

33rd Annual Wisconsin Space Conference

Wisconsin Space Grant Consortium

Exo Planets
and the
Origins of Life

August 11, 2023



PLENARY SPEAKER

Exploring Exoplanets, Star Formation, and the Universe with the James Webb Space Telescope



DR. KENNETH SEMBACH



Dr. Kenneth Sembach is a tenured astronomer at the Space Telescope Science Institute (STScI), where he served as director from 2015 to 2022. STScI is the operations center for NASA's flagship astronomical observatories, including the Hubble and the James Webb Space Telescopes, which play key roles in exoplanet research. Dr. Sembach holds a PhD in astronomy from the University of Wisconsin-Madison and a bachelor's degree in physics from the University of Chicago.

PLENARY SPEAKER

Stellar Epitaphs: the Final Testimonies of Devoured Worlds



DR. MELINDA SOARES-FURTADO



Dr. Melinda Soares-Furtado is a NASA Hubble Fellow at the University of Wisconsin - Madison, and member of the Wisconsin Center for Origins Research (WiCOR). She will commence her appointment as Professor of Astronomy at UW in September 2024. She studies open cluster variable stars and the formation and evolution of star-planet systems. She is also studying how space-based infrared surveys of young star-forming regions can bring new insights to star-planet systems.

WSC 2023 Presentation Schedule

August 11, 2023

PRE-SESSION

7:30 Registration
Presenter Check-in
Breakfast
Individual Photos

Session 1 Welcome and Special Guests, Kevin Crosby Auditorium

8:30 Welcome Bill Linton, Kevin Crosby

8:45 Plenary Speaker Kenneth Sembach — Exploring Exoplanets, Star Formation, and the Universe with the James Webb Space Telescope; Space Telescope Science Institute

9:30 WSGC Announcements Christine Bolz; Wisconsin Space Grant Consortium

Session 2 Posters, Networking, & Photos, Christopher Stockdale Atrium

9:45 Individual Awardee Photos

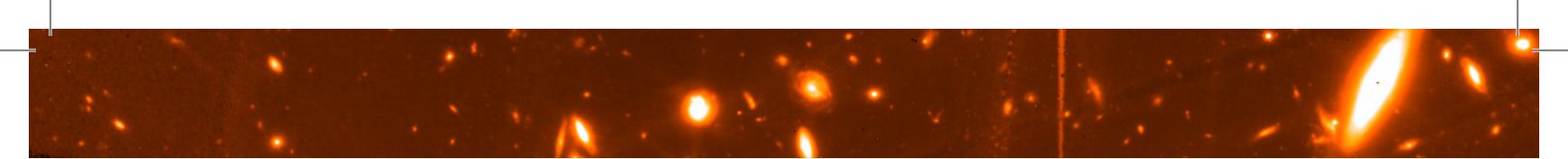
Poster #1 Collegiate Rocket Launch: Jordan Bopp, Gabriela Carranza, Semaje Farmer
Carthage Rocket Launch: Introducing Ingenuity; Carthage College

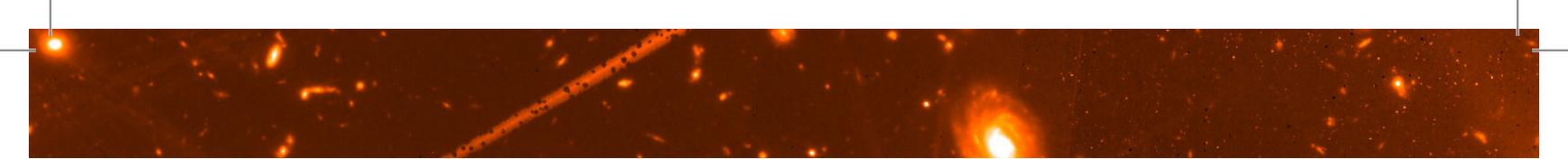
Poster #2 Collegiate Rocket Launch: Carlos Betancourt, Charles O'Brien
Marquette CRL Presentation; Marquette University

Poster #3 Collegiate Rocket Launch: Bella De La Cruz, Alexander Hornung, Samuel McKee,
Pioneer Rocketry's CRL Performance; University of Wisconsin - Platteville

Poster #4 Early Career Investigator: Michael Eberhardt, Risa Hardison, Jax Sanders
Prototyping Shape Memory Alloy-Based Actuators for Future Gravitational Wave Detectors; Marquette University

