



# AFRL

Air Force Research Laboratory  
Air Force Office of Scientific Research (AFOSR)  
Overview  
DEPSCoR Day  
Portland Museum of Art

**Dr. IRINA PALA**

DEPUTY CHIEF/SCIENCE AND ENGINEERING DIVISION

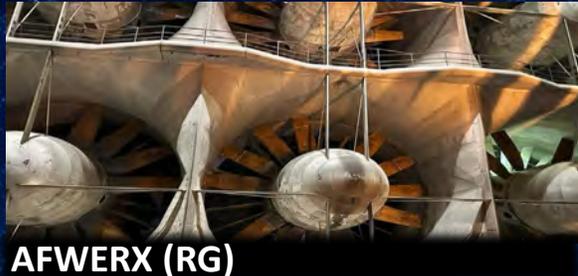
24 OCTOBER 2023



# Air Force Research Laboratory (AFRL) Enterprise At-a-Glance



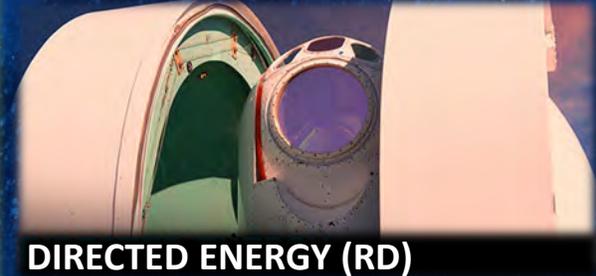
**AEROSPACE SYSTEMS (RQ)**



**AFWERX (RG)**



**BASIC RESEARCH (AFOSR)**



**DIRECTED ENERGY (RD)**



**HUMAN PERFORMANCE (711<sup>th</sup>)**



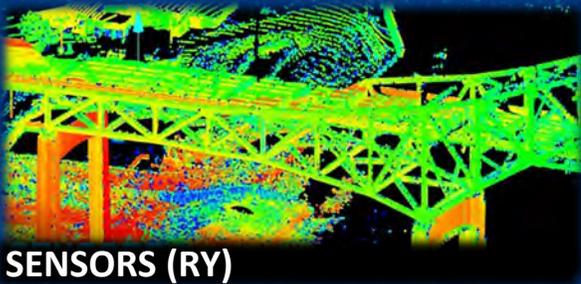
**INFORMATION (RI)**



**MATERIALS & MANUFACTURING (RX)**



**MUNITIONS (RW)**



**SENSORS (RY)**



**INTEGRATED CAPABILITIES (RS)**



**SPACE VEHICLES (RV)**



# Who We Are



A small organization with a big mission ...

to Discover, Shape, Champion and Transition High Risk Basic Research to profoundly impact the future Air and Space Force



Scientists & Engineers and Business Professionals

- Active-duty Air & Space Force
- All-service veterans
- Renowned academics
- Passionate civil servants



A global network of talent

We partner, grow and discover with a global network of the greatest scientific minds in the world, pulling them into our ecosystem, launching career trajectories, and strengthening their contributions to national defense.

**We are the Basic Research Arm of the Department of the Air Force and AFRL**



# AFRL/AFOSR Mission & Span of Influence



**AFOSR's Mission** is to Discover, Shape, Champion, and Transition High Risk Basic Research to profoundly impact the future Air and Space Force

**Core Mission** - With a broad, long-term perspective, we identify areas for investment and collaboration to advance the Department of the Air Force's (DAF) research and development enterprise across the full spectrum of air, space, and cyber operations. We build bridges to the world's most prestigious universities and talented researchers to enhance partnerships and provide revolutionary science and technology discoveries to the Warfighter.

**Span of Influence** - 60+ World-class Subject Matter Experts manage 1,600+ grants at over 300 leading academic institutions across 50 states and 65 countries, 150 industry-based contracts, and more than 230 internal AFRL research efforts.

