# THE SCOPE

Fall 2013

CALIFORNIA NORTHSTATE UNIVERSITY
COLLEGE of MEDICINE

# Message from the Founding Dean

Starting something new, being able to develop from scratch an innovative and incredible idea, is undoubtedly one of the most stimulating parts of life. At least, it is for me. Even after a half century in academic medicine, when many are thinking about how to relax, being the Founding Dean of a brand new, state-of-the-art, medical school in California is an exciting challenge that I am honored to have. It gives me the opportunity to help create the ideal medical school for training primary care physicians for California at a time when these physicians are desperately needed. For this opportunity I owe a debt of gratitude to the President and CEO, Dr. Alvin Cheung, the Board of Trustees and the Board of Directors of California Northstate University.

Designing an excellent medical school takes careful planning, creativity, an appreciation of academics, and courage. For the faculty of California Northstate University College of Medicine (CNUCOM), it has offered a rare opportunity to introduce the groundbreaking, new clinical presentation curriculum. This curriculum is centered on integrating the basic sciences into systems rather than disciplines. It is a curriculum that allows students to study the basic sciences as an integral part of each of the systems including cardiovascular, renal, and endocrine rather than the less ideal, traditional, method of studying them as separate disciplines such as anatomy, biochemistry and physiology.

Robert M. Suskind, MD

CNU's College of Medicine has reinforced this innovative, successful curriculum by housing its fourteen basic scientists and eight full time clinical faculty in the same Department of Medical Education. The clinical faculty teach as College Masters, overseeing the skills lab and helping students develop the art of taking a thorough history and performing a complete physical examination in order to make appropriate diagnoses. The ultimate goal of CNUCOM is to become a leader in medical education. The establishment of this outstanding curriculum is an important part of that goal. The recruitment of extraordinary faculty from throughout the U.S. is another essential component.

In addition, a unique experiential educational program is being developed with our clinical faculty based at the Dignity and Kaiser Health Care Systems. The CNUCOM clinical faculty will consist of over four hundred practicing community physicians. During each one-month clinical rotation, these experienced physicians will be our students' clinical preceptors, reinforcing what our students had learned during their first two years of medical school. Having the full support of the community physicians from both the Dignity and Kaiser Systems is a major advantage in enhancing the education of our students. We are indeed fortunate to have such strong support in the medical community.

CNUCOM is also fortunate to have a strong research base, including faculty recognized as leaders in their fields of research. The research facilities at our Elk Grove campus are designed to maximize efficiency and promote collaboration between faculty. As more faculty are brought on, research interests are aligning and new projects are already in development. In addition to students having an opportunity to work with outstanding educators, they will also have an opportunity to engage in both basic and clinical research, an invaluable process for young physicians.

I knew I loved medicine, loved interactions with patients but, mostly, I loved innovating and creating. This love encouraged me to travel worldwide pursuing my research interests in childhood malnutrition. I have also had significant experiences in developing medical education programs including a Ph.D. program in Clinical Nutrition for M.D.'s at MIT. I have served as department chair at Louisiana State University and Dean at the Chicago Medical School. Prior to coming the CNUCOM I served as founding dean at the Paul L. Foster College of Medicine in El Paso, Texas introducing the clinical presentation curriculum to the United States. All of these experiences have only enhanced my love for innovation in academic medicine. It's a fantastic journey, still going strong. I look forward to helping create, with our faculty and the support of the California Northstate University administration, one of America's outstanding new schools of medicine, dedicated to training first class primary care physicians for the state of California.

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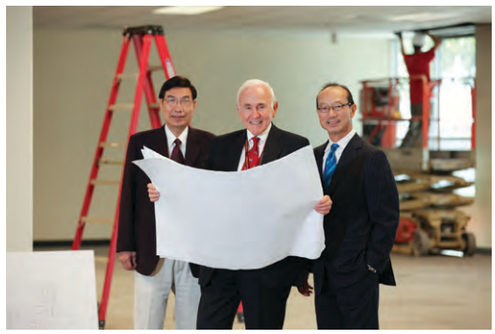
## On The Cover



Front: CNUCOM President Alvin Cheung, PharmD, MHSA and Founding Dean Robert M. Suskind, M.D. in front of the new facility at 9700 West Taron Drive, Elk Grove, CA 95757

Back: Dr. Robert M. Suskind, Founding Dean (center), reviews plans for the new facility with Dr. Carl Hsu (left) and Dr. Gordon Wong (right).

