



HMRI Immunologist in search of potential heart and brain therapies.

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HMRI provides leadership in cultivating bioscience industry in Pasadena.

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Altadena Guild holds 70th annual home and garden tour to benefit HMRI.

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A Message from our CEO



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HMRI is known for its longstanding culture of innovation. Over the past 70 years, this has been the driving force behind novel solutions to complex medical problems and new discoveries that have enabled people around the world to live longer, healthier lives. Our pioneering spirit continues as we embark on the discoveries of tomorrow.

The vision of HMRI is to become a leading independent biomedical research organization in the United States. Our culture of innovation will lead the way, embodying focused, revolutionary research and scientific discovery

that regularly generates paradigm-shifting solutions to key problems. We will provide leadership in the biomedical industry by going beyond current ways of thinking and forging new paths with tenacity, patience and courage, renewing our commitment to HMRI's strategic pillars: scientific research, education, strategic partnerships and resource development.

HMRI is uniquely positioned as an emerging leader in Pasadena's biotech and life sciences ecosystem, featured on page 4. The city's tradition of intellectual excellence—shaped by institutions like Caltech and the NASA Jet Propulsion Lab as well as HMRI—provides a foundation for this ecosystem. HMRI can build upon this foundation and upon our track record of innovation to incubate biotech start-ups and form strategic partnerships. These collaborations will help HMRI as we seek to commercialize the treatments, tools and technologies we develop so that people around the world can benefit from them. These collaborations will also open new doors for postdoctoral and advanced student researchers in our education programs so they can gain experience translating scientific discoveries into marketable products that advance human health.

As we embark on new endeavors and growth opportunities, we are grateful for supporters like you. We are pleased to recognize the Altadena Guild and their continuous 70-year legacy of giving to HMRI on page 7. We seek to partner with individuals and organizations who can provide financial support, raise awareness and build strategic partnerships. With your help, we will transform into a leading biomedical research institution as we continue to make advancements that improve cardiovascular and neurological health.

Julia E. Bradsher, PhD, MBA
President and Chief Executive Officer

In Memoriam

We received news this year of the passing of these HMRI supporters and former board members: Allen W. Mathies, Jr., MD, PhD; Lary J. Mielke; Lynn Howe Myers; and Robert Tranquada, MD. They will be missed. We offer our sincere condolences to their families and friends.



Elkhal applies immunological discovery to search for heart and brain therapies

“My goal is to discover new treatments for patients in the clinic,” states Abdala Elkhal, PhD, who joined HMRI in December 2022 as an assistant professor specializing in neuro-immunology and cardio-immunology.

A decade ago, Elkhal made a groundbreaking discovery regarding the role of the coenzyme NAD⁺ in regulating the immune system. Through preclinical trials, he observed that NAD⁺ exhibited significant potential as a therapy for individuals suffering from autoimmune disorders, bacterial infections and organ transplants.

Born and raised in France, Elkhal pursued doctoral research in Germany and obtained a PhD in cell biology and biochemistry from the University Rene Descartes Paris V in France. During his postdoctoral studies at Boston Children’s Hospital/Harvard Medical School, he shifted his research focus to immunology.

While serving on the faculty of Harvard Medical School, Elkhal initiated his pioneering work on NAD⁺. Also known as nicotinamide adenine dinucleotide, NAD⁺ is a naturally occurring coenzyme present in all living cells. It plays a central role in energy metabolism. Elkhal says, “We demonstrated that NAD⁺ regulates the immune system and facilitates the transformation of aggressive T-cells into protective ones.” This effect was observed even in individuals with immunodeficiency. In preclinical trials, Elkhal found that

administering NAD⁺ provided protection against septic shock induced by bacteria like *E. coli*. Additionally, NAD⁺ not only impeded the progression of multiple sclerosis—an autoimmune disease—but also reversed its advance.

More recently, Elkhal has connected NAD⁺ to HMRI’s research on brain and heart health. He collaborated with Anju Vasudevan, PhD, chair and scientific director of HMRI’s Department of Neurosciences, to investigate the impact of NAD⁺ on prenatal brain development. Utilizing mouse models, they discovered that NAD⁺ can repair flawed blood vessel formation in the forebrain of embryos, preventing abnormal behavioral symptoms after birth. These findings suggest that NAD⁺ could be used as a prenatal supplement to safeguard against neurological disorders.

Together with Robert A. Kloner, MD, PhD, chair of cardiovascular research at HMRI, Elkhal explored the potential of NAD⁺ as a therapeutic intervention for patients recovering from heart attacks and for minimizing excessive bleeding following major injuries.

Elkhal decided to join HMRI because, he says, “Here I have greater opportunities to advance NAD⁺ into clinical trials. The institution’s leadership is dedicated to facilitating the transition from laboratory research to bedside applications.”