*Inherent in our mission, we strive to strengthen and shape the Science and Engineering talent pipeline through targeted outreach, research, internships, and fellowship programs to include a focus on Historically Black Colleges and Universities and Minority Serving Institutions. Fund DAF's K-12 STEM Outreach at 30+ bases supporting 500+ competitions!*

## DAF Link to Academia



## Global Footprint and Reach



## STEM Outreach Impact





# What We Do





# AFRL/AFOSR Science Divisions

**IO Director**  
**Int'l Science Division**  
*Col Timothy Russell, PhD (UK)*



**Science & Engineering**  
**Division Chief**  
*Col Brian Vesey*



**Deputy Division &**  
**Branch Chief,**  
**North America**  
 VACANT

**IO Tech Advisor**  
*Dr. Barrett Flake*  
 (UK)



**Deputy Division Chief**  
**Science & Engineering**  
**Division Chief**  
*Dr. Irina Pala*



**Science &**  
**Engineering**  
**Tech Advisor**  
*Dr. Milton "Van"*  
*Blackwood*



**Branch Chief,**  
**Europe**  
*Lt Col Charlton "David"*  
*Lewis II (UK)*



**Branch Chief,**  
**South America**  
*Col Roger Greenwood*  
*PhD (Brazil)*



**Engineering & Info**  
**Sciences Branch Chief**  
*Lt Col Katrina Schweiker*



**Physical &**  
**Biological Sciences**  
**Branch Chief**  
*Dr. Kera Lawson*



**Branch Chief,**  
**Asia**  
*Dr. Christopher Drew*  
 (Japan)



**Australia Lead**  
*Lt Col David Newell*  
 (Australia)



**Program Coordinators**  
**Branch Chief**  
*Neville Thompson*





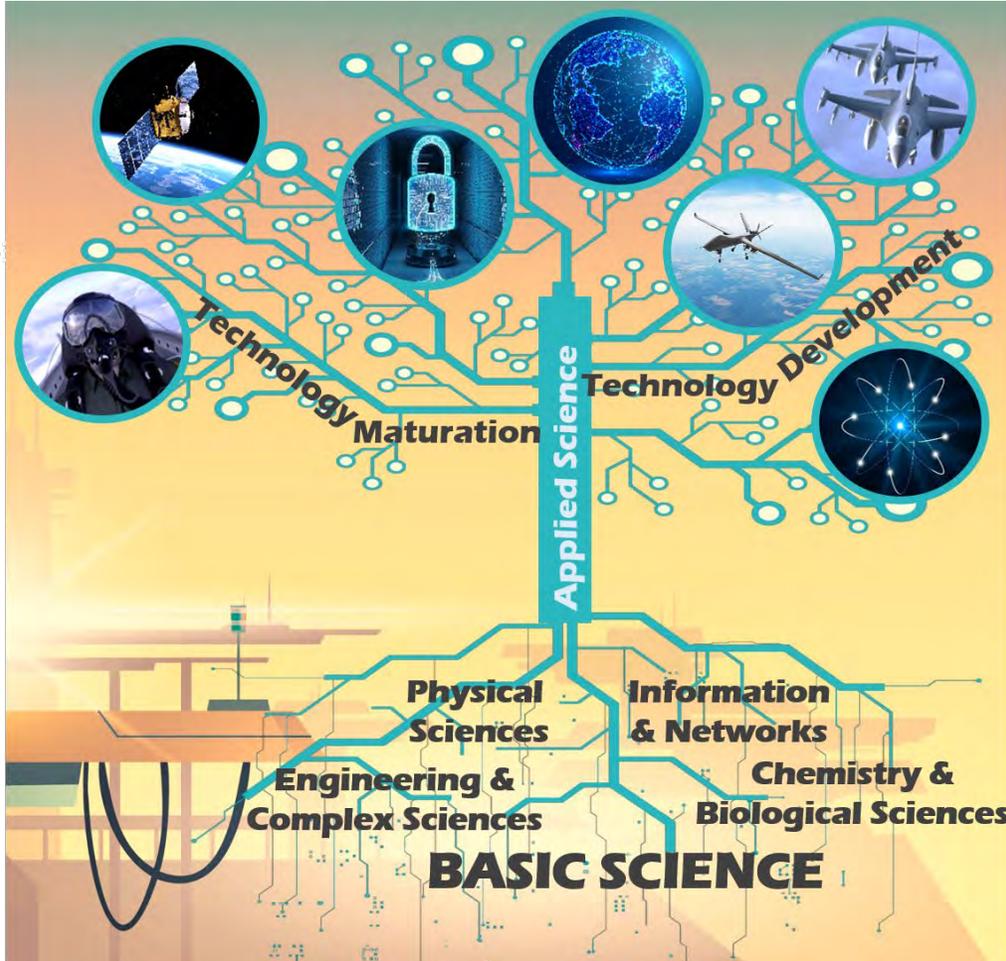
# AFRL/AFOSR Science & Engineering Portfolio Areas

