

## Grant Murphy gives captivating presentation on protein engineering, synthetic biology

### "BOOTSTRAPPING EVOLUTION USING PROTEIN ENGINEERING & SYNTHETIC BIOLOGY" PRESENTATION ENRAPTURES STUDENTS

BY CHRITIANNA VAN DALSEN  
STAFF WRITER

What do you think of when you hear protein engineering? Do you imagine strange laboratory experiments creating man-made life forms or reconstructing the genetic makeup of creatures? How about synthetic biology? Perhaps you picture a mock ecosystem, where scientists test the likelihood of human survival on Mars.

While these words may sound like something out of a science fiction novel, they are certainly not fiction. Protein engineering

and synthetic biology are very real and influential strategies that researchers, businessmen and political figures have recognized as applicable and effective for the progression of biotechnology.

"It is an interesting topic that a lot of people are involved in," said early college junior Emerson Santiago. "I'd heard about it, but I didn't really understand it before."

It is not easy to take these complex processes and present them in a way that is both entertaining and informative for non-science majors, but a presentation on April 9, as part of the Science and Math Division Speaker Series, made the topic easily enjoyable and understandable for Guilford students.

The exhibition was alluringly titled "Bootstrapping Evolution Using Protein Engineering and Synthetic Biology," and was presented by Grant Murphy '05. Murphy double-majoring in biology and chemistry. After Guilford, Murphy received his Ph.D. from the University of North Carolina at Chapel Hill and now works as a postdoctoral

fellow and lecturer at Princeton University's Hecht Lab.

"Grant Murphy ... gave a fascinating and impressive presentation on protein engineering," said Professor of Biology Lynn Moseley.

Murphy uses protein engineering and synthetic biology in his research to substitute bacterium genes with proteins engineered from computational modeling.

"His talk about computer simulations of how proteins fold was really enjoyable," said senior Eric Barnett. "They use a system where they connect a protein to thousands and thousands of computers to do a bunch of folding all at the same time. They also have this program that they've designed and refined over the years to predict protein structure."

Murphy described how predicting protein structure could be used to engineer the metabolism of various species like algae, yeast and bacteria to create fuels that are photosynthetic or carbon-based.

"Synthetic biology combines the

experimental techniques and functional components ... of molecular biology, chemistry and physics with the ... design principles of engineering," simplified Murphy in an email interview. "Using synthetic biology, we can build simplified model systems to improve our understanding of natural biological systems. However, the true significance of synthetic biology is in its ability to generate new biological systems ... systems not developed by natural evolution."

There is no way to ignore the fact that this extraordinary research has taken biology engineering to the next level, but it can still improve with help from all of us.

"Protein engineering and synthetic biology are both young fields with lots of room for growth and with the ability to tackle big problems like global food supply, fuel availability, clean fuel and the development of new therapeutics," said Murphy. "We need scientists and nonscientists to take an interest in emerging fields like synthetic biology."

## Today's top cover artists: go ahead, judge them by their covers

BY RISHAB REVANKAR  
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For the most part, YouTube cover artists are just like you and me. Besides the fact that they wear a lot more makeup, what sets them apart from us is that they attract listeners by the millions.

The Guilfordian recently interviewed three YouTube talents who have made their mark by recreating popular music: a 10-year-old Internet sensation from Atlanta, Ga., a world famous singer from Leeds, U.K., and an independent singer at the frontline of the industry.

### Matthew Morris (YouTube Channel: MattyBRaps)

"I do not think of myself as famous," MattyB told The Guilfordian.

At only 10 years of age, MattyB has accumulated 500 million views on YouTube, performed on the Today Show, and appeared in multiple Disney commercials.

MattyB is not famous; he is a child prodigy and an Internet sensation.

At the age of seven, MattyB kicked off his musical career with a creative cover of "Eenie Meenie" by Justin Bieber.

