What Teachers Are Saying

How would you rate the impact of the Genes, Genomes and Personalized Medicine program on your teaching practice?

Taking the course helped remove the fear of teaching biology at a molecular level and helped me appreciate the complexity of the relationship between DNA and observable traits.

I can honestly say that this has been one of the very best professional development opportunities I have had the honor of being a part of over the course of all my years of teaching.

This course was excellent in updating my knowledge on topics I wouldn't have even thought to investigate.

I have learned ways to maintain a more student centered classroom. Models don't just help students learn...they also allow teachers to literally see the misconceptions that students have. I have also learned to inspire my students to ask deeper questions. My Genomics course, which is based almost exclusively on the models and ideas from GGPM, is framed by student questions every step of the way.

I approach the subject in a whole new light. I also have personal stories that hook the students into the material and are carried through everything we cover in biology. Rather than lecture the information, my students learn through exploring the models and observing them. This is how science works and how I encourage my students to work.

Because my knowledge of the molecular world has been greatly enriched by my participation in the course I have the confidence to deal with the questions students pose about the molecular world. **My deeper understanding has translated into a greater willingness to encourage questioning.**

The students come into class asking me 'so what are we going to be asked to do today?' During numerous classes the students are focusing on a screen and they positively seek out the change in pace.

Because my knowledge base is stronger the analogies that I use in class are far more complex, the concepts being presented have developed in subtlety. The students are far more willing to learn difficult concepts because the end goal is to improve the lives of others. The personalization of genetics has allowed for connection; genetics is no longer focused on the abstract.

The PD I received at MSOE was the best PD I have ever received which is why I continue to go back for more of their workshops.

My own knowledge of biology, chemistry, physics, and the ties across scientific disciplines has grown as a result of my participation in the workshop. I know more, so I can share more with my students. I am

comfortable sharing my knowledge with students because it was presented at the workshop in a way that built.
Genes & Genomes has completely changed the way that I teach. I am so thankful that I have had the opportunity to work with these amazing people.

I feel that my teaching has gotten more engaging and more creative as the years go by participating in the program.

GGM has impacted my teaching practice by giving me state of the art models and the most current research applied directly to my classroom. I feel that I am teaching my students at the cutting edge of our understanding of molecular processes rather than from an outdated textbook or curriculum.

I start my units with the models before I do anything else. By the time I get to the notes they regularly "know it all already"; the models have become the primary method of learning and notes are just a supplement.

Some concrete improvements to my biology course which are directly attributable to my participation in GGPM include my ability to weave a molecular story into the many molecular based topics required by my state standards. I have learned a great deal about the molecular world which makes me much more confident in using the modeling kits in my class.

I am able to teach my students with models that allow them to have a deeper understanding which feels comfortable and fun for them when "playing" with the models. It is a quicker learn and students are more engaged.

This is real life, real time, practical applications for my Biology classroom. I've learned so much that I can take back to my students, that I would never get in a textbook!

My experience in Genes, Genomes and Personalized Medicine has fundamentally changed me as a teacher in an extremely positive way.

Tim Herman and his team at the CBM are incredibly knowledgeable and have tremendous respect and regard for what teachers need to generate curiosity in students. As a result of what I learned in Genes & Genomes, I have been able to add additional strategies and molecular stories to my existing lessons in order to allow students to have more relevant conversations and apply this knowledge to the real world. It also opened my eyes to the world of modeling and using hands on tools that students can manipulate to visualize and better understand what happens inside their cells and bodies.

Overall, this is easily, by a very large margin, the BEST professional development I have had the privilege to engage in.

It has allowed me to integrate not just cutting edge research into my curriculum, but taught me how to use biomolecular models to support students' understanding of complex chemical processes.

Working with the MSOE Center for BioMolecular Modeling and teachers from all over the United States has been a definite game changer in my teaching. I have found attending professional development opportunities can add valuable insight to engaging students in learning.

This program has helped my curriculum solidify many of the concepts we teach with the models and stories. Students love the hands on activities and variety in teaching methods.

The model-based instructional tools and the Trello collaboration has added quite a few tools to my tool box at a very important time. I use some aspect of this course every day.

This workshop not only gives me materials to use in the classroom but also helps me with how to relay the information to my students in interesting and unique ways.

This program has revolutionized my approach to teaching, stepping away from the "drill and kill" lecture-mentality and more towards a student centered investigation approach

My teaching practices have been overhauled because I am beginning to think about the reality of the learning of my student and how to present it in a way that students will not only learn it, but internalize it to facilitate a life-long learning and an explorative mentality.

Instead of standing in front of the room and telling my students how DNA is replicated and how proteins are made – my students use the models to discover and test their ideas.

I am confident, resilient, and excited. I have stories that enrich the content I'm tasked to teach and can better support my students' learning. One of the most valuable professional development experiences I've ever attended.

This course empowered me with a greater understanding of biology and a greater appreciation for the curiosity that makes a good scientist. Now instead of lecturing facts I explore topics with my students. The course Genes Genomes and Personalized Medicine made me ask questions I never thought about before. Since I have adopted the teaching practices from Genes and Genomes, my students are now exploring science in a ways that they never thought about before, ways that interest them, and we as a class are on a journey of discovery together.

