OPEN SESSION

1. Convene Meeting  
   David L. Boliek Jr., Chair

2. Roll Call  
   Malcolm Turner, Secretary

3. Election of Officer  
   David L. Boliek Jr., Chair

4. Statement of Ethics  
   David L. Boliek Jr., Chair

5. Consent Agenda  
   - Approval of November 3-4, 2021 Minutes (Regular Meeting)  
   - Approval of December 9, 2021 Minutes (Special Meeting)  
   - Approval of December 14, 2021 Minutes (Emergency Meeting)  
   - Approval of Revised 2022 BOT Meeting Dates
     Attachment A  
     Attachment B  
     Attachment C  
     Attachment D

6. Board of Trustees Chair’s Remarks  
   David L Boliek Jr., Chair

7. Student Body President’s Remarks  
   Lamar Richards, Student Body President

8. Chancellor’s Remarks  
   Dr. Kevin Guskiewicz, Chancellor

9. Presentation on Research Enterprise at UNC  
   Terry Magnuson, Vice Chancellor for Research and Weatherspoon, Distinguished Professor of Genetics  
   Lindsey James, Assistant Professor, School of Pharmacy  
   Gerald Meyer, Director of Center for Hybrid Approaches in Solar Energy to Liquid Fuels, Professor, Department of Chemistry

10. *Report of the Audit, Compliance, and Risk Management Committee  
    Marty Kotis, Committee Chair

11. *Report of the Strategic Initiatives Committee  
    Perrin Jones, Committee Chair

    John Preyer, Committee Chair

13. *Report of the University Affairs Committee  
    Rob Bryan, Committee Chair
   Allie Ray McCullen, Committee Chair

   **CLOSED SESSION**

15. *Report of the External Relations Committee  
   Allie Ray McCullen, Committee Chair

16. *Report of the University Affairs Committee  
   Rob Bryan, Committee Chair

17. Legal Update  
   Charles Marshall, Vice Chancellor and General Counsel

   **OPEN SESSION**

18. Adjournment  
   David L. Boliek Jr., Chair
The Board of Trustees met in regular session on Wednesday November 3, 2021, at the Carolina Inn, Chancellor's Ballroom. Chair Boliek convened the meeting at 10:03am.

**NOVEMBER 3, 2021 SESSION**

Because this was a non-voting, information-only session, neither the roll call nor the statement of ethics was necessary for this session.

Vice Chancellor for Human Resources and Equal Opportunity and Compliance Becci Menghini, Interim Associate Vice Chancellor for Equal Opportunity & Compliance Elizabeth Hall, Executive Director of Strategy, Policy, and Special Project Katie Nolan held a Title IX and the University's Discrimination and Harassment Policy training session that all Trustees are required to complete.

To conclude their presentation, they entertained questions from the board.

The Board of Trustees met in regular session on Wednesday November 4, 2021, at the Carolina Inn, Chancellor's Ballroom. Chair Boliek reconvened the full Board meeting at 9:09 a.m.

**NOVEMBER 4, 2021 SESSION**

Chair Boliek introduced the special guests, UNC Clef Hangers, who sang the national anthem and Carolina in my Mind for the Trustees and attendees.

**ROLL CALL**

Secretary Malcolm Turner called the roll and the following members were present:

- Teresa Artis Neal
- David L. Boliek, Jr., Chair
- Rob Bryan
- R. Gene Davis, Jr.
- Dr. Perrin Jones
- Marty Kotis
- Allie Ray McCullen
- Ralph W. Meekins, Sr.
- Vinay Patel
- John P. Preyer, Vice Chair
- Malcolm K. Turner, Secretary
- Ramsey White

Trustee Lamar Richards was not in attendance at roll call and joined at a later time.

Secretary Turner indicated that there was a quorum.

