Granulysin: A Powerful Agent to Eradicate Microbes

What could be better than a molecule that kills *Mycobacterium tuberculosis*? How about an agent that also kills *Salmonella typhimurium*, *Staphylococcus aureus*, *Escherichia coli*, *Candida albicans* and numerous other infectious agents.

Steffen Stenger, Dennis Hanson, Alan Krensky and Robert Modlin discovered that granulysin, a protein found in granules of cytolytic T lymphocytes (CTL) and natural killer (NK) cells, has such broad antimicrobial effects. The group's discoveries on the effect of granulysin on *M. tuberculosis* and other bacteria were reported in the October 2, 1998, issue of *Science*, in an article entitled “An Antimicrobial Activity of Cytolytic T Cells Mediated by Granulysin.”

Krensky, Shelagh Galligan Professor of Pediatrics at Stanford University, originally discovered the molecule in 1987, then dubbed 519, but only discovered its killing properties a few years ago. The molecule was named granulysin due to its location in the cytotoxic granules of CTL and its lytic

Start-Ups: A Few Points From the Initiated

Silicon Valley could also be known as “Entrepreneur Valley” due to the number of companies started each year. At times, it seems that every person in the Bay Area is developing a new company or is involved with a start-up in some way.

OTL is well aware of the entrepreneurial drive at Stanford and on April 12, 1999, sponsored an event intended to educate would-be company founders. Three speakers shared their insights on both starting companies themselves as well as working with new-born companies. The panelists (Guy Kawasaki, Lawrence Steinman and John Cioffi) and the insights they purveyed are highlighted below.

- **Guy Kawasaki** is co-founder of Garage.com, a company that “helps entrepreneurs and investors build great businesses” and author of multiple books including *Rules for Revolutionaries*.

The message from Kawasaki was a list of things NOT to do. Do NOT:
1. Use your uncle the divorce lawyer for your securities work.
2. Look for valuation, not value, when it comes to investors.
3. Be paranoid and try to get everyone to sign a Non-Disclosure Agreement.
4. Submit a 100 page business plan and 60 slide PowerPoint™ presentation.
5. Send this plan straight over the transom to VCs with no introduction.
6. Ask for more than you need.
8. Believe that patents and intellectual property make your company defensible.
9. Wing it in your presentations.
10. Spend all of your time “proving” you can do the product and none of the time proving the existence of a market for it.

- **Lawrence Steinman** is a Professor of Neurology at Stanford and co-founder of Neurocrine Biosciences. Steinman advised:
1. You cannot start a company without attractive intellectual property. File timely invention disclosures with OTL. Follow these with patent applications and CIPs.

Continued on page 3
Anastomosis Invention Challenge

In order to promote creativity, collaboration and superior medical devices, OTL and the Medical Device Network (MDN) issued an "Invention Challenge" in Fall of 1998 (see Brainstorm, Fall, 1998). The challenge put forth to the Stanford community was to create a better approach to anastomosis, a method for joining blood vessels.

Current approaches to anastomosis with surgical sutures are time consuming and difficult. It is now preferable in coronary bypass surgery to keep the heart of the patient beating throughout the surgery. Therefore the anastomosis must be both quick and precise.

The new approach had to be absolutely "leak-free," join the two vessels without any flow obstruction, and be relatively quick to perform. Submissions were due January 29, 1999, and from the twelve entries received, three finalists were announced in early March. The finalists had to make a presentation to the selection committee, a group consisting of people skilled in medicine, patent law and engineering. The selection committee evaluated the inventions on how well they would work, the likelihood that the invention could be manufactured, the cost of the final product, the invention's ease of use, and whether the invention was patentable (novel and unobvious).

The winners were announced on March 24, 1999. In first place, receiving a prize of $2500, were Eunice Chen, Jessica Smith and Walter Stevens (pictured below). Two teams were designated as "runners-up" and were each awarded a prize of $500. The runners-up were the husband-and-wife team of doctors Elisabeth and Allen Jeremias, both post-doctoral researchers, and Brian Courtney and John MacMahon, two post-graduate engineering students. Since these inventions are not public yet, full descriptions are not currently available. However, OTL has filed a patent application based on the winning entry.

