UF Response to BOG Medical Education Questions
March 4, 2006

1. **"A more detailed description of their** (the State medical school's) **expansion plans including what resources both public and private that they anticipate needing. I would like to know what private funds are currently committed or they anticipate being committed to achieve these goals."**

   The University of Florida plan for medical school class expansion follows the recommendations made by the CEPRI on November 18, 2004 to the Board of Governors. CEPRI's Policy Recommendation 7 reads:

   > *"When expansion of medical school capacity is pursued, the options of expanding existing medical school capacity, establishing regional partnerships, and establishing new medical schools should be prioritized based on cost-efficiency."*

   In response to the Board of Governors, the University of Florida College of Medicine increased the size of its entering medical student class by 15%, going from an entering class size of 115 to an entering class size of 135 in 2005. To accommodate the additional students during their first two years of medical school, existing educational space was renovated by the College of Medicine without additional state funds. In 2007 the additional students will enter their clinical years of training. We have made plans for the students to have more of their clinical education at our regional urban campus, the University of Florida Health Science Center-Jacksonville (UFHSC-J). The College of Medicine is therefore fully responding to the CEPRI's recommendation to expand existing medical school capacity. Further, we have done so utilizing the regional campus model in partnership with Shands Jacksonville.

   Increasing our entering class size to 135 has maximized utilization of the College's educational space available to medical students during their first two years of medical school. Our current educational buildings and classrooms were planned during the 1960's and constructed during the early 1970's. The facilities were intended for an ultimate class size of 90 medical students. Thus our current College of Medicine classroom facilities are utilized at 160% of planned capacity.

   At UF, it is possible to increase our class size to 160 students. However, expanding our class size above the current level of 135 entering medical students will require additional classroom teaching space through further renovations and additions to our current educational facilities. The cost of this approach is $20,899,852 for the facility expansion and total (direct + indirect) cost per student FTE of $67,009/incremental FTE/year.

   A more rational and cost effective approach to increasing space for additional students is to construct a new medical education building, rather than renovating

existing space. Our current educational space for medical students during their first two years is not only overcrowded, but also architecturally and technologically outdated. The College of Medicine needs a 21st Century medical education building: one that is designed for beyond-state-of-the-art information technology and the use of simulators and standardized patients, rather than only the traditional lecture halls. The cost of a new medical education building, which could accommodate up to180 entering students each year, is $29,794,400. As above, the total per student FTE cost would be $67,009/incremental student/year.

The UF Senior Vice President for Health Affairs and the Dean of the College of Medicine have given clear directions to our Development Office to seek private funding for a new medical education building. The current plan is to seek a major donor for each of the 5 floors. If such donors are found, then the cost to the State to construct a new building would be reduced. Our Development Office opines that it is more feasible to raise private funds for a new building rather than for additions to dated existing structures.

CEPRI Policy Recommendation 7 is for the state's existing medical schools to help create a system of regional campuses. For the past decade, the University of Florida has been developing a robust regional urban campus, the University of Florida Health Science Center-Jacksonville (UFHSC-J), which has approximately 400,000 gross square feet of facilities. At the UFHSC-J, we utilize Shands Jacksonville as the major teaching hospital in partnership with Shands HealthCare. This is, in fact, a substantial contribution from the private not-for-profit Shands HealthCare corporation. UF has 327 full-time College of Medicine faculty and 306 residents in 20 different residency programs on our Jacksonville campus. The UFHSC-J is well positioned to provide clinical education to additional medical students. Increasing our entering class size increases from the current 135 students up to 160, would be accommodated by having a percentage of the entering class receive their first two years of education in Gainesville (in the new classroom facility described above) and then move to Jacksonville for the final two years of clinical education on our regional urban campus.