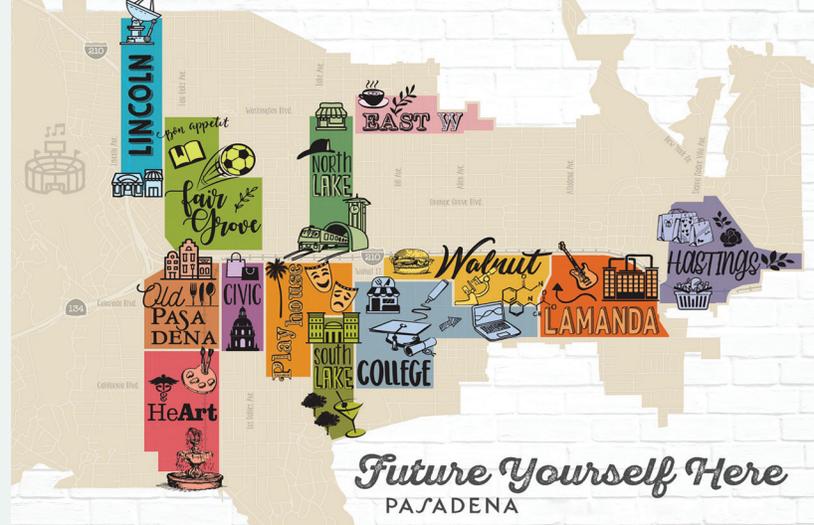
New to the HMRI team

In the past six months, HMRI has continued to grow its capacity for scientific discovery by hiring new research and administrative staff. In addition to Assistant Professor of Immunology Abdala Elkhal, new members of the research team include postdoctoral fellows Tanimul Alam, Amina Ghouzlani, Kazi Helal, Joby Jose and Divya Mishra; Analytical Laboratory Research Technician Darren Simmons; and Animal Care Technician William Palma.

New members of our administrative team include Director of Marketing and Communications Jessica West, Director of Grant and Contract Management Alex Abramyan, Accounting Manager Jason Teng, IT Support Specialist Juan Sanchez, and Assistant to Education and Postdoctoral Programs Amogh Kulkarni.

At the heart of Pasadena's HeArt District

HMRI takes leadership role in cultivating bioscience ecosystem



Robert Kloner shows HMRI labs during Bio Cluster Expansion Tour.

HMRI's growth and success in developing biomedical innovations have always been intertwined with the vibrancy of the research environment in Pasadena. HMRI was born from the co-existence of several medical research institutes in the city from the 1950s through the 1980s. This collaborative environment contributed to HMRI discoveries—such as using lasers to remove tumors and magnetic resonance imaging for medical diagnosis—that have enabled people to live longer, healthier lives.

Today, HMRI is playing a key role in an effort coordinated by the City of Pasadena's Economic Development Division to strengthen and grow the local bioscience industry.



Economic Development Director Dave Klug, adds valuable insights.

On May 18, HMRI was featured as part of Pasadena's Bio Cluster Expansion Tour of leading bioscience institutions. "Pasadena is becoming one of the most notable bioscience industry hubs in the LA region," said Pasadena Mayor Victor Gordo. "It is our priority to promote bioscience and help businesses find a home where they can innovate, grow and access our diverse and talented workforce. We continue to invest in transit and workforce development to connect workers to high-quality bioscience jobs. We are learning from and partnering with local industry leaders like Huntington Medical Research Institutes, and taking a proactive approach to ensuring bioscience thrives in Pasadena."



At HMRI, City of Pasadena Vice Mayor Felicia Williams, leads the discussion on ways to grow the local bioscience industry.

The Bio Cluster Expansion tour started at HMRI, where participants gathered and boarded a bus to visit biotech companies Xencor and Protomer Technologies. It ended at HMRI with a building tour and a discussion, facilitated by Pasadena Vice Mayor Felicia Williams, about strategies for strengthening the industry in Pasadena. More than 50 city leaders representing diverse sectors—including bioscience, government, education, real estate, healthcare and philanthropy—participated.

HMRI *Insights* interviewed President and CEO Julia Bradsher to learn more about the goals of this effort and HMRI's role.

Insights: How is HMRI helping to develop Pasadena's bioscience ecosystem?

Bradsher: We're working with the city to help put the right policies in place. For example, HMRI is located in Pasadena's HeArt District, which stands for health, education, arts, research and technology. Besides HMRI, the district includes Huntington Hospital and the Art Center College of Design's South Campus. Last October, the city approved the South Fair Oaks Specific Plan, which includes zoning adjustments for the HeArt District. HMRI attended city council meetings regarding the plan's development and advocated for zoning regulations to make this district a place where life sciences companies can thrive.

We also facilitate collaboration. We want to develop our campus to provide space for collaboration with biotech companies. We want to create a culture of innovation not only among HMRI scientists, but also by encouraging collaboration and innovation and sense of community with our partners.

