

iMATHination Conference 2015: "Math and Science for the Next Generation"  
January 23 and 24, 2015: Q Conference Center, St. Charles

## FRIDAY MATH BASH SESSIONS

January 23, 2015

(Science and Math Bash Sessions are 45 Minute, Interactive Sessions)

### CCSS, Geometry, and the TI-Nspire Calculator

**Appropriate for:** 7th, 8th, 9th, 10th, 11th, 12th grades

**Areas of Focus:** Geometry, Common Core Implementation, Technology Integration, Teacher Professional Development

The teaching of Geometry has been greatly impacted by the advent of dynamic Geometry software and its inclusion on graphing calculators. With dynamic Geometry tools, students can make discoveries on their own without having to be "told" by the teacher what they are to learn. The students will be able to create geometric figures, manipulate these figures dynamically, and perform tests of measurement on their parts. This will then enable students to make connections between figures and lead to a deeper understanding of important geometric concepts. This session will introduce participants to this dynamic Geometry package, and will reference its use to the teaching of the Common Core State Standards for Geometry, and mathematics in general. With the tools available within CABRI on the TI-Nspire calculator, participants will construct a triangle, the midpoints of two of the sides of this triangle, and the segment connecting these midpoints. They will then learn how to dynamically manipulate this triangle, and will observe this dynamically changing figure and make conjectures as to what properties this figure might have, developing their capacity to support their students in similarly quantitative, critical thinking. Participants will then learn how they can guide students in testing their conjectures by using the measurement tools within CABRI, revise their conjectures if necessary, and eventually discover a well-known geometric theorem. They will then be asked to apply this discovery to another figure, enabling them to make – and teach - important geometric connections.

**Ray Klein** is a retired high school math teacher with over 40 years of classroom experience. He has been a T3 National Instructor since 1995 and has given over 500 presentations throughout the country involving the teaching of math with technology. A particular area of his expertise is Geometry.

### Evolving the Mathematical Problem Solving Process: A Teacher's Strategy in a Common Core World

**Appropriate for:** 9th, 10th grades

**Areas of Focus:** Algebra, Common Core Implementation, Math, Science, and Language, Inquiry-Based Approaches, Teacher Professional Development  
Ever feel like the term scaffolding is easier said than done? This session will

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discuss strategies to help teachers cover difficult topics by being better facilitators of the problem-solving process. Using the Intensified Algebra curriculum and a functions-based approach to Algebra 1 as a backdrop, the activities discussed will give you ideas that can be easily implemented in your classroom. After participants engage in interactive problem-solving activities, facilitators will discuss the benefits of allowing students to solve problems with different and creative methods, of recycling problems when new methods are taught, and of allowing students to have processing time when it comes to challenging problems. A sample homework assignment will be shared so that participants can experience how proper scaffolding can help solidify prior knowledge, as well as concepts already taught and preview upcoming topics.

**Ellen Casey** is a mathematics teacher at Curie Metropolitan High School. She has taught for Chicago Public Schools for 6 years; during that time she has worked at Curie and Bronzeville Scholastic Institute. She has co-sponsored Mu Alpha Theta, the school's National Mathematics Honor Society, and is currently a member of the Instructional Leadership Team and Multi-Tiered Systems and Supports committee. Mrs. Casey attended DePaul University for her Bachelor's and Master's, where she earned degrees in Secondary Education and Math Education.

**Jeff Mikula** is a mathematics teacher for the Chicago Public Schools system, and is currently at Curie Metropolitan High School. He has been at Curie for 6 years and continues to be an International Baccalaureate teacher for Algebra 1. He is a soccer coach for the varsity girls' and junior varsity boys' teams, as well as a coach for the Curie Math Team. Mr. Mikula has a Bachelor's degree from UIC in Secondary Education and a Master's degree from DePaul in Math Education.

### Hook, Line, and Sinker!

**Appropriate for:** 7th, 8th, 9th grades, Administrators

**Areas of Focus:** Algebra, Common Core Implementation, Math, Science, and Arts, Inquiry-Based Approaches, Technology Integration, Assessment and Evaluation, Teacher Professional Development, Mentoring, Supporting First-Generation Students, Supporting Low-Income Students, Supporting Students with Disabilities

Technology is a daily part of every student's life, and yet it can be intimidating for math teachers to use technology effectively in their lessons. This session will give you the experience of working with a nationally certified instructor and coach who encourages teachers to teach math lessons that are aligned to Common Core Standards, while learning to use technology to enhance student understanding of difficult to teach math concepts. Spend some time setting the hook, reeling in the line, and putting on the sinker with the interactive lessons shared during this session. Participants will develop an understanding of box-and-whiskers plots, and

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they will then use their measurement of height to construct a human box-and-whiskers plot, which can be applied immediately in their classrooms. Participants will then enter the data into the Nspire handheld device, and will make a box-and-whiskers plot on the Nspire device. Throughout the activity, the instructor will use the Navigator system to monitor participant understanding.

