Brainstorm: Not Just Another OTL Newsletter

The computer age is making our lives easier and more complicated. Although we can quickly obtain colossal amounts of information, how much of it do we really want to use? If you are a medical student studying neuroanatomy, BrainStorm: Interactive Neuroanatomy could be your solution.

Back in 1990, Stanford University Medical Media and Information Technologies (SUMMIT) was founded to create new technology that helps faculty, students and researchers develop innovative, interactive teaching software and to research methods of making these technologies easy and effective for content creators as well as users.

One of the first projects out of the SUMMIT was the creation of BrainStorm, interactive software for students to learn and test their skills for neuroanatomy. After disclosing BrainStorm to OTL in 1993, the program was eventually exclusively licensed to Mosby Publishing.

But the story doesn't begin or end with this short description. Rather, as with all new technologies, it has a unique past which SUMMIT, OTL and Mosby hope will lead into a prosperous future.

Gary Coppa, a first year medical student in 1989/1990, joined the Media Research Group (MRG), a precursor to SUMMIT headed by Professor Robert A. Chase. MRG was working mainly on Electric Cadaver, a computer-based gross anatomy program. Coppa started tackling a neuroanatomy computer project, which was difficult due to the numerous cross references a student would normally use. Instead of a medical student having four books open at once, he or she could see all of the necessary information on one screen and link it with other pertinent information at the click of a button.

After the funding for his project ran out, Coppa approached SUMMIT with his work. SUMMIT readily took it on.

As Coppa learned more programming "on the job", he continued his medical studies. During this time, Dr. Elizabeth Tancred, a neuroanatomy lecturer in Australia, was on sabbatical at Stanford. Planning on developing software to teach neuroanatomy herself, Tancred learned of the Electric Cadaver program on a local TV station. "It was fortuitous that Coppa was working on a prototype for what was to become BrainStorm and was looking for academic input," said Tancred. "With more than 10 years teaching experience behind me, I was able to provide that. We pooled our ideas and experience and BrainStorm evolved from Coppa's original concept into what it is today."

Tancred's connections also helped them obtain some of the beautiful pictures and artwork continuing on page 2.
A lot of our ideas come from students because they arise from the students’ needs and the way they learn," said Dev. Although BrainStorm is mainly used by medical students, it can be used by virtually anyone who wants to learn neuroanatomy. "BrainStorm is very user friendly," said Martino. "Even high school students could use it. It’s convenient and easy to use, and it allows a smooth ride through the frustration of cross-referencing through different heavy books." It left behind behind. This is close to what the author of this article could navigate through it.

Neuroanatomy Test Spin

With a past in biological sciences, I could not help but help myself to spin through BrainStorm. Once you start, it’s difficult to stop.

Upon entering the program, you are asked to choose between three sections: Cross-Sections, Gross Dissections, and Gross Dissections of Crossed Sections of Central Nervous System structures, in which anatomical structures can be selected and followed through cross-sections. Neuroanatomy Test Spin

It was difficult to pick just one of the three because they are all very well thought out and comprehensive. It was very helpful in keeping track of my progress through the program.

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SUTECH Trademark: quality and recognition

A trademark is an important way for a consumer to identify the source and quality of a product. In order to protect the reputation of the highest standard of quality for special Stanford-created technologies, we are pleased to announce SUTECH™ and its trademark logo (right).

Individual Stanford lab groups who have developed technologies may want to display the SUTECH™ logo on their websites. We invite you to visit the site of one of our newest SUTECH™ users, the Stanford Sequencing and Technology Development Group (http://sequence.stanford.edu/group/techdev/index.html). The Technology Development Group develops custom biological instruments and novel automated technologies to increase the throughput and lower the price of certain biological techniques and analyses.

We are interested in finding more Stanford products which can qualify for the SUTECH™ trademark. If you have innovative, high quality technology that can benefit from trademark recognition, please contact Jessica Smith at jessica@stanford.edu (415-322-1566).

