



9th Annual CEIRS Network Meeting

June 26 – June 29, 2016

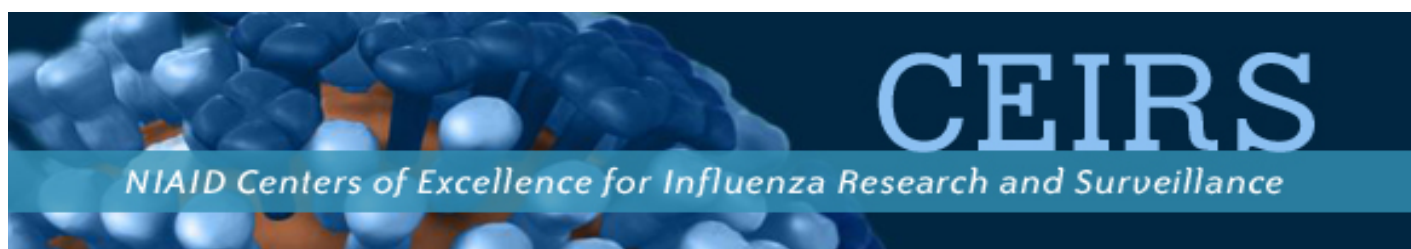
**Memphis Cook Convention Center
Memphis, TN**

Hosted by:

**St. Jude Children's Research Hospital
Center of Excellence for Influenza Research and Surveillance
(SJCEIRS)**

Sponsored by:

NIH/NIAID CEIRS Program



Dear Colleagues:

On behalf of NIAID and SJCEIRS we welcome you to St. Jude, Memphis, and the 9th Annual CEIRS Network Meeting. As with previous events, the annual meetings goals are to provide a collaborative and confidential forum for you to discuss recent results, engage intra and inter CEIRS center colleagues, and to drive the future of our network. Based on the sage advice of the most famous Memphian of all, Elvis, who stated “After a hard day of basic training, you could eat a rattlesnake”, we have also worked hard to provide poster and evening gatherings that in addition to the formal sessions should foster these goals.

While emerging virus threats such as Ebola and Zika are on the forefront of media and public infectious disease attention, influenza has certainly not gone away and the threats from seasonal and zoonotic viruses remain. At the time of writing this welcome, Memphis is in the midst of a small measles outbreak, clear reminder of the challenges we face. While on the topic of challenges, we would like to take this opportunity to thank everyone who has contributed to the planning, organization, and implementation of this meeting, we hope you all enjoy the fruits of their labors.

We welcome you again, urge you to sit back, relax, soak up some true deep-fried Southern Hospitality, and enjoy the rattlesnake.

Thank ya, thank you very much~

Diane Post
Program Officer
NIAID/DMID

Richard Webby
PI/Director, SJCEIRS
SJCRH

Stacey Schultz-Cherry
PI/Co-Director, SJCEIRS
SJCRH



9th Annual CEIRS Network Meeting

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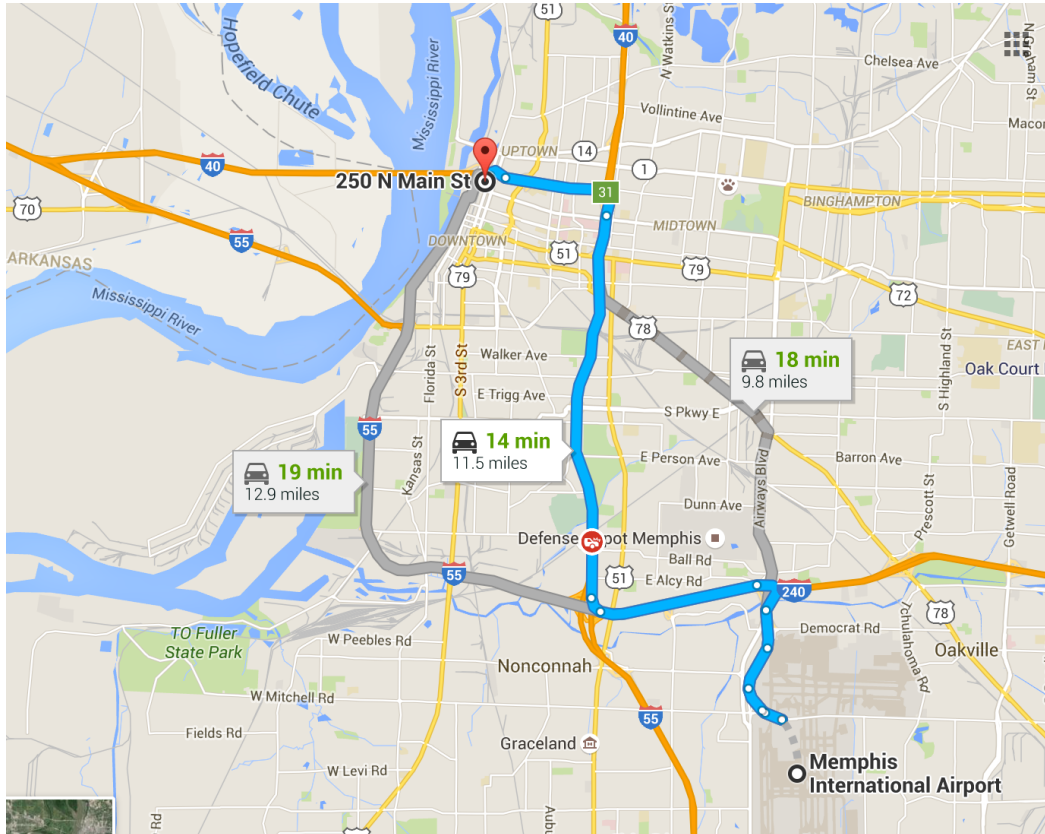
Participants List.....52

DIRECTIONS

Sheraton Memphis Downtown Hotel

250 North Main Street

901-527-7300



From Memphis International Airport

Exit the airport on Winchester Road West and follow the signs to Interstate 240. Merge onto Interstate 240 West toward Little Rock / Downtown. Merge onto Interstate 240 North. Take Exit 31 and merge onto Interstate 40 West/ Little Rock. Take Exit 1A toward Second Street. Turn left onto North 2nd Street. Turn right onto Exchange Avenue. Turn right onto Main Street. The hotel is on the right.

From East (Nashville)

From Interstate 40, follow the signs for Memphis. Take Exit 10B and continue on I-40 West/Little Rock. Take Exit 1A toward 2nd Street. Turn left onto North 2nd Street. Turn right onto Exchange Avenue. Turn right onto Main Street. The hotel is on the right.

From South (Mississippi)

Proceed north on Interstate 55. Continue on I-55 North as it merges with Interstate 69 North and Interstate 240 North. Take Exit 31 onto Interstate 40 West/Little Rock. Take Exit 1A toward 3rd Street. Turn left onto 2nd Street. Turn right onto Exchange Avenue. Turn right onto North Main Street. The hotel is on the right.

From West (Arkansas)