**Jane Damaske**, a T3 National Instructor, taught students math for 30 years and has been a TI-MathForward Implementation Specialist for the last five years. Her role now takes her into classrooms across the country helping teachers integrate handheld technology into their daily lesson, thereby enhancing student mathematical conceptual understanding.

## Science is Infectious: An Innovative, Inquiry-Based Infectious Disease Curriculum that Connects Students to Science through Everyday Health Issues

**Appropriate for:** 11th, 12th

**Areas of Focus:** Biology, Algebra, Inquiry-Based Approaches

Mrs. Galvez and Ms. Gaspar will share their experience from the GEAR UP STEM Academy, which took place in the Summer 2014. Along with other teachers and mentors, they facilitated the inquiry-based Infectious Disease curriculum. This unique summer program was open for incoming high schools sophomores and juniors. This academy focused on the development of real-life skills needed for careers in science. Students had multiple opportunities to engage in laboratories where they could create their own bacteria samples, observe bacterial colonies with the use of microscopes, and analyze the growth of bacteria. In this session, participants will simulate the contagion of infectious diseases in the classroom. Then, they will then use data to represent their findings and make predictions.

**Joselyn Gálvez** works as the 7th grade math teacher at Frank W. Reilly Elementary School. As a former GEAR UP student, she understands the importance of providing under-served students with unique opportunities to explore different careers for their future. She believes that students can develop positive academic mindsets with the help of adult mentors.

**Albina Gaspar** is a recent graduate from NEIU (Northeastern Illinois University) with a B.A. in Elementary and Middle School Education. Ms. Gaspar was a member of the MSTQE (Math, Science, and Technology for Quality Education) program at NEIU. As a former GEAR UP mentor, she values the impact and motivation that one creates in young lives. She has had to overcome many of the same challenges faced by other low-income students. As a result has developed a deep appreciation for student-centered

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education, where students are encouraged to incorporate their own experiences to make their learning more meaningful.

## **STEM Services: From Robotics Afterschool teams to summer programs**

**Appropriate for:** 8th, 9th, 10th, 11th, 12th, Administrators

**Areas of Focus:** Computer Science/Coding/Gaming, Physics, Algebra, Advanced Algebra, Trigonometry, Pre-Calculus, Physics, Civic Engagement and Service Learning, NGSS Implementation, Math, Science, and Arts, Inquiry-Based Approaches, Experiential Approaches, Technology Integration, Assessment and Evaluation, Teacher Collaboration, Teacher Professional Development, Mentoring, Career Development, College Access, Supporting First-Generation Students, Supporting Low-Income Students, Supporting Students with Disabilities, Supporting Undocumented Students

The Center for College Access and Success invites you our STEM activity share-a-thon where you will learn about our diverse activities such as robotics, game development, music editing, science research and much more.

**Aaron Cortes** serves as the Director of the Upward Bound Math and Science TRIO Program at the Center for College Access and Success. He is also involved in the development of STEM activities for students, parents and staff at the Center for College Access and Success. He is currently the President of Illinois TRIO and a USDA Kika De La Garza Fellow.

**Shana Kachaochana** is the College and Career Coach for the TRIO Upward Bound Math and Science. She has a B.S in Applied Mathematics from Northeastern Illinois University.

## **Wondering, Seeing and Sharing Before Solving**

**Appropriate for:** 7th, 8th, 9th, 10th, 11th, 12th grades, Administrators

**Areas of Focus:** Algebra, Advanced Algebra, Trigonometry, Pre-Calculus, Calculus

Help students lose their unease or fear of problem solving by getting them excited about mathematical observation, questioning, and wondering. Participants will be guided in creating simple, rich, open-ended activities or openers that preview, motivate, and review math-based content, and make deeper connections. In this session, we will target specific math topics ranging from middle school mathematics all the way up to calculus. These activities draw from Math Talks, Singapore Math, Japanese Teaching Through Problem Solving (TTPS), and Qfocus - all inspired by educators such as Jo Boaler, Annie Fetter, P.J. Karafiol, and others. Participants will be presented with "math talks" and "math discovery"

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exercises related to topics in the curriculum, allowing them to take a dual role as both students and teachers. In so doing, participants will hone their ability to create rich activities that address a central issue in the classroom: If students have the freedom to speculate without fear of getting the wrong answer, what would they do, and how would their learning expand?