Technology Spotlight

Continued from page 1

50,000 sequence motifs that were derived from EMOTIF, and each has an associated biological function. This method has the potential to help researchers improve and design new gene therapies. To try either tool, please visit http://motif.stanford.edu or http://motif.stanford.edu/identify. To request more information, please contact Kirsten Leute at (650) 725-9497 or kirsten@ostl打拼斯坦福大学计算机系。

Making Automobiles?

Driving in the valleys of California or in the plains of the midwest, one is awed at the large vehicles driving through the fields of grains. Now imagine these vehicles without human drivers. No, we’re not talking about any other animals taking the place of people. In fact, farmers use the increasingly popular Global Positioning System to steer their tractors.

Created by Thomas Bell, Professor Bradford Parkinson, Michael O’Connor, and Abraham Skolnik in the Aeronautics and Astronautics Department at Stanford, the automated control system for land vehicles offers low cost precision navigation that does not require specific external cues for successful operation. It could be useful in clearing minefields, cleaning up toxic waste, appending hazardous pesticides, transporting disabled people and, as noted above, endless crop harvesting.

Please contact Luis Mejia at (650) 723-0651 or luis@ostlint Gdańsk for more information regarding this invention.

Looking for Low Fat? AGRP (597-025)

As is evidenced daily in our lives, people are obsessed with their weight. From the very start, the miracle pills to weight loss centers, people go to extraordinary lengths to lose a few pounds. As more products and protocols are brought to market, the problems of obesity and anorexia just appear to get worse.

A newly discovered protein, agouti-related protein (AGRP), may be a key to combating weight gain. To do this, researchers in the hypothalamus and the adrenal gland has been shown to control body weight in response to signaling by leptin, a protein involved in the weight control process. In experiments done by Stanford researchers Brent Wilson and Michael Ollmann, deficiency of leptin in mice without certain control genes caused nearly a tenfold increase in Agrp expression. Overexpression in transgenic mice carrying an Agrp gene increased weight gain and body length.

AGRP is not involved in any physiological processes besides body weight regulation and therefore may be an ideal pharmaceutical target. Previous drugs have been involved in multiple processes and therefore had problematic side effects. New Agrp agonists during experiments Within the past decade of each prototype methods have been developed which can produce complex shapes but these techniques cannot produce good enough surface finishes for high performance structural ceramic components.

Professor Friedrich Pitz, Alexander Cooper and Jürgen Kitzelman of the
BrainStorm is that you get to "play doctor." Although most of the people who are using the program are on their way to attaining this position, for those of us whose paths diverted to other directions, doing basic tests and then making simple diagnoses on sample patients can be an exhilarating sensation.

If you are an instructor that uses the BrainStorm program as a part of your classes, you can create customized tutorials and exams within the program. This additional feature is available only on the institutional version of the program. Yet another upcoming improvement is the conversion of the program to JAVA, allowing functionality via the web.

Naturally this description doesn't give nearly the depth of functionality and information that the BrainStorm program provides. We hope those in need of such training will discover how effortlessly they can use and learn from the program.

For further information about SUMMIT, please visit their website at http://summit.stanford.edu/

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Technology Spotlight

Continued from page 1

50,000 sequence motifs that were derived by EMOTIF, and each has an associated biological function. IDENTIFY scans newly sequenced open reading frames (ORFs) from genomic sequences for function. The database is able to determine the function of 25% to 30% of all of the proteins analyzed with minimal false assignments.

To try either tool, please visit http://motif.stanford.edu/emotif or http://motif.stanford.edu/identify. To request more information, please contact Kirsten Leute at (650) 725-9407 or kirsten@otlmail.stanford.edu.

