



Air Force Basic Research

Emerging Research Institutions

Carl D. Atkison, Chief
AFRL/RBK 25 January 2019

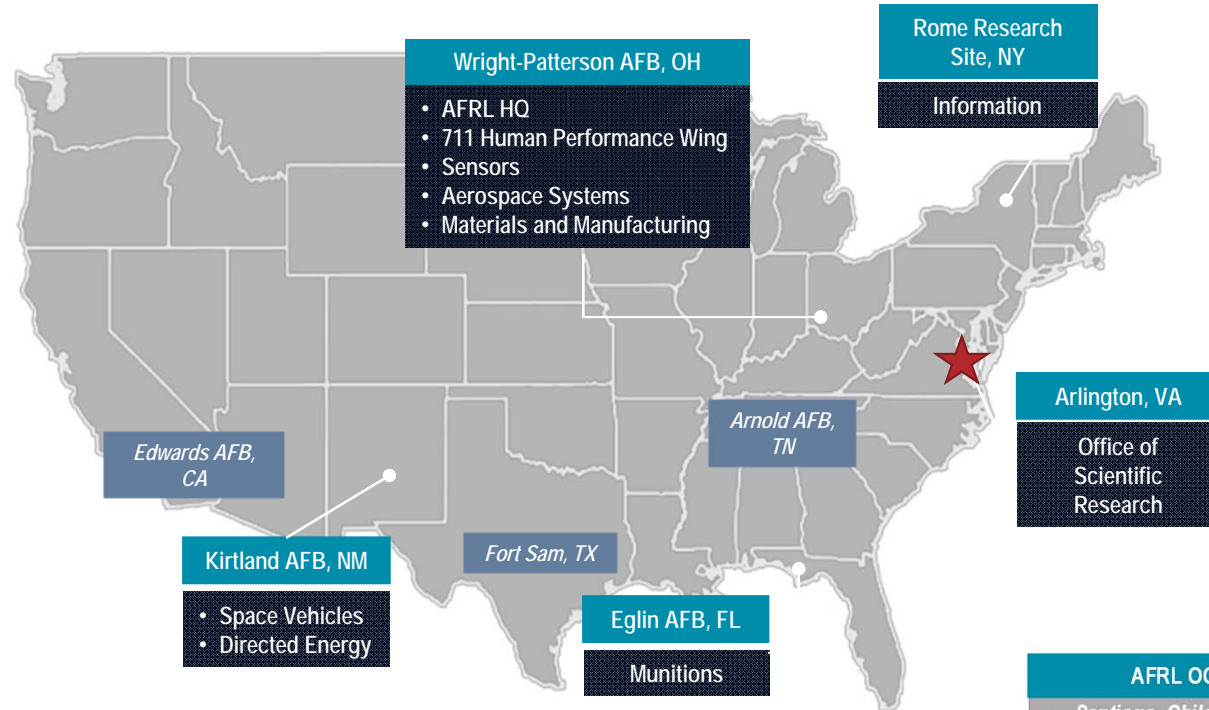
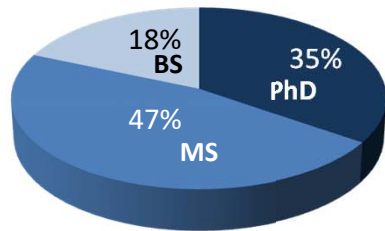
Agenda

- About us
- Our Granting Process
- Research Areas
- Opportunities
- Improving Competitiveness



About Us

LOCATIONS AND WORKFORCE



	Employees	Civilian	Military
Total	6,254	5,072	1,182
S&Es	3,611	3,041	570

www.AFResearchLab.com

About Us

AFRL TECHNOLOGY DIRECTORATES

AF Office of Scientific Research

- Physics and Electronics
- Aerospace, Chemical and Materials Sciences
- Mathematics, Information, and Life Sciences



