



LOMA LINDA UNIVERSITY  
HEALTH

Many Strengths. One Mission.

# ANESTHESIOLOGY RESIDENCY PROGRAM



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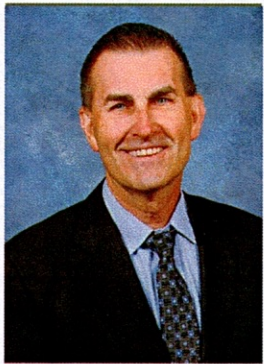
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# ABOUT OUR PROGRAM

“DIVINUM EST SEDARE DOLERUM” (IT IS DIVINE TO ABOLISH PAIN)

*Thank you for your interest in our Anesthesiology Residency Program!*



**Robert D. Martin, MD**  
Professor of the Floyd S. Brauer  
Chair in Anesthesiology

Our outstanding academic department is dedicated to resident education and providing you with a healthy atmosphere in which to learn. Loma Linda University (LLU) is located in the heart of the “Inland Empire,” with easy access to multiple activities in San Bernardino, Riverside, Los Angeles and Orange Counties. An hour’s drive can take you to surfing at the beach, camping in the desert, winter sports in the mountains, or multiple theme parks and cultural events. Loma Linda University Medical Center (LLUMC) is a tertiary care hospital and Level I trauma center for both children and adults. It is world-renowned for pediatric cardiac surgery by pioneering infant heart transplantation in 1985.

*We excel in academic excellence, hands-on learning,  
caseload diversity and on-going research!*

Our department prides itself on diversity: 45% of the faculty is female and 66% of the current resident physicians come from medical schools other than LLU. The residency program has been graduating high quality anesthesiologists for over 30 years, with a board certification pass rate of more than 90%. Our graduates often secure highly competitive private practice jobs, academic positions, and/or fellowships at prestigious institutions throughout the nation. Many of our graduates have assumed leadership roles within their practice groups, hospital and medical societies. The network of Loma Linda Anesthesiology alumni is large and extends throughout all regions of the United States, offering unparalleled access to topflight anesthesiology opportunities nationwide.

ACGME-approved fellowships are offered in Pediatric Anesthesia and Cardiothoracic Anesthesia as well as Critical Care Medicine. We partner with the Department of Rehabilitation and Preventive Medicine in offering fellowship training in Pain Medicine. This sub-specialty training enables our graduates to more effectively pursue careers in either academic or private practice settings.

*We hope you will find our program an exciting place to continue your medical training!*

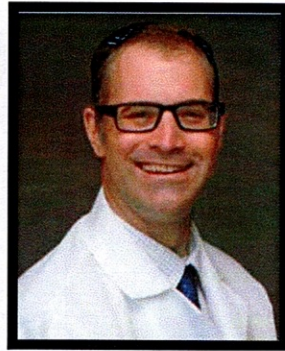
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LOMA LINDA UNIVERSITY HEALTH  
DEPARTMENT OF ANESTHESIOLOGY

## PROGRAM LEADERSHIP



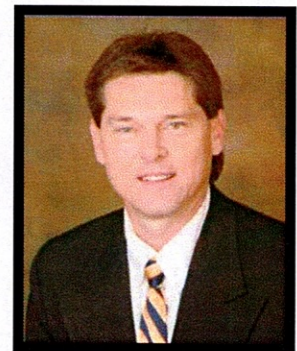
**Stanley Brauer, MD**  
*Professor of Anesthesiology  
Vice-Chair and CFO,  
Department of Anesthesiology  
Chair, Clinical Competency Committee*



**Jason Gatling, MD**  
*Associate Professor of Anesthesiology  
Program Director,  
Anesthesiology Residency  
Director, Anesthesiology Quality  
Improvement*



**Melody Chang, MD**  
*Assistant Professor of Anesthesiology  
and Critical Care  
Associate Program Director,  
Anesthesiology Residency  
Program Director, Critical Care  
Fellowship*



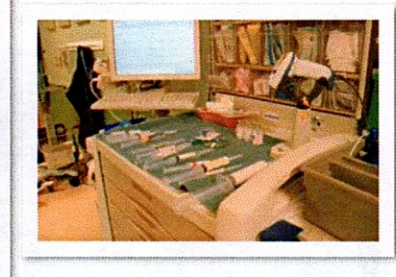
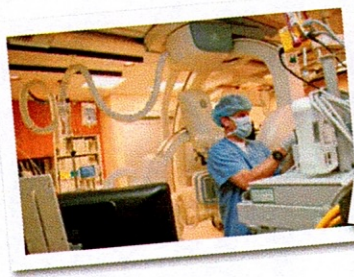
**Gary Stier, MD, FACP, MBA**  
*Professor of Anesthesiology, Internal  
Medicine, and Critical Care  
Program Director, Combined  
Anesthesiology/Medicine Residency  
Director, Preoperative Clinic and PSH*

