



22ND ANNUAL

HEALTH INNOVATION
RESEARCH DAY

2024

April 5TH

IHotel & Conference Center

Empowering Health: The AI Revolution in Medicine

Carle Illinois
**COLLEGE OF
MEDICINE**

 Carle  UNIVERSITY OF
ILLINOIS
URBANA-CHAMPAIGN

● WELCOME!

On behalf of the Planning Committee, we welcome all of you - medical students, residents, fellows, faculty, and colleagues - to this year's Health Innovation Research Day!

We hope you find today to be an opportunity to participate in scholarly dialogue both within and outside your discipline, to engage scholars you might not have the chance to meet otherwise and strive to do so with openness and enthusiasm.

This year, we are thrilled to welcome a selection of student posters from our international partner, the esteemed National Yang Ming Chiao Tung University College of Medicine in Taiwan.

Please keep in mind this year's theme, "Empowering Health: The AI Revolution in Medicine," and find opportunities to share your ideas and innovations, be inspired, be curious, build your network, and encourage others to do the same. Thank you for joining us!



Naveed Adoni
MD

Carle Health
Clinical Professor
Carle Illinois College of Medicine

**Wawrzyniec L.
Dobrucki**
PhD

Associate Professor of
Bioengineering and Medicine
Department of Bioengineering
Carle Illinois College of Medicine



Olivia Coiado
PhD

Director of Student Research
Carle Illinois College of Medicine

11:30 a.m.

Check-in

Heritage Hall 2, 3, 5, 6

12:15 - 12:20
p.m.

Welcome!

Gregory Polites, MD
Executive Vice Dean
Carle Illinois College of Medicine

12:20 – 1:40
p.m

Keynote Speaker Lunch

“The Role of AI in Behavioral Medicine”

James M. Rehg, PhD
*Director, Health Care Engineering
Systems Center
Founder Professor of Computer
Science and Industrial and Enterprise
Systems Engineering
The Grainger College of Engineering*

**Lunch buffet served in hallway*

1:40 - 1:50
p.m.

Break

Introduction of International Poster Exhibition

1:50 – 2:00
p.m.

**Janet A. Jokela, MD, MPH, FIDSA,
MACP, FRCP**
*Clinical Professor, Senior Associate
Dean of Engagement
Carle Illinois College of Medicine*

**See page 8 for full list of posters*

Poster Presentation Session

2:00 – 4:00
p.m.

**See page 9 for full list of posters*

Awards Ceremony and Closing

4:00 – 5:30
p.m.

Remarks with Reception

Dr. Naveed Adoni, MD
*Carle Health
Clinical Professor
Carle Illinois College of Medicine*

Dr. Wawrzyniec L. Dobrucki, PhD
*Associate Professor of Bioengineering
and Medicine
Department of Bioengineering
Carle Illinois College of Medicine*



MEET THE SPEAKER

JAMES M. REHG, PHD

*Director, Health Care Engineering Systems Center
Founder Professor of Computer Science and Industrial
and Enterprise Systems Engineering
The Grainger College of Engineering*

James M. Rehg (pronounced “ray”) is a Founder Professor of Computer Science and Industrial and Enterprise Systems Engineering at University of Illinois Urbana-Champaign.

Previously, he was a professor in the School of Interactive Computing at the Georgia Institute of Technology, where he co-directed the Center for Health Analytics and Informatics (CHAI). He received his Ph.D. from CMU in 1995 and worked at the Cambridge Research Lab of DEC (and then Compaq) from 1995-2001, where he managed the computer vision research group. He received an NSF CAREER award in 2001 and a Raytheon Faculty Fellowship from Georgia Tech in 2005.

He and his students have received a number of best paper awards, including best student paper awards at ICML 2005, BMVC 2010, Mobihealth 2014, Face and Gesture 2015, and a Distinguished Paper Award from ACM IMWUT and a Method of the Year award from the journal Nature Methods.

Dr. Rehg served as the General Co-Chair for CVPR 2009 and the Program Co-Chair for CVPR 2017. He has authored more than 200 peer-reviewed scientific papers and holds 26 issued US patents.