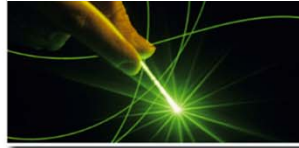
Aerospace Systems

- Aerospace Vehicles
- Control, Power and Thermal Management
- High Speed Systems
- Space and Missile Propulsion
- Turbine Engines



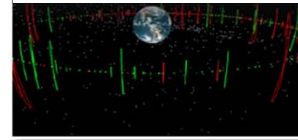
Directed Energy

- High Power Electromagnetics (HPEM)
- Laser Systems (LS)
- Directed Energy
- Electro-Optics for Space Superiority
- Weapons Modeling & Simulation (WM&S)



Information

- Autonomy, Command and Control, and Decision Support
- Processing & Exploitation
- Cyber Science and Technology
- Connectivity and Dissemination



Human Performance

- Decision Making
- Bioeffects
- Human Centered ISR



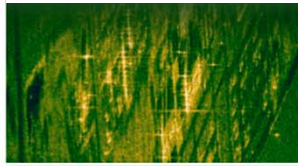
Munitions

- Ordnance Sciences
- Fuze Technology
- Terminal Seeker Sciences
- Munitions Airframe, Guidance, Navigation & Control
- Munitions System Effects Sciences



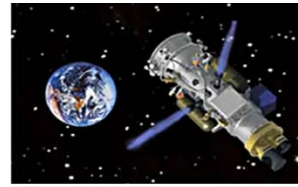
Sensors

- Spectrum Warfare
- Layered Sensing Exploitation
- Enabling Devices and Components
- RF Sensing
- EO Sensing



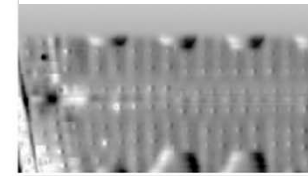
Space Vehicles

- Space Electronics
- Space Remote Sensing
- Space Environment Impacts & Mitigation
- Space Experiments
- Space Platforms



Materials and Manufacturing

- Structural Materials
- Functional Materials
- Manufacturing Technologies
- Support for Operations