## GOALS AND OBJECTIVES

- The goal of our training program at Loma Linda University (LLU) is to prepare resident physicians for a successful career in the field of anesthesiology and its related subspecialties through integration of the ACGME Core Clinical Competencies: patient care, medical knowledge, practice-based learning & improvement, professionalism, interpersonal & communication skills, and systems-based practice.
- The didactic curriculum, taught by faculty and guest lecturers, follows a four-year track to best prepare resident physicians for successful certification by the American Board of Anesthesiology (ABA).
- The resident is encouraged to participate with the faculty in either a basic science or clinical science research project. Ongoing research projects advance the science of anesthesia both locally and nationally.
- Residents will have opportunities to provide supervision, education and performance evaluation of both medical and paramedical personnel who are involved in perioperative care.

## INNOVATIONS

- In addition to a **strong research program**, LLU is on the forefront of many exciting changes in the world of anesthesia. We are one of only three programs in the U.S. to offer a **combined anesthesia/internal medicine program**, which allows graduates to be ideally placed as expert consultants in both perioperative care and medicine.
- We are one of a handful of departments to have implemented a **Perioperative Surgical Home (PSH) model**. Seen as the future of perioperative care, the PSH model integrates anesthesiologists more broadly into pre- and post operative care, utilizing our expertise to improve quality, efficiency, and patient satisfaction.
- Our residents receive education in process and quality improvement, with focused training in **Lean Six Sigma** methodology. Process improvement training is becoming increasingly important in medicine with the ever-increasing emphasis on patient outcomes, quality of care, and cost reduction.
- Residents receive extensive training in **transesophageal echocardiogram** and **point-of-care ultrasound (POCUS)**, which positively impacts upon efficient patient assessment and serves as an effective tool for rapid bedside diagnosis of significant cardiac pathology.
- Our program is leading the way in **electronic residency interviews** with a quarter of our interviews conducted online via videoconferencing. Applicants are able to learn about the program and meet with residents and faculty members in the convenience of their own home, without the expense and difficulty of traveling. Applicants are given the option to choose an in-person interview or web interview, with the assurance that their decision will not affect how they are ranked.



## CURRICULUM

The **clinical base** internship consists of training in internal medicine, cardiac care unit, cardiac consults, critical care, pain management, emergency medicine, acute care surgery, transfusion medicine and anesthesiology.

The first year of Clinical Anesthesia (**CA-1**) features instruction in basic techniques and fundamental aspects of anesthetic care. The **CA-2** year is composed of subspecialty rotations including obstetric, pediatric, cardiothoracic, regional, neuroanesthesia, acute and chronic pain management and critical care medicine. The **CA-3** year consists of a six month minimum of advanced anesthetic techniques with both Elective and Selective rotations in advanced clinical anesthesia, the subspecialties, and/or research.

Non-OR educational opportunities throughout training include weekly Grand Rounds, didactic lectures, and problem-based learning sessions, point-of-care ultrasound, process improvement, preoperative care coordination, plus a monthly Journal Club. Semi-annual mock oral examinations are given to senior residents and departmental faculty participate in annual board reviews for the Spring In-Training Exam and American Board of Anesthesiology Step 1 Written Exam.

## COMBINED ANESTHESIOLOGY-INTERNAL MEDICINE PROGRAM

The 5-year Combined Anesthesiology-Internal Medicine residency program was developed to provide the trainee with the unique skill sets needed to become an expert and leader in the areas of perioperative medicine, anesthesiology, and internal medicine. As the delivery of healthcare undergoes rapid change, the graduates of this program will gain valuable training in the delivery of evidence-based and cost-effective care, principles of patient safety and process improvement, perioperative care coordination, population health, healthcare finance, and team leadership. During residency, there will be ample opportunity for research in the areas of perioperative care and healthcare quality. The strengths of the anesthesiology and internal medicine curriculum are complementary, providing a quality experience that enables the trainee to become a leader in the medical field. The PGY-1 year is spent in internal medicine; the PGY-2 year is spent in anesthesiology. The third through the fifth years consist of 6 months total per year in internal medicine and in anesthesiology.

