

## IV. UC SAN DIEGO CONTRIBUTIONS TO THE REGIONAL WORKFORCE

### A LEADER IN HIGHER EDUCATION

The most fundamental mission of any University is to educate, a public University is further charged with providing its students with the knowledge and skills required to make a positive contribution to society. For more than four decades, UC San Diego has fulfilled this mission by educating tens of thousands of Californians and preparing them to contribute to the local, regional, and state economies.

UC San Diego's roots date back to 1912 when the Scripps Institution of Oceanography, comprising 170 acres of land, became part of the University of California. By the 1950's, the Institution had become the largest center of oceanographic research in the world, with instructional programs focusing exclusively on graduate studies. In 1960, The Regents of the University established UC San Diego as a comprehensive general campus and set in place a plan to develop instructional and research programs at both the undergraduate and graduate levels. Since then, UC San Diego has grown to encompass more than 1,150 acres and has become a national leader in higher education.<sup>26</sup>

UC San Diego's undergraduate program is organized around six residential colleges, each complete with their own campus, residences, offices, and general education courses and specialty courses. Students belong to each college but can focus their study within any of the following six divisions: Arts and Humanities, Biological Sciences, Physical Sciences, Social Sciences, and the Jacobs School of Engineering. Graduate students play an integral role in UC San Diego campus life. There are several graduate and professional schools at UC San Diego including the Graduate School of International Relations and Pacific Studies (IR/PS), Rady School of Management, UC San Diego School of Medicine, and Skaggs School of Pharmacy and Pharmaceutical Sciences. The University offers 114 undergraduate and graduate degree programs throughout its various departments and schools. In fiscal year (FY) 2006-07, total enrollment was approximately 26,880 students, including 21,370 undergraduates and 5,510 graduate students.

U.S. News and World Report rated UC San Diego 8<sup>th</sup> among public institutions in the nation and 38<sup>th</sup> among all higher education institutions in the United States. Faculty of the University have also been the recipients of numerous academic distinctions, including 8 Nobel Prize winners, memberships in the prestigious National Academy of Sciences, Fields Medal, and MacArthur Foundation Awards, among others. Several distinguished faculty and alumni include are discussed later in this chapter.

### UC SAN DIEGO GRADUATES AND THE REGION'S SKILLED LABOR FORCE

UC San Diego's highly skilled graduates are perhaps the University's most significant contribution to the state and regional economies. In the 2006-07 fiscal year, UC San Diego conferred 6,500 degrees, including 5,060 bachelor's, 900 master's, and 540 doctorate degrees. Table 4 illustrates total degrees awarded and highlights select degree programs.

---

<sup>26</sup> Historical information provided by UC San Diego Office of Institutional Research.

**Table 4: Select Degree Programs By Number of Degrees Conferred, FY 2007**

<u>Field of Study</u>	<u>Bachelors Degree</u>	<u>Certificate Degree</u>	<u>Masters Degree</u>	<u>Doctorate</u>	<u>Total</u>
All Degree Programs	5,061	185	901	535	6,497
Select Degree Programs					
Biology	511	0	50	52	613
Biochemistry	313	0	0	0	313
Bioengineering	155	14	34	20	223
Other Biological Sciences	0	0	25	37	62
Chemistry and Chemical Engineering	105	1	73	31	210
Electrical Engineering	125	48	80	45	298
Mechanical Engineering	139	9	33	12	193
Structural Engineering	81	11	23	9	124
Other Engineering	59	3	16	12	90
Environmental/Earth Sciences	18	0	2	10	30
Math and Computer Sciences	233	28	58	0	319
Medicine	0	0	0	101	101
Pharmacy	0	0	0	47	47
Physics	32	8	12	15	67
Psychology	406	0	0	39	445
Cognitive and Neurosciences	84	0	1	13	98

Sources: UC San Diego Student Research and Information Office; and CBRE Consulting.