About Us

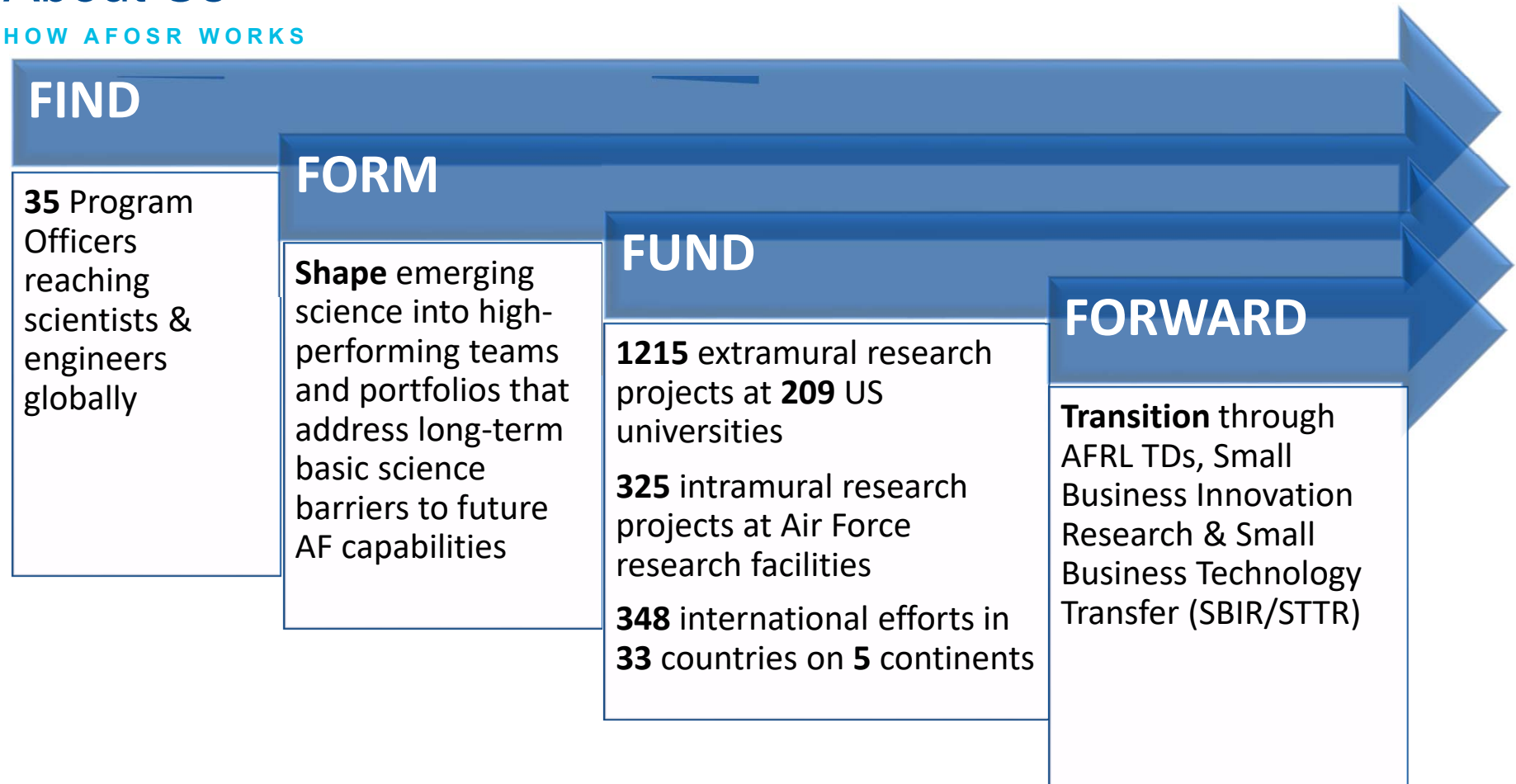
AIR FORCE OFFICE OF SCIENTIFIC RESEARCH



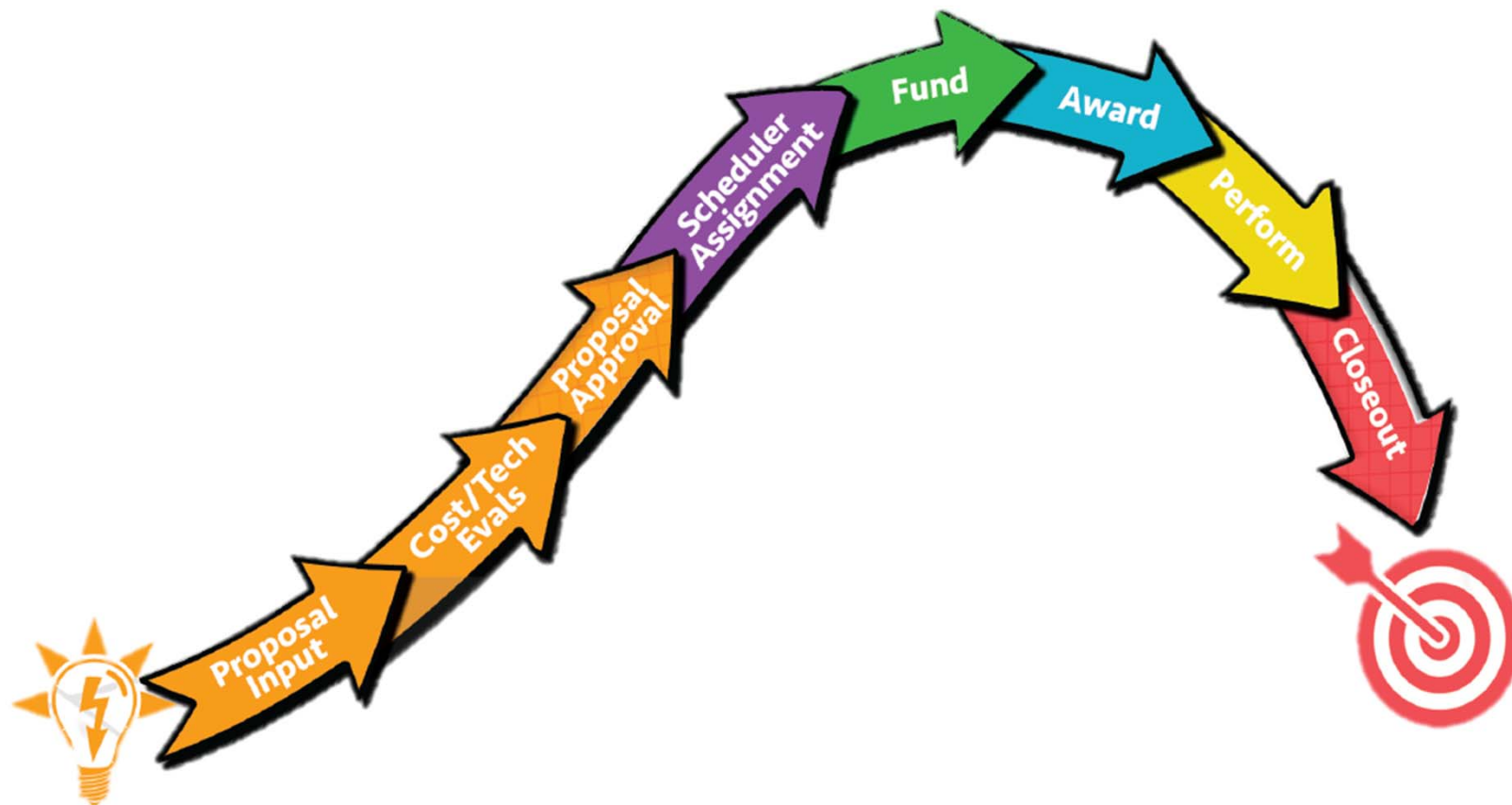
www.AFResearchLab.com

About Us

HOW AFOSR WORKS



AFOSR Granting Process



AFOSR Research Areas

AFOSR GENERAL BAA

- Outlines research areas of interest
- FA9550-18-S-0003 can be found on www.grants.gov
<https://www.grants.gov/web/grants/view-opportunity.html?oppld=305996>

Eng./Complex Systems	Information & Networks	Physical Science	Chem./Bio Science
Multi-Scale Structural Mechanics and Prognosis	Computational Cognition & Machine Intelligence	Quantum Information Science	Natural Materials & Systems
Turbulence and Transition	Information Operations and Security	Atomic and Molecular Physics	Mechanics of Multifunctional Materials and Microsystems
Test and Evaluation	Dynamic Data Driven Applications Systems	Ultrashort Pulse Laser-Matter Interactions	Human Performance and Biosystems
Flow Interactions and Control	Systems and Software	Remote Sensing and Imaging Physics	Organic Materials Chemistry
Energy Conversion and Combustion Sciences	Trust and Influence	Optoelectronics and Photonics	Molecular Dynamics and Theoretical Chemistry
GHz-THz Electronics	Science of Information, Computation and Fusion	Aerospace Materials for Extreme Environments	Biophysics
Dynamic Materials and Interactions	Computational Mathematics	Quantum Electronic Solids	
Low Density Materials	Dynamics and Control	Electromagnetics, Sensing, Surveillance, and Navigation	
Space Propulsion and Power	Complex Networks	Plasma and Electro-Energetic Physics	
Aerothermodynamics	Optimization and Discrete Mathematics	Laser and Optical Physics	
		Space Sciences	

AFOSR Funding Opportunities

FOUNDATIONAL GRANTS

- Traditional Grants*
- Historically Black Colleges and University/Minority Serving Institution Grants
- Young Investigator Grants

ADD'L FACULTY PROGRAMS

- Multidisciplinary University Research Grants
- Instrumentation Grants
- Small Business Tech Transfer Grants/Contracts
- AFRL Science and Technology Fellowships
- Summer Faculty Fellowships
- Center of Excellence Grants
- Foreign Exchange Experiences