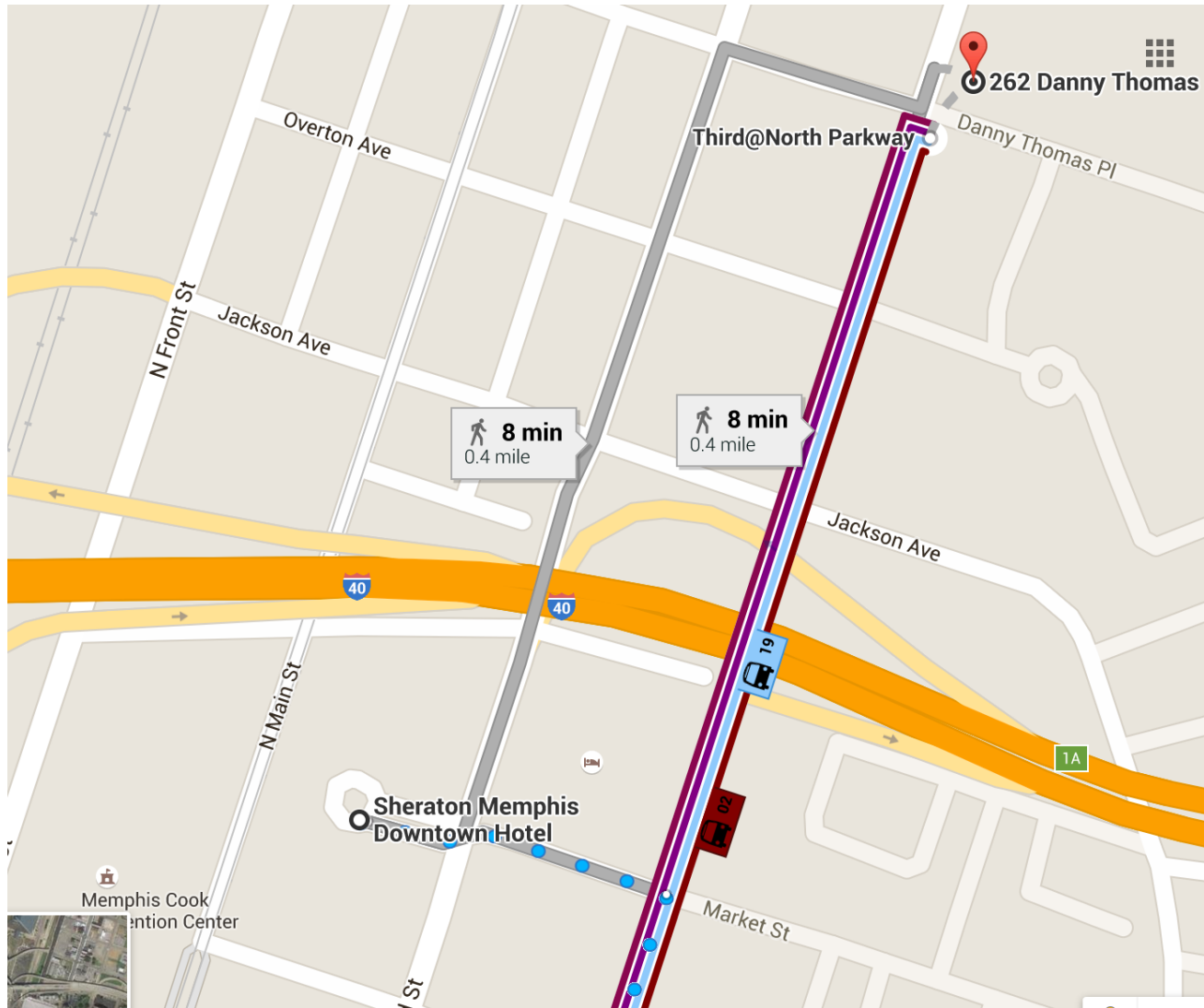
Take Interstate 40 East toward Memphis/Nashville. Take Exit 1 for Front Street. Stay left at the fork following the signs toward Front Street North. Turn left onto Front Street. Turn right onto Winchester Avenue. Turn right onto North Main Street. The hotel is on the left.

DIRECTIONS

St. Jude Children's Research Hospital

262 Danny Thomas Place

901-595-3400 (St. Jude CEIRS, James Knowles)



From Sheraton Memphis Downtown Hotel

Head east toward Market Ave.

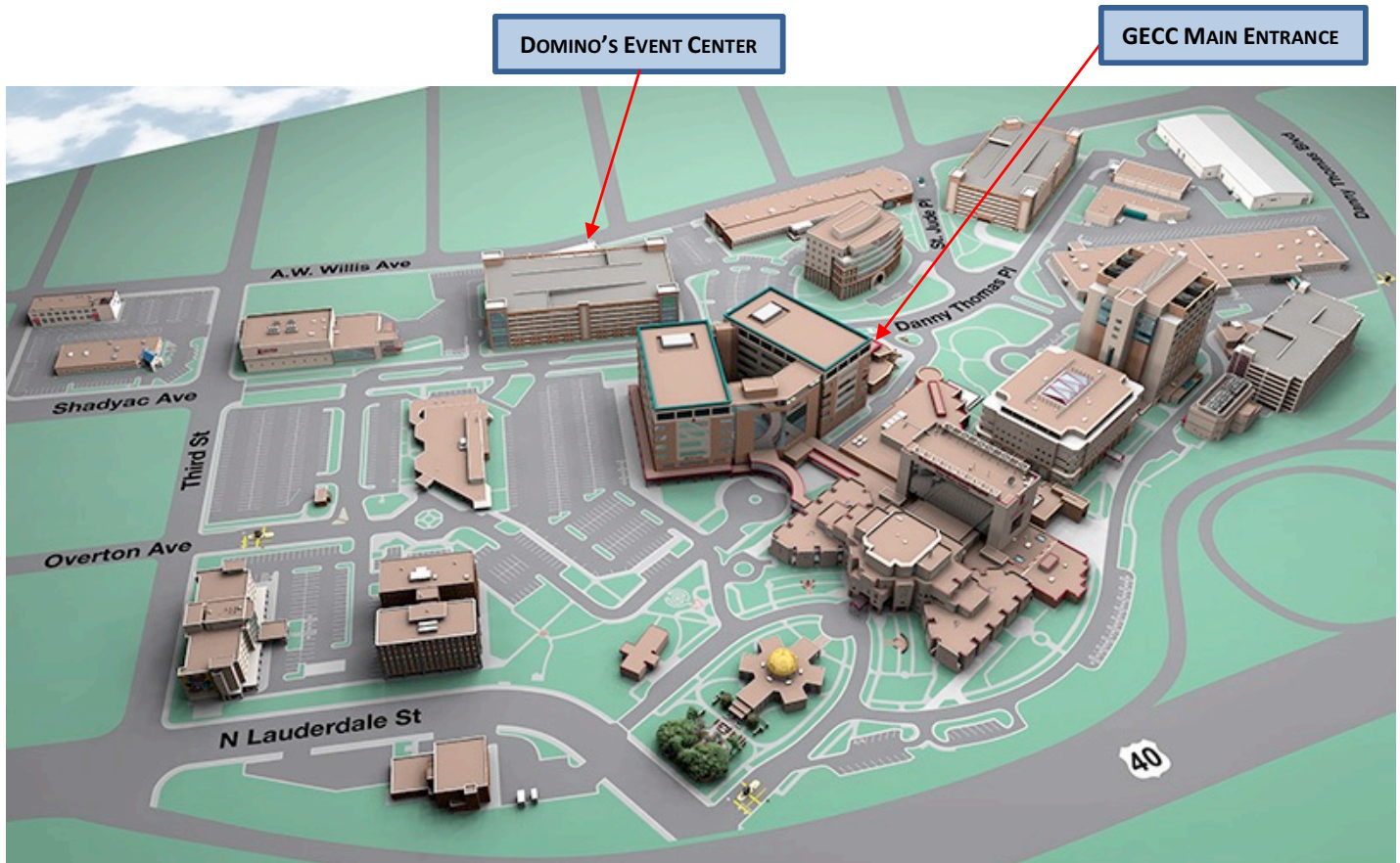
Slight right onto Market Ave.

Turn right onto N B.B. King Blvd

St. Jude Children's Research Hospital will be on the left

ST. JUDE CHILDREN'S RESEARCH HOSPITAL CAMPUS MAP

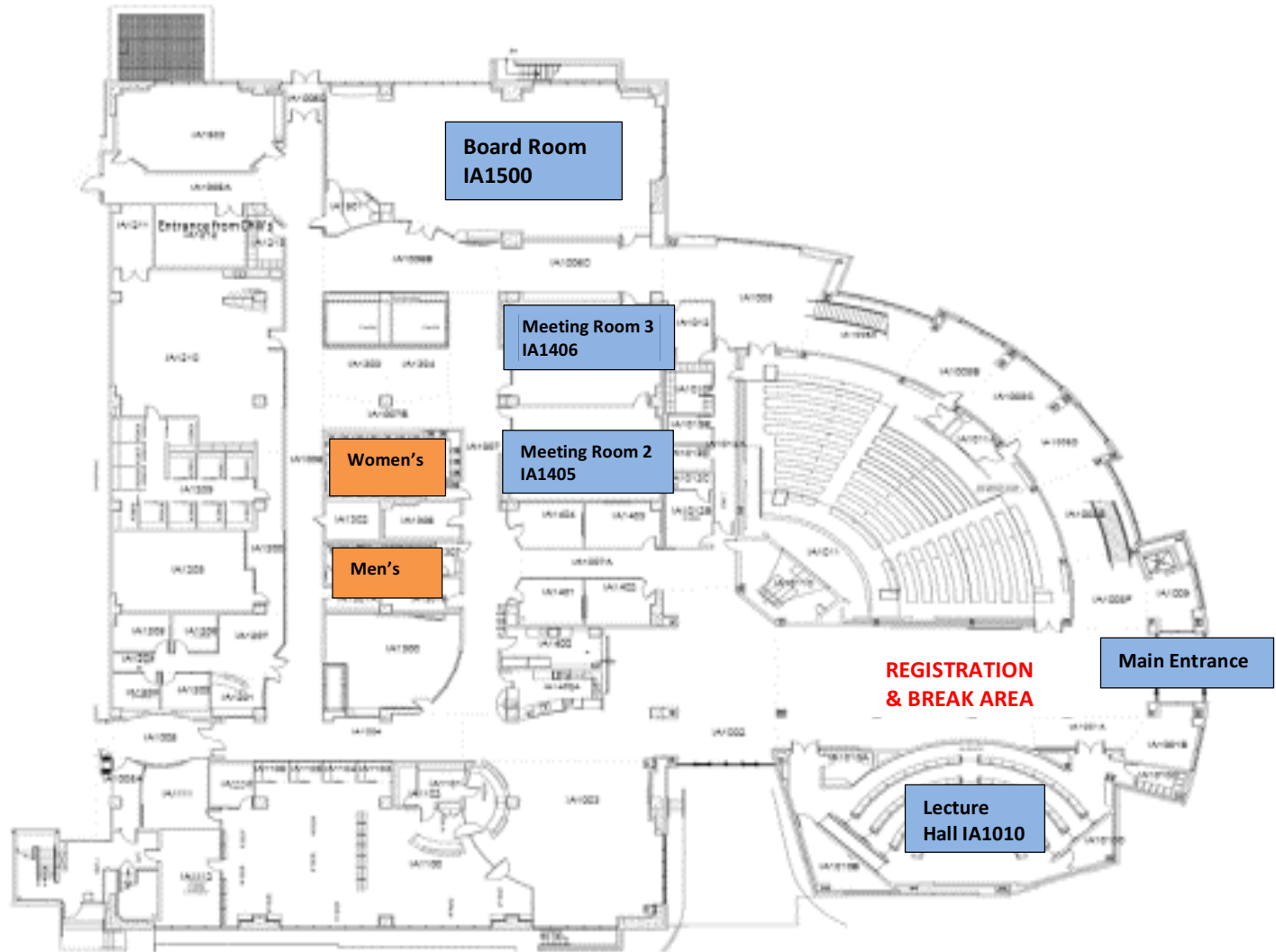
Marlo Thomas Center for Global Education and Collaboration (GECC): Sunday June 26th