INTERNATIONAL POSTERS FULL LIST

Not part of the judged competition

Basic Science Innovation & Engineering

Yan-Cheng Chen

National Yang Ming Chiao Tung University College of Medicine
Subtyping Major Depressive Disorder Using Voxel-wise Functional Connectivity with Complete-Linkage Clustering

Yu-Ching Chen

National Yang Ming Chiao Tung University College of Medicine
Innovative SPICEhead Model for Accelerated Temporal Interference Brain Stimulation (TIBS) Simulations

Bo-Sheng Chuang

National Yang Ming Chiao Tung University College of Medicine
Optimization of Using Multiple Machine Learning Approaches in Atrial Fibrillation Detection Based on a Large-Scale Data Set of 12-Lead Electrocardiograms: Cross-Sectional Study

Yu-Fan Lin

National Yang Ming Chiao Tung University College of Medicine
Microscopic Video Analysis for Evaluating Stimulus-Evoked Hemodynamics in Mouse Barrel Cortex

Clinical Research & Quality Engineering

Yu-Fan Lin

National Yang Ming Chiao Tung University College of Medicine
Unsupervised Subtyping of Motor Dysfunction of Parkinson's Disease and its Structural Brain Imaging Correlates

Ting-Wei Wang

National Yang Ming Chiao Tung University College of Medicine
Brain Metastasis Tumor Segmentation and Detection Using Deep Learning Algorithms: A Systematic Review and Meta-Analysis

Ting-Wei Wang

National Yang Ming Chiao Tung University College of Medicine
Radiomics of Metastatic Brain Tumor as a Predictive Image Biomarker of Progression-Free Survival in Patients with Non-Small-Cell Lung Cancer with Brain Metastasis Receiving Tyrosine Kinase Inhibitors

Humanities & Medical Education

Jui-Yen Chen

National Yang Ming Chiao Tung University College of Medicine
Exploring the Roles of Physicianeers in the Digital Healthcare Innovation Ecosystem

POSTER PRESENTATIONS FULL LIST

Basic Science Innovation & Engineering

Maria Bederson (M3)

Carle Illinois College of Medicine
Simulation-Based, Peer-to-Peer Learning of a Technical Skill for Pre-Clinical Medical Students

Jennifer Carson-González (M4)

Carle Illinois College of Medicine
Image Classification in Distinguishing Dementia Types

Jaina Gaudette (M2)

Carle Illinois College of Medicine
Innovating the Pulse Oximeter

Mukul Govande (M3)

Carle Illinois College of Medicine
PharmAssist: Antibiotic Navigation & Treatment Support Engine

Rand Kittani (M2)

Carle Illinois College of Medicine
Implementing 3D Printed Casts in the Community: Literature Review of Patient Preference, Physical Properties and Costs

Rand Kittani (M2)

Carle Illinois College of Medicine
Uterus Sounding: A Novel Prototype for Accurate Measurement

Alexa Lauinger (M2)

Carle Illinois College of Medicine
Innovations in Assist Devices to Improve External Ventricular Drain Placement

Daniel Ng (M3)

Carle Illinois College of Medicine
Altering the Biochemical Properties of Medical Gauze Utilized in Vaginal Seeding in Order to Optimize Newborn Microbiome Restoration

Jacob Prince (M2)

Carle Illinois College of Medicine
Addressing Retinal Hypoxia: Pathophysiology, Therapeutic Innovations, and Future Prospects

John Squire (M2)

Carle Illinois College of Medicine
ANTs, BET, or... Neither? An Exploration of Brain Masking and Machine Learning Tools Applied to Magnetic Resonance Elastography

Venkat Tummala (M2)

Carle Illinois College of Medicine
MedGenBoost: Supercharging Medical ML With Generative Balancing for Equity and Excellence

Case Reports

Muhammad Raheel Awan (Resident)

Carle Health- Internal Medicine
Unveiling Cardiovascular Impacts: Testosterone-Induced Myopericarditis and Transient Heart Block in Transgender Male

Muhammad Raheel Awan (Resident)

Carle Health- Internal Medicine
Management of an Iatrogenic Perforation After Balloon Dilation of a Gastrojejunal Anastomotic Stenosis Using a Lumen Apposing Metal Stent

POSTER PRESENTATION FULL LIST, CONT'D

Roshani Bista (Resident)

Carle Health- Internal Medicine
Beyond Conventional Challenges: Fibrinopurulent Exudative Granulation Tissue in Non- Malignant Refractory Oesophageal Stenosis- A Case Report

Roshani Bista (Resident)

Carle Health- Internal Medicine
HSV Type 2 Meningitis in an Immunocompetent Patient with Genital Herpes

Daniel Cheah (M2)

Carle Illinois College of Medicine
Acute Pancreatitis Due to Compression from GJ Tube Bumper

Daniel Cheah (M2)

Carle Illinois College of Medicine
Sudden Onset of Homonymous Painless Vision Loss: A Case Report on Psychogenic Vision Loss

Matthew Dusza (M3)

Carle Illinois College of Medicine
Unmasking Immune-Related Adverse Events: A Case of Acute Bilateral Facial Palsy Associated with Immune Checkpoint Inhibitor Therapy

