and an ocular digital data bank system for virtual clinical trials. He is one of the few doctors in the U.S. who participated in an FDA clinical trial research study for a procedure to treat age-related loss of near vision.

Dr. Wang's other surgical and research interests include treatments for keratoconus—including Intacs and cross-linking--and artificial cornea implantation. He performed the first new Intacs procedure in the United States to treat advanced keratoconus.

Dr. Wang is a clinical associate professor of ophthalmology for the University of Tennessee and director of Wang Vision 3D Cataract & LASIK Center. He has published more than 100 peer-reviewed scientific papers and book chapters, including a major paper in the world renowned journal "Nature," which describes the development of a new molecular biological technique of studying in vivo



Dolly Parton had bladeless all-laser LASIK, with Dr. Ming Wang

DNA-protein interaction and gene expression regulation. He also lectures frequently at major international conferences.

God has created this world

Among the issues that vexed Dr. Wang in his research to reduce corneal scarring after trauma and restore sight in adults was "how can one study the scarless fetal wound-healing process to benefit an adult's injured eye without harming the fetus?" Dr. Wang saw this conflict as a reflection of a larger issue, i.e., research and faith sometimes appear to clash in an apparently contradictory world. Dr. Wang is a Christian who believes that God has created this world, and that He would never create it with such opposition. "The world may appear to be contradictory to us because we do not know better," Dr. Wang said. "So I think we must persist, try even harder, and we should truly have faith and trust in Him, and believe that He will show us a way."

The world's first amniotic membrane contact lens

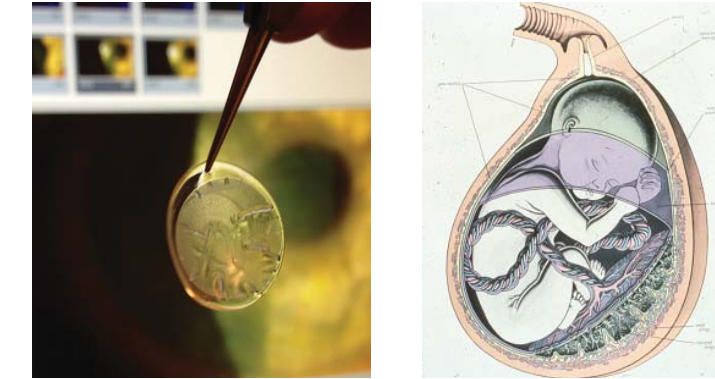
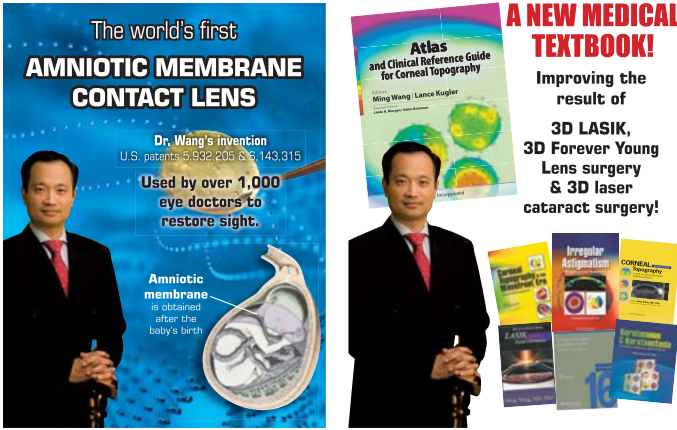


Diagram showing an amniotic sac surrounding a fetus. Dr. Wang's research uses the amniotic membrane (obtained after a child is born) and bioengineers it into an amniotic membrane contact lens, to recreate fetus-like environment on an adult injured eye in order to help it heal, and to restore sight.

Hungry to understand the secret of the scarless fetal wound-healing process, Dr. Wang began a series of pioneering experiments with Professor Scheffer Tseng to transplant an amniotic membrane onto an adult-injured cornea, recreating a fetal-like healing environment on an adult eye. Their work was successful, and they published the first paper in scientific literature that demonstrates laboratory success in reducing corneal scarring with an amniotic membrane graft. Publishing the paper and obtaining a U.S. patent for the world's first amniotic membrane contact lens was exciting enough, but for Dr. Wang personally, even more fulfilling and meaningful was the validation of his belief that the world created by God is indeed perfect and without contradictions.