As discussed in the previous chapter, the tourism, manufacturing, transportation, defense, biotechnology, technology, and construction sectors have driven the San Diego County economy. While the construction sector has slowed in recent months due to the downturn in the housing industry, the professional sectors have remained stable in San Diego. These industries rely on a more highly-educated workforce to operate the sophisticated technology that is ever more critical to doing business in the “new economy.” In particular, San Diego’s economy relies heavily on jobs requiring at least a bachelor’s degree as the minimum level of education.<sup>27</sup>

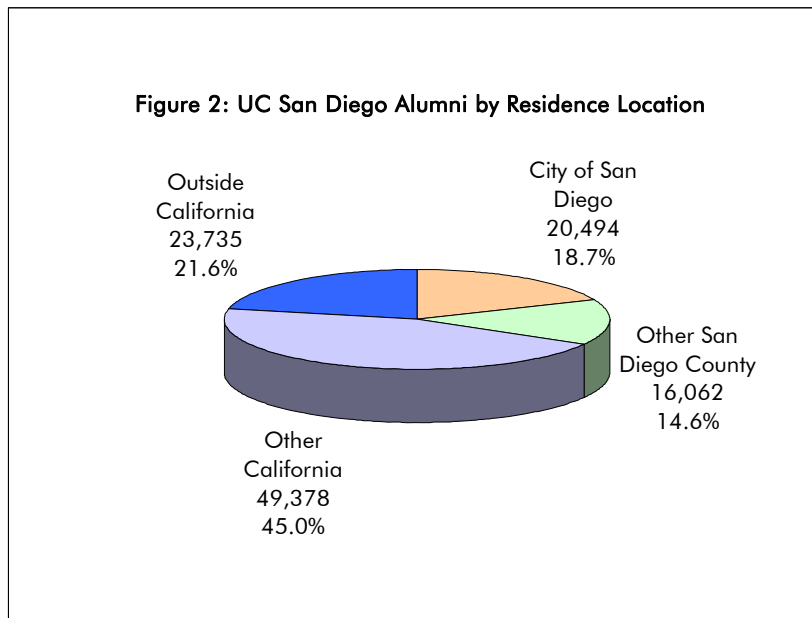
UC San Diego plays a major role in supporting the growth of the San Diego County economy by providing a steady stream of bachelor’s, master’s, and doctoral degree recipients to the local workforce each year. In particular, in FY 2006-07 UC San Diego graduated 233 B.S. degrees, 28 certificate degrees, and 58 M.S. degrees in Math and Computer Science, and 155 B.S. degrees, 34 M.S. degrees, and 20 Ph.D.’s in Bioengineering, which supported the expansion of the skilled labor pool for high-tech businesses and biotech businesses in San Diego. As discussed in the previous chapter, the high-tech industry is a critical component of the San Diego economy as it helps support the development and growth of the manufacturing, defense, and financial services industries. These jobs also provide high wages. UC San Diego also yielded a significant number of degrees in other technical fields, which contribute to the employment base for the manufacturing, transportation, defense, and construction industries. These include: 139 B.S. degrees, 33 M.S. degrees, and 12 Ph.D.’s in Mechanical Engineering; 81 B.S. degrees, 23 M.S. degrees, and 9 Ph.D.’s in Structural Engineering. Finally, the fields of Chemistry and Chemical Engineering, Mechanical Engineering, Physics, Structural Engineering, and Cognitive and Neurosciences collectively comprised 566 B.S. degrees, 77 certificates, 222 M.S. degrees, and 125 Ph.D.’s in 2007.

<sup>27</sup> “Occupational Employment Projections,” California State Employment Development Department (EDD), <http://www.labormarketinfo.edd.ca.gov>

The future expansion of other knowledge-based industries in San Diego County – such as the defense and aerospace industries and medical products and pharmaceuticals sectors – requires access to an educated labor force, and UC San Diego plays a critical role in meeting this need. In the 2006-07 fiscal year, UC San Diego graduated 3,230 bachelor’s, master’s, and doctoral students in the biological sciences, chemistry, engineering, mathematics, physics, and health sciences. In fact, approximately 44.7 percent of all Bachelor’s degrees awarded in FY 2006-07 were in engineering, science/math, or biology. A summary of select science, engineering, and other high tech-related degree awards is provided in Table 4.

**UC SAN DIEGO GRADUATES IN SAN DIEGO COUNTY**

Of the 116,800 members of the UC San Diego alumni association who have graduated from UC San Diego since 1965, accurate data on location of residence is available for 111,000 alumni. As shown in Figure 2, 85,930, or 78.4 percent, lived in the State of California in 2007.<sup>28</sup> Of these alumni, 36,560, or about 33.3 percent of the total, lived in San Diego County. Of the remaining alumni, 23,740, or 21.6 percent, lived outside California but within the United States and 1,380, representing less than 1.0 percent, lived outside the United States.



