

2013 30K Competition Team Bios and Business Descriptions

The goal of **Eos LABs** (Light-Activated Biosystems) is to engineer and commercialize light-regulatable systems for biomedical research and medicine. Light has numerous advantages as a means to control biological systems. It can be applied with high spatial and temporal resolution, unachievable by drugs (chemicals), and has no side effects. Near-infrared (NIR) light penetrates animal tissue to a depth of several centimeters. Therefore it can be used in the medical treatment of patients without surgical procedures. NIR light systems also provide a noninvasive “on/off switch” that can be used to target diseased cells while leaving healthy cells unaffected. Eos LABs plans to use NIR light based systems in two market niches: 1) novel molecular tools for research in animal disease models 2) treatment of a variety of genetic diseases involving, but not limited to, gene and stem cell therapies.

Dr. Mark Gomelsky is a Professor of Molecular Biology. He hails from the Southern Ural region of Russia that is almost exactly half-the-globe away from Laramie, WY. Dr. Gomelsky has received his training in Moscow, Russia. After obtaining his Ph.D. degree in Biological Sciences in 1991 from the Institute of Genetics and Selection of Industrial Microorganisms in Moscow, he worked at Pasteur Institute in Paris, France on a short-term fellowship. After that he went for a postdoctoral training at the University of Texas Health Sciences Center in Houston, TX, where he studied gene regulation in photosynthetic bacteria. Gomelsky joined the faculty of Molecular Biology at UWyo in 1999. He is an author on over sixty research publications. According to Thomson Reuters, Gomelsky’s papers from the work done at UWyo since 1999 have attracted more scientific citations than papers of any other scientist at the College of Agriculture and Natural Resources.

Gavin Lawlis earned his B.S. in Molecular Biology at the University of Wyoming. Gavin became interested in light-activated proteins when he discovered the Gomelsky Lab at UWyo. Gavin foresees light activated proteins to be used as new tools in bio medical research and possible treatments in genetic diseases. Gavin signed on with the Gomelsky lab and is currently working on his Master’s of Molecular Biology at UWyo specializing in synthetic biology. His thesis is centered on engineering light activated protein systems based on cyclic dinucleotide signaling pathways.

Min-Hyung Ryu graduated Summa Cum Laude with a B.S. in Life Sciences at the Sogang University in Seoul Korea. Min-Hyung continued his education at Sogang University in Dr. Jeong K. Lee’s Lab where he earned his Master’s in Molecular Biology. He then was accepted as a Ph.D. candidate in Molecular Biology at the University of Wyoming in 2008. Min-Hyung has focused his research in synthetically engineering the first near-infrared light activated signaling pathway based on photoreceptor proteins via small molecules. His current research is now focused on engineering a red-light activated caspases-3 that induces programmed cell death (apoptosis).

Ky[E]nterprise & Logistics is a collaborated marketing system which connects producers and consumers of Hay and Forage commodities. It combines an integrated system of both traditional and value-added hay products which is achieved with the help of an industrial Hay Compressor Station that further compacts hay/forage bales into more dense packages, which are then shipped by railroad for both national and international consumption. Wyoming grows the highest quality hay in the USA according to the World Dairy Expo. The cost of Logistics keep Wyoming producers from receiving due prices due to the distance between producer and the consumers. This marketing approach combined with an industrial Hay Compressor will allow for farmers to receive 10%-20% higher prices, on average, for their hay/forage. We are able to pay producers more due the efficiency gained through shipping higher density loads which can only be achieved through railroad transportation. Ky[E]nterprise & Logistics will bring stability to hay/forage markets in Wyoming and surrounding states while serving the needs of hay markets not only in the USA, but Internationally as well.

The sole founder of Ky[E]nterprise & Logistics, **Kyle Thoman**, was born and raised in Central Wyoming on a hay/forage based farming operation. He started a custom hay harvesting and high protein feed operation at age 16, and was announced the Wyoming State Star Farmer in 2010 where the term "Crazy Ambition" was coined in his honor. In 2011, his ambition earned him honors in the National New Century Farming Organization where he is joined by 50 young producers from across the country. Currently Thoman attends school at the University of Wyoming where he is a Junior studying Agricultural Business and Economics. He operates a private hay marketing and logistics business in cooperation with the family farm. Thoman continues to travel across the country attending meetings on behalf of New Century Farming and Ky[E]nterprise & Logistics.