Dr. Wang believes that God does want us to pursue scientific research to improve our lives, but He wants us to do it in the right way. In the case of the study of fetal wound healing, God does not want us to touch any part of the fetus, but rather use the amniotic membrane (which surrounds a fetus before birth, and has similar properties as fetal tissue, but is not part of the baby and is discarded after a child is born) to understand the fetal scarless wound-healing process in order to restore sight in adult eyes without injuring any part of a baby.

"The amniotic membrane is a great example that God has given to show us how to conduct scientific research while still maintaining



our conscience, faith and moral principles,” Dr. Wang said. Dr. Wang’s Christian faith is shown not only in his scientific work, but also in his efforts to bring God’s Word to the people of his native country China. He established a 501c(6) non-profit organization, the Wang Foundation for Christian Outreach to China, with a mission to bring a newly translated Bible to China. Dr. Wang said: “This is such an incredible, once-in-a-lifetime opportunity to help recruit a quarter of the human race for God’s kingdom!”

Helping hand

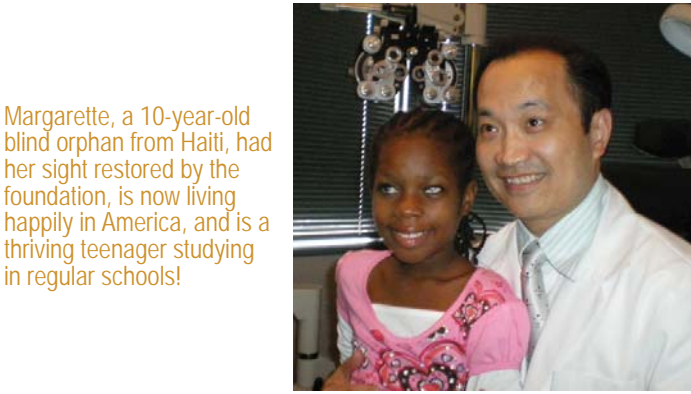
Dr. Wang is passionate about helping others, particularly those who do not have sufficient financial means to afford their medical treatments. He shares, “As an immigrant in this country, I am grateful for the opportunity that America has given me to study and learn, so I feel it is my obligation to do what I can to give back to America, particularly to help those who are in need.”



Maria, a 15-year-old blind orphan from Moldova, had her sight restored by the foundation, she went from darkness to light, and was able to see herself in the mirror for the very first time!

Wang observed, “In every field of medicine today, there is always a huge gap between the high cost of the latest and most complex medical treatments and the lack of affordability by the sickest patients, for whom these most advanced treatments are precisely intended. There is no easy solution to this problem, of course, but I feel that if we all do what we can to help, through a collective grass-roots effort, together we will indeed make a difference.”

For his part, in 2003 Dr. Wang started the Wang Foundation for Sight Restoration, a 501c(3) non-profit charity which provides financial support to patients for whom all conventional surgeries have failed, and who may benefit from new eye reconstructive surgeries but cannot afford them. The foundation consists of a board of directors who are among the leaders in philanthropy in the United States, and also a medical council that includes over 30 leading eye doctors. To date, the foundation doctors have helped patients from over 40 states and 55 countries worldwide, with all sight restoration surgeries performed free-of-charge.



Several times a year, Wang travels back to the country of his birth to help improve eye care for Chinese citizens. He is a co-owner of the Aier Eye Hospital Group, China’s largest private hospital group, which holds 10 percent of the country’s entire eye care market, and he is also the international president of Shanghai Aier Eye Hospital, here he performed the first bladeless all-laser LASIK in a population of 1.4 billion people. It was on one of these trips to Shanghai that he met his wife, JJ, an artist and businesswoman, with whom he shares his passion for classical ballroom dance.

The Dancing Doctor

While he was studying at Harvard, Dr. Wang and few of his fellow students decided they wanted to get rid of the “bookworm” reputation that Harvard students had, so they got together and started the Harvard Ballroom Dance Club. Along the way he learned to dance, and the Dance Club ended up winning the U.S. national collegiate championships. Ballroom dance became a lifelong passion for Dr. Wang, and he is now an accomplished, award-winning ballroom dancer.

