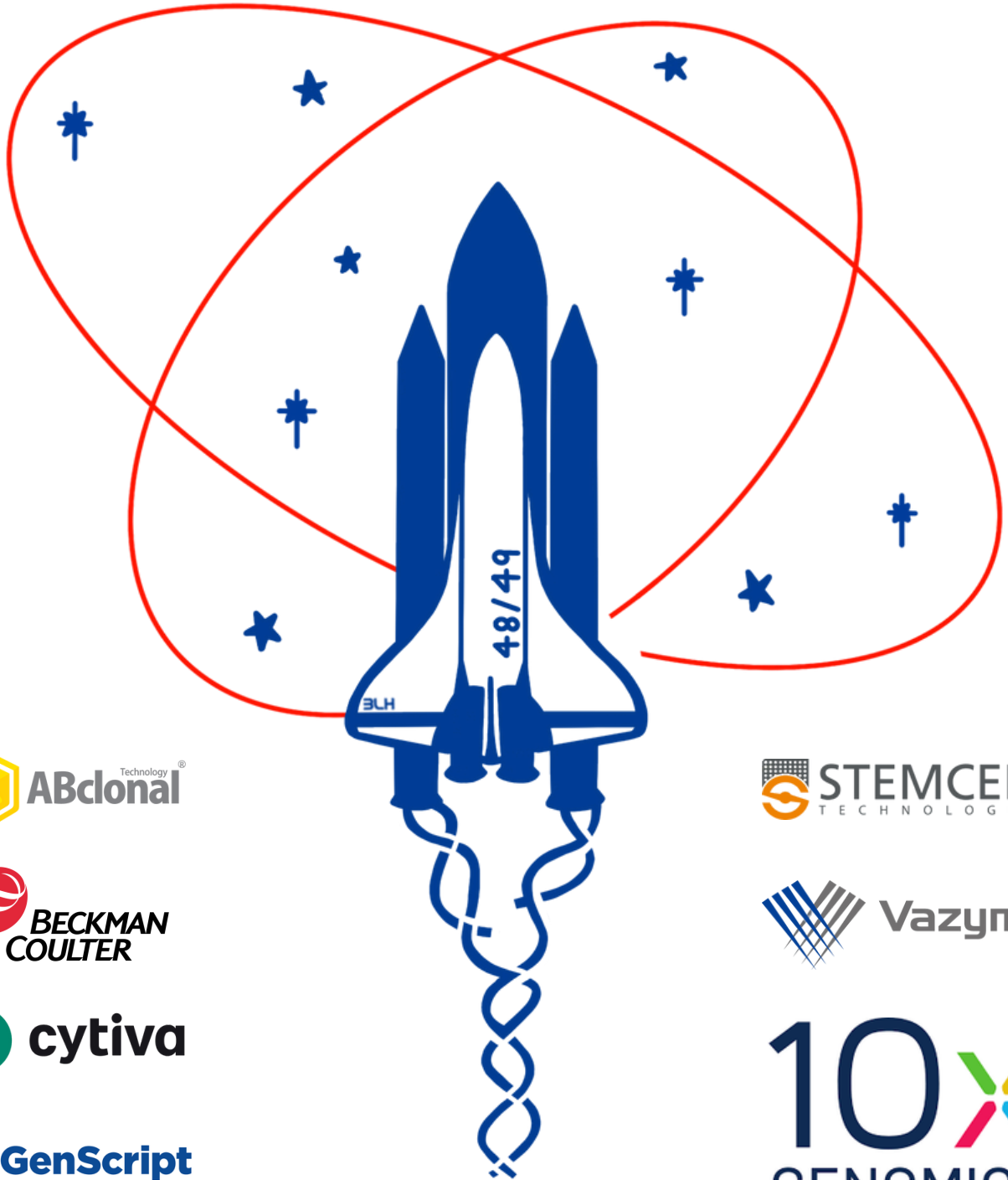
APRIL 22, 2025

GSO RESEARCH SYMPOSIUM

DIGITAL BOOKLET



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APRIL 22, 2025

GSO RESEARCH SYMPOSIUM

PROGRAM

8:30 AM	Registration and Breakfast Vendor Exhibition 1
9:00 AM	Openings from Dr. Kenneth S. Ramos Keynote Presentation - Dr. Kate Rubins
10:00 AM	Break
10:15 AM	Oral Presentations - Block 1
11:30 AM	Lunch
12:30 PM	Posters and Vendor Exhibition
1:45 PM	Oral Presentations - Block 2
3:00 PM	Vendor Exhibition
3:30 PM	Oral Presentations - Block 3
4:30 PM	Break
4:45 PM	Awards and Prizes

KEYNOTE SPEAKER

“Pioneering the Frontiers of Science & Exploration: Insights from a Scientist and Astronaut”

Kate Rubins, Ph.D.

