

NIH Research Festival

*A Celebration of
Intramural Science*

30
years

**Join Us for the 30th Annual Showcase
of NIH Intramural Research**

Opening Plenary Sessions
Concurrent Symposia Sessions
Poster Sessions
Green Events and Green Labs Fair
Special Exhibits on IRP Resources
Virtual Reality and Innovative Technologies
at the NIH Library
Vendor Tent Show, Campus Tours, and More

researchfestival.nih.gov

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#ResearchFest

September 14-16, 2016

Building 10 | NIH Bethesda Campus

Image provided by Shawn Chen & John Song, NIBIB



Intramural Research Program
Our Research Changes Lives

General Schedule of Events

All events will be held in Building 10

Light refreshments will be served during poster sessions

DAY 1

9:00 a.m. – 10:00 a.m.

Wednesday, September 14, 2016

Tours of National Library of Medicine and Clinical Center

9:30 a.m. – 10:00 a.m.

FARE Awards Ceremony, Masur Auditorium

10:00 a.m. – 12:00 p.m.

Plenary Session I, Super enhancers in cell identity and disease
Masur Auditorium

12:00 p.m. – 2:00 p.m.

NIH Green Labs Fair and Exhibits, South Lobby

12:00 p.m. – 4:30 p.m.

Explore Virtual Reality and Innovative Technologies, NIH Library

12:30 p.m. – 2:30 p.m.

Concurrent Symposia Session I, locations vary

3:00 p.m. – 4:30 p.m.

Poster Session I, FAES Terrace

3:00 p.m. – 4:30 p.m.

Special Exhibits on Resources for Intramural Research, South Lobby

DAY 2

9:00 a.m. – 10:00 a.m.

Thursday, September 15, 2016

Tours of National Library of Medicine and Clinical Center

9:30 a.m. – 3:30 p.m.

Technical Sales Association (TSA) Exhibit Tent Show, Parking Lot 10H

10:00 a.m. – 12:00 p.m.

Plenary Session II, New insights through clinical imaging
Masur Auditorium

11:00 a.m. – 2:00 p.m.

R&W “Taste of Bethesda” Lunch, Parking Lot 10H

12:00 p.m. – 1:30 p.m.

Poster Session II, FAES Terrace

12:00 p.m. – 1:30 p.m.

Special Exhibits on Resources for Intramural Research, South Lobby

12:00 p.m. – 5:00 p.m.

Explore Virtual Reality and Innovative Technologies, NIH Library

1:30 p.m. – 3:30 p.m.

Concurrent Symposia Session II, locations vary

3:30 p.m. – 5:00 p.m.

Poster Session III plus IC and Scientific Directors Poster Session, FAES Terrace

3:30 p.m. – 5:00 p.m.

Special Exhibits on Resources for Intramural Research, South Lobby

DAY 3

9:00 a.m. – 10:00 a.m.

Friday, September 16, 2016

Tours of National Library of Medicine and Clinical Center

9:30 a.m. – 10:00 a.m.

Animal Research Community Tribute and Dedication Ceremony
Building 10 South Lawn

9:30 a.m. – 2:30 p.m.

Technical Sales Association (TSA) Exhibit Tent Show, Parking Lot 10H

10:00 a.m. – 12:00 p.m.

Plenary Session III, Cell-based immune therapies, Masur Auditorium

12:00 p.m. – 1:30 p.m.

Poster Session IV, FAES Terrace

12:00 p.m. – 1:30 p.m.

Special Exhibits on Resources for Intramural Research, South Lobby

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Plenary Session I, Super enhancers in cell identity and disease
Masur Auditorium

Super enhancers, as the name may connote, offer seemingly heroic regulation of gene expression. While snippets of DNA known as enhancers have long been appreciated to bind with transcription factors to ramp up gene activity, regions of DNA called super enhancers are exceptionally busy parts of the genome that control lineage-defining genes – to paraphrase the movie *Spinal Tap*, they turn their volume up to 11 just when that extra push is needed. Mutations in super enhancers have been noted in various diseases, and they may play important roles in the dysregulation of gene expression in cancer.

