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 Die-
go 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.

Matt Ruppel is excited to be back at COSMOS after working last summer as a Cluster Assis-
tant 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 chilis 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—David Hurst

From Lasers to LCD’s: Light at Work

Prior to teaching mathematics for 21 years, Mr. Hurst was a mathematics researcher whose work on a team to develop advanced mathematics/engineering software (NCLgebra) continues to be cited as an important tool in the fields of Systems Engineering and Mathematical Operator Theory. His experiences in both private and public schools has allowed him to apply his research and educational leadership skills for the benefit of students, families and faculty. His background in Mathematics and Philosophy has give rise to his personal mission statement to “Excel, Be Fair and Inspire!” To achieve that mission, he is currently teaching part time in San Diego City Schools, while training to apply to the 2016 NASA Class of Astronaut Candidates.

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—Parag Chowdhury
Bioengineering/Mechanical Engineering: The Amazing Red Blood Cell

Parag is a teacher that has a passion for science education and environmental justice issues. He grew up in Little Rock Arkansas and attended Hendrix College where he studied Philosophy. He then went on to complete his doctoral work at University of Arkansas for Medical Science in Physiology and Biophysics. Trained as a cell and molecular biologist, his thesis work focused on visualizing changes in the endocytic pathways of migrating cancer cells using confocal microscopy. His postdoctoral work brought him to The Scripps Research Institute (TSRI) where he used cryo-electron microscopy and single particle analysis to visualize the structural rearrangement synaptic vesicle components. His passion for education eventually lead him to join High Tech High North County as a Biology teacher. His aim as a teacher is to create authentic opportunities for students to participate in rigorous, impactful inquiry based science projects by bringing real science and scientists into his classroom. Over the years, he has brought researchers from variety of fields including immunology, genomics, species conservation, oceanography and stem cell biology into his classroom to collaborate on projects. Parag was one of the founding faculty members of e3 Civic High, a new charter school located in the Downtown Public Library in San Diego’s East Village. He has taught AP Biology, Biomedical Engineering, Anatomy and Physiology and Conservation and Environmental Biology. He loves helping students discover their passions, pursue their curiosity and explore the living world.

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 here third summer at COSMOS and she knows that this year Cluster 8 is going to be ‘GR8’!

Cluster 9—Kimberly Morris
Music & Technology

Ms. Kim Morris is a Mathematics teacher and a San Diego native. She attended the University of California, Riverside (UCR) to earn her Bachelor of Science degree in Mathematics for Secondary School Teachers. In 2011 she began her first year of teaching in Riverside County while working towards her Teaching Credential at UCR’s Graduate School of Education. During this time she received the National Science Foundation’s Robert Noyce Teacher Scholarship which allowed her to continue her education at UCR and complete a Master of the Arts degree in Education, Society, and Culture. Kim Morris is committed to education. She is passionate about developing authentic learning experiences for students that provide opportunities to think critically about real-world issues and utilize class content in creative ways. She believes that learning best occurs when students are engaging in relevant projects, and working cooperatively with a team!