UNIVERSITY OF TENNESSEE INSTITUTE OF AGRICULTURE

6/21/16

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UT RESEARCH FOUNDATION

utrf.tennessee.edu

UTIA OVERVIEW

UT AgRESEARCH INSTITUTE OF AGRICULTURE THE UNIVERSITY OF TENNESSEE

- Research

UT CVM INSTITUTE OF AGRICULTURE THE UNIVERSITY OF TENNESSEE

- Veterinary Medicine

UT EXTENSION INSTITUTE OF AGRICULTURE THE UNIVERSITY OF TENNESSEE

- Outreach

UT CASNR INSTITUTE OF AGRICULTURE THE UNIVERSITY OF TENNESSEE

- Teaching

FOCUS AREAS

- Animal Science
- Biosystems Engineering & Soil Science
- Entomology and Plant Pathology
- Food Science & Technology
- Plant Sciences

COOL STUFF GOING ON!

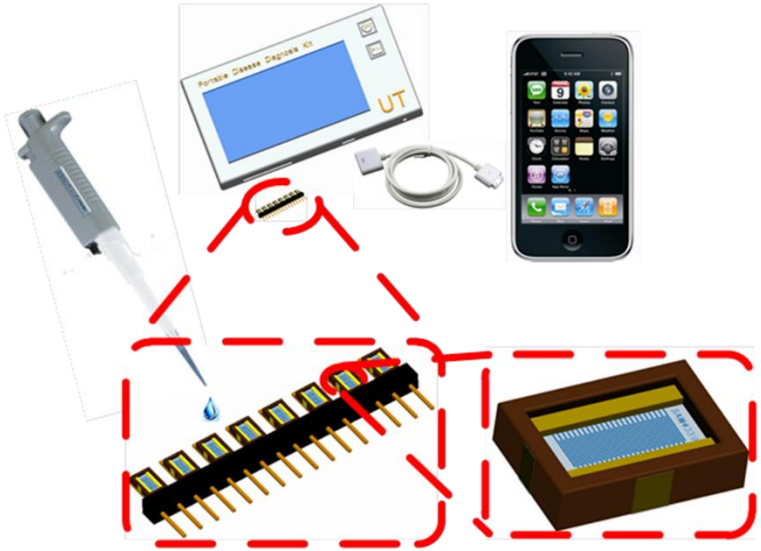
- Animal genetic traits
- Plant genetic traits
- Natural herbicides/pesticides
- Bio-based adhesives
- Antibiotic alternatives
- New animal vaccines
- Diagnostics

RAPID & EARLY DISEASE DETECTION

- Small, portable, low-cost device
- Detects DNA, proteins, antibodies, cells

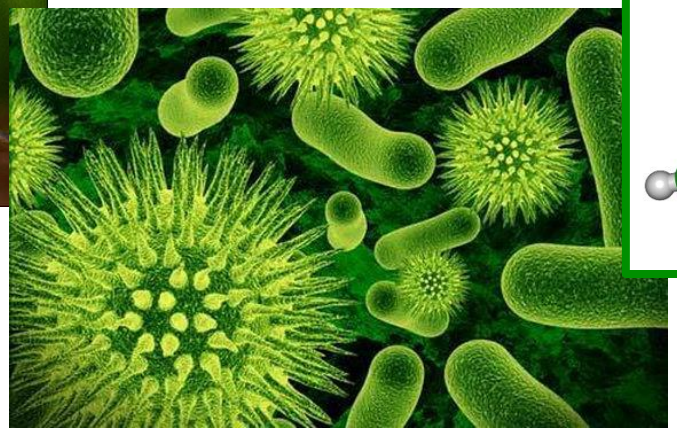
Prototype

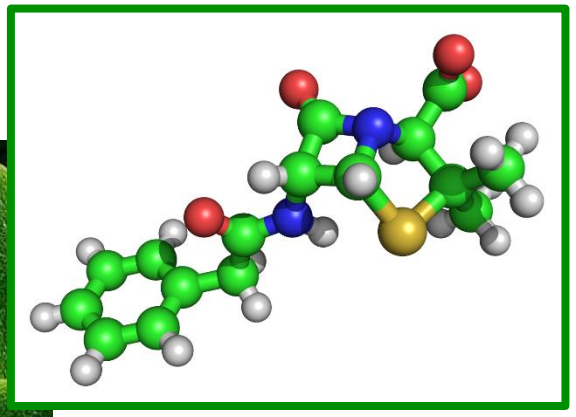
Vision



WHAT CAN IT DETECT?