Ph.D. in Cancer Biology from Stanford University Medical School Biochemistry Department and Microbiology and Immunology Department

ORAL PRESENTERS
BLOCK 1

10:15 - 10:30 AM — **Uffaf Khan**

Pleozyme: Novel, Pleiotropic Nanozyme for Targeting Metabolic Deficits in Friedreich's Ataxia

10:30 - 10:45 AM — **Karthik Mouli**

SOD1 Overexpression and Dysregulated Resilience to Hydrogen Sulfide in Down Syndrome: Pleiotropic Avenues for a Novel Nanozyme Therapeutic

10:45 - 11:00 AM — **David Jiang**

Towards Lesion-Specific Stenting Strategies: A Computational Framework to Validate the Deployment of Balloon-expandable Stents

11:00 - 11:15 AM — **Thomas Wong**

Reprogramming the GBM tumor microenvironment using an S100A4/TFR bispecific antibody

POSTER SESSION A
12:30 - 1:10 PM

1A — **Wei Zhao**

Clostridium difficile infection as a risk factor of sepsis

2A — **Javier Villela**

Longitudinal and multi-regional analysis of cancer phenotypes in hepatocellular carcinoma and intrahepatic cholangiocarcinoma

3A — **Heather Barrera**

Heterogeneity in infection susceptibility is determined by the convergence of sex, immunity, and metabolism in Drosophilia

4A — **Ahmed Muhsin**

Immunomodulatory Effects of 13-HODE Enantiomers on Colorectal Cancer

5A — **Nesha Rubin**

Role of LINE-1 Retrotransposons in Neuronal Differentiation: Implications for Cellular Plasticity and Tumorigenesis

POSTER SESSION B
1:10 - 1:45 PM

1B — **Jack Wang**

An image-based computational framework to evaluate material properties of human coronary lesions

2B — **Kajol Harsh**

Epigenetic alterations modulate nuclear stiffness in mouse embryonic stem cells

3B — **Bingru Feng**

Aging-associated Y chromosome loss and X chromosome gain: insights from single-cell whole-genome amplification data

4B — **Sokviseth Moeng**

Single-cell RNAseq unveils heterogeneity in LncRNA profiles of non-transformed and transformed human lung epithelial cells: implications for precision-based targeted therapeutics of non-small cell lung cancers

5B — **Maryam Vaziripour**

Exploring the role of lung cancer-associated rare variants in DNA damage promotion

ORAL PRESENTERS
BLOCK 2

1:45 - 2:00 PM — **Yingshan Wang**

Polymorphic LINE-1 Retroelements and Their Impact in Non-Small Cell Lung Cancers

2:00 - 2:15 PM — **Bettina Hoden**

Activation of Innate Immune Signaling by Bacterial Protein Flagellin Induces LINE-1 and Shapes the Heterogeneity and Microenvironment of Non-Small Cell Lung Cancers

2:15 - 2:30 PM — **Jimmy Wengler**

Using short-read data to evaluate rDNA methylation levels

2:30 - 2:45 PM — **Logan Rivera**

Integrative single-cell analysis reveals the regulation of transposable elements in HSPCs during the aging process

2:45 - 3:00 PM — **Tatsuki Nonomura**

Engineering of Light-Switchable Protein OligomerizationTools with Defined Oligomeric Statesfor Optical Control of Cell Signaling

ORAL PRESENTERS
BLOCK 3

3:30 - 3:45 PM — **Dr. Jorge Tovar Perez**

Epigenetic targeting of PRC2 complexes upregulates MHC antigen presentation components in gastrointestinal cancer cells resulting in increased immunogenicity

