Scientific Openness and Foreign Influence: Implications for Science and Innovation Leadership



### **Fundamental Research—Definition**

"Fundamental research means basic and applied research in science and engineering, the results of which ordinarily are published and shared broadly within the scientific community."

-National Security Decision Directive-189



# Pasteur's Quadrant—the Complexity of Research

FUNDAMENTAL UNDERSTANDING

Copenhagen interpretation Complementarity Bohr model Sommerfeld-Bohr theory BKS theory

Niels Bohr



USE-INSPIRED BASIC RESEARCH

Germ theory (w/ R. Koch) Immunology Vaccination Pasteurization

Louis Pasteur

General relativity
Special relativity
Photoelectric effect
Brownian motion
Mass-energy equivalence
Einstein field equations
Unified Field Theory
Bose-Einstein statistics

Albert Einstein



PRACTICAL
APPLICATIONS

Universal stock ticker

Automatic telegraph system
Paraffin paper
Carbon rheostat
Carbon telephone transmitter
Phonograph
Incandescent light

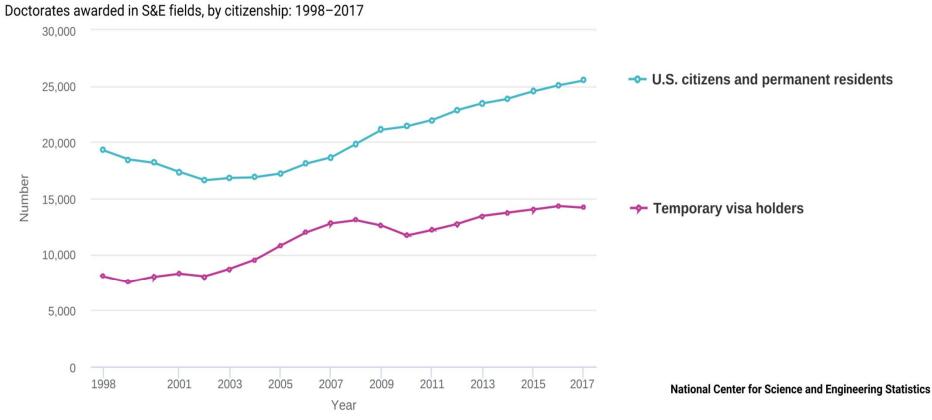
#### Thomas Edison

Magnetic ore separator Motion picture camera Fluoroscope Fluorescent electric lamp Nickel-iron-alkaline battery



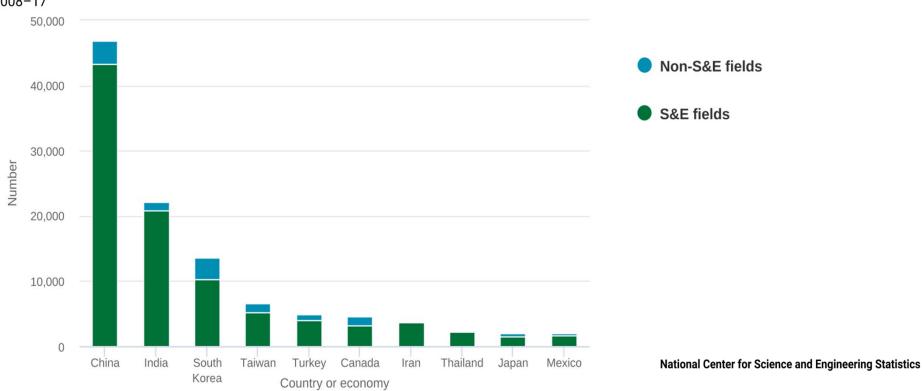
# Foreign Talent in the U.S.

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# Foreign Talent in the U.S.

Top 10 countries or economies of foreign citizenship for U.S. doctorate recipients with temporary visas: 2008–17



# Ensuring the Integrity of Federally-Funded Research:

- Conflicts of interest/commitment
- Confidentiality of merit review process
- Protection of pre-publication data



## **Ensuring the Integrity of Research**

### Shared Responsibility:

- Federal government
- Universities
- Private sector



## **Ensuring the Integrity of Research**

How can FDP use its convening power and intellectual power to assist with science and security related-issues?

How can the federal government avoid administrative burdens on grantees?