Minnatallah Eltinay (M2)

Carle Illinois College of Medicine
Esophageal Adenocarcinoma Complicated by Leptomeningeal Carcinomatosis Associated with Non-Small Cell Carcinoma

Mobeen Haider (Resident)

Carle Health- Internal Medicine
Digital Gangrene as an Unusual Presentation of ANCA-Associated Vasculitis - A Case of Anchoring Bias

Mobeen Haider (Resident)

Carle Health- Internal Medicine
Diffuse Alveolar Hemorrhage- A Rare and Deadly Complication of ANCA-Associated Vasculitis

Yusra Khalid (Resident)

Carle Health- Internal Medicine
Unveiling the Uncommon: A Case of HSV-2 Encephalitis in an Immunocompetent Adult

Yusra Khalid (Resident)

Carle Health- Internal Medicine
Overcoming the Anchoring Bias: A Case of Microscopic Colitis Initially Perceived as Mesenteric Ischemia

Maggie Li (M2)

Carle Illinois College of Medicine
New Diagnostic Method to Identify Empyema-Causing Pathogens in Sepsis

Kristy Lin (M1)

Carle Illinois College of Medicine
Microfluidics and Flow Analysis of Stented Ahmed Valve & Hypotony Treatment

Tessabella Magliochetti

Cammarata (M2)

Carle Illinois College of Medicine
Modern Mechanical Thrombectomy of an Iliocaval Fat Embolism

Sabrina Mann (M3)

Carle Illinois College of Medicine
Multifocal and Bilateral Breast Myofibroblastoma: A Difficult Dilemma for Diagnosis

Eric Moran (M4)

Carle Illinois College of Medicine
Bilateral Sequential Clear Lens Exchange with a New Multi-Focal Lens

Nimrah Muneer (Resident)

Carle Health- Internal Medicine
Dual Dilemma: Empyema and Purulent Pericarditis Induced by Streptococcus Pneumoniae

Michael Nguyen-Truong (M2)

Carle Illinois College of Medicine
Triple Valve Infective Endocarditis with Streptococcus Gallolyticus Infection

Michael Nguyen-Truong (M2)

Carle Illinois College of Medicine
A Case of a False-Positive Dobutamine Stress Echocardiogram in an Octogenarian Patient

Gloria Pan (M1)

Carle Illinois College of Medicine
Gardening Causes Takotsubo Cardiomyopathy

Esha Patel (Resident)

Carle Health- Internal Medicine
A Case Report of Adult-Onset Still's Disease with Macrophage Activation Syndrome

Dhruv Patel (M3)

Carle Illinois College of Medicine
Acute Tubulointerstitial Nephritis Associated with Atezolizumab Immunotherapy in Metastatic Neuroendocrine Lung Cancer

Muhammad Umair Rana (Fellow)

Carle Health- Cardiology
Unraveling Vasospastic Angina: A Case of Diagnostic Intricacies

Muhammad Umair Rana (Fellow)

Carle Health- Cardiology
Delayed Onset Statin Induced Anti-HMGR Antibody Mediated Necrotizing Autoimmune Myopathy

Shreya Rangarajan (M3)

Carle Illinois College of Medicine
A Unique Cadaveric Presentation of Bilateral Accessory Maxillary Ostia

Usama Syed (Resident)

Carle Health- Internal Medicine
Ruptured Radiance

Beverly Tomita (M3)

Carle Illinois College of Medicine
Rare Use of Dual Circuit Extracorporeal Membrane Oxygenation: A Case Report

Kathryn Tsai (M1)

Carle Illinois College of Medicine
A Case of Adult-Onset Recurrent Painful Ophthalmoplegic Neuropathy with Bilateral Internal Ophthalmoplegia

Mounica Vorla (Resident)

Carle Health- Internal Medicine
Breathless Enigma: Deciphering the Intricate Link Between Neuroleptic Medications and Respiratory Dyskinesia

Anthony Wong (M2)

Carle Illinois College of Medicine
CADASIL Misdiagnosed as Multiple Sclerosis: A Case Study

POSTER PRESENTATION FULL LIST, CONT'D

Rachael Wong (M2)

Carle Illinois College of Medicine
A Rare Case of Multisystem
Involvement with Acute Influenza
A Infection

Rachael Wong (M2)

Carle Illinois College of Medicine
An Interesting Case of Empyema
After Recovery from a Recent
COVID Infection

Clinical Research & Quality Improvement

Maria Bederson (M3)

Carle Illinois College of Medicine
The Perivascular Space Burden
in Traumatic Brain Injury: A
Systematic Review