3:45 - 4:00 PM — **Dr. Tien-Hung Lan**

A chemogenetic toolkit for inducible actin disassembly

4:00 - 4:15 PM — **Dr. Syed Sher Ali Bukhari**

Engineering of genetically encoded blockers for calcium channels

4:15 - 4:30 PM — **Chetna Dureja**

Vancomycin Resistance Mechanism and its Impact on Treatment Outcomes in Clostridioides difficile Infection

CEDP

Maryn Cavalier
Hanlu Chen
Bingru Feng
Kajol Harsh
Stacey Minsun Jeon
Ahmed Muhsin
Carolyn Nguyen
Jorge Tovar Perez
Logan Rivera
Ashley Suris
Yi-Chen Wang
Jimmy Wengler

CIID

Guadalupe Calderon
Rian Hernandez
Ann McKelvey
Hannah Reeves
Wei Zhao

CTRC

Logan Herring
Linh Huynh
Siyao Liu
Xiaoxuan Liu
Ziying Liu
Brendan McKee
Tatsuki Nonomura
Javiier Castrejon Villela
Zihan Zhang

CGPM

Bettina Hoden
Uffaf Khan
Isla Mata
Sokviseth Moeng
Karthik Mouli
Nesha Rubin
Xinjie Wang
Yingshan Wang

2024-2025 PUBLICATIONS

Guo L, Hong T, Lee YT, Hu X, Pan G, Zhao R, Yang Y, Yang J, Cai X, **Rivera L,** Liang J, Wang R, Dou Y, Kodali S, Li W, Han L, Stefano BD, Zhou Y, Li J, Huang Y. Perturbing TET2 condensation promotes aberrant genome-wide DNA methylation and curtails leukemia cell growth.

Wang TC, Abolghasemzade S, **McKee BP,** Singh I, Pendyala K, Mohajeri M, Patel H, Shaji A, Kersey AL, **Harsh K,** Kaur S, Dollahon CR, Chukkapalli S, Lele PP, Conway DE, Gaharwar AK, Dickinson RB, Lele TP. Matrix stiffness drives drop like nuclear deformation and lamin A/C tension-dependent YAP nuclear localization:

Jiang D, Robinson AJ, Nkansah A, Leung J, Guo L, Maas SA, Weiss JA, Cosgriff-Hernandez EM, Timmins LH. A computational framework to optimize the mechanical behavior of synthetic vascular grafts

Lan TH, Ambiel N, Lee YT, **Nonomura T,** Zhou Y, Zuchero JB. A Chemogenetic Toolkit for Inducible, Cell Type-Specific Actin Disassembly.

Leu JS, Deng H, Tran HN, Wei X, Hashimoto C, Leonard F, Wong T, Abdelfattah N, Benítez Salazar JM, Kang R, Maldonado JA, Cristobal CD, Lee HK, An Z, Zhang N, Yun K. Combined inhibition of S100A4 and TIGIT suppresses late-stage breast cancer metastasis to the lung by activating T and NK cells.

Sokviseth M, Chamorro-Parejo AD, **Jeon MS,** Cai JJ, Ramos KS. Single-Cell RNA Sequencing Reveals Extensive Heterogeneity and Unique Gene Trajectories in Non-Transformed and Transformed Human Lung Epithelial Cells: Insights into the Role of LncRNAs in Tumor Heterogeneity

2024-2025 PUBLICATIONS

Mohan N, Johnson GS, **Tovar Perez JE,** Dashwood WM, Rajendran P, Dashwood RH. Alternative splicing of BAZ1A in colorectal cancer disrupts the DNA damage response and increases chemosensitization.

Mouli K, Liopo AV, McHugh EA, Underwood E, Zhao J, Dash PK, **Vo ATT,** Malojirao V, Hegde M, Tour JM, Derry PJ, Kent TA. Oxidized Carbon Nanoparticles Enhance Cellular Energetics With Application to Injured Brain.

Mouli K, Liopo AV, Suva LJ, Olson KR, McHugh EA, Tour JM, Derry PJ, Kent TA. SOD1 Is an Integral Yet Insufficient Oxidizer of Hydrogen Sulfide in Trisomy 21 B Lymphocytes and Can Be Augmented by a Pleiotropic Carbon Nanozyme.