## CLINICAL BASE ROTATIONS - CORE ANESTHESIOLOGY PROGRAM

- 4 months of internal medicine
- 1 month each of:
  - acute care surgery
  - cardiac care unit
  - cardiac consult service
  - chronic pain management
  - emergency medicine
  - neuro intensive care unit
  - perioperative surgical home
- 3 weeks of anesthesiology
- 1 week of transfusion medicine & process improvement training





## CLINICAL ANESTHESIA ROTATIONS

**PACE CLINIC** The resident spends one month rotating at the Pre-Anesthesia Consultation and Education (PACE) Clinic, which is the primary preoperative assessment clinic for surgeries scheduled within the Loma Linda University Health System facilities. The clinic employs over 20 full-time staff caring for approximately 18,000 patients each year. The resident works within a care-team model with advanced-practice nurses (NPs) to assess the patient's health status and determine readiness for surgery. A wide variety of patients with simple to complex medical diseases are assessed utilizing modern clinical assessment and planning tools, a systems-based electronic medical record, and on-site diagnostic testing. The resident learns valuable communication skills needed to interact with other health care professionals and a wide variety of patients from all backgrounds.

**REGIONAL ANESTHESIA** training and experience is obtained while on the VA Hospital and East Campus Hospital rotations. Orthopedic and neurosurgical procedures, including spine surgery are commonly performed at these hospitals. The orthopedic procedures provide the resident with opportunities for learning and perfecting regional anesthesia techniques, both as stand alone procedures or in combination with general anesthesia. The regional blocks are placed utilizing modern ultrasound modalities. The resident follows patients receiving regional blocks postoperatively to ensure a pain free recovery.



**CRITICAL CARE** training occurs at LLUMC in the 24-bed surgical-trauma intensive care unit (SICU), the Neurocritical Care Unit (Neuro ICU), and the cardiothoracic intensive care unit (CTICU), which are directed by intensivist faculty from the Department of Anesthesiology. In the SICU, complex multitrauma patients including spinal cord injury, traumatic brain injury, blunt chest and abdominal trauma, complicated orthopedic injuries, as well as admission following major surgery from multiple surgical disciplines are managed. Care is shared between 4-5 residents from the Departments of Anesthesiology, Surgery, and OB-GYN. Techniques utilized include central venous oximetry, pulse-wave contour analysis, neuromonitoring, high-frequency oscillation and airway pressure-release ventilation. The LLUMC Neuro ICU is a 15-bed ICU caring for neurosurgical patients with intracranial hemorrhages from cerebral aneurysms, AVMs, SDHs, and spontaneous intracerebral hemorrhages; craniotomies for brain tumors; and seizure mapping. The Neuro ICU also cares for patients with neuro-medical diseases including hyperacute strokes, status epilepticus, nonsurgical hemorrhagic strokes, acute meningitis, encephalitis, myasthenic crisis, and other neurologic disorders. The Neuro ICU functions in a team model consisting of 2-3 residents from the Departments of Anesthesiology, Neurosurgery, and Emergency Medicine, and advanced practice nurses (NPs). The CTICU offers residents experience in managing patients following cardiac and thoracic procedures. Point-of-care ultrasound skills, as well as experience with mechanical circulatory assist devices are gained during this rotation.

**NON-OR ANESTHESIA (NORA)** Residents on this service provide anesthesia services throughout the hospital. Types of cases include imaging studies such as CT and MRI; interventional radiology; GI procedures, other interventional procedures such as intrathecal chemotherapy and bronchoscopy, and many other non-OR cases.



**CARDIOTHORACIC ANESTHESIA** service performs approximately 700 heart cases per year, with many of these complex cases typical of those transferred to tertiary care centers such as Loma Linda. Approximately one-third of these cases are pediatric, including neonatal heart transplants. In addition, several hundred thoracotomies are performed for pulmonary and esophageal procedures. The cardiac cath lab carries out a wide variety of minimally-invasive intravascular procedures including pacemaker, AICD or LVAD placement, EPS and ablations, and septal defect closures. Residents are exposed to basic echocardiography during their CA-2 year with more advanced TEE during CA-3 subspecialty training.



**NEUROSURGICAL ANESTHESIA** Along with OR-based procedures, learning opportunities involve patients undergoing neurodiagnostic procedures such as CT, MRI and angiography. Residents learn applications of specialized monitoring such as EEG, MEP and SSEP. Specialized surgical needs include optimal procedural timing, prone or sitting positions, induced hypothermia, induced hypotension, wake-up testing, burst suppression and barbiturate coma.

