

BLUE FOLDER ITEM

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CITY COUNCIL MEETING June 7, 2022

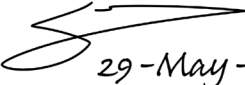
N.1. DISCUSSION AND POSSIBLE ACTION REGARDING A WATERFRONT EDUCATION FACILITY AND PROGRAMMING CONCEPT TITLED OCEAN ENCOUNTER

**APPROVAL OF THE CONCEPT AND DIRECTION TO STAFF TO PREPARE
DRAFT PLANS, AGREEMENTS, AND OTHER APPLICABLE FACILITY
IMPLEMENTATION DOCUMENTS**

**CONTACT: GREG KAPOVICH, WATERFRONT & ECONOMIC
DEVELOPMENT DIRECTOR**

Attachment: Resumes and Qualifications of the Ocean Encounter team

ANDREW GRIMM MD PhD


29-May-2022

Office: 52 Leveroni Court, Novato CA 94941 email: agrimm@ultragenyx.com
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SUMMARY OF QUALIFICATIONS

- ◆ Physician scientist with 7+ years of experience in orphan, pediatric, and GI drug development from IND to approval
- ◆ Led regulatory interactions with FDA, EMA and PMDA to align on clinical development strategy for Gattex/Revestive
- ◆ Led 2 successful IND submissions
- ◆ Led clinical development to approval of Gattex/Revestive for treatment of children with short bowel syndrome
- ◆ Formulated clinical development plans for 4 new pipeline programs
- ◆ Proven team leadership skills in research, development, and clinical practice
- ◆ Board-certified in pediatrics and pediatric gastroenterology
- ◆ Dynamic, energetic leader with a proven track record in clinical development strategy and execution

PROFESSIONAL EXPERIENCE

EXECUTIVE MEDICAL DIRECTOR

Jun 2020 – Present

Ultragenyx, Novato, California

Ultragenyx is a biopharmaceutical company committed to bringing to patients novel products for the treatment of rare and ultra-rare diseases, with a focus on serious, debilitating genetic diseases.

Global clinical development lead for UX053, an mRNA-LNP for the treatment of glycogen storage disease type III (GSD III). Global clinical development lead for Evkeeza, a monoclonal anti-ANGPTL3 antibody for the treatment of homozygous familial hypercholesterolemia (HoFH).

Key accomplishments and responsibilities:

- ◆ Designed the phase 1/2 first-in-human study of UX053, an mRNA-LNP therapeutic for the treatment of GSD III
- ◆ Led FDA interaction during IND review, achieved IND clearance for UX053 in March 2021
- ◆ Designed and currently leading execution of the UX053 Clinical Development Plan
- ◆ Currently leading ex-US clinical development for Evkeeza
- ◆ Invited to join the Translational Research Management Team to guide translational research across the Ultragenyx portfolio
- ◆ Authored the SOP on medical monitoring of Phase I-III clinical trials
- ◆ Represented Global Clinical Development in the creation of standardized electronic case report forms for clinical trials at Ultragenyx
- ◆ Represented Global Clinical Development on the Global Patient Leadership Team in the formulation of the patient-focused drug development framework for Ultragenyx

MEDICAL DIRECTOR

Aug 2016 – Jun 2020

ASSOCIATE MEDICAL DIRECTOR

Aug 2015 – Aug 2016

Takeda, Cambridge, Massachusetts
Shire, Lexington, Massachusetts

Takeda is a patient-focused R&D-driven global biopharmaceutical company with a focus on rare diseases, gastroenterology, neuroscience, oncology, vaccines, and plasma-derived therapies. Takeda acquired Shire in 2019.

Responsible for global clinical development of Gattex/Revestive, and TAK-781, a new asset in short bowel syndrome

Key accomplishments and responsibilities:

- ◆ Guided clinical development strategy as a member of the Joint Scientific Advisory Board for Ambys Medicines. Ambys is a preclinical-stage company focused on regenerative medicine therapies for liver disease.
- ◆ Served in the Takeda Physician Scientist Accelerator Program Steering Committee to recruit physician scientists from academia for this elite development program
- ◆ Organized the Takeda Clinical Development Forum, a monthly lecture series dedicated to innovation clinical development
- ◆ Led early-stage development of a new asset for the treatment of short bowel syndrome
 - IND approval January 2019
 - Designed clinical development plan
 - Designed phase 1 study and achieved proof-of-concept in healthy volunteers
- ◆ Led global clinical development of Gattex/Revestive (teduglutide) for the treatment of short bowel syndrome (SBS)
 - sNDA approval for the treatment of children with SBS May 2019
 - sNDS approval in Canada for children with SBS August 2019
 - Supported regulatory filings and approval for adults and children with SBS in South Korea, Australia, Switzerland, and Brazil
 - Led 2017 FDA Type B meeting to define Gattex sNDA strategy
 - Oversaw the design, conduct, and interpretation of the pivotal phase III pediatric study for US sNDA for teduglutide
 - Oversaw the design, conduct, and interpretation of long-term pediatric extension studies
 - Led 2018 Health Canada pre-sNDA meeting and successful application for Priority Review
 - Participated in 2018 EMA consultation on Revestive device development
 - Led 2017-2019 PMDA consultations to define Revestive Japanese clinical development strategy
 - Designed new phase III studies in Japanese adults, children, and infants

ASSISTANT PROFESSOR**Jun 2016 – Jun 2020**

UMass Memorial Children's Medical Center, Worcester, Massachusetts

Responsible for new patient consultations in the outpatient pediatric gastroenterology clinic

Key accomplishments and responsibilities:

- ◆ Initial workup and treatment of new pediatric gastroenterology patients

**ADJUNCT ASSISTANT PROFESSOR
POSTDOCTORAL RESEARCH FELLOW****Jul 2014 – Aug 2015****Jul 2012 – Jul 2014**Eli and Edythe Broad Center of Regeneration Medicine and Stem Cell Research
UCSF, San Francisco, California

Developed new strategies for treatment of metabolic liver diseases

Key accomplishments and responsibilities:

- ◆ Obtained grant from California Institute of Regenerative Medicine, funding 75% protected research time in liver development and liver cell therapy
- ◆ Developed a new strategy for liver cell therapy via partial reprogramming of primary human T cells with non-integrating episomal vectors, facilitating autologous and traceable liver cell therapy for metabolic liver disease without permanent genetic modification
- ◆ Identified genetic signatures of cell types in the injured human liver, including characterization of ductular reactions/oval cells, putative hepatic progenitor cells in the adult liver
- ◆ Improved in vitro differentiation of induced-pluripotent stem cells into hepatocytes based on in vivo developmental expression profiling and pathway analysis
- ◆ Evaluated in vivo conversion of myofibroblasts into hepatocytes using non-integrating AAV vector
- ◆ Served on Pediatric GI Fellow Scholarship Oversight Committees, advised pediatric GI fellows in the design of their research projects
- ◆ Served on the Clinical Competency Committee, ranked applicants to the GI fellowship program and evaluated progress of current fellows in acquiring clinical skills

- ♦ Mentored postdoctoral fellows at the and Edythe Broad Center of Regeneration Medicine and Stem Cell Research
- ♦ Practiced pediatric gastroenterology, including inpatient, outpatient, and procedures, supervision and training of residents and fellows

EDUCATION

DOCTOR OF MEDICINE (MD)**Aug 2000 – May 2008**

Washington University School of Medicine, St Louis, Missouri

DOCTOR OF PHILOSOPHY (PHD)**Jun 2001 – May 2008**

Washington University School of Medicine, St Louis, Missouri

Program in Molecular Genetics and Genomics

Identified and cloned a key enzyme in the mammalian NAD biosynthetic pathway and identified new functions of SIRT1, an NAD-dependent protein deacetylase, in pancreatic beta cells and hepatocytes

Key accomplishments:

- ♦ Designed and executed diverse experiments to study the function and regulation of SIRT1, an NAD-dependent protein deacetylase known to regulate longevity in a variety of animals
- ♦ Cloned and characterized the enzymes involved in NAD biosynthesis in mammals, and identified the rate-limiting enzyme
- ♦ Reconstituted the mammalian NAD biosynthetic pathway from vitamin B3 (nicotinamide) in vitro, leading to the development of an in vitro assay that was licensed for drug development
- ♦ Identified uncoupling protein 2 as a target gene of SIRT1 in pancreatic beta cells, explaining the observed increase in insulin secretion in response to SIRT1 overexpression
- ♦ Discovered a nutrient-dependent interaction between HNF1a and SIRT1 in hepatocytes, which regulates the expression of specific HNF1a target genes such including C-reactive protein

BACHELOR OF SCIENCE (SB)**Aug 1997 – Jun 2000**

Massachusetts Institute of Technology, Cambridge, Massachusetts

Undergraduate research in the laboratory of Robert Weinberg

Whitehead Institute for Biomedical Research

Key accomplishments:

- ♦ Examined the effects of phosphorylation-resistant mutants of RB on G1/S checkpoint regulation in human embryonic stem cells

ETHICS AND HEALTH POLICY COURSE**Jan 2000 – May 2000**

University of Bergen, Bergen, Norway

UNIVERSITY OF MINNESOTA**Sep 1994 – Jun 1997****TALENTED YOUTH MATHEMATICS PROGRAM**

University of Minnesota, Minneapolis, Minnesota

SUBSPECIALTY TRAINING

CLINICAL FELLOW**Jul 2011 – Jun 2014****PEDIATRIC GASTROENTEROLOGY, HEPATOLOGY, AND NUTRITION**

UCSF Benioff Children's Hospital San Francisco

University of California San Francisco, San Francisco, California

JUNIOR AND SENIOR RESIDENT, PEDIATRICS**Nov 2009 – Jun 2011**

St Louis Children's Hospital

Washington University School of Medicine, St Louis, Missouri

INTERN AND JUNIOR RESIDENT, PEDIATRICS**Nov 2009 – Jun 2011**

Boston Combined Residency Program

Harvard Medical School and Boston University School of Medicine, Boston, Massachusetts

Key accomplishments:

- ♦ Served on the Primary Care Clinic Advisory Committee

AWARDS AND RESEARCH GRANTS

ULTRA-RARE AWARD**May 2022**

Ultragenyx

Awarded for extraordinary effort to support the ongoing phase I/II study of UX053 by re-labeling study drug and troubleshooting study drug infusion at the study site in Madrid

ULTRA-RARE AWARD**Mar 2021**

Ultragenyx

Awarded for poise during extensive and rapid-fire last-minute negotiation of first-in-human study design with FDA

PRIX GALIEN, SWITZERLAND**2020**

Orphan Diseases Category Winner: Revestive

PATIENT FIRST AWARD**Jul 2019**

Takeda GI Summit

Awarded for creative approach to achieving US pediatric approval of Gattex in the setting of severe GMP challenges and device constraints

PRIX GALIEN, FRANCE**2017**

Teduglutide awarded as GI drug of the year

CIRM FELLOWSHIP**Sep 2013 – Aug 2015**

California Institute for Regenerative Medicine

Research grant for identification of pathways that promote hepatocyte maturation

NIH PEDIATRIC LOAN REPAYMENT PROGRAM**Jun 2013 – Aug 2015****SCHOLARSHIP FOR RESEARCH IN THE BIOLOGY OF AGING****Jun 2003 – Aug 2003**

Glenn/American Federation for Aging Research

MOLECULAR GENETICS PROGRAM STEERING COMMITTEE**Jul 2005 – Jun 2006**

Elected represent graduate students on a faculty committee that oversaw recruitment and training of graduate students in molecular genetics

MOLECULAR BIOLOGY OF AGING COURSE FELLOWSHIP**Aug 2003**

Ellison Medical Foundation

PATENTS

NAD BIOSYNTHESIS SYSTEM**Mar 2021**

United States Patent 8,268,575

*Licensed to Sirtris in 2006**Licensed to Metro Midwest Biotech in 2014*

PEER REVIEWED MANUSCRIPTS

Hill S, Carter BA, Cohran V, Horslen S, Kaufman SS, Kocoshis SA, Mercer DF, Merritt RJ, Pakarinen MP, Protheroe S, Thompson JF, Vanderpool CPB, Venick RS, Wales PW, Smith SE, Yoon M, **Grimm AA**. Safety Findings in Pediatric Patients During Long-Term Treatment With Teduglutide for Short-Bowel Syndrome-Associated Intestinal Failure: Pooled Analysis of 4 Clinical Studies. J Parenter Enteral Nutr. 2020 Dec 10.

Kocoshis SA, Merritt RJ, Hill S, Protheroe S, Carter BA, Horslen S, Hu S, Kaufman SS, Mercer DF, Pakarinen M, Venick RS, Wales PW, **Grimm AA**. Safety and Efficacy of Teduglutide in Pediatric Patients With Intestinal Failure due to Short Bowel Syndrome: A 24-Week, Phase III Study. J Parenter Enteral Nutr 2020 44(4): 621-31.

Rezvani M, Español-Suñer R, Malato Y, Dumont L, **Grimm AA**, Kienle E, Bindman JG, Wiedtke E, Hsu BY, Naqvi SJ, Schwabe RF, Corvera CU, Grimm D, Willenbring H. In Vivo Hepatic Reprogramming of Myofibroblasts with AAV Vectors as a Therapeutic Strategy for Liver Fibrosis. Cell Stem Cell. 2016 Jun 2;18(6):809-16.

Rezvani M*, **Grimm AA***, Willenbring H. Assessing the Therapeutic Potential of Lab-Made Hepatocytes. Hepatology. 2016 Mar 25. (*equally contributing authors).

Grimm AA*, Brace CS*, Wang T, Stormo GD, Imai S. A nutrient-sensitive interaction between Sirt1 and Hnf-1 α regulates Crp expression. Aging Cell. 2011 10(2):305-17 (*equally contributing authors).

Revollo JR, **Grimm AA**, Imai S. The regulation of NAD biosynthesis by Nampt/PBEF/visfatin in mammals. Curr. Opin. Gastroenterol. 2007 23(2):164-70.

Moynihan KA, **Grimm AA**, Plueger MM, Bernal-Mizrachi E, Ford E, Cras-Meneur C, Permutt MA, and Imai S. Increased dosage of mammalian Sir2 in pancreatic beta cells enhances glucose-stimulated insulin secretion in mice. Cell Metab. 2005 2(2):105-17.

Revollo JR*, **Grimm AA***, Imai S. The NAD biosynthesis pathway mediated by nicotinamide phosphoribosyltransferase regulates Sir2 activity in mammalian cells. J Biol Chem. 2004 279(49):50754-63 (*equally contributing authors).