STUDENT PROGRAMS

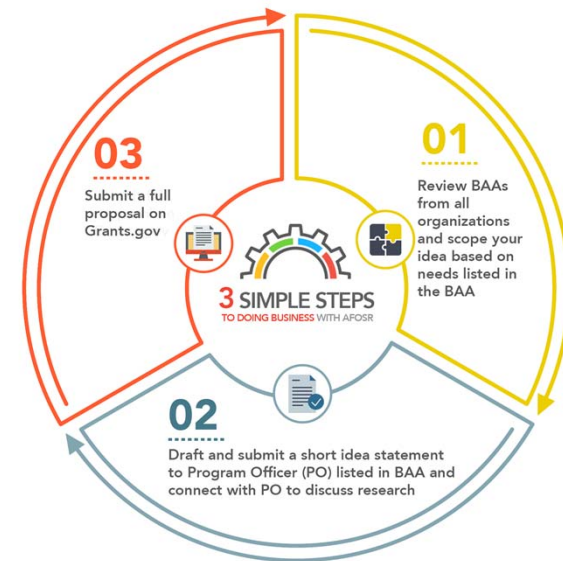
- Undergraduate Research Experiences
- Graduate Fellowships
- AFRL Internships
- Foreign Exchange Experiences

* Traditional grants can be awarded year round from the general BAA, while other opportunities may have specific solicitations, deadlines and qualification criteria. Carefully follow guidance on www.grants.gov for the opportunity of interest.

Improving Competitiveness

DOING BUSINESS WITH AFOSR

- **Engage with AFOSR PO researchers** to discuss your idea statement
- Promising ideas may begin an ongoing dialogue leading to full proposal submission
- Throughout your working relationship with AFOSR, you can expect an AFOSR PO to take on a number of roles:
 - Topical / Program Expert
 - Educator / Communicator
 - Team Builder
 - Advocate
 - Evaluator
 - Administrator
 - Active Member of AFRL, DoD & Scientific Communities



Improving Competitiveness

DOING BUSINESS WITH AFOSR

- **Attend grant writing courses**
- In general, a good proposal is one that includes:
 - Strong technical merit
 - Air Force relevance
 - Solid budget justification
 - Consideration given to every requirement stated in the BAA

Improving Competitiveness

DOING BUSINESS WITH AFOSR

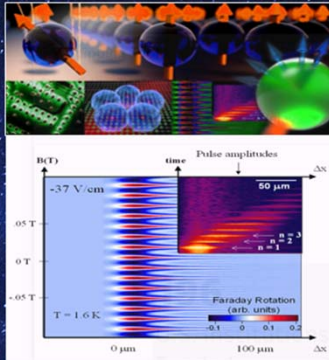
- **Understand funding considerations**
- AFOSR receives far more good proposals than it is able to fund every year
- POs must factor many other considerations into funding decisions. Those include, but aren't limited to:
 - Overlap with program interests and connecting to DoD labs
 - Potential for scientific breakthroughs
 - Strategic directions
 - Budget realities
 - Peer review recommendations

Improving Competitiveness

DOING BUSINESS WITH AFOSR

- **Look for opportunities to forge partnerships**
- Once funded, remain engaged and continue with the process by
 - Reviewing BAAs
 - Attending program reviews
 - Collaborating with other PIs in the program
- Seek out Center of Excellence BAAs
 - University-led efforts, sponsored by 1+ AFRL Technology Directorate and AFOSR
 - Prime opportunity for academic engagement and student pipeline
 - Nominal three-year arrangement, with two-year renewal option
 - AFRL and University share costs (with AF investment up to \$500K/year)

Professor David Awschalom, University of California Santa Barbara: Quantum Information Processing/Spintronics



"I am extremely grateful to the AFOSR for launching my career at the University of California, and for **having the courage to fund ambitious, high-risk research**. Without their **steadfast support** and thoughtful guidance, the field of quantum spintronics would almost certainly not be where it is today." - Dr. Awschalom

Questions?