- Viruses (Zika, influenza)
- Bacteria (E. coli, salmonella)
- Proteins (cancer, Alzheimer's, allergies)
- Small molecules (BPA, pesticides)



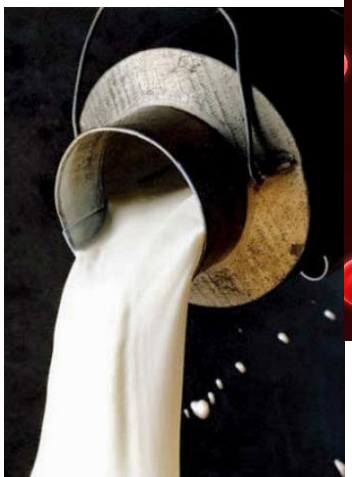


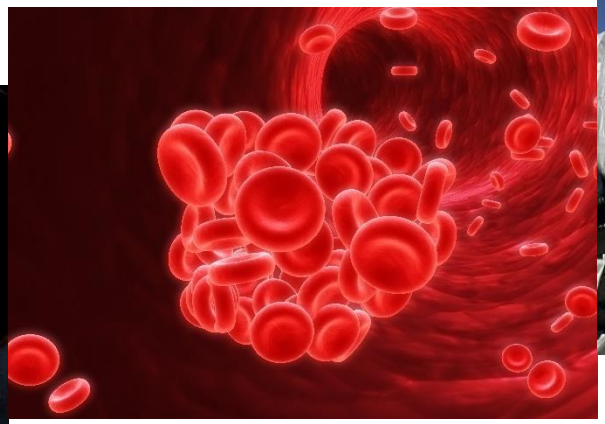
WHY IS IT BETTER?

- Cost reduction:
  - Capital
  - Sample cost
- Significantly faster
- Reduces waste

EXAMPLE APPLICATIONS

- Monitoring of mastitis in milk production
- Real-time monitoring of blood clotting during surgery
- Rapid detection of biological or chemical agents





PREDICTION OF ANIMAL HEALTH

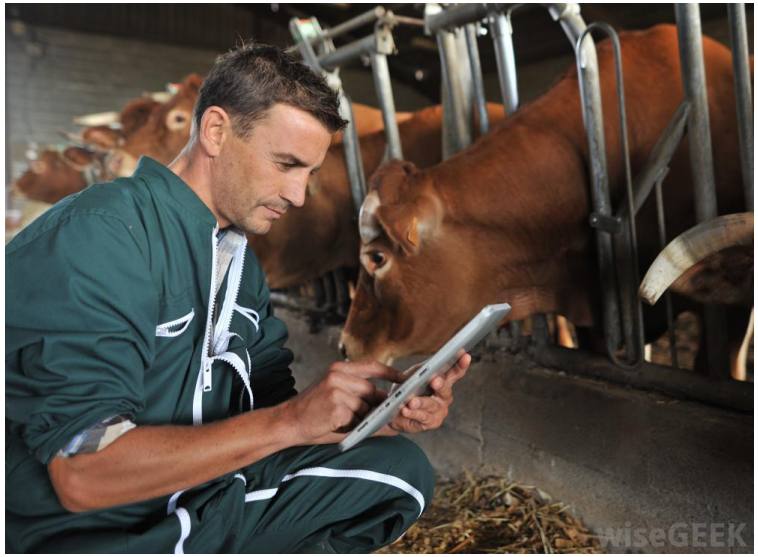
- Software and sensor-based devices
- Remotely monitor animal behavior
- Pre-clinical detection of diseases

WHAT DOES IT DO?

- Detects changes in individual animal activity patterns
- Compares with historical group patterns
- Detects disease before symptoms present

WHY IS IT BETTER?

- Saves money
- Less treatment time
- Reduces chances of early death
- Less preventative antibiotics needed



REMOTE CROP MONITORING

- Sensors, algorithms and drones to rapidly detect crop changes

HOW DOES IT WORK?

Detects:

- Plant characteristics
- Insect problems
- Other stressors

WHY WILL IT BE BETTER?

- Labor savings
- Reduces damaged crop waste
- Less pesticides needed

UTIA

Thank you!