One of our collaboration success stories is Protomer, a company that engineers protein therapeutics for diseases like diabetes. They were tenants at HMRI for about six years, during their start-up phase. We don't have any financial ties to them, but we feel we helped incubate them as a company. Last year, they were acquired by Eli Lilly and Company for more than \$1 billion.

How will being part of an expanded Pasadena biotech cluster help HMRI?

Collaboration is the key to our success. Our scientists will benefit from collaborators in the biotech industry who can help us flesh out basic science and translate it into clinical science. By partnering with industry, we create a channel for our innovations to go from bench to bedside—from discovery to testing to trying therapies out on patients and, ultimately, to the marketplace.

We also want our trainees, especially our postdoctoral researchers, to have collaborative experiences. Some postdocs will enter academia, but others may seek positions in the pharmaceutical/biotech industry. We want them to have first-hand experience working with biotech partners so they can make informed decisions about their careers.

How does it benefit Pasadena?

It's important to have high-paying, high-quality jobs for Pasadena residents. The average salary for a biotech worker is \$94,000, and biotech jobs are more stable and less cyclical than other sectors of the economy.

Pasadena already has a critical mass of scientists between Caltech, the NASA Jet Propulsion Laboratory and HMRI. Cultivating a bioscience ecosystem aligns with the talents of people already here.

But not everybody who works in biotech needs a PhD. In fact, 67% of biotech jobs do not require advanced degrees. Pasadena City College (PCC) has created a workforce development program focused on biotech manufacturing, providing opportunities for people to get associate degrees and certificates in preparation for biotech careers.

How soon will this biotech expansion happen?

It will take some years. There are challenges: for instance, although Pasadena has vacant commercial real estate, the vacancy rate for lab space is less than 1%. We need space for companies to grow. HMRI may be able to help with this as we develop our campus. I envision that as Pasadena's biotech industry grows, HMRI will grow along with it.



Julia Bradsher, right, leads Bio Cluster Expansion Tour of HMRI.

Accolades for Bradsher

Julia Bradsher's leadership in the fields of health care and STEM education received public recognition this spring from two organizations in the Los Angeles area.

The *Los Angeles Business Journal* honored Bradsher as one of its "2023 Women of Influence: Health Care." Honorees were selected for their impact on the profession and the Los Angeles community. The journal described Bradsher as a "successful scientist, strategic leader and dynamic CEO.... Dr. Bradsher is accelerating the overall operations of medical research."

Pasadena City College (PCC) presented Bradsher with their Community Special Recognition Award. "Your contributions made a significant impact on the lives of PCC students," wrote Erika A. Endrijonas, superintendent-president of PCC. One of the contributions Endrijonas cited was HMRI's Summer Undergraduate Research Fellowship (SURF), which gave PCC students an opportunity to gain hands-on laboratory research experience and mentorship.



Year-round student research program provides opportunities for professional growth and development

HMRI offers education programs of varying durations for aspiring scientists at every level.* Our year-round student research program enables a wide range of participants to gain practical experience aligned to their research interests and professional aspirations.

Participants in this program are enrolled in high school, college or a master's-level program; they excel academically in science, demonstrate a passion for bioscience and improving human health. This experience helps them clarify what they want to do and take a pivotal step to achieve their career goals.

Students studying biological and physical sciences are paired with postdoctoral scientists in the laboratory where they learn by doing. They work on real research projects and master fundamental techniques, such as how to use a pipette for measuring out solutions and how to genotype DNA to find genetic variants and structural changes. Other students like Jasmyn Tang, MPH, and recent USC graduate, have been mentored by HMRI President and CEO, Julia Bradsher, PhD, MBA.

When Jasmyn started our education program at HMRI, she was working towards her master's degree in public health at USC. For her practicum, she wanted to conduct research that connected science to her passion of improving the lives of patients in the community by investigating

whether physicians are adequately equipped to support patients beyond a clinical diagnosis.

Under Dr. Bradsher's mentorship, Jasmyn created an interactive survey for brain aging patients with Alzheimer's disease and other dementias who had comorbid conditions. Her objective was to determine their social supports and the quality of the relationship with their primary care providers.

From a public health perspective, Jasmyn explains, "Science isn't just one field or only taking place in a lab, it can be passed on to the community in multiple ways by connecting hard science to real life experiences, it can also influence health care policies that ultimately improve lives." Jasmyn graduated from USC in May 2023, her educational goals include an MD and PhD. She has a love for pediatrics and the community where she sees herself serving as a primary care physician.

Jasmyn is thankful for her research experience with Dr. Bradsher. She explains, "I was glad to get out of my comfort zone to apply practical knowledge to real life applications."

