early diagnosis, treatment, and care. Several university partners have expressed their deep interest in partnering with us on the research and development issues of such a project. We feel that the same technologies will also be relevant to research in broader populations, including attention deficit disorder, language disorders, Alzheimer's treatment and research, and many more areas.

S.S. Demir: Lots of the readers will be interested in hearing about related career and/or investment opportunities. Would you please summarize the career and/or job opportunities?

R. Oberleitner: We are a small business, currently being modestly funded by multiple sources. We have submitted proposals for a number of external grants from both the federal and private sectors; they are currently being reviewed. As our growth continues, we anticipate creation of a wide range of multidisciplinary opportunities. The job openings will include biomedical engineers, computer scientists, and information technologists. We believe that there will be many challenging and financially and emotionally rewarding career paths carved out for the professional staff tackling special-needs disabilities.

We invite socially minded investors and large company collaborators who see this as an opportunity to help leverage their resources to provide these bioengineering services quickly and dramatically. We've intentionally kept the TalkAutism services as a branded entity with potential intellectual property opportunities. Philosophically, we believe in industry's role to accelerate the availability of these bioengineering services to support families, universities, and governments.

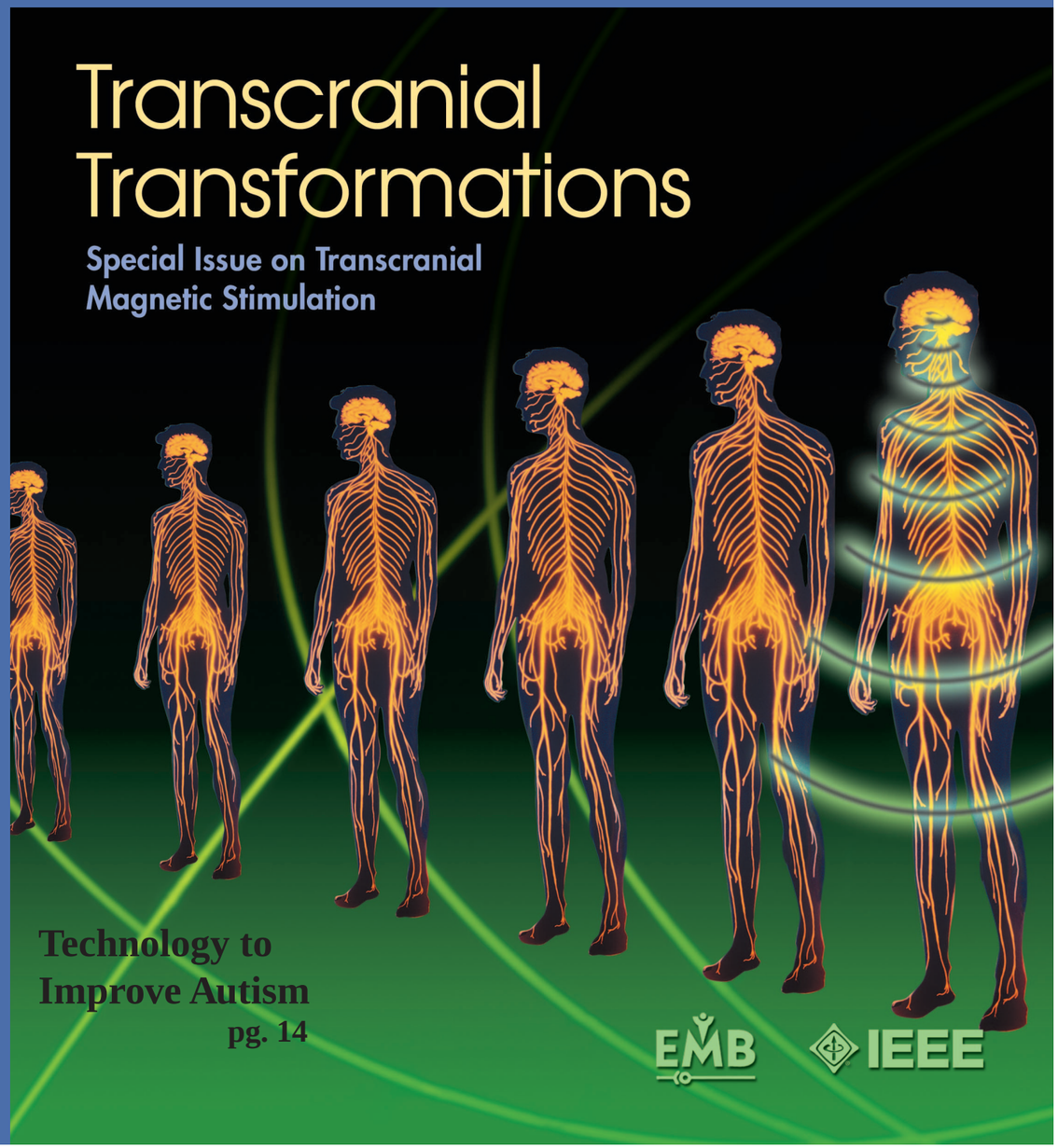
Autistic people's decisions on computer programs may be "biomedical data," defining their behaviors.