**STATE GOVERNMENT ETHICS ACT**

Chair Boliek read the following statement:

As Chair of the Board of Trustees, it is my responsibility to remind all members of the Board their duty under the State Government Ethics Act to avoid conflicts of interest and appearances of conflict of interest as required by this Act. Each member has received the agenda and related
information for this Board of Trustees’ meeting. If any Board member knows of any conflict of
interest or appearance of conflict with respect to any matter coming before the Board of Trustees
at this meeting, the conflict or appearance of conflict should be identified at this time.

CONSENT AGENDA
The following items were presented for approval on the consent agenda:
• Approval of September 22-23, 2021 Minutes (Regular Meeting)
• Approval of October 7, 2021 Minutes (Special Meeting)
• Approval of Final Delegated Authority Resolution
• Approval of Human Resources Petition to Seek Elected Office
• Revisions to Title IX Appeal Procedures
  (ATTACHMENTS A-E)
Chair Boliek added the resolution passed in the Strategic Initiatives Committee with respect to
support of the military and military students to the consent agenda. Trustee Davis made a
motion to approve the consent agenda. Trustee Artis Neal seconded.

BOARD OF TRUSTEE CHAIR’S REMARKS
• Chair Boliek began his remarks by thanking faculty, staff, students, parents, and Board
  members as the Holiday season begins and the end of the Fall semester approaches.
• Chair Boliek announced the 2021 William Richardson Davie Award recipients:
  o Tim Moore
  o Roy Cooper
  o Robyn Hadley
  o Jean Allman Kitchen
  o Roy Williams
  o Wanda Williams
• The Chair congratulated the awardees and shared his appreciation for the diversity and
  impact of the recipients.
• The Chair concluded his remarks by calling upon Chancellor Kevin Guskiewicz for his
  remarks.

  [A copy of these remarks is in the Office of the Assistant Secretary and at bot.unc.edu]

CHANCELLOR’S REMARKS
• Chancellor Guskiewicz began his remarks by thanking the Chair, President Richards,
  staff, faculty, and Board members for their service to the university.
• The Chancellor shared highlights from the Fall semester – Class of 2020
  Commencement, Tar Heel Bus Tour Reunion, and welcoming the largest and most
  diverse first-year class.
• The Chancellor congratulated the recipients of the William Richardson Davie Award.
• The Chancellor provided AAU Meeting highlights; stating that shared challenges
  discussed were vaccines, AAU institutions and HBCU partnerships, assisting in moving
  NC A&T to r1 status through collaboration on research projects.
- The Chancellor recognized the Vaccine Requirement Executive Order from the Biden Administration for employees.
- The Chancellor addressed the Mental Health Crisis and its impact on the community; sharing the universities’ commitment to investing more resources into counseling, crisis invention, cultural support systems, and implementing more events similar to the Mental Health Summit held on November 15, 2021.

[A copy of these remarks is in the Office of the Assistant Secretary and at bot.unc.edu]

**STUDENT MENTAL HEALTH AT CAROLINA**

Chancellor Guskiewicz introduced Dr. Samantha Meltzer-Brody, Assad Meymandi Distinguished Professor and Chair, Director, UNC Center for Women’s Mood Disorders and Amy Johnson, Vice Chancellor for Student Affairs. Dr. Meltzer-Brody and Vice Chancellor Johnson began their presentation by discussing the scope of the national mental health crisis and the impacts it has had on UNC’s students and campus. Vice Chancellor Johnson shared information on localized and broad-based support that are available to students, as well as campus prevention and post-prevention plans.

To conclude their presentation, they entertained questions from the board. This presentation can be found on bot.unc.edu and on file in the Office of the Assistant Secretary.

(ATTACHMENT F)

**INTRODUCTION TO THE NORTH CAROLINA STUDY CENTER**

Chancellor Guskiewicz introduced Madison Perry, Executive Director of the North Carolina Study Center to present to introduce the board to the faith-based Christian study center that opened in 2015. The study center provides UNC students hospitality, education, and community between the hours of 8am-10pm.

To conclude their presentation, they entertained questions from the board. This presentation can be found on bot.unc.edu and on file in the Office of the Assistant Secretary.