Ameek Bindra (M1)

Carle Illinois College of Medicine
Leveraging GPT-4 to Mitigate
Racial Disparities for Earlier
Diagnosis of Premenopausal
Endometrial Cancer

Samuel Blake (M2)

Carle Illinois College of Medicine
Region and Age Are the Greatest
Prediction Factors for in-Hospital
Mortality After Traumatic Spinal
Cord Injury

Samuel Blake (M2)

Carle Illinois College of Medicine
Digital Healthcare Innovations
to Improve and Customize
Preoperative Screening and
Postoperative Management

Grace Broly (M2)

Carle Illinois College of Medicine
Geospatial and Demographic
Analysis of Infertility Treatment
and NICU Admissions

Neddie Byron (M2)

Carle Illinois College of Medicine
Pilot Study on Chronic Kidney
Disease at-Home Screening
Program

Sharon Chao (M2)

Carle Illinois College of Medicine
A 7T MRI Pilot Study on Colorectal
Cancer-Related Cognitive
Impairment and Brain Atrophy

Kyle Cunningham (Resident)

Carle Health- General Surgery
Applicability of Brain Injury
Guidelines to Patient Population
at Carle Foundation Hospital

Matthew Dusza (M3)

Carle Illinois College of Medicine
Safety and Efficacy of Liposomal
Bupivacaine in the Pediatric
Population: A Scoping Review of
the Literature

Eve Emmanouilidou (M2)

Carle Illinois College of Medicine
Effects of Hypermobility
Ehlers-Danlos Syndrome and
Hypermobility Spectrum Disorder
on Gynecologic Conditions and
Obstetric Outcomes

Alan Fullenkamp (M2)

Carle Illinois College of Medicine
Improved Prediction Models Are
Needed for Surgical Site Infection
After Spinal Surgery

Alan Fullenkamp (M2)

Carle Illinois College of Medicine
National Data Highlights Need for
Improvement in Novel Surgical
Approaches to Spine Trauma

Sowmya Gaviyappa (Resident)

Carle Health- Internal Medicine
Breast Cancer Risk Assessment
and Understanding Hereditary
Breast Cancer

Modan Goldman (M2)

Carle Illinois College of Medicine
Infliximab and Its Biosimilars for
Inflammatory Bowel Disease:
Analysis of Medicare Part D
Claims and Costs

Nellie Haug (M2)

Carle Illinois College of Medicine
A Decade in Review: Predictors
of Mortality and Long-Term
Outcomes in Pulmonary
Embolism Patients with Catheter-
Directed Thrombolysis

Kaviamuthan Kanakaraju (M1)

Carle Illinois College of Medicine
Factors Influencing 5-Year
Bladder Recovery in Spinal Cord
Injury Patients with Bladder
Dysfunction at 1 Year Follow-Up

Szymon Kasperek (M4)

Carle Illinois College of Medicine
Association of Imaging Efficiency
with Health Outcomes

Alexa Lauinger (M2)

Carle Illinois College of Medicine
Key MRI Features for
Understanding Degenerative
Disc Disease in Hypermobility
Syndromes

Robert Liu (M2)

Carle Illinois College of Medicine
Gliomas in Low- and Middle-
Income Countries and Their
Outcomes

Robert Liu (M2)

Carle Illinois College of Medicine
Metastatic Brain Tumors in Low-
and Middle-Income Countries
and Their Outcomes

Meagan McNicholas (M3)

Carle Illinois College of Medicine
Role of Glucagon-Like Peptide-1
Agonists and Dipeptidyl
Peptidase-4 Antagonists in Aortic
Disease: A Systematic Review

Panik Moradian (M3)

Carle Illinois College of Medicine
Influence of Prior Gynecologic
Care on Follow-Up Patterns for
Abnormal Uterine Bleeding

Kellie Mullany (M3)

Carle Illinois College of Medicine
A Novel Approach to Multimodal
Pain Management Program in
Gynecologic Procedures; An
Observational Clinical Study

Nathan Nguyen (M2)

Carle Illinois College of Medicine
A Multi-Level Approach to
Analyzing Geographic and
Demographic Factors in
Prostate Cancer Clinical Trials
Between Caucasians and African
Americans: Challenges and
Potential Solutions

Nathan Nguyen (M2)

Carle Illinois College of Medicine
Racial Differences in Bladder
Cancer Treatment Between Asian
and White Patients

Maharshi Pandya (M3)

Carle Illinois College of Medicine
Beyond Numbers: Navigating
COVID-19 Trends in Universities
Through Multidimensional
Insights

POSTER PRESENTATION FULL LIST, CONT'D

Peyton Paschell (M3)

