

# **REDD**

## **RESEARCH & EXPLORATORY DEVELOPMENT DEPARTMENT**

### **RA1: Research and Exploratory Development Department Office**

J. R. Schatz, Department Head  
C. D. Lemley, Operations Executive  
A. Sutton (Fauver)\*, Department Secretary

A. C. Merkle, RED Mission Area Executive  
D. W. Blodgett, REDD Chief Scientist  
S. L. Stratigis

J. D. Bigelow, Managing Executive  
R. A. Scott\*

### ***Johns Hopkins APL Technical Digest***

H. K. Charles Jr.\*, Editor-in-Chief  
S. A. Foster\*

### **RA2: Business Operations Group**

C. H. Becraft, Group Supervisor  
K. M. Funk, Assistant Group Supervisor  
W. J. Kraus, Assistant Group Supervisor

### **RA3: Quality Assurance and Safety Group**

M. Desmarais, Group Supervisor

### **RA5: APL Education Center Office**

H. K. Charles Jr.\*, Program Manager and Group Supervisor

### **RA6: RED Program Office**

J. A. Hoffmann\*, Program Area Manager  
J. P. Maranchi\*, Program Area Manager

## **RX1 RESEARCH PROGRAM AREA**

J. P. Maranchi, Program Area Manager and Group Supervisor  
R. Joseph, Administrative Assistant

S. E. Herman, Program Manager for Biological & Chemical Sciences  
M. J. Hughes\*, Assistant Program Manager for Biological &  
Chemical Sciences

K. Gerasopoulos, Program Manager for Signature, Electromagnetics,  
and Energy Research  
D. B. Shrekenhamer, Acting Assistant Program Manager for  
Signature, Electromagnetics, and Energy Research

M. J. Hughes\*, Assistant Program Manager for Environmental  
Resilience

M. M. Trexler, Program Manager for Science of Extreme and  
Multifunctional Materials (SEMM)  
L. H. Hamilton, Assistant Program Manager for Science of Extreme  
and Multifunctional Materials (SEMM)

## **RX2**

# **EXPLORATION PROGRAM AREA**

J. A. Hoffmann, Program Area Manager and Group Supervisor  
TBD, Administrative Assistant

J. A. Hoffmann\*, Acting Program Manager for Alternative Computing  
Paradigms

M. E. Wolmetz, Program Manager for Human and Machine Intelligence  
(HMI)

B. A. Wester, Acting Assistant Program Manager for Human and  
Machine Intelligence (HMI)

K. D. Katyal, Program Manager for Robotics and Autonomy

R. F. Young, Assistant Program Manager for Robotics and Autonomy

## **RA2 BUSINESS OPERATIONS GROUP**

C. H. Becraft, Group Supervisor  
K. M. Funk, Assistant Group Supervisor  
W. J. Kraus, Assistant Group Supervisor  
S. F. Christoff\*, Group Administrator

### **Staff**

A. S. Mathews  
B. A. Thomas

### **RA2-001: Department Operations and Facilities**

S. M. Fisher, Section Supervisor  
J. M. Rommal, Assistant Section Supervisor  
A. N. Baughman  
M. K. DeChristopher  
E. L. Kratochwill

### **RA2-002: Central Operations**

A. J. Puccio, Section Supervisor  
H. A. Cooley  
R. F. Griffiths  
A. D. Haarer  
T. J. Hamilton  
K. R. Lynch  
E. M. Morton  
L. J. Welch

### **RA2-003: Research and Exploratory Development**

#### **Mission Area Operations**

M. F. Richard, Section Supervisor  
G. M. Marr, Assistant Section Supervisor  
K. G. Balomas  
M. D. Blue  
S. M. Carey  
A. K. Cofod  
C. B. Gonzalez  
A. M. Green  
E. H. Long  
C. E. Nardone  
M. C. Savery  
C. L. Sawyer  
R. V. Sullivan

### **RA2-004: Security and IT Management**

D. G. Jones, Section Supervisor  
C. S. Dennehy  
J. R. Encarnacion  
R. A. Johnston  
A. R. Prehn  
A. C. Sawyer  
J. M. Schmidt

### **RA2-005: Administrative and Logistic Operations**

R. A. Scott\*, Section Supervisor  
S. E. Buhr\*  
C. M. Darnell\*  
A. L. Duffy\*  
J. A. Fraley\*  
D. Y. Hong\*  
S. C. Muhler\*