**Steve Starr** is a retired CPS mathematics teacher who taught at Lake View High School for 20 years, developing a successful AP Calculus program where minority and low income students were motivated to take advanced mathematics. He has shared his experience and ideas at numerous workshops before and after retirement.

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## SATURDAY SESSIONS

January 24, 2015

(Saturday Sessions are 75 Minute, Interactive Sessions)

### Civic Engagement through the Sciences

**Appropriate for:** 9th, 10th, 11th, 12th, Administrators

**Areas of Focus:** Biology, Civic Engagement and Service Learning, NGSS Implementation, Common Core Implementation, Experiential Approaches

Service learning is a pedagogical practice that links classroom content with community action. The practice enables students to make multiple connections: community, career, civic engagement and identity development, and more. Service learning has been used in all content areas at K-16 academic levels with great success in terms of student outcomes (academic, civic, vocational, social-emotional) and community impact. Civic Engagement through the Biology Curriculum will enable workshop participants to explore the pedagogy and practice of service-learning through the lens of the Biology classroom. Participants will learn about current practice in high school Biology classrooms, analyze service-learning case studies, then, working together, begin the process of constructing a high quality service learning project that is rooted in a biology classroom.

**Jon Schmidt** has been engaging middle school, high school, and university students in civic learning/development opportunities for more than 20 years. Currently he works out of the Center for Experiential Learning at Loyola University with faculty, community partners, students, and other university centers to build civic learning experiences through a wide variety of courses. Jon recently joined Loyola after 12 years as Manager of Democracy Education and Student Leadership at Chicago Public Schools.

**Saswati Koya** has a Master's degree in Zoology, with specialization in Animal Cytology and genetics. She has been a Science Teacher and Service Learning Coach previously at Gage Park and at Chicago Academy High School for the past nine years. Saswati has been recognized for her community service and has received many awards.

### Health, Education, and Game Design

**Appropriate for:** 9th, 10th, 11th, 12th grades, Administrators

**Areas of Focus:** Computer Science/Coding/Gaming, Civic Engagement and Service Learning, Health, Experiential Approaches, Assessment and Evaluation, Mentoring

Launched in 2012, Game Changer Chicago Design Lab (GCC Lab) is an initiative in which youth collaborate with faculty, staff and university students at the

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University of Chicago. Using gameplay and game design, GCC engages youth in STEM and health. In this session, participants will learn basic game design and play "Smoke Stacks," a tobacco education tool developed by GCC. Following this activity, participants will discuss how games and role-play can be used in the classroom to engage youth in health, math, and civic engagement. Lastly, we will describe our game design curriculum, which engages youth in researching larger scale systems such as epidemiology or economic inequality.

**Ashlyn Sparrow** is Game Changer Chicago's Lab Director and a game designer/experience designer with a passion for creating interactive worlds and telling deep and meaningful stories about the human condition. She received a B.A. in Information Technology from Penn State University and holds a Masters of Entertainment Technology from Carnegie Mellon University.

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## **The Math Component Of The Emerge Summer Program: Supporting Incoming Freshmen In Math Development Coursework** Appropriate for: 9th, 10th, 11th, 12th grades, Administrators

**Areas of Focus:** Algebra, Technology Integration, Mentoring, College Access, Supporting First-Generation Students, Supporting Low-Income Students, Supporting Underrepresented Students

This presentation describes the development, results, learnings, and future directions of the mathematics component of the English & Math Enrichment, Readiness & Growth Experience (EMERGE) Summer Program at Northeastern Illinois University (NEIU), a Hispanic serving institution in Chicago, Illinois. The EMERGE Program offered a 3-week English session and a 3-week mathematics session for incoming freshmen. To participate in the mathematics session, students took NEIU's mathematics placement exam and placed into mathematics development coursework. The mathematics session aimed to help students strengthen their mathematical foundation, gain confidence in their mathematics abilities, and gain the skills needed to successfully place into a higher-level mathematics course during the fall semester. EMERGE mathematics students attended mini-lectures, participated in structured group activities, and completed online MyMathLab modules. Results for the 2014 EMERGE Program mathematics component indicated a 73% success rate. Of those students who retook the mathematics placement exam, 58 of 79 moved up at least one level in mathematics. Presenters will draw on their EMERGE coordination experiences to provide suggestions for how session participants might better support high school students in preparing for collegiate level mathematics. Participants will also have opportunities to engage in small and whole-group discussions centered on this topic.