Carle Illinois College of Medicine
Liposomal Bupivacaine for Enhanced Pain Control After Spine Surgery: A Systematic Review

Esha Patel (Resident)

Carle Health- Internal Medicine
Curious Case of Fever with Pancytopenia

Tarika Patel (M3)

Carle Illinois College of Medicine
Thoracolumbar Interfascial Plane Block for Enhanced Pain Control After Spine Surgery: A Systematic Review

Tarika Patel (M3)

Carle Illinois College of Medicine
Geospatial Evaluation of Femoral Nerve Block Utilization Across the United States

Ramya Ramakrishnan (M1)

Carle Illinois College of Medicine
Chemical or Physical? A Review of How Vitamin D and Light Therapy Can Benefit Patients with Post-Stroke Depression

Shreya Rangarajan (M3)

Carle Illinois College of Medicine
Effects of Surgical Timing on Outcomes and Complications in Patients with Mandibular Fractures

Billianne Schultz (M2)

Carle Illinois College of Medicine
Outpatient Robotic Assisted Hysterectomy Outcomes: Hospital vs. Freestanding Ambulatory Surgical Center

Annabelle Shaffer (M3)

Carle Illinois College of Medicine
Long-Term Outcomes of Lumbar Facet Arthroplasty Versus Spinal Fusion in Young (<65 Years) and Old (>65 Years) Patients for the Treatment of Degenerative Spondylolisthesis and Stenosis

Annabelle Shaffer (M3)

Carle Illinois College of Medicine
Pre- and Post-COVID Symptom Reporting on SCAT 5 in 2847 Adolescent Athletes

Micah Silberstein (M2)

Carle Illinois College of Medicine
Rare Variant Sharing Analysis of 17 Hypermobile Ehlers Danlos Families

Alex Teague (M4)

Carle Illinois College of Medicine
Characterizing Sedation Practice Outcomes in Mechanically Ventilated Patients: A Retrospective Multi-Center Database Analysis

Kathryn Tsai (M1)

Carle Illinois College of Medicine
Retrospective Observational Investigation of Treatment Regimens and Stroke Incidence Secondary to Postoperative Atrial Fibrillation Following Coronary Artery Bypass Graft Surgery in Nationwide Sample from Epic Cosmos Database

Aditya Vaidyam (M2)

Carle Illinois College of Medicine
Student-Driven Engineering of Teaching Electronic Medical Records Systems for Clinical Simulation and Evaluation

Aditya Vaidyam (M2)

Carle Illinois College of Medicine
The Evolving Landscape of AI in Mental Health: Exploring the Promise and Pitfalls of Large Language Models

Brian Wadugu (M2)

Carle Illinois College of Medicine
The Incidence of Pancreatic Fistula Rates After Distal Pancreatectomy: A Systematic Review and Meta-Analysis of Transection Techniques

Humanities & Medical Education

Kamryn Abraskin (M2)

Carle Illinois College of Medicine
Suturing Excellence: Unraveling the Current Suture Kits on the Market

Kamryn Abraskin (M2)

Carle Illinois College of Medicine
MedTerms: Student Co-Design Towards Engineering Effective Medical Education Software

Monica Bhagavan (M3)

Carle Illinois College of Medicine
Igniting Surgical Discovery and Critical Thinking- A Novel Trauma Surgical Exposure Course for Medical Students

Jennifer Carson-González (M4)

Carle Illinois College of Medicine
Fostering Accessible and Equitable Healthcare for All

Tracy Kao (M4)

Carle Illinois College of Medicine
Roleplay With ChatGPT-3.5 as the Standardized Patient for OSCE Skills Development

Megan Amber Lim (M2)

Carle Illinois College of Medicine
Empowering Medical Learning Through Interactive Knowledge Graphs with Large Language Models

Kellie Mullany (M3)

Carle Illinois College of Medicine
Integration of Social Determinants of Health into Problem Based Learning: A Novel Mixed-Method Approach to Preclinical Training

Gaurav Nigam (M2)

Carle Illinois College of Medicine
User-Experience (UX) Methods Identify Unmet Needs in MedEd Software Applications

Connor Oltman (M1)

Carle Illinois College of Medicine
Development of a Low-Cost Bone Biopsy Phantom for Radiology Training

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Carle Illinois College of Medicine

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Poster Judges

*Please see accompanying insert

RESEARCH DAY COMMITTEE MEMBERS

Naveed Adoni (Co-Chair)
Carle Health

Wawrzyniec L. Dobrucki (Co-Chair)
Bioengineering

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Carle Illinois College of Medicine

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Alexa Lauinger (M2)
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Bilal Karim
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