# Message from President Cheung

In establishing the California Northstate University College of Medicine, I wished to promote the advancement of the health sciences while also serving and benefiting society. Advancing the art and science of the health professions has been my decades long passion, igniting the formation and development of our unique health sciences institution.

My experience through 30 years of working in the health profession and 27 years in teaching caused me to reflect and consider how we might best educate health professionals for the future. How does a health sciences university best exemplify and reinforce professionalism in its students and graduates? How does a health sciences university advance its curriculum to stay true to the evolving changes of health care practice?

Alvin Cheung, PharmD, MHSA

Teaching is a sacred profession, particularly in health sciences education. Its sanctity lies in the faculty's truthful modeling of professionalism for future healthcare practitioners both within and outside the campus, in order to provide the best and safest care for their patients. As an instructor, every semester on the first day of class I used to ask the students, "What is your biggest fear after graduation?" Many responses echoed concerns in regard to being "stuck" working night shifts or weekends, not finding a job right away, or working in a different city from home. Upon further questioning, a student would finally offer that his or her greatest fear was making a mistake that would harm a patient. I would then reply that the biggest fear is when you find out you are ill-prepared to take care of the patient in front of you. The students' eyes and faces would then transition to visible concern. We would use this exchange to reaffirm the mutual commitments of teaching and learning.

My experience at Kaiser Permanente was also instrumental in shaping my vision to begin our fine University. The journey began by launching the first accredited pharmacy residency program for Kaiser in Northern California. The ten years that I spent as the Residency Program Director gave me a deep insight into health care education. I had first-hand experience in providing advanced training to graduates from many pharmacy schools across the country.

Healthcare and education are both highly regulated in order to protect the public. Success in both healthcare and education requires that one must possess that passion for excellence, generating the highest standard of professional practice. The educational domain also demands unwavering commitment to effective teaching and dedication to student learning in order to pass this passion for excellence on to the students.

In January of 2007, University Vice-President Norman Fong and I established the formation structure to build a coalition of pharmacists and physicians, coupled with financial sponsors who shared a mutual passion, to establish the eighth pharmacy program in California. We then began the complex task of building the first College of California Northstate University. Our collective desire to impart the highest ideals to the future of the pharmacy profession became the founding principle of its formation. It is with great pride that we are now witnessing the first wave of our graduates entering the pharmacy profession and health care field. Our graduates are already establishing a reputation for excellence, leadership in the profession, and delivery of high quality patient centered care. We have the utmost confidence that our graduates will continue to advance themselves: by being lifelong learners; by promoting their practices by expanding their roles in providing extraordinary care and services to their patients; by advancing the profession by precepting students, undertaking research, and joining professional associations in maturing our esteemed profession; by continuing to be a source of pride to those of us who embarked on this mission six years ago; and by continuing to advance the art and science of the profession.

With the success of our students our University has been encouraged to expand into medical education. In 2011, Drs. Gordon Wong and Carl Hsu joined our formation group and gained much support from the community including physicians, pharmacists, and financial backers, to bring a new, innovative allopathic medical school to northern California. Our community recognizes the need for educated and dedicated physicians, and we are prepared to launch the College of Medicine to help fulfill this need. It is our mission to continue producing health care graduates committed to lifelong learning, professionalism, and further advancing the art and science of health care.

# Training with the Pros

## Students Benefit from Clerkships with Dignity, Kaiser

After two years of simulated clinical experiences in the classroom setting, the students of CNUCOM will have the benefit of entering their clerkships in two of the largest and best hospital systems in Northern California. Both Dignity Health and Kaiser Systems have agreed to serve as clinical teaching sites for the College of Medicine's third and fourth year students. Our students will be welcomed into these systems to train with the most highly respected physicians in the greater Sacramento area who will represent our clinical faculty.

In these settings our students will be expected to deepen their understanding of clinical and basic science knowledge while providing evidence-based care that is compassionate, appropriate, and effective for the promotion of health and the treatment of illness. The physicians that have agreed to mentor our students are looking forward to fostering student knowledge about established and evolving biomedical and clinical sciences. Our clinical faculty will demonstrate the proper application of this knowledge to the practice of medicine and help shape these abilities in our students. By working with community experts our students will experience firsthand compassionate and effective interpersonal communication skills with patients and families necessary to deliver effective medical care and promote shared decision making.

The physicians and staff of Dignity and Kaiser Health Care systems demonstrate a commitment to the highest standards of professional responsibility and adherence to ethical principles. The fine role models within these systems are the ideal preceptors to guide our students on how to exhibit the personal attributes of compassion, honesty, integrity, and cultural competence in all interactions with patients, families, and the medical community.