GECC: Break-out Sessions (noon- 6:00pm)

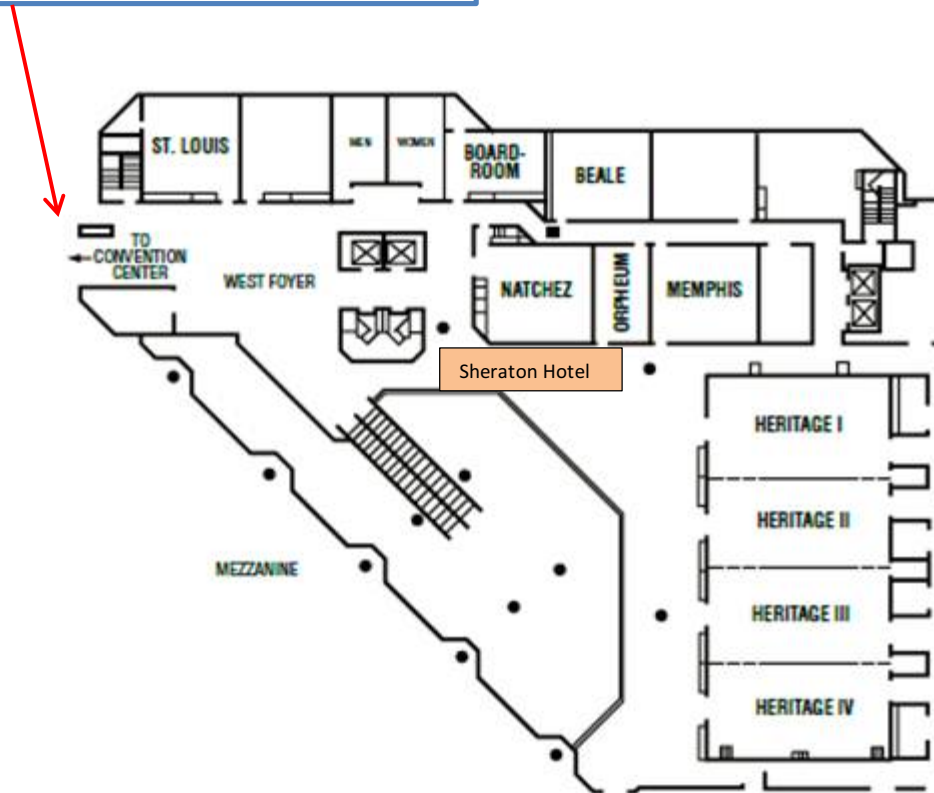
Domino's Event Center: CEIRS Meeting Reception (6:30-9:00pm)