# **RA3**

## **QUALITY ASSURANCE AND SAFETY GROUP**

M. Desmarais, Group Supervisor  
A. Sutton\*, Group Administrator

E. R. Bruguera  
N. D. Griffith  
H. O. Koenig (SC)  
T. J. Miller  
J. M. Patel (LW)  
R. E. Rubin  
D. W. Sizemore  
D. A. Zahl

## RA5 OFFICE OF THE APL EDUCATION CENTER

H. K. Charles Jr.\*, Program Manager and Group Supervisor  
S. A. Foster\*, Group Administrator  
C. M. Morris (P), Program Manager  
A. N. Johnson, Program Manager  
S. B. Arcido  
A. S. Chalmers  
H. E. Cohen  
A. M. Cranston  
T. K. Gauthier (PA)  
A. N. Johnson  
B. E. Quinn  
J. L. Rowe

### **Master's Program in Applied and Computational Mathematics Program Committee**

J. C. Spall, Program Chair  
B. E. Castello (JHU-WSE Department of Applied Mathematics & Statistics)  
S. D. Hill  
G. Nakos (U.S. Naval Academy)  
E. R. Scheinerman (JHU-WSE Vice Dean for Graduate Education)  
J. M. Whisnant

### **Master's Program in Applied Physics Program Committee**

H. K. Charles Jr.\*, Program Chair (JHU-WSE Associate Dean, Non-Residential Graduate Education)  
W. E. Torruellas, Program Vice Chair  
J. B. Spicer (JHU-WSE Chair, Materials Science & Engineering Department)  
D. L. Porter  
A. M. Rymer  
M. E. Thomas

### **Master's Program in Artificial Intelligence Program Committee**

J. A. Piorkowski, Program Chair  
A. N. Johnson, Program Manager

### **Master's Program in Computer Science Program Committee**

L. A. Watkins, Program Chair  
R. S. Grossman, Program Vice Chair Emeritus  
A. N. Johnson, Program Manager  
J. M. Akinpelu  
M. A. Bishop (Professor, Department of Computer Science, University of California, Davis)  
J. Coffman (Associate Professor, United States Air Force Academy)  
A. T. Dabhura (Executive Director, The Johns Hopkins University Information Security Institute)  
D. B. Dunie (Executive Vice President and Board Director, CACI International)  
D. A. Frincke  
J. A. Piorkowski  
J. M. Whisnant

