

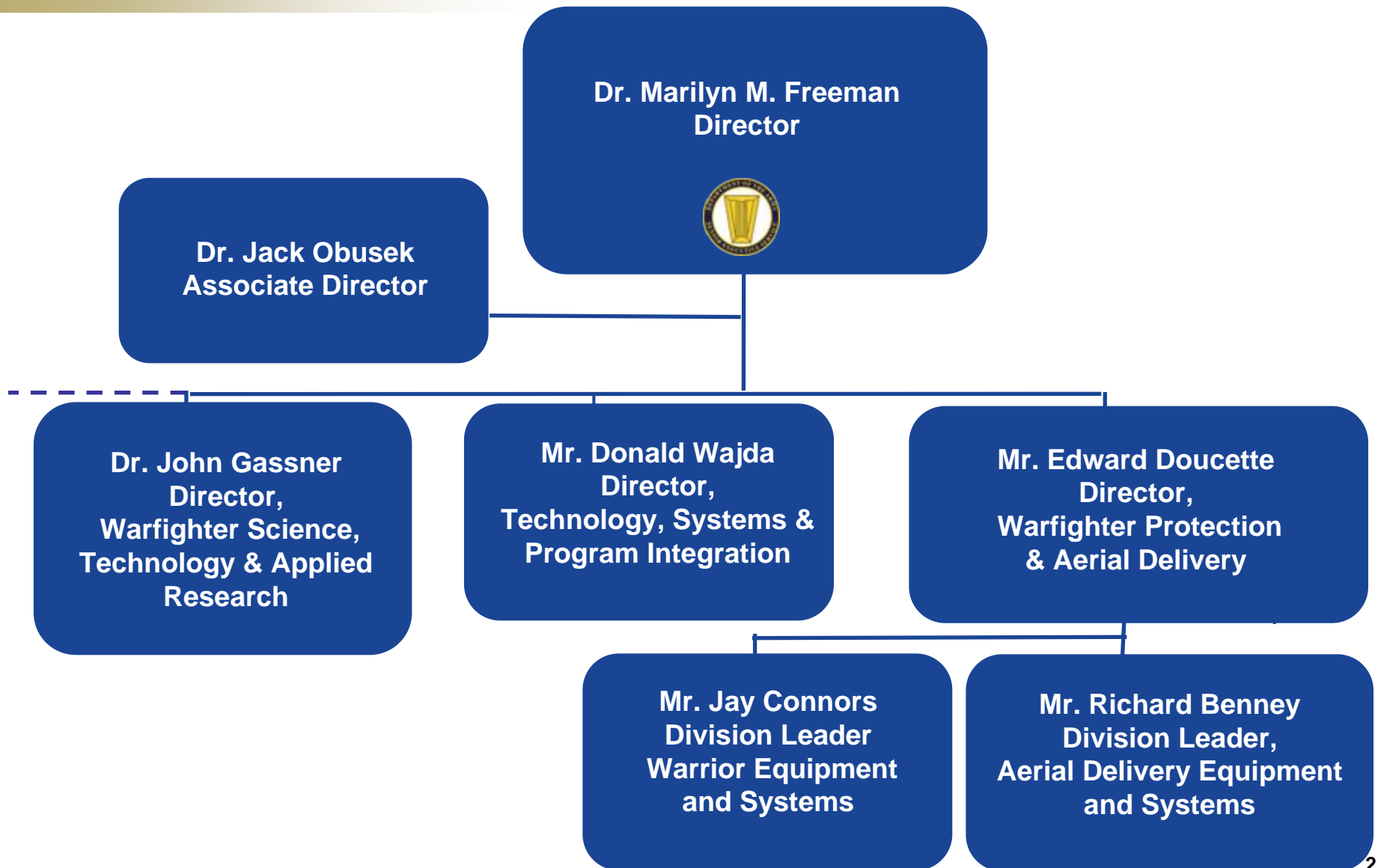


RDECOM



TECHNOLOGY DRIVEN. WARFIGHTER FOCUSED.