It should be clear from the preceding comments that the restricting factor in the size of our entering medical student classes is not the availability of *clinical facilities* but the availability of classroom and learning lab facilities for students during their first two years of medical school. As stated, we have plans to overcome this limitation through addition of space to our current Gainesville educational facilities or the construction of a new medical education building. Down the longer road, the University of Florida College of Medicine could consider forming a four-year regional partnership that would provide both the first two years of pre-clinical education as well as the clinical years to some of our medical students at a facility not located in Gainesville.

2. **"What additional residencies can we hope to achieve, both with and without their expansions, and how will they be funded?"**

Increasing the size and variety of residency programs is largely independent of increasing a medical school class size. The Board of Governors is well aware that further increases in the production of medical school graduates in the State of Florida without increasing residency positions is not the optimal strategy to address the State's physician shortage. This is because of the current lack of available residency positions in the State. Florida ranks near the bottom of available residency positions per 100,000 citizens of any state. Graduating additional medical students will simply result in many leaving Florida in order to find residencies available in other states. The national experience, and that of Florida, predicts with a high degree of certainty that these Florida graduates will ultimately practice outside Florida, near the facility where they complete their residencies. These realities led to the CEPRI Policy Recommendation 3:

> *"To address the immediate and/or impending physician shortage in the State, the State of Florida should first pursue a policy of creating and expanding medical residency positions in the State."*

The number of residencies and variety of specialties that any academic health center sponsors is dependent on a number of factors including the spectrum and number of clinical cases seen, the available applicant pool, the number and expertise of the faculty, and the available funding for residency positions.

There is considerable room for expansion of residency positions in the UF and Shands HealthCare system if funding becomes available. We have currently applied for additional resident FTE funding through the Veterans Administration Healthcare System which has plans to increase the percentage of residents it funds from the current 9% of the country's total to 11%. Regarding other sources of funding for residencies, we agree with CEPRI Policy Recommendation 4:

> *Given the federal funding limitations on the expansion and creation of residency positions, the Legislature should provide direct state funding for the residency positions at a rate no less than half of the average estimated direct cost for residency training. Funding for residency positions should be targeted to areas of on-going critical need to the state."*

Florida needs more opportunities for community-based and outpatient experiences in resident education. Those opportunities are currently limited because funding for resident education is tied to service in the hospital through the Medicare system. Financial support from the State directly to our existing medical schools for residencies would not only be a direct investment in producing more physicians for Florida, but it would also improve the quality of

resident education and facilitate educating the kinds of residents needed to serve the citizens of the State of Florida.

UF has increased its medical school class size by 15%. Those students will be ready for first-year residency positions in 3-4 years. Logically, we should work to have the same % increase in resident FTEs by the time they graduate. Every medical school in the State has increased its entering class size. Those schools that have associated residencies and could follow the same logic. This approach would be a start but would likely keep the State ranked at or near # 44 in residency positions per 100,000 citizens. The University of Florida in Gainesville currently has 603 residents and UF-Jacksonville has 304. Thus, using the 15% logic we should offer a total of 136 new residents in the UF programs in order to retain these students in Florida.

UF College of Medicine has 1193 faculty on two campuses, excellent teaching hospitals in two cities, a broad array of community-based and university-based clinics, and a large number of patients being served on our two campuses. Thus, UF could easily provide residency training for 200 additional residents if funding were available.

National and state data indicate that the total direct cost per resident FTE is approximately $100,000 per FTE per year including resident's salary and fringe plus costs of faculty supervision. Expanding existing residencies at the medical schools takes advantage of existing faculty resulting in the state cost per resident FTE per year of $50,000.