Grimm A, Moynihan K, and Imai S. The function of Sir2 and the mechanism of caloric restriction in mammals. Experimental Medicine (Japan). 2004 22(6): 831-836

SELECTED PRESENTATIONS AND ABSTRACTS

Venick R, Chen K, Carter B, Hill S, Kocoshis S, Mercer D, Mu F, Swallow E, Zhao J, Wales P, **Grimm A**. Identification of Factors Associated with Response to Teduglutide within 24 Weeks Among Pediatric Patients with Short Bowel Syndrome-Associated Intestinal Failure. **Poster of Distinction, PIFRS 2020**

Wada M, Mizushima T, Sugita A, Tazuke Y, Udagawa E, Yoon M, Pinton P, **Grimm A**, Ikeuchi H. A Phase III Study of Teduglutide in Adult Japanese Patients with Short Bowel Syndrome–Associated Intestinal Failure. DDW 2020

Hill SM, Kocoshis SA, Carter BA, Venick RS, Wales PW, Hu S, **Grimm AA**. Teduglutide Reduced Parenteral Support in Children with Short Bowel Syndrome Associated-Intestinal Failure (SBS-IF): A Phase 3 Study. **Awarded prize for best presentation at ESPEN 2018, selected for oral presentation at plenary session at PIFRS 2018**

Carter BA, Cohran V, Hill S, Horslen S, Kaufman SS, Kocoshis SA, Mercer DF, Merritt RJ, Pakarinen MP, Protheroe S, Smith SE, Thompson J, Vanderpool C, Venick RS, Wales PW, Yoon M, **Grimm AA**. Safety Findings in Children Treated With Teduglutide for Short Bowel Syndrome–Associated Intestinal Failure: Pooled Analysis of 4 Clinical Studies. **Abstract of Distinction, NASPGHAN 2019**

Kocoshis SA, Carter BA, **Grimm AA**, Hill S, Horslen S, Hu S, Venick RS, Wales PW. Parenteral Support Volume and Calorie Requirements in Children With Short Bowel Syndrome-Associated Intestinal Failure (SBS-IF): Analysis of 2 Phase III Studies. PIFRS 2018

Onishi K, **Grimm A**, Español-Suñer R, Lammele A, Mathur A, Loskill P, Conklin BR, Willenbring H, Healy KE. Disease-Specific Integrated Microphysiological Human Tissue Models. ISSCR 2016

Jeppesen PB, Pape U-F, Lee H-M, **Grimm AA**, O’Keefe SJ. Subanalysis of Teduglutide Efficacy and Safety in Patients With Inflammatory Bowel Disease in the STEPS Study. ESPEN 2016, ACG 2016, UEGW 2016

Rezvani M, Español-Suñer R, Malato Y, Dumont L, **Grimm AA**, Kienle E, Bindmann J, Wiedtke E, Naqvi SJ, Derderian SC, Schwabe RF, Grimm D, Willenbring H. In vivo reprogramming of myofibroblasts into hepatocytes as a therapy for liver fibrosis. The Liver Meeting 2015

Grimm AA, Brunkan CS, Wang T, Stormo GD, Imai S. Identification of new targets of Sirt1 in hepatocytes in specific metabolic conditions. Cold Spring Harbor Meeting, Molecular Genetics of Aging. 2006

Imai S, **Grimm AA**, Moynihan Ramsey K, Revollo JR, Mills KF, Brunkan CS. Function of mammalian Sirt1 and NAD Biosynthesis in the regulation of glucose metabolism and aging. Cold Spring Harbor Meeting, Molecular Genetics of Aging. 2006

Moynihan KA, **Grimm AA**, Plueger MM, Todt LM, Bernal-Mizrachi E, Ford E, Permutt MA, Polonsky KS, and Imai S. Increased dosage of mammalian Sir2 in pancreatic β cells enhances glucose-stimulated insulin secretion in mice. The Gerontological Society of America. 2005

Grimm AA, Wang T, Plueger MM, Todt LM, Zhou Y, Cras-Meneur C, Permutt MA, Stormo GD, and Imai S. Identification of Sir2 α Targets In Pancreatic β Cells. The Gerontological Society of America. 2004

Moynihan KA, Plueger MM, **Grimm AA**, Todt LM, Bernal-Mizrachi E, Permutt MA, and Imai S. Pancreatic β cell-specific Sir2 α -overexpressing transgenic mice show improved glucose and increased insulin secretion during glucose stimulation. Cold Spring Harbor Laboratory Meeting, Molecular Genetics of Aging. 2004

Revollo JR, **Grimm AA**, Imai S. The NAD biosynthesis pathway mediated by nicotinamide phosphoribosyltransferase regulates Sir2 activity in mammalian cells. Cold Spring Harbor Laboratory Meeting, Molecular Genetics of Aging. 2004

LICENSURE AND CERTIFICATION

PEDIATRIC GASTROENTEROLOGY
American Board of Pediatrics

2015 - PRESENT

GENERAL PEDIATRICS

American Board of Pediatrics

2011 - PRESENT**PHYSICIAN AND SURGEON**Medical Board of California
License No A116631**2011 - PRESENT****PHYSICIAN AND SURGEON**Massachusetts Board of Registration in Medicine
License No A116631**2016 - PRESENT****ADVANCED CARDIAC LIFE SUPPORT**

American Board of Pediatrics

2008 - 2020**PEDIATRIC ADVANCED LIFE SUPPORT**

American Board of Pediatrics

2008 - 2020

LANGUAGES

ENGLISH

Native Language

GERMAN

Speak, read, and write with proficiency

SPANISH

Speak, read, and write with proficiency

Interview with QySea Co-founder Belinda Zhang

Belinda Zhang, Qysea Founder



Before I founded Qysea, I oversaw R&D in FOXCONN with more than 11 years' experience on the design, manufacture, quality control, supplier chain management and sales and oversea marketing. I led and participated in R&D, the manufacture and sales of more than 30 products including Apple, Nintendo Wii/NDS, Sony TV/PSP, SBB, Panasonic, Brother and other products of 500 leading companies.

My special interest is in R&D, having been instrumental in 4 patents (3 US patents and 1 Chinese patent) and 2 patents for utility models. I am also a keen underwater sports enthusiastic and certified PADI open water diver.

There are 12 men who have walked on the moon, 500 human beings have been to space and although the sea covers 70% of the earth, only 3 have dived into the murky darkness of Challenger Deep, the deepest point under the sea.

More and more people are eager to explore the vast ocean nowadays. Over the past few years, we are seeing a significant increase in numbers of divers each year. More and more people have the desire to explore what is down the surface. However, scuba diving or free diving needs special training, and it can be dangerous sometimes. Right now, without diving apparatus, there are no easy tools for ocean exploration. As a scuba diver myself, I enjoy capturing and recording every moment under the water. I would like to make this more accessible to many people, especially even for those who fear water, so they could also capture epic underwater moments. What's more, we have seen a huge boost in robotics and artificial intelligence in recent years. The success of DJI is a great proof that we can successfully bring robotics and artificial intelligence into our ordinary life and bring consumers a whole new perspective of seeing the world. And for underwater drones, there is even greater meaning. Most of our team members are scuba divers and we know that underwater world is a very different world, we also know that the ocean is suffering from pollution; coral is disappearing; marine lives are being threatened by environmental change. We feel the urge to help people understand more about the ocean, and then to have the desire to protect it.

Our dream is to offer a quality option by applying AI/robotic technology into our product and to open a new perspective for underwater researchers and consumers. And even more, we hope to bring a huge boost to the development of marine technology and arouse people's concern for positive change for the ocean world.

In addition to today's economic environment worldwide, consumption upgrade is a phrase we often use right now. It means that consumers not only pursue products with functions that suit their needs, but also, they place higher standards upon their self-expression and also emotional needs. Our products can also represent our way of pursuing life.

The last but not the least is that up till now, we see a transformation of industries. The traditional ocean industry has certain barriers, it is more limited to military and industrial applications. How to adjust the industrial structure, and make the related technology and applications suits more ordinary applications is a task ocean-related companies are striving for in recent years.

With all the motivations of above reasons, we see a huge opportunity and potential for growth in our product. That is why FIFISH was created!

It is a great honor for us to win two CES innovation awards in succession. Since we all know that the CES innovation awards are an annual competition honoring outstanding design and engineering in consumer technology products, it is a recognition for our effort and product. We humbly appreciate that.

We've spent two years in product development stage and we've made huge breakthroughs in the underwater industry by addressing technical development barriers for our products, from aesthetic design, to engineering quality as well as function.

The ID design is colorful and fashionable, and the body is streamlined, unique and efficient. After comprehensive and repeated hydrodynamic simulation and experiments, the machine moves very stable at current interference.

The reliability of the products also stands out. Multiple pressure and anti-corrosion tests have been done to ensure long term guarantee to end users. The best in the current market. The camera has an obvious advantage comparing with other underwater drone in current market.

We designed an underwater lens with an ultra-wide angle of 162 FOV, which can take 4K high-definition video and 20 Mega Pixel photos. This combined with abundant lighting of 4,000 lumens, ensures truly great underwater shots. The stabilized camera with shooting algorithm is a great guarantee for stable footage. Multiple shooting modes from micro to normal modes can ensure the camera fits all sorts of scenes.

We are at a rapid development stage. Right now, we are expanding all sorts of applications for our products and explore all sorts of possibilities. We are continuing to develop the technology and in the middle of developing a wireless underwater drone at the moment. FIFISH P3 is in the process of mass production, and we can ship our product at the end of May, which is targeted at the consumer market. We also have light industrial versions for applications like rescue searching, inspection, fishery and so on.

We also have established a long-term partnership with distributors in USA, Japan and European. More and more consumers will see FIFISH P3 on the market soon.

We have encountered lots of tough problems during the design process. There are many design obstacles to overcome even to withstand water pressure 50 meters down the water. In order to conquer these issues we changed designs and materials, in fact we even didn't use glue for the water-proof design which is a great challenge for underwater drone. Lots of pressure tests have been done to ensure the reliability. With all the effort we have done, water-proof sealed and

cylindrical tank with 3.5mm thickness make FIFISH P3 dive to depths of 100m, our vision has come to life.

Actually, there is no big difference for FIFISH P3 to perform in salt or freshwater environment since we have apply special surface treatment on the tank.

The best advantage of FIFISH P3 is its professional camera. We have 4K cameras with a 1 inch SONY sensor, a specially designed underwater lens, and ambarella chipset. It can take 4K video and 20MP photos of very high quality. To create enough light for deep water photography, we have 2*2000 lumens very bright LEDS in the front. Red light is absorbed by water at certain depth, which is why all things in the ocean look blue or green. We have LED with bright light to ensure the color rendition for underwater photography. With all the time we have spent a lot on the camera system, we believe it is much better than other similar products.

What's more, to ensure waterproofing, our current solution is to not use glue, the integrity of which can be affected by water. By thoroughly testing and verifying, we have been able to ensure the reliability of water proofing at all sorts of temperatures and conditions.

The machine is integrated with high precision depth sensors and tilt sensors, and with a single click of a button, the machine can hover at any depth and location with high precision and great stability. Also, it has a few interfaces where people can easily attach multiple sensors to expand the machine's function.

There is a user-friendly App called FIFISH app which can allow you to see the real-time underwater images including real-time depth, movements, battery life etc.

The APP has a wide range of functions. All footage taken can be marked with exact depth at the time it was taken. Once one finishes the shots, footage can be edited via the FIFISH App and shared instantly through social media, or even streamline live broadcast during the diving trip to Facebook, YouTube etc. It also has a community feature in the app where you can share your great shots with other ocean enthusiasts all sorts of explorations.

Using from FIFISH APP, auto-depth, and auto-navigation also can be defined when using the FIFISH P3.

For the consumer application, we envision FIFISH being used for diving, underwater photography, underwater videography and underwater exploration etc. For free diving areas, we've been in contact with free diving international associations, like Andi etc. We understand that the free diving is very dangerous as divers are diving into depth below 100 meters without any equipment, which present safety issues for the divers with limited sea surface observation capabilities. We are working on applying our product to follow free divers during their diving and let people on shore understands what's happening and if any safety precautions need to be taken.

For commercial applications, FIFISH is used for rescue, research, inspection etc. We've been exploring all sorts of other applications with our product. We've helped Blue Sky Rescue team upon some of their rescue projects. We also have cooperated the largest water project "south-north water project" in China for water inspection.

We are willing to use our product to participate in public welfare activities, to help shoulder social responsibilities.

We are hoping to provide more and more easy use and meaningful tools for people to explore the ocean, to make good use of the resources and most importantly, to protect it.

For consumer-grade product, we wish to provide smaller, cheaper products even wireless products for more and more people could afford and explore the underwater world in a much easier way.

For light-industry product, FIFISH will continue to make breakthrough over technical barriers even offer customized product for multifunctional use. We do hope to help proceed the development of marine technology.

We will continue to update our brand and product information on our website to let people know more about us. The underwater drone market has huge potential. We are seeing a increase in underwater drone companies all over the world in recent years. A lot of efforts and resources have been invested into this industry, so in the next five years, we are hoping to see a huge boost in the ocean industry, and to see robotics and AI application be developed to change the ways people explore the ocean.

Bonnie Rogers, M.S., PWS

Environmental Specialist and Professional Wetland Scientist (PWS)
(805) 448-3352; aquanow.info@gmail.com; Los Angeles, California

INTRODUCTION

Marine ecologist with a passion for coastal resources innovation and restoration. I deliver high-quality materials rooted in science, simplify project outputs, and recommend strategic permit paths.

PRINCIPLE AREAS OF EXPERTISE

- ◆ National Environmental Policy Act (EA and EIS) and environmental regulations.
- ◆ Coastal resources permit strategy, process, and agency consultation.
- ◆ Condition assessments, ecosystem mitigation and monitoring plans, and restoration.

CONSULTING EXPERIENCE

2019 – Present. President, Blue Edge Consulting LLC, California.

2020 – Present. Senior Wetland Scientist Team Lead, SWCA Environmental Consultants.

FEDERAL EXPERIENCE

2019 – Present. Life Scientist, U.S. Environmental Protection Agency (EPA), Region 9.

2012 – 2019. Interdisciplinary Biologist, U.S. Army Corps of Engineers (USACE), Los Angeles District. Senior Project Manager (GS-12: 2014-2019); Team Lead term (GS-13: 2017); Project Manager (GS-11: 2012-2014).

2010 – 2012. Scientist III (2012), and Resource Specialist (2010-2011), Ocean Associates at National Oceanic and Atmospheric Administration (NOAA).