**ST. JUDE CHILDREN'S RESEARCH HOSPITAL
MARLO THOMAS CENTER FOR GLOBAL EDUCATION AND COLLABORATION
(GECC)
1ST FLOOR**

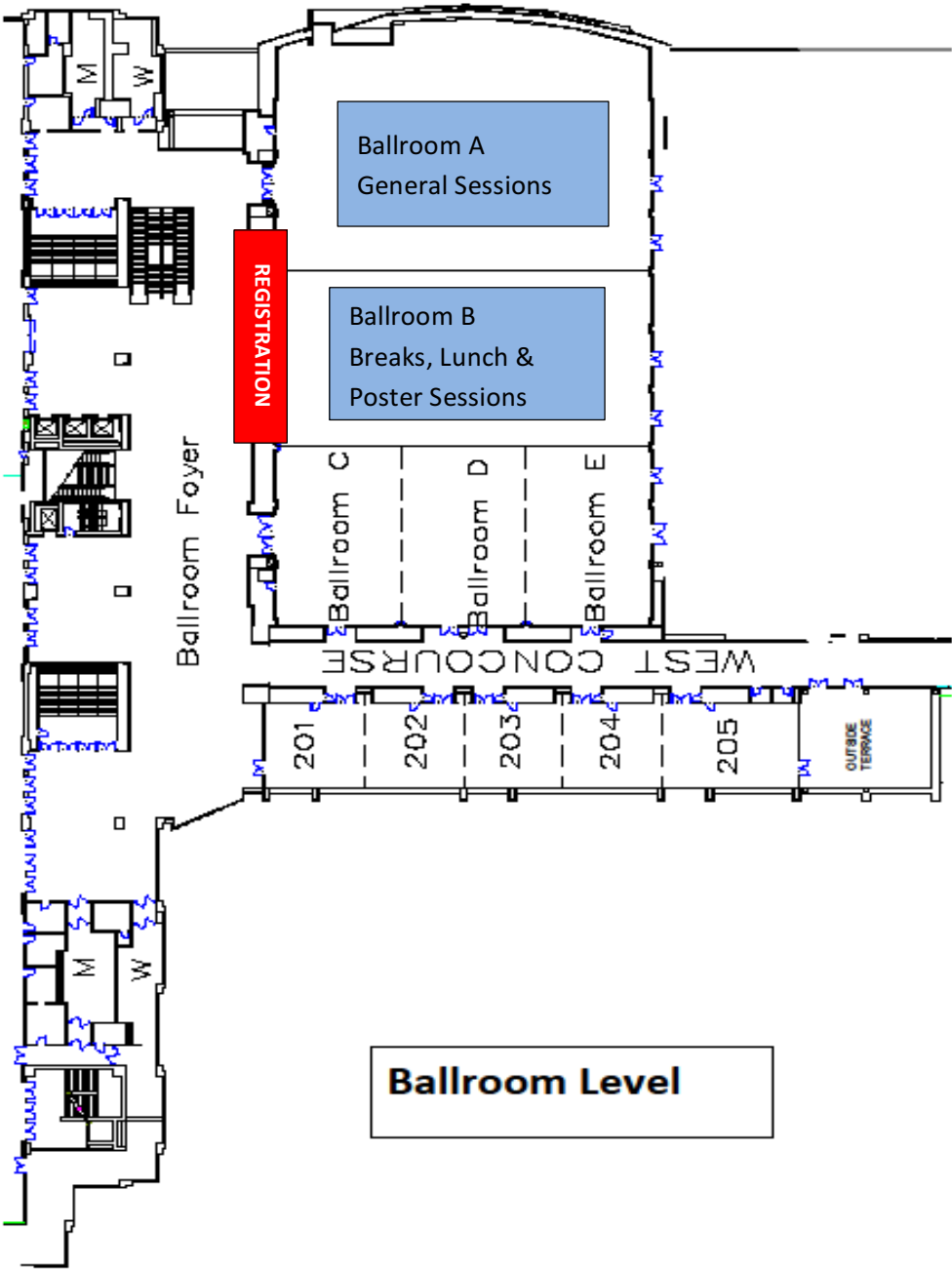


SHERATON MEMPHIS DOWNTOWN 2ND FLOOR

Entrance TO Memphis Cook Convention



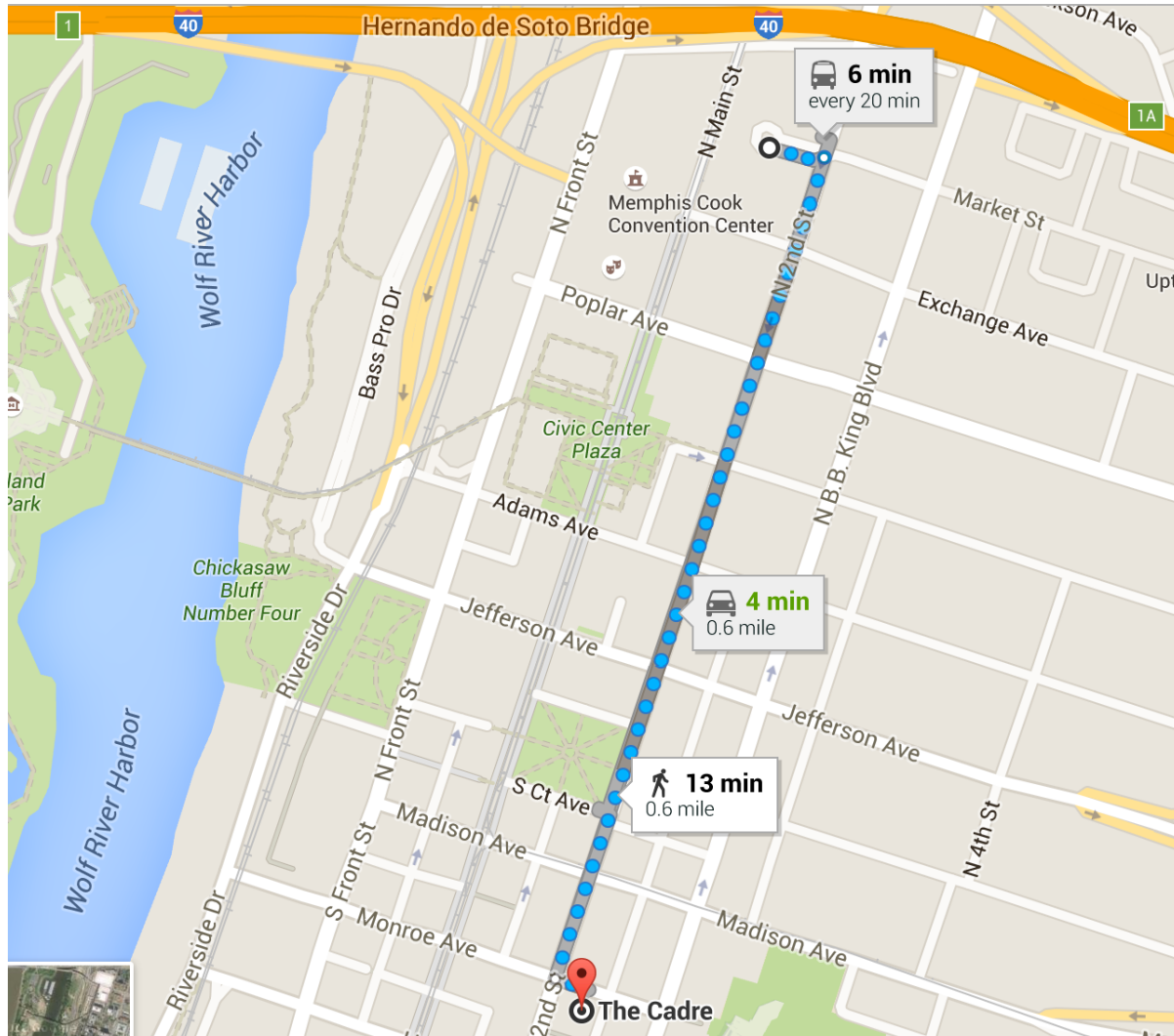
MEMPHIS COOK CONVENTION CENTER FLOOR PLAN
Ballroom Level



DIRECTIONS

The Cadre

149 Monroe Avenue
(901) 544-9103



From Sheraton Memphis Downtown

Head east toward Market Ave.

Slight right onto Market Ave.

Turn right onto N 2ND St.

The Cadre on corner of 2nd St and Monroe Ave.

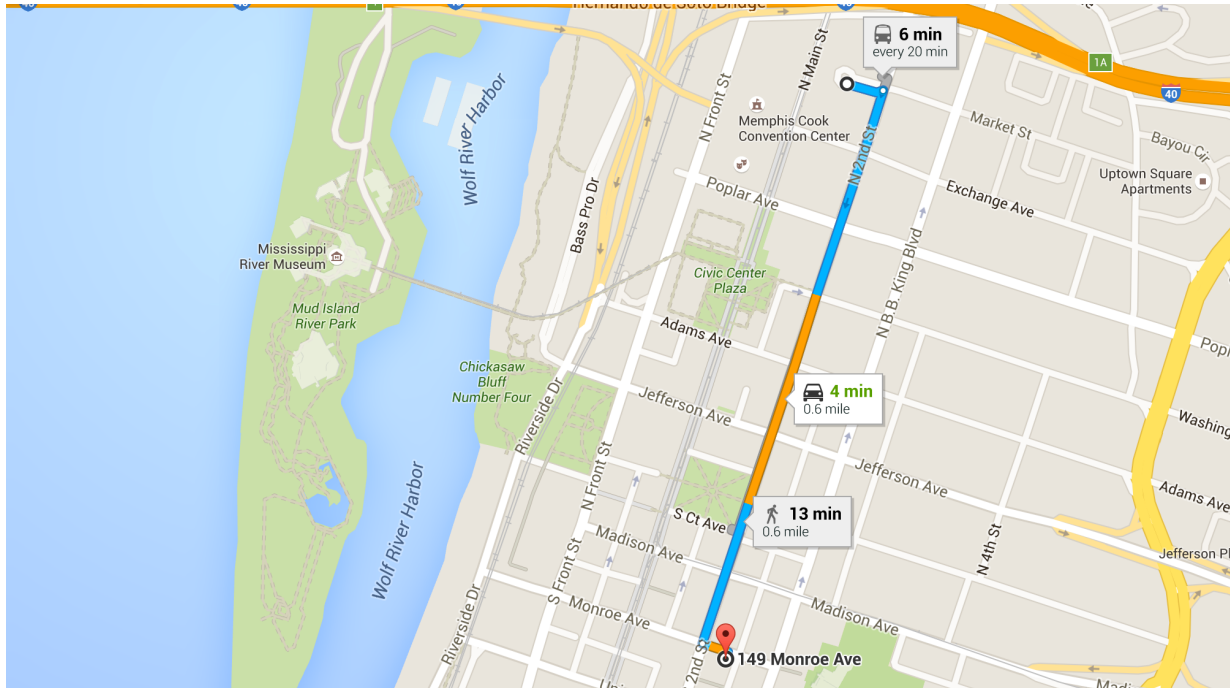
Entrance to The Cadre on 2nd Street

DIRECTIONS

Jerry Lee Lewis Café & Honky Tonk

149 Monroe Avenue

(901) 544-9103



From Sheraton Memphis Downtown

Head east toward Market Ave

Continue onto Market Ave.

Turn right onto N 2nd St.

Turn left onto Union Ave.

Turn right onto S 4th St.

Turn right onto Beale St.

Jerry Lee Lewis will be on right

9th Annual CEIRS Network Meeting “At A Glance”

SUNDAY JUNE 26TH

| REGISTRATION | 11:00am-6:30pm | GECC Lobby/Main Entrance |
|--|-----------------------|---------------------------------|
| Break-Out Session: Team Ferret | 12:00pm-1:00pm | GECC Board Room |
| Break-Out Session: Avian Surveillance | 1:00pm-2:00pm | GECC Board Room |
| Break-Out Session: Swine Surveillance | 2:00pm-3:00pm | GECC Board Room |
| Break-Out Session: Virus-Host Characterization | 3:00pm-5:00pm | GECC Board Room |
| Break-Out Session: Clinical | 12:00pm-3:00pm | GECC Lecture Hall |
| Break-Out Session: Human Surveillance | 3:00pm-4:00pm | GECC Lecture Hall |
| Break-Out Session: NIAID OA-Contract Q&A | 4:00pm-5:00pm | GECC Lecture Hall |
| Break-Out Session: Data Management | 12:00pm-1:00pm | GECC Meeting Room #2 |
| Break-Out Session: Experimental Data | 1:00pm-2:00pm | GECC Meeting Room #2 |
| Break-Out Session: Trainee Session - Influenza Research Priorities | 2:00pm-3:00pm | GECC Meeting Room #2 |
| Break-Out Session: DIGS Sequencing | 3:00pm-4:00pm | GECC Meeting Room #2 |
| Break-Out Session: Data Analysis Tools | 4:00pm-5:00pm | GECC Meeting Room #2 |
| Break-Out Session: Pandemic Planning Advisory Committee (PPAC) | 4:00pm-5:00pm | GECC Meeting Room #3 |
| CENTER Breakout (CRIP -closed) | 5:00pm-6:00pm | GECC Board Room |
| CENTER Breakout (NYICE- closed) | 5:00pm-6:00pm | GECC Meeting Room #2 |
| CENTER Breakout (JHCEIRS- closed) | 5:00pm-6:00pm | GECC Meeting Room #3 |
| CENTER Breakout (SJCEIRS- closed) | 5:00pm-6:00pm | GECC Meeting Room #5 |