(ATTACHMENT G)

**REPORT OF THE FINANCE, INFRASTRUCTURE, & AUDIT COMMITTEE**

Trustee Preyer presented the report from the Finance, Infrastructure, and Audit Committee. The following items were presented to the committee for action.

**Annual Endowment Fund Report**

Board of Governors’ regulations require that the institution’s Board of Trustees submit to the Board of Governors an annual report on the endowment fund. The annual report for the fiscal year ending June 30, 2021 is attached. The Endowment Board approved this report at its meeting on October 21, 2021.

(ATTACHMENT A)
Property Disposition by Sublease
UNC-CH currently leases an approximately 23k sf, two story office building at 521 S. Greensboro, Carrboro, NC. UNC-CH has leased this building on behalf of the Frank Porter Graham Child Development Institute since 2005. FGP has, in the past two years, consolidated its operations and freed up the first floor of this building to be used by other entities. UNC-CH has two users on the 2nd floor (TEACCH and School of Public Health), but the first floor is mostly vacant. CHCSS has agreed to terms to sublease the 90% of the first floor for the remaining term of the lease, until 12/31/23. The sublease will generate approximately $170,000 in savings in each of the next two years. In keeping with existing delegated authority, all leases with a value in excess of $150,000 on an annual basis require Board of Trustees approval.

(ATTACHMENT B)

Property Acquisition by Lease – Renaissance Computing Institute
UNC-CH’s Renaissance Computing Institute (RENCI) leases approximately 25,000 square feet of office space from Europa Center, LLC at 100 Europa Drive, Chapel Hill. This lease expired September 31, 2021 and they currently occupy the space on a month-to-month basis. UNC-CH has negotiated to renew this lease for the same space for two years. The new rate negotiated is less than the current rate yielding a savings for the University over the next two years of about $50,000. RENCI has occupied this space since 2016. In keeping with existing delegated authority, all leases with a value in excess of $150,000 on an annual basis require Board of Trustees approval.

(ATTACHMENT C)

Tuition and Fee Proposals
Nathan Knuffman, Vice Chancellor for Finance and Operations, presented recommendations from the Tuition and Fee Advisory Task Force. The Finance, Infrastructure, and Audit Committee approved the tuition and fee proposals as presented.

(ATTACHMENT D)

A motion came from committee to approve the annual endowment report, property disposition item, property acquisition item, and the tuition and fee proposals. Trustee Davis seconded, and they passed.

Trustee Preyer continued and shared the items for information only:
- Preliminary Design Review – Kenan Football Center Addition Design
- Carolina Research Ventures Board Appointment

A full review of the committee meeting are in the committee minutes in the Office of the Chancellor.

REPORT OF THE UNIVERSITY AFFAIR COMMITTEE
Trustee Bryan presented a review of the University Affairs Committee meeting. There were no action items for this committee in open session. Trustee Bryan shared the items presented for information:
- Faculty Update given by Mimi Chapman
• Carolina Next – Strategic Initiative #7: Globalize by Barbara Stephenson

A full review of the committee meeting are in the committee minutes in the Office of the Chancellor.

REPORT OF THE EXTERNAL RELATIONS COMMITTEE
Trustee White presented a review of the External Relations Committee meeting. There were no action items for this committee in open session. Trustee White shared the items presented for information:
• The Campaign for Carolina by David Routh
• University Communications Update by Beth Keith and Tanya Moore
• Public Affairs Update by Clayton Somers

A full review of the committee meeting are in the committee minutes in the Office of the Chancellor.

MOTION TO CONVENE IN CLOSED SESSION
On motion of Secretary Turner, and seconded by Trustee Bryan, the Board voted to convene in closed session pursuant to North Carolina General Statutes Section 143-318.11 (a) (1) (to prevent the disclosure of privileged information under Section 126-22 and the following); and also pursuant to Section 143-318.11 (a) (2), (3), (5), (6), (7), and (9).

RECONVENE MEETING IN OPEN SESSION
Secretary Turner made a motion to return to open session. Trustee Artis Neal seconded, and it passed.