EDUCATION & RESEARCH

2010 Master of Science, Biology Cum Laude. California State University, Long Beach (CSULB).

2003 Marine Science. University of Queensland, Australia.

2005 Bachelor of Science, Aquatic Biology. University of California, Santa Barbara (UCSB).

2006 – 2010. Shark Lab, Research Assistant (2006-2009) and Department of Biological Sciences, Teaching Assistant (2007-2010), California State University, Long Beach.

2002 – 2006. Scientific Survey Technician, Partnership for Interdisciplinary Studies of Coastal Oceans (PISCO). University of California, Santa Barbara.

SCIENTIFIC PUBLICATIONS

1. Rogers, Bonnie L., Christopher G. Lowe, and Esteban Fernández-Juricic. Recovery of visual performance in rosy rockfish (*Sebastes rosaceus*) following exophthalmia resulting from barotrauma. Dec 2011. Fisheries Research, v.112, no.1-2, p.1(7) (ISSN: 0165-7836).
2. Rogers, Bonnie L., Christopher G. Lowe, Esteban Fernández-Juricic, and Lawrence R. Frank. 2008. Utilizing magnetic resonance imaging (MRI) to assess the effects of angling-induced barotrauma on rockfish (Sebastes). Canadian Journal of Fisheries and Aquatic Sciences, 65:(7) 1245-1249.

Choro Ching, PhD.

Choro Ching, PhD. Chief Technical Officer and co-founder of QySea, based in Qingdao, China.

QYSEA is a company that designs and manufactures marine Remotely Operated Vehicles (ROVS).

Choro cofounded Qysea with Belinda Zhang (See attached interview below).

Choro Ching received his Doctorate in Electrical Engineering from Taiwan Jiaotong University.
Choro “Zorro” is an expert in wireless communications, 5G networks and FMCW radar systems.

In 2016, QYSEA launched the world first Omni-directional underwater drone, the FIFISH, which can be moved in any direction and suitable for underwater inspection and survey. Light weight and small size can be hand carried.

In 2022, QYSEA launched the Artificial Intelligent (AI) marine ROV. QySea’s AI is driven by a smart algorithm called “Vision Lock” which allows the ROV station to maintain position in sea currents.

Erica J. (Grimm) Lewis, MD

1408 Cordilleras Ave, San Carlos CA 94070. Tel (608) 217.2779 -EricaLewisMD@gmail.com

Experience			
	El Camino Hospital Emergency Medicine Physician 433 bed community hospital	Mtn View, CA	7/11 – present
	Director of Peer Review: organize monthly QA meetings and case reviews, track provider trends, provide staff education		9/15 – present
	Physician Champion for Epic EHR Making systems improvement for clinical practice		1/21 – present
	IT liaison: ED representative for Epic build and installation. Work with IT staff for ongoing improvements		1/15
	LEAN project consultant: met with administration to optimize throughput and decrease waste		5/13
	Mednition Incorporated Med consultant for machine learning	Burlingame, CA	7/16 – present
	PAMF Urgent Care Staff Physician (per diem)	San Carlos, Ca	10/18-present
	Mills - Peninsula Hospital Emergency Medicine Physician	Burlingame, CA	12/11 – 2/13
	San Mateo Medical Center Emergency Medicine Physician	San Mateo, CA	7/11 – 12/11
	Racing The Planet Provided medical support to athletes competing in foot races across the Atacama desert	San Pedro, Chile	2010; 2013
	Project Manager Epic Systems Corporation Project Manager for electronic medical record implementation.	Madison, WI	6/03 – 4/04

Education	Stanford/Kaiser Emergency Medicine Residency Stanford, CA 6/08 – 7/11 Loyola University School of Medicine Maywood, IL 8/04 – 6/08 Medical Doctorate, <i>Cum Laude</i> University of Wisconsin at Madison Madison, WI 9/99 – 12/02 Bachelor of Science in Biology with Honors in Liberal Arts
Certifications	American Board of Emergency Medicine exp 12/22 Advanced Pediatric Life Support 6/11 Wilderness Advanced Life Support Certification 8/10 Advanced Trauma Life Support Certification 7/08 Advanced Cardiac Life Support Certification 6/08
Awards	Excellence in Research Award 6/11 Fellow of Wilderness Medicine Award 11/10 Alpha Omega Alpha Honors Society 6/08 Holstrom Environmental Research Scholarship 6/02
Research	Improving ED Emergency Severity Index Acuity Assignment Using Machine Learning and Clinical Natural Language Processing Journal of Emergency Nursing Mednition Inc. Burlingame, CA 12/20 Prevention of Altitude Illness with Non-steroidal Anti-inflammatory Study Stanford University Palo Alto, CA 7/10 – 7/11 PI Grant Lipman, MD. Study assessing the efficacy of ibuprofen compared to placebo in preventing acute mountain sickness. We measured optic nerve sheath diameter as a surrogate for increased intracranial pressure. Prevention Trial Assessing Paper-Tape in Endurance Distances (PreTAPED) Stanford University Palo Alto, CA 12/08 - present PI Grant Lipman, MD. Study assessing the efficacy of paper tape in preventing blisters in endurance runners in San Pedro de Atacama, Chile.
Publications	

	Lipman GS, Kanaan NC, Holck PS, Constance BB, Corbett B, Grimm E, Preuss J, Zorko B. Ibuprofen Prevents Altitude Illness: A Prospective Randomized Controlled Trial. Academic Emergency Medicine. May, 2011. 18(5): S15. Grimm, E. Auerbach, P. Marine Envenomations. In David, S (editor) Textbook of Emergency Medicine. Wolters Kluwer. India, New Delhi 2010 (In Press). Grimm, E. Sunburn. American College of Emergency Physicians Wilderness Medicine Section Newsletter. 2010, Aug. 5(2).
Hobbies	Mountaineering/backpacking, playing with my 2 boys

BIOGRAPHICAL SKETCH

Provide the following information for the key personnel and other significant contributors in the order listed on Form Page 2.
Follow this format for each person. **DO NOT EXCEED FOUR PAGES.**

NAME Gordon A. Saxe, MD, PhD, MPH		POSITION TITLE Director, Krupp Center for Integrative Research and Associate Physician, UC San Diego	
eRA COMMONS USER NAME gasaxe			
EDUCATION/TRAINING <i>(Begin with baccalaureate or other initial professional education, such as nursing, and include postdoctoral training.)</i>			
INSTITUTION AND LOCATION	DEGREE <i>(if applicable)</i>	MO/YR	FIELD OF STUDY
Brandeis University, Waltham, MA	BA	5/1979	History/ Sociology
Tulane School of Public Health and Tropical Medicine, New Orleans, LA	MPH	8/1985	Nutrition
University of Michigan, Ann Arbor, MI	PhD	5/1992	Epidemiology
Michigan State University College of Human Medicine, East Lansing, MI	MD	6/1997	Medicine
Berkshire Medical Center, Pittsfield, MA		6/1998	Internal Medicine Internship
University of Massachusetts School of Medicine, Worcester, MA		8/2000	Preventive Medicine Residency

A. POSITIONS:

8/2017 – Director, Krupp Center for Integrative Research, University of California, San Diego
8/2017 – Director, Center for Integrative Nutrition, University of California, San Diego
1/2015 – Chair of Research, Krupp Endowed Fund, University of California, San Diego
7/2011 – Associate Physician, Centers for Integrative Health, University of California, San Diego
1/2011 – 8/2017 Director of Research, Center for Integrative Medicine, University of California, San Diego
7/2003 – 6/2011 Assistant Professor, Department of Family and Preventive Medicine, University of California, San Diego
1/2003 – 6/2003 Research Associate IV, Department of Family and Preventive Medicine, University of California, San Diego
9/2000 – 1/2003 Medical Director, Pacific College of Oriental Medicine, San Diego, CA
7/1999 – 8/2000 Chief Resident in Preventive Medicine, Department of Family and Community Medicine, University of Massachusetts School of Medicine, Worcester, MA

CERTIFICATIONS AND MEMBERSHIPS:

- Medical Licenses, State of California and Commonwealth of Massachusetts
- Board certified in Preventive Medicine by American Board of Preventive Medicine
- DEA licensed
- Member of Society for Integrative Oncology

- Member, Moores UCSD Cancer Center, University of California, San Diego
- Member of UCSD Center for Microbiome Innovation
- Fellow of the American College of Nutrition

HONORS AND AWARDS:

2006-2011	<i>"Diet and Gene Expression in Prostate Cancer,"</i> The Cancer Project
2005-2010	K23 Clinical Research Training Grant, National Center for Complementary and Alternative Medicine, National Institutes of Health
2003-2005	New Investigator Award, American Cancer Society
1994-1997	Wilbur Wright Memorial Foundation Scholarship, Michigan State University College of Human Medicine
1993-1997	Leonard Luker Foundation Scholarship, Michigan State University College of Human Medicine
1989	Rackham Dissertation Grant, University of Michigan
1988	Breast Oncology Research Grant, University of Michigan Comprehensive Cancer Center
1977-1979	Dean's List, Brandeis University

C. CONTRIBUTIONS TO SCIENCE:

- Saxe G**, "Cancer: Causes, Cures, and Implications" (published as part of proceedings of 2nd Annual Bioethics Conference, Boston College, Boston, MA), *Linacre Quarterly*, June, 1979
- Saxe G**, "Lifestyle Change After a Diagnosis of Cancer," *Graduate Research Bulletin*, University of Maryland, 1983
- Saxe G**, "A Retrospective Study of Diet and Cancer of the Pancreas." Master's Thesis, Tulane University, 1985
- Orringer C and **Saxe G**, "Diet and Exercise in the Management of Breast Cancer." In: D. Adler, R. Cody, J. Harness, A. Lichter, and H. Oberman (editors), Breast Cancer: Collaborative Management, Lewis Publ. Co., Chelsea, MI, 1988
- Saxe G**, "Diet and Estrogen Receptor Status in Breast Cancer," Doctoral Dissertation, University of Michigan, 1992
- Rock CL, Randall DL, Ruffin MT, August DA, and **Saxe GA**, "Serum Carotenoids and Estrogen Receptor Status in Breast Cancer." Presented at the Tenth International Symposium on Carotenoids, Trondheim, Norway, June 20-25, 1993
- Carter JP, **Saxe GA**, Newbold V, Peres CE, Campeau RJ, and Bernal-Green L, "Hypothesis: Dietary Management May Improve Survival from Nutritionally Linked Cancers Based on Analysis of Representative Cases," *J Amer Coll Nutr*, 12(3): 209-226, 1993
- Rock CL, **Saxe G**, Ruffin M, August DA, and Schottenfeld D, "Carotenoids, Vitamin A, and Estrogen Receptor Status in Breast Cancer," *Nutr and Cancer*, 25(3): 281-296, 1996
- Saxe, G**, Rock CL, Wicha M, and Schottenfeld D, "Diet and Risk for Breast Cancer Recurrence and Survival" *Breast Cancer Res Trmt*, 53(3): 241-53, 1999
- Saxe GA**, Hebert JR, Carmody JF, Kabat-Zinn J, Rosenzweig PH, Jarzowski D, Reed GW, and Blute RD, "Can Diet in Conjunction with Stress Reduction Affect the Rate of Increase in Prostate Specific Antigen after Biochemical Recurrence of Prostate Cancer?" *J Urology*, 166(12): 2202-7, 2001
- Saxe GA**, "Saxe G, "The Fight Against Recurrent Prostate Cancer," *Advances (Newsletter of the American Cancer Society)*, July 2003, P.3.
- Saxe GA**, "Integrative Tumor Board: Recently Diagnosed Prostate Cancer," *Integr Cancer Ther*, 2(1): 65-73, 2003

- Saxe GA** and Major JM, "Diet and Stress Reduction in Recurrent Prostate Cancer," Presented at the Annual Meeting of the Society for Integrative Oncology, San Diego, Nov. 2005
- Saxe GA** and Major JM, "Diet and Stress Reduction in Recurrent Prostate Cancer," Presented at the American Society for Clinical Oncology Second Annual Prostate Cancer Symposium, San Francisco, Feb. 2006
- Saxe GA**, Major JM, Nguyen JY, Freeman KM, Downs TM, and Salem CE, "Potential Attenuation of Disease Progression in Recurrent Prostate Cancer With Plant-Based Diet and Stress Reduction," *Integr Cancer Ther*, 5(3): 206-13, 2006
- Nguyen JY, Major JM, Knott CJ, Freeman KM, Down TM, and **Saxe GA**, "Adoption of a Plant-Based Diet by Patients with Recurrent Prostate Cancer," *Integr Cancer Ther*, 5(3): 214-23, 2006
- Berkow SE, Barnard ND, **Saxe GA**, and Ankerberg-Nobis T, "Diet and Survival after Prostate Cancer Diagnosis." *Nutr Rev*, 65(9): 391-403, 2007
- Berkow SE, Barnard ND, **Saxe GA**, "Authors' Reply (Letter to the Editor)," *Nutr Rev*, 66(7): 427, 2008
- Saxe GA**, Madlensky L, Kealey S, Wu DP, Freeman KL, and Pierce JP, "Disclosure to Physicians of CAM Use by Breast Cancer Patients: Findings from the Women's Healthy Eating and Living Study," *Integr Cancer Ther*, 7(3): 122-9, 2008
- Saxe GA**, Major JM, Westerberg L, Khandrika S, and Downs TM, "Biological Mediators of Effect of Diet and Stress Reduction on Prostate Cancer," *Integr Cancer Ther*, 7(3):130-8, 2008
- Saxe GA** and MacElhern L, "Natural Healing and Cooking," *Glob Adv Health Med*, 2(Suppl): S1116, 2013
- Sundaram J, Montross L, Meier E, Gomes S, Redwine L, Mills P, Kallenberg G, and **Saxe G**, "I Hope to Find ...: What We Can Learn from Analyzing Patients' Goals in Integrative Medicine," *J Alt Compl Med*, 20(5): A77-A77. 2014
- Gonzales JF, Barnard ND, Jenkins DJ, Lanou AJ, Davis B, **Saxe G**, and Levin S, "Applying the Precautionary Principle to Nutrition and Cancer," *J Am Coll Nutr*, 33(3): 239-46, 2014

D. OTHER SUPPORT:

The following are all supported by the Krupp Endowed Fund at the University of California, San Diego:

Principal Investigator:

1. "Mushroom-based Product for COVID-19" (FDA Phase 1 trial), July 2020 – Dec 2022, \$132,500
2. "Chinese Herbal Formula for COVID-19" (FDA Phase 1 trial), July 2020 – Dec 2022, \$132,500
3. "RCT of Mushroom-based Natural Product to Enhance Immune Response to COVID-19 Vaccination," June 2021 – Dec 2022, \$150,000
4. "RCT of Mushroom-based Natural Product to Enhance Immune Response to COVID-19 Vaccination in Patients with Chronic Lymphocytic Leukemia," Jan 2022 – Dec 2023, \$200,000

Co-Principal Investigator:

1. "Clinical trial of whole food, plant-based diet and vision in glaucoma," July 2019 – June 2023, \$450,000
2. "RCT of plant-based diet and endometriosis," July 2021 – June 2024, \$530,000
3. "Clinical trial of plant-based diet and lifestyle modification in progression of cardiac disease," July 2020 – June 2023, \$300,000

Jerry R. Schubel

EXPERT PROFILE

Jerry R. Schubel

President and CEO

Aquarium of the Pacific

California, California, United States, dean, president and CEO, Harvard University, the Johns Hopkins University, National Research Council (Show more tags)



Biography

Jerry Schubel has been president and CEO of the Aquarium of the Pacific since 2002. He previously worked as president and CEO of the New England Aquarium. From 1974 to 1994, he was dean of Stony Brook University's Marine Sciences Research Center, and for three of those years he also served as the university's provost. Before 1994, he served an adjunct professor, research scientist and associate director of The Johns Hopkins University's Chesapeake Bay Institute. Dr. Schubel has worked throughout his professional life at the interfaces of science, management and policy on issues dealing with the ocean. He has published more than 200 scientific papers and also has written extensively for general audiences. He writes a monthly column on the environment for Long Beach Magazine. He chaired the National Sea Grant Review Panel and the National Research Council's Marine Board and has served on numerous NRC committees and national and state government advisory panels. At the Aquarium of the Pacific, he created the Aquatic Forum, which brings together scientists, policymakers and stakeholders to explore alternative ways of dealing with some of California's complex environmental issues. Dr. Schubel earned a bachelor of science degree from Alma College, a master's degree from Harvard University and a doctorate in oceanography from The Johns Hopkins University. He received an honorary doctorate from the Massachusetts Maritime Academy in 1998 and was selected in 2004 as a national associate of the National Academies of Sciences and Engineering.