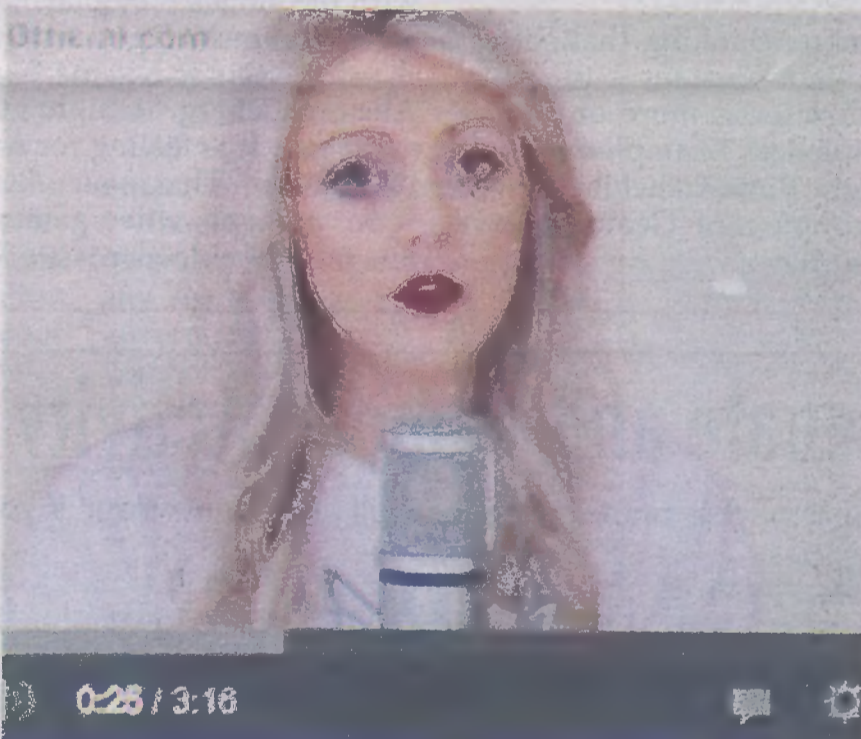
"I always watched my big cousin record and shoot," MattyB said. "I kept bugging him to give me a chance. He did, and the video went viral."

His recent version of another Bieber hit song, "Boyfriend," attracted more than 60 million views.

"The song had a laid back rap and a falsetto hook," said MattyB. "The combination was a surprise, and the video spread to millions of fans."

Outside of singing and rapping, MattyB considers himself an ordinary third grader and prides himself in the Morris family tradition.

"My family teaches me that no matter what you achieve, you have to credit God for your success and stay grounded," said MattyB. "I love my friends at school and baseball team, and I do not want that to change."



### Beth Wale (YouTube Channel: BethOfficial)

From the outskirts of Leeds, U.K., Beth had no intention of becoming a world famous cover artist. Before the age of 17, her singing career consisted of music lessons and talent show performances. In 2011, she released her first YouTube cover, "Someone Like You" by Adele.

"When I uploaded my first video, I had no idea what would happen," Beth told The Guilfordian. "I really, really didn't expect the amazing support from fans."

The cover song created ripples around the world. In 2011, Beth became the most popular unsigned artist on U.S. Spotify.

Simple, yet uniquely captivating, her music videos depict a close-up shot of the blonde-haired, blue-eyed teenager and her microphone.

Beth's vocal music echoes a similar spirit.

"I hope that (people) will see something unique in me," said Beth. "I have really established a niche by slowing down dance tracks."

With more than 5 million views on YouTube, Beth's cover of "Don't You Worry Child" by Swedish House Mafia is the most viewed cover of the song.

"The fact that I absolutely love singing that song really reflects through the vocals," said Beth. "It has made a dance track into a heartfelt ballad."

### Tyler Ward (YouTube Channel: TylerWardMusic)

Recently rated a top five cover artist by OC Weekly, Ward had little interest in music early on. After high school, he embarked on a football career at the U.S. Air Force Academy Preparatory School.

Unsatisfied with that lifestyle, Ward left the academy and began recording music in his parents' basement.

Since then, he has captured the spotlight with his impassioned voice and trademark acoustic guitar.

"I think I stand out because I make my covers my own," Ward told The Guilfordian. "They have my voice on them."

During the 2010 Winter Olympics, Ward covered Michael Jackson's "We Are The World."

He continued to impress on the big stage, rubbing shoulders with Rihanna and Boyce Avenue on two world tours.

In Sept. 2012, Ward released his first original album, "Hello. Love. Heartbreak." The album seized the top honors on 15 iTunes singer/songwriter charts.

"Releasing the album was exciting and scary," Ward said. "Every song was so personal. As an artist, it's a real success if you can be that honest with your fans."

Ward enjoys support from audiences worldwide but pursues music for other reasons.

"I get great feedback on my voice, which is very flattering," said Ward. "But at the end of the day, I try to share my love for the song, my emotion and my hope to genuinely connect with people."