OPEN SESSION

REPORT OF UNIVERSITY AFFAIRS COMMITTEE
Trustee Bryan referred members to the November Human Resource items and School of Medicine Administration Compensation Plan item submitted for action. Trustee Bryan made a motion to approve the items. Trustee Kotis seconded, and it passed.

ADDITIONAL MOTION
Trustee Kotis raised a motion to move that the university shall not discriminate against preferential treatment against any group or company on the basis of race, sex, color, or ethnicity. Seconded by Trustee McCullen. Trustee Kotis shared that it is a priority to ensure fairness in the application process. Secretary Turner called the vote by roll call, with the motion failing to pass on a vote of 11-2. Trustee McCullen and Kotis voted in favor of the motion and Trustees Artis Neal, Boliek, Bryan, Davis, Jones, Kotis, McCullen, Meekins, Preyer, Turner, and White voted against the motion.

ADJOURNMENT
There being no further business to come before the Board, Chair Boliek called for a motion to adjourn. Trustee Davis made the motion; Chair Boliek seconded, and it passed. Chair Boliek adjourned the meeting at 1:08pm.
The Board of Trustees met in a special meeting session on Thursday, December 9, 2021 via zoom teleconference hosted in 105 South Building with the Chair and Vice Chair present. Chair Boliek convened the meeting at 10:34 a.m.

**WELCOME**
Chair Boliek shared a few logistics to begin the meeting. Due to recent amendments to the North Carolina General Statutes concerning virtual meetings by public bodies, all votes will be by roll call.

**ROLL CALL**
Secretary Turner called the roll and the following members were present in person unless otherwise noted to be via zoom as provided below:

- Teresa Artis Neal
- David L. Boliek, Jr., Chair
- Rob Bryan
- R. Gene Davis, Jr.
- Dr. Perrin Jones
- Marty Kotis
- Allie Ray McCullen
- Ralph W. Meekins, Sr.
- Vinay Patel
- John P. Preyer, Vice Chair
- Lamar Richards
- Malcolm K. Turner, Secretary
- Ramsey White

Secretary Turner indicated that there was a quorum.

**PRESENTATION OF AGENDA**
Chair Boliek asked Assistant Secretary Somers to distribute the agenda to the board as the first order of business and to post it concurrently on bot.unc.edu.

**STATE GOVERNMENT ETHICS ACT**
Chair Boliek read the following statement:
As Chair of the Board of Trustees, it is my responsibility to remind all members of the Board of their duty under the State Government Ethics Act to avoid conflicts of interest and appearances of conflict of interest as required by this Act. Each member has received the agenda and related information for this Board of Trustees’ meeting. If any Board member knows of any conflict of interest or appearance of conflict with respect to any matter coming before the Board of Trustees at this meeting, the conflict or appearance of conflict should be identified at this time.

**MOTION TO CONVENE IN CLOSED SESSION**
On motion of Secretary Turner, and seconded by Trustee Davis, the Board voted to convene in closed session pursuant to North Carolina General Statutes Section 143-318.11 (a) (1) (to prevent the disclosure of privileged information under Section 126-22 and the following); and also pursuant to Section 143-318.11 (a) (2), (3), (5), (6), (7), and (9). Secretary Artis Neal called the vote by roll call. The motion passed unanimously by roll call vote.

**RECONVENE MEETING IN OPEN SESSION**
A made a motion to return to open session. It was duly seconded, and the motion passed.

**OPEN SESSION**
Chair Boliek reconvened the meeting in open session Trustee Preyer made a motion to approve a personnel action the Board had approved in closed session, the approval of action item one on the agenda. Secretary Turner called the vote by roll call, with the motion passing on a vote of 12-
1. Trustees Artis Neal, Boliek, Bryan, Davis, Jones, Kotis, McCullen, Meekins, Preyer, Turner, and White voted for the motion, and Trustee Richards voted against the motion.

Chair Boliek called for a motion to approval action items two and three from the closed session agenda. Trustee Davis motioned and seconded by Trustee White. Secretary Turner called the vote by roll call, with the motion passing on a vote of 12-1. Trustees Artis Neal, Boliek, Bryan, Davis, Jones, Kotis, McCullen, Meekins, Preyer, Turner, and White voted for the motion, and Trustee Richards abstained from the vote.