The doctors in our affiliated health care systems offer our students knowledge of and responsiveness to the larger context of health care (social, behavioral, economic factors) in addition to the ability to effectively call on system resources to provide care that is of optimal value to the health of the individual and of the community.

We are thankful to our affiliates for placing their trust with California's newest medical school and next generation of doctors. We look forward to building strong and long-lasting relationships with our community's hospital systems and physicians.

# A Commitment to Success

## Integrated Curriculum Encourages Student Development

Since early 2012 the founding faculty members of the CNU College of Medicine's Department of Medical Education have been working diligently on the development of the school's curriculum. The goal of CNUCOM is to provide a horizontally and vertically integrated approach that fosters critical thinking and lifelong learning in our students. This curriculum encourages student development of clinical reasoning in conjunction with mastering the traditional basic sciences.

The integrated curriculum is divided into body systems over the course of the first two years where students will be given clinical presentations (CP) such as sore throat, cough, or shortness of breath. Each CP is organized by a knowledge scheme in the form of an algorithm designed to facilitate understanding of the appropriate clinical approach. Additionally, each of the algorithms is supported by a process worksheet and worked case examples. Process worksheets describe how to think through and use the scheme of the CP. Students study sample cases using the schemes and process worksheets in order to arrive at an appropriate diagnosis and ensure adequate knowledge of the underlying basic and clinical sciences.

In efforts to better prepare for their clinical clerkships, students will be taking part in weekly small group sessions that focus on building medical skills. It is in these sessions that students will learn the practical skills of history taking, physical examination techniques, diagnostic reasoning, communication skills, and teamwork with the use of standardized patients (trained actors) or via our computerized simulation laboratory. Furthermore, there will be a Masters Colloquium course held throughout the first two years where students will interact with their respective College Masters discussing bioethics, cultural awareness, humanities, health care systems, and professionalism issues in small group settings.

Dr. Eva Hess does some research in one of the nearly completed classrooms.

To advance critical thinking, each student will be expected to design a scholarly project from a wide range of possible topics including bench research, clinical research or innovative educational approaches. The students will learn the scientific method and will be expected to apply those principles to their projects. At the end of two years, each student will be expected to create a submittable abstract describing the design, results, and impact of their project.

After students pass their USMLE Step 1 exams following completion of years 1 and 2 they will move on to their Clinical Clerkships in the third and fourth years. Each student will be assigned to a community-based physician who will oversee that student's clinical education in a particular specialty, ensuring a proper mix of both in-patient and outpatient experiences. In the fourth year, each student will select elective rotations that will supplement their knowledge in areas of clinical interest. Each student will also be asked to select a track (three rotations from the list of electives) that specifically supports development in his/her clinical or research interest. Additionally, as a capstone experience, students will have the opportunity to select a sub-internship in the specialty of their choice.

CNUCOM is committed to providing a fully integrated curriculum focusing on critical thinking, clinical problem solving, and skills development. The development process will continue to evolve as more faculty join and assessment data are collected and analyzed. For more information about our novel curriculum, please contact CNUCOM's Senior Associate Dean of Medical Education Dr. Ralitsa Akins.

# A Path Toward Improve

California Northstate University College of Medicine faculty members Dr. Jeff Karpen and Dr. Hugo Arias are experts on ion channels and their pharmacology.

Ion channels play a central role in a large number of disease states ranging from neuromuscular disorders, pain, seizures, dementias, depression, and drug addiction to angina, hypertension, arrhythmias, diabetes, cystic fibrosis, and retinitis pigmentosa. In this regard, ion channels represent one of the largest classes of pharmacotherapeutic targets.

Despite this knowledge and the notable successes of some blockbuster drugs, the pace of progress in developing drugs to combat all of these disorders has been relatively slow. There are two main reasons for this: historically it has been much more difficult to obtain high resolution structural information on integral membrane proteins such as ion channels, and the standard methods for measuring ion channel function, while exquisitely sensitive, require a fair amount of specialized training and practice. However, several developments in recent years have begun to break through these tangles and impediments.

1 With some giant and rather breathtaking steps by several groups, there are now high-resolution structures available for a series of ion channels, and both the pace of progress and number of groups working in this area have increased markedly.

2 Second, high-throughput methods for measuring ion channel function and binding have been developed.

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# d Ion Channel Blockers

3 With improvements in computing power and software, molecular modeling and molecular dynamics methods have become more practical and useful tools in drug development.