## OFFICE OF THE APL EDUCATION CENTER (CONTINUED)

### Master's Program in Cybersecurity Program Committee

L. A. Watkins, Program Chair

A. N. Johnson, Program Manager

J. M. Akinpelu

M. A. Bishop (Professor, Department of Computer Science, University of California, Davis)

J. Coffman (Associate Professor, United States Air Force Academy)

A. T. Dabhura (Executive Director, The Johns Hopkins University Information Security Institute)

D. B. Dunie (Executive Vice President and Board Director, CACI International)

D. A. Frincke

J. A. Piorkowski

J. M. Whisnant

### Master's Program in Data Science Program Committee

J. A. Piorkowski, Program Chair

J. C. Spall, Program Chair

A. N. Johnson, Program Manager

T. Budavari (JHU-WSE Department of Applied Mathematics & Statistics)

B. E. Castello (JHU-WSE Department of Applied Mathematics & Statistics)

S. Butcher

S. D. Hill

L. A. Watkins

J. M. Whisnant

B. Wilt (Data Scientist and Senior Manager, Facebook)

### Master's Program in Electrical and Computer Engineering Program Committee

A. Dutta, Program Chair

C. E. Davis, Program Vice Chair

R. Hourami, Program Manager

R. Etienne-Cummings (JHU-WSE Department of Electrical & Computer Engineering)

J. J. Costabile (Syncopated Engineering)

J. G. Houser (U.S. Army Research Laboratory)

D. G. Jablonski

J. E. Penn (U.S. Army Research Laboratory)

R. M. Sova

D. S. Wenstrand

### Master's Program in Engineering Management Program Committee

T. J. Galpin, Program Chair

R. W. Blank, Program Manager

P. Sheff (JHU-WSE Director, Engineering Management Program)

A. E. Kedia

D. Regan

S. Tarchalski

## OFFICE OF THE APL EDUCATION CENTER (CONTINUED)

### **Master's Program in Information Systems Engineering Program Committee**

J. A. Piorkowski, Program Chair

A. N. Johnson, Program Manager

J. M. Akinpelu

M. A. Bishop (Professor, Department of Computer Science, University of California, Davis)

J. Coffman (Associate Professor, United States Air Force Academy)

A. T. Dabhura (Executive Director, The Johns Hopkins University Information Security Institute)

D. B. Dunie (Executive Vice President and Board Director, CACI International)

D. A. Frincke

L. A. Watkins

J. M. Whisnant

### **Master's Program in Space Systems Engineering Program Committee**

P. W. Binning, Program Chair

W. S. Devereux, Program Manager

M. Baird (Brigadier General, United States Air Force)

H. Koenigsmann (Vice President, Build and Reliability, SpaceX)

J. Pellicciotti (Acting Deputy Chief Engineer, NASA Headquarters)

H. Seifert

### **Master's Program in Systems Engineering Program Committee**

A. C. Merkle, Program Chair

D. A. Flanigan, Program Vice Chair

L. D. Strawser, INCOSE and ASEE Liaison

C. Utara, Program Quality Coordinator

J. Coolahan, Partnership Development and Outreach Manager

S. M. Biemer

W. B. Crownover

C. J. Grant

B. F. Hobbs (JHU-WSE Department of Geography & Environmental Engineering,  
Theodore M. and Kay W. Schad Professor of Environmental Management)

J. A. Krill

E. A. Smyth



## R1Z RED BRANCH OFFICE

J. D. Bigelow, Managing Executive  
R. A. Scott\*, Branch Administrator  
D. P. Wilt

### **R1N: Discovery Program Group**

P. W. Cox, Group Supervisor  
I. I. Hasty (P), Assistant Group Supervisor  
T. C. Lilly, Assistant Group Supervisor

### **R1R: CIRCUIT Group**

W. R. Gray Roncal, Acting Group Supervisor

### **RH1: Exploratory Science Branch**

R. S. Armiger, Branch Supervisor

#### **R1A: Multifunctional Materials and Nanostructures Group**

D. E. Clemons, Group Supervisor  
A. J. Maisano, Assistant Group Supervisor

#### **R1B: Experimental and Computational Physics Group**

S. M. Hendrickson, Group Supervisor

#### **R2A: Biological Sciences Group**

T. J. Lawton, Group Supervisor

#### **R2B: Human Performance and Biomechanics Group**

K. A. Ott, Group Supervisor

### **RK1: Concept Design and Realization Branch**

J. T. Ramsburg, Branch Supervisor  
D. P. Hilliard, Assistant Branch Supervisor

#### **R1G: Electrical Engineering Systems Analysis and Design Group**

TBD, Group Supervisor

#### **R1H: Mechanical Engineering Systems Analysis and Design Group**

M. P. Boyle, Group Supervisor

#### **R1J: Advanced Electrical Fabrication Group**

G. L. Coles Jr., Group Supervisor

#### **R1K: Advanced Mechanical Fabrication Group**

R. C. Matteson III, Group Supervisor  
J. M. Paulson, Assistant Group Supervisor

### **RQ1: Intelligent Systems Branch**

B. L. Paulhamus, Branch Supervisor  
D. M. Patrone, Assistant Branch Supervisor

#### **RQA: Neuroscience Group**

M. S. Fifer, Group Supervisor

#### **RQB: Robotics Group**

R. J. Bamberger Jr., Group Supervisor

#### **RQC: Artificial Intelligence Group**

C. R. Ratto, Group Supervisor  
E. P. Reilly, Assistant Group Supervisor

## **R1N DISCOVERY PROGRAM GROUP**

P. W. Cox, Group Supervisor  
I. I. Hasty (P), Assistant Group Supervisor  
T. C. Lilly, Assistant Group Supervisor  
E. C. Garber, Group Administrator

O. E. Adeyemo  
S. Avrahami  
K. Balakrishnan  
S. S. Brij-Raj  
N. S. Burkhardt  
E. Z. Cawi  
P. J. Coye  
G. S. Divakar  
R. S. Duggan  
M. H. Dursht  
N. R. Eelman  
E. C. Garber  
J. I. I. Garrett  
H. M. Gooden  
A. J. Graffeo  
J. H. Ireland  
E. M. Jetton  
B. A. Johnson  
D. T. Jones  
D. W. Kotroco  
C. E. Ku  
D. A. Lengel  
E. F. Martinez  
Y. T. Mekonnen  
G. M. Minnehan  
M. J. Nissly  
J. H. Pak  
L. J. Pasquarelli  
J. J. Reese  
J. J. Schmidt  
T. M. Skura  
N. E. Stock  
S. Y. Su  
C. C. Trop  
G. F. Tsai  
M. W. Wanjihia  
J. J. Yen  
D. Zhang