From the crash course on mental models to the plethora of physical models in (historical/narrative) context, the program has helped me to become a more intentional thinker and planner of learning experiences for my students and their parents.

The workshop caused me to completely rethink that way that I related genetics to protein synthesis.

What Teachers Are Saying

As a result of participating in the Genes and Genomes program, I am better equipped to encourage my students to ask good questions about the molecular world.

The models provided from CBM has enabled my students to develop a deep understanding of the molecular basis of life through the questions inspired by tangible and manipulative molecular models. My students regularly ask questions that won't officially be answered until a college level biology course.

I now ask -- what questions do you have for me? This lets the students now that they should have questions.

Questions are now a central part of my course. Although I am not using those questions as effectively as I should, my experiences in GGPM and other CBM courses are fostering my evolution as a more inquiry driven instructor and fostering a more thoughtful and creative classroom.

I can pass on these unique molecular stories and that sparks their interest in their own health and medicine. This generates a lot of curiosity on their part.

Genes, Genomes and Personalized Medicine greatly impacted my teaching practice by several different means. First, it gave me the confidence, tools, and knowledge to present the molecular world to my students in a manner that was more effective and relevant than I had ever done before. Second, it put me in touch with a team of professionals and my fellow peers with whom I shared a common goal. The positive collaboration and relationships that we developed have persisted well past those of any other workshop that I have participated in.

Absolutely! When I have the background knowledge to withstand ambiguity, I can ask my students to take bigger risks with their thinking and push the envelope of the "I wonder..." and "How come..."

It is not so much that I am better equipped to encourage my students to ask good questions about the molecular world, its through OUR explorations of the molecular world that my students feel safe now to ask questions, to wonder and explore in ways that unleash their natural curiosity.

The longer I teach the more convinced I become that without a sound and up-to-date background in their discipline, teachers are unable to challenge their students with the materials and questions necessary to understand their subject at a deep level. This program, unlike any other that I have attended over my 24 years as an educator, has given me this type of background.

As a result of Tim talking about "questions," I decided to have my students ask questions at the end of each class that can be used on an assessment. Kids are thinking about science. Parents are telling me at parent/teacher conferences that my class is the "thinking class.

What Teachers Are Saying

My classroom has become more student-centered – as result of my participation in the Genes and Genomes program.

Integrating molecular models into an existing inquiry framework has inspired my student to develop and hone their communication and meta-cognition as a group. It is truly inspiring to witness students of different abilities challenge, teach and collaborate with one another; unified together by the models.

I have always wanted for my classroom to be more student-centered, which is what caused me to seek the PD opportunities at the CBM, my experiences as part of a GGPM cohort have been very helpful in my continuing transition toward a more student-centered philosophy.

My teaching has revolved around more story telling, which intrigues the students and provides relevancy.

Students work in groups to complete activities that came from this class and they ask each other questions throughout the activities. They take more responsibility for their own learning instead of just listening to me talk.

Before I was teacher centered, I provided the lesson, the students dutifully answered my questions. Now my students must demonstrate concepts using the models from Genes and Genomes in ways that show what they understand but more importantly showing areas that they do not understand and need help in.

I have been very pleased with how I can now challenge my students to explore topics and make discoveries on their own because of the training I've had in using the models and activities designed for this course which I have purchased and use regularly.

I have changed the way I approach my lessons, incorporating more hands-on learning and allowing students to develop "what-if" and "how does it do that" questions. Students have also made connections to other areas of biology as a result of the manipulatives and class discussions.

What Teachers Are Saying

I feel as though I have become part of a larger professional learning community - as a result of my participation in the Genes and Genomes program.

I have made contacts with other teachers across the country and have not only benefited from the collegiality of networking with other professionals in teaching, but have also been able to bounce ideas and share materials to improve my lessons. My interaction with other teachers exposed me to other approaches to teaching content and raised my motivation and anticipation of getting back in the classroom to try new things.

My students have asked me some really tough questions as a result of the modeling activities I use in my classroom. Any time I am unable to find the answer the staff at MSOE and my cohort members are always willing to help. Some of my cohort members and I are still in touch and share materials on a regular basis.

When I collaborate with my fellow Genes and Genomes cohort I feel at home with likeminded explorers, I feel vindicated in what I am trying to do in my classroom, I feel empowered with support.

I have become a part of a professional learning network that allows me to ask questions, explore topics, and gain resources to share with students.

The way that the program has been designed and the professionalism, encouragement of the staff, as well as their commitment to helping teachers challenge students with amazing materials has renewed my enthusiasm for my own subject as well as well as for teaching.

Honestly, the teachers in the program and the staff of CBM have become the most important influences on my practice. That's saying a lot, because I've had a lot of great mentors in my life!

The type of teacher that attends the workshops, is a happening educator. Because of the nature of the course we get to know the pros and cons of everyone's work life and become comfortable about the idea of sharing teaching practices. I have incorporated a number of new teacher ideas because of emails that I have received.