100 Aquarium Way
Long Beach California 90802
United States

Office Phone:

(562) 951-1608

Links:

<http://www.aquariumofpacific.org/>

Jorge K. Tamayo

33442 Cheltam Way, Apt D.
Dana Point, CA 92629
Phone: 949-292 7981
E-mail: jk@best-aqua.com

Experience:

Aquaculture Consultant Latin America at Genics Pty Ltd Sep. 2020 to present
Technical support for Latin America customers, Multipath, Genetic, Troubleshooting.
"RAS" Systems, Maturation, Larviculture and Broodstock.

- Prototype Mr. Ghazi, Kuwait
- Aquagen, Ecuador
- Grupo Genesis, Ecuador

Owner / Technical Manager – Best-Aqua Jan. 2002 to Present
RAS Systems, consultant services, maturation, larviculture, growth-out
Consultant:

- Grand Shrimp, Fountain Valley, CA, USA
- Carlsbad Aquafarms, Carlsbad, CA, USA
- Simply Shrimp, Minnesota, MN, USA
- Center for Aquaculture Technologies, San Diego, CA, USA
- Built and setup RAS, GAM (Grupo Acuicultor Mexicano)
- Acuablas, San Blas, Nayarit, Mexico

Operations Manager – North America Broodstock, Mecca, CA, August 2018 - Nov. 2021
Build and manage the first shrimp farm in the west coast with artificial water.

Operations Manager - Primo Broodstock, Fort Myers, FL Nov 2015 – Jul 2016
Broodstock maintenance and shipping.

Consultant Assistant - Super Shrimp Group July 2000 – August 2002

- Los Angeles Broodstock Shipping Center.
- Brine shrimp nutritional enrichment project in Lee Vinning, CA
- Singapore Hatchery, maturation and broodstock.
- Yuma, AZ Installation of a bio-filtration system.

Manager/Owner – Devanguardia, SA. Ecuador Jan. 1997 – Jun. 2000

25 million post-larvae /mo. Shrimp hatchery in Crucita Ecuador.

Manager of a Shrimp maturation facility – LACAMSA Oct. 1998 – Sept. 2000
Crucita, Ecuador.

Maturation Manager - Granjas Marinas del Pacífico, April, 1990 – Feb., 1992
Punta Barandúa, Ecuador.

Consultant with Emagro S.A. Ecuador 1988 – 1999

Companies:

- | | |
|--------------------|--------------------------|
| Agromarina Cispata | Monteria, Colombia |
| Maragícola | Tumaco, Colombia |
| Formosa | La Libertad, El Salvador |
| Emagro | Manta, Ecuador |
| Formosa | Kaohsiung, Taiwan |

Maturation Manager - Lacamsa S.A., Ecuador Jan., 1985 – Jan., 1990
Instrumental in the design, construction, and management of a large-scale shrimp maturation.

Assistant Manager - Granjas Marinas del Pacífico, March-Dec., 1984
Punta Barandua, Ecuador.

Education:

Certification in "Aquaculture Technician", Saddleback College, San Juan Capistrano, CA
Certification in "Aquarium Technician", Saddleback College, San Juan Capistrano, CA
BA in Business Administration, 1999. Universidad Vicente Rocafuerte, Portoviejo, Ecuador.

Conference speaker:

AquaExpo Santa Elena, Ecuador 2020
MADURATION, LARVICULTURE & BROODSTOCK WITHOUT OCEAN WATER

AquaExpo Guayaquil, Ecuador 2021
RECIRCULATION SYSTEMS (RAS), HOW TO REDUCE THE CULTURE RISK AND
PRODUCTION COSTS

References: Available upon request

Kathryn Schubel, Ph.D.
2445 Garfield St. Carlsbad CA 92008
Phone: 831.392.7852
E-Mail: kschubel@mac.com

EDUCATION

Ph.D., Johns Hopkins University, Department of Earth and Planetary Sciences, 1997

Conducted geological field studies in Dolomite Mountains, Italy. Performed laboratory experiments at the University of Lund, Sweden.

Specialties: Carbonate sedimentology, geochemistry, crystal chemistry.

Primary dissertation topic: Dolomite Microstructures and Reaction Mechanisms of Dolomitization: An Integrated TEM, Petrographic, Geochemical and Field Study of Selected Dolomite Bodies.

Thesis Committee: Lawrence A. Hardie and David R. Veblen.

M.A., Binghamton University, Department of Geological Sciences, 1992

Conducted geological field research in Qinghai Province, China.

Specialties: Evaporite sedimentology, low-temperature geochemistry.

Thesis topic: Vertical and Lateral Variations in a Shallow Perennial Lake to Salt Pan Deposit, Qarhan Salt Plain, Qaidam Basin, Western China.

Thesis Committee: Tim K. Lowenstein, Robert V. Demicco and David M. Jenkins

B.A. Honors, Oberlin College, Department of Geology, 1987

Semester abroad Nepal, 1986. Conducted geological field research in Australia 1986-1989.

Thesis topic: Petrographic Criteria to Aid in the Recognition of "Magadi-type" Cherts.

Adviser: Bruce M. Simonson

CONTINUING EDUCATION

Canvas Training, 2016

Adobe Dreamweaver, Adobe Certified Training, 2009

ArcGIS Desktop I, II, and III, ESRI, 2008

Adobe Photoshop, Adobe Certified Training, Sterling Ledet and Associates, 2007

Online Course Development Training, Johns Hopkins University, 2006

Edward Tufte Course, Presenting Data and Information, 2005

PROFESSIONAL EXPERIENCE

Associate Faculty, MiraCosta College, Spring 2015-present

Online part-time faculty, Johns Hopkins University (JHU), Advanced Academic Programs (AAP), M.S. Environmental Sciences, 2006-present

Onsite part-time faculty, JHU, AAP, M.S. Environmental Sci., 2001, 2005-present

Instructor, Coastline Community College, Fall 2014-present

Co-owner Carlsbad Aquafarm, 2014-present

Instructor, Laguna College of Art and Design, 2011-2020

Facilitator, University of Phoenix Online, 2011-2017

Associate Faculty, Palomar College, 2015

Instructor, Cypress College, 2013-2014

Instructor, Fullerton College, 2012-2014

Co-Founder, F3: Food and Fuel for the Future 2010-2013

Contractor, Playing for Change Foundation, 2010

Co-founder, Airship Earth, 2009

Project Manager and Curator of Content, Gulf of California Exhibit, AoP, 2008

Project Manager and Curator of Content, Ocean on the Edge: Top 10 Ocean Issues Exhibit, Aquarium of the Pacific (AoP), 2007-2008
Instructional Designer and Instructor, AoP, Aquatic Academy, 2007-2008
Consultant, AoP, 2006-2008
Curator of Content, Catch a Wave Exhibit, Aquarium of the Pacific, 2007
Director of College and University Programs, Owen Software Development Co., 2006-2007
Assistant Professor, Lafayette College, Dept. Geology & Environmental Geosciences, 1998-2006
Expert Scientist, National Science Foundation REU Project, Utah, 2003-2004
Visiting Assistant Professor, Johns Hopkins University, conducted research in the Dept. of Earth and Planetary Sciences and taught in the AAP, M.S. Environmental Sci, 2001-2002
Instructor, Lafayette College, Dept. Geology and Environmental Geosciences, 1996-1998

COURSES TAUGHT

Introduction to Oceanography^{MC-F2F, P-O, Full-F2F, Cypress-F2f, UoPx-O}
 Introduction to Earth and Space Science^{MC-F2F}
 Physical Geology^{MC-F2F, CC-O}
 Physical Geology Lab^{CC-O}
 Geology and Tropical Ecology of Hawai'i^{JHU-F2F, f}
 Coral Reefs and Caves: The Geology of the Bahamas^{JHU-F2F, f}
 Coastal Zone Processes and Policy^{JHU-O}
 Oceanic and Atmospheric Processes^{JHU-F2F}
 Geological Foundations of Environmental Science^{JHU-F2F}
 Project GREEN: Hillside^{LCAD-F2F, f}
 Project GREEN: From Ridge to Reef^{LCAD-F2F, f}
 Project GREEN: Ocean^{LCAD-F2F, f}
 Exploration of the Earth Sciences^{UoPx-O}
 Environmental Geology^{UoPx-O}
 Earth Science for Teachers^{Cypress-F2F, *}
 Historical Geology^{Cypress-F2F, *}
 FYS 114 – An Exploration of West African Song and Rhythm^{LC-F2F}
 Geology 102 – History of the Earth^{LC-F2F}
 Geology 105 – Oceanography^{LC-F2F}
 Geology 106 – Oceanography Laboratory^{LC-F2F, f}
 Geology 130 – Origins, Evolutions, and Extinctions^{LC-F2F}
 Geology 140 – Coral Reefs and Caves: The Geology of the Bahamas^{LC-F2F, f}
 Geology 205 – Oceanography^{LC-F2F, *f}
 Geology 215 – Modern and Ancient Depositional Environments^{LC-F2F, *}
 Geology 315 – Sedimentology^{LC-F2F, *}
 Geology 353 – Independent Study: Sedimentary Geology^{LC-F2F}
 Geology 428 – Integrated Methods and Applications in the Geosciences^{LC-F2F, f}
 Geology 495/496 – Thesis^{LC}

Modality: ^{F2F}Face to face, ^OOnline, *courses with labs, ^ffield-based courses,
 Institution: ^{MC}MiraCosta College, ^{CC}Coastline College, ^{JHU}Johns Hopkins University, ^{LCAD}Laguna College of Art and Design, ^{UoPx}University of Phoenix, ^PPalomar College, ^{Full}Fullerton College, ^{Cypress}Cypress College, and ^{LC}Lafayette College

STRENGTHS

Instructional Design and Curriculum Development

Designed and developed a diverse portfolio of training materials and educational programs and delivered them in person and online. Topics include technical scientific topics— oceanography, ocean issues, environmental science, geology, Earth history, and the geology of the Bahamas and the geology and ecology of Hawai'i (two field courses); cultural topics—West African song and rhythm; and technical training for computer-based educational software. Learners include undergraduates (four-year and community colleges), master's-level graduate students, educators, administrators, upper-level managers, and front-line staff. Content is delivered to a broad range of people in a variety of settings, from a free-choice learning institution to colleges and universities.

Community Building

Created rigorous, safe, and supportive learning communities in a variety of settings including: a leading undergraduate institution, a major research university, and a leading free-choice learning institution.

Recent Examples of Demonstrated Leadership

Project Manager and Curator of Content for major exhibits at the Aquarium of the Pacific (AoP)

- Catch a Wave, The Gulf of California, and Ocean on the Edge: Top 10 Ocean Issues
- Oversight of Aquarium Staff in graphic design, media production, life-support, facilities, education and volunteer services, in the creation and installation of major exhibits.
- Responsible for creating scientific content and displays for AoP with the following organizations: NASA, NOAA, MIT, Scripps Institution of Oceanography, Johns Hopkins University, Pepperdine University, UC Irvine, UCLA, San Francisco Estuarine Institute, and World Wildlife Fund.
- GIS data acquisition, graphics design and layout with the Environmental Systems Research Institute—ESRI, National Center for Atmospheric Research, and Wildlife Conservation Society.

Co-Founder F3: Food and Fuel for the Future (F3)

- F3: Food and Fuel for the Future focused on, microalgae cultivation and aquaponics, which integrates hydroponics and aquaculture into a high-performance agricultural system.

Playing for Change Foundation (PFCF)

- Worked to create live audio and video connections between PFCF schools and schools in the United States. Our first event, between kids at the MIT Media Lab and kids in Gugulethu, South Africa was broadcast live on the Web. Staff fielded questions on Social Media sites.
- Developed fundraising plans and strategies to support the PFCF.

Co-Founder Airship Earth (AE), located at the NASA Ames Research Park, Moffett Field, CA

- Provided leadership in all facets of establishing and developing a new business focused on renewable energy, including high altitude wind energy and biofuel production.
- Worked with Magenn Power, lighter-than-air wind-power company, to develop, test and deploy high altitude wind turbines.
- Negotiated a 10,000 square feet lease of Hangar space to support lighter-than-air technology.

- Worked to create spaces for innovation and collaboration. In partnership with SeaWorld, we explored development of environmentally themed, mobile, social networks to record geo-coded, time-stamped citizen scientist observations that could be organized and catalogued in a social network to facilitate exploration and enhance STEM literacy were explored.

