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**A REPORT ON THE LIFE SCIENCE WORKFORCE FORUM:
A CATALYST FOR TRANSFORMING
GEORGIA'S BIOSCIENCE TALENT**

Jonathan Lochamy
John V. Aliff
Georgia Perimeter College

Note from the authors – As you read through the remarks of education and industry leaders, please notice the pattern of need that can only be met by science educators.

On Thursday, December 4, 2008, the Atlanta Journal-Constitution reported that Kansas State University was selected as the site for the National Bio and Agro-Defense Facility. The University of Georgia was one of the finalists. Would Georgia have been more competitive if the University System and technical colleges of Georgia had more training programs for Bio-Tech students?

On November 19, 2008, a forum addressed Bio-Tech workforce training needs of Georgia. The forum, held at the U.S. Center for Disease Control, Clifton Road, Atlanta, was sponsored by the CDC, Georgia Bioscience Technology Institute, The Yerkes Primate Research Institute of Emory University and Resonance Marketing. The conference began with a keynote address by Dr. David Satcher, former U.S. Surgeon General and director of the Center for Health Disparities of Morehouse School of Medicine. Dr. Satcher emphasized the need for minority participation Bio-tech training programs, scientific literacy for all citizens, and the need for more scientists in education. Meeting these needs is essential he said to “mining the diversity of our culture” and taking maximum advantage of the skills available in Georgia. Dr. Satcher found hopeful the election of Barack Obama as President of the United States. He foresaw increased participation of scientists in government, better pay for science teachers and the encouragement of parental support of science students.

As salaries in the life sciences have increased an average of 41% to \$63,000 in the last seven years, compared to an average of 24% and \$42,000 in all other sectors¹, the life sciences have become an even more attractive field to prospective students.

Georgia ranks #9 in population, but we are #13 in producing Life Science graduates. Georgia ranks low in salaries paid to life science employees, other than microbiologists and physicians. Dr. Jeff Humphries, Director of the Selig Center for Economic Growth at U.G.A., pointed out that life sciences jobs have doubled the national rate of jobs increase in general. Georgia ranks high with a 17% increase in life science positions. At the same time, many of these are being filled by applicants with experience from other states. A 2008 report on the status of the life sciences industry¹ in Georgia cites a

specific need for applicants with both training in the life sciences and managerial skills and experience. A survey of 47 life sciences companies cited this as the most critical element of labor force availability and Georgia's greatest labor force weakness. A sector analysis also shows a lack of applicants with training suitable to wildlife and environmental biology, paired with anticipated growth in these sectors.

Dr. Jan Youtie of the Innovation Enterprise Institute of Georgia Tech presented the findings of a 2008 report on the educational needs of the life sciences workforce² in Georgia. This report predicted a growth of 38% in the employment of medical professionals between 2004 and 2014. During this same period a greater than 25% growth is predicted in the employment of agriculture and food scientists, medical and clinical technologists, biomedical engineers, and laboratory technicians with Associate's degrees. It should be noted that Georgia fell short by 90% in providing clinical technologists with a Bachelor's degree and that only four institutions currently offer this degree.

"Currently Georgia ranks 10th among all states in the overall number of bioscience graduates. Since Georgia is the 9th largest state in terms of population, an overall bioscience ranking of 10th means that the number of bioscience graduates nearly proportional to the state's population. However when we compare Georgia's ranking in the five individual categories, Georgia ranks in the top ten states only in the clinical/technical category. In the other four categories, Georgia's ranking varies from a low of 25th for medical sciences, to a high of 13th for biological sciences. . . . Although the present level of bioscience graduates is adequate for the state's current needs, if the state were to set ranking among the top five states in one or more of the five subcategories as a goal, it would be necessary to increase very substantially the size of the state's higher educational bioscience programs (*ibid.*)" Dr. Youtie stated that the number of life science graduates would have to increase by 50% over the next 7 years just to maintain the current ranking (9%) of the state of Georgia.

Dr. Marcia Jones of the Center for Agribusiness and Economic Development at U.G.A. presented findings from a 2008 study on the workforce needs of agribusiness³. Approximately 10% of agribusiness companies engage in the biological sciences. Nearly half of the full-time positions in these companies (47%) require a four-year degree. Over 60% of these companies intend to increase their college-educated workforce significantly over the next year, while only half that intend to increase their general staff. Mirroring the results in the general life sciences industry, soft skills such as critical thinking and oral communication are required much more frequently than work experience.

A separate panel of employers included executives from CryoLife, CDC, Yerkes Primate Research Center, and the technical employee search company Aerotek Scientific, LLC. The speakers related the importance of biotech training for national defense and general health, with the latter relating directly to economic growth. Employers prefer to see more training of college graduates in these areas: a. ethics, b. critical thinking and problem

solving, oral and written communication skills, d. customer service and e. mathematical skills. Jennifer Maffia of the employment firm Aerotek cited the lack of such practically trained job applicants as a reason for industry pullbacks from Georgia. The life sciences industry as it matures has entered a merger and consolidation phase where companies consolidate their operations to locations with the highest staffing potential. Due to the economic recession, on-the-job internships were down last year in Georgia. The senior vice-president of research for Cryolife, Dr. Al Heacox, related that state support of internships, science education, and basic research would be economically effective for the state of Georgia. Echoing the statements of Ms. Maffia, he stated that there is currently a disjunction between the graduates in life sciences and the companies that wish to hire them. Students remain unaware of potential career fields until after graduation and therefore fail to acquire the necessary skills for the available jobs.

The repeated themes from both education and industry are the need for a higher number of graduates with practical skills and experience, not just degrees. As educators, it is our job first and foremost to prepare our students with the necessary skills for employment. It is becoming painfully clear that those skills cannot be acquired exclusively through our classrooms, and yet our students must possess these skills before leaving our institutions. We at the Georgia Academy of Science should seek to serve as facilitators between our students and their future employers, creating opportunities to gain this practical training. As funds have dried up for post-graduation internships, we must create programs for service learning. We must seek out local life science companies and collaborate on these extended activities as well as fostering short shadowing experiences. These activities currently reside in the realm of the individual professor and the occasional student. In order to provide for the future of Georgia's life science industry, these activities must become the rule, not the exception.

The Georgia Academy of Science has done more than any other organization to encourage the basic research needed to develop the interest of science students. In evidence are the hundreds of student research abstracts published each year and presented at our annual meetings. Now our federal and state governments have recognized the need to produce students who have the knowledge and skills to fuel economic progress, our Academy should sound the clarion call for action. The political climate of the recent past has emphasized attacking teachers and teaching as roots of the science literacy crisis. Tough economic times have renewed a public concern that academicians should be teaching, rather than researching. While teaching may be the challenge for two-year institutions, the four-year institutions should answer the call by encouraging, rather than discouraging, more basic research. Students are inspired by doing, few are inspired by listening.