Poster #5 Higher Education Incentives: Dylan Meyer
Optimizing Galaxy Cluster Mass Measurements for Improved Dark Energy Constraints; Milwaukee School of Engineering

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- Poster #6 **NASA Internship Program:** Justin Wheeler *Designing the Imaging and Breadboard System for FBCE-TL Project*; Carthage College
- Poster #7 **Undergraduate Research Scholarship:** Zach Kongable *Fiber Optic Sensing System*; Carthage College
- Poster #8 **Undergraduate Research Scholarship:** Jordan Cioni *Low-cost and high-volume production of light-weight engineered cellular materials*; University of Wisconsin - River Falls
- Poster #9 **Undergraduate Research Scholarship:** Ainsley Salisbury *Enhancing Plant Growth in Space through Mechanical Stimulation*; University of Wisconsin - Madison
- Poster #10 **Undergraduate Research Scholarship:** Shelldyn Earnest *Diffusive transport of water in Extraterrestrial Regolith*; Carthage College
- Poster #11 **Undergraduate Research Scholarship:** Juliana Alvarez, Jordan Bopp, Skylar Farr *Modal Propellant Gauging - Propellant Refueling and on-Orbit Transfer Operations*; Carthage College
- Poster #12 **Undergraduate Research Scholarship:** Daifaizon Aldridge, John Cargille, Sarah Kersten, Logan Dales, Riley Johnson, Carissa Kiehl, Sydney Pelnar, Joey Sachtleben *Carthage Space Sciences: Canopy Near-IR Observing Project*; Carthage College
- Poster #13
- Poster #14 **Undergraduate Research Scholarship:** Jill Forgac, Sikiel Graves, Teagan Steineke, Jordan Wheeler *Microgravity Ullage Detection (MUD)*; Carthage College
- Poster #15 **Unmanned Aerial Vehicle Research:** Ava Beyers, Trent Edger, Kat McClain, Haley Siculan, Jeff Clark *Using suAS multispectral imagery to determine the effect of prescribed burns on C3/C4 plant communities in a reclaimed wisconsin prairie*; Carthage College, Lawrence University
- Poster #16 **NASA Internship Program:** Laura Jones *Migration Adventures: Laying the Groundwork for Inter-Institutional Access and Preservation*; University of Wisconsin - Milwaukee
- Poster #17 **Dr. Laurel Salton Clark Memorial Research Fellowship:** Becca Hall *The Connection Between Mesoscale Convective Systems and Thermodynamic and Dynamic Conditions*; University of Wisconsin - Madison



Poster #18 **WSGC Graduate & Professional Research Fellowship:** Dylan Childs *Investigation of Weathering Conditions Within Lava Tubes: Analogue for Venus*; University of Wisconsin - Milwaukee

Poster #19 **WSGC Graduate & Professional Research Fellowship:** MJ Romfoe *UW-Madison TESS Follow-Up Observing Program (TFOP)*; University of Wisconsin - Madison

Session 3A Student Scholarship, Fellowship, and Internships Programs, Jeff Clark

Auditorium

10:15 **Undergraduate Research Scholarship:** Daifaizon Aldridge, John Cargille, Logan Dales, Riley Johnson, Sarah Kersten, Carissa Kiehl, Sydney Pelnar, Joey Sachtleben *Carthage Space Sciences: The Path to a COTS CubeSat Payload*; Engineering; Carthage College

10:30 **Undergraduate Research Scholarship:** Joseph Carpenter, Grace Weber *Open Source Microscopy for Undergraduate Students*; Engineering; Lawrence University

10:45 **WSGC Graduate & Professional Research Fellowship:** Gabriella Agazie *Integration of CHIME into the NANOGrav Pulsar Timing Array*; Physics; University of Wisconsin-Milwaukee

11:00 **WSGC Graduate & Professional Research Fellowship:** Bob Aloisi *Searching for Exoplanets in Unusual Places*; Astronomy; University of Wisconsin - Madison

11:15 **NASA Internship Program:** Joe Wopat *Active Thermal Control - Coolant Trade Study and Radiator Development*; Engineering; Sierra Space

11:30 **WSGC Graduate & Professional Research Fellowship:** Wilbert Cruz *Investigating the Influence of Particle Shape on Dust Dispersion: A Comprehensive study on Drag Effects for a Multi-particle System*; Engineering; Marquette University