Exhibit and Program Development

Co-wrote Catch A Wave: An Introduction to California's Waves and was an advisor for A Sea on the Edge, a movie about the Gulf of California.

Developed content for major exhibits at the Aquarium of the Pacific and designed, organized and taught intensive courses and short courses to introduce Aquarium staff to the science behind new exhibits.

Developed a 27-panel exhibit, based on Ocean on the Edge: Top 10 Ocean Issues for the 2008 ESRI's International User Conference, which was featured in the Society for Conservation GIS and Conservation Program's Special Display. Created a display, Preserving Marine Biodiversity, for Keynote address.

PUBLICATIONS

-
- Schubel, J.R. and **Schubel, K.A.**, 2008, From Ocean issues to solutions: The role of public ocean literacy. Oceans '08 Marine Technology Society/IEEE, Quebec City, Quebec, Canada.
- Schubel, J.R., Monroe, C. **Schubel, K.A.**, & Bronnenkant, K., 2009, Environmental literacy through the lens of aquarium ocean literacy, in J.H. Falk, J.E. Heimlich, & S. Foutz (Eds.), *Free-Choice Learning and the Environment*. AltaMira Press, MD, p. 123-138.
- Schubel, K.A.** and Veblen, D.R., 2005, Textural and compositional analysis of multiple dolomite generations from the Latemar buildup, Dolomites, northern Italy. *Carbonates and Evaporites*, v. 20, p. 148-160.
- Schubel, K.A.**, Veblen, D.R. and Elbert, D.C., 2005, Dolomite Microstructures and Reaction Mechanisms of Dolomitization on the Triassic Latemar Buildup, Dolomites, Northern Italy. Submitted to *Carbonates and Evaporites*, v. 20, p. 116-130.
- Schubel, K.A.**, Veblen, D.R. and Malone, M. J., 2006, Microstructures and textures of experimentally dolomitized Bahamian ooids: implications for reaction mechanisms of dolomitization. Submitted to *Carbonates and Evaporites*, v. 21, p. 1-13.
- Woods, K.L., Scalise, R.L., Beagle, P.F.J., Maxson, Julie, A., and **Schubel, K.A.**, 2003, Spring deposits within the palustrine carbonates of the Cretaceous Cedar Mountain Formation, UT. *Geological Society of American Abstracts with Programs*, p. A511.
- Schubel, K.A.**, Elbert, D.C. and Veblen, D.R., 2002, Crystallographic and compositional aspects of *c*-domains in calcium-rich dolomite, Goldschmidt Conference, Davos, Switzerland, Abstracts, p. A689.
- Schubel, K.A.**, Elbert, D.C. and Veblen, D.R., 2002, Crystallographic and compositional aspects of *c*-domains in calcium-rich dolomite, International Congress for Electron Microscopy, Durban, South Africa, p. 1091-1092.
- Schubel, K.A.**, Veblen, D.R. and Malone, M. J., 2001, Microstructures and textures of experimentally dolomitized Bahamian ooids: implications for reaction mechanisms of dolomitization. *Geological Society of American Abstracts with Programs*, p. A255.

- Simonson, B.M., Cardiff, M. and **Schubel, K.A.**, 2001, New evidence that a spherule layer in the late Archean Jeerinah Formation of Western Australia was produced by a major impact. Lunar and Planetary Science Conference XXXII, abstract #1141.
- Schubel, K.A.**, Elbert, D.C. and Veblen, D.R. (2000) Incommensurate c-domain superstructures in calcian dolomite from the Latemar buildup, Dolomite Mountains, Northern Italy: *American Mineralogist*, v. 85, p. 858-862.
- Elbert, D.C., **Schubel, K.A.** and Veblen, D.C., 1999, Mineralogical applications of energy-filtered imaging (EFI) in a conventional transmission electron microscope (TEM): *Geological Society of America Abstracts with Programs*, v. 31, no. 7, p. A169.
- Schubel, K.A.**, Elbert, D.C., Veblen, D.R. and Hardie, L.A. (1998) Recognition of Incommensurate c-domain superstructures in calcian dolomite from the Latemar buildup, Dolomite Mountains, northern Italy: *Geological Society of America Abstracts with Programs*, p. A282.
- Schubel, K.A.** (1997) Reaction mechanisms of dolomitization, an integrated TEM, SEM, geochemical, petrographic and field approach: unpublished Ph.D. dissertation, Johns Hopkins University, 352 pp.
- Schubel, K.A.** and Lowenstein, T.K. (1997) Criteria for the recognition of shallow perennial saline lake evaporites based on recent sediments from the Qaidam Basin, western China, *Journal of Sedimentary Research*, v. 67, p. 74-87.
- Schubel, K.A.**, Hardie, L.A. and Veblen, D.R. (1996) Heterogeneous microstructures in dolomites from the Triassic Latemar platform, northern Italy: *Geological Society of America Abstracts with Programs, National Meeting, Denver, CO.*, p. A337.
- Simonson, B.M., Hassler, S.W. and **Schubel, K.A.** (1993) Revised stratigraphic correlation of the Carawine and Wittenoom Dolomites, Hamersley Basin, Western Australia: *GSWA Professional Paper 34*, p. 65-80.
- Simonson, B.M., **Schubel, K.A.** and Hassler, S.W. (1993) Carbonate production and dispersal in the 2.6 Ga Hamersley Basin of Western Australia: *Precambrian Research Special Volume No. 60*, p. 287-336.
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MATT STERN



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Mira™ Co-Founder and Chief Operating Officer Matt Stern leads the execution of strategies developed at Mira™ and oversees the policies that promote Mira's culture and vision. Stern also spearheads Mira's "Labs" division where he is responsible for identifying, establishing, and successfully managing partnerships with industry-leading brands.

Prior to founding Mira, Stern worked as a Project Manager for Sony Pictures VR and CreateVR, where he helped build The Walk VR, one of the first experiences for PlayStation VR.

Stern holds a BS in Art, Technology, and the Business of Innovation from the inaugural class of the University of Southern California's Jimmy Iovine and Andre Young Academy. When he's not pioneering in the immersive technology space, Stern is an active angel investor into early-stage startups and pursues his love for cooking via hosting multi-course, themed dinner events.

EXPERIENCE

COO, CO-FOUNDER

Mira

2016-Present

Co-founder/COO at the most widely deployed augmented reality startup transforming the way in which humans interface with technology, the world, and each other- beginning with the industrial sector and partnerships within entertainment, education and medical.

VIRTUAL REALITY INNOVATOR

Sony Pictures Entertainment

May 2016-September 2016

Spearheading creative and interaction design among a team working to create story-driven experiences based on films, games, and television to further Sony's intellectual property.

VR RESEARCHER

MxR Studio 2016-

2018

Conducting research in Mark Bolas' MxR Studio at the School of Cinematic Arts, USC regarding cinematic techniques and whole body interaction in virtual reality.

MIXED REALITY DEVELOPER

Create VR

2015-2016

Leading a team in the emerging field of virtual reality to create high-quality immersive experiences. Responsibilities include developing and 3D modeling hardware, designing CG VR experiences, experimenting with live-action recording, patent execution, and VR distribution for mainstream access such as planning a world tour for our flagship experience, Can You Walk the Walk VR.

DESIGN/BUSINESS

Stasis Labs 2014-

2016

Worked with a team to develop medical devices around the needs of patients, families, and doctors in developing nations. Selected as one of Inc Magazine's "Coolest College Startups of 2015" and won Second Place in the 2015 Global Grand Challenges Engineering Summit in Beijing.

EDUCATION

USC

IOVINE & YOUNG ACADEMY

2014-2018

Member of Dr. Dre and Jimmy Iovine's inaugural class of thirty students studying Arts, Technology, and the Business of Innovation at the University of Southern California. Double-emphasis in Business Venture Management and VR/AR Development.

MIRA COSTA

HIGH SCHOOL

2010-2014

Graduated from the Mira Costa High School Class of 2014 as valedictorian and Student of the Year with a 4.0 unweighted GPA and in National Honors Society.

LANGUAGES

ENGLISH



SPANISH



HTML / JQUERY



JAVA



PROFESSIONAL SKILLS

FINAL CUT PRO



PHOTOSHOP



ILLUSTRATOR



UE4 // UNITY



AFTER EFFECTS



KEYNOTE



OFFICE SUITE



MAYA



REFERENCES AVAILABLE UPON REQUEST

Michael Zyda

Michael Zyda is the Founding Director of USC's Computer Science Games Program, and a Professor of Engineering Practice in the USC Department of Computer Science. At USC, he founded the Computer Science Games Program and the year-long advanced game projects course that forms the core of USC Games and took that program from no program to the #1 Games program in the world. That program has been rated #1 by the Princeton Review for ten of the last eleven years. His alums have shipped games played by over 5 billion players, about \$250B in revenue and \$2.5B in payroll to those alums. Zyda is an ACM Fellow, IEEE Fellow, an IEEE Virtual Reality Technical Achievement Award winner, a Senior Member of the National Academy of Inventors, a Fellow of the Asia-Pacific Artificial Intelligence Association (AAIA) and a National Associate of the National Academies. Zyda is a member of the Editorial Board & Games Column Editor, IEEE Computer magazine. Zyda is a Distinguished Collaborator for the [Stanford Human Perception Laboratory](#) affiliated with the [Institute for Human-Centered AI](#).

From Fall 2000 to Fall 2004, he was the Founding Director of the [MOVES \(modeling, virtual environments, and simulation\) Institute](#) located at the [Naval Postgraduate School, Monterey](#), and a Professor in the Department of Computer Science at NPS as well. At NPS, Zyda's NPSNET Research Group built the first networked virtual environment with fully instrumented body suits that played across the Internet. His work on the networking of virtual environments contributed to the development of the [IEEE 1278.1 standard for distributed interactive simulation](#). He helped found the subspecialty in modeling and simulation for the United States Navy, the simulation operations functional area (57) for the US Army and the simulation operations area (MOS-9625) for the US Marine Corps. While at NPS, Zyda was Associate Editor and then Senior Editor for the [MIT Press Journal Presence: Teleoperators and Virtual Environments](#) from 1993 - 2004. With Fred Brooks, Henry Fuchs and Mary Whitton, he co-founded the [ACM SIGGRAPH Symposium on Interactive 3D Graphics](#) in 1990.

He was a member of the [National Research Council](#) Committee that put out the report "[Virtual Reality - Scientific and Technological Challenges](#)". He chaired the NRC Committee that put out the study "[Modeling and Simulation - Linking Entertainment and Defense](#)". That NRC report changed the entire Department of Defense towards the usage of games and entertainment technology for its future modeling and simulation systems. From that report, Zyda wrote the operating plan and research agenda that founded [USC's Institute for Creative Technologies](#).

For the [National Research Council](#), he has served on committees for the Behavioral and Social Sciences and Education Commission, the Computer Science and Telecommunications Board, the Aeronautics and Space Engineering Board, the Mathematical Sciences and Their Applications Board, the Naval Studies Board, the Air Force Studies Board, the Army Research Laboratory Technical Assessment Board, the Board on Higher Education and Workforce, the Board on Behavioral, Cognitive, and Sensory Sciences, and the Board on Earth Sciences and Resources.

Zyda holds [a lifetime appointment as a National Associate of the National Academies](#), an appointment made by the Council of the National Academy of Sciences in November 2003, awarded in recognition of "extraordinary service" to the National Academies.

On the 13th of March 2022, Zyda became an Inaugural Member of the IEEE VGTC Virtual Reality Academy.

On the 6th of June 2021, Zyda was made a Fellow of the Asia-Pacific Artificial Intelligence Association (AAIA).

On the 13th of January 2021, he was promoted to ACM Fellow "for contributions to game design, game and virtual reality networking, and body tracking".

On the 11th of February 2020, the National Academy of Inventors elected Zyda as a Senior Member for

“success in patents, licensing, and commercialization” and for producing “technologies that have brought, or aspire to bring, real impact on the welfare of society”. In May 2017, Zyda was appointed a member of the [National Academy of Inventors](#) in recognition of advanced technological development and innovation as issued by the United States Patent & Trademark Office.

In August 2019, Zyda was appointed Distinguished Collaborator for the [Stanford Human Perception Laboratory](#) affiliated with the [Institute for Human-Centered AI](#).

In November 2018, he was promoted to [IEEE Fellow](#) with the citation “for contributions to game design and networking”.

In March 2017, Zyda was awarded the IEEE Virtual Reality Technical Achievement Award "for fundamental work in virtual reality networking, body tracking & institutionalizing the application of virtual reality".

Zyda is a member of the [Academy of Interactive Arts & Sciences](#). He served as the principal investigator and development director of the [America's Army PC](#) game funded by the Assistant Secretary of the Army for Manpower and Reserve Affairs. He took America's Army from conception to three million plus registered players and hence, transformed Army recruiting. The creation of the America's Army game founded the serious games field. He co-holds two patents that form the basis for the nine-axis sensor in the Nintendo Wii U.

Professor Zyda has consulted for the [White House Office of Science and Technology Policy](#), [NASA AMES](#), the [Ministry of Industrial Development Sabah Province](#), Malaysia, [Japan Tech Services Corporation, Tokyo](#), and Paramount Digital Entertainment, among others. He is a speaker with [Celebrity Speakers, International](#). He is the founder and Chairman of Happynin Games, and [411 Productions DTLA](#). He is co-founder, with Qingyun Ma, of Great Wall Tiger, Xi'an, China. He is consultant to the Ministry of Culture & Shaanxi Cultural Group, Xi'an, China – entertainment technology advisor for AR & VR & theme park projects in/around the historic sites of Shaanxi Province, including the Terracotta Warriors Museum, the e-Pang Palace and the Zhaojin Red Army Base, 2015 – present.

Zyda is advisor to a number of start-ups including Concurrents (Redwood City, CA), We Are Robot (Dallas), Athanos3D (Los Angeles), Eternal Fantasy Land VR Technology (Nanjing), Versusgame (SFO), Equally (SFO), Muoe (Shenzhen), Chia Interactive (Nanjing), EON Protocol (EOT) (Singapore), Movyl Technologies (Oakland), Primal Space Systems (Raleigh, NC), Starcoach.tv (Beijing), Vizzario (Venice Beach), Mira Labs (Los Angeles). See <https://www.linkedin.com/in/mikezyda/> for additional information on these startups.

Professor Zyda began his career in Computer Graphics in 1973 as part of an undergraduate research group, [the Senses Bureau](#), at the University of California, San Diego. Professor Zyda received a BA in Bioengineering from the University of California, San Diego in La Jolla in 1976, an MS in Computer and Information Science from the University of Massachusetts, Amherst in 1978 and a DSc in Computer Science from Washington University, St. Louis, Missouri in 1984.

