

## MSU Fellows Share their Research with Middle School Students

Pairs of Fellows— one science and one math—give lessons that move seamlessly (usually) between math and science, inspiring students from diverse backgrounds.

Interdisciplinary lessons include extracting DNA from strawberries; decoding the genetic code; finding mutations on an autorad; making a Frankenstein (transgenic) organism; burning snack foods; growing bacterial cultures; seeing invisible fields; measuring pace length; and finding area under a curve. Other topics include lima bean toxicology; giant gel electrophoresis; bug heredity; osmosis in potatoes; leaf chromatography; chemistry of fizz; titration using calibration curves; vectors; nanotechnology (scientific notation); nanotools (Legos with oven mitts); instabilities in ferrofluid; a neat way to organize numbers (matrix); check digits (modulo arithmetic); menu variables (solving linear equations); bungee M&Ms (Hooke's law); and a surprising discussion of hydrogen hydroxide lab safety

Our theme this year is populations and ecosystems (a FOSS kit). Field trips include the Great Swamp, Sandy Hook Bay, and math/science day at MSU. The Fellows and teachers traveled to Panama, where they held an exciting teleconference with students back home. The most important thing we have learned in our three years is that integrated lessons are greatly enhanced when Fellows teach in pairs as documented by our qualitative research.