Pollution Control Technologies, LLC sells mercury and other pollutant control systems for coal-fired power plants and industrial boilers. The main advantage of these systems is the capability of on-site and on-demand production of highly efficient materials for pollution control while utilizing raw materials available at these facilities, thereby reducing current associated operating costs by up to 50% compared to existing technologies. With on-site production of the materials, substantial savings in transportation costs are to be expected, and additional advantages, such as versatility in the production can be offered to our customers. As a result, these systems can be built to fit the specific needs of our clients, according to the process at hand so that they are always in compliance with current and future regulations.

Rodolfo Monterroso is a chemical engineering student from Guatemala. He is currently working on a PhD degree at the University of Wyoming. He obtained a B.S. in Chemical Engineering from Universidad del Valle in Guatemala and a Master's degree from the University of Wyoming. He has worked in the industry in Colgate and Kimberly Clark in Guatemala. During his research, he has worked on developing mercury capture materials, he published a chapter on the book "Coal gasification and its applications" about mercury control techniques. Currently he studies the effects of different catalysts on coal gasification. His entrepreneurial experience is related to a family-owned business started in 2011 in Guatemala in textbook publication.

Kaspars Krutkramelis is a chemical and petroleum engineer. He obtained a BS and MS from the University of Wyoming in chemical engineering. Currently he is a PhD graduate student, conducting research in the interdisciplinary field of microfluidics. Kaspar's previous research experience includes flue gas pollutant separation and capture with carbonaceous materials. Kaspar's interests cover the topics of development of viable technology for clean energy and sustainability.

Rave-nation.com is an online retail business specializing in accessories and apparel related to the booming Electronic Dance Music (EDM) industry. Rave Nation provides hundreds of unique and rare products for people attending EDM concerts and raves. These products include rave clothing, lighted gloves, goggles, and a variety of other specialized apparel. Rave Nation allows its customers to customize their items, allowing them to continually be unique and express their personality. Rave Nation is committed to becoming one of the largest suppliers of rave products and apparel by utilizing specific online marketing strategies, continuing to source very rare products, and providing quick response times.

Shawheen Amirkhizi is a Junior at the University of Wyoming, working towards a degree in Accounting. He began working with Electronic Dance Music (EDM) in early 2008, where he was heavily involved with face to face, and social media promotions for Twilight Entertainment. He began selling EDM products and accessories out of a record store in Salt Lake City in early 2009, during which time he also organized a couple of small EDM Concerts in Evanston, WY. Shawheen launched Rave-Nation.com in October 2009 to grow sales of his products and accessories.

Rho Zero Fermentation researches, develops and markets enhancements to yeast that improve the efficiency of fermentation. These enhancements are genetic modifications that subvert the yeast's normal energy use and prevent consumption of the economically valuable end products. These modifications are directly applicable to industrial ethanol production and have been shown to increase ethanol output without placing new demands on the production line. In addition, they can be adapted to the expanding high value fermentation markets, which produce varied chemical products that can be used in industries as diverse as plastics and food additives.

Dr. Peter Thorsness is the mastermind of Rho Zero Fermentation, realizing that discoveries made in his academic research lab could be commercially useful. He has been a member of the faculty in the Department of Molecular Biology at the University of Wyoming for 21 years and during that time has directed a research group studying mitochondrial function. Peter has his B.A. in Chemistry and a PhD in Biochemistry.

Elizabeth Hiatt is the Lead Scientist for Rho Zero and is currently conducting research on improving fermentation. She has a B.S. in Microbiology and is pursuing an M.S. in Molecular Biology. Her science education allows her to conduct the lab work for Rho Zero and her outgoing personality helps her to connect with potential customers.

Dr. Mary Thorsness is a senior research scientist at the University of Wyoming and currently serves as an advisor to Rho Zero Fermentation. She has an A.B. and PhD in Biochemistry, which positions her to serve as principle investigator on future SBIR and STTR grants (small business research and product development grants), as well as providing scientific assistance and advice.

Dr. Brian Francis is a research scientist at the University of Wyoming and advisor to Rho Zero Fermentation. Dr. Francis has an eclectic and comprehensive scientific background, having earned a PhD in Organic Chemistry and amassing over 40 years of scientific laboratory experience that encompasses organic synthesis, biochemistry, cell biology and genetics.