**ADJOURNMENT**

There being no further business to come before the Board, Chair Boliek called for a motion to adjourn. Trustee Davis made the motion; Trustee Patel seconded, and Secretary Turner called the vote by roll call. The motion passed unanimously by roll call vote. Vice Chair Davis adjourned the meeting at 12:17 pm.

___________________________________
Clayton Somers, Assistant Secretary
The Board of Trustees met in an emergency meeting session on Thursday, December 14, 2021 via zoom teleconference in 311A South Building. Chair Boliek convened the meeting at 1:32 p.m.

**WELCOME**
Chair Boliek shared a few logistics to begin the meeting. Due to recent amendments to the North Carolina General Statutes concerning virtual meetings by public bodies, all votes will be by roll call.

**ROLL CALL**
Secretary Turner called the roll and the following members were present in person unless otherwise noted to be via zoom as provided below:

- Teresa Artis Neal
- David L. Boliek, Jr., Chair
- Rob Bryan
- R. Gene Davis, Jr.
- Dr. Perrin Jones
- Marty Kotis
- Allie Ray McCullen
- Ralph W. Meekins, Sr.
- Vinay Patel
- John P. Preyer, Vice Chair
- Lamar Richards
- Malcolm K. Turner, Secretary
- Ramsey White

Secretary Turner indicated that there was a quorum.

**PRESENTATION OF AGENDA**
Chair Boliek asked Assistant Secretary Somers to distribute the agenda to the board as the first order of business and to post it concurrently on bot.unc.edu.

**STATE GOVERNMENT ETHICS ACT**
Chair Boliek read the following statement:
As Chair of the Board of Trustees, it is my responsibility to remind all members of the Board of their duty under the State Government Ethics Act to avoid conflicts of interest and appearances of conflict of interest as required by this Act. Each member has received the agenda and related information for this Board of Trustees’ meeting. If any Board member knows of any conflict of interest or appearance of conflict with respect to any matter coming before the Board of Trustees at this meeting, the conflict or appearance of conflict should be identified at this time.

**OPEN SESSION**
**CHAIR REMARKS**
Chair Boliek thanked the Board members for their commitment to the university and taking time to attend the emergency meeting. The special meeting convened on December 9, 2021 was to discuss and consider certain confidential personnel matters and returned to open session to vote on three personnel matters. The Board must abide by Open Meetings Law and the State Human Resources Act.

The Open Meetings Law requires that all votes be cast in open session or by written ballot outside of a scheduled meeting. The State Human Resources Act mandates that the Board protect confidential personnel information from disclosure.

Chair Boliek referred to the measures taken by the Board to protect against the premature disclosure of confidential personnel information when taking votes in open session. The
university releases information regarding personnel matters following the completion and the specific information related to the action is publicly available under the State Human Resources Act.

Chair Boliek referred to the December 9, 2021 roll call vote in open session to prevent the premature disclosure of confidential personnel information associated with the appointment of the Executive Vice Chancellor and Provost. Chancellor Guskiewicz requested additional time to finalize the appointment with Dr. Chris Clemens and release an announcement.

EHRA NON-FACULTY HR ACTIONS
Chair Boliek called for a motion to approve Dr. Chris Clemens as Executive Vice Chancellor and Provost effective February 1, 2022. Vice Chair Preyer made a motion to accept the recommendation, and Trustee Patel seconded. Secretary Turner called the vote by roll call, with the motion passing on a vote of 12-1. Trustees Artis Neal, Boliek, Bryan, Davis, Jones, Kotis, McCullen, Meekins, Preyer, Turner, and White voted for the motion, and Trustee Richards voted against the motion.