Engineering and Complex Systems	Information and Networks	Physical Sciences	Chemistry and Biological Sciences	International Office
Dynamic Materials and Interactions	Computational Cognition and Machine Intelligence	Aerospace Materials for Extreme Environments	Biophysics	Asian Office of Aerospace R&D Tokyo, Melbourne
GHz-THz Electronics	Computational Mathematics	Atomic and Molecular Physics	Human Performance and Biosystems	European Office of Aerospace R&D London
Energy, Combustion, and Non-Equilibrium Thermodynamics	Dynamical Systems and Control Theory	Electromagnetics	Mechanics of Multifunctional Materials and Microsystems	Southern Office of Aerospace R&D Santiago, São Paulo
Unsteady Aerodynamics and Turbulent Flows	Dynamic Data and Information Processing	Condensed Matter Physics	Molecular Dynamics and Theoretical Chemistry	North America - Arlington
High-Speed Aerodynamics	Information Assurance and Cybersecurity	Optoelectronics and Photonics	Natural Materials and Systems	
Aerospace Composite Materials	Mathematical Optimization	High Energy Radiation-Matter Systems (HERMeS)	Organic Materials Chemistry	
Multiscale Structural Mechanics and Prognosis	Science of Information, Computation, Learning, and Fusion	Quantum Information Sciences	Life Sciences for Space	
Propulsion and Power	Trust and Influence	Physics of Remote Sensing		
Agile Science of Test and Evaluation (T&E)	Complex Networks	Space Science		
	Cognitive and Computational Neuroscience	Ultrashort Pulse Laser-Matter Interactions		
		Astrodynamics		





# Why We Do What We Do



"BASIC RESEARCH LEADS TO NEW KNOWLEDGE. IT PROVIDES THE SCIENTIFIC CAPITAL. IT CREATES THE FUND FROM WHICH THE PRACTICAL APPLICATIONS OF KNOWLEDGE MUST BE DRAWN.

NEW PRODUCTS AND NEW PROCESSES DO NOT APPEAR FULL-GROWN. THEY ARE FOUNDED ON NEW PRINCIPLES AND NEW CONCEPTIONS, WHICH IN TURN ARE PAINSTAKINGLY DEVELOPED BY RESEARCH IN THE PUREST REALMS OF SCIENCE."

— SCIENCE, THE ENDLESS FRONTIER

**Our Job is to Discover the Basic Research that will Protect the Future Department of the Air Force!**



# How We Accomplish Our Mission

## Technology Transition

- Small Business Innovation Research (SBIR)/Small Business Technology Transfer (STTR) Program
- Partnerships for Transition

## Strengthening Academic Research Capabilities

- Multidisciplinary University Research Initiative (MURI) Program
- Defense University Research Instrumentation Program (DURIP)
- Presidential Early Career Award for Scientists and Engineers (PECASE)

## Workforce Development

- Awards to Stimulate and Support Undergraduate Research Experiences (ASSURE)
- National Defense Science and Engineering Graduate Fellowship Program (NDSEG)
- Pre K-12 STEM