As the data in Table 5 indicate, from 2004 to 2006 between 84.6 and 87.8 percent of new freshmen came to UC San Diego from outside San Diego County. Upon graduation, many of these students choose to reside in the area. As of 2007, the percentage of total graduates residing in San Diego County was 33.3 percent, while the percentage of entering freshmen from within San Diego County that year was only 12.2 percent. These figures demonstrate that the University acts as a magnet that draws talented people to the region.

<sup>28</sup> For the purposes of determining alumni residence, alumni are defined as all persons who have received graduate or undergraduate degrees from UC San Diego.

**Table 5: New Freshmen Registrants By Home Location, 2004-2006**

<u>Geography</u>	<u>2004</u>	<u>2005</u>	<u>2006</u>
San Diego County	595	477	560
Imperial County	33	26	31
Los Angeles County	1,806	1,736	2,089
San Francisco Bay Area	806	820	1,101
Other California	439	413	477
Out of State	111	156	211
Foreign	84	92	120
<b>Total</b>	<b>3,874</b>	<b>3,720</b>	<b>4,589</b>

Sources: UC San Diego Institutional Research; and CBRE Consulting.

Notes: Year of registration represents the beginning of each fiscal year. For example, freshmen registrants for 2006 represent data for FY 2006-07.

**ON-CAMPUS RECRUITING AT UC SAN DIEGO**

In 2006-07, a total of 21,800 off-campus career jobs were posted with the UC San Diego Career Center. All of the full-time jobs require baccalaureate degrees. Approximately half of the postings were for part-time or internship positions. The UC San Diego Career Center database does not sort by location of an individual position, but positions were listed by organizations in California as well as throughout the United States. During the 2006-07 fiscal year, the On-Campus Recruiting Program scheduled approximately 1,330 student interviews and hosted a number of job fairs in which approximately 500 employers participated.<sup>29</sup> The top ten companies that conducted on-campus interviews at UC San Diego are listed in Table 6.

**Table 6: Top Ten Companies Interviewing On Campus, 2006-07**

<u>Company Name</u>	<u>Company Location</u>
Qualcomm	San Diego, CA
Pfizer	La Jolla, CA
Northrop Grumman	El Segundo, CA
SAIC	San Diego, CA
Hewlett Packard	Palo Alto, CA
Google	Mountain View, CA
The Capital Group	Brea, CA
Broadcom	Irvine, CA
Scripps Research Institute	La Jolla, CA
The Salk Institute	La Jolla, CA

Sources: UC San Diego Career Center; UC San Diego Jacobs School of Engineering; and CBRE Consulting.

Additionally, the Rady School of Management at UC San Diego conducts recruiting services and an internship program through its own Career Services Center. Recruiting services for full-time positions for the graduating class of 2007 resulted in placement rates of 84.0 percent of students three months after graduation. Table 7 provides a summary of key statistics for career placement of Rady’s graduating class of 2007.

<sup>29</sup> Estimates were provided by UC San Diego Career Services.

<b>Table 7: Rady School of Management at UC San Diego Class of 2007 Placement by Industry</b>	
<u>Industry</u>	<u>Percentage</u>
Healthcare/Biotech/Pharmaceutical	35.0%
Financial Services	22.0%
Technology & High Tech	22.0%
Consulting Services	8.0%
Energy & Petroleum	5.0%
Consumer Products	3.0%
Manufacturing	2.5%
Real Estate	2.5%

Sources: UC San Diego Rady School of Management; and CBRE Consulting.

Note: Figures may not total due to rounding.

Internships are not a requirement for Rady students, but they are highly encouraged and 100 percent of MBA candidates participate in internships.<sup>30</sup> Many are employed in summer managerial positions that allow them to apply skills they have learned in the first-year core curriculum. Through these internships, students make key connections in the industry or functional area of particular interest to them. These internships often lead to job offers upon graduation.

#### **UC SAN DIEGO EXTENSION CONTINUING EDUCATION PROGRAMS**

In addition to graduates of UC San Diego’s degree programs, the University contributes to the development of the regional workforce through its UC San Diego Extension continuing education programs. Continuing education and extension programs are designed to train and re-train adult learners through both classroom and workplace training programs. Many continuing education students already have college degrees and look to continuing education to aid them in career advancement or in seeking an entirely new career. This reflects the need for life-long learning that is increasingly important as workers find that the skills they learned in bachelor’s or even master’s programs are often not enough to equip them to meet the rapidly evolving demands of the workplace.