11:45 **WSGC Graduate & Professional Research Fellowship:** Sinead Humphrey *Realistic Simulations of White Dwarf Tidal Disruption Events*; Physics; University of Wisconsin-Milwaukee

Session 3B Student Scholarship, Fellowship, and Internships Programs, Lindsay McHenry

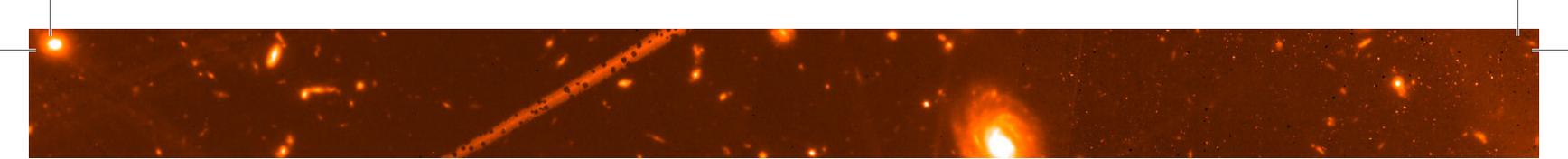
Room 122

- 10:15 **WSGC Graduate & Professional Research Fellowship:** Rayne Wolf *Direct Ink Write Printing of RRAM Devices*; Engineering; University of Wisconsin - Madison
- 10:30 **WSGC Graduate & Professional Research Fellowship:** Chase Glenister, Madeline Woller *Investigating Glaciovolcanic Glass and Habitability at North Sister Volcano Complex in Oregon, US*; Geoscience; University of Wisconsin - Madison
- 10:45 **NASA Internship Program:** Seth Hazen *My Experience at Sierra Space: Seth Hazen*; Engineering; Sierra Space
- 11:00 **STEM Bridge Scholarship:** Jose Trujillo Parra *High Voltage Converter Controller (HVCC) Output Regulator Controls Modeling*; Engineering; University of Wisconsin-Milwaukee
- 11:15 **WSGC Graduate & Professional Research Fellowship:** Gabriel Freedman *Accelerated Bayesian Searches for Gravitational Waves from Eccentric Binary Systems*; Physics; University of Wisconsin-Milwaukee
- 11:30 **WSGC Graduate & Professional Research Fellowship:** Rachel McClure *Galactic Bar Resonances and the Vertical BPX Stellar Trajectories in an N-Body Simulation*; Astronomy; UW-Madison
- 11:45

Session 3C Outreach Programs, Brian Ewenson

Room G216/217

- 10:15 **Special Initiatives Program:** Amy Prevost *Launching a Career in Biotechnology*; Biological Sciences/Medicine; BTC Institute
- 10:30 **Aerospace Outreach Program:** Matt Heer *High Schools Uniting with NASA to Create Hardware (HUNCH)*; Engineering; Platteville High School
- 10:45 **Special Initiatives Program/Aerospace Outreach Program:** Kelly Suha, Lisa Swaney, Wayne Vohnoutka *Horwitz-DeRemer Planetarium: Beginnings, Basics, & Beyond*; Astronomy; School District of Waukesha



11:00 **Aerospace Outreach Program:** Coggin Heeringa *Making Astronomy Accessible*; Astronomy; Crossroads at Big Creek, Inc.

11:15 **Special Initiatives Program/Aerospace Outreach Program:** Aidan Holmes *Space Explorers: A Program For Middle School Students / Biotechnology and Space: Courses For Teachers*; BTC Institute

11:30 **Aerospace Outreach Program:** Todd Treichel *Rocket Science for Future Engineers*; Engineering; AIAA-Wisconsin

11:45 **Special Initiatives Program:** Embedded Teacher Program *The Embedded Teacher Program Short Film, "My Teacher in Space," (Working Title)*; Lorinsuz Films, LLC; Glen Hills Middle School