**OBSTETRIC ANESTHESIA** is a busy mix of routine and high-risk cases, averaging more than 3000 births per year with 800 by Caesarean section. Epidurals, spinal, and saddle blocks are the mainstay of this rotation which provides competency in pre-anesthetic evaluation of the parturient, anesthetic techniques for labor and delivery, and recognition of the distinctive physiologic needs of both mother and child.



**PEDIATRIC ANESTHESIA** cases comprise nearly 25% of our residents' total case load. Most residents will have above-average exposure to both routine and complex pediatric procedures. As the tertiary referral center for San Bernardino County, patients are transferred for care from as far away as the California-Arizona-Nevada borders. LLUMC is a leader in specialized pediatric care and paved the way for infant heart transplant as early as 1985. The adjoining LLU Children's Hospital houses a Level III NICU, the only one of its type and size in the western United States.

**ADVANCED CLINICAL (AC)** During this LLUMC-based rotation, residents learn to evaluate and manage patients undergoing a broad range of complex surgical, diagnostic, and therapeutic procedures. Many of these patients have multi-systemic diseases or trauma and benefit from advanced monitoring. AC residents gain additional expertise accessing and using the information obtained from arterial, central venous and pulmonary artery catheters. Transesophageal echocardiography (TEE) is often used during major vascular, cancer resection and liver transplant procedures.



**OUTPATIENT SURGERY** This rotation provides residents with a wide variety of pediatric and adult ambulatory ophthalmology, otolaryngology and general surgery cases. The fast pace of this facility allows the resident to anticipate how quickly procedures might be done in a "real life" private practice setting.



**PAIN MANAGEMENT** training includes rotations in acute perioperative pain, as well as chronic pain. The Acute Pain Service manages acute pain conditions within the immediate postoperative period including patient controlled analgesia and the placement and management of continuous neuraxial or peripheral nerve catheters. The chronic pain experience includes rotations at the LLU Center for Pain Management and the VA Hospital Pain Center. These rotations provide residents with experience in the assessment and management of patients with acute perioperative pain, complex chronic pain syndromes, and cancer pain. Residents on this rotation gain valuable experience in the technical procedures utilized in pain treatments, including the use of multiple fluoroscopically-guided nerve blocks.

**POST ANESTHESIA CARE** The immediate postoperative setting provides a broad range of urgent or emergent conditions. Communication skills, indications and techniques for invasive monitoring, CPR team responsibilities, assessment of discharge readiness and patient resource management skills are essential. Advanced airway management techniques include fiberoptic intubation, as well as basic diagnostic and therapeutic bronchoscopy. A working knowledge of the ASA Difficult Airway Algorithm is essential for emergencies in the Post Anesthesia Care Unit (PACU), as well as for rapid response to the wards.

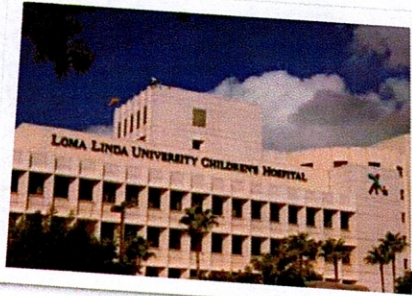
**PERIOPERATIVE MEDICINE** Residents gain valuable experience and training in perioperative medicine, an important skill set for the anesthesiologist of the future. Our department is one of a select number of training programs with an active and functional perioperative surgical home (PSH) model. Residents are exposed to the continuum of surgical care from the preoperative evaluation period through discharge from the hospital. Residents are educated in enhanced preoperative optimization and stratification, intraoperative goal-directed therapy, perioperative pain management, postoperative medical care, and transitional care planning.



**RESEARCH** opportunities are plentiful in both basic science and clinical anesthesia. Residents interested in basic science research have opportunities to apply for an extended experience in several successful research laboratories, including the NIH-funded Zhang Neuroscience Laboratory and the Center for Perinatal Biology in collaboration with Dr. Arlin Blood. Clinical research is done in collaboration with faculty research mentors, who have research interests related to anesthesiology subspecialties including cardiac, neuroanesthesia, obstetric, outpatient, pain, pediatric and regional anesthesia; monitoring devices and anesthetic techniques. Department faculty researchers have over three dozen IRB-approved clinical research projects currently in progress. All residents complete an academic project during their training. Research participation has resulted in abstract presentation at various national meetings for nearly 90% of residents, including numerous awards at the Western Anesthesia Residents Conference (WARC) in the past 5 years.