NIH researchers have been at the forefront of this three-year-old field. The Collins lab in 2013 identified “stretch enhancers” as gene groups analogous to super enhancers; and with the O’Shea lab they explained how T cell super enhancers relate to the function of this specialized cell. In the summer of 2016, the Hennighausen lab discovered super enhancers in the mammary genome and used CRISPR/Cas9 to dissect one in mice. In this plenary session, NIH researchers present their latest work on these master control switches. Francis Collins, M.D., Ph.D. (NHGRI), will discuss the epigenomics of type 2 diabetes as revealed by one set of super enhancers. Rafael Casellas, Ph.D. (NIAMS), will illuminate the role of nuclear architecture in gene expression in B cells. And Keiko Ozato, Ph.D. (NICHD), will present how super enhancer are rapidly organized to control inflammatory gene expression.

- **Epigenomics of type 2 diabetes**
Francis S. Collins, M.D., Ph.D. (NHGRI)
- **The role of nuclear architecture in gene expression**
Rafael C. Casellas, Ph.D. (NIAMS)
- **BRD4 coordinates rapid reorganization of super enhancers to control inflammatory gene expression**, Keiko Ozato, Ph.D. (NICHD)

12:00 p.m. – 2:00 p.m.

NIH Green Labs Fair and Exhibits, South Lobby

12:00 p.m. – 4:30 p.m.

Explore Virtual Reality and Innovative Technologies, NIH Library

- Hands-on demos with immersive virtual reality headsets, a digital production studio, 3D printing, and more.

12:30 p.m. – 2:30 p.m.

Concurrent Symposia Session I

- **From insight to therapy: bench-to-bedside homeruns**, Masur Auditorium
- **The zen of microbiota**, Lipsett Amphitheater
- **Lasting legacies: long-term effects of early developmental exposure**
FAES Classrooms 1-4

3:00 p.m. – 4:30 p.m.

Poster Session I, FAES Terrace

3:00 p.m. – 4:30 p.m.

Special Exhibits on Resources for Intramural Research
South Lobby

Day 2

Thursday, September 15, 2016

- 9:00 a.m. – 10:00 a.m.** **Tours of National Library of Medicine and Clinical Center**
- 9:30 a.m. – 3:30 p.m.** **Technical Sales Association (TSA) Exhibit Tent Show**
Parking Lot 10H
- 10:00 a.m. – 12:00 p.m.** **Plenary Session II, New insights through clinical imaging**
Masur Auditorium
- The NIH intramural program has helped to pioneer the field of clinical imaging, from the earliest development of MRI technology and Louis Sokoloff's now classic PET scan techniques to map and measure brain function, to recent breakthroughs such as MRI-guided closed-chest heart repair.
- This plenary session highlights the latest research of three NIH PIs who are extending this fine tradition of intramural-based clinical imaging advances. Shawn Chen, Ph.D. (NIBIB), will discuss nanotheranostics, the integration of diagnostic and therapeutic function in one system using the benefits of nanotechnology, which may be essential for personalized medicine. Jessica Gill, Ph.D., R.N. (NINR), will present her discoveries of mechanisms underlying differential responses to traumatic brain injury as a way to inform interventions to support recovery. And PET expert Robert Innis, M.D., Ph.D. (NIMH), will present his most recent method for imaging proteins as a biomarker for neuro-inflammation.
- **Nanotheranostics**
Xiaoyuan (Shawn) Chen, Ph.D. (NIBIB)
 - **The role of tau in recovery from brain injuries**
Jessica M. Gill, Ph.D., R.N. (NINR)
 - **PET imaging of translocator protein 18 kDa (TSPO) as a biomarker for neuroinflammation**, Robert Innis, M.D., Ph.D. (NIMH)
- 11:00 a.m. – 2:00 p.m.** **R&W “Taste of Bethesda” Lunch**, Parking Lot 10H
- 12:00 p.m. – 1:30 p.m.** **Poster Session II, FAES Terrace & Special Exhibits on Resources for Intramural Research**, South Lobby
- 12:00 p.m. – 5:00 p.m.** **Explore Virtual Reality and Innovative Technologies**, NIH Library
- Hands-on demos with immersive virtual reality headsets, a digital production studio, 3D printing, and more.
- 1:30 p.m. – 3:30 p.m.** **Concurrent Symposia Session II**
- **Rings of fire: inflammation at the intersection of chronic disease**, Masur Auditorium
 - **Precision medicine now: the power of NIH patient cohorts to wed genotype with phenotype**, Lipsett Amphitheater
 - **Computation and biology: Making sense of Greek letters and too many numbers in the age of big data**, FAES Classrooms 1-4
- 3:30 p.m. – 5:00 p.m.** **Poster Session III plus IC and Scientific Directors Poster Session**, FAES Terrace
- 3:30 p.m. – 5:00 p.m.** **Special Exhibits on Resources for Intramural Research**, South Lobby