Peter Giokaris

909 525 5846

petergiokaris@gmail.com

Athanos - Founder / CEO

Claremont, CA March 2019 – Present

www.athanos.com

- Self-funded start-up
- Architecture and implementation of novel 3D system (VIEW) for commercial and enterprise applications
- Designed, contracted and managed the system hardware components (HALO and SYNC devices)
- Authoring multiple patents for core system algorithms
- Designed, contracted and managed multiple showcase applications with external developers
- Managing all digital presence (website and social platforms)
- Presented system to prospective investors and potential partners
- Presented system at multiple public events (CES2020, AWE 2020, 2021)
- Currently working with Dolby R&D on a skunkworks project

Issued Patents

- Giokaris, Peter Zyda, Michael Sardone, Joseph - Movable Display for Viewing and Interacting with Computer Generated Environments. U.S. Patent No. **11032537**, Date of Patent: **June 8, 2021** | U.S. Patent No. **10732707**, Date of Patent: **August 4, 2020** | U.S. Patent No. **10499404**, Date of Patent: **December 3, 2019**

Facebook / Oculus VR - Senior Software Engineer

Los Angeles - San Francisco, CA Dec 2012 – Dec 2018

- Unity3D SDK architect for Oculus Rift DK1/2 - v0.1.2 (first official) to v0.3.2 (time of Facebook acquisition)
- Helped define and optimize crucial components within the low-level Oculus SDK (DK1/2)
- Speaker at VR events: Unity world-wide conferences, SVVR Conference (2014), NAMM 2016 and various VR meet-ups
- Research and implementation of Oculus 3D audio spatializing tech
- Integration of spatializer into Wwise, Unity, VST (Stienberg) and AAX (Pro Tools) plug-in formats
- Designed native visualizer for VST/AAX plug-ins as proof-of-concept for adding VR to non-VR applications
- Research and implementation of solutions for haptics, speech recognition, automated lip-syncing and voice modulation
- Technical advisor to external developers

Issued Patent

- LaValle, Steve Giokaris, Peter - Perception Based Predictive Tracking for Head Mounted Displays. U.S. Patent No. **9,348,410 B2**, Date of Patent: **May 24, 2016**

Qualcomm - Staff Engineer

San Diego, CA Oct 2010 – Dec 2012 Staff Engineer

- Led engineering effort for growing and maintaining the Adreno Software Development Kit. This included writing cross platform samples and tools (C++, C#) for Windows and Android and maintaining OpenGL ES (graphics) and OpenSL ES (audio) emulators for Windows
- Designed and implemented Augmented Reality demos using Unity 3D and Vuforia (Qualcomm's AR SDK) to showcase capabilities of Qualcomm's Snapdragon chipset
- Worked with Unity engineers to optimize Unity 3D engine (Android) for Snapdragon chipset *Adreno SDK Lead*

Electronic Arts - Senior Software Engineer

Los Angeles, CA July 2008 – June 2010 Senior Software Engineer

Medal of Honor and Tiberium (Sony PS3, Xbox 360, Windows), ***Command and Conquer 4*** (Windows)

- Maintained and engineered audio system (C++, C#) for Unreal 3.0 titles *Medal of Honor* and *Tiberium* (Win, 360, PS3)
- Implemented comprehensive audio mix-down functionality into *Command and Conquer 4*
- Added non-audio tools into Unreal 3.0 pipeline to reduce bottlenecks and help artist / designer productivity

Sandblast Games (THQ) - Senior Software Engineer

Seattle, WA Aug 2007 – July 2008

Destroy All Humans! 3 (Xbox 360)

- Worked on various game play systems (C++) for Unreal 3.0 title *Destroy All Humans! 3* for Xbox 360

SounDraw Studios - Owner

Toronto, ON Aug 2004 – July 2007

- Software contract services

Microsoft - Software Engineer

Seattle, WA Feb 2001 – July 2004

Crimson Skies 2: High Road to Revenge (Xbox)

- Design, creation and support of art pipeline tools, writing and enhancing major software systems and integrating art and sound content into the game
- Creation of numerous visual effect systems
- Implemented networking code for both game lobby and in-game events
- Design and implementation of audio and music systems

Robert S Pomeroy

Teaching Professor

Department of Chemistry and Biochemistry, University of California, San Diego

Education/Training:

Institution and Location

Degree Year(s), Field

Scripps Institution of Oceanography	Postdoc	1990-1992, Chemical Oceanography
University of Arizona	Ph.D.	1986-1990, Analytical Chemistry
California State Polytechnic University, Pomona	MS	1984-1986, Analytical Chemistry
University of California, San Diego	B.A.	1976-1981, Chemistry

Research and Professional Experience:

Assistant Professor US Naval Academy – 1992 to 1993

Visiting Scientist Eastman Kodak – 1991 to 1994

Assistant Professor of Chemistry – NSU 1997 to 2001

Associate professor of Chemistry – NSU 2001 to 2007

Full Professor of Chemistry – NSU 2007

LPSOE UCSD 2007 to 2013

LSOE UCSD 2013 to 2019

SLSOE UCSD 2019 to present

Awards and Academic Honors at UC San Diego

2018 UC San Diego Faculty Chancellors Associates Award for Community Service

2016 Muir Environmental Fellow

2015 UCOP Climate Action Champion

2015 Institute of the Americas – Outstanding Service Award

2015 Diversity Award

2014 NOBChE Western Regional Service Award

2010 Outstanding Community Advisor of the Year – Center for Student Involvement

2010 Chancellor's Advisory Committee on Sustainability - Outstanding Faculty

Consultant for:

Trumpf Industries, Photometric Limited, Thermo Jarrell Ash, U of A Department of Hydrology, People's Moss Gin Company, ALQUA, ChyBio, Eastman Kodak, and Clarke Engineering

Additional Information: Research Support

Recent Past, Current and Pending Support – Robert S Pomeroy – July 2021

Funding

Past Funding Completed in this review period

Project/Proposal Title: Crop Protection Utilizing Integrated Pest Management through Early Detection and Identifications of Pathogens and Predators

Source of Support: DOE (1162-1602)

Total Award Amount: 820,327

Total Award Period Covered (start date to end date): Oct 2015 – Mar 2019

Current Funding

Project/Proposal Title: Center for Aerosol Impacts on the Chemistry of the Environment

Source of Support: NSF CCI – Phase IIb renewal #1305427

Total Award Amount: 20,000,000

Total Award Period Covered (start date to end date): 10/1/2018 to 9/30/2023

Project/Proposal Title: Advanced Algal Biofoundries for the Production of Polyurethane Precursors

Source of Support: DOE BioEnergy Engineering for Products Synthesis (BEEPS), Control Number: 1916-1689, Award Number: DEEE0008491

Total Award Amount: 2,500,000.00

Total Award Period Covered (start date to end date): Jan 1, 2019 – Sept 30, 2022

Project/Proposal Title: Process development for recycling of high-performance polyurethane products from algae precursors

Source of Support: DOE - BOTTLE Consortium Collaborations to Tackle Challenges in Plastic Waste

Total amount of the award: 2.5 million

Total award Period – 10/2020 to 9/2023

Contract work

NSF SBIR awarded to Algenesis Materials – Phase 1 (250K) and Phase 2 (1 million)

DOE SBIR awarded to Algenesis Materials – Phase 1 (250k) and Phase 2 (1 million)

On-going Educational Support

Project/Proposal Title: California State Summer Schools for Math and Science – COSMOS

Source of Support: Funded by the State of California

Total Award Amount: 4,000,000

Total Award Period Covered (start date to end date): ongoing

I am working on a project collaborating with Dr. Kim Prather where we currently receive material and technical support from Thermo Fisher Scientific to develop an interface to their MSQ and ISQ-EC to a Chemical Ionization source to perform rapid, sensitive, real time VOC analysis.

Pending Funding

Project/Proposal Title: Enhanced production of algae lipids and carbohydrates for fuel and polyurethane precursors (APEX)

Source of Support: DOE (2423-1563)

Total Award Amount: 3,200,000

Total Award Period Covered (start date to end date): October 2021 – September 2024

Pending Contract Work

Neste – The is a subaward through Global Algae Industries and Algenesis Materials – (200k)

SBIR - quinc.tech inc

Project Title: 100 Terahertz Spectroscopy for Bioreactor Monitoring

Proposal #8122587 4455

Total Amount of the Award (250k), subaward (100k)

Total Award Period Covered (start date to end date): October 2021 – September 2023

Publications:

R.S. Pomeroy, M.B. Denton, N.R. Armstrong, "Voltammetry at the Thin Film Mercury Electrode (TFME): Anodic and Cathodic Stripping Voltammetries and Simple Potentiostat Construction," J. Chem. Ed. 66(10), 877-880 (1989).

J.V. Sweedler, R.D. Jalkian, R.S. Pomeroy, and M.B. Denton, "A Comparison of CCD and CID Detection for Atomic Emission Spectroscopy," *Spectrochim. Acta* 44B(7), 683-92 (1989).

R.D. Jalkian, R.S. Pomeroy, J.D. Kolczynski, M.B. Denton, J.M. Lerner, and R.E. Grayzel, "Evaluation and Application of a Holographic Aberration Corrected Imaging Spectrograph," *Am. Lab.* 21(2), 80-88 (1989).

J.D. Kolczynski, R.S. Pomeroy, R.D. Jalkian, and M.B. Denton, "Spatial and Spectral Imaging of Plasma Excitation Sources," *Appl. Spectrosc.* 43(5), 887 (1989).

R.S. Pomeroy, J.D. Kolczynski, J.V. Sweedler, and M.B. Denton, "Analysis of Microgram Amounts of Particulate Material by Simultaneous Multiwavelength Atomic Emission Spectroscopy," *Mikrochim. Acta* III, 347-353 (1989).

R.S. Pomeroy, J.V. Sweedler, M.B. Denton, "Charge-injection Device Detection for Improved Performance in Atomic Emission Spectroscopy," *Talanta* 37(1), 15-21 (1990).

R.S. Pomeroy, M.E. Baker, J.D. Kolczynski, and M.B. Denton, "Indirect Determination of Phosphate, Silicate, and Arsenate by HPLC-AES," *Appl. Spectrosc.* 45(2), 198–201 (1991).

R.S. Pomeroy, J.D. Kolczynski, and M.B. Denton, "Information Based Expert Systems for Atomic Emission Spectroscopy," *Appl. Spectrosc.* , 45(7), 1111–1119 (1991).

R.S. Pomeroy, R.D. Jalkian, and M.B. Denton, "Spark Spectroscopy Using Charge-transfer Devices: Analysis, Automated Systems, and Imaging," *Appl. Spectrosc.* , 45(7), 1120–1125 (1991).

Robert S Pomeroy, Mark E. Baker, Andrew G. Dickson and M. Bonner Denton, "Scientifically Operated CCD-Based Spectroscopic System for High-Precision Spectrometric Determinations of Sea Water," *Appl. Spectrosc.* 49(12), 1729– 1736 (1995)

Pomeroy, R., Duncan, G., Sunar-Reeder, B., Ortenberg, E., Ketchum, M., Wasiluk, H., & Reeder, D. (2009). A low-cost, high-throughput, automated single nucleotide polymorphism assay for forensic human DNA applications. *Analytical biochemistry*, 395(1), 61-67

Balamurugan, K., Pomeroy, R., Duncan, G., & Tracey, M. (2010). Investigating SNPs flanking the D1S80 locus in a Tamil population from India. *Human biology*, 82(2), 221-226.

Ault, Andrew P., and Robert Pomeroy. "Quantitative investigations of biodiesel fuel using infrared spectroscopy: An instrumental analysis experiment for undergraduate chemistry students." *Journal of Chemical Education* 89.2 (2011): 243-247.

Guasco, Timothy L., et al. "Transition Metal Associations with Primary Biological Particles in Sea Spray Aerosol Generated in a Wave Channel." *Environmental science & technology* 48.2 (2013): 1324-1333. <http://pubs.acs.org/doi/abs/10.1021/es403203d>

Stacey Brydges, Robert Pomeroy, Matthew J Ruppel, and Kim Prather, Science in the classroom, "Do Clouds Need Passports?", <http://scienceintheclassroom.org/research-papers/do-clouds-need-passports/highschool>

Pomeroy, R. S., Balamurugan, K., Wong, H., & Duncan, G. (2014). High-resolution melt analysis of the minisatellite D1S80: A potential forensic screening tool. *Electrophoresis*, 35(21-22), 3020-3027. <http://onlinelibrary.wiley.com/doi/10.1002/elps.201400143/full>

Kim, Michelle J., et al. "Bacteria-driven production of alkyl nitrates in seawater." *Geophysical Research Letters* 42.2 (2015): 597-604. <http://onlinelibrary.wiley.com/doi/10.1002/2014GL062865/pdf>

Hai, Thien An Phung, Nitin Neelakantan, Marissa Tessman, Suryendra D. Sherman, Graham Griffin, Robert Pomeroy, Stephen P. Mayfield, and Michael D. Burkart. "Flexible polyurethanes, renewable fuels, and flavorings from a microalgae oil waste stream." *Green Chemistry* 22, no. 10 (2020): 3088-3094.

Natasha R. Gunawan, Marissa Tessman, Ariel C. Schreiman, Ryan Simkovsky, Anton A. Samoylov, Nitin K. Neelakantan, Michael D. Burkart, Robert Pomeroy, and Stephen P. Mayfield, "Rapid biodegradation of renewable polyurethanes, identification of microorganisms and decomposition products" *Bioresource Technology Reports*. (2020)

Sauer, J. S., Simkovsky, R., Moore, A. N., Camarda, L., Sherman, S. L., Prather, K. A., & Pomeroy, R. S. (2021). Continuous measurements of volatile gases as detection of algae crop health. *Proceedings of the National Academy of Sciences*, 118(40).

Nguyen, D. D., Sauer, J. S., Camarda, L. P., Sherman, S. L., Prather, K. A., Golden, S. S., ... & Simkovsky, R. (2022). Grazer-induced changes in molecular signatures of cyanobacteria. *Algal Research*, 61, 102575.

Review and Invited Articles

J.D. Kolczynski, M.J. Pilon, D.A. Radspinner, R.S. Pomeroy, M.E. Baker, J.A. Norris, M.B. Denton, R. Foster, R.G. Schleicher, and P.M. Moran, "Atomic Emission Spectrometry Using Charge-injection Device (CID) Detection," *Am. Lab.*, 23(8), 48–55 (May 1991).