## Basic Research Traditional Grants

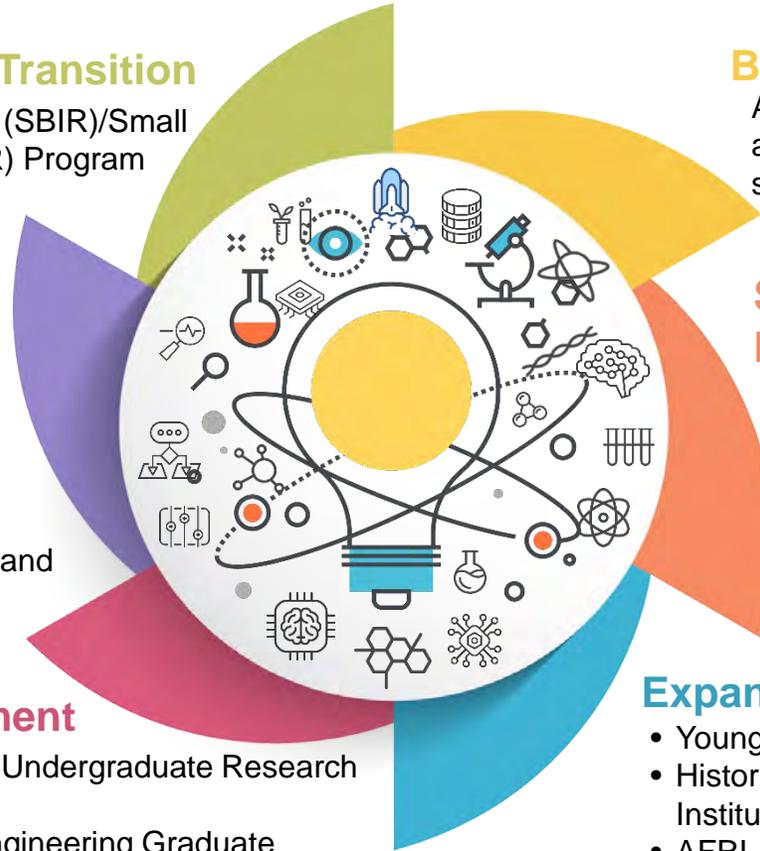
All qualified, responsible organizational applicants from academia, the non-profit sector, and industry are eligible to submit research proposals.

## Strengthening Air & Space Force Research Capabilities

- US Air Force Academy Program
- Summer Faculty Fellowship Program (SFFP)/Science & Technology Fellowship Program (STFP)

## Expanding Air & Space Force Academic Reach

- Young Investigator Program (YIP)
- Historically Black Colleges & Universities/Minority Serving Institutions (HBCU/MSI) Program
- AFRL Basic Research National Science Portals (NSPs)



**Diversified investment strategy for maximum discovery potential**



# How to Work with Us

## Review Broad Agency Announcements

- Researchers should visit [www.grants.gov](http://www.grants.gov) – the official source for finding and applying to Federal grants
- Find opportunities that match interests. Search by:
  - Keyword
  - Eligibility
  - Category
  - Agency etc.
- Study and keep current with BAAs
- Attend program reviews to understand the directions and needs of program

The screenshot shows the Grants.gov search results page. On the left, there are search filters for 'BASIC SEARCH CRITERIA' (Keyword, Opportunity Number, CFDA), 'OPPORTUNITY STATUS' (Forecasted, Posted, Closed, Archived), and 'FUNDING INSTRUMENT TYPE' (All Funding Instruments, Cooperative Agreement, Grant, Other, Procurement Contract). The main area displays a table of 2385 matching results, sorted by 'Posted Date (Descending)'. The table columns are Opportunity Number, Opportunity Title, Agency, Opportunity Status, Posted Date, and Close Date. Some rows are highlighted in blue.