Mukherjee T, Usman M, Mehdi RR, Mendiola E, Ohayon J, Lindquist D, Shah D, Sadayappan S, Pettigrew R, Avazmohammadi A. In-silico heart model phantom to validate cardiac strain imaging

Nonomura T, Minoshima M, Kikuchi K. Light-Activated Gene Expression System Using a Caging-Group-Free Photoactivatable Dye.

Olson KR, Takata T, Clear KJ, Gao Y, Ma Z, Pfaff E, **Mouli K,** Kent TA, Jones P Jr, Fukuto J, Wu G, Straub KD. The SOD1 Inhibitor, LCS-1, Oxidizes H2S to Reactive Sulfur Species, Directly and Indirectly, through Conversion of SOD1 to an Oxidase.

Ramos KS, **Hoden B,** Overview of Receptor Systems and their Interaction With Endogenous and Exogenous Ligands.

2024-2025 PUBLICATIONS

Rivera L, Hong T, Rathod K, Guzman A, Wohlan K, Zhou Y, Goodell M, Huang YN. Integrative single-cell analysis reveals the regulation of transposable elements in HSPCs during the aging process.

Tovar Perez JE, Zhang S, Hodgeman W, Kapoor S, Rajendran P, Kobayashi KS, Dashwood RH. Epigenetic regulation of major histocompatibility complexes in gastrointestinal malignancies and the potential for clinical interception.

Tripathi C, **Tovar Perez JE,** Kapoor S, **Muhsin A,** Dashwood WM, Demirhan M, Shapiro A, Mohammed A, Sei S, Thompson J, Zaheer M, Sinha KM, Brown PH, Savage MI, Vilar E, Rajendran P, Dashwood RH. Antitumor efficacy of intermittent low-dose erlotinib plus sulindac via MHC upregulation and remodeling of the immune cell niche.

Vaziripour M, Faghihi M, Ranjbaran M, Asadi B, Abdi A, Kianian F, Hajiaqaei M, Seifi B. Exploring the Therapeutic Potential of Sodium Hydrosulfide in Alleviating Oxidative Stress and Ovarian Dysfunction in a Rat Model of Polycystic Ovary Syndrome

Vo ATT, Khan U, Liopo AV, **Mouli K,** Olson KR, McHugh EA, Tour JM, Pooparayil Manoj M, Derry PJ, Kent TA. Harshly Oxidized Activated Charcoal Enhances Protein Persulfidation with Implications for Neurodegeneration as Exemplified by Friedreich's Ataxia.

2024-2025 PUBLICATIONS

Vo ATT, Mouli K, Liopo AV, Lorenzi P, Tan L, Wei B, Martinez SA, McHugh EA, Tour JM, **Khan U,** Derry PJ, Kent TA. Pleozymes: Pleiotropic Oxidized Carbon Nanozymes Enhance Cellular Metabolic Flexibility.

Wang T, **Nonomura T,** Lan TH, Zhou Y. Optogenetic engineering for ion channel modulation.

Wong T, Kang R, Yun K. The multi-faceted immune modulatory role of S100A4 in cancer and chronic inflammatory disease.

Yang Y, **Cavalier M, Suris A**, Chen K, An C, Fan J, Rivera L, Fang S, Guo L, Zhou Y, Huang Y. Enhanced glucose metabolism in Tet-deficient mouse embryonic stem cells.

Yang Y, Rivera L, Fang S, **Cavalier M, Suris A,** Zhou Y, Huang Y. Maternal high-fat diet alters Tet-mediated epigenetic regulation during heart development.

Congratulations!

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Dr. Margie Mocyzgemba

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Dr. Kurt Zhang

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Dr. Rick Silva

THANK YOU FOR ATTENDING!

First, we thank you for dedicating your time and attending our 2025 GSO Research Symposium.

For the second time in a row, our symposium is being hosted at one of the top research facilities in the area, TMC3. Thank you to Dr. Kate Rubins for sharing her excellent research and experience behind being the first to do genetic sequencing in space. Thank you to our vendors for their generous support. A special thank you to Dr. Kenneth S. Ramos, Dr. Stefan Siwko, and Deloris White for their constant support of the GSO and the amazing events we have achieved in the past year. We are truly grateful.

We are excited to welcome each of you today and hope you are inspired by the research to be presented!

Sincerely,
Your 2024-2025 Graduate Student Organization

PLEASE SHARE YOUR FEEDBACK ON THE SYMPOSIUM