**Sarah Oppland-Cordell** is an assistant professor of mathematics at Northeastern Illinois University. Her research interests include examining the identity development of marginalized students in mathematics, exploring relationships between marginalized students' identity development and participation in collaborative mathematics classrooms, and drawing on marginalized students' experiences to create equitable mathematics learning environments.

**Katherine Bird** is an assistant professor of mathematics at Northeastern Illinois University. Her research interests are in the areas of pure mathematics and mathematics education. She studies Lie groups within finite group representation theory. She also studies the identity development of marginalized students in mathematics while focusing specifically on the intersectional nature of mathematics and gender identities.

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**Joseph E. Hibdon, Jr.** is an assistant professor of mathematics at Northeastern Illinois University. His research bridges applied mathematics and math education. He studies diffusion flames and natural resource modeling. He is also doing research on mathematics identification and advising of students through STEM curriculums.

## More Hook, Line, and Sinker

**Appropriate for:** 7th, 8th, 9th grades, Administrators

**Areas of Focus:** Algebra, Common Core Implementation, Math, Science, and Arts, Technology Integration, Assessment and Evaluation, Teacher Professional Development, Mentoring, Supporting First-Generation Students, Supporting Low-Income Students, Supporting Students with Disabilities

Technology is a daily part of every student's life and yet can be intimidating for math teachers to use effectively in their lessons. This session will give you the experience of working with a nationally certified instructor/coach who encourages teachers to teach math lessons that are aligned to Common Core State Standards and use technology to enhance student understanding of difficult to teach math concepts. Spend some time setting the hook, reeling in the line, and putting on the sinker with the inter-active lessons shared during this session. This is a continuation of Friday night's session, and participants will investigate vertical and horizontal translations of a function. After learning about functions, participants will use games that motivate students to mathematical learning with linear and quadratic functions using the TI-Nspire™ handheld device.

**Jane Damaske**, a T3 National Instructor, taught students math for 30 years and has been a TI-MathForward Implementation Specialist for the last five years. Her role now takes her into classrooms across the country helping teachers integrate handheld technology into their daily lesson, thereby enhancing student mathematical conceptual understanding.

## NASA's Mysteries of the Universe: Dark Matter

**Appropriate for:** 8th, 9th, 10th, 11th, 12th grades

**Areas of Focus:** Earth Science, Physics, Algebra, Advanced Algebra, Physics, NGSS Implementation, Common Core Implementation, Math, Science, and Arts, Inquiry-Based Approaches

Dark matter is one of the universe's biggest mysteries, baffling modern-day scientists and astronomers. Yet, your students can explore the mysteries of dark matter through mathematical modeling and reasoning! In this session, participants will develop and reinforce Common Core Mathematical Practices through a series

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of thought experiments and investigations as they use mathematics to make sense of the world around in which we live. Working with real astronomical data, teachers will learn how their students can investigate planetary systems and galaxies to analyze evidence that dark matter exists. Completing these tasks will allow participants to understand proper scaffolding in order to be able to apply mathematical modeling for less familiar systems, and will also provide a basis for comparing the models that are generated. These mathematical models that are created end up simplifying lots of data into very user-friendly forms. By comparing those models, participants will be able to discover mathematical evidence of the existence of dark matter. Then, learn what we know - and don't know - about this dark matter phenomenon. Free NASA materials will be available!

**Janet Moore** is a mathematics instructor at Illinois State University and a NASA Educator Ambassador, representing NASA's high-energy astrophysics missions. She is passionate about helping students and educators rediscover the world around them through mathematical and scientific exploration.

### **Re-Engaging Students to Repair Mathematical Misconceptions**

**Appropriate for:** 7th, 8th, 9th, 10th grades

**Areas of Focus:** Algebra, Advanced Algebra, Assessment and Evaluation, Teacher Collaboration, Teacher Professional Development

As anyone who has ever tried to teach their dog to whistle knows, learning and teaching are unfortunately not the same thing. When we assess our students after instruction, we may uncover some important gaps or misconceptions. Is there something we can do to help move students' understanding forward besides reteaching - the old "louder and slower" approach? We'll practice a structure to respond through "re-engagement" to surface and repair misconceptions in a way that involves and challenges all students. You'll analyze students' work and leave with guidance on where to find rich, high quality, free mathematical tasks and supporting materials on a variety of important topics and help your students meet the demands of the Common Core State Standards for Mathematics.