Lunch Cafeteria/Outdoor Patio

12:00-1:00

Group Photo Main Lawn

1:00

Session 4

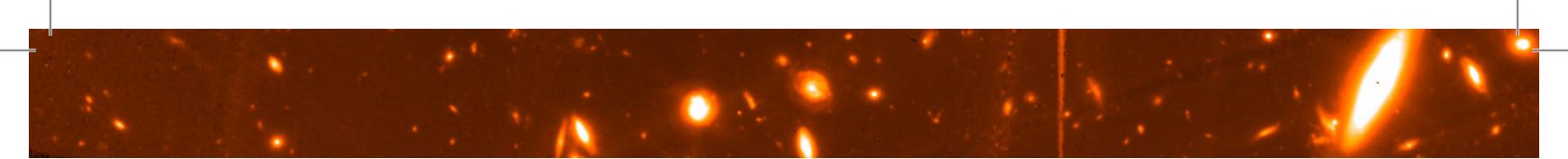
1:15 **Plenary Speaker** Melinda Soares-Furtado — *Stellar Epitaphs: The Final Testimonies of Devoured Worlds*; WICOR

Session 5 Posters, Networking, & Photos

2:00 Individual Awardee Photos

Poster #1 **Collegiate Rocket Launch:** Jordan Bopp, Gabriela Carranza, Semaje Farmer *Carthage Collegiate Rocket Launch: Introducing Ingenuity*; Physics; Carthage College

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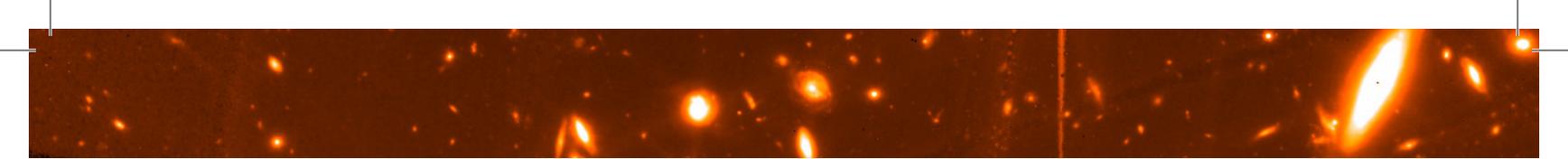
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Session 6A Student Scholarship, Fellowship, and Internships Programs, Robert Morrow

Auditorium

- 3:15 **Undergraduate Research Scholarship:** Jakob Mills *Probing the Kinematic Association Between Cold Neutral Hydrogen and Molecular Gas*; Astronomy; University of Wisconsin-Madison
- 3:30 **Undergraduate Research Scholarship:** Benjamin Callies *Flex-PAAS: Development of Flexible and Wearable Phased Array Antenna System (PAAS for NASA's Space Suits)*; Engineering; University of Wisconsin-La Crosse
- 3:45 **WSGC Graduate & Professional Research Fellowship:** Pratyusava Baral *Localization of Binary Neutron Stars using One Cosmic Explorer*; Physics; University of Wisconsin Milwaukee
- 4:00 **WSGC Graduate & Professional Research Fellowship:** John Podczerwinski *Removal of Foregrounds from 21cm Intensity Mapping Data*; Physics; UW-Madison
- 4:15 **WSGC Graduate & Professional Research Fellowship:** Amanda Baylor *Early-Warning Detection of Gravitational Waves from Compact Binary Mergers*; Physics; University of Wisconsin-Milwaukee



4:30 NASA Internship Program: Maddie Shipshock *3D Printing Rocket Engines*; Engineering; Sierra Space

Session 6B Faculty Research, William Farrow Room 122B

3:15 Higher Education Incentives: Steven Girard, Nicholas Barmore, Foster Boom, Spencer Cooper *Nanostructured Zinc Oxide Gas Sensors for Space Travel*; Chemistry; UW-Whitewater

3:30 Research Infrastructure Program: Md Tanzil Shahria *Developing Vision-based Object Detection and Localization System for Robot Object Manipulation*; Engineering; University of Wisconsin Milwaukee

3:45 Higher Education Incentives: Luis Rodriguez *Simulation and Control of Reconfigurable Mechanisms*; Engineering; Milwaukee School of Engineering

4:00 Research Infrastructure Program: Angela Dassow *Integrating ground-level acoustic monitoring with orbital multispectral imaging to monitor an endangered primate species*; Biological Sciences/Medicine; Carthage College

4:15 Faculty Forum: Kevin Crosby, Christopher Stockdale *Faculty Engagement in WSGC Programs*

4:30 Faculty Forum: Kevin Crosby, Christopher Stockdale *Faculty Engagement in WSGC Programs*

Session 7 Closing Remarks, Poster Award Announcement, Kevin Crosby, Christopher Stockdale Auditorium