Day 3

Friday, September 16, 2016

- 9:00 a.m. – 10:00 a.m.** **Tours of National Library of Medicine and Clinical Center**
- 9:30 a.m. – 10:00 a.m.** **Animal Research Community Tribute and Dedication Ceremony**
Building 10, South Lawn
- 9:30 a.m. – 2:30 p.m.** **Technical Sales Association (TSA) Exhibit Tent Show**
Parking Lot 10H
- 10:00 a.m. – 12:00 p.m.** **Plenary Session III, Cell-based immune therapies**
Masur Auditorium
- Cell-based immune therapies, such as immunotherapy for cancer, are among the hottest topics in clinical research. A centuries-old concept of stimulating the immune system to fight a non-infectious disease, immunotherapy became a viable treatment that doctors could exert some degree of control over as a result of pioneering research at the NCI in the 1960s and 1970s on monoclonal antibodies (Michael Potter) and Interleukin-2 (Robert Gallo). Building on such advances, NCI's Steven Rosenberg, M.D., Ph.D. was the first to recognize the potential of Il-2 and apply it as a novel anti-cancer agent, in 1984. Rosenberg has spent most of his 40-year-career at the NIH improving various techniques, most recently developing chimeric antigen receptor therapy and T cell receptor gene-engineered cell therapy to fine-tune and turbo-charge the killing of cancer cells.
- Rosenberg's body of research has given rise to numerous methods to harness the immune system to fight cancer and other chronic, non-infectious diseases. And many of Rosenberg's NIH colleagues are now at the forefront of these pursuits. This plenary session features Steve Rosenberg, providing an historical context that only he can best deliver, as well as an update on his latest clinical work. Nicholas Restifo, M.D. (NCI), will discuss new immunotherapies for patients with advanced cancer. And John Tisdale, M.D. (NHLBI), will present his research combining hematopoietic stem cell methods with immunotherapy for the treatment of the genetic-based sickle cell disease.
- **Developing the next generation of cell-based therapies**
Nicholas P. Restifo, M.D. (NCI)
 - **Cells as drugs: a personalized immunotherapy for cancer**
Steven A. Rosenberg, M.D., Ph.D. (NCI)
 - **Exploiting hematopoietic stem cells for the genetic treatment of sickle-cell disease**, John F. Tisdale, M.D. (NHLBI)
- 12:00 p.m. – 1:30 p.m.** **Poster Session IV, FAES Terrace**
- 12:00 p.m. – 1:30 p.m.** **Special Exhibits on Resources for Intramural Research**
South Lobby

Technical Sales Association (TSA) Research Festival Exhibit Tent Show

Thursday, September 15, 2016 - 9:30 a.m. – 3:30 p.m.

Friday, September 16, 2016 - 9:30 a.m. – 2:30 p.m.

The Technical Sales Association (TSA) sponsors the popular Research Festival Exhibit Tent show. A large group of exhibitors will display state-of-the-art equipment supplies and services from leading regional and national biomedical research suppliers. For more information, please visit: <http://www.gtpmgt.com>. To view a list of confirmed exhibit booths please visit: <http://www.gtpmgt.com/attendees.php?id=4>.



Thank you for attending the 2016 NIH Research Festival and for your support of the NIH Intramural Research Program. We hope you will enjoy sharing and learning about the exciting research taking place on campus.

For more information, please visit: <http://researchfestival.nih.gov>

You can also email us at researchfest@mail.nih.gov

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#ResearchFest

NIH Research Festival Co-Chairs:

Ann Cashion, Ph.D., R.N., Scientific Director, NINR

Andrew Griffith, M.D., Ph.D., Scientific Director, NIDCD



Intramural Research Program

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*The cover image is a nanovesicle assembled from individual gold nanorods.
The beard has a polymer coating on the surface of the vesicle.*