The need for life-long learning was documented in a 2001 report by the U.S. Department of Labor, titled “Report on the American Workforce.” This report notes that the U.S. economy’s expansion is increasingly dependent on high-skilled, information-based industries. “This has created a disconnect between the jobs that are being created and the current skills of many workers.”<sup>31</sup> This so-called “skills gap” highlights the need for continuing education programs that aim to enhance the skills of workers already in the workforce, allowing those workers to grow and develop new skills as they encounter new demands on the job.

UC San Diego Extension offers specialized studies, certificate programs, and professional degrees in partnership with campus departments. Approximately 100 certificate programs and twelve specialized study programs are offered at UC San Diego Extension.<sup>32</sup> Table 8 highlights

<sup>30</sup> 100.0 percent estimate provided by Rady School of Management staff.

<sup>31</sup> “Report on the American Workforce,” U.S. Department of Labor, 2001, page 1.

<sup>32</sup> Estimates were provided by UC San Diego Extension.

the areas of study covered by the Continuing Education Curriculum. Extension program courses are offered in a variety of formats including courses taught in the daytime, evening, and during weekends, and through online education courses.

Art, Photography, and Music	Humanities and Writing
Business	Information Technology and Software Engineering
Digital Arts	Law
Education	Leadership and Management Development
Engineering and Defense Technology	Life Sciences
English Language Studies	Occupational and Environmental Safety and Health
Foreign Languages	Public Service and Social Responsibility
Healthcare and Behavioral Sciences	

Sources: Office of Alumni and Constituent Relations, UC San Diego; and CBRE Consulting.

The annual budget for Extension is approximately \$30.00 million and is funded solely by fees, contracts, grants, sponsors, and donors with no State support. In 2006-07, there were a total of 20,000 enrollments in some 2,000 UC San Diego Extension courses. Extension offers a number of specific programs that directly benefit the community. One such program is the OSHA Training Institute, which trains employers from around the world in enforcing workplace health and safety standards. Another program that directly benefits the unique biomedical- and pharmaceutical-focused market of San Diego is the Clinical Trials and Research Programs. This program offers specialized certificates in clinical trials administration and clinical trials design and management.<sup>33</sup>

In addition, UC San Diego Extension has a significant international program that attracts 2,200 students to the U.S. from overseas each year.<sup>34</sup> Through participation in week-, month-, and semester-long courses of study, these students enhance the education they are acquiring back home with the unique learning experiences – both in and out of the classroom – offered at UC San Diego. The cultural exchange also enhances the experience of UC San Diego students who interact with thousands of foreign students each year.

UC San Diego Extension courses are offered at a variety of locations, including the UC San Diego main campus, as well as the Sorrento Mesa Center, the Extension Rancho Bernardo Center, and the Extension Mission Valley Center. In addition, Extension conducts special on-site programs at locations including company headquarters, partner schools, and overseas locations. UC San Diego Extension has conducted customized training for large-scale companies including Sony, Sempra Energy, Northrup-Grumman, Sea World, Disney, and Pfizer, among many others. Extension also offers an on-line learning program with annual enrollment of approximately 4,000 students in a variety of courses.

**ENTREPRENEURIAL SUCCESSES OF UC SAN DIEGO ACADEMICS AND ALUMNI**

In addition to providing skilled workers to the region, UC San Diego faculty and alumni have started hundreds of successful companies in San Diego, California, and around the world. These companies range from very small startups to Fortune 500 companies such as

<sup>33</sup> Information on enrollments, courses, and budget for UC San Diego Extension was provided by the Extension office.

<sup>34</sup> Information provided by UC San Diego International Students Office.

Qualcomm, Incorporated. The companies contribute to the local economy by attracting revenue dollars from outside the region, employing local residents, and making expenditures that generate further economic impacts. Table 9 provides a list of some of the well-known companies founded by UC San Diego alumni. The quantitative economic impacts of some of these companies are identified in Chapter IX, Research at UC San Diego.