## R1R CIRCUIT GROUP

W. R. Gray Roncal, Acting Group Supervisor

J. T. Alam (OSNE)	A. T. Kim (OSNE)
S. Ally (OSNE)	Y. T. Kokeb (OSNE)
G. O. Ashiru (OSNE)	O. F. Koleosho (OSNE)
N. Attram (OSNE)	A. J. Larson (OSNE)
K. A. Bonilla (OSNE)	T. D. Lesigues (OSNE)
J. T. Burroughs (OSNE)	F. Lizano (OSNE)
K. Cassamajor (OSNE)	R. N. McGahan (OSNE)
W. Chen (OSNE)	D. S. Moore (OSNE)
A. E. Chen (OSNE)	B. L. Nguyen (OSNE)
C. I. Clark (OSNE)	K. D. Nguyen (OSNE)
A. O. Clark-Sevilla (OSNE)	E. N. Ochoa (OSNE)
F. R. Davenport (OSNE)	S. C. Ohai (OSNE)
J. C. Elekwachi (OSNE)	U. N. Osia (OSNE)
S. D. Floryanzia (OSNE)	F. T. Otegbade (OSNE)
C. A. Forrester (OSNE)	T. V. Pearson (OSNE)
K. A. Furukawa (OSNE)	A. B. Pena (OSNE)
M. A. Gaye (OSNE)	A. Perez-Doval (OSNE)
M. J. Gilmore (OSNE)	V. Pudi (OSNE)
T. A. Gordon (OSNE)	B. J. Raphino (OSNE)
N. K. Guittari (OSNE)	P. Saha (OSNE)
N. A. Gutierrez (OSNE)	M. S. Sanchez (OSNE)
C. N. Haddad (OSNE)	M. G. Scott (OSNE)
J. E. Harryman (OSNE)	S. M. Smith (OSNE)
M. J. Hodge (OSNE)	M. A. Vabson (OSNE)
M. Hopkins (OSNE)	F. H. Welde (OSNE)
S. S. Hugh (OSNE)	D. J. Williams (OSNE)
D. I. Jimenez (OSNE)	B. A. Wilson (OSNE)
I. W. Kilelu (OSNE)	H. Wong (OSNE)

**RH1**  
**EXPLORATORY SCIENCE BRANCH**

R. S. Armiger, Branch Supervisor  
S. F. Christoff\*, Group Administrator

# R1A

## MULTIFUNCTIONAL MATERIALS AND NANOSTRUCTURES GROUP

D. E. Clemons, Group Supervisor  
 A. J. Maisano, Assistant Group Supervisor  
 S. E. Buhr\*, Group Administrator

### Staff

R. C. Bruce  
 A. Chiu  
 J. C. Gagnon  
 S. Kamal  
 A. M. Stanley  
 R. Venkatasubramanian

### R1A-001: Materials Discovery

E. B. Gienger, Section Supervisor  
 A. L. Bennett-Jackson  
 A. R. Lark  
 L. Ma  
 C. A. McDermott  
 L. H. Oh  
 A. A. Podpirka  
 G. M. Valentino  
 D. Zhang

### R1A-002: Materials for Extremes

M. P. Hunt, Section Supervisor  
 M. C. Brupbacher  
 D. A. Burns  
 K. S. Caruso  
 C. C. McClain  
 J. B. Spicer (TOC)

### R1A-003: Materials Characterization

B. R. Trethewey Jr., Section Supervisor  
 M. A. Berkson  
 C. Chung  
 B. P. Croom  
 A. M. Lennon  
 T. J. Montalbano  
 C. T. Mooers  
 S. M. Nimer  
 D. J. Rose Jr.  
 D. B. Trigg

### R1A-004: Materials Chemistry

J. C. La Favors  
 J. M. Boothby  
 C. L. Carroll  
 C. M. Joe-Wong  
 M. M. Kesavan  
 S. A. Langevin  
 N. G. Pavlopoulos  
 C. M. Person  
 O. M. Uy (TOC)  
 T. B. VanVolkenburg

### R1A-005: Energy Storage

J. S. Ko, Section Supervisor  
 M. H. Jin  
 M. W. Logan  
 A. G. Simmonds  
 R. Srinivasan

### R1A-006: Material Transition

E. D. LaBarre, Section Supervisor  
 S. S. Badesha  
 W. M. Buchta  
 G. D. Ferguson  
 M. L. Graybeal  
 E. D. Jacque  
 J. E. King  
 W. L. Luedeman  
 A. J. Yuan

