Cluster 1—Shirley Miranda
Computers in Every Day Life

Shirley earned her B.S. in Computer Engineering at UCSD then worked as a software development engineer. Her continued volunteer work with high school students through the Greater San Diego Science and Engineering Fair (GSDSEF) inspired her to go into teaching. At the University of San Diego, she earned her M.Ed. focusing on technology in education. She currently teaches Statistics 1-2, AP Statistics, Robotics and AP Computer Science at Morse High School in San Diego. This is her ninth summer as a Teacher Fellow at UCSD COSMOS where she developed the Science Communication curriculum. She serves as the Director of the GSDSEF, is a member of the COSMOS Advisory Board and the Intel International Science and Engineering Fair’s Advisory Council. Recently, she was recognized with the 2014 National Council of Women and Information Technology (NCWIT) Educator Award for her contributions to the computer science educational community. Additionally, her school district named her the 2015 Teacher of the Year Runner-Up for high schools. Shirley spends her free time writing and visiting the San Diego Zoo with her husband and 19-month old daughter. She has published four books Falling, Winter Solstice, Wintering, and Springing of her Bits and Pieces series. She is currently writing her fifth book.

Cluster 2—Brooks Park
Engineering Design & Control of Kinetic Sculptures

Brooks Park has just finished his 20th year as a secondary science educator and is thrilled to be spending his fifth COSMOS summer with Cluster 2: Engineering Design and Control of Kinetic Sculptures. When he is not teaching Physics or coaching the Upper School Robotics team at Pacific Ridge School, he enjoys hiking and backpacking, cycling, listening to music, reading and learning new skills.

Cluster 3—Matt Ruppel
Living Oceans & Global Climate Change

Matt Ruppel is excited to be back at COSMOS after working last summer as a Cluster Assistant for Cluster 3. Matt earned his B.S. in Chemistry at the University of Washington and his M.S. in Chemistry at UC San Diego. After earning his teaching credential at San Diego State, he is looking forward to working at High Tech High North County, facilitating student projects in environmentally-relevant areas of chemistry. When not working with students, Matt loves reading and watching science fiction, and taking photos wherever he goes.
Cluster 4—Bob Whitney
When Disaster Strikes: Earthquake Engineering

Bob is honored to have been invited back for his fifth year as the Cluster 4 teacher fellow. He began his career as a California high school Earth Science educator thirty years ago, yet he has only aged 17 years during that time. Remarkable! Bob earned his BS in Earth Science from Northern Arizona University and his M.Ed in Environmental Science Education from California State University San Bernardino. He teaches AP Environmental Science and Physics, as well as sponsoring several clubs on campus. Outside of the classroom Bob enjoys biking and hiking, the beach and the desert, playing basketball, growing chilies and avocados, reffing youth soccer matches, and directing a local special needs soccer program. His wife is a high school chemistry teacher, and they are the proud parents of an incredible daughter who just graduated with a BS in Soil Science/Biogeochemistry from UC Davis, and an amazing sophomore son attending Seattle Pacific University who is a goalkeeper for their nationally ranked soccer team. They have a black lab named Pooh Bear, a pit bull-boxer mix named Willow, an orange tabby named Cheedo, and several city chickens. Bob’s favorite quotes usually involve obscure lines from Monty Python movies, which accounts for the strange looks students give him.

Cluster 5—Andy Nelsen
From Lasers to LCD’s: Light at Work

Andy has taught science in public schools in San Diego for the past seven years and is currently teaching earth and space science at San Diego High School. He graduated from Western Washington University with a bachelor’s of science in geology in 2002 and worked in the field as a consultant for several years before returning to school to earn a master’s degree in teaching in 2008. Andy grew up in northwestern Washington and developed a passion for outdoor sports, science and learning. Working as a teacher has given him a platform to share his interests with young learners. When not in the classroom, he can be found spending time with his wife and baby daughter or exploring the roads and trails of San Diego county on his bike.

Cluster 6—Tim Towler
Biodiesel from Renewable Sources

Tim is looking forward to working with students in COSMOS as a returning fellow this year. He had a great time with Cluster 3 last summer and looks forward to working with Cluster 6 this summer. Tim has a B.A. in Biology from U.C.S.D., a M.Ed in Secondary Curriculum and Instruction, and an A.A. in General Business. Yes, earned in that order. He holds credentials in Life Science, Psychology, Chemistry, General Science, Introductory Business, and Computer Concepts and Applications. He also has a Designated Subjects Credential in Information Technology. Tim currently teaches IB Biology Higher Level, GIS & Global Technologies and Foundations of Information Technology at the School of International Studies at the SDHS Educational Complex. He has coached Science Olympiad, SuperQuest, CyberSentinal, Science Fair and has been involved in school related trips to China and Costa Rica. Currently, Tim serves as a Boy Scout merit badge counselor and acts as an advisor for Girl Scouts, International Order of Rainbow for Girls and DeMolay. In those unusual moments called “free time”, he teaches courses in poker and other games and has written four gaming training manuals. He enjoys traveling with his wife, and they have collected chips from over 100 US and foreign casinos.
Cluster 7—Michael Robertson
Bioengineering/Mechanical Engineering: The Amazing Red Blood Cell

I’m your Teacher Fellow, Dr. Mike Robertson, and I wanted to take this opportunity to introduce myself to you and to also welcome you to Cluster 7-The Amazing Red Blood Cell!! I think you’re really (I mean realllllllllly) going to enjoy COSMOS and particularly Cluster 7 (yes, I’m biased!). As you probably already know, Cluster 7 is unique in that it’s really TWO Clusters in one—Bioengineering AND Mechanical Engineering, and it’s taught by two terrific UCSD faculty, Dr. Carlos Vera & Dr. Mauricio de Olivera. This is my fifth summer as a Teacher Fellow in Cluster 7 so I’ll be able to guide you through the program so that you’ll get the most out of it. I’m actually an International Baccalaureate chemistry teacher at San Diego High School where I am also Academic League coach and a science tutoring club advisor. Prior to teaching I spent 20+ years conducting biomedical research in the field of molecular immunology at places like the University of Cambridge in England and the Scripps Research Institute in La Jolla, CA. I’m a long-time resident of San Diego and have two daughters, one a recent graduate of Pomona College in Claremont, CA and another entering her sophomore year at UC Berkeley. I’ve really enjoyed working with COSMOS these last few summers and am once again looking forward to an exciting program working with all of you in your unique and highly memorable journey to explore the red blood cell, and beyond!

Cluster 8—Patty Fowler
Tissue Engineering & Regenerative Medicine

Patty Fowler is currently an AP Biology and Biology teacher, and Science Olympiad and National Ocean Science Bowl Coach, at Scripps Ranch High School, in San Diego. She earned a B.S. with a Biology Major and Chemistry Minor at The University of Iowa, and a Masters in Education from National University. Patty performed biological research as an immunopathologist, mostly at The Scripps Research Institute, for 18 years prior to teaching for the past 15 years. In her free time she enjoys telling jokes, reading, hiking, playing games, spending time with her husband, who is also a scientist, and son, who is currently attending medical school in Maryland, and of course the fifteen pets. This is her third summer at COSMOS and she knows that this year Cluster 8 is going to be ‘GR8’!

Cluster 9—Eric Burston
Music & Technology

Eric Burston teaches International Baccalaureate Physics at the San Diego High School of International Studies. He has also taught IB Chemistry, and has been a science administrator and a vice principal. In the past few years he has returned to his favorite work: teaching IB Physics. Mr. Burston is also a practicing musician, playing bass in Old Order, a Joy Division tribute band.