R.E. Fields, M.E. Baker, D.A. Radspinner, R.S. Pomeroy and M.B. Denton, "Spectroscopic Applications of Charge-transfer Devices," *Spectroscopy*, 7(9), 28– 35 (1992).

C.W. Earle, M.E. Baker, R.S. Pomeroy and M.B. Denton, "Imaging Applications for Chemical Analysis Utilizing Charge-coupled Device Array Detectors," *Trends in Analytical Chemistry*, 12(10), 395–403 (1993).

Limtiaco, J. K., Pomeroy, R. S., Burkart, M., & Mayfield, S. (2012). Educating and developing workers for the green economy. *Biofuels*, 3(2), 119-121.

Books and Book Chapters

R.B. Bilhorn, R.S. Pomeroy, and M.B. Denton, Trace Metal Analysis and Speciation, Chapter 4, "The Future of Intelligent Spectrometers in Speciation by Atomic Emission Spectrometry," *Journal of Chromatography Library*, 47, Elsevier Science, New York, NY, 75–98 (1991).

R.B. Bilhorn, R.S. Pomeroy, and M.B. Denton, Computerized Multichannel Atomic Emission Spectroscopy. In Computer-Enhanced Analytical Spectroscopy; Plenum Publishing Corporation: New York, NY, (1992).

Pomeroy, Robert S. "CTD Detection in Atomic Emission Spectroscopy." Charge-transfer devices in spectroscopy. Vol. 1. 1994.

Pomeroy, Robert S. "CTD Detection in Analytical Luminescence Spectroscopy." Charge-transfer devices in spectroscopy. Vol. 1. 1994.

Pomeroy, Robert S "Rethinking plastics", **Rethinking Polyester Polyurethanes: Renewable, Sustainable, Biodegradable and Recyclable, Chapter 1,10 and 11**

Editor "**Rethinking Polyester Polyurethanes: Renewable, Sustainable, Biodegradable and Recyclable**" Elsevier Publishing, in process.

Refereed Conference Proceedings

M.B. Denton, R.B. Bilhorn, R.S. Pomeroy, J.V. Sweedler, P.M. Epperson, and R.D. Jalkian, "Array Detectors for Plasma Spectrochemistry," ICP Information Newsletter, Vol. 13, p. 64 (1988).

R.S. Pomeroy, M.E. Baker, D.A. Radspinner, and M.B. Denton, "Fluorescence Imaging of Latent Fingerprints With a Cooled Charge-coupled Device Detector," International Conference on Scientific Optical Imaging, M. Bonner Denton (Ed.), SPIE Proceedings, 1439, 60–65 (1990).

R.S Pomeroy and A.G. Dickson "Potential Applications of State-of-the-Art Solid State Optical Spectroscopic Components to the Chemical Analysis of Sea Water". ABOOS Conference Proceeding, 1992.

Pomeroy, R.S, "The Use of Spreadsheets as a Learning Tool in the Classroom", Conference Proceedings AASE, San Diego Ca., 1994.

Technical Reports

1. Pomeroy R.S, Koszelak, T and Bilhorn , R. B., "Antiblooming CCD Detection for ICP-AES", Eastman Kodak Technical Report. 1995
2. Pomeroy R.S, Koszelak, T and Bilhorn , R. B., "Antiblooming CCD Detection for ICP-AES-Analytical System Development", Eastman Kodak Technical Report. 1996
3. Pomeroy, R.S and Bilhorn. R.B., "Signal to Noise Comparison of Charge Transfer Devices: Charge Injection Devices (CIDs), and Charge-Coupled Devices (CCDS) to Photomultiplier Tubes (PMTs) and Photodiode arrays (PDAs)", Eastman Kodak Technical Report. 1998
4. Pomeroy, R.S., "QA and QC protocols for Colored Grouts and Mortars: Certification of 36 Security Colors" Technical Report 1000, Southern Grouts and Mortars, September 1999
5. Pomeroy, R.S., "Large Scale Production Consideration for Key Components of Diamond Brite, TM" Technical Report 1001, Southern Grouts and Mortars, October 1999.
6. Pomeroy, R.S., "SOP Sample Template Cycling: Batch Clean-Up" Technical Report 1002, Southern Grouts and Mortars, October 1999.

7. Pomeroy, R.S., Technical Report 1004 SGM – Modifications to Thin set Mortar to Increase Open Time.
8. Pomeroy, R.S., Technical Report 1005 SGM – Formulation of Feather Concrete Patch
9. Pomeroy, R.S., Technical Report 1006 SGM – Formulation of Self Leveling Compound
10. Pomeroy, R.S., Technical Report 1007 SGM – 100% solids epoxy grout
11. Pomeroy, R.S., Technical Report 1008 SGM – Modifications to Thin Set Mortar to Increase Open Time
12. Pomeroy, R.S., Technical Report 1009 SGM – Smooth Pool plaster finishes
13. Pomeroy, R.S., Technical Report 10010 SGM – IR Reflective pigment in decking materials
14. Pomeroy, R.S., Technical Report 10011 SGM – Elimination of cracking in marble-based pool finish for arid environments
15. Pomeroy, R.S., Technical Report 10012 SGM – Low VOC mastic Formulation
16. Pomeroy, R.S., Technical Report 10013 SGM – Set acceleration for 100% Solids Epoxy Grouts
17. Pomeroy, R.S., Technical Report 10014 SGM – Ultra-Light Weight Thin Set Formulation for large Format Tiles.

Patents

1. US Patent #6,596,074 B2 “Cementious Product with Phosphorescence”, Robert S. Pomeroy, Issued July 22, 2003.

NSF SBIR/STTR BIOGRAPHICAL SKETCH

NAME:

CURRENT TITLE & EMPLOYER:

A. EDUCATION AND OTHER PROFESSIONAL PREPARATION: A list of the individual's undergraduate, graduate, and postdoctoral training (including location) as indicated below:

INSTITUTION	LOCATION	MAJOR / AREA OF STUDY	DEGREE (if applicable)	YEAR (YYYY)

B. EMPLOYMENT: A list, in reverse chronological order, by start date with most recent or current employment first. Include: academic, professional, public or private business, governmental, and/or organizational employment (domestic or foreign). Employment must include full-time and part-time positions.

From – To

Employment Title, Organization and Location

- C. APPOINTMENTS:** A list, in reverse chronological order, by start date of all the individual's other academic, professional, or institutional appointments, beginning with the current appointment. Appointments include any titled academic, professional, or institutional position whether or not remuneration is received, and whether full-time, part-time, or voluntary (including adjunct, visiting, or honorary). With regard to professional appointments, senior personnel must identify all domestic and foreign professional appointments outside of the individual's academic, professional, or institutional appointments at the proposing organization.

From – To	Appointment Title, Organization and Location

- D. LIST UP TO FIVE PRODUCTS MOST CLOSELY RELATED TO THE PROPOSED PROJECT.** List up to FIVE products, including but not limited to: patents, websites, software programs, or other published works most closely related to the proposed project. Only list materials for which you were an author or contributor. Each product must include full citation information for NSF and reviewers to be able to access the products.

E. LIST UP TO FIVE ADDITIONAL PRODUCTS. List up to FIVE additional products, including but not limited to: patents, websites, software programs, or other published works whether or not related to the proposed project. Only list materials for which you were an author or contributor. Each product must include full citation information for NSF and reviewers to be able to access the products.

F. SUMMARY OF RELEVANT EXPERIENCES/ACCOMPLISHMENTS/AWARDS/SKILLS.
List up to FIVE related professional experiences or accomplishments relevant to the proposed project. Give dates, your role, and describe each in 1-2 sentences.

Thomas Grimm

Summary of Experience and Qualifications

Carlsbad Aquafarms – CEO and President. Installation, operation and management of Southern California's only mussel, oyster and culinary seaweed farm, producing premium seafood for regional and national customers; Design and installation of novel live support for the domestication of native California shellfish, including Purple-hinged rockscallops, Calico scallops, California mussels, Green and Abalone, Olympia oysters and Spot Prawns; design and installation of state-of-the-art oyster and mussel hatcheries; Coastal Habitat Restoration installation of high-performance bioreactor complex; support installation of oyster reefs in coastal restoration projects. Developed high-performance marine algae bioreactor cultivation systems to generate cost-effective, high yields.

PhycoVax, LLC

PhycoVax, LLC – CEO and President. PhycoVax was established by Thomas Grimm and Roshan Shrestha, PhD in 2018 to address the growing need for effective and affordable health management of aquaculture diseases. Annual losses from diseases reduce aquaculture revenues by over 20%. Since its founding PhycoVax has developed a novel feed-based diatom platform for vaccine administration. The company's first product will be incorporated into a commercially produced shrimp feed to improve shrimp health and their ability to cope with bacterial diseases such as Acute Hepatopancreatic Necrosis Disease. Challenge tests at the Shrimp Pathology Lab at the University of Arizona were successful. PhycoVax is developing a CRADA agreement with the USDA Agricultural Research Service and the Center for Veterinary Biologics, in the USDA Center in Ames, Iowa.

Developing feed-based vaccines

PhycoVax solved many challenges to develop an oral vaccine that can be incorporated into shrimp feeds. The PhycoVax diatom platform provides protection of the vaccine in the aquatic environment. PhycoVax novel methods to encapsulate vaccines to withstand to barriers in digestive system. PhycoVax feed-based vaccines provides broad resistance against bacterial diseases and specific immunity and treatment for AHPND. Vibrio outbreaks in farms with immunized shrimp can be curtailed to prevent further losses in shrimp production. PhycoVax vaccine-based feeds include *immuno-growth-stimulants* and *antioxidants* that improve overall shrimp health, resistance to other bacteria. PhycoVax feed-based vaccines are delivered as a whole-cell algal ingredient: PhycoVax ingredients include immuno-nutraceuticals via whole algae cells; encapsulation of whole cells provide protection to vaccine antigens from the harsh acidic environment of animal digestive systems; AHPND vaccine candidates for shrimp trials: based on challenge feed trials at the Aquaculture Pathology Laboratory located at the University of Arizona, the company has created ten unique antigens; new challenge experiments will consist of single-dose, various doses and formulations, and more extensive challenge test duration trials in the laboratory and at shrimp farms.

Corporate Patents - Patent Application No.63/034,286, filed June 3, 2020, shared by PhycoVax Co-Founder, Roshan Shrestha, and Esteban Soto Martinez, University of California Davis, and funded in part by USDA. Patent title: Immunogenic Francisella antigens and their use immunization of fish against Francisellosis.

Golden Shore, LLC

Golden Shore is a privately-held Holding Company committed to building organizations with triple bottom models that produce healthy seafoods and animal feed in a manner that is economically and environmentally responsible. Golden Shore is the parent company of Carlsbad Aquafarms, based in Carlsbad, California.

Proprietary Technologies

Developed of aquaponics systems suited for areas where arable land is unavailable, where fresh water is limited, infrastructure poor, and environmental conditions are limiting factors. Biofiltration regimes use waste-streams from aquaculture to feed vegetables in a manner that optimizes the productivity of both systems symbiotically.

Patents

US 2011/0267241 A1, Multi-Mission Frameless Airship Platform (video link attached)
US 6,076,318, Interlocking puzzle June 2000

Scientific Papers

Grimm, T. (2021) Mobile Apps and Rapid Response Network to prevent zoonotic Pandemics, IEEE Journal of OceanicEngineering – Global Oceans Conference 2021 (Publication attached and video)

Pending NSF Application

Grimm, et al, NSF Convergence Accelerator: Smart Ocean Farms – Instrumented to Improve Productivity and Safety, Overcome Restrictive Permitting, and Stimulate Development of Sustainable Offshore Aquaculture and Advance the Goals of the Networked Blue Economy (send paper)

Avalon Aquafarm - Pending Offshore Aquaculture Permit

Avalon Aquafarm - CEO. Developed, submitted 2000-acre offshore farm permit to the US Army Corps of Engineers (SPL-2020-00039-TS), to farm shellfish and kelp farm; Project plan includes Construction and Operational Plan for the San Pedro Channel, Port of Los Angeles and AltaSea Berth 58. This will be the largest offshore farm in the U.S.

Aquaculture Training and Certification Program – AltaSea, Port of Los Angeles

Founder and conceptual master plan framework for Restoration Aquaculture Training and Certification Program in collaboration with AltaSea, Port of Los Angeles, Santa Monica College, and leaders from shellfish industry.

Collaborative Research

Research support and collaboration with University of Southern California (Manahan et al on installation of novel oyster spat bottle hatchery system and cultivation grow-out support for resilient elite hybrid family lines - five years to present); Collaboration with U.S. Navy Marine Research SPAWAR - effect of parental diet and larval on the settlement of *Haliotis* species feed. Abalone donated to UC Davis Bodega Lab Abalone Recovery Program.

USDA NIFA SBIR Grant

Establishing Aquaculture Frameworks for the Methane-Mitigating Rhodophyta, *Asparagopsis taxiformis*. Collaboration with Nuzhidn Lab, University of Southern California Department of Biology

Clinton Foundation, Washington, DC

Technology and Communications - Forest Landscape Restoration – Measurement, Modeling and Verification Systems, Workshops Organized Forest Landscape Carbon Measurement, Modeling and Verification workshops at National Geographic Headquarters, Washington DC, NASA Ames Research Center and Google Headquarters, Mountain View, CA. Workshops were attended by forestry, agriculture and climate scientists from 30 countries, the CEOs from conservation NGO's including the Nature Conservancy, World Wildlife Fund and Conservation International and the CEOs humanitarian NGOs, including World Vision, Oxfam and the Red Cross. Workshop report led to initial funding for the Clinton Climate Initiative of \$11 million from Rockefeller Foundation.

Peace Parks Foundation, Stellenbosch, South Africa

Directed, scripted and produced "Peace Parks," a documentary about the transnational conversation movement led by Nelson Mandela, Prince Bernhard of the Netherlands and South African business leader, Dr. Anton Rupert. The documentary was narrated by Academy Award-winner Morgan Freeman, and the production was supported by the National Geographic and sponsored by Daimler-Chrysler and others. Organized successful fundraising event in New York City. Documentary Link: https://www.youtube.com/watch?v=R-Yozh22S_M

Cargill Corporation, Minneapolis, MN

Executive Producer and Director, Cargill's 125th Anniversary Celebration. Cargill is a global producer and marketer of food, agricultural products and services. The event included a documentary about the company's history narrated by comedian Bob Newhart, who also served as Master of Ceremonies for the gala evening. The event included a live musical theatre production which was closed-circuit broadcast to twenty-three cities across US.