At the College of Medicine, two faculty members are experts on ion channels and their pharmacology: Dr. Hugo Arias and Dr. Jeff Karpen. Dr. Arias studies nicotinic acetylcholine receptors (nAChRs) and Dr. Karpen studies cyclic nucleotide-gated (CNG) channels.

nAChRs mediate synaptic transmission in the peripheral and central nervous systems as well as modulate angiogenesis in non-neuronal tissues. They belong to a receptor superfamily called Cys-loop ligand-gated ion channels involved in numerous physiologic functions. In all of these channels five subunits surround a central ion-conducting pore.

CNG channels play a key role in the sensory processes of vision and olfaction. They generate the electrical response to light in photoreceptor cells and to odorants in olfactory receptor neurons following stimulus-induced changes in intracellular cGMP and cAMP, respectively. They are also present in most other tissues at lower density where their functions are largely unclear. CNG channels are tetramers, with four subunits surrounding the central ion-conducting pore, and they belong to a superfamily of channels that include all of the voltage-gated $Na^+$, $K^+$, and $Ca^{2+}$ channels.

A fascinating fact about the pentameric and tetrameric channels is that they share no obvious amino acid sequence homology, and yet they carry out very similar functions. In the case of nAChRs and CNG channels, both are rapidly gated or opened by the binding of agonists (ACh and cGMP, respectively), both strongly select for cations over anions, both mediate extremely rapid movements of cations through the membrane at a rate of nearly $10^7$ ions/s, and both are permeable to $Ca^{2+}$, which triggers many important intracellular events. Importantly, Dr. Arias and Dr. Karpen have also noted that a number of drugs such as local anesthetics inhibit or block cation flow through both channels.

In a new collaboration Dr. Arias and Dr. Karpen have started to compare in detail the binding and blocking characteristics of these drugs on the two ion channels in order to gain a greater understanding of the mechanistic and structural principles governing ion channel block. By focusing on the functional and structural similarities and differences in the blocking interactions of a large number of compounds, something which has never been undertaken before, they hope to be able to design and synthesize more potent and more selective blockers for each class of channel. Such drugs would require lower doses and produce fewer side effects.

Much of the work will be done at the COM, using techniques such as patch clamp electrophysiology, radioligand binding, high-throughput fluorescence assays, molecular biology, simple organic synthesis, and computer modeling. The project will also engage a network of American and international collaborators with expertise in molecular dynamics simulations, synthetic chemistry, transgenic mice, and other techniques. Students who work on this project will gain wide exposure to many of the experimental and theoretical aspects of modern drug development.

# Integration of Clinical Skills

CNUCOM's clinical presentation-based curriculum creates a unique opportunity for integration and application of topics in medical skills, with content covered throughout the week in the basic sciences. From the first day medical students start their coursework, they are exposed to this innovative curriculum that is specifically designed to develop the critical thinking skills required of a practicing physician.

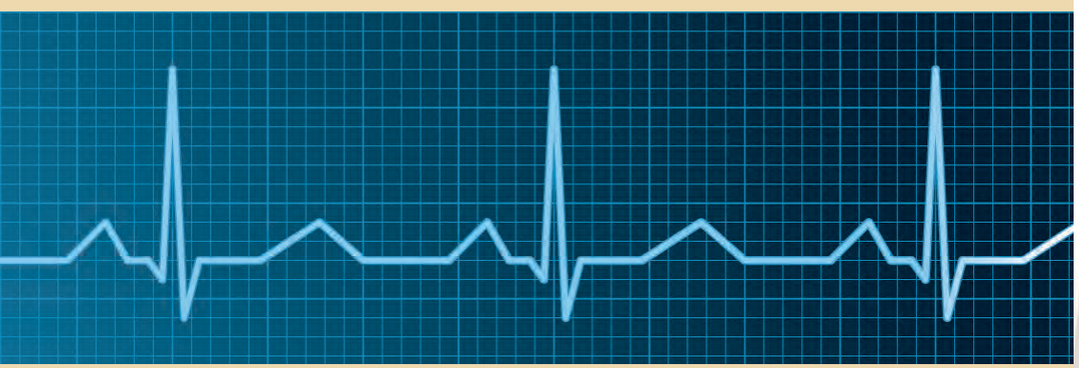
Unlike a traditional curriculum, the clinical presentation-based curriculum frames the basic sciences in the context of any one of 120 clinical presentations or chief complaints. The students are then taught to navigate the accompanying algorithm to arrive at a correct diagnosis of the patient, using inductive reasoning. Students are guided through this by a process worksheet, developed by a collaboration of physicians and basic scientists. At the completion of the week's basic science sessions, students will have small group sessions led by physicians to review and discuss worked case examples of that clinical presentation.