Incorporating his love of ballroom dancing into his philanthropic endeavors, Dr. Wang created a unique medical charity gala – the “EyeBall” – a black-tie event held each October in Nashville, with all proceeds supporting foundation patients. He came up with the idea for the ball while trying to bring his sight restoration efforts out of the four walls of his medical clinic, and into the forefront of society’s awareness.

“The EyeBall is a unique event, merging music and medicine. The breathtaking beauty of classical ballroom dancing reminds us how precious our God-given gift of sight is, and how much we need to help those who have lost that gift.” he says.

Dr. Wang himself is a vision to behold at these EyeBall events, usually appearing in a white tie and black tails, dancing and entertaining the guests.

Dr. Wang said that being involved in ballroom dancing also helps him become a better doctor. Through learning ballroom dancing –



Kajal (a 5-year-old Indian child) and Dr. Wang dancing at the EyeBall. Kajal was intentionally blinded by her own stepmother, who poured acid into Kajal’s eyes when she was sleeping. The foundation helped Kajal and brought her to America.

which requires connection and communication between two human beings, since two people have to move together synchronously – he has learned to feel what a patient feels, to communicate better with his patients, and to be more sensitive and aware of their suffering and their needs. He explains that ballroom dancing is not just about music, movement and exercise, but perhaps more importantly, it is about one’s sensitivity and awareness of another human being, and not only about that person’s physical position, but also his/her emotional position.

“The EyeBall is a unique event, merging music and medicine. The breathtaking beauty of classical ballroom dancing reminds us how precious our God-given gift of sight is, and how much we need to help those who have lost that gift.” – Dr. Ming Wang

He picked up the er-hu again, 30 years later

Though he has lived here in America for more than 30 years, Dr. Wang has not forgotten when he was a teenager in China, and played the er-hu not as a hobby, but as a way to survive and to avoid the devastating fate of deportation. However, 30 years later, he picked up the er-hu again and played, but this time it was with an entirely different feeling and purpose.

“I learned to play the er-hu as a way to escape poverty,” he says. “But now I play it for an entirely different reason. Today I play the er-hu -- with its soulful, gentle, beautiful sound -- to truly appreciate the music itself, and to appreciate God’s blessings, and the opportunities He has given me to learn and to help others.”

Dr. Wang formed the band--Music for Sight--with his good friend, classical guitarist Carlos Enrique, and they play at various public gatherings in order to raise awareness to the cause of charitable sight restoration. Dr. Wang also accompanied Dolly Parton on her 2005 CD, “Those Were the Days.”

To show his appreciation to his adopted country America, Dr. Wang founded another 501c(6) non-profit organization, the Tennessee Chinese Chamber of Commerce, with a mission to help Tennessee companies export their products to China, the largest emerging market in the world. The chamber hosts an educational forum every other month to help its members learn about China – its history, culture and people – as well as who they are and what kinds of products they need. Dr. Wang believes that learning about

“30 years ago, I played this instrument to survive. Today I play it again, but it is now to express my appreciation for God’s blessings, and for the opportunities that He has given me to learn and to help others, especially those who are blind, so they may go from darkness to light.” – Dr. Ming Wang

another country or culture is no longer just the right thing to do as citizens of the world, but it is now also an economic necessity for us here in America, since our customers are now located throughout the world, including China. Only through learning about other countries and people, their interests and needs, can we increase our export to these countries--and hence generate funds through positive foreign trade--to enable us to truly accomplish what we need to do here in America, e.g., improving our education and health care.

Dr. Wang says that life is just like music; it has its ups and downs, its happy and sad moments. He has learned many things in life, among them respect for teachers, parents and the elderly, who have suffered and therefore have more wisdom; and also capturing one’s opportunities in life and making the most of them. He adds that life, indeed, is often difficult. Sometimes we struggle and doubt if we will ever succeed, and at times we wonder what the purpose of life is. However, Dr. Wang firmly believes that God does have a purpose for each one of us; and it is only through our dedication, hard work and doing our part to the best of our capabilities that we have the opportunity to find out what His plan is for us.

From music to medicine to research to teaching to inventions to dance to philanthropy, Dr. Ming Wang lives life fully, meaningfully and gratefully.

When asked what actually drives him to work so hard every day, to excel in so many areas, and to help so many, all with such drive and dedication, he replies, simply: “from the experience of once having not.”