**R1A**  
**MULTIFUNCTIONAL MATERIALS AND NANOSTRUCTURES GROUP**  
**(CONTINUED)**

**R1A-007: Organic Synthesis**

C. M. Hoffman, Section Supervisor  
M. E. Bartlett  
Z. H. Kiick  
B. M. Koronkiewicz  
R. E. Messersmith  
M. W. Patchan  
L. K. Ratliff  
J. M. Sarapas  
S. A. Shuler

**R1A-008: Energy Conversion**

J. M. Pierce, Section Supervisor  
J. L. Ballard  
N. J. Fairbanks  
P. Gajendiran  
M. Himmtann  
P. T. Shuler  
R. J. Ung

# R1B

## EXPERIMENTAL AND COMPUTATIONAL PHYSICS GROUP

S. M. Hendrickson, Group Supervisor  
S. E. Buhr\*, Group Administrator

### Staff

S. J. Papadakis, Chief Scientist

#### **R1B-001: Electromagnetic Modeling**

R. S. Awadallah, Section Supervisor  
C. M. Gutsell  
J. A. Hansen  
G. M. Hunt  
J. Miragliotta  
A. J. Shishineh (SC)  
D. B. Shrekenhamer  
T. A. Sleasman  
A. C. Strikwerda

#### **R1B-002: Condensed Matter Physics**

I. M. Cabrera, Section Supervisor  
B. S. Tien-Street, Assistant Section Supervisor  
J. B. Abraham  
J. W. Alldredge  
M. K. Geckler  
A. N. Kalikian  
T. M. Kott (LA)  
K. P. McElroy  
M. A. Palace  
L. F. Spietz  
H. G. Yoest

#### **R1B-003: Experimental Optics**

J. J. Wathen, Section Supervisor  
J. P. Angelo Jr.  
M. J. Fitch  
N. J. Goonasekeram  
V. R. Pagan  
C. L. Rodriguez  
S. D. Rogers

#### **R1B-004: Microelectronics and MEMS**

S. K. Adams, Section Supervisor  
J. A. Duke  
E. B. McDaniel  
K. A. Ohiri  
J. E. Tiffany

#### **R1B-005: Quantum Exploitation**

T. M. Sweeney, Section Supervisor  
G. D. Quiroz, Assistant Section Supervisor  
M. M. Amezcua  
J. P. Barnes  
T. F. Gilliss  
T. E. Keller  
A. J. Murphy  
L. M. Norris  
K. M. Schultz  
J. A. Shackford  
P. T. Titum  
C. J. Trout  
J. S. Van Dyke

## **R2A BIOLOGICAL SCIENCES GROUP**

T. J. Lawton, Group Supervisor  
A. L. Duffy\*, Group Administrator

### **R2A-001: Biomolecular Sciences**

J. E. Gleason, Section Supervisor  
S. L. Brewer  
M. E. Hannegan  
R. J. Jacak  
B. M. Luisi  
E. A. Robinson  
J. D. Shipp  
W. D. Stone  
B. J. Walsh

### **R2A-002: Bioanalytics and Modeling**

A. W. Ernlund, Section Supervisor  
K. M. Blount  
K. V. Bowden  
B. B. Merritt  
A. C. Nolan (I)  
K. K. Zudock

### **R2A-003: Integrated Biosystems**

C. M. Filone, Section Supervisor  
S. K. Wu, Assistant Section Supervisor  
R. W. Baker-Branstetter  
B. R. Brensinger  
J. D. Evans  
R. A. Hegab  
R. J. McQuillen  
A. C. Timm

### **R2A-004: Biological Systems Applications**

P. M. Thielen, Section Supervisor  
M. R. Harman, Assistant Section Supervisor  
M. V. Cyrana  
H. M. DeHart  
P. A. Demirev  
A. N. Elayadi  
M. T. Gasser  
E. R. Hancock  
J. Jackman



## **R2B**

# **HUMAN PERFORMANCE AND BIOMECHANICS GROUP**

K. A Ott, Group Supervisor  
A. L. Duffy\*, Group Administrator

### **Staff**

E. Bar-Kochba  
A. Chi (TOC)  
G. L. Holt

### **R2B-001: Experimental Biomechanics and Injury Science**

A. S. Iwaskiw, Section Supervisor  
M. G. Bevan  
J. A. Clark  
C. K. Demetropoulos  
N. J. Hahne  
C. E. Howes  
A. W. Injeian  
A. J. Lurski  
L. A. Reider  
D. L. Rush  
L. M. Voo