> *To cure sometimes,*
> *to relieve often,*
> *to comfort always.*
>
> – Dr. Edward Trudeau

In a traditional medical school, the first two years consist primarily of basic sciences courses (such as physiology and anatomy), with the student interacting with their first patient in his/her third year. At California Northstate University College of Medicine, students will interact with Standardized Patients starting in their first week of medical school. These patients are trained actors who have experience portraying given symptoms and can evaluate our students as well. Standardized Patients, as part of a comprehensive weekly Medical Skills course, have been shown to provide a consistent and thorough clinical skills education to first and second year medical students. We will be combining Standardized Patients with state-of-the-art mannequin and task trainer simulators to help the students learn basic procedures and resuscitation skills that prepare them for their clinical years.

Medical Skills is a weekly "doctoring" program that teaches communication skills, physical exam skills, lab and diagnostic test interpretation, and relationship-centered physician-patient interactions. Each week, the Medical Skills sessions will be composed of two hours of instruction: the first half consists of a standardized patient exercise with subsequent group discussion, and the second half is a skill builder, taught in small groups, which reinforces a clinical skill covered in that week's clinical presentation. For example, in the week covering the clinical presentation of chest pain, the first hour will be devoted to a Standardized Patient with chest pain, and the second hour will be instruction of basic ECG interpretation.

After the completion of the first two years of the CNUCOM curriculum, students will enter their clerkships with the required knowledge of the basic and clinical sciences as well as the confidence to succeed not only in their clinical clerkships, but also in their lifelong clinical practice.



# Assessment at CNUCOM

## A Plan That Defines Mastery

Perhaps the most baffling question faculty have dealt with over the centuries is this: how do I know that students learned what I think they learned? Traditionally this has been evaluated through both oral and written examinations. While that is an appropriate means of demonstrating specific knowledge at a particular point in time, it does not necessarily reflect aggregate knowledge over the course of study.

In these days of evidence-based education, it is important for us to be able to document what we want students to know, what students know, when students know what they know, and how it compares from year-to-year. To this end, the College of Medicine has developed an assessment plan that allows us to track these elements of student knowledge through the academic program and use the information from this tracking to evaluate and continuously improve the curriculum in order to meet our educational goals.

**With 35 years of teaching experience, Dr. Rose Leigh Vines has led the effort in integrating Anatomy and Histology in to the CNUCOM curriculum.**

The educational goals of the College of Medicine are embodied in six Program Learning Outcomes:

1. Patient Care
2. Medical and Scientific Knowledge
3. Communication and Interpersonal Skills
4. Professionalism
5. Health Care Systems,
6. Reflective Practice and Personal Development

Each of the Program Learning Outcomes has competencies which define achievement of that learning outcome. To determine how well the College of Medicine prepares students, we map the learning objectives in each course to the competencies that comprise the Learning Outcomes. Additionally, the objectives are correlated to the methods by which they are evaluated. Student achievement in the evaluations, then, demonstrates the level of mastery of the competency.

Mastery of the competencies is achieved through a gradual process. Students initially are introduced to the competency. Over time, students develop understanding of the competency through exposure and practice in different courses. At some point, students apply the competency in their coursework. Finally, students demonstrate mastery over the competency. At each step along the process, students are assessed using different formal and informal mechanisms. By collecting data for each individual student, it is possible to determine how well individual students and students as a whole achieve the competencies. By comparing student achievement versus faculty expectation, it is possible to identify what specific areas can be improved within the curriculum to maximize student achievement. Moreover, by comparing student achievement year-to-year, we can evaluate how well the College of Medicine achieves its educational goals.

