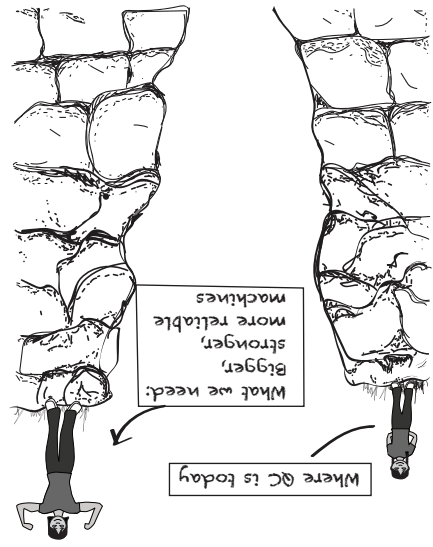# The EPiQC Challenge:

Can we make NISQ computers solve the problems of future computers?

Algorithm / NISQ Machine gap

Today we have –
Noisy (error-prone)
Intermediate
Scale (pretty small)
Quantum computers

Year →

#Qubits

1995 2000 2005 2010 2015 2020 2025

1
10
100
1,000
10,000
100,000
1,000,000

Qubits buildable

Break current-day encryption with Shor's algorithm

Boost world food production by modeling nitrogen fixation

Search large databases quickly with Grover's algorithm

MINIMUM #QUBITS NEEDED

Gap
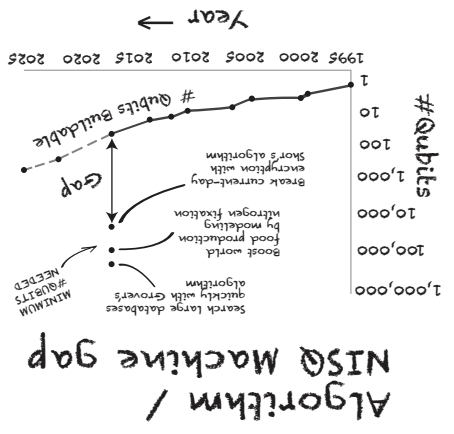
Quantum algorithms (skeletons of programs) exist, but there is a gap.

Where QC is today

What we need:
Bigger, stronger, more reliable machines

The Hope....

A Cure for Cancer

Boost world food production

Breaking cryptography
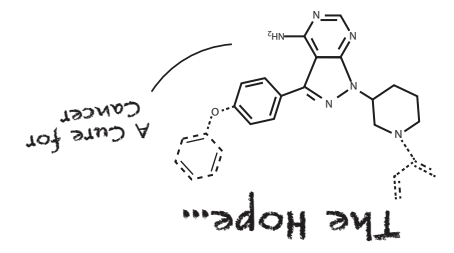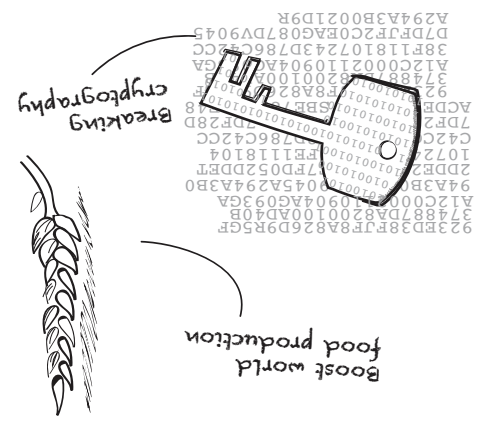
The EPiQC Approach

Develop NISQ-aware:
- Algorithms
- Languages
- Compilers
- Architecture

NISQ-aware QC

How can you join this EPiQC journey?

Learn quantum physics!

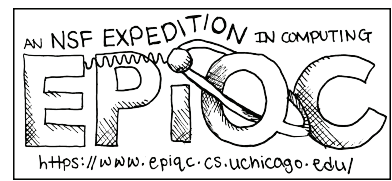Learn computer systems – architecture, compilers, languages, algorithms!

Put it together in quantum computing!
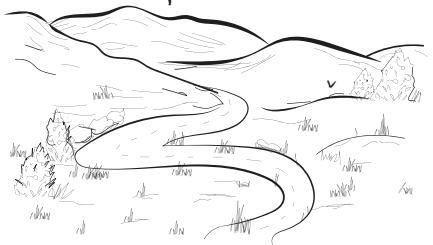
Find more Quantum Computing zines here:

https://www.epiqc.cs.uchicago.edu/resources/

Quantum Computing

Fake news?
Hype or Hope?

Mobile LTE   7:13AM   87%

@typemaster_0101
Quantum Leap!
♡

@chris_t3
Cryptography is #DEAD
♥

@gerry2tv37
Quantum BREAKTHROUGH
♡