**MISSION TRIPS** Dr. Nitin Shah, Professor of Anesthesiology and Critical Care, organizes medical missions to foreign countries throughout the year, such as South Africa and India. In addition, the LLU Global Health Institute (GHI) sponsors trips throughout the world, which residents can join. These international trips provide residents with quality opportunities to develop their international medical and anesthesia skills and advance medical outreach efforts.



## OUR FACILITIES

### ON-CAMPUS

Loma Linda University Medical Center (LLUMC) is a 789-bed tertiary care and level I trauma hospital which serves as the major referral center for the surrounding areas of the Inland Empire and eastern California deserts. The adjacent Children's Hospital is a busy site for acute pediatric illnesses and contains one of the largest neonatal intensive care units of its kind. Across the street, the Outpatient Surgery Center serves ambulatory pediatric and adult eye, ENT and general surgery patients.



The LLUMC East Campus is situated one half mile to the east and offers comprehensive inpatient and outpatient health care services. East Campus includes a hospital, two physician and diagnostic office buildings, and an ambulatory service center. Physical Medicine and rehabilitation, orthopedics, neurosurgery, and family medicine services are specialties being incorporated into the overarching goal of East Campus. The clustering of these service lines and the single campus location gives patients on-stop access to medical experts in specialty fields.

Located close to LLUMC is the freestanding Pre-Anesthesia Consultation and Education (PACE) clinic, which provides screening of both pediatric and adult patients prior to elective surgical or diagnostic procedures requiring general anesthesia. Patient care is provided by a multidisciplinary team that includes physicians, nurse practitioners, registered nurses, medical assistants, phlebotomists, and administrative support. The PACE Clinic provides culturally competent and age-specific care for patients throughout the various states of the lifespan. A telemedicine and electronic medical record system facilitate perioperative readiness.



The LLU Surgical Hospital (SH) lies another half mile to the east and is the center for adult general surgery, gynecologic, urologic, bariatric and robotic procedures. SH is the pilot site for our departmental perioperative surgical services. Of approximately 400 academic hospitals in the nation, LLU SH is one of 29 named a Top Teaching Hospital by the Leapfrog Group.

### OFF-CAMPUS SITES

The Veterans Administration (VA) Medical Center lies across the street from LLUMC East Campus. Here residents gain valuable experience with regional, chronic pain, major vascular, and oncology procedures. Residents have the opportunity to provide care to more than 72,000 Veterans living in a 2-county area of San Bernardino and Riverside.



St. Bernardine Medical Center (SBMC) exposes residents to a large, private practice hospital and health care system. Additionally, this rotation provides residents experience with thoracotomies, as well as major abdominal and spine cases. Opportunities to learn and apply regional anesthesia techniques are plentiful. SBMC is located 7 miles from LLUMC.



# LOMA LINDA UNIVERSITY

Loma Linda University School of Medicine graduated its first class in 1909 and is part of a large world-renowned health care training facility. It contains the schools of Medicine, Dentistry, Pharmacy, Nursing, Health, Allied Health, Religion, Graduate Study, and the GeoScience Institute.



The **Drayson Center** is a 100,000 square foot focal point for exercise with an indoor track, weight and cardiovascular room, “superfield” for softball, soccer, and football; courts for racquetball, tennis, basketball, and beach volleyball; and a recreational pool and lap pool. Membership is open to students, employees, and families of LLU and LLUMC. It is the takeoff point for the annual PossAbilities Triathlon, popular with both able-bodied and disabled athletes.

The **Centennial Complex** is a modern educational learning center for all LLU schools. It houses a world-class **Simulation Center** where students from all disciplines are able to practice their skills in a life-like setting. Simulator-training is a regular part of the residency curriculum.

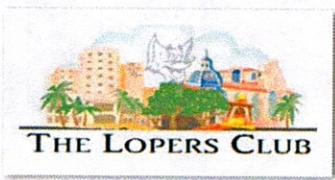


## OUR LOCATION

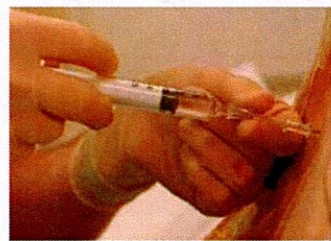
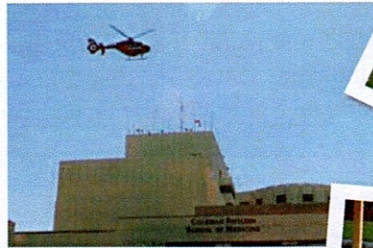
Loma Linda is midway between Los Angeles and Palm Springs in the heart of beautiful Southern California. Local attractions include Oak Glen, Victoria Gardens, Mission Inn, Big Bear and Arrowhead Lakes, PossAbilities Triathlon, the Redlands Bicycle Classic, Redlands Theatre Festival and Bowl Summer Concert series, and multiple theme parks. There are six major airports within an hour’s drive and a convenient on-campus **Children’s Center**, providing care for children from infancy to kindergarten age!