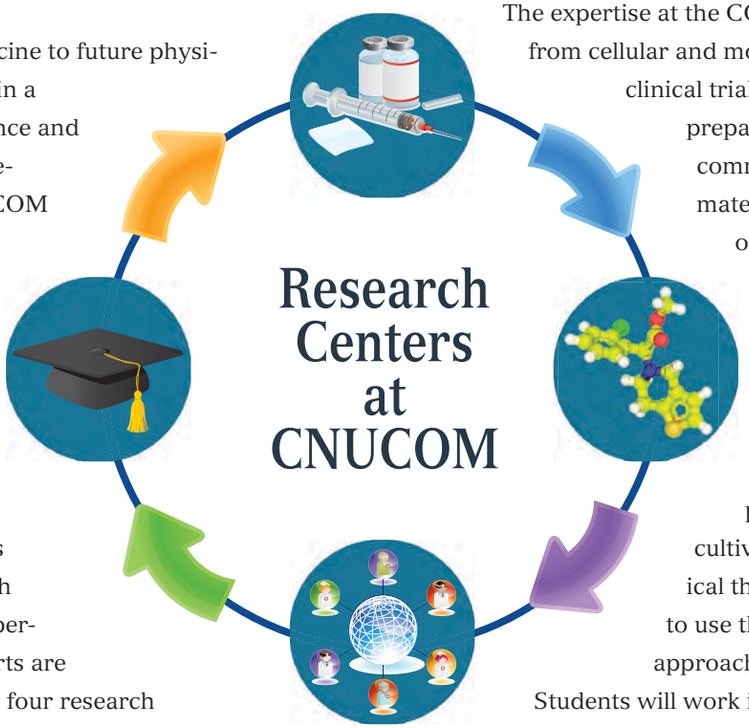
This process of using data to do continuous educational improvement is the basis of the College of Medicine Assessment Plan. It requires significant dedicated staff to manage the process and ensure that the data are collected, placed into appropriate software and database systems, and analyzed and presented for evaluation purposes. While these processes can be used on a year-to-year basis for quality review and improvement, these processes can serve the faculty and student better if it is used on a day-to-day basis. In this way, students and faculty can receive instantaneous updates as to student progress. This allows for more timely intervention when student performance lags. Moreover, if educational gaps occur, faculty can quickly identify and remedy those gaps before the end of the academic year.

The College of Medicine is proud to be at the forefront of developing an assessment plan that utilizes combined academic and technological resources to ensure the best possible education for our students. In this era of data-driven education, we can demonstrate the how, why, and when of student achievement as well as prove that we prepare our students for their careers as physicians.

# Research An Integral Part of Unique Program

At California Northstate University College of Medicine, we consider scholarly activity the formal work systematically undertaken to increase and apply basic science and medical knowledge. Through these efforts, our faculty-driven research endeavors are integral to the College of Medicine's goal of synthesizing teaching and research to not only enhance the quality of education provided to our students, but also enhance the greater body of scientific and medical knowledge.

Teaching the art of medicine to future physicians requires expertise in a wide range of basic science and clinical disciplines. Therefore, the faculty at CNUCOM work assiduously to develop a culture of investigation, critical thinking, and collaboration among our diverse faculty. Our faculty includes basic scientists with varied backgrounds as well as physicians with wide ranging clinical expertise whose research efforts are currently divided among four research centers:




1. Obesity, Diabetes, and Cardiovascular Disease
2. Molecular Pharmacology and Therapeutics
3. Global Health
4. Medical Education

CNUCOM welcomes researchers from within our university system and our community clinical affiliates to help us reach and surpass our scholarly goals.

The primary mission of our research centers is to coordinate and conduct research; collect and analyze data, develop and disseminate research-based advice and products, provide a wide range of technical assistance, and facilitate knowledge development and exchange among practitioners, administrators, and policymakers. The College of Medicine endeavors to create and maintain an environment where researchers in one discipline work in an interdisciplinary fashion, often just a few laboratory benches away, from an investigator in another field.

The expertise at the COM currently ranges from cellular and molecular biology to clinical trial development to the preparation of nationally commended educational materials. To take advantage of the diversity of our faculty and their experiences as a teaching tool, students are required to pursue a scholarly project of their choice. This project is designed to cultivate each student's critical thinking skills and ability to use the scientific method in approaching clinical problems. Students will work in conjunction with one of our many qualified faculty members studying anything from intracellular second messenger systems to harvesting data from clinical trials of hypertension drugs.

As CNUCOM continues to grow and expand our presence in the community, we hope to drive discoveries forward from clinical and bench research to population-based programs that will ultimately improve health care. Those interested in learning more about our developing research program, please contact CNUCOM's Assistant Dean of Research Dr. Robert Zeiler at Robert.Zeiler@cnucom.org.