### **R2B-002: Human Computational Modeling**

T. A. Metzger, Section Supervisor  
C. A. Bradfield  
M. A. Dunphy  
J. M. Gipple  
T. P. Harrigan  
M. W. Tumperi  
N. A. Vavalle  
J. Zhang

### **R2B-003: Human and Systems Integration**

V. D. Alphonse (LA), Section Supervisor  
K. A. Carr  
R. Hingorani  
B. W. Lindsey  
C. O. Pyles  
C. F. Schuman  
N. E. Steiner  
M. F. Vignos

**RK1**  
**CONCEPT DESIGN AND REALIZATION BRANCH**

J. T. Ramsburg, Branch Supervisor  
D. P. Hilliard, Assistant Branch Supervisor  
R. A. Scott\*, Group Administrator

# **R1G ELECTRICAL ENGINEERING SYSTEMS ANALYSIS AND DESIGN GROUP**

TBD, Group Supervisor  
J. A. Fraley\*, Group Administrator

## **Staff**

E. B. Alvarez  
H. S. Feldmesser

### **R1G-001: Electronic Design Automation**

J. A. Davis, Section Supervisor  
M. D. Hiteshew  
M. L. Kulkusky  
E. M. Ochs  
D. M. Pierce  
K. J. Pionke  
R. F. Smith

### **R1G-003: RF and Optical Systems**

P. R. Schuster, Section Supervisor  
R. P. Goonasekeram  
P. L. Kirby  
J. F. Roycroft Jr.

### **R1G-002: Embedded Systems and Architectures**

H. A. Eaton, Section Supervisor  
M. S. Carpenter, Acting Assistant Section  
Supervisor (RA)  
D. S. Ayoub  
B. G. Carkhuff (SC)  
P. R. Hock  
Z. D. Linkous  
G. H. Palo  
D. S. Wenstrand  
C. P. Williams  
R. L. Williams

# **R1H MECHANICAL ENGINEERING SYSTEMS ANALYSIS AND DESIGN GROUP**

M. P. Boyle, Group Supervisor  
J. A. Fraley\*, Group Administrator

## **R1H-001: Mechanical Design**

E. E. Crane, Section Supervisor  
C. L. Carpenter (SC), Assistant Section Supervisor  
J. L. Herchek, Acting Assistant Section Supervisor  
M. A. Athey  
M. S. Bailey  
J. K. Braine  
T. D. Dilworth  
Y. A. Ferneau  
S. J. Gantz  
S. E. Gaumer  
J. C. Green  
K. W. Harclerode  
J. W. Hrivnak  
J. L. Marcus  
B. F. Massey  
B. D. Miller  
K. A. Ruckelshaus  
R. D. Seery  
R. L. Stanford  
R. A. Startt  
J. N. Tobias  
K. A. Westbrook  
F. H. Winterling  
L. X. Wu

## **R1H-002: Mechanical Engineering/Packaging**

D. A. Zinn, Section Supervisor  
V. J. Campbell, Acting Assistant Section Supervisor (RA)  
S. A. Elazar Mittelman  
D. O. Fernandes  
C. J. Gingrich  
K. D. Gordge  
J. E. Harsono  
N. W. Houriet  
C. W. Lomicka  
T. C. Magee  
J. A. Marks  
A. S. Martin  
G. L. Merboth  
D. P. Seker  
J. O. Sharp  
H. J. Tomey  
T. Truong

## **R1H-003: Multiscale Mathematical Modeling**

C. D. Stiles, Acting Section Supervisor  
N. Q. Le, Acting Assistant Section Supervisor  
M. T. Shanaman, Assistant Section Supervisor  
A. I. Bhonsale  
R. A. Darragh  
J. Domenico  
M. A. Lapera  
M. M. Salerno Jr.  
E. S. Wong