WELCOME RECEPTION **6:30pm- 9:00pm** **Domino's Center, SJCRH**

MONDAY JUNE 27TH

| REGISTRATION | 7:30am-5:00pm | MCC Ballroom A/B |
|---|----------------------|-------------------------|
| Poster Session #1 Set-up | 7:30am-8:00am | Ballroom B |
| DPCC Tech and Training Bar | 8:00am-4:25pm | Rm 204 West Concourse |
| Welcome & CEIRS Update | 8:00am-8:25am | Ballroom A |
| General Sessions 1- Pandemic Preparedness | 8:25am-10:55am | Ballroom A |
| AM Break* | 10:00am-10:25am | Ballroom B |

| | | |
|--|----------------------|--------------------------|
| Panel Discussion #1 (GoFROC Policy & next steps) | 10:55am-11:25am | Ballroom A |
| General Sessions 2- Surveillance | 11:25am-4:25pm | Ballroom A |
| LUNCH* | 12:00pm-1:15pm | Ballroom B |
| NEC Luncheon | 12:00pm-1:15pm | Rm 205 West Concourse |
| PM Break* | 2:50pm-3:15pm | Ballroom B |
| Poster Session Presentations (1 minute) | 4:25pm-5:15pm | Ballroom A |
| Bus Ride: The Cadre | 5:15pm-6:00pm | Sheraton Hotel- Main St. |
| Speed Networking & Poster Session #1 | 6:00pm-8:00pm | The Cadre |
| DINNER & Dinner Discussion | 6:00pm-9:00pm | The Cadre |

TUESDAY JUNE 28TH

| | | |
|--|----------------------|--------------------------------------|
| REGISTRATION | 7:30am-5:00pm | MCC Ballroom A/B |
| Housekeeping | 7:55am-8:00am | Ballroom A |
| Poster Session #2 Set-up | 7:30am-8:00am | Ballroom B |
| General Sessions 2- Surveillance cont. | 8:00am-11:00am | Ballroom A |
| AM Break* | 9:55am-10:20am | Ballroom B |
| General Sessions 3- Immunity & Vaccines | 11:00am-3:10pm | Ballroom A |
| LUNCH* | 12:15pm-1:30pm | Ballroom B |
| Coordinator Luncheon | 12:15pm-1:30pm | Rm 205 West Concourse |
| PM Break* | 3:10pm-3:30pm | Ballroom B |
| Panel Discussion #2 (Universal Flu Vaccine Debate) | 3:30pm-4:15pm | Ballroom A |
| General Sessions 3- Immunity & Vaccines cont. | 4:15pm-5:30pm | Ballroom A |
| Bus Ride: Jerry Lee Lewis Café & Honky Tonk | 5:30pm-6:30pm | Sheraton Hotel- Main St. |
| Team Building & Poster Session #2 | 6:30pm-8:00pm | Jerry Lee Lewis Café & HT |
| DINNER | 6:30pm-? | Jerry Lee Lewis Café & HT |

WEDNESDAY JUNE 29TH

| | | |
|--|----------------------|-------------------|
| HOUSEKEEPING | 7:55am-8:00am | Ballroom A |
| General Sessions 4- New Technologies & Resources | 8:00am-10:00am | Ballroom A |
| AM Break* | 10:00am-10:20am | Ballroom B |
| General Sessions 5- Pathogenesis & Transmission | 10:20am-2:25pm | Ballroom A |
| LUNCH* | 11:55am-1:10pm | Ballroom B |
| General Sessions 6- Molecular Virology | 2:25pm-5:00pm | Ballroom A |
| Meeting Wrap-up! | 5:00pm-5:15pm | Ballroom A |

**Food & beverage during Breaks, Lunch and Dinner limited to those paying optional food fees*

9th Annual CEIRS Network Meeting

Sunday June 26th, 2016 – Wednesday June 29th, 2016

MEMPHIS CONVENTION CENTER

255 N Main St
Memphis, TN 38103

Sunday June 26th, 2016

11:00 - 7:00 **Arrival and Check-in – Marlo Thomas Center for Global Education and Collaboration (GECC) at Kay Research & Care Center entrance**

Breakout Meetings **GECC (St Jude Children's Research Hospital Campus)**

12:00 – 6:00 pm Concurrent breakout meetings for CEIRS members to be held on **St. Jude Children's Research Hospital Campus at the GECC in Kay Research Center**. Break out meetings include CEIRS Cross-Collaborative working groups & informational sessions. Interested CEIRS members should attend any groups of interest.

| Meeting TIME | GECC Board Room | GECC Lecture Hall | GECC Meeting Room 2 | GECC Meeting Room 3 |
|---------------|---|---|---|--|
| 12:00-1:00 pm | Team Ferret Lead: Stacey Schultz-Cherry | Clinical Breakout Lead: Robin Mason | Data Management Lead: Marciela DeGrace | |
| 1:00-2:00 pm | Avian Surveillance Lead: Dave Stallknecht & Scott Krauss | Clinical Breakout continued | Experimental Data Lead: Eric Bortz | |
| 2:00-3:00 pm | Swine Surveillance Lead: Nicola Lewis, Amy Vincent & Martha Nelson | Clinical Breakout continued | Trainee session – Influenza research priorities Lead: Diane Post & Stacey Schultz-Cherry | |
| 3:00-4:00 pm | Virus-Host characterization Lead: Scott Krauss & Marciela DeGrace | Human Surveillance Lead: Rich Rothman & John Treanor | DIGS Sequencing Lead: Harm van Bakel, Peter Thielen, Justin Bahl, Ralph Tripp | |
| 4:00-5:00 pm | Virus-Host characterization continued | Contract Management* Lead: Diane Post & Shane Ryan | Data Analysis Tools Lead: Justin Bahl | Pandemic Planning Advisory Committee (PPAC) Lead: Michael Osterholm |
| 5:00-6:00 pm | CRIP Center Breakout Session (closed meeting) | SJCEIRS Center Breakout Session## (closed meeting) | NYICE Center Breakout Session (closed meeting) | JHCEIRS Center Breakout Session (closed meeting) |

*Participant-dependent; subject to room change;

##Note: Location change- Meeting Room #5 for St. Jude Center meeting

6:30 – 9:00 pm **OPTIONAL WELCOME RECEPTION – Domino's Center** on St. Jude Children's Research Hospital Campus

Monday June 27th, 2016

7:30 – 5:00 **Arrival and Check-in – Ballroom A/B entrance**

7:30 – 8:00 **Poster Session #1 Set-up – Ballroom B**

Meeting Opening **Memphis Convention Center** **Ballroom A**

8:00 – 8:05 Welcome – Richard Webby and Stacey Schultz-Cherry

8:05 – 8:25 Update on CEIRS – Diane Post and Marciela DeGrace

Memphis Convention Center **Rm 203 - West Concourse**

8:00 – 4:25 DPCC Tech and Training Bar – CEIRS DPCC Help Desk

Session 1: Pandemic Preparedness & Risk Assessment **Ballroom A**

Session Chairs: John Steel (Emory UGA) & Tom Fabrizio (SJCEIRS)

8:25 - 8:40 Virus Characterization Working Group – Scott Krauss

8:40 - 9:00 Continuous Evolution and risk assessment of the H5 and H7 subtypes of avian influenza viruses in China – Zhu Huachen

9:00-9:20 Recent Advances in Pandemic Influenza Modeling – Joshua Epstein

9:20-9:40 The 2016 H7N8 Highly Pathogenic Avian Influenza Outbreak in Indiana – David Suarez

9:40-10:00 Characterization of animal influenza virus infection and transmission in mammalian hosts – Hualan Chen

10:00–10:25 **BREAK - Ballroom B**

10:25-10:40 Update on CEIRS Pandemic Plan – Mike Osterholm

10:40-10:55 Pandemic Preparedness & risk assessment Panel discussion

Panel Discussion #1: GoFROC Policy and next steps **Ballroom A**

10:55-11:25 **Panel – GoFROC discussion – implementation of policy and alternative GoFROC approaches**

Moderator: Irene Glowinski

Panelists: Charlie Russell, John Steel, Andy Pekosz, Ron Fouchier, Daniel Perez, & David Spiro

Session 2: Surveillance **Ballroom A**

Session Chairs: Andy Bowman (SJCEIRS) & Constantinos Kyriakis (Emory-UGA CEIRS)