4:45 Poster Session Award Winner Christopher Stockdale

4:50 Closing Remark Kevin Crosby

Reception/Afterparty

5:00 Reception: Atrium

7:00 Observatory Tour/Stargazing, Bell Burnell Observatory



2023-2024 ANNOUNCEMENTS OF OPPORTUNITY

spacegrant.carthage.edu

SUMMER: August 11, 2023

FALL: November 1, 2023

APPLICATION DEADLINE OCTOBER 9, 2023

UNDERGRADUATE

STEM Bridge Scholarship (SBS)

Spring Scholarship 2024/Fall Scholarship 2025

Undergraduate Scholarship (UGS)

Spring Scholarship 2024

Two-year Academic Institutions

All Academic Institutions

Undergraduate Research Scholarship (UGR)

Spring Research 2024

Women in Aviation Scholarship (WAI)

Spring Scholarship 2024

FACULTY

Higher Education Incentives (HEI)

Spring Research January - May 2024

OUTREACH

Aerospace Outreach Program (AOP)

Special Initiatives Program (SIP)

Summer Programs January - August 2024

APPLICATION DEADLINE OCTOBER 20, 2023

ROCKET PROGRAMS

Collegiate Rocket Launch (CRL)

Midwest Rocket Launch (MRL)

First Nations Launch (FNL)

FACULTY

NASA Sponsored Competitions (OPP)

APPLICATION DEADLINE FEBRUARY 5, 2024

UNDERGRADUATE

Undergraduate Scholarship (UGS)

Fall Scholarship 2024

All Academic Institutions

Undergraduate Research Scholarship (UGR)

Summer 2024/Academic Year Research 2024 - 2025

Unmanned Aerial Vehicle Program (UAV)

10-Week Summer Research 2024

GRADUATE & PROFESSIONAL

Dr. Laurel Salton Clark Graduate & Professional Research Fellowship (LSC)

WSGC Graduate & Professional

Research Fellowship (RFP)

Summer 2024/Academic Year Research 2024 - 2025

FACULTY

Early Stage Investigator Program (ESI)

Higher Education Incentives (HEI)

Research Infrastructure Program (RIP)

Summer/Academic Year Research June 2024 - May 2025

OUTREACH

Aerospace Outreach Program (AOP)

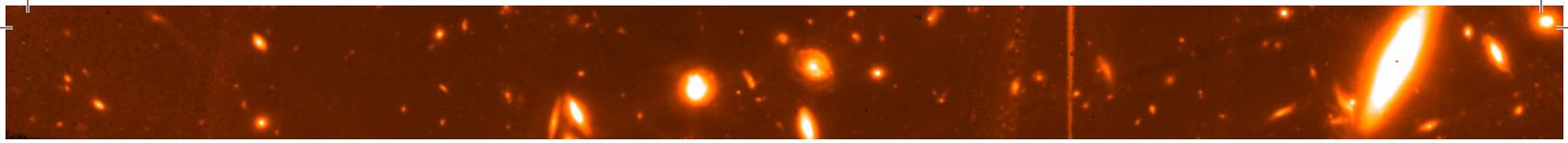
Special Initiatives Program (SIP)

Academic Year Programs July 2024 - May 2025

CREATE a [NASA STEM GATEWAY account](https://stemgateway.nasa.gov/public/s/login/) stemgateway.nasa.gov/public/s/login/