<b>Table 9: Sample of Companies Founded by UC San Diego Alumni and Faculty</b>		
<u>Company</u>	<u>Location</u>	<u>Description/Industry</u>
AnalgesiX Inc.	San Diego, California	Pharmaceutical
Aurora Biosciences	San Diego, California	Pharmaceutical
Clinical Micro Sensors	Pasadena, California	DNA Detection
CryoGen	San Diego, California	Biotechnology
Cymer, Inc.	San Diego, California	Laser Systems and Equipment
Eilean Technologies	Las Vegas, Nevada	Imaging Technologies
Fastrack Design, Inc.	San Jose, California	Computer Systems Design
Genoptix Medical Laboratory	Carlsbad, California	Physical Research
GetActive Software	Berkeley, California	Communications
Innercool Therapies	San Diego, California	Clinical Research
Linspire, Inc.	San Diego, California	Computer Operating System
Nereus Pharmaceuticals, Inc.	San Diego, California	Pharmaceutical
Qualcomm	San Diego, California	Communications
Rusty Surfboards, Inc.	San Diego, California	Surfboard Manufacturer
Senomyx, Inc.	San Diego, California	Physical Research
SigAlert	San Diego, California	Traffic Reporting Website
Signal Pharmaceuticals	San Diego, California	Pharmaceutical
Viasat, Inc.	Carlsbad, California	Communications Equipment

Sources: UC San Diego Office of Alumni Relations; and CBRE Consulting.  
 Notes: Aurora Biosciences was acquired by Vertex Pharmaceuticals; Signal Pharmaceuticals was acquired by Celgene; Clinical Micro Sensors is now a division of Motorola; Cryogen was acquired by American Medical Systems Holdings.

The following profiles highlight some of the entrepreneurial endeavors of UC San Diego academics and alumni. These UC San Diego-affiliated entrepreneurs have developed successful businesses that have contributed to the San Diego County, the State of California, the U.S., and in some cases, across global economies.

**Faculty and Researcher Entrepreneurs**

UC San Diego has numerous faculty members who began successful commercial endeavors. A few of the notable faculty are as follows.

**Dr. Irwin Jacobs, UC San Diego Department of Computer Science and Engineering.** Dr. Jacobs, who was a member of the UC San Diego faculty from 1966 through 1972, may be the most well-known faculty entrepreneur from UC San Diego. Dr. Jacobs is co-founder of Qualcomm Incorporated, a San Diego based firm specializing in wireless communications.

Qualcomm has grown from a small start-up in 1985 contracting research and development services to a multi-billion dollar company creating new and innovative technologies in the wireless industry. Qualcomm has approximately 6,100 patents, including the Code Division Multiple Access (CDMA) technology that revolutionized wireless communications.

Qualcomm's economic impact and presence in San Diego is undeniable. In Fiscal Year 2007 Qualcomm had gross revenues totaling nearly \$8.871 billion and net income of \$3.303 billion. Qualcomm employs over 10,000 people in the U.S. and 12,800 people worldwide. In 1997 they purchased the naming rights to the San Diego Chargers' NFL football stadium in San Diego.

**Dr. Sujit Dey, UC San Diego Jacobs School of Engineering.** Dr. Dey joined the Electrical and Computer Engineering Department at UC San Diego in 1997 and in 2004 he founded Ortiva Wireless, a company dedicated to developing software for wireless data communication. Ortiva Wireless is located in close proximity to the Jacobs School of Engineering and several of its 10 employees are graduates of UC San Diego.

Dr. Sujit Dey holds many other distinctions including holding 12 patents (with 8 pending) and publishing over 150 papers in technical journals and conference proceedings. While at UC San Diego, Dr. Dey was affiliated with the California Institute of Telecommunication and Information Technology (Cal-IT2) and the UC San Diego Center for Wireless Communications.

**George Varghese, Computer Science and Engineering Department.** George Varghese, a UC San Diego Professor in the Computer Science and Engineering Department, is responsible for a number of inventions in the fields of computer networks and the Internet. A few important inventions to note include the Procket Router, Netsift, and the "timing wheel". The Procket Router was developed along with Tony Li. Varghese created the forwarding engine for the Procket Router, which was the fastest router in the world in 2003 and was later sold to Cisco Systems. Varghese, Stefan Savage (another UC San Diego Computer Science and Engineering Professor) and a group of graduate students developed Netsift, a computer security technology used to identify attacks on computer networks. Netsift was sold to Cisco Systems in 2005. The "timing wheel" uses an algorithm to stop an operating system from frequently testing for false-alarm events that are not occurring. The "timing wheel" was integrated into the Linux kernel, FreeBSD, and more. Varghese has written several guide books presenting his research and findings and is currently researching Internet security and traffic measurement.