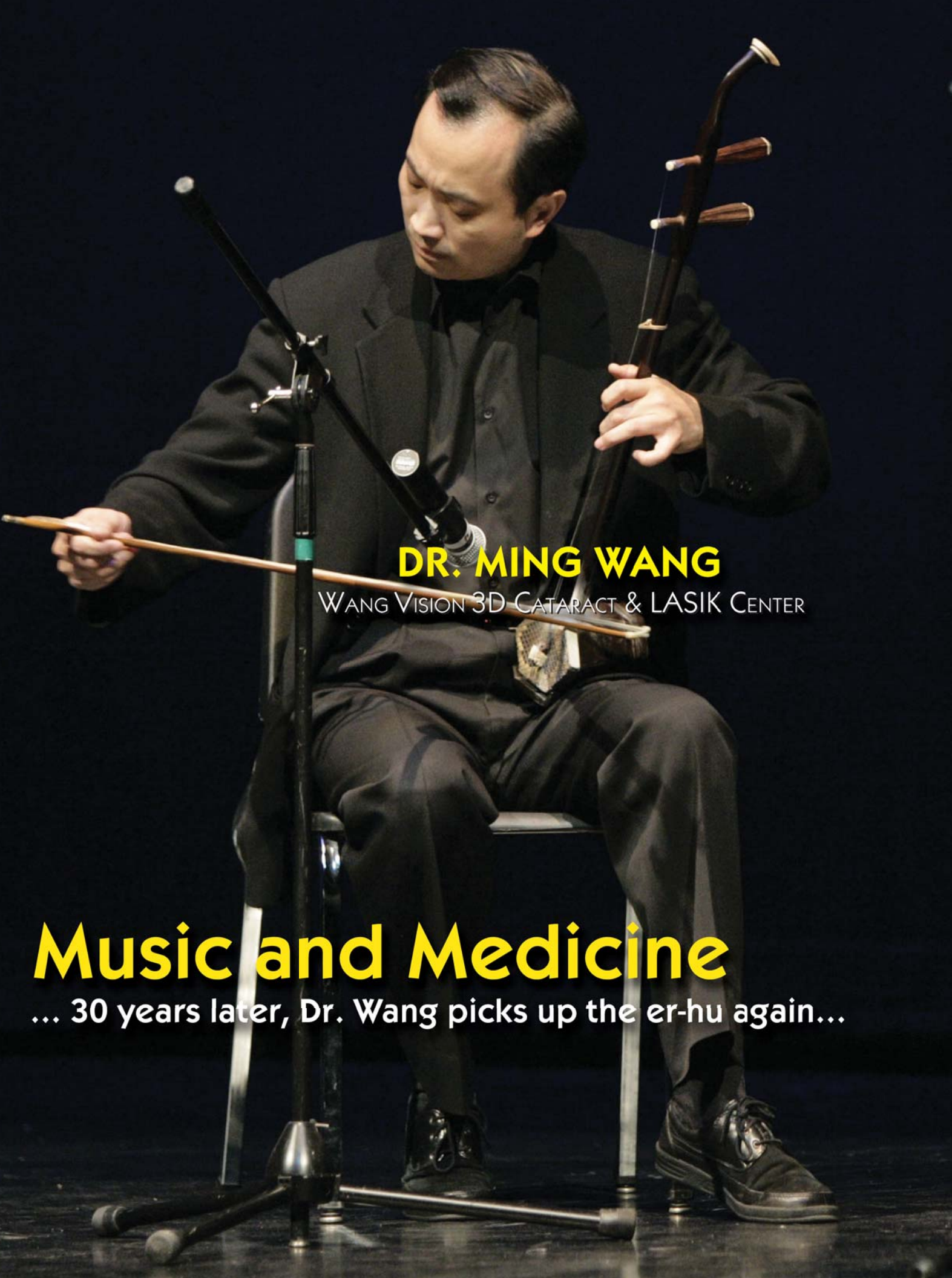


Research Clinical Trial Cross-linking for Keratoconus



Dr. Ming Wang, Harvard & MIT (MD, magna cum laude) and PhD (laser physics), of Wang Vision 3D Cataract & LASIK Center, conducted an FDA-regulated clinical research trial to study an investigational corneal cross-linking treatment for keratoconus and corneal ectasia after LASIK/PRK.

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