**Sendhil Revuluri** was a founding math teacher of a new high school in the South Bronx, where he was recognized as a Math for America Master Teacher. He now works with teachers and administrators in high-needs districts to influence practice, infuse effective tools, and support improvement and joint problem solving.

### **Service for 30**

**Appropriate for:** 7th, 8th, 9th, 10th, 11th, 12th, Administrators

**Areas of Focus:** Civic Engagement and Service Learning, Inquiry-Based Approaches, Experiential Approaches

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Service learning and civic engagement provide students with the opportunity for hands-on, kinesthetic learning in addition to allowing them to become engaged with their peers and community. In this session, we will talk about the purpose, pedagogy, and usefulness of implementing service learning in math and science content courses in a teacher preparation program, and in a mathematics course taught at Curie Metro High School. Attendees will learn how service learning can engage students and be implemented into their curriculum, and engage in interactive activities to implement service learning. The session will feature the details of an industry-linked, student-driven aviation curriculum that incorporates service learning, mathematics, science and engineering, including details of how it was established at Curie.

**Brittany Pines** is the Program Assistant for the interdisciplinary math and science program (MSTQE) at Northeastern. Ms. Pines is also a graduate of NEIU and MSTQE. Her passion for engaging students in service learning and civic engagement stems from her involvement with the Service Learning and Civic Engagement Consortium (SLCEC) where she is an active member.

**Ellen Casey** is a mathematics teacher at Curie Metropolitan High School. She has taught for Chicago Public Schools for 6 years; during that time she has worked at Curie and Bronzeville Scholastic Institute. She has co-sponsored Mu Alpha Theta, the school's National Mathematics Honor Society, and is currently a member of the Instructional Leadership Team and Multi-Tiered Systems and Supports committee. Mrs. Casey attended DePaul University for her Bachelor's and Master's, where she earned degrees in Secondary Education and Math Education.

### **STEM Teaching and Learning through Mentorship**

**Appropriate for:** 9th, 10th, 11th, 12th grades

**Areas of Focus:** STEM, Mentoring

In this session the presenters will share their findings from the summer programs focused on STEM learning and teaching, as well as The Young People's Project methodology: College Math Literacy Workers train and develop High School Math Literacy Workers (MLW) and high school MLW facilitate activities to elementaryaged students. In this workshop, participants will engage in interactive activities that the High School Math Literacy Workers facilitate, and explore data that expose the need for early-involvement programs based on the Common Core State Standards for Content and Mathematical Practices, Gender-Based Experiences for Middle School Students, On-Going Mentoring, Building Knowledge about STEM Careers, and Promoting Relationships with STEM Faculty.

**Nell Cobb** is an Associate Professor of Mathematics Education at DePaul

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University, College of Education in Chicago Illinois. She is responsible for teaching middle and elementary mathematics education courses on the undergraduate and graduate levels. Dr. Cobb also teaches elementary and secondary capstone education courses for student teachers. In the College of Health and Sciences – Mathematical Sciences Department, Dr. Cobb teaches the content courses for elementary and middle school teachers. Dr. Cobb is the co-director of the Masters of Science in Middle School Mathematics Education (MSME) Program, a jointly developed effort between the College of Education and Mathematical Sciences Department. She also serves on several university, college, and professional committees. Dr. Cobb has coordinated the Algebra Project Teacher Resource Materials Team (funded by NSF grants) and has organized a number of Algebra Project Professional Development Institutes. Dr. Cobb has presented at several conferences and published articles in the areas of mathematics teacher competencies, reflective teaching, and general mathematics education.

**Charlene De Leon** has worked in community organizations for almost 16 years. Charlene worked at Erie Neighborhood House and initiated and implemented programs such as computer clubs, tutoring, and dance. Charlene has experience running after school programs for churches where she led youth to be responsible for arts/crafts, sports, and homework help; youth learned how to plan activities, organize events, and to give back to their communities. Charlene volunteered with the Logan Square Neighborhood Association (LSNA) youth group where she developed strong relationships with the teens and served as a mentor and positive role model. As part of LSNA, Charlene worked on advocating for issues that include: funding for youth programming, affordable housing, and immigration. Her passion for youth development led her to work with The Young People's Project (YPP). Charlene began her tenure at YPP in 2003 as a College Math Literacy Worker and became YPP's Coordinator of Measurement and Learning over the summer of 2011. In 2005, Charlene was the Chicago Site Director and helped develop and shape the work. Throughout her work at YPP she has believed and supported YPP in developing young learners, teachers, leaders, and organizers; but most importantly she has impacted and continues to be impacted by youth.