Chair Boliek referenced the personnel matters of current employees, Dr. Amy L. Hertel to be appointed as Executive Vice Provost and Dr. Christi Hurt as Chief of Staff to the Chancellor. Chair Boliek called for a motion to approve the proposed salaries for the Executive Vice Provost and Chief of Staff such that the Chancellor may proceed with any additional approvals needed in the completion of the appointments and to the extent necessary ratify the actions taken to approve these salaries previously on Thursday, December 9th, 2021. Vice Chair Preyer made the motion to approve the appointments and salaries and seconded by Trustee Davis. Secretary Turner called the vote by roll call, with the motion passing on a vote of 12-1. Trustees Artis Neal, Boliek, Bryan, Davis, Jones, Kotis, McCullen, Meekins, Preyer, Turner, and White voted for the motion, and Trustee Richards abstained from the vote.

ADJOURNMENT
There being no further business to come before the Board, Chair Boliek called for a motion to adjourn. Trustee Davis made the motion; Trustee Patel seconded, and Secretary Turner called the vote by roll call. The motion passed unanimously by roll call vote. Vice Chair Davis adjourned the meeting at 1:58pm.

Clayton Somers, Assistant Secretary
MEMORANDUM

To: Members of the Board of Trustees

From: David Boliek, Chair

Date: January 28, 2022

RE: Revised 2022 Meeting Dates

Due to conflicts, the September and November 2022 BOT meetings need to be rescheduled. Please see below the updated 2022 meeting dates for approval.

March 23 – 24
May 18 –19
July 27 – 28
Revised to September 28 – 29 (Previously September 21-22)
Revised to November 9 – 10 (Previously November 16-17)
A BILLION DOLLAR ENTERPRISE

$1.16B in Annual Research Expenditures

$1.07B in New Research Awards for FY21, making it the best fiscal year for external funding

10,420 NC employees supported by UNC Research

$385M in salaries

$96M in purchases

at 3,500 NC businesses

in 89 counties.
DISCOVERY to DEVELOPMENT to MARKET
UNC’S RESEARCH, TRANSLATION, & INNOVATION PIPELINE

TRANSLATION & PRE-COMMERCIAL
Tech/Product De-Risking & Development

- Institute for Convergent Science
- Eshelman Institute for Innovation
- AdvanTx
- Lineberger
- Drug Discovery Initiative
- Digital Health Venture Studio
- Pinnacle Hill Deerfield

GO-TO-MARKET
Venture Creation, corporate partnerships, technology licensing

ECONOMIC & SOCIAL BENEFITS
$100M DoE program: Advance artificial photosynthesis for the production of fuels from sunlight.

UNC: Develop hybrid photoelectrodes for liquid solar fuel production (Gerald Meyer)

• $40 million award to the North Carolina based Center for Hybrid Approaches in Solar Energy to Liquid Fuels (CHASE).

• Accelerates fundamental research of the production of fuels from sunlight.

Center for Hybrid Approaches in Solar Energy to Liquid Fuels

Gerald Meyer: Director
Professor of Chemistry
Translational Research Towards New Cancer Therapeutics

Lindsey I. James
Assistant Professor, Division of Chemical Biology & Medicinal Chemistry
Director of Chemical Biology, Center for Integrative Chemical Biology & Drug Discovery
UNC Eshelman School of Pharmacy

UNC Chapel Hill
January 27, 2022
What is the problem?

- The misregulation of regulatory proteins is an emerging hallmark of disease
- New examples of disease associated proteins are rapidly emerging

What is our solution?

Are these proteins ‘druggable’?

SMALL MOLECULE INHIBITORS
What is the problem?

- The misregulation of regulatory proteins is an emerging hallmark of disease
- New examples of disease associated proteins are rapidly emerging

What is our solution?