# Faculty Accomplishments

## Books/ Book Chapters

- Mousa, S.A., **Arias, H.R.,** and Davis, P.J. (2013) Role of non-neuronal nicotinic acetylcholine receptors in angiogenesis modulation. *In Angiogenesis Modulations in Health and Disease. Practical applications of pro- and anti-angiogenesis targets* (S.A. Mousa and P.J. Davis, Eds.), Springer Science+Business Media, Dordrecht, The Netherlands, Chapter **6**, 55-75.
- **Corniola, R.S.,** Suskind, D.L., Lewinter-Suskind, L., Suskind, R.M. (2013) The Malnourished Child. Berdanier, Dwyer, and Heber, *CRC Handbook of Nutrition and Foods, 3rd edition*. Boca Raton, FL (In Press).
- Suskind, D.L., **Corniola, R.S.,** Suskind, R.M. (2013) Childhood Obesity. Berdanier, Dwyer, and Heber, *CRC Handbook of Nutrition and Foods, 3rd edition*. Boca Raton, FL (In Press).

## Peer-Reviewed Publications

- Taylor, D.H., Burman, P.N., Hansen, D.M., Wilcox, R.S., Larsen, B.R., Blanchard, J.K., Merrill, C.B., Edwards, J.G., Sudweeks, S.N., Wu, J., **Arias, H.R.,** and Steffensen, S.C. (2013) Nicotine enhances the excitability of gaba neurons in the ventral tegmental area *via* activation of alpha 7 nicotinic receptors on glutamate terminals. *Biochem. Pharmacol.* S1, 007 (9 pages) (Special issue: Psycho- and Neuropharmacology) (doi:10.4172/2167-0501.S1-007).
- **Arias, H.,** Feuerbach, D., Targowska-Duda, K.M., Aggarwal, S., Lapinsky D.J., Jozwiak, K. (2012) "Structural and functional interaction of (±)-2-(*N-tert*-butylamino)-3′-iodo-4′-azidopropiophenone, a photoreactive bupropion derivative, with nicotinic acetylcholine receptors" *Neurochemistry International.* 61(8) 1433-1441.
- **Arias, H.** Molecular Interactions between ligands and nicotinic acetylcholine receptors revealed by studies with acetylcholine binding proteins. (2012) *J Thermodynam Cat* 3:116.
- **Arias, H.R.,** Fedorov, N.B., Benson, L.C., Lippiello, P., Gatto, G.J., Feuerbach, D., and Ortells, M.O. (2012) Functional and structural interaction of (-)-reboxetine with the human α4β2 nicotinic acetylcholine receptor. *J. Pharmacol. Exp. Ther.,* in press.
- Huang, T.T., Zou, Y., **Corniola, R.S.** (2012) "Oxidative stress and adult neurogenesis—Effects of radiation and superoxide dismutase deficiency" *Seminars in Cell & Developmental Biology*. 23(7) 738-744.
- Gower-Winter, S.D., **Corniola, R.S.**, Morgan, Jr., T.J., Levenson, C.W. (2012) Zinc Deficiency regulates hippocampal gene expression and impairs neuronal differentiation. *Nutritional Neuroscience*. Epub ahead of print.
- **Corniola, R.S.,** Zou, Y., Leu, D., Fike, J.R., Huang, T.T. (2012)Paradoxical relationship between Mn superoxide dismutase deficiency and radiation-induced cognitive defects. *PLoS One* 7(11): e49367. doi:10.1371/journal.pone.0049367.
- Zou, Y., **Corniola, R.,** Leu, D., Khan, A., Sahbaie, P., Chakraborti, A., Clark, D., Fike, J.R., Huang, T.T. (2012) Extracellular superoxide dismutase is important for hippocampal neurogenesis and preservation of cognitive functions after irradiation. *PNAS* 109(52):21522-21527.

Continued on page 12

# Faculty Accomplishments

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## Presentations

- **Arias, H.** Invited Speaker: "Structural and functional interaction of antidepressants with nicotinic receptors", Pontificial Catholic University of Chile, Santiago de Chile, Chile, June 13 and 14, 2012.
- **Arias, H**. Invited speaker: "Functional and structural interaction of antidepressants with nicotinic receptors", TEAM Scientific Meeting' 2012, Laboratory of Medicinal Chemistry and Neuroengineering, Medical University of Lublin, Lublin, Poland September 11-12, 2012.
- **Arias, H**. Invited speaker at "Novel positive allosteric modulators of the human α7 nicotinic acetylcholine receptor", the 5th Seminar in Medicinal Chemistry, Medical University of Lublin, Lublin, Poland September 13-15, 2012.
- Targowska-Duda, K.M., **Arias, H.R**., and Jozwiak, K.," Importance of the nicotinic receptors in the therapeutic action of antidepressants." 5th Seminar in Medicinal Chemistry, Medical University of Lublin, Lublin, Poland, September 13-15, 2012.
- Targowska-Duda, K.M., Feuerbach, D., Gu, R-X., Ye, Y., Wei, D-Q., Jozwiak, K., and **Arias, H.R**. "Novel positive allosteric modulators of the human α7 nicotinic receptor modulate the antidepressant activity elicited by nicotine." 2012 Annual Meeting of the ASCB, San Francisco, CA, USA, Dec. 15-19, 2012. Expenses Support: This poster was supported by the ASCB with a travel award to K. Targowska-Duda, and by the TEAM Program (Poland).
- **Karpen, J**. "G-protein-coupled receptors that don't desensitize", International Society for Heart Research and the Western Pharmacology Society Banff, Alberta, Canada, May 30, 2012.