3. **"How do they see the integration of more technology and/or other innovations or new ideas being incorporated into their approaches for medical education, delivery of health/medical services and research?"**

The missions of education, research and clinical care are integrally combined in the country's best academic health centers. Educating future physicians to provide modern diagnosis and treatment and compassionate care requires us to be at the forefront of innovation. When students learn the principles and practice of medicine in an environment where the most up-to-date care is delivered and where new therapies are being discovered, they leave their formal training maximally prepared for contemporary practice and for a future of life-long learning. At the same time students must be educated in an environment that recognizes the patient as an individual and where attention to safety is fostered. At UF we are recognized by the national medical school accrediting body, the LCME, as providing one of the most innovative, humanistic, and interdisciplinary curricula in the country. We have also been at the forefront of the use of human patient simulators, standardized patient experiences, and virtual patient simulations in medical education. The colleges of the UF Health Science Center have been leaders in the development and use of distance education, delivering

health education to programs in Jacksonville, Orlando, St. Petersburg, and elsewhere in Florida.
Over the past 50 years, the State of Florida and the federal government have made significant investments in our State's existing academic health centers. Enhancing these institutions, to not only keep them up to date, but forever forging into the future, is an efficient and cost effective strategy to address the State's needs.

4. **"What economic development via research and its applications/spin offs and expanded health and medical services do they anticipate?"**

Florida's existing state medical schools have a tremendous local and state economic impact. In FY05, the College of Medicine in Gainesville and Jacksonville employed approximately 8700 people for a total payroll of $340 million. If one includes our teaching hospitals (Shands HealthCare) we employ 15,000 citizens and have a payroll of approximately $1B. In addition, the College of Medicine leverages its current state funding (now at approximately 9% of its total budget) to garner additional resources through federal grants and contracts, foundations and other private sources. For each state dollar invested in the College of Medicine creates an estimated $8.88 in funding from other sources. This should be an expectation of any medical school in today's fiscal environment. Studies at the University of Virginia and the University of North Carolina have clearly demonstrated, however, that the economic impact of a school of medicine is directly related to the size and success of its research programs and its clinical enterprise.

Like UVA and UNC research plays a very large role in the economic impact of UF's College of Medicine. In FY05, the College generated over $250 million in sponsored research awards. Research funding expenditures cycle through the state and local economies, transforming federal funds into revenue for Florida residents and businesses.

In 2003, UF joined the top ten of all US universities in the number of patents issued, driven in large part by medical research. The inventions and knowledge of UF faculty and staff have helped create many new companies. The Health Science Center has licensed 568 technologies to private industry, and HSC faculty hold 356 U.S. patents.

Companies that have licensed UF technologies contribute a half-billion dollars a year and 2,000 jobs to the state's economy. The HSC accounts for as many as two-thirds of these spin-off technologies. Two of our health-related spin-off companies, Regeneration Technologies and MRI Devices employ upwards of 700 people. Moreover, three venture capital firms have recently opened local offices to capitalize on UF spin-off company opportunities. Currently, there are fifteen biotech companies at the Sid Martin Biotechnology Incubator with a basis in the Health Center, including Oragenics, Applied Genetics Technology and

Nanotherapeutics, Inc. Applied Genetics received $15 million in venture capital funding in 2004 and recently entered into a major research agreement with biotech giant Genzyme Corporation. Oragenics received FDA approval in 2005 to begin human clinical trials on a gene-related treatment for tooth decay and has grown its employment base. Daimonion Diagnostics LLC received a $1.3 million contract by the Department of Defense develop its low-cost alternative to MRI's that would detect the severity of trauma to the brain.

Some examples of the local economic impact of UF's Health Center research inventions include: Gatorade (to date produced $120 million in licensing income), Trusopt, an anti-glaucoma drug (to date has produced $143 million in licensing income), Regeneration Technologies, Inc., a College of Medicine spin-off company that processes human tissue for implants (generated $60 million in capital for UF.)