**SMALL MOLECULE INHIBITORS**

- Are these proteins ‘druggable’?
- Can we use small molecules to increase biological understanding?
- Are inhibitors likely to lead to desirable clinical outcomes? (target validation)
Tool Compounds Versus Drugs

DRUGS: safe and effective

TOOLS: ask a specific question about biology

Opportunities at UNC facilitate translational research and the rapid development of novel therapeutics
Unmet needs abound in multiple myeloma

- MM cells are abnormal plasma cells that build up in the bone marrow and form tumors in many bones of the body
- MM is the second most common blood cancer (>30,000 diagnoses in 2020)
- Still unknown why some people get myeloma
- Many currently marketed agents do not overcome the negative prognosis, drug resistance is inevitable, and we lack a reliable curative strategy
Unmet needs abound in multiple myeloma

- MM cells are abnormal plasma cells that build up in the bone marrow and form tumors in many bones of the body
- MM is the second most common blood cancer (>30,000 diagnoses in 2020)
- Still unknown why some people get myeloma
- Many currently marketed agents do not overcome the negative prognosis, drug resistance is inevitable, and we lack a reliable curative strategy

Novel pharmacological tools are desperately needed to better understand MM biology and treat patients with MM
Pinnacle Hill partnership is making translation to the clinic a reality

**Academic Collaborations**

Pinnacle Hill, the research and development partnership between the University of North Carolina at Chapel Hill and Deerfield Management Company, an investment management firm, recently announced its first project agreement to advance the preclinical development of new medicines.

Pinnacle Hill will support a project of Lindsey James, an assistant professor in the UNC Eshelman School of Pharmacy’s Division of Chemical Biology and Medicinal Chemistry. Her work focuses on multiple myeloma, a devastating cancer that develops in bone marrow.

James and her research team are interested in epigenetic abnormalities that lead to cancer and are working to apply medicinal chemistry, chemical biology, and cancer biology approaches to discover potential therapeutic agents. Through this first project, Pinnacle Hill will devote targeted resources to advancing discoveries which have great therapeutic potential for patients with the disease.

*Lindsey Ingerman James, Ph.D.*
Center for Integrative Chemical Biology & Drug Discovery

Pinnacle Hill partnership is making translation to the clinic a reality

- **Highly collaborative** project involving scientists from UNC, Deerfield, and CROs with extensive experience in drug discovery
- **Shared goals** around basic science, therapeutic development, and commercialization
- Molecules identified at UNC are now in **preclinical development** with the goal of identifying analogs suitable for clinical trials
- **Intellectual property** filed at the end of 2021
- **PH resources** have been instrumental in rapidly advancing the project in a way that would have otherwise been challenging
- Discussions around **new projects** are underway
Translational research opportunities at UNC are numerous

**Mission:** The Eshelman Institute is forging a game-changing approach to translating bold new ideas into real-world impact for patients

- 3 funded projects from the EII ranging from $50,000 to $500,000
- Current project is focused on novel MM therapies (distinct from PH)
Acknowledgements

James Lab
John Tabor
Caroline Foley
Rebecca Johnson
Peter Buttery
Juanita Sanchez

Ronan Hanley (currently at C4 Therapeutics)
Isabelle Engelberg
Jarod Waybright (currently at Design Therapeutics)
Frankie Potjewyd (currently at SGC UNC)
Naimee Mehta (currently at Nurix)

CICBDD
Stephen Frye
Jacqueline Norris
Ken Pearce
Dmitri Kireev

Pinnacle Hill
Jon Collins

Funding Sources

NIH 1R61DA047023-01
NIH 1R01CA242305-01
CENTER for HYBRID APPROACHES in SOLAR ENERGY to LIQUID FUELS
Center for Hybrid Approaches in Solar Energy to Liquid Fuels

MISSION: To develop the fundamental science necessary for the synthesis of hybrid photoelectrodes that generate storable liquid fuels using only the small molecules found in air as chemical feedstocks and sunlight as the sole energy source.

www.chase.unc.edu
The CHASE Principal Investigators and Key Personnel

Joanna Atkin
James Cahoon
Jeffrey Dick
Yosuke Kanai
Rene Lopez
Alex Miller
Matthew Lockett
Alex Tropsha
Pat Holland
Sharon Hammes-Schiffer
Nilay Hazari
James Mayer
Hailiang Wang

Joan Atkin
James Cahoon
Jeffrey Dick
Yosuke Kanai
Rene Lopez
Alex Miller
Matthew Lockett
Alex Tropsha
Pat Holland
Sharon Hammes-Schiffer
Nilay Hazari
James Mayer
Hailiang Wang