**Judith Dolan, Arts and Humanities Department.** Ms. Dolan's costume designs are seen in numerous productions on Broadway, throughout the United States, and abroad. In 1997 she received a Tony Award for her work on *Candide*. Recently, Ms. Dolan's work on the 2007 production *LoveMusik* attracted Best Costume nominations from Drama Desk and Outer Critics.

**Roger Revelle, Scripps Institution of Oceanography, and Professor of Science and Public Policy.** Mr. Revelle served as the Director of Scripps Institution of Oceanography from 1950 to 1964, during which time he was the main force in establishing the UC San Diego campus in 1960. Academically, Mr. Revelle is best known for co-authoring the first authoritative paper in which carbon dioxide from fossil fuels was recognized as a potential global problem. The findings of this paper provided a premise for the modern day understanding of global warming.

Subsequently Mr. Revelle served on scores of academic, scientific, and government committees advising on a wide spectrum of topics. He was Science Advisor to the Secretary of the Interior, President of the American Association for the Advancement of Science, and a member of the NASA Advisory Council. In 1974 Mr. Revelle returned to UC San Diego as a Professor of Science and Public Policy, during which time he focused on applying science and technology to

combat world hunger. In November 1990, Mr. Revelle received the National Medal of Science from President George H.W. Bush.<sup>35</sup>

### **Alumni Entrepreneurs**

A few notable alumni entrepreneurs and a description of their endeavors are highlighted below.

**Garrett Gruener, UC San Diego Class of '76 and David Warthen, UC San Diego Class of '71.** Garrett Gruener and David Warthen are the co-founders of Ask.com. Graduating from UC San Diego's Muir College five years apart, Mr. Gruener and Mr. Warthen worked for the same small communications software company during the early 1990s, a time when the Internet was still extremely fresh and not widely accessed by the general public. Gruener developed a concept to make the Internet more user-friendly. He wanted Internet users to be able to search for and locate information using natural language and through a pleasant context; similar to a question and answer session. Over time, prototypes were cultivated and by mid-1996 a prototype was developed that was strong enough to start a company.

In April 1997 Ask Jeeves went live, an Internet search engine with the knowledgeable and amiable butler, Jeeves, always ready and willing to answer questions. The company was renamed in 2005 to Ask.com. Today millions of people use Ask.com every day.<sup>36</sup>

**Dr. J. Craig Venter, UC San Diego Class of '72, Ph.D '75.** Dr. Venter received his bachelor's degree in biochemistry and his Ph.D. in physiology and pharmacology from UC San Diego in 1972 and 1975, respectively. While at the National Institute of Health in 1991, Dr. Venter and his team developed an innovative method to quickly discover genes, called Expressed Sequence Tags (ESTs). In 1995, after establishing The Institute of Genomic Research, a non-profit research institute, Dr. Venter and his team utilized the new DNA sequencing technology to sequence the first free living organism, *Haemophilus influenzae*. Following this exceptional advancement and after sequencing and analyzing more than 50 microbial genomes, Dr. Venter and his team progressed into mammalian genomics. This is the time when Dr. Venter caught the eye of the world by sequencing and analyzing the human genome, which was published in 2001 by Dr. Venter and Celera Genomics. Venter announced his discovery at the White House alongside President Bill Clinton, who declared the completed genome to be "the most important, most wondrous map ever produced."<sup>37</sup>

**Rusty Preisendorfer, UC San Diego Class of '78.** Mr. Preisendorfer graduated from UC San Diego with a bachelor's degree in visual arts. Combining his knowledge of the arts and his love of surfing, Mr. Preisendorfer founded Rusty surfboards and apparel. While attending UC San Diego, Mr. Preisendorfer began his career in the surfboard industry as a shaper for Gordon and Smith. He then went on to work for a San Diego-based manufacturer called Canyon Surfboard and continued to build a notable reputation.

In 1985 Rusty surfboards was founded. Mr. Preisendorfer is credited with perfecting the modern thruster, a shortboard used to perform quick maneuvers on waves and is now the most popular type of surfboard.<sup>38</sup> Mr. Preisendorfer opened shops in La Jolla and Del Mar to have local retail

---

<sup>35</sup> [Earthobservatory.nasa.gov/Library/Grants/Revelle](http://Earthobservatory.nasa.gov/Library/Grants/Revelle)

<sup>36</sup> [http://about.ask.com/en/docs/about/company\\_overview.shtml](http://about.ask.com/en/docs/about/company_overview.shtml)

