LC Physics Overview

courtesy of SiD
1. We need discoveries at the LHC to motivate construction of a Linear Collider.
This sets priorities for thinking about what the specific motivation will be for a Linear Collider:

SM Higgs boson needs $> 10 \text{ fb}^{-1}$ ($> 2013$)

but

$$Z^0' \rightarrow \mu^+ \mu^-$$

$$R \rightarrow t\bar{t}$$

$\tilde{g}$ with $m(\tilde{g}) = 600 \text{ GeV}$

could be discovered in the 2010 LHC run.
2. We do not need the LHC to "set the energy scale for the LC"

In all three scenarios above,

experiments at **500 GeV** or **top threshold** address key issues for dark matter and grand unification.
3. Terascale physics scenarios require LC experiments at multi-TeV energies
Once we discover the existence and nature of new physics we need to debate the urgency of experiments at ILC energy vs the strategy for the long-term program to address all aspects of this physics.