11:25-11:40 Perspective on MERS or Surveillance – Vincent Munster

| | |
|-------------|---|
| 11:40-12:00 | Middle East Respiratory Syndrome Coronavirus (MERS-CoV) in Africa – Malik Peiris |
| 12:00-1:15 | LUNCH - Ballroom B NEC LUNCH - Room 205 – West Concourse |
| 1:15-1:35 | Surveillance for MERS Coronavirus in mammals in Egypt – Mohamed Ali |
| 1:35-1:50 | Swine Surveillance Working Group – Amy Vincent, Martha Nelson, & Nicola Lewis |
| 1:50-2:10 | Tracking Swine Influenza Virus Epidemics in the Southeast and Midwest USA via Characterization of H1 Hemagglutinin Antigenic Profiles – Constantinos Kyriakis |
| 2:10-2:30 | Novel Chilean swine H1N2 virus transmits in ferrets via the respiratory route – Nicholas Bravo |
| 2:30-2:50 | Phenotypic characterization of an H1N1 swine influenza A virus closely related to the ancestor of the 2009 pandemic – Nacho Mena |
| 2:50-3:15 | BREAK - Ballroom B |
| 3:15-3:35 | Sequential sampling of individuals during flow through closed, coordinated swine production systems in the United States – Bryan Kaplan |
| 3:35-3:55 | Panel discussion on Surveillance |
| 3:55-4:10 | Training Update – Randy Albrecht |
| 4:10-4:25 | Avian Surveillance Working Group – Dave Stallknecht & Scott Krauss |
| 4:25-5:15 | Poster Session #1 presentations (1 minute presentations) |
| 5:15 – 6:00 | Bus Ride to The Cadre (meet 5:15pm at Sheraton's fountain on Main St.) |
| 6:00-6:30 | SPEED NETWORKING - The Cadre Opportunity for junior investigators to interact in groups with senior investigators |
| 6:00-8:00 | POSTER SESSION #1 and TEAMBUILDING (The Cadre) |
| 6:00-9:00 | OPTIONAL DINNER – The Cadre Dinner discussion - Advice to young influenza scientists. Panel: Rafi Ahmed, Peter Doherty, Peter Palese & Rob Webster. Moderator: Ali Ellebedy |

Tuesday June 28th, 2016

7:30-5:00 **Arrival and Check-in – Ballroom A/B entrance**

Poster Session #2 Set-up – Ballroom B

7:55-8:00 **Housekeeping – Ballroom A**

Session 2 cont. Surveillance Ballroom A

Session Chairs: Jon Runstadler (CRIP) & Becky Poulson (SJCEIRS)

8:00-8:20 Prevalence, diversity, dynamics and diffusion of avian influenza A viruses among key wild bird groups at a major breeding, migratory and over-wintering site in Europe – Nicola Lewis

8:20–8:40 Emergence and Spread of an Avian H11 Influenza Virus in a Colombian Live Animal Market – Pedro Jimenez-Bluhm

8:40-9:00 Antibodies to North American and clade 2.3.4.4 Eurasian H5 influenza viruses in Canada geese – David Stallknecht

9:00-9:15 Human working group – Rich Rothman & John Treanor

9:15-9:35 Severe pdmH1N1-2009 influenza during the 2015 season in Santiago, Chile – Tamara Garcia

9:35-9:55 Incidence of Influenza and Influenza Re-infection in a Cohort of Nicaraguan Children – Aubree Gordon

9:55-10:20 **BREAK - Ballroom B**

10:20-10:40 H1N1 disease in Baltimore versus Taipei Taiwan – Rich Rothman

10:40-11:00 Surveillance Panel discussion

Session 3 Immunity and Vaccines Ballroom A

Session Chairs: Paul Thomas (SJCEIRS) & Ali Ellebedy (Emory-UGA CEIRS)

11:00-11:15 Perspective on Immunity – Peter Doherty

11:15-11:35 Defining antigen specific plasmablast and memory B cell subsets in blood following viral infection and vaccination of humans – Ali Ellebedy

11:35-11:55 Patterns of Antibody response to influenza after a first and second infection – Samuel Wilks

11:55-12:15 A universal influenza virus vaccine candidate confers protection against pandemic H1N1 infection in ferrets. – Raffael Nachbagauer

12:15-1:30 **LUNCH - Ballroom B**

12:15-1:30 **COORDINATOR LUNCH – Room 205 – West Concourse**

| | |
|-------------|---|
| 1:30-1:50 | Neutralizing and non-neutralizing human H7N9 influenza vaccine-induced monoclonal antibodies offer protection <i>in vivo</i> – Carole Henry Dunand |
| 1:50-2:10 | Hemagglutinin stalk-specific antibodies potently induce phagocytosis of immune complexes and the release of extracellular traps by neutrophils – Caitlin Mullarkey |
| 2:10-2:30 | Systemic dysregulation of cellular immune responses to H1N1 infection during pregnancy – Elizabeth Littauer |
| 2:30-2:50 | Flow Cytometric and Cytokine ELISpot Approaches to Characterize the Cell-mediated Immune Response in Ferrets Following Influenza Virus Infection – Anthony DiPiazza |
| 2:50-3:10 | Immunity and Vaccines panel discussion |
| 3:10 – 3:30 | BREAK – Ballroom B |

Panel Discussion #2: **Decision 2016 Debate: Universal Flu Vaccines**

| | |
|-----------|---|
| 3:30-4:15 | Decision 2016 - Universal Flu Vaccines: Pros, Cons and will we ever have one Moderator: Daniel Perez Team Pro Universal Flu Vaccine: Florian Krammer, Peter Palese, Patrick Wilson & Ruben Donis Team Cons Universal Flu Vaccine: Paul Thomas, John Treanor, Mike Osterholm, & Andrea Sant |
|-----------|---|

Session 3 cont. **Immunity and Vaccines** **Ballroom A**

| | |
|-----------------|---|
| Session Chairs: | Sabra Klein (JHCEIRS) & Brenda Tesini (NYICE) |
| 4:15-4:35 | Recognition of swine-origin influenza H3N2 variant virus by human neutralizing antibodies – Sandhya Bangaru |
| 4:35-4:55 | Evolution of the influenza-specific CD4 T cell response from childhood to adulthood – Jennifer Nayak |
| 4:55-5:15 | Links between specificity and function in CD4 T cell immunity to influenza virus – Andrea Sant |
| 5:15-5:30 | Immunity and Vaccines panel discussion |
| 5:30 – 6:30 | Bus Ride to Jerry Lee Lewis Café and Honky Tonk (meet 5:15pm at Sheraton's fountain on Main St.) |
| 6:30-8:00 | POSTER SESSION #2 and TEAMBUILDING – Jerry Lee Lewis Café and Honky Tonk |
| 6:30-??? | OPTIONAL DINNER – Jerry Lee Lewis Café and Honky Tonk |

Wednesday June 29th, 2016

7:55-8:00 **Housekeeping – Ballroom A**

Session 4: New Technologies and Resources Ballroom A

Session Chairs: Ralph Tripp (Emory-UGA CEIRS) & Luis Martinez (NYICE)

8:00-8:15 Team Ferret & Cell Core update – Stacey Schultz-Cherry

8:15-8:30 DIGS Sequencing Core – Constantinos Kyriakis, Harm van Bakel, & Justin Bahl

8:30-8:50 Establishing new cell culture models to study bat-borne emerging viruses – Carles Martinez-Romero

8:50-9:10 The use of implantable Telemetry devices for acquiring real-time physiological data during an influenza virus infection in ferrets – Lisa Kercher

9:10-9:30 A novel influenza A barcoded-library reveals NS1 adaptations to the host – Raquel Munoz-Moreno

9:30-9:45 Panel discussion on new technologies and resources

9:45-10:00 Data Management update – Marciela DeGrace

10:00-10:20 **BREAK – Ballroom B**

Session 5: Pathogenesis & Transmission Ballroom A

Session Chairs: Stacey Schultz-Cherry (SJCEIRS) & Jefferson Santos (CRIP)

10:20-10:35 Perspective Presentation – Mark Tompkins

10:35–10:55 HPAI H5N1 airborne-transmission substitutions: low pathogenicity in ferrets and clade-dependent phenotypes – Sander Herfst

10:55-11:15 Phenotypic Differences observed in Swine and Human Pandemic H1N1 viruses – Daniel Darnell

11:15-11:35 Characterization of highly pathogenic avian influenza H5N6 viruses of clade 2.3.4.4. – Mathilde Richard

11:35-11:55 Impact of Natural Variation in the Eurasian Avian-Like Swine Lineage M1 Protein on Replication and Transmission of Influenza A Virus – John Steel

11:55-1:10 **LUNCH – Ballroom B**

1:10-1:30 Obesity weighs heavily on secondary bacterial infection following influenza virus challenge – Erik Karlsson

1:30-1:50 Immunological parameters that associate with severe influenza disease or recovery in mice - Juliet Morrison

1:50-2:10 Panel discussion on Pathogenesis and Transmission

2:10-2:25 Influenza research priorities: Trainees perspective

Session 6: Molecular Virology Ballroom A

Session Chairs: Andy Pekosz (JHCEIRS) & Mark Zanin (SJCEIRS)

2:25-2:40 Perspective presentation on Molecular Virology – Andy Pekosz

2:40-3:00 Impact of packaging signal mismatch on influenza A virus reassortment – Anice Lowen

3:00-3:20 **BREAK – Ballroom B**

3:20-3:40 Design and incorporation of mosaic hemagglutinins as a universal vaccination strategy against influenza B viruses – Megan Ermler

