22ND ANNUAL
HEALTH INNOVATION
RESEARCH DAY
2024
IHotel & Conference Center

Empowering Health: The AI Revolution in Medicine
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!
<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>11:30 a.m.</td>
<td>Check-in</td>
</tr>
<tr>
<td></td>
<td>Heritage Hall 2, 3, 5, 6</td>
</tr>
<tr>
<td>12:15 - 12:20 p.m.</td>
<td>Welcome!</td>
</tr>
<tr>
<td></td>
<td>Gregory Polites, MD</td>
</tr>
<tr>
<td></td>
<td>Executive Vice Dean</td>
</tr>
<tr>
<td></td>
<td>Carle Illinois College of Medicine</td>
</tr>
<tr>
<td>12:20 – 1:40 p.m.</td>
<td>Keynote Speaker Lunch</td>
</tr>
<tr>
<td></td>
<td>“The Role of AI in Behavioral Medicine”</td>
</tr>
<tr>
<td></td>
<td>James M. Rehg, PhD</td>
</tr>
<tr>
<td></td>
<td>Director, Health Care Engineering Systems Center</td>
</tr>
<tr>
<td></td>
<td>Founder Professor of Computer Science and Industrial and Enterprise Systems Engineering</td>
</tr>
<tr>
<td></td>
<td>The Grainger College of Engineering</td>
</tr>
<tr>
<td></td>
<td>*Lunch buffet served in hallway</td>
</tr>
<tr>
<td>1:40 - 1:50 p.m.</td>
<td>Break</td>
</tr>
<tr>
<td>1:50 – 2:00 p.m.</td>
<td>Introduction of International Poster Exhibition</td>
</tr>
<tr>
<td></td>
<td>Janet A. Jokela, MD, MPH, FIDSA, MACP, FRCP</td>
</tr>
<tr>
<td></td>
<td>Clinical Professor, Senior Associate</td>
</tr>
<tr>
<td></td>
<td>Dean of Engagement</td>
</tr>
<tr>
<td></td>
<td>Carle Illinois College of Medicine</td>
</tr>
<tr>
<td>2:00 – 4:00 p.m.</td>
<td>Poster Presentation Session</td>
</tr>
<tr>
<td></td>
<td>*See page 9 for full list of posters</td>
</tr>
<tr>
<td>4:00 – 5:30 p.m.</td>
<td>Awards Ceremony and Closing</td>
</tr>
<tr>
<td></td>
<td>Remarks with Reception</td>
</tr>
<tr>
<td></td>
<td>Dr. Naveed Adoni, MD</td>
</tr>
<tr>
<td></td>
<td>Carle Health Clinical Professor</td>
</tr>
<tr>
<td></td>
<td>Carle Illinois College of Medicine</td>
</tr>
<tr>
<td></td>
<td>Dr. Wawrzyniec L. Dobrucki, PhD</td>
</tr>
<tr>
<td></td>
<td>Associate Professor of Bioengineering and Medicine</td>
</tr>
<tr>
<td></td>
<td>Department of Bioengineering</td>
</tr>
</tbody>
</table>
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

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

Humanities & Medical Education

Jui-Yen Chen
National Yang Ming Chiao Tung University College of Medicine
Exploring the Roles of Physicianes 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

Mukui 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

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
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  
Eosophageal 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

Yousra Khalid ( Resident)  
Carle Health - Internal Medicine  
Unveiling the Uncommon: A Case of HSV-2 Encephalitis in an Immunocompetent Adult

Yousra 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 Recurrent Painful Ophthalmoplegic Neuropathy with Bilateral Internal Ophthalmoplegia

Mounica Vorla ( Resident)  
Carle Illinois College of Medicine  
CADASIL Misdiagnosed as Multiple Sclerosis: A Case Study
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 Brolly (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 Hypermobile 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

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
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 Pancretopenia

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 Transaction 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
ACKNOWLEDGMENTS

Drs. Adoni, Coiado and Dobrucki would like to give special thanks to the individuals below for their help and support of the Health Innovation Research Day event.

Carle Illinois College of Medicine

Hovah Berg  
Project Management Coordinator

Beth Hart  
Content Strategy Specialist

Bilal Karim  
HML Innovation Intern

Libby Knight  
Asst. Director of Marketing & Communications

Ryann Monahan  
Director of Marketing & Communications

Liz Steele  
Web & Graphic Design Coordinator

Whitney Widick  
Office Manager

Carle Health

Dania Mendoza  
Internal Medicine Residency Coordinator

Abstract Reviewers

Abby Adams  
Saad Adoni  
Mehmet Ahsen  
Gustavo Caetano-Anolles  
Lianghe Gao  
Anuj Garg  
Vidya Haran  
Samar Hegazy  
Elizabeth Kim  
Brandyn Mason  
Deana McDonagh  
Hedda Meadan  
Sanjay Mehta  
Fadi Mikhail  
Michael L. Oelze  
Suguna Pappu  
Priyank Patel  
Sara Pedron-Haba  
M. Yanina Pepino  
Danish Thameem  
April Yasunaga

Poster Judges

*Please see accompanying insert
RESEARCH DAY
COMMITTEE MEMBERS

Naveed Adoni (Co-Chair)
Carle Health

Wawrzyniec L. Dobrucki (Co-Chair)
Bioengineering

Olívia Coiado
Carle Illinois College of Medicine

Abigail Adams
Carle Health

Lianghe Gao
Carle Health

Iwona Jasiuk
Carle Illinois College of Medicine

James Kumar
Carle Health

Taylor Young
Carle Illinois College of Medicine

Havah Berg
Carle Illinois College of Medicine

Modan Goldman (M2)
Carle Illinois College of Medicine

Alexa Lauinger (M2)
Carle Illinois College of Medicine

Bilal Karim
Carle Illinois College of Medicine