Relevant Members of the NSRDEC Leadership Team



- **Dr. Marilyn Freeman**
NSRDEC TECHNICAL DIRECTOR

Dr. Marilyn Miller Freeman was selected to the Senior Executive Service in September 2007 and appointed to her position as the Director of the US Army Natick Soldier Research, Development and Engineering Center.

- **Dr. John (Jack) Obusek**
NSRDEC ASSOCIATE TECHNICAL DIRECTOR

Dr. Obusek was selected to fill the position (Jun 08) as the Associate Director of the US Army Natick Soldier Research, Development and Engineering Center.

Technology Barriers

- Single layer solutions that “do it all” in all environments (e.g., hot/cold, dry/rain, flame)
- Lightweight, multifunctional fibers or materials
- Fabrics with instantaneous environmental response

Pacing Technologies

- Environmentally-responsive fabrics
- Unique fiber blends
- Nonwoven solutions
- Shape memory polymers

Current Efforts

- Microclimate Conditioning
- Antimicrobial efficacy in various applications
- Flame resistant material integration
- Lightweight material solutions that can satisfy flame, no melt/no drip and thermal flux issues



Technology Barriers

- Development/integration of high performance materials to protect against multiple ballistic threats
- Understanding the coupled response of the body & armor at high strain rates
- Weight and bulk vs. increased protection

Pacing Technologies

- New high performance fibers & composites
- Advanced ceramics & metals
- Enhanced predictive modeling
- Material systems integration

Current Efforts:

- Improved integrated / modular headgear systems
- Anthropometric assessment of key armor components
- Developing/assessing new fibers and ceramics
- Predictive models for blast & ballistic assessment



Textile Engineering



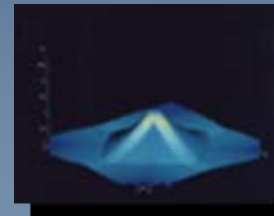
Polymer Engineering



Composites Engineering



Ceramics Engineering



Theoretical Modeling



Biomechanical Engineering

Technology Barriers

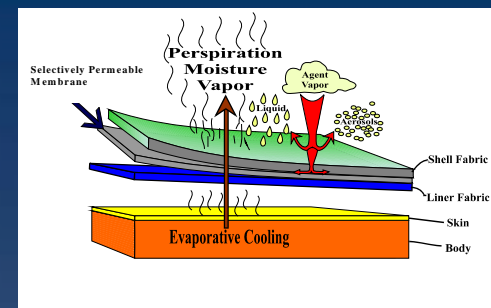
- Reducing physiological burden while ensuring required CB agent protection
- Protecting against a broad range of toxic industrial chemicals via a single garment
- Ability to enhance systems protection through effective closures that are simple to operate
- Obtaining advanced performance at low cost (affordability)

Pacing Technologies

- Selectively permeable membranes
- Electrospun nanofibers & reactive nanoparticles
- Shape memory polymers
- Ion implantation of surfaces
- Electro active textiles

Current Efforts

- Concepts for Integrated Protective Systems
- Ultra-thin Polymeric Membranes for Improved Tactility
- C/B ensemble interfaces
- Network interfaces for C/B detection (Soldier-worn sensors) and C/B information technologies



High Performance Fiber Facility: One of a kind tri-component fiber extrusion capability to produce high performance protective and sustaining fibers/textiles for Warfighters and First Responders

Thermal Test Facility: State-of-the-art facility co-managed by NSRDEC and Navy Clothing and Textile Research Facility (NCTRF)

- Large propane fire cell, laser lab, and instrumented manikins including a powered “traversing” manikin
- To evaluate the effects of flame/thermal threats, assist in the development of improved materials, and to assess the flammability of tentage, kitchen burners, water heaters and other items of individual equipment.

ISO Certified Textile Performance Testing Facility

- **FY07 Upgrade**
- Physical Textile Testing (abrasion, strength, wet, dry, etc)
- Analytical Laboratory
- Shade Evaluation Laboratory