The next invention challenge begins in the Fall of 1999. The challenge is to invent a system for minimally invasive treatment of the arthritic knee. There are numerous approaches to solve this problem, so again a team well diversified in backgrounds (medicine/engineering) will most likely benefit from their teammates' experiences and education. Flyers will be posted around campus, and a full description will appear on MDN's homepage, http://mdn.stanford.edu.
**Recently Issued U.S. Patents Available for Licensing from Stanford**

<table>
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<tr>
<th>Docket No.</th>
<th>Title</th>
<th>U.S. Patent Number</th>
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<tr>
<td>S92-093</td>
<td>Inhibition of Proliferation of Vascular Smooth Muscle Cell</td>
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<td>Victor Dzau</td>
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<td>S94-040</td>
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<td>S95-036</td>
<td>High Frequency Contact Sampling Probe w/ Sub-Micron Spatial Resolution</td>
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<td>Francis Ho</td>
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<td>S95-086</td>
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<td>S96-048</td>
<td>Reference Carrier Phase Prediction for Kinematic GPS</td>
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<td>David Lawrence</td>
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<tr>
<td>S96-115</td>
<td>An Mdr1 Gene Mutation Resistant to Modulation by Cyclosporins</td>
<td>5,830,697</td>
<td>November 3, 1998</td>
<td>Gang Chen</td>
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<td>S98-031</td>
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<td>5,865,227</td>
<td>February 2, 1999</td>
<td>Brian Carilli</td>
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For more information, please contact Jill Brigham at jill.brigham@stanford.edu or (650) 725-9112.
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Recall, created by Sam Yen, Renate Fruchter, and Larry Leifer of the School of Engineering at Stanford, is a new application to radically improve video indexing. Recall holds promise for enhancing and speeding up content generation and archival conjunction with software of many types including applications for video conferencing, distance learning, CAD, and corporate training by indexing audio and video with simultaneous sketching activity.

Recall is a drawing application written in Java that captures and time stamps each individual action on the drawing surface. The application also synchronizes with audio/video capturing and encoding through a client-server architecture. Once the session is complete, the drawing and video information is automatically indexed and published on a web server. This allows for distribution and synchronization playback of the drawing session and audio/video from anywhere at anytime.

In addition, Recall enables the user to navigate through the session and interactively jump to each part of interest by selecting individual elements in the drawing.

Recall is the only known tool that both replays and controls sketching concurrently, thereby eliminating the time normally needed to index the recorded section.

Stanford has filed for a patent on Recall and is seeking licensees. For more information, please contact Mary Watanabe at mary.watanabe@stanford.edu or (650) 725-9411.

Start-Ups: A Few Points From the Initiated
Continued from page 1

2. Exclusivity is an asset with inventions that may be therapeutics for diseases. Techniques may benefit from "open architecture" non-exclusive licenses, although experience shows that even with techniques, exclusivity may be a benefit.

3. It is a major asset to work with the world’s leaders in VC on Sand Hill Road.

• John Cioffi is an Associate Professor of Electrical Engineering at Stanford and co-founder of Amati Communications.

Cioffi drew on his experience by noting these following keys on start-ups:

1. Strong advantage (technology companies often have technical innovation, but not the only way to do it) and supporting theme.

2. Talented people
   • Stanford University students! (maybe some Cal people also)
   • Management:
     - attract other talent and let them know you value them
     - motivate those talented people with clear goals
     - then, let them do their job and continue motivation

3. Don’t give up! (unless you’re convinced you were wrong)

OTL plans to host a full-day event on start-ups in the fall. We encourage those with an interest in starting their own businesses to take advantage of the resources available in Silicon Valley and elsewhere. For a listing of some of our entrepreneur information, please visit our homepage at http://www.stanford.edu/group/OTL/ and click the "Entrepreneurial Info" button.