Going forward, the College of Medicine's faculty is creating new companies including Applied Genetic Technologies Corporation which develops gene therapy products for the treatment of inherited and acquired diseases. It has three products in active development and several additional product candidates in its research pipeline. The company received a $15 million venture capital investment in 2004. With regulatory approval, the company expects first-year revenues in 2009 to reach as high as $100 million. Oragenics Inc., now in clinical trials with a treatment for lifelong protection against tooth decay, is the brainchild of a College of Dentistry faculty member. With approximately 90% of the U.S. dental care market focused on repair $40 billion directly related to tooth decay, Oragenics' lead product could generate $1 billion annually. Gainesville-based QuickMed Technologies joined with UF researchers to produce a microbicidal coating that kills the two most common and harmful types of antibiotic-resistant bacteria. The coating permanently bonds to fabric and other substances, making it ideal for microbicidal wound dressings, hospital gowns and even paper towels and contact lenses. Wound care is a $3 billion industry and the demand for additive chemicals for cosmetics and toiletries is expected to reach $7 billion by 2008.

The other driver of economic impact is the size and success of a college of medicine's clinical enterprise, including that of its teaching hospital(s). The University of Florida College of Medicine and Shands HealthCare together have been estimated to have a $2.5 billion impact on the economy of the state. Colleges of medicine around the country that have little or no research enterprise, limited clinical services provided by the faculty, and no teaching hospital partner can not be expected to achieve this type of impact. The State can, and should, expect a real and substantial multiplier effect of investments in the existing State medical schools that have already developed robust research and clinical enterprises. One can not expect the same from a school of medicine with minimal or modest research, no faculty practice program, and no supportive teaching hospital.

5. **"How can they leverage existing resources through partnerships with other universities and/or other agencies to avoid duplication and maximize efficiencies? In this response, I would like to have some discussion of the other CEPRI recommendations."**

   The answers to this question are at the core of decisions to be made by the Board of Governors. Duplication of existing programs by definition minimizes efficiencies, and is the least cost effective way to expend resources. The formal partnership between the UF College of Medicine and Shands HealthCare in the creation of our urban regional campus in Jacksonville (UFHSC-J) is a good example of maximizing efficiencies to expand the medical school's class size and improve the quality and availability of health care for the citizens of North Florida.

   The State of Florida has incredible opportunities based on its size, diversity of citizens and communities, and resources. The key to our future will be maximizing these benefits. A possible solution is regionalization of medical education. The State could define regions, and request that medical schools in these regions formulate explicit and rational plans to form partnerships with teaching programs and hospitals within their region.

   Pursuing partnerships with hospital systems, universities and/or other agencies could be a strategy that fulfills all or most of the CEPRI recommendations. For example, Policy Recommendations #1 and #2 ask the legislature to enact the Florida Healthcare Practitioner Workforce Database. That database would serve as the official statewide source of valid, objective and reliable data on the physician workforce and provide a rational basis for defining regions and developing a model to quantify the adequacy and distribution of the state's physician workforce. Having this database would be essential to the formation of the kind of partnerships suggested by Governor Duncan.

6. **"How will their plans address the need to further elevate the status and prestige of the public medical schools in the State?"**

   The State of Florida is fortunate to have public medical schools with excellent reputations in education, research and clinical care. The University of Florida College of Medicine is currently celebrating its 50th anniversary, having opened its doors in 1956. Maturation of a school of medicine requires substantial and sustained investment and a long lead time. We are proud of our accomplishments in education, research and clinical care over the past 50 years and we eagerly accept the challenge of helping the State address its current and future physician workforce needs. The UF College of Medicine is well aware of the difficult decisions facing the Board of Governors regarding increasing physician numbers in the State of Florida. Investment in Florida's existing public medical schools can only enhance their status and prestige, and thus enhance the status and prestige of Florida and its system of higher education.

The University of Florida College of Medicine intends to continue growing in stature and prestige during the 21st Century. Our educational programs are considered by the Association of American Medical Colleges and the Liaison Committee on Medical Education to be among the most innovative in the country. The College of Medicine has doubled its external funding for research over the past 5 years and we are committed to continuing this trajectory. The UF Health Science Center now brings in over $250 million in research funds to the State from federal institutes, foundations and granting agencies. We provide the most advanced and highest quality health care to Florida's citizens. We can, and we will expand this level of excellence with continued investment by the State of Florida and by maintaining and enhancing our competitiveness.