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UKUČA

April 12, 2024

Dear Friends,

I am excited to welcome you to the 23rd annual Celebration of Undergraduate Research



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This book, as well as a sampling of posters from the Celebration event, can be viewed on Hope's Digital Commons Repository on the Van Wylen Library website (digitalcommons.hope.edu) beginning in May.

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Numbers next to presenter names in this program reference the project number on the floor of the event.

Listing of Projects by Department or Program

Pre-en, a ion Tī, le

S, den, Pre-en, er

Biochemistry & Molecular Biology

Men, or

Dr. Leah Chase, Dr. Kristin Dittenhafer-Reed

Erlg ⁻ -Q k [^] neZnl ra [^] ZrlbnZg] ikZ \dlg [^] h_ira [^] cystine/glutamate transporter, System xc-	Anna Koppin	87
LC-MS/MS for proteomic analysis of post-translational f h] l6\Zihg] hg'q<M	Connor Bricco	98
N[h] nbgZihg h_ q<MBF i ZrlhgMa [^] I krlhgÖLrZ] lbn% Mkgho [^] kKZnl%Zg] Eh\ZdsZihg	Sofa Rosenberger	109
Bgo [^] l rñ Zihg [^] ra [^] lgnkl [^] \rlhg h_ hg [^] \Zk hg'f [^] ^rZ] hdlf [^] and mitochondrial genome maintenance	Taylor Laurin	120
Determining the nature of the interaction of mitochondrial DNA with nucleoid proteins involved in one carbon metabolism.	MacKenzie Luurtsema	121

Biology

Men, or

Dr. Leah Chase, Dr. Kelly Ronald, Dr. Jennifer Blake-Mahmud, Dr. Maria Burnatowska-Hledin

> ^\rhh_ = ^zr^] A<: >qi hlnk [^] hgZKZnl f h] ^eh_ ; b hZk= Bhlj [^] k Understanding the role of serine 26 phosphorylation changes in i ^kqj [^] ^E ^] lZnl] ikZ \dlg [^] h_ lrlmf [^] q\&hira [^] ^ef [^] af [kZg [^]	Eden Comer, Natalie Olander Katherine Lane	74 65
>qi dk [^] Ahi [^] ^Lnf f [^] k<Zf i l3 f Zslg [^] : glf Ze: [lbb]l	Hannah Sturgeon, Alyssa Archer	63
Ma [^] ^g [^] rñ Obpi hgnh_ >gobhgf [^] ^gnZel [^] q= ^mkf lgZihg [^] lgI Zgnh3KG: >qnlZrlhg h_ Lrki [^] ^] F Zi e [^]	Janaa Ward	75
= h [^] l lg [^] k [^] Z [^] ^] ^g [^] rñ f ZnlZeZ [^] ^nma [^] l rkl l k [^] li hgl [^] in related organisms?	Steven Awad, Madeline Kenney	76
AZi r< aZf r4Ma [^] > ^\rhh_ i A hgL [^] qnZeOl [^] : l [^] qnZeK [^] i kh] n\rlhg	Amanda Darner, Sam Haakenson, Alyssa Fusco, Madison Smith	85
Lh\Zel [^] q= ^mkf lgZihg3P aZm k [^] Bhlf bt8	Molly Prom, Kayleigh Harrell, Hannah Dehaan, Mackenzie Dole	86
>gobhgf [^] ^gnZg] l [^] qnZe [^] q k [^] l lhg3Ahk [^] hg [^] &g] n\^] l [^] q [^] change in sexually plastic trees	Colin Kalkman, Samantha Weaver, Michael LaPorte, Arsh Mir, Jillian Hickok	107
Bgo [^] l rñ Zihg [^] : n] bhkr Zg] ObnZel [^] ZihgZdm lg Ahnl [^] ?lg [^] a [^] l	Ashley Lauraine, Hannah Peterson, Jordan Winters	64
F i dZihg] h_ Bhg Hqj [^] ^GZghi Znl e [^] >qi hlnk [^] hg [^] ra [^] : n] bhkr I arl bhd [^] r Zg] Bhg; bZ\ \nf neZihg [^] lg Ahnl [^] Li Zklpl [^]	Shae Johnston, Peyton Hallemann	96

Biology continued

: k'ra'k'1^q&Z'] b ^k'g^1 lg'lnk'] gnk'gh'

Communication

Men or

Dr. Austin Beattie

: kniol 'Ma^: khlr6 Zg' Bp ^L'i ZkZn] 8

Simon Awad, Timothy Ramos,
Antonio Popp, Ja'Kaurie Kirkland

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Ódkg` hkAnkg` 80E ^k^i rthgl h_?dkZthnl`