3:40-4:00 Development and characterization of influenza B-H5 chimera viruses – Jefferson Santos

4:00-4:20 Distribution of O-acetylated sialic acids in influenza host tissues – Brian Wasik

4:20-4:40 Plasticity of amino acids at 2 positions in the RBS of H9 Influenza virus – Adebimpe Obadan

4:40-5:00 Panel discussion on Molecular Virology

5:00-5:15 **Meeting wrap-up (with clickers)**

9th Annual CEIRS Network Meeting

POSTER SESSIONS

June 26th, 2016 – June 29th, 2016

Poster Session #1: Surveillance- Human & Other

| Poster # | Name | Center | Title |
|----------|-----------------------------|---------|--|
| 1 | Ana Beatriz Gorini da Veiga | CRIP | Mutation analyses of Influenza A viruses isolated from clinical samples |
| 2 | Angela Danner | SJCRH | Vaccine Breakdown in an Outbreak of Equine Influenza |
| 3 | Benjamin Cowling | SJCRH | Epidemiology of Influenza in a household transmission study |
| 4 | Duamaco Escribano | SJCRH | Incidence and mortality rate for acute respiratory infections in three ethnic groups in the north of Colombia. |
| 5 | Juan Dib | SJCRH | Genetic susceptibility to infection by Influenza virus in the Kogui Indians from the North of Colombia. |
| 6 | Hiroataka Imai | CRIP | Natural selection limits human adaptation of H5N1 influenza viruses within individual hosts despite prolonged infection |
| 7 | Justin Hardick | JHCEIRS | Characterization of Influenza A Viruses from Three Cohorts of Influenza Positive Samples by RT-PCR/ESI-MS |
| 8 | Valerie Cortez | SJCRH | Comparative seroprevalence of respiratory and enteric virus infections within indigenous communities in the Sierra Nevada de Santa Marta, Colombia |
| 9 | Wendy Puryear | CRIP | Expanding our ecological understanding of Influenza A Virus: a role for both opportunistic and prospective sampling in marine mammals. |
| 10 | Zhen-Ying Liu | JHCEIRS | Predictive factors of false positive rapid influenza diagnostic tests among adults admitted to the emergency department in Taiwan. |

Poster Session #1: Surveillance- Swine

| Poster # | Name | Center | Title |
|----------|---------------|--------|---|
| 11 | Rafael Medina | CRIP | Improved diagnostics and surveillance identify novel reassortant swine influenza a viruses in Chile |

| | | | |
|----|-------------------------|-----------|--|
| 12 | Andrew Bowman | SJCRH | Controlling influenza A virus in swine at agricultural fairs to improve public health. |
| 13 | Andrew Bowman | SJCRH | Influenza A virus contamination of animal contact surfaces during swine corralling activities at agricultural fairs. |
| 14 | Constantinos Kyriakis | Emory-UGA | The Founder Effect Facilitates Fast Evolution of Swine Influenza A Virus in the Southeastern USA |
| 15 | Gustavo Real-Soldevilla | CRIP | Influenza surveillance in wild boars and free-range Iberian pigs in Spain |
| 16 | Jingjiao Ma | SJCRH | Characterization of swine influenza viruses isolated from Midwest USA swine herds |
| 17 | Marina Dibarbora | CRIP | Phylogenetic analysis of swine influenza virus isolated in Argentina |
| 18 | Josh Lorbach | SJCRH | Outbreak of porcine hemagglutinating encephalomyelitis virus associated with influenza-like illness in exhibition swine at agricultural fairs in Michigan in 2015. |
| 19 | Karl Cuideris | SJCRH | pdmH1N1 is endemic in Colombian swine populations. |

Poster Session #1: Surveillance- Avian

| Poster # | Name | Center | Title |
|----------|---------------------------|--------|--|
| 20 | Hui-Ling Yen | SJCRH | Isolation of H5N6, H7N9, and H9N2 avian influenza viruses from air sampled at live poultry markets in China, 2014-2015 |
| 21 | Christopher Hamilton-West | SJCRH | Risk based surveillance of influenza virus in wild birds in Chile |
| 22 | Jacqueline Nolting | SJCRH | Influenza A surveillance efforts in wild birds using the Mississippi Migratory Flyway, 2015-2016 |
| 23 | Jacqueline Nolting | SJCRH | The impact of host migratory behavior on the evolution of influenza A virus diversity at a small spatial scale. |
| 24 | Rebecca Poulson | SJCRH | Influenza A Subtype Diversity in Fall Migrating Teal: Almost a Decade in the Making |
| 25 | Marjolein Poen | CRIP | Lack of virological and serological evidence for continued circulation of highly pathogenic avian influenza H5N8 virus in wild birds in the Netherlands, 2014-2016 |

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| 26 | Nichola Hill | CRIP | Do anthropogenic habitats promote amplification of influenza in gulls? |
| 27 | Peter Thielen | JHCEIRS | Deployable Sequencing Methods for Real-Time Influenza Genomic Surveillance |
| 28 | Philip Meade | CRIP | Serological response in mallards to successive infection with low-pathogenic influenza viruses H3N8 and H4N5. |
| 29 | Thomas Fabrizio | SJCRH | Spatial separation of North and South American-lineage influenza viruses in Brazilian birds. |
| 30 | Gongxun Zhong | CRIP | Characterization of Avian H5N1 Influenza Viruses From Vietnam |
| 31 | Gonzalo Barriga | CRIP | Wild Bird Influenza Virus Surveillance in Chile |
| 32 | Islam Hussein | CRIP | Circulation of low pathogenic H5N2 in Alaskan wild birds prior to emergence of highly pathogenic H5 viruses in North American poultry |
| 33 | Truc Pham | SJCRH | Dynamics and risk of reassortment between AIV subtypes in Alaska |
| 34 | Agustina Rimondi | CRIP | Wild Bird Influenza Surveillance in Argentina |
| 35 | Vijay Dhanasekaran | SJCRH | Avian influenza viruses of diverse origins detected in Adélie Penguins in Antarctica |

Poster Session #1: Pandemic Preparedness & Risk Assessment

| Poster # | Name | Center | Title |
|----------|---------------|--------|--|
| 36 | Gavin Smith | SJCRH | Staggered Introduction of Eurasian Avian Swine Lineage Segments into Pig Circulation: Revisiting the Single Precursor Origin? |
| 37 | Bindu Marathe | SJCRH | Extension of Treatment Window for Highly Pathogenic Influenza A(H5N1) Virus Infection in Mice with Oseltamivir and T-705 Combination |
| 38 | Laura Eckard | SJCRH | The zoonotic potential of a novel Influenza C-like virus |

Poster Session #1: Molecular Virology

| Poster # | Name | Center | Title |
|----------|-----------------|-----------|--|
| 39 | Adebimpe Obadan | CRIP | Pathogenesis of a novel H5N2 virus in turkeys following prime-boost vaccination strategies |
| 40 | Anice Lowen | Emory-UGA | Droplet digital PCR assay for quantification of defective interfering influenza A viruses |

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| 41 | Colin Parrish | CRIP | Modified sialic acids and their expression in influenza hosts. |
| 42 | David Suarez | CRIP | H7 hemagglutinin gene limits poultry transmission and replication in Chinese avian influenza isolates |
| 43 | Deena Blumenkranz | JHCEIRS | Stability of the influenza hemagglutinin protein correlates with fitness and evolution |
| 44 | Grant Beyleveld | CRIP | Exploring host factors that support replication of respiratory viruses |
| 45 | Hsuan Liu | JHCEIRS | Mutations in the M1 protein increase infectious virus titers and enhance filamentous virus production in influenza A viruses encoding M2-Y76A |
| 46 | Hui-Ling Yen | SJCRH | Sialyl glycans recognized by the hemagglutinin and neuraminidase proteins of A(H1N1)pdm09 and swine influenza viruses |
| 47 | Jefferson Santos | CRIP | Effect of alternative amino acid substitutions near the receptor-binding site of influenza A H3 viruses |
| 48 | Lucas Ferreri | CRIP | Evaluating internal genes reassortment in an Argentinian H4N2 virus. |
| 49 | Maria White | Emory-UGA | Quantifying the effects of RNA packaging signal divergence on influenza A virus reassortment |
| 50 | Nicholas Wolghemuth | JHCEIRS | Influenza A virus M2 protein apical targeting is required for efficient virus assembly and replication |
| 51 | Vinod Balasubramaniam | CRIP | Live visualization of hemagglutinin dynamics during infection by using biarsenically labeled replication competent Influenza A virus |

Poster Session #1: Data & Resource Management and Experimental Data

| Poster # | Name | Center | Title |
|----------|----------------------------|--------|---|
| 52 | Ana Silvia Gonzalez-Reiche | CRIP | Transfer of technology between two CRIP laboratories: Expanding Next Generation Sequencing capacity for the CEIRS network |
| 53 | Stephan Bour | DPCC | New Feature of the DPCC to Find Information, Share Data and Collaborate |
| 54 | Eric Bortz | CRIP | Virus-Host Interactions: modeling experimental data on emerging influenza and coronaviruses |
| 55 | Jayeeta Dutta | CRIP | Next generation sequencing for Influenza genome |