# R1J

## ADVANCED ELECTRICAL FABRICATION GROUP

G. L. Coles Jr., Group Supervisor  
J. A. Fraley\*, Group Administrator

### Staff

A. C. Keeney (LA), Chief Engineer

#### R1J-001: PWB Fabrication

M. J. Bundy, Acting Section Supervisor

J. P. Cook

A. W. Cruz

B. D. Edwards

S. A. Edwards

W. A. Johnston Jr.

D. M. McKay

F. A. McKay

R. P. Miller

C. F. Rogich

R. M. Sak

H. A. Whitham

#### R1J-002: Electronics Assembly

K. A. Griffin, Section Supervisor

D. L. Berg

C. J. Brogdon

M. S. Costa

M. Crawford

M. C. Hill

B. L. Jones

S. C. Mills-Young

E. A. Roycroft

C. D. Santos

J. G. Schutt

M. T. Siquefield

S. E. Thomas

P. R. Wescoat Jr.

A. M. Wurie

J. Zhu

#### R1J-003: Assembly Engineering and Operations

M. M. Matos, Section Supervisor

L. L. Bowles (SL)

T. G. Callahan

K. A. Gerhardt

R. K. Hartig

K. E. Houck

M. E. Krok

H. M. Powers

N. E. Reek

A. F. Rodriguez

J. L. Sandler

S. E. Schlemmer

A. C. Stump

S. Thor

M. M. Woodard

#### R1J-004: Microelectronics Fabrication

G. L. Coles Jr.\*, Acting Section Supervisor

L. Currano (PD), Assistant Section Supervisor

J. S. Corgan

E. L. Dodson

C. A. Eble

K. Inboun

R. A. Korneisel

D. M. Lee

S. J. Lehtonen

N. M. Nowicki

B. L. Ong

V. O. Rojas

# **R1K**

## **ADVANCED MECHANICAL FABRICATION GROUP**

R. C. Matteson III, Group Supervisor  
J. M. Paulson, Assistant Group Supervisor  
C. M. Darnell, Group Administrator

### **Staff**

M. E. Daffron  
C. S. Johal

### **R1K-001: Mechanical Fabrication**

K. J. Bulkin, Section Supervisor  
J. A. Walters, Assistant Section Supervisor  
N. A. Allen III  
D. G. Athman Jr.  
C. T. Beatty Sr.  
C. R. Burner (SL)  
E. R. Canales  
W. C. Cheezum Jr.  
H. M. Debye  
W. H. Eyler  
C. H. Farrington  
M. B. Ford  
K. J. Garrett  
W. R. Hiler Jr.  
M. L. Honeyman  
J. S. Johal  
D. E. Jones (WL)  
A. J. Kitzmiller  
D. J. Malick  
J. M. McGinness  
B. A. McMaster  
D. N. Owenby  
G. E. Palm  
D. Plank  
T. R. Radtke III  
G. C. Shaw  
K. E. Stevenson  
N. Sundramoorthy  
M. A. Tandazo Ronquillo  
J. O. Teehan  
H. G. Turco  
C. W. Warnick  
E. J. Watts  
H. Zhou

### **R1K-002: Engineered Materials Fabrication**

R. M. Quinn, Section Supervisor  
P. J. Biermann  
R. R. Harter  
N. A. Knowlton  
C. B. Leese  
N. D. Newhouse  
J. J. Sopcisak  
S. M. Storck  
J. T. Townsend  
P. D. Wienhold

### **R1K-003: Additive Manufacturing**

W. R. Zimbeck, Acting Section Supervisor  
R. H. Carter, Acting Assistant Section Supervisor  
J. P. Leese  
K. R. Lowery  
R. K. Mueller  
Z. J. Post  
M. Presley  
A. Rakovsky  
S. R. Szczesniak

### **R1K-004: Fabrication Integration and Management**

C. F. Kane, Section Supervisor  
W. K. Granger, Assistant Section Supervisor  
L. C. Barley  
R. B. Francis  
D. L. Geyer  
J. H. Prietz  
D. P. Rutten

**RQ1**  
**INTELLIGENT SYSTEMS BRANCH**

B. L. Paulhamus, Branch Supervisor  
D. M. Patrone, Assistant Branch Supervisor  
D. Y. Hong\*, Group Administrator

## **RQA NEUROSCIENCE GROUP**

M. S. Fifer, Group Supervisor  
D. Y. Hong\*, Group Administrator

### **Staff**

C. A. Scholl, Chief Scientist

### **RQA-001: Neural Interface**

F. V. Tenore, Section Supervisor  
L. E. Osborn, Assistant Section Supervisor  
B. P. Christie  
W. G. Coon  
L. M. Franke  
A. F. Jackson  
D. A. Kouakou D'almeida  
G. W. Milsap  
H. H. Nguyen  
P. L. Peranich

### **RQA-002: Neuro-AI**

E. C. Johnson, Section Supervisor  
B. R. Rohbin, Assistant Section Supervisor  
J. M. Joyce  
J. K. Matelsky  
S. A. Matson  
S. L. McDaniel  
R. Norman-Tenazas (TOC)  
M. S. Robinette  
K. J. Romero  
A. A. Seth  
M. K. Western