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Engineering	Nathan Ceja	103
sensation quality	Jef rey Quintanilla Flores Justin Egbuzie	92

Geological & Environmental Sciences

Members

Dr. Brian Bodenbender, Dr. Michael Philben, Prof. Suzanne J. DeVries-Zimmerman

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Engineering	A	

History

Mathematics

Men, or
Dr. Paul Pearson

Listing of Projects by Department or Program

Pre en, a ion T i le	S den Pre en er	Projec N mber on he Floor of he E en
Neuroscience continued		
@kZhm ^Zg] ^kn] ^l rhpZkl hra^kl 3F i Zrhhg` emotion-regulation and the parasympathetic nervous system	Nhi Hoang, Charis Snyder, Kendahl Miller, Parker Friend, Grace Sarafa, Alexander Mathew, Jacob Bergstrom, Wyatt Collier, Jessica Estabrook, Joseph Gillengerten, Tyler Kennedy, Ana Wong	123
F h] ^dg`] hi Zf lg^k b`dhl lg`ra^s^ [kZBl a heZrhrk lrl rnf` GZghf ^aZgbZe`aZkZrnksZrhg`h_`s^ [kZBl a heZrhrk` epithelium following damage and recovery.	Lexus Putt Ander Ciesielski	101 112
> ^rhh` Znrn`ari hqb` ^qi hlnk` hg`ra` heZrhrk lrl rnf` ` h` Z] neis^ [kZBl a	Skylar DeWitt	91
Nursing		
Men or Dr. Anita Esquerra-Zwiers		
F r F hra^kDF lbd` hkF babZg Bg Zgh`= ZiP^ [&Zl ^] ` : i i dZrhg`h`nl @kni `?^^ [Zld	Delaney Wesolek	111
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Men or Dr. Kate Finley		
K`d`bhl l`kni ndl bn3`rhh` r%f ^Zlg` & Zdlg` %Zg] li hbmZe` p^ed^lg` Zf hg` i Zrhh Zrhpba l b glB`Zgn`qi ^kbg`^l` p`ha`ra^ < aklnZg`B`zf b`%kCp`ba`Zra	Erin Moran	51
Physics		
Men or Dr. Belen Monteagudo, Dr. Zachary Williams, Mr. Andrew Bunnell, Dr. Paul DeYoung, Dr. Kyuil Cho, Dr. Peter Gonthier		
< aZkZrnksZrhg`Zg] Ml rlg` h`LH F l`hkZG`qnt`g`^kZrhg` Neutron Detector	Bishop Carl	70
Bgo`l`rh`Zrhg`h` < hgo`^`rhg` < ^ed` OlZMng`Zrn] `	Gillian Donley	71
F ZrnkZe` < aZkZrnksZrhg` hkBg] nl rBZeMhg`?hf` I`h`^l`l`^l` &^`Zr`l`rk`g``ma`ng`^`rhg`h``22%)` R	Nathaniel Jobson, Jacob Walther, Justin Rink, Wil Pinkerton Nathaniel Jobson	81 82

Physics continued

= $\int_{-\infty}^{\infty} \delta(x) dx = 1$
Elj nb *2? Lög] Zk]

Psychology continued

Individual Differences

Allie Prindle, Alexa Burgess,
Katherine Yakes **36**

Evolutionary Psychology
on Partner Choice

Jennifer Almquist, Neva Brown **26**

Sociology & Social Work

Men or

Dr. Aaron Franzen, Dr. Liz Sharda, Dr. Rodrigo Serrao

> ^\mh_>f i Zrab<hg^kg%Lh\ZeLni i hkr%A^Zaa%Zgl ; nkghm
hg'Ngj ^k kZ] nZmI k^&^ZaaZg] 'Gnkkg` Lm] ^gmÜrk'l

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23rd Annual A. Paul and Carol C. Schaap Celebration of Undergraduate Research and Creative Activity

Poster and Presentation Map



NATURAL AND APPLIED SCIENCES



SOCIAL SCIENCES



ARTS AND HUMANITIES



GLOBAL HEALTH

- | | |
|-------------------------------|--|
| 1. Kinesiology | 12. Global Health |
| 2. Psychology | 13. Geological & Environmental Science |
| 3. Sociology & Social Work | 14. Biology |
| 4. Education | 15. Biochemistry & Molecular Biology |
| 5. Political Science | 16. Chemistry |
| 6. Women's & Gender Studies | 17. Nursing |
| 7. Communication | 18. Neuroscience |
| 8. World Languages & Cultures | 19. Engineering |
| 9. Music | 20. Physics |
| 10. History | 21. Computer Science |
| 11. Philosophy | 22. Math |



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