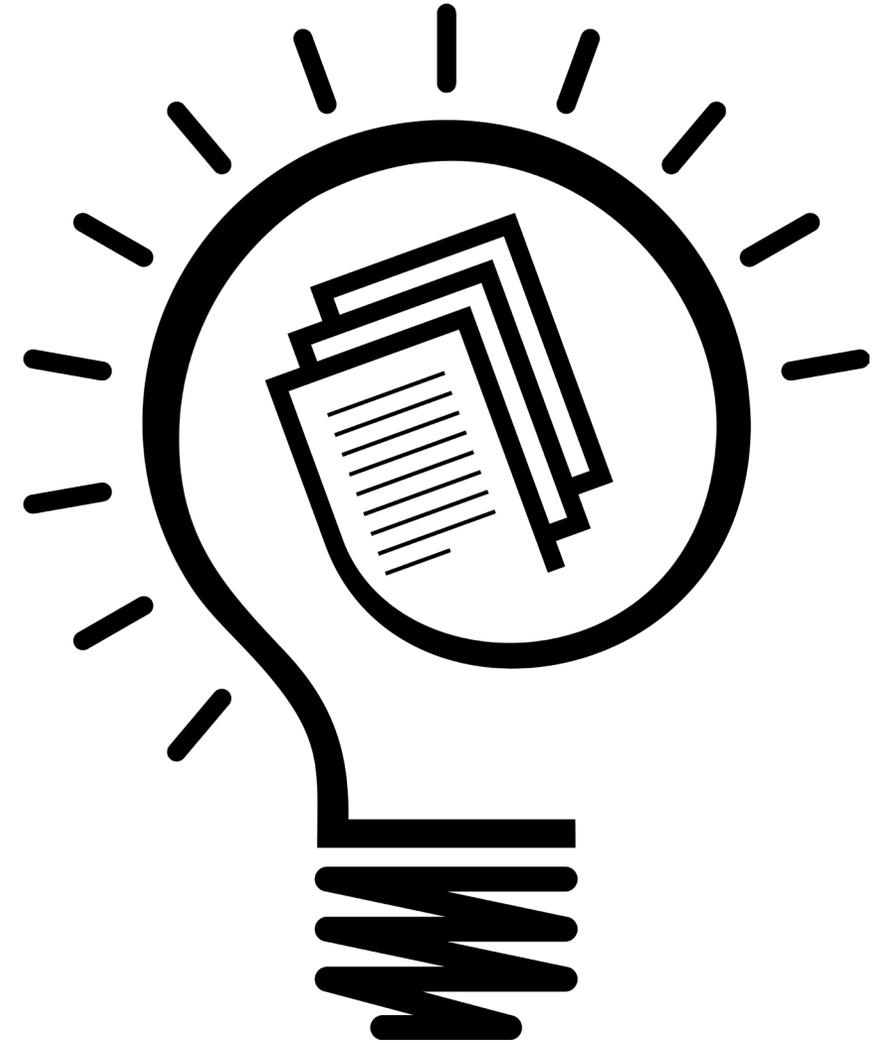
Opportunity Number	Opportunity Title	Agency	Opportunity Status	Posted Date	Close Date
PAR-19-027	Basic Neurodevelopmental Biology of Circuits and Behavior (R01 Clinical Trial Not Allowed)	HHS-NIH11	Posted	10/17/2018	02/04/2019
PAR-19-028	Basic Neurodevelopmental Biology of Brain Circuits and Behavior (R21 Clinical Trial Not Allowed)	HHS-NIH11	Posted	10/17/2018	02/04/2019
PA-19-029	Innovation Corps (i-Corps) at NIH Program for NIH and CDC Translational Research (Admin Supp Clinical Trial Not Allowed)	HHS-NIH11	Posted	10/17/2018	04/28/2019
HHS-2019-ACF-OPRE-PD-1548	Human Services Interoperability Innovations	HHS-ACF-OPRE	Forecasted	10/16/2018	
HHS-2019-ACF-ACYE-EV-1547	Family Violence Prevention and Services Discretionary Grants, Capacity Building and Program Technical Assistance for Family Violence Prevention and Services Act Formula Grantees	HHS-ACF-FY56	Forecasted	10/16/2018	
	Fish and Wildlife Management Assistance	DOH-FWS	Posted	10/16/2018	10/22/2018
	Lymphatics in Health and Disease in the Digestive System (R01 Clinical Trial Not Allowed)	HHS-NIH11	Posted	10/16/2018	02/21/2019
	US Mission to Viet Nam/Comstate General in HCMC: Annual Program Statement of Public Diplomacy Programs	DOS-VNM	Posted	10/16/2018	06/01/2019
	Family-to-Family Health Information Centers - Montana	HHS-IHSA	Posted	10/16/2018	01/15/2019
JOVAN-10162018	2018 Targeted Aished Grant Program	EPA	Posted	10/16/2018	01/04/2019
	Establishing a Family Justice Center in Moldova	DOS-NL	Posted	10/16/2018	12/17/2018
ILDOVAN-10162018	Legal Socialization in Moldovan Schools	DOS-NL	Posted	10/16/2018	12/17/2018
	Coastal Wetlands Planning, Protection and Restoration	DOH-FWS	Posted	10/15/2018	12/13/2018
	U.S. Embassy Brussels FY2019 Annual Program Statement - Individuals	DOS-BEL	Posted	10/15/2018	07/19/2019
	U.S. Embassy Brussels FY2019 Annual Program Statement - Organizations	DOS-BEL	Posted	10/15/2018	07/19/2019
	U.S. Mission to South Africa: Ambassadors Fund for Cultural Preservation	DOS-ZAF	Posted	10/15/2018	11/30/2018
	U.S. Mission to South Africa: Ambassadors Fund for Cultural Preservation	DOS-ZAF	Posted	10/16/2018	11/30/2018
	AFCP 2019 Small Grants Competition	DOS-MDA	Posted	10/15/2018	12/13/2018
	Ryan White HIV/AIDS Program Part D - Women, Infants, Children, and Youth (WICY) Grants Supplemental Funding	HHS-IHSA	Posted	10/15/2018	01/29/2019
	Chesapeake Bay Division (CBA) Final	EDS	Posted	10/15/2018	11/17/2018





