What Will You Teach with CRISPR?

**Ethics**
- Germline vs. somatic changes
- Potential for powerful cures/therapies
- Release of gene drives into ecosystem
- Safety
- Non-medical enhancements
- Informed consent
- Justice and equity
- DIY science

**Natural History**
- Adaptive immune system in archaea and bacteria
- Safeguard against bacteriophages
- DNA repair mechanisms

**Regulation**
- Lack of global regulations
- Varied stakeholders
- No established safeguards against off-target effects

**Legal**
- Patent wars between research institutions

**Impact**
CRISPR Publications:

1987
1st report on CRISPR published

2002
“CRISPR” name coined

May 2012
1st patent application submitted for CRISPR-Cas 9 technology by Doudna, Charpentier (UC Berkeley, U. of Vienna)

April 2012
1st commercialization of CRISPR-Cas9 technology for pizza cheese by DuPont

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US Scientists edit mosquito genome to combat malaria

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**Transformative Science**
So much more than a bacterial transformation
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- Immunotherapies
- Cures for genetic diseases
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Get ready to teach CRISPR! Bring true CRISPR gene editing into your classroom. In addition to ideas and facts from this infographic, see [bio-rad.com/outoftheblue](http://bio-rad.com/outoftheblue) for additional resources including videos, publications, and more.

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<tr>
<td>Coming soon!</td>
<td>Out of the Blue Genotyping Extension</td>
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