Dr. Bradsher is committed to carrying out HMRI's mission by inspiring the next generation of scientists. She is proud to lead an organization that embraces women's leadership in science, stressing, "I consider it my most important



Jasmyn Tang, MPH

avocation to guide young women interested in the sciences."

* HMRI also offers a Summer High School STEM Program, Summer Undergraduate Research Fellowship and Postdoctoral Fellowship Program. For more information, visit hmri.org/education.

HMRI Celebrates 70 Years of Science November 1, 2022



Bill Ukropina, Linan Ukropina; Shwu-Nuo Chang; C. Joseph Chang, HMRI Board Member



Kathryn Barger, LA City Council; Julia Bradsher, President & CEO, HMRI; Felicia Williams, Pasadena Vice Mayor



Altadena Guild: A 70-year legacy supporting HMRI



HMRI leaders attend Home and Garden Tour

In February 1952, the Altadena Guild held its first home tour, charging \$1.50 for admission to three Altadena homes or \$2.00 for admission and dessert. The tour yielded \$428, which the Guild donated to the medical research facility that would later become HMRI, and inaugurated a 70-year legacy that has raised more than \$2.5 million for HMRI.

The Altadena Guild was originally established to extend the work of the Women’s Auxiliary of Huntington Memorial Hospital, formed 25 years earlier. Over the past 70 years, the Guild has continued to honor its founding mission by consistently supporting HMRI through the annual tradition of the Altadena Home and Garden Tour. Since the inaugural tour, 270 Altadena homes and gardens have been featured, showcasing diverse architecture and local history. Karen Skinner-Twomey, president

of the Altadena Guild, says, “The Altadena community has been proud to open its homes over the past 70 years to benefit HMRI’s mission of improving health outcomes through innovative biomedical research.”

The most recent Altadena Guild Home & Garden Tour was held on May 7 on the historic Rubio Street, known as the gem of Altadena. Guests enjoyed strolling the street, which was lined with classic cars for the occasion, spending time with friends at the pop-up café, listening to live music, shopping at stalls set up by local vendors, and viewing the four spectacular homes at the heart of the tour. One of these homes was 1090 Rubio Street, which played a key role during the first home tour in 1952: checks and reservations for the tour were mailed to that address. This year, the current owners graciously included their home in the landmark 70th anniversary tour.

The vision of the Altadena Guild is to support and improve peoples’ lives through better healthcare, innovation and community involvement. Through volunteering and philanthropic support, Guild members live this vision and play a vital role in helping HMRI improve human health outcomes through scientific discovery. A number of members support HMRI not only through the Guild, but also by donating directly to HMRI. “We believe that HMRI is a critical cause, and we want to contribute to revolutionary science and patient-centered research to detect, prevent, cure and hopefully eradicate common diseases like Alzheimer’s, heart disease and mental illnesses,” Skinner-Twomey explains.



Altadena Guild welcomes attendees

The Altadena Guild also helps advance HMRI’s mission to inspire the next generation of scientists. The Guild proudly provides philanthropic support to HMRI’s 10-week Summer Undergraduate Research Fellowship (SURF) program, which gives college students enriching, hands-on experience in biomedical research. This fellowship is an important steppingstone for students on their scientific journey; some SURF alumni have gone on to chair medical school departments and lead biomedical research institutes.

Skinner-Twomey says, “Scientific progress and its impact happen incrementally over time, and the Altadena Guild has been pleased to watch discoveries unfold during our 70 years of partnering with HMRI.” HMRI is thankful for the Altadena Guild’s legacy of support, generosity and dedication to future scientists and scientific discovery.

UPCOMING EVENTS

We're excited to welcome you and share more about the vital work we're doing at HMRI

HMRI SCIENCE DAY



You're invited to join the HMRI biomedical researchers to learn about their experiences and current projects in neurology and cardiology.

**Wednesday, July 26
10 am to 2 pm**

Meet the next generation of scientists enrolled in our STEM and SURF programs, and the talented postdoctoral fellows.

RSVP by Monday July 24 to Dr. Nicole Purcell
nicole.purcell@hmri.org

Inside HMRI

Huntington
Medical Research
Institutes



We're pleased to invite you to a special event featuring Chief Science Officer, Robert A. Kloner, MD, PhD for an in-depth look **Inside HMRI**.

**Thursday, July 27
5:30 pm to 6:30 pm**

Dr. Kloner will be giving an update on the cardiovascular research programs, followed by a laboratory tour.

RSVP by Monday July 24 to Wendy Welch-Keller
wendy.welch-keller@hmri.org | 626.389.3433

Events will be held at HMRI: 686 South Fair Oaks Avenue, Pasadena, CA 91105
1st floor auditorium
Light refreshments will be provided

GIVING TO HMRI IS **YOUR** CHANCE TO **IMPROVE HUMAN HEALTH**

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Inspire the next generation of scientists

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- Call 626.795.4343 to speak with our Development Office.

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