### Transitioning to the Common Core Math Standards

**Appropriate for:** 9th, 10th, 11th, 12th grades, Administrators

**Areas of Focus:** Algebra, Advanced Algebra, Trigonometry, Pre-Calculus, Common Core Implementation, Teacher Collaboration, Teacher Professional Development

This presentation will help participants understand that we are adopting, not adapting to, the Common Core Standards and Practices. This process will mean a

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change in curriculum, lesson preparation and presentation in the classroom, and emphasis on student investigation, discovery, and conclusion using a variety of mathematical methods. The presentation will address the "mile wide and inch deep" criticism of the current high school math curriculum. The goal is to emphasize depth, understanding, and application to real life situations. Participants will experience hands-on problems, discussion questions, and interact with fellow educators on the topic of Common Core as it relates to their own circumstances.

**Robert Cherry** is currently an adjunct math instructor at Elmhurst College. He is a retired math department chair, teacher, and coach from Wheaton Warrenville South high school, where he worked for 31 years. Additionally, he worked at Oak Park-River Forest high school and middle school, in addition to serving as a consultant for the state of Illinois for three years. He has taught at Wheaton College, the College of DuPage, and Triton College, and he is a certified Common Core and National Council of Teachers of Mathematics presenter. He holds a M.A. + 60 academic level.

### **Molecular Origami for Biochemistry: Beautiful Paper Models for your Classes**

**Appropriate for:** 7th, 8th, 9th, 10th, 11th, 12th

**Areas of Focus:** Biology, Chemistry, Math, Science, and Arts, Experiential Approaches

Participants in this workshop will construct accurate paper models of important biological molecules such as cellulose, starch (amylose and amylopectin), DNA, and/or a protein for use in their own classes. These models are affordable, easy to construct, and allow educational activities that are impossible with other kits. The starch models can be used to illustrate the storage and release of energy, while the protein and DNA models can be used to extend student understanding of molecular structure to large systems. We will discuss the advantages and disadvantages of the model, and then use a scissors to cut individual glucose units from the starch as a way to represent of the release of fuel for conversion to energy.

**Charles Abrams** has taught organic chemistry and biochemistry at Truman College for the past twelve years. He also organizes professional development workshops for science teachers, and conducts research on insect pheromones and water quality analysis with teachers at several K-12 schools.

### **STEM in Action: Engineering Helpful Hydrogels for Feeding, Healing, and Fueling our World**

**Appropriate for:** 7th, 8th, 9th, 10th, 11th, 12th

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**Areas of Focus:** Biology, Chemistry, Earth Science, Physics, Algebra, Physics, Nanoscience, Biotechnology, Geometry, NGSS Implementation, Common Core Implementation, Math, Science, and Language, Inquiry-Based Approaches, Teacher Collaboration, Teacher Professional Development, 21st Century Skills

In this engineering-focused session, participants will engage in hands-on scientific and engineering practices as they investigate and create remarkable types of polymers called hydrogels. These polymers have a vast array of current and potential applications—especially in health, agricultural, environmental and food sciences—such as in wound care, pharmaceutical drug delivery, tissue engineering, water/soil conservation, nutrient enrichment, flood control, oil spill cleanup, and food processing. Participants will generate questions as they explore the applications, structures, and engineering of these polymer hydrogel beads and worms. They will develop simple models, plan and carry out an investigation regarding which types of solutions form the "best" hydrogel beads/worms. Participants will be led through the process of analyzing and interpreting their data, constructing explanations, and engaging in argument from evidence. Participants will explore how these investigations exemplify the NGSS and Common Core Mathematics as they learn content by engaging in science and engineering practices and connecting to cross-cutting concepts.

**Karen Lindebrekke**, Director of Programs of the iBIO Institute EDUCATE Center, is responsible for the development and implementation of all new and existing EDUCATE programs, which focus on hands-on teacher professional development in STEM education that exemplifies the Common Core and Next Generation Science Standards.

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