## How to Work with Us Scope and Draft Idea Statement

- Statement doesn't have to be all-inclusive, but should address the unique value proposition of the research
- Statement needs to be specific enough that it catches the interest of the Program Officer





# How to Work with Us

## Connect with a Program Officer

- At this point, some Program Officers will want a specifically formatted white paper
- Others will want to have a conversation
  - In person
  - Over the phone
  - Via email
- If the idea seems promising, a Program Officer will initiate an ongoing dialogue setting expectations and explaining the process for full proposal submission.





# How to Work with Us

## Determine the Correct Funding Mechanism

- There are many different mechanisms for universities to obtain basic research grant funding:
  - Traditional grants
  - University Research Initiatives (i.e. Multidisciplinary University Research Initiative (MURI), Defense University Research Instrumentation Program (DURIP))
  - Special Programs (i.e. HBCU/MSI, DEPSCoR, Young Investigator Program (YIP), Presidential Early Career Awards for Scientists and Engineers (PECASE))
- Traditional grants can be awarded year-round from the general Broad Agency Announcement
- Other opportunities have specific deadlines



# Summary



- With a broad, **long-term** perspective, our core mission is to identify areas for investment and collaboration to **advance the DAF's research and development enterprise** across the **full spectrum of air, space, and cyber** operations.
- We build bridges to the world's most prestigious universities and talented researchers to **support ground-breaking research, enhance partnerships** and **provide revolutionary science and technology discoveries** to the Warfighter.
- The **cutting-edge basic research** identified and supported by our Program Officers and International Program Officers **create future warfighting technologies** for the Air and Space Forces, protecting the lives of those that put themselves in harm's way.



# DEPSCoR DAY AIR FORCE ATTENDEES



**Dr. Gregg Abate**  
**Unsteady Aerodynamics  
and Turbulent Flows**



**Dr. Warren Adams**  
**Mathematical  
Optimization**



**Dr. Fariba Fahroo**  
**Computational  
Mathematics**



**Dr. Chiping Li**  
**Energy, Combustion and  
Non-Equilibrium  
Thermodynamics**



**Dr. Fred Leve**  
**Dynamical Systems  
and Control**



**Dr. Kim Jacoby Morris**  
**STEM Program  
Manager**



**Dr. Erik Blasch**  
**Dynamical Data and  
Information Processing**



**Mr. Ed Lee**  
**DAF DEPSCoR  
Program Manager**



# Connect with AFRL

# Connect with AFRL/AFOSR



Student & Faculty Opportunities

Grants.Gov



AFResearchLab



AFresearchlab



Air Force Research Laboratory - AFRL



AFResearchLab

## Website

Doing Business with AFRL/AFOSR  
Announcements and Highlights

## Events

Find our BAA and Events Calendar  
Learn about Program Reviews

- <https://www.afrl.af.mil/AFOSR/>

- <https://community.apan.org/wg/afosr/>
- <https://www.grants.gov/web/grants/view-opportunity.html?oppld=345653>



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#BasicResearch



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Be Our Friend  
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## LinkedIn

Connect With Us  
Search: AFOSR



## Instagram

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Mention @\_AFOSR\_  
#BasicResearch



# Questions?

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[edward.lee@us.af.mil](mailto:edward.lee@us.af.mil)