25th Anniversary of Earth Day – Executive Producer of Building a New World, Washington, DC

Executive Producer, “Building a New World,” an award-winning STEM project was co-developed with alumni of the University of Minnesota’s Institute of Technology. Hundreds of schools participated in the construction a five-story tall, scale model of Earth. 11,200 students researched their assigned areas and painted panels that were attached to a geodesic framework supported by a mast made of interlocked steel cubes. Following initial construction at the U of M, the project was staged at a science museum in Tampa, FL, the Monterey Institute of Technology, culminating as the centerpiece of 25th Anniversary of Earth Day on the National Mall in 1995. Thirteen federal agencies participated. Sponsors included 3M, Lockheed Martin, General Electric and Honeywell.

International Special Olympics World Winter Games, Austria

Executive Producer, Special Olympics World Winter Games Opening and Closing Ceremonies hosted by the City of Salzburg and the Ski Resort of Schladming, Austria. Over six thousand athletes with intellectual disabilities from 106 countries competed in a variety of winter sports. Opening Ceremonies was staged at natural amphitheater at the base of mountain where giant alpenhorns heralded a procession of torch bearing precision and acrobatic skiers, followed by performances by Austrian and international stars. Arnold Schwarzenegger served as host and ambassador for the event. Closing Ceremonies was staged in Mozart Place in the center of Salzburg. The opening and closing ceremonies were broadcast on ABC, BBC, ZDF and ORF (Austrian Television).

U.S. Olympic National Sports Festival, Saint Paul, MN

Executive Producer, U.S. Olympic National Sports Festival Closing Ceremonies. The production included all the traditional pageantry of Olympic Ceremonies, with celebrity performing artists and a cast of over 2,500. Beginning in Colorado Springs, in 1978 and running through 1995, in off-Olympic years, the U.S Olympic Committee held National Olympic Sport Festivals in 14 cities, complete with Opening and Closing Ceremonies.

New Sweden Midsummer Music Festival, Bloomington, MN

Executive Producer, Midsummer Music Festival, which celebrated the 350th Anniversary of New Sweden, the first Swedish Settlement in the New World. The 10-day music festival included construction of the massive stage and clear-span tent, with seating for 10,000. The 10,000 square foot stage accommodated the Minnesota Orchestra and Gothenburg Symphony Orchestra, accompanied by an 800-voice choir, in PBS broadcast of Mahler’s 8th Symphony, the largest-scale choral work in the classical concert repertoire. Other featured productions: “A Prairie Home Companion,” hosted by Garrison Keillor, National Public Radio (NPR); “Chess,” Broadway Musical, created by Benny Andersson and Bjorn Ulvaeus, of ABBA. Featured performers included Harry Belafonte, Al Jarreau, Max von Sydow, and hundreds of other ensembles from around the world.

Three Rivers Park District, Hennepin County, Minnesota

Conservation and Natural History Interpretation, Hyland Lake Park Reserve Interpretive Naturalist, Exhibit Designer and Special Events Producer. Led environmental and natural history education programs and workshops for teachers, students and public; wildlife (Trumpeter Swans) and wildlife habitat (native prairie) restoration projects; led numerous wilderness survival skill and minimum impact camping training programs; guided numerous wilderness backpacking, canoeing, kayaking, snowshoeing, Nordic skiing and camping trips in Minnesota, the Boundary Waters Canoe Area and Canada; designed, fabricated and installed numerous natural history exhibits for Richardson Nature Center, Bloomington, MN.

Event Production — Produced numerous music festivals, including Midsummer Music Festival; Summer Folk Festival, cultural and natural history programs sponsored by the Minnesota Humanities Commission, including featured broadcast of the NPR’s A Prairie Home Companion, a live radio variety show created and hosted by Garrison Keillor, and various winter sports festivals, including Ski Fun Norway sponsored by Norwegian Olympic Committee, Volvo and Scandinavian Airlines (SAS)

Olympic Summer Games – Olympic Green Design Competition, Beijing, China

Conceptual Planning and Design. Co-led international architectural, planning and design team with Doni Visani, Principle, Ohlson Lavoie - Collaborative, an architecture firm, specializing in comprehensive sports facility design. The design plan included a 120-page book, written in Mandarin Chinese and English; ten (4'x10') exhibit panels; one (4'x10') detailed architectural model and one (3'x 8') architectural model. The design plan encompassed an area of 1,135 hectares, including 680 hectares Forest Park Land, 400 hectares for the Olympic Central Area, and 50 hectares for an Ethnic Culture Park. The plan included designs for a National Stadium, National Gymnasium; National Aquatic Center, International Media Center, and Olympic Athletes Village. Auxiliary commercial use included cultural, convention and exhibition facilities, athlete village, entertainment and media broadcast centers. The Design Entry received the most votes by visitors to the international design competition expo.

Playing for Change Board of Directors, Santa Monica, CA

Member Playing for Change Board of Directors, 2007 – 2012. Playing for Change Foundation (PFC) is a multimedia movement created to inspire, connect, and bring peace to the world through music. PFC was founded by Grammy-winning producer and filmmaker Mark Johnson, who assembled a small crew, equipped with some borrowed equipment and a big dream of connecting People through the Power of Music, and they have been travelling the world ever since. PFC's viral video of "Stand by Me" amassed over 200-million views on YouTube and Vimeo. PFC's "Songs around the World" debuted at #10 on Billboard's Top Album chart and has sold over 1,000,000 copies. PFC has been featured on major media outlets such as CNN, ABC World News Tonight, The Today Show, CBS News Sunday Morning, Rolling Stone, New York Times, and TV, radio and internet media.

Clinton Global Initiative - New York City, New York.

Thomas Grimm was recognized by President Clinton at the inaugural Clinton Global Initiative for his production of the "Peace Parks" documentary about the trans-boundary conservation movement, led by Nelson Mandela.

Special Event of the Year Award

"Building a New World," a STEM educational initiative staged in conjunction with the 25th Anniversary of Earth Day on the National Mall, the University of Minnesota campus and ten other locations where thousands of students constructed a 50'-tall geodesic model of Earth. The project was awarded "Special Event of the Year."

Theatrical Event of the Year Award

Cargill 125th Anniversary Celebration, live theatrical production, corporate documentary, décor, and multi-city gala dinner for 55,000 guests, staged simultaneously in twenty-three cities across the U.S. Produced by Thomas Grimm.

Defense Language Institute

The Defense Language Institute provides linguistic and cultural instruction to Army Intelligence and Security Command, the Office of Naval Intelligence, the Central Intelligence Agency, and the National Security Agency.

- Honors Graduate for outstanding scholarship in Mandarin Chinese
- Honors Graduate for outstanding scholarship in German Language

UNIVERSITY OF MINNESOTA, MINNEAPOLIS, MN

Graduated *Summa Cum Laude*, majors: German and Biology Phi Beta Kappa honoree for exceptional academic excellence in liberal arts and sciences; Schlenker Award for scholarship in German and Scandinavian Languages

University of Minnesota, Minneapolis/St Paul Campus

Graduated *summa cum laude*, Phi Beta Kappa

VITA

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June 3, 2022

Professional Preparation

Cybernetics and Human Knowing, University of South Florida, Sept. 2015 to December 2016,
Doctor of Philosophy, Oceanography, Nova University, a.b.d. Graduate Studies
Master of Science, Aquatic Ecology, University of Miami May 1978
Bachelor of Science, Zoology, Florida Atlantic University, December 1969
AS Science, Miami-Dade Community College 1967

2014 to Present

Currently 7th Grade Biology Teacher and Grant Writer Corbett Preparatory School

Not for Profit Consultant. Consulting on the Bronze Kingdom Museum opening on International Drive in Orlando, FL Long Range Planning studies, retreats, and World Cafes. Fundraising consulting. Customer Service. Endowment creation and management. And all other aspects of major NFPs

President and Founder of Celerity Investments, Inc. Consulting on financial, planning, fundraising, and investments of most notably not-for-profit large institutions. Working with Boards of Directors and senior management in visioning for the future and practical ways to raise operating standards for future growth as well as raising resources for Endowments, Capital Improvements, and Operations.

President and Founder of Non-Prophets, Inc. A not-for-profit 501c.3 corporation dedicated to eliminating poverty among disadvantaged groups; wounded veterans, native American Indians in rehabilitation, single mothers, women college graduates, and African American men 18 years and older to learn to be self-sufficient.

World Cafe Organizer, helping nonprofit museums to engage with their board of directors, staff, and communities through this conversation technique to plan, evaluate, and execute museum work.

1987 to 2014- Museum of Science & Industry, Tampa, Florida

(Retired) President and CEO of MOSI Science Center, Inc. 1990-2014. Responsible for board development, fundraising, long-range and strategic planning. Accumulated and developed **\$120 million dollar** capital including a 73-acre site, 318,000 square feet of facilities including A) Science Center B) Whitney Andres Lang Center of Learning C) Florida Hospital IMAX Theater, D) Children's Science Center- Kids In Charge! E) Science Idea Zone F) Pre-School and Middle-Grade School- 560 students G) Saunders Planetarium H) NASA Lunar Colony I) Laboratories, Weather Simulators, and Classrooms and Lead Nature Tours by land, sea, and air.

In 2014, Completed a **\$34 million capital** expansion. Completed Kids in Charge a 40,000 sq. ft. children's science center, Disasterville a 10,000 sq.ft. natural hazards of the U.S. permanent exhibition, and the 8,000' Welcome Center building. In 2010, opened a 13,000 sq. ft. Health and the human body exhibition. The Amazing You. A total of 318,000 in A/C, 436,576 under roof on 74 acres. Completed 15-year Master Plan for 2021.

The staff of 200 108 FTEs with a \$10.2 Million-dollar annual revenue. Planned New Energy Center to distribute information worldwide on how to utilize alternative and sustainable energy opening 2011-2015.

In **July 1995** completed Phase 1 of a 15-year master plan. Expansion (200,000 ft) architecturally designed by Antoine Predock tripled original size to 265,000 square feet located on 65 acres. **The \$36 million capital** expansion includes an IMAX DOME Theater and Living System for water treatment. It contains the nation's first public library, Head Start School, and elementary school-science center-university relationship. Has a staff of 103, a budget of \$8.5 million, 600,000 visitors, and 10,000 member households.

Director of Museums for Hillsborough County 1987-1995. Responsible for developing the original site into a state-of-the-art science center on 47 acres. The 65,000-square-foot facility had a staff of 33, a \$3 million revenue, 375,000 visitors, and 3,500 members.

1979 to 1987 - Historical Museum of Southern Florida, Inc., Miami, Florida

Assistant Director/Marketing Director 1982-1987 of a new 35,000-square-foot history museum in a downtown cultural facility designed by Philip Johnson, which contained both a Fine Arts Center and Public Library. Full responsibility for attendance, public relations, membership, and fund-raising efforts (corporations, individuals, deferred giving). Assisted with board development. Active in the Chamber of Commerce Corporate Responsibility committee.

Education Director 1979-1982. Responsible for fundraising and fiscal planning for education department. Initiated and developed a history museum education program including community tours, enrichment classes, outreach activities, museum demonstrations, and volunteer activities. Designed interactive educational components for new facility exhibitions. Developed a history curriculum for all educational programs including school programs, public demonstrations, and human interpretation of archaeological and historic sites. Led seven-day historic/ecological Everglades tours and ten-day historic/ecological Florida Keys tours for Smithsonian Field Series.

1976 to 1979 - Museum of Science, Miami, Florida

Director of Education. Developed and directed science education programs including hiring and supervision of six full-time and 47 part-time staff and instructors. Trained and supervised 100 plus volunteer docents. Was responsible for the financial planning of budget and fundraising for program activities. Specialized in Children's Outdoor natural history activities.

1974 to 1976 - Graduate Student, University of Miami, Coral Gables, Florida

Instructor of laboratory classes, including lectures, demonstrations, tutoring, and testing in General Biology and Genetics. Research in aquatic ecology and small mammal population studies. Familiar with ecological methods, anatomy, and physiology.

1970 to 1974 - United States Coast Guard

Honors

Best Museum in the country award from the U.S. Institute of Museum and Library Services

Florida Association of Museums:

1970. Lifetime Achievement Award

1971. Innovator Award

Hispanic Heritage – Amigo Award; a friend of the Hispanic community

Selected Presentations

Annual presentations at ASTC, AAM, FAM, and other regional and local venues on Leadership, Education, Science, and Creativity.

Private Consulting on Planning, Design, and Group Dynamic Facilitation.

Selected Publications

Ostrenko, W. (unpublished) How to Raise \$120 Million Dollars.

Ostrenko, W. (unpublished) How to Operate a Profitable Not for Profit.

Ostrenko, W. and F. Steier; Conversations as a Core Process; Creating a Culture of Dialogue in Juanita Brown and David Issac in The World Café: Shaping our futures through conversations that matter, Shaffer, Berrett; Kohler 2005

Steier, F. and Ostrenko, W. "Taking Cybernetics Seriously at a Science Center: Reflection-in-interaction and Second-Order Organizational Learning. Cybernetics and Human Knowing, 2000, Vol. 7, 2-3, pp. 47-69.

Ostrenko, W. and Atherholt, W. "e-Commerce in Science Museums," published ASTC 2000

Ostrenko, W. and Zajonc, M. "Banyan Trees to Cultural Cornerstones," *Southeastern Museum Conference Journal*, Published 1984 by Southeastern Museum Conference, Memphis, Tennessee.

Ostrenko W., Rothstein, B., and Mazzotti, F.J. "Population Dynamics and Utilization of the Exotic Melaleuca quinquenervia by Three Sympatric Rodents. Abstract. Florida Academy of Science, 1979 Annual Meeting.

Ostrenko, W. and Mazzotti, F.J. "The Role of Science Museums in Environmental Education - Bringing the Public and the Environment Together." Abstract. Florida Academy of Science, 1977 Annual Meeting.

Synergistic Activities

Board of Directors, SponsorsOne, Inc. a Canadian/USA Corporation 2020
Smithsonian Associate Field Trip Leader – Everglades and Big Cypress
Association of Science-Technology Centers Conference – Problem Solving Techniques, 2001
Advisory Board, Cultural Institutions Management Program, 2001 to present
Advisory Board, American Association of Museums, Museums & Community, 2000-2001
Association of Science-Technology Centers Conference – Contemporary Exhibit Design, 2000

Collaborators and Other Affiliations

Collaborators

Dr. Fred Steier, University of South Florida, Tampa, Florida
Dr. Judith Lombana, Hillsborough County School System, Tampa, Florida
Dr. Anita Goel, Nanobiosym, Boston, Mass.
Dr. Frank Mazzotti, Urban Wildlife Specialist, Ft. Lauderdale. FL