<sup>37</sup> <http://www.time.com/time/health/article/0,8599,1706552-3,00.html>

<sup>38</sup> <http://www.surfing-waves.com/surfboard.htm>

space for his boards. Rusty International surfboards are sold around the world, with production load of 15,000 surfboards annually and apparel sales exceeding \$40.00 million.<sup>39</sup>

**Michael Robertson, UC San Diego Class of '90.** Michael Robertson received his bachelor's degree in cognitive science from UC San Diego in 1990. Mr. Robertson is the founder of several innovative companies including MP3.com, Linspire, Inc., and SIPphone.com. Before any of these companies transpired, Mr. Robertson ran a number of websites whose function was the merging of search technologies with commerce. MP3.com was created in 1997, a website boasting the largest collection of free digital music in the world. Robertson sold MP3.com to Vivendi Universal in 2001 for \$372.0 million in stock and cash. Robertson's next move was the development of Linspire, Inc. A competitor to Microsoft's Windows operating system, Linspire, Inc. is an affordable, license-free desktop Linux operating system. In 2003 SIPphone.com was founded by Robertson, a company that utilizes the Internet to make free long distance phone calls based on a VoIP platform and directory except that it offers digital music without digital rights management, which means it does not limit the use of the songs by the customers.<sup>40</sup> Twice Robertson has been on the Fortune 40 under 40 list, which names the 40 richest people under the age of 40 and once on Forbes 400 list which lists the 400 richest people in America. He continues to reside in San Diego.

**Susumu Tonegawa, UC San Diego Class of '68.** Mr. Tonegawa received a Ph.D. from UC San Diego in 1968. In 1987 he received the Nobel Prize in Medicine for the discovery of the genetic principle for generation of antibody diversity. Later in his career, he researched the molecular and cellular basis of memory formation at the Massachusetts Institute of Technology's Department of Biology, where he served as Professor of Biology and Investigator in the Howard Hughes Medical Institute until 2006.

**Dr. Eleanor "Connie" Mariano, UC San Diego Class of '77.** Ms. Mariano was the first Filipino-American to reach the rank of Admiral in the United States Navy, and the first female Director of the White House Medical Unit. She served as personal physician to Presidents George H.W. Bush and Bill Clinton during their respective terms of office.

**Bud Tribble, UC San Diego '75 and Bill Atkinson, UC San Diego '74.** Together these prominent alumni managed the development teams for the first Macintosh computer and Mac OS operating system. Mr. Tribble managed the original Macintosh software development team while Mr. Atkinson created countless Macintosh software applications, the most notable of which are MacPaint, Quickdraw, and Hypercard.

**Robert Akins, UC San Diego '74 and Richard Sandstrom, UC San Diego '72.** Mr. Akins and Mr. Sandstrom co-founded Cymer, Inc. in 1986. As the world's leading supplier of excimer light sources, which are essential to the semiconductor industry, Cymer, Inc. has annual revenues of approximately \$543.9 million and has worldwide employment of 975 people. Since co-founding Cymer, Inc., Akin received the Ernst & Young Entrepreneur of the Year award for San Diego County in 1997. He also sits on the Board of Directors for Semiconductor Equipment and Materials International (SEMI) and is on the Council of Advisors to the Jacobs School of

---

<sup>39</sup> <http://www.rusty.com/index.cfm?page=2&brand=1>

<sup>40</sup> <http://www.michaelrobertson.com/about.php>

Engineering at UC San Diego. Together, Mr. Akin and Mr. Sandstrom received the prestigious SEMI award for North America in 1996.<sup>41</sup>

***Ancel Keys, Scripps Institution of Oceanography Class of '30.*** Ancel Keys received his Ph.D. in oceanography from the Scripps Institution of Oceanography in 1930 and is one of the University's most notable alumni. While at Scripps Institution of Oceanography, Mr. Keys studied fish biology and physiology, then earned a second doctorate degree in physiology from Cambridge University. He was a pioneer in studying the relationship between the human diet and blood. During World War II Mr. Keys developed "K-rations," high-calorie, lightweight meals that were used by troops during wartime when no other food options were available. In the years following, he led landmark studies on the effects of diet on blood cholesterol, earning the nickname "Mr. Cholesterol." Ancel Keys' many accomplishments landed him on the cover of Time Magazine in 1961.

---

<sup>41</sup> Information about Cymer, Inc. is from [www.cymer.com](http://www.cymer.com), and Dun & Bradstreet.