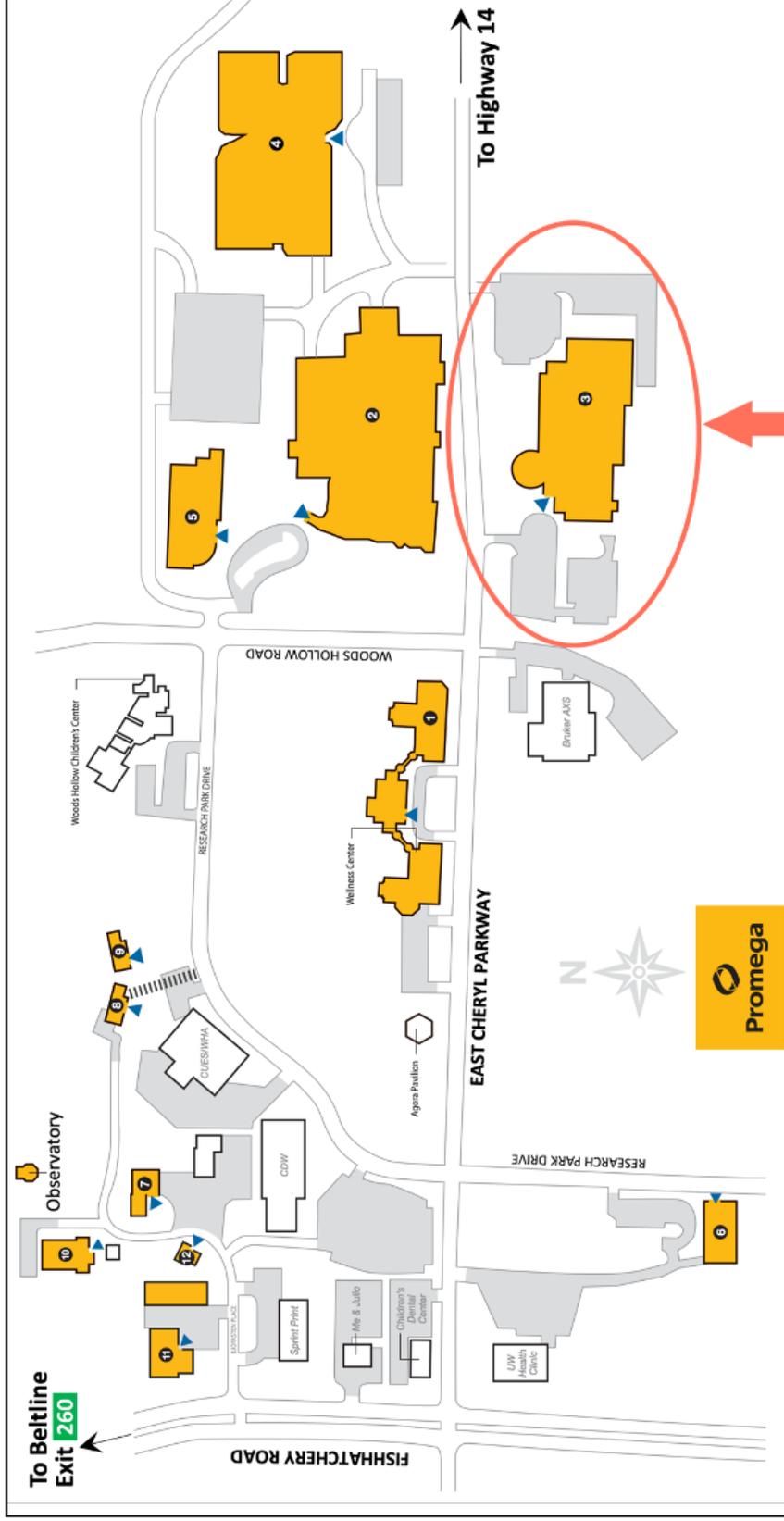
CREATE a [WSGC account](http://spacegrant.carthage.edu/about/login/) spacegrant.carthage.edu/about/login/

APPLY to WSGC programs of interest prior to application deadline spacegrant.carthage.edu/apps/account/login/



Notes

WSGC 33rd Wisconsin Space Conference Map



Promega Campus Map

- 1 Agora, Promega Headquarters. 5500 East Cheryl Parkway, Suite 110
- 2 Feynman Center, Manufacturing. 2780 Woods Hollow Road
- 3 BioPharmaceutical Technology Center (BTC). Manufacturing. 5445 East Cheryl Parkway
- 4 Kornberg Center, Research and Development. 5430 East Cheryl Parkway
- 5 Future Manufacturing Center. 2800 Woods Hollow Road
- 6 Terso Solutions, Subsidiary. 5540 Research Park Drive
- 7 Faraday Center. 2800 South Fish Hatchery Road
- 8 Sauna House, Guest House. 5474 Bjorksten Place
- 9 Earth House. 5472 Bjorksten Place
- 10 da Vinci, Maintenance & Engineering. 5511 Bjorksten Place
- 11 Lamarr Center, Operations. 2798 South Fish Hatchery Road
- 12 Louvre West, Meeting Space and Art Curation. 5458 Bjorksten Place

BioPharmaceutical Technology Center (BTC)

**5445 East Cheryl Parkway
Madison, WI 53711**

Free parking is available in the BTC front lot and along adjacent streets



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