## Educational Materials

- **Vines, R.L**. "Cadaver Dissection Video Series for Human Anatomy and Physiology" Pearson, June 2012.

## Awards/Recognition

- **Arias, H.** Member of the Editorial Board, *World Journal of Pharmacology*, Baishideng Publishing Group Co., Limited. September, 2012-present.
- **Arias, H.** Advisory Board Member, OA Biochemistry, January, 2013-present.
- **Arias, H.** Editorial Board Member, *Marine Life Sciences,* April, 2013-present.
- **Vines, R.L.** *Faculty Recognition of Excellence* CNUCOM November 2012.

# Our Mission, Vision, Values

## Mission

To advance the art and science of medicine through education, service, scholarship, and social accountability

### Education

To provide the environment for its graduates to become life-long learners in the field of medicine.

### Service

To assist in serving the underserved in the community as a critical function of the medical school.

### Scholarship

To identify leaders in basic science, translational, clinical, and educational research; development of educational materials and processes; and leadership in science and education to foster a scholarly environment for the medical school.

### Social Accountability

To emphasize community service, community health, access to health care, global health, global health education, health care policy and advocacy, and diversity as essential elements of the medical school.

## Vision

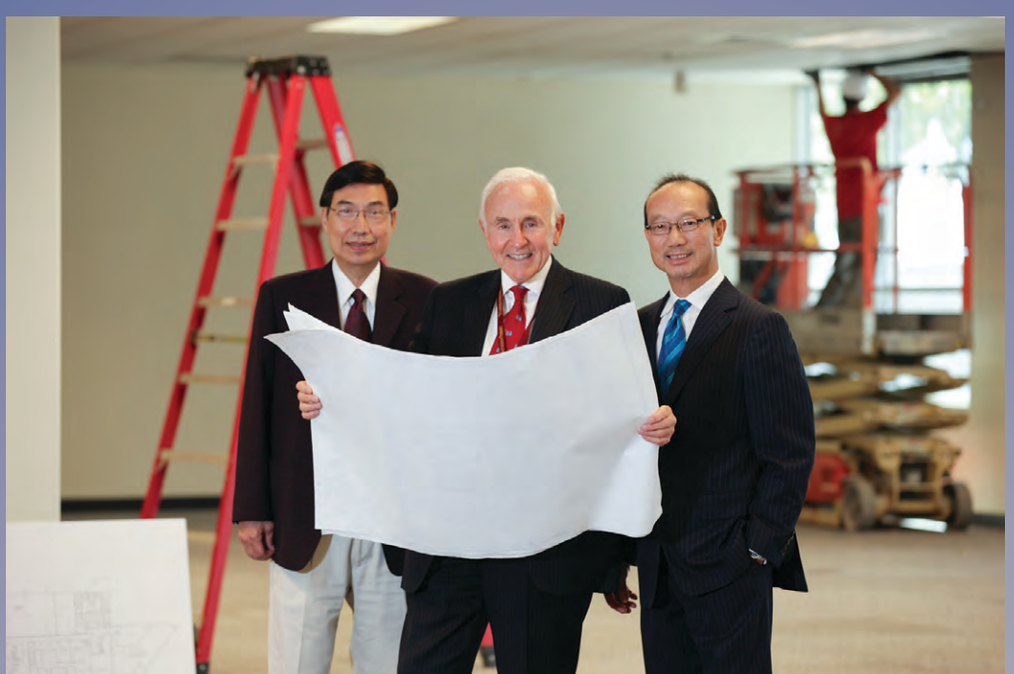
Develop a community-based medical school that will deliver innovative programs in education, research, and patient care.

## Values

The key values of California Northstate University College of Medicine are:

- Excellence in Medical Care
- Professionalism
- Ethics
- Compassion
- Social Accountability
- Innovation

CALIFORNIA NORTHSTATE UNIVERSITY
COLLEGE of MEDICINE



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9700 West Taron Drive, Elk Grove, CA 95757

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