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| 56 | Bridgett Sharp | SJCRH | South American Influenza Surveillance: A Tale of Data Collection and Management |
| 57 | Pamela Freiden | SJCRH | St. Jude Ferret Reagent Core: Developing key reagents to study cellular, immunological, and virological processes in influenza virus-infected ferrets. |
| 58 | Sean Cherry | SJCRH | Primary Respiratory Cell Core for the CEIRS Network |
| 59 | Veronika Chromikova | CRIP | A robust <i>in vitro</i> phagocytosis assay to measure the effector functions of antibodies directed to the influenza virus surface glycoproteins |
| 60 | Bryan Kaplan | SJCRH | Development of clade 2.3.4.4 H5NX <i>in vivo</i> challenge models |

Poster Session #2: Immunology

| Poster # | Name | Center | Title |
|----------|-------------------------|-----------|--|
| 1 | Aisha Hegab | SJCRH | Herpesvirus co-infection alters immune responses to human influenza virus infection |
| 2 | Brenda Tesini | NYICE | Natural H3N2 influenza A infection in humans expands memory B cells specific for the hemagglutinin stalk domain |
| 3 | David Boyd | SJCRH | ADAMTS4 modulates lung tissue repair following lethal influenza A infection in mice |
| 4 | E. Stein Esser | Emory-UGA | Adverse outcomes of seasonal influenza A virus infection in pregnant mouse model |
| 5 | E Kaitlynn Allen | SJCRH | IFITM3 regulatory SNP increases severe human influenza risk by shifting transcription factor occupancy |
| 6 | Jacob Kohlmeier | Emory-UGA | Tissue-resident monocytes promote the establishment of lung-resident CD8 T cell memory following influenza infection |
| 7 | Jefferson Santos | CRIP | Genetic and phenotypic stability of an attenuated influenza B virus |
| 8 | Jenny Johnson | SJCRH | Understanding the impact of low dose rapamycin on B cells following a primary influenza infection. |
| 9 | Katherine Fenstermacher | JHCEIRS | Temperature-dependent induction of host innate immune response by Influenza A Virus in differentiated primary human nasal epithelial cells |

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| 10 | Meenu Pillai | SJCRH | Autoreactive potential of cross-reactive influenza antibodies |
| 11 | Paul Leon | CRIP | Conserved epitopes on the head domain of the influenza B virus hemagglutinin |
| 12 | Stefan Schattgen | SJCRH | The antiviral molecule Mx1 positively regulates the induction of type I IFN in response to influenza infection. |
| 13 | Melissa Uccellini | CRIP | Ly6Chi inflammatory monocytes are the predominant IFN-responding cells during influenza virus infection |
| 14 | Xizhi Guo | SJCRH | The protective role of $\gamma\delta$ T cells in neonatal influenza |

Poster Session #2: Immunology & Vaccine

| Poster # | Name | Center | Title |
|----------|----------------------|---------|--|
| 15 | Angela Choi | CRIP | Antibodies induced by a recombinant H5 vaccine in humans confer protection in a heterosubtypic influenza virus mouse passive transfer challenge model |
| 16 | Susu Duan | SJCRH | A novel monocyte-derived macrophage-like lung interstitial population of distinct recruitment kinetics contributes to influenza disease pathogenesis |
| 17 | Ashley Fink | JHCEIRS | Antibody responses and adverse reactions to influenza A virus immunization differ between the sexes in a mouse model |
| 18 | Christopher Anderson | NYICE | Rapid Identification of Candidate Vaccine Strains For Protection Against Emerging Avian Influenza Viruses |
| 19 | Jeri Carol Crumpton | SJCRH | Existing poultry vaccines provide protection against highly pathogenic North American H5 Clade 2.3.4.4 influenza A virus in chickens. |
| 20 | Katherine Richards | NYICE | Comparison of immunogenicity in season and avian influenza HA proteins in HLA-DR1 and HLA-DR4 Tg mice |
| 21 | Leo Poon | SJCRH | Quantifying influenza virus transmission bottlenecks in humans |
| 22 | Leo Poon | SJCRH | Stalking influenza by vaccination with pre-fusion headless HA mini-stem |
| 23 | Michael Schotsaert | CRIP | Infection-permissive immunity against influenza virus provided by vaccination prevents loss of alveolar macrophages and modulates virus-induced cross-reactive cellular immune responses during subsequent influenza infections. |

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| 24 | Olivia Hall | JHCEIRS | Progesterone-based contraceptives alter immune responses and cross-protection against influenza A viruses in female mice |
| 25 | Racheal Keating | SJCRH | Inhibition of mTOR dampens the primary CD8 T cell response to influenza vaccination and enhances the cross-protective secondary response. |
| 26 | Wenqian He | CRIP | Protective non-neutralizing antibodies targeting the influenza virus hemagglutinin require alveolar macrophages to mediate virus clearance |
| 27 | Sook-San Wong | SJCRH | Evaluating the immune correlate of protection for an avian influenza H5N1 vaccine in the ferret model by using oil-in-water adjuvants |
| 28 | Sophia Ng | SJCRH | Immune correlates of protection and household transmission dynamics |
| 29 | Sun-Young Sunwoo | SJCRH | Evaluation of the efficacy of a universal influenza virus vaccine candidate in a pig model with maternal antibodies |
| 30 | Teddy John Wohlbold | CRIP | Broadly cross-reactive antibodies against the influenza B virus neuraminidase are protective against lethal viral challenge in mice when administered prophylactically or therapeutically |
| 31 | Xueting Qiu | SJCRH | Predicting H5N1 Lineage Specific Human CD8+ T-Cell-Reactive Epitopes for Vaccine Selection |
| 32 | Yaoqing Chen | NYICE | Neuraminidase targeted antibody response alters the severity of influenza infection |
| 33 | Erik Karlsson | SJCRH | Adjuvanted H7N9 influenza vaccine fails to protect obese mice in spite of seroconversion |

Poster Session #2: Transmission and Adaptation

| Poster # | Name | Center | Title |
|----------|----------------|-----------|---|
| 34 | Erik Karlsson | SJCRH | The obese host as a driver of influenza virus evolution |
| 35 | Andrew Feldman | JHCEIRS | Modeling the Evolution of HA Protein Stability to Predict Viral Persistence in Populations |
| 36 | John Steel | Emory-UGA | Adaptation of the M segment to a mammalian host is important for transmission in a guinea pig model |
| 37 | Kimberly Davis | CRIP | The Characterization of Influenza A Virus Adaptations During Propagation in Laboratory Hosts |

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| 38 | Marion Russier | SJCRH | Role of HA acid stability in the emergence of H1N1 pandemic influenza from swine |
| 39 | Thibaut Vausselin | CRIP | Role of host adaptive polymerase mutations in conferring species-specific interactions with essential host factors |
| 40 | Mark Zanin | SJCRH | An amino acid residue in the stalk domain of influenza neuraminidase N1 is critical for sialidase activity |

Poster Session #2: Pathogenesis

| Poster # | Name | Center | Title |
|----------|----------------------|-----------|--|
| 41 | Victoria Meliopoulos | SJCRH | Absence of $\beta 6$ integrin protects highly susceptible obese mice from influenza infection |
| 42 | Victoria Meliopoulos | SJCRH | $\beta 6$ integrin sets the baseline antiviral state in the lung through IFN dependent tuning of alveolar macrophage activation |
| 43 | Chinglai Yang | Emory-UGA | Infection and replication of H3N2 avian influenza viruses in mice |
| 44 | Christopher Bandoro | CRIP | Bacterial lipopolysaccharide directly reduces the infectivity of avian H3N8 and human H1N1 influenza viruses |
| 45 | Marco Straus | NYICE | Identification of bacterial proteases as activators of influenza A viruses |
| 46 | Michael Chan | SJCRH | Human mesenchymal stromal cells reduce influenza A H5N1-associated acute lung injury |
| 47 | Marta Lopez de Diego | NYICE | NS1 protein mutations affecting interferon responses and virulence of circulating H3N2 human influenza A viruses |
| 48 | Philippe Pascua | SJCRH | Influenza B Viruses with E119A or H274Y Oseltamivir-resistant Substitution did not Outcompete the Wild-type Virus in Co-infection Ferret Model |
| 49 | Francisco Chaves | NYICE | Production and evaluation of recombinant influenza hemagglutinin probes for detection of specific B cells |
| 50 | Shauna Marvin | SJCRH | Understanding the pathogenesis of highly pathogenic avian influenza viruses in mammals; Hijacking Macrophages for replication |
| 51 | Teresa Aydillo-Gomez | CRIP | Loss of Fitness in Mammalian Cells Imposed by the NS1 Protein from Bat Influenza Viruses |

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