Director
Jillian Dempsey
Deputy Director
Caley Allen
Managing Director

CHASE Center for Hybrid Approaches in Solar Energy to Liquid Fuels

Senior Staff Scientists (3)

Dan Kurtz
Technical Communications & IP

Jerry Meyer
Jillian Dempsey
Caley Allen
Tim Lian

UNC
Yale
BNL
Penn
NCSU
Emory

Jessica Anna
Zahra Fakhraai
Karen Goldberg
Tom Mallouk
Eric Stach

Phil Castellano
Elena Jakubikova
Paul Maggard
Greg Parsons

Jerry Manbeck
Dmitry Polyansky
José Rodriguez

Javier Concepcion
Mehmed Ertem
David Grills

CHASE

Tim Lian
FIVE-YEAR RESEARCH GOAL

To develop a fundamental molecular level understanding of how hybrid photoelectrodes, comprised of molecular catalysts with tailored microenvironments integrated with semiconducting light absorbers, couple single photon absorptions to the multi-electron/multi-proton chemical transformations necessary to generate liquid solar fuels.
The CHASE Strategy

FIVE-YEAR RESEARCH GOAL
To develop a fundamental molecular level understanding of how hybrid photoelectrodes, comprised of molecular catalysts with tailored microenvironments integrated with semiconducting light absorbers, couple single photon absorptions to the multi-electron/multi-proton chemical transformations necessary to generate liquid solar fuels.

Diagram:
- Semiconductors absorb light and separate charge.
- Molecular catalysts generate fuels.
- The reaction involves CO₂, H₂O, N₂.
The CHASE Strategy

FIVE-YEAR RESEARCH GOAL
To develop a fundamental molecular level understanding of how hybrid photoelectrodes, comprised of molecular catalysts with tailored microenvironments integrated with semiconducting light absorbers, couple single photon absorptions to the multi-electron/multi-proton chemical transformations necessary to generate liquid solar fuels.
The CHASE Strategy

FIVE-YEAR RESEARCH GOAL
To develop a fundamental molecular level understanding of how hybrid photoelectrodes, comprised of molecular catalysts with tailored microenvironments integrated with semiconducting light absorbers, couple single photon absorptions to the multi-electron/multi-proton chemical transformations necessary to generate liquid solar fuels.

**Diagram:**
- Semiconductors absorb light and separate charge.
- Tailored microenvironments enhance catalyst selectivity and durability.
- Cooperative interactions of catalysts enable cascade production of high value liquid fuels.
- Molecular catalysts generate fuels.

**Equation:**
\[ 	ext{CO}_2, \text{H}_2\text{O}, \text{N}_2 \rightarrow \text{fuel(l)} \]
CHASE Hybrid Photoelectrodes will Address DOE Priority Research Opportunities

**PRO-1:** Understand Mechanisms that Underpin Constituent Durability & Performance

**PRO-2:** Control Catalyst Microenvironment to Promote Selective & Efficient Fuel Production

**PRO-3:** Bridge Time and Length Scales of Light Excitation & Chemical Transformations

**PRO-4:** Tailor Interactions of Complex Phenomena to Achieve Integrated Multicomponent Systems

CHASE research will address fundamental science needs identified by all four DOE PROs, building the critical foundation needed for technology breakthroughs.
CHASE has enacted an effective research management plan that cultivates synergistic, interdisciplinary, and collaborative research across six sites.

Foundational research infrastructure has been built in Year 1 to facilitate rapid research advances towards CHASE goals.

An adaptive approach to management will ensure CHASE research stays mission-focused and makes rapid progress towards scientific goals.
ACKNOWLEDGMENT

This work was supported as part of the Center for Hybrid Approaches in Solar Energy to Liquid Fuels (CHASE), an Energy Innovation Hub funded by the U.S. Department of Energy, Office of Science, Office of Basic Energy Sciences under Award Number DE-SC0021173