### **RQA-003: Connectomics & Learning**

M. Villafane-Delgado, Section Supervisor  
L. M. Kitchell, Assistant Section Supervisor  
R. F. Brodsky  
L. C. Diaz  
R. T. Hider Jr.  
D. A. Luna  
M. W. Ogg  
P. K. Rivlin  
V. A. Rose  
D. L. Symonette  
M. E. Wimbish  
D. Xenos

### **RQA-004: Cognition, Behavior & Teaming**

S. L. Wasko, Section Supervisor  
M. E. Luongo, Assistant Section Supervisor  
N. D. Bos  
C. J. Brandt  
H. P. Cowley  
J. R. Gersh (TOC)  
A. M. Greenberg  
D. A. Handelman  
J. J. Kopecky  
E. D. McAlexander  
S. D. Simpkins



## **RQB ROBOTICS GROUP**

R. J. Bamberger Jr., Group Supervisor  
D. Y. Hong\*, Group Administrator

### **Staff**

A. B. Goertz  
J. L. Moore

### **RQB-001: Assured Autonomy**

A. C. Schmidt, Section Supervisor  
C. R. Fink  
M. A. Hinton  
B. J. Matt  
B. L. Stoler  
G. K. Vallabha

### **RQB-002: Robotic Intelligence**

J. J. Markowitz, Section Supervisor  
K. M. Popek, Assistant Section Supervisor  
C. T. Knuth  
G. M. Perrotta  
S. M. Pohland  
A. C. Polevoy  
E. W. Staley

### **RQB-003: Robotic Systems**

C. J. Cooke, Section Supervisor  
M. P. Para, Acting Assistant Section Supervisor  
A. G. Anand  
M. W. Breiner  
N. K. La  
C. J. Taylor  
M. J. Zeher

### **RQB-004: Advanced Robotic Control**

K. C. Wolfe, Section Supervisor  
G. E. Mullins, Acting Assistant Section Supervisor  
B. A. Bittner  
C. A. Dimmig  
E. A. Holmes  
B. Y. Yeh

### **RQB-005: Novel Robotics**

M. V. Kozlowski, Section Supervisor  
J. M. Wormley, Assistant Section Supervisor  
J. N. Aguiard  
M. Armand  
M. I. Cervantes  
C. J. Dohopolski  
M. D. Hahne  
Y. C. Kopel

## **RQC** **ARTIFICIAL INTELLIGENCE GROUP**

C. R. Ratto, Group Supervisor  
E. P. Reilly, Assistant Group Supervisor  
S. C. Muhler\*, Group Administrator

### **Staff**

M. D. Dinmore, Chief Engineer  
J. A. Millison  
I.-J. Wang, Chief Scientist

### **RQC-001: Embodied Learning and Reasoning**

C. G. Rivera, Section Supervisor  
C. C. Ashcraft  
S. D. Billings  
M. Chau  
A. M. Ciesielski  
C. S. Ewulum  
K. Karra  
M. J. Pekala

### **RQC-002: Perception and Contextual Reasoning**

A. Banerjee, Section Supervisor  
N. G. Drenkow, Assistant Section Supervisor  
P. M. Burlina (OSNE)  
N. M. Fendley  
N. J. Joshi  
N. P. Kuo  
M. R. Lennon  
P. A. Mathew  
R. Mocharla  
W. A. Paul

### **RQC-003: Human-Machine Communication**

C. A. Bishop, Section Supervisor  
S. K. Anderson  
S. A. Barham  
C. J. Costello  
J. C. Mayfield  
P. McNamee

### **RQC-004: Emerging Challenges in AI**

C. D. Piatko, Section Supervisor  
B. C. Eng  
M. T. Kelbaugh  
A. S. New  
D. M. Rollend  
J. A. Sleeman

### **RQC-005: Robust Statistical Modeling**

J. A. Lee, Section Supervisor  
S. Agarwala  
H. S. Burkom  
L. C. Mullany  
R. Ramachandran  
A. Saksena  
A. K. Stephens

### **RQC-006: Reasoning Machines**

A. S. Gearhart, Section Supervisor  
W. L. Bethea  
N. L. Brown  
J. T. Downs  
D. P. Wernig

### **RQC-007: AI Development**

M. M. Baker, Section Supervisor  
E. Q. Nguyen, Assistant Section Supervisor  
S. A. Farris  
J. G. Huang  
C. A. Lowman  
D. C. Ramsden  
J. D. Rokisky

### **RQC-008: Health Surveillance Systems**

W. A. Loschen, Acting Section Supervisor  
J. A. Aviles  
J. L. Bondi  
S. V. Patel  
S. L. Patterson  
L. E. Powers  
R. A. Wojcik