Making Automobiles Automated (S97-093)

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Agrp is not involved in any physiological processes besides body weight regulation and therefore may be an ideal pharmaceutical target. Previous drugs have been involved in multiple processes and therefore had problematic side effects. Agrp agonists may be useful for the treatment of cachexia or anorexia, while Agrp antagonists may be useful for treatment of obesity.

For further information on Agrp, please contact Kirsten Leute at (650) 725-9407 or kirsten@otlmail.stanford.edu.

Shaping the future (S97-141)

Ceramics have excellent high temperature mechanical properties which make them desirable for use in modern jet engines. Current engines use metal components, but changing to ceramics would enable the operating temperatures to be increased, thus increasing the efficiency.

It is difficult to make complex parts, such as jet engine components, using traditional ceramic manufacturing processes. Within the past decade a variety of rapid prototyping methods have been developed which can produce complex shapes but these techniques cannot produce good enough surface finishes for high performance structural ceramic components.

Professor Friedrich Prinz, Alexander Cooper and John Kietzman of the 

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Department of Mechanical Engineering have developed a process called Mold Shape Deposition Manufacturing (Mold SDM) to overcome these limitations. Mold SDM is a process that builds molds which can be used to gelcast ceramic green parts. It is a layered manufacturing process which allows for the fabrication of complex geometries. It uses CNC machining processes to shape the layers as they are built, resulting in smooth surfaces. The ceramic green part is made by monolithic casting. Therefore, the final part contains no layer boundaries, which are potential sources of defects.

Mold SDM is being developed for fabricating ceramic jet engine components but it can also be used to produce parts from other castable materials. A variety of ceramic and polymer parts have been made. Metal gelcasting will be investigated in future as a means of making metal parts.

For more information, please visit the website at http://www-rpl.stanford.edu/~agcooper/MoldSDM/MoldSDM.html or contact Luis Mejia at 650-723-0651 or luis@otmail.stanford.edu.

Jaundiced Newborns See a New Light (S96-113)

Phototherapy for jaundice in newborns is a common practice, both in the hospital (Neonatal Intensive Care Nurseries) and in the baby’s home. Now this ‘traditional’ treatment is getting some fine tuning.

Enter Stanford inventors Daniel Seidman, David Stevenson, and Hendrik Vreman, with assistance from Martin Fejer and Roger Route in Stanford’s Applied Physics Department and the Ginzton Laboratory. They were looking for a safer and more effective treatment for jaundiced newborns. Several million babies suffer from this condition each year, and without proper treatment, excessive jaundice pigment in the blood can be life-threatening.

The inventors’ discovery involves using high intensity light emitting diodes (LEDs) in the blue-green portion of the visible light spectrum instead of the most frequently used sources of light (fluorescent and halogen). These LEDs are rapidly becoming smaller and cheaper, and by using their selectable, narrow wavelength light spectrum instead of broad spectrum white light from fluorescent or halogen lights, LEDs are being demonstrated to be a more effective way to treat jaundice. The inventors are working on numerous ways to use the LEDs to treat the babies, including weaving small “chip” LEDs into a blanket or jacket.

Some of the advantages of this particular phototherapy are the small size, high intensity, stable intensity, low voltage and lack of heat generation. Due to the small size of the LEDs, it may soon be possible for parents to take their jaundiced children home with a battery-powered LED therapy jacket and avoid an extended hospital stay.

The inventors are also looking into other medical applications of LEDs. The use of light for treatment of disturbances of diurnal biorhythms, often leading to depression such as is experienced during episodes of Seasonal Affective Disorder (SAD), is gaining repute.

Furthermore, recent publications have indicated that selective light exposure may alleviate the effects of temporary disruptions of biorhythm, such as those caused by jet lag and night shift work. Small size, low weight, high intensity, and low power requirement are characteristics that make LEDs particularly suitable for incorporation into portable, computer chip-controlled, and battery-powered devices that can be used to treat or possibly prevent these troublesome disorders.

For more information, please contact Jon Sandelin at jon@otmail.stanford.edu or (650) 725-9404.