S.S. Demir: Please let us know of the Web site from where our readers can get further information about your company.

R. Oberleitner: Our current communication services can be viewed by going to www.talkautism.org, where nearly 1,000 families and professionals use Talk Autism each day. Bioengineers and companies interested in sponsoring collaborative research activities, or wanting to be apprised of the progress of bioengineering principles applied to autism, may also want to go to www.autismtechnology.org. Readers should feel free to contact me directly at admin@talkautism.org.

IEEE ENGINEERING IN
MEDICINE AND BIOLOGY
Magazine

VOLUME 24 • NUMBER 1 ■ http://EMB-Magazine.bme.uconn.edu ■ JANUARY/FEBRUARY 2005



BME Company Profiles

talking to the autism community

Semahat S. Demir

In this column I am featuring e-Merge Medical Technologies and specifically its TalkAutism service by presenting an electronic interview I recently had with Ron Oberleitner, e-Merge's president.

S.S. Demir: We were honestly surprised to see TalkAutism exhibited at our recent annual meeting. Would you please introduce TalkAutism to us and let us know the connection to bioengineering?

R. Oberleitner: Historically, e-Merge has been successful in introducing emerging technologies to the medical marketplace in fields of telemedicine, advanced diagnostics, and Internet services. In 2001, due to my own personal involvement with autism and knowing the unfortunate rise in new diagnosed cases, we redirected much of e-Merge's resources to introduce and now manage a technology-based service called TalkAutism, a branded communication service for this rapidly growing special-needs population. People with autism have a broad spectrum of deficits in communication and social skill abilities and of detrimental behaviors, and yet they respond well to intervention if diagnosed and worked with at an early age. TalkAutism has rapidly become a national "watering hole" for the autism community, providing online threaded discussion boards, distance learning, informational resources, and identification of specialists in all fields of education, therapy, and medicine. It's available to the public directly at www.talkautism.org and through embedded services within other autism organizations' web sites. With an identifiable network now created, we are now focused on developing a telehealth service and data management platform to help families communicate health and behavioral issues remotely, while providing better health and educational data to accelerate research. Upon interactions with biomedical engineering world leaders like Prof. Swamy Laxminarayan, we attended the recent Engineering in Medicine and Biology Society (EMBS) Conference in San Francisco to both present a paper on this telemedicine platform and, at the same time, communicate our deep conviction that the bioengineering community has a critical role to play in helping the world to understand and address medical mysteries like autism and other broader neurological disorders. We want to tap into the EMBS braintrust on behalf of our autism community and children. The EMBS conference in San Francisco was a great opportunity to present autism issues and problems to a large audience of pioneers in biomedical engineering. Their most valuable inputs have significantly contributed to our understanding of newer technology perspectives in autism research, early intervention, and treatment.

Ron Oberleitner

S.S. Demir: Why is bioengineering so important to the treatment or research of autism?

R. Oberleitner: Children with troubling neurological disabilities like autism struggle to communicate their feelings or intentions to their parents and others in the world around them. Families struggle through crisis after crisis dealing with tantrums, sleeplessness, obsessions, and nonspecific behaviors. Health and educational professionals are making progress in helping these children. We now have the opportunity to tap into the expertise of the bioengineering community for an objective, scientific interpretation of these behaviors and perhaps their intended communication.

S.S. Demir: Where are your company's efforts concentrated in bioengineering and biosciences?

R. Oberleitner: On the one hand, we needed to have an understanding of what objective data acquisition was technically possible to help us reach out to existing autism clinicians and researchers in the pursuit of alternative research tools and approaches which might yield further results in the treatment of this disability. And at a practical level, like countless other families communicating their needs on TalkAutism's communication services, families need more support from their homes to get help. This is where telemedicine can play a huge role. For example, we see a great potential benefit in transmitting secure video clip data from home as a means to communicate indescribable behaviors and self-injury.