This close-knit, active community has been a center of health and wellness since it was founded in the late 1890’s. In 2008, Loma Linda earned the distinction of being the only “Blue Zone” in the United States. Blue Zones are population clusters showing healthy traits and unusual longevity. Many city residents maintain active lifestyles well into their 90’s. Loma Linda Lopers is one of the largest running clubs in Southern California and regularly trains for the Los Angeles Marathon. Loma Linda has a temperate climate nearly all year long, ideal for outdoor activities. The city has several parks and preserved open spaces with a fitness course, baseball diamonds, soccer field, tennis courts, golf driving range, and dog parks. The Hulda Crooks Park (named after a well-known city centenarian!) is famous for its access to mountain biking trails in the southern hills.



FROM WELCOME . . . TO WARC

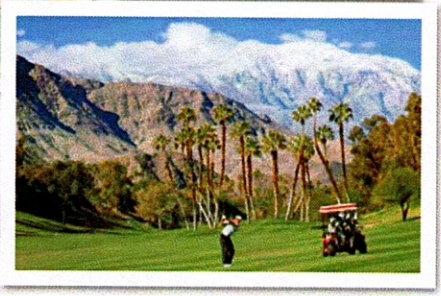
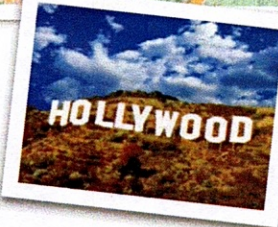
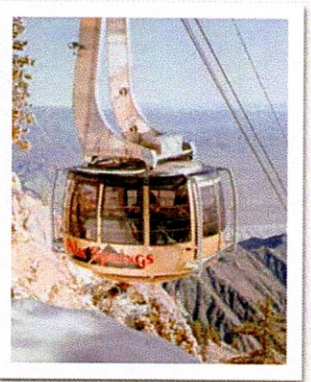
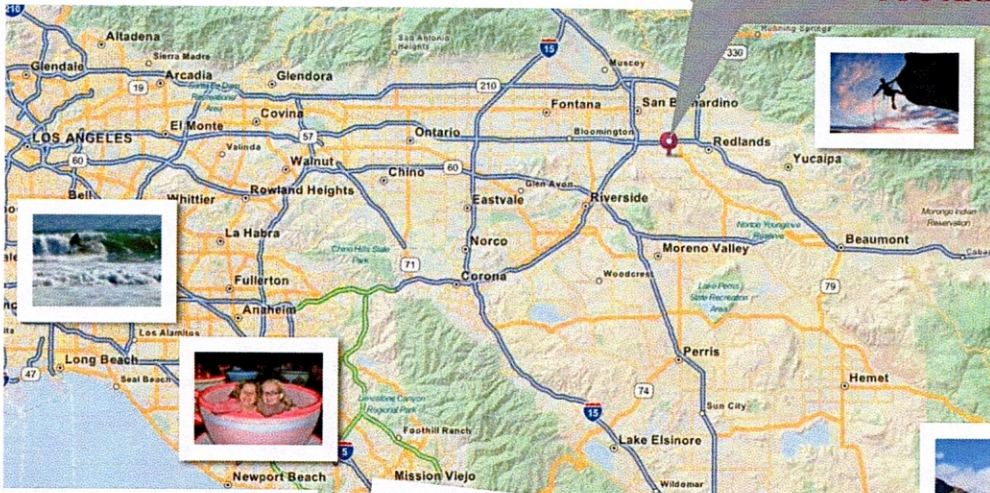


AN EDUCATION YOU DON'T WANT TO MISS!

WITHIN AN HOUR!



LOMA LINDA UNIVERSITY  
ANESTHESIOLOGY RESIDENCY PROGRAM  
YOU ARE HERE!



FOR MORE INFORMATION PLEASE CONTACT  
OUR RESIDENCY COORDINATOR AT THE NUMBER BELOW.

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