Early on, we elicited the experiences of Prof. Swamy Laxminarayan. His past research in such medical conditions as sudden infant death syndrome (SIDS), epilepsy, sleep disorders, AIDS, and leprosy, helped convince us that bioengineering and bioscience principles are of paramount importance to the understanding of the disease state, as well as to the impact of technology on the detection, monitoring, and early intervention of the autism sufferers.

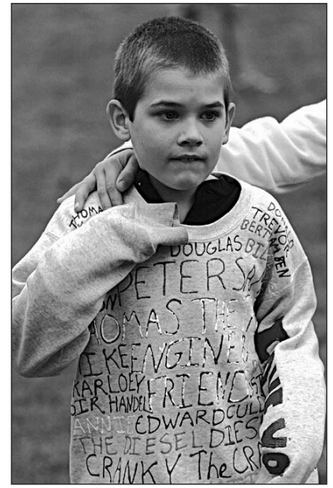
Biomedical engineering and biomedical information technologies will play a major role in the future in addressing these issues. What bioengineering did for heart patients in the 1960s with pacemakers and advanced imaging in the 1970s and 1980s with CTs and MRIs, we believe bioengineering can do for special-needs individuals—allowing more objective communication of neurological disorders so that clinicians and researchers have more data to work with. We think bioengineering expertise can support meaningful advancement with autism this decade. Our company is currently very active in the development and implementation of various technologies, and the TalkAutism forum can complement the effort by bringing needy families together with the professional community, which openly embraces better means of communication and richer data to work with.

S.S. Demir: Is there a market for such technology and services?

R. Oberleitner: The United States already pays an estimated US$90 billion a year for services and treatment for up to 1.5 million people diagnosed with autism in this country alone—most under the age of 13. Other countries are facing similar incidences. In less than ten years, the societal costs are expected to rise to US$200–400 billion per year. As an example, 15,000 public school districts currently pay up to US$60,000 per child to bus children to out-of-district special-education schools. The improved capture and communication of student medical and behavioral observations to remote experts could meaningfully reduce the need to do this. Families could also better communicate with professionals. Thus, our services should keep more students in local educational settings and help families deal with a greater range of difficult behavioral and medical events in the home. Importantly, researchers would be able to obtain far better data on this disability and have access to a greater study population; stressed families and remote rural families are more likely to participate in behavioral studies through telemedicine, reducing stressful travel. A huge market exists for using biomedical technologies like telehealth and information technology just for the current treatment and services available—and there's an even more dramatic market and business opportunity if such data can lead to more effective treatments and cures. And beyond this, a huge international market looms where there is even less access to expertise on this important disability.

S.S. Demir: Would you please comment on your company's partnerships, collaborations and alliances?

R. Oberleitner: We've developed strategic alliances with universities who are interested in the TalkAutism environment as well as other telemedicine initiatives we are developing. E-Merge's project management expertise in targeted grant programs is focused on 1) autism—a recently identified priority by NIH, 2) technology applications, and 3) rural healthcare and underserved populations. Through publications and a presence at international congresses and special topic meetings, we have attracted a great deal of interest and collaborative support from both industry and academia. Upon request from Prof. Laxminarayan, we have interacted in the development of a proposal to globalize autism research efforts through the International Federation for Medical and Biological Engineering. We are also developing partnership initiatives with the European Union countries. My wife and I also founded and now support a nonprofit organization, Princeton Autism Technology (www.autismtechnology.org), which dedicates itself to researching and applying technology solutions to assist the autism community.



Eleven-year-old Robby Oberleitner—and up to 1.5 million others—are afflicted with autism in the United States. Its incidence is believed to be comparable worldwide.

S.S. Demir: Can you give us an overview of the new areas that your company will expand into in the near future?

R. Oberleitner: Our long range goals are focused on developing center-of-excellence-quality telehealth and informatics services. This will facilitate a unique informatics research environment and the remote collection of a broad spectrum of pertinent data to support multiple worldwide initiatives, including NIH's Autism Phenome Project priority. Autism research currently benefits from advances in speech processing, face processing, gaze processing, functional magnetic resonance imaging, mathematical modeling of the brain, genetic engineering, and other cognitive measures. Our services will provide both the infrastructure and the intelligent tools for data mining and interparameter correlations for effective

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