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2020

# DAVINCI FELLOWS



NORTHEASTERN STATE UNIVERSITY

# THE DAVINCI INSTITUTE

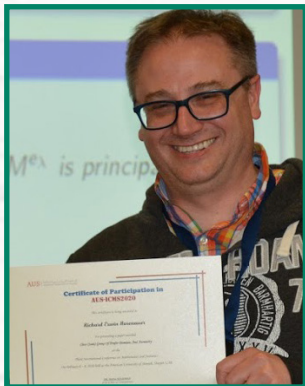
*The DaVinci Institute is organized exclusively for charitable, scientific and educational purposes, more specifically to serve as an Oklahoma think tank whose mission is to promote a statewide creative renaissance through lectures, workshops, professional development, research and advocacy.*

*The DaVinci Institute funds creative projects among Oklahoma's higher education faculty. A \$1,000 grant is awarded to each DaVinci fellow to assist in completing their DaVinci proposal.*

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## 2020 DAVINCI FELLOW

*This Fellowship funds creative projects, broadly defined, among Oklahoma's higher education faculty. The recipients of this honor receive a DaVinci "Vitruvian Man" medal and a \$1,000 grant they may apply to any aspect of completing the proposed project.*



### Dr. Richard Hasenauer

*Associate Professor, Mathematics*  
Gregg Wadley College of Science & Health Professions

#### DAVINCI FELLOW PROPOSAL:

Applications of factorization theory

#### OVERVIEW:

Dr. Hasenauer chose his discipline because it is unbiased and provable as true, and he relates his passion for mathematics through his teaching. He believes being involved in ongoing research allows him to answer questions in a more complete way than would otherwise be possible. In Dr. Hasenauer's classes, he is able to discuss mathematical problems which have remained unsolved for hundreds of years.

*"I think it is important for me to explain to students that mathematics is like a sport—you can't do it without hard work and moments of frustration."*

#### HOW THE GRANT WILL BE USED:

Dr. Hasenauer's research mostly involves the study of factorization properties in non-Noetherian domains. He plans to use the funds to study the application of his research to cryptography.

#### ON RECEIVING THE AWARD:

*"It is nice to have my work recognized. It is rewarding to be placed amongst other scholars who are successful in their fields."*

## 2020 DAVINCI FELLOW (CONTINUED)



### **Dr. Sapna Das Bradoo**

*Associate Professor, Biology*

Gregg Wadley College of Science & Health Professions

#### **DAVINCI FELLOW PROPOSAL:**

Engage and retain minority, first-generation, students in STEM and better prepare them for their next step after a college degree.

#### **OVERVIEW:**

The focus of Dr. Das Bradoo's research focuses on a network of conserved proteins that function to protect cells from DNA replication defects, and mutations in these proteins are associated with cancer. Her research employs yeast and human cells to study how conserved proteins work to protect our genome, and to study the molecular consequences when they are disrupted. Dr. Das Bradoo is fascinated by biology because she wants to understand the molecular mechanisms in living organisms. She loves understanding the way cells function and how they affect each other.

*"I share my passion for science with my students by discussing my scientific journey across three continents (Asia, Europe and North America). In addition, students see the connection between my research and how it can help us further understand cancer, a deadly disease that affects all humans across the world."*

Dr. Das Bradoo has received several grants from the National Institutes of Health to pursue her research and engage students in research at NSU. She has been invited to give talks at other universities, present posters at national conferences and attend conferences where she learns about new discoveries in the field of Cell and Molecular Biology which she shares with her students.

#### **HOW THE GRANT WILL BE USED:**

Dr. Das Bradoo's project proposes to involve minority, first-generation students in research. By engaging students in research at an undergraduate level, she hopes to increase opportunities for faculty-student interactions and provide experiences that develop useful skill sets geared towards achieving future career goals. These opportunities and experiences will assist students in completing their college education and moving forward with their career goals.

## 2020 CREATIVITY IN EDUCATION DAVINCI FELLOW

*Instituted as a special category Fellowship in recent years, this award recognizes research connected to innovative practice. Fellowship selectees receive a \$1,000 grant to apply to any aspect of completing the proposed project.*

### Dr. Spence Pilcher

*Professor, Chemistry | Chair, Department of Natural Sciences*  
Gregg Wadley College of Science & Health Professions



### DAVINCI FELLOW PROPOSAL:

Making organic chemistry reactions relevant to undergraduate students

### OVERVIEW:

At NSU, Dr. Pilcher generally teaches general chemistry, organic chemistry, and polymer chemistry. His research area is in organic and polymer synthesis. The research area that excites him the most is using microwave irradiation to heat organic reactions. Dr. Pilcher states, "In today's modern world of instant entertainment, instant meals and instant messaging, undergraduate students prefer not to have to wait an hour for an organic reaction to take place." As such, Dr. Pilcher and his research students design organic synthesis laboratory experiments that use microwave irradiation to shorten the reaction times so students won't have to wait as long for the reaction to take place. In addition to saving time, increased yields and purity are often observed with the reactions heated by this method. The designed experiments provide the students enrolled in his lab courses with immersive learning experiences in the synthesis of organic molecules without the time constraints of a typical organic chemistry reaction and allows his students to work with advanced technology.

*"Furthermore, students like being able to relate an experiment to something that they see routinely making the subject of organic chemistry relevant to their lives. For these reasons, many of the experiments that are designed by myself and my research students are the preparation of compounds that students would encounter in their everyday lives, like an artificial sweetener or a pharmaceutical."*

During class, Dr. Pilcher shares his enthusiasm for and works to relate how chemistry affects the students' everyday lives to get them more interested in the subject. In his general chemistry course, students have to prepare posters relating chemistry to everyday things... like how chemistry is involved in football or fishing.

### HOW THE GRANT WILL BE USED:

Dr. Pilcher will work with his students to develop an experiment for the Organic Chemistry II Laboratory curriculum that incorporates microwave irradiation to prepare a compound that holds some relevance to a typical undergraduate student. He will lean on the creativity of his students to come up with the idea for the reaction they will develop.

### ON RECEIVING THE AWARD:

*"It is an honor to be put in such distinguished ranks as the past honorees from NSU. Some of those faculty are ones that I have always looked up to and to be included among them is truly amazing."*

## 2020 DAVINCI SCHOLAR AWARD

The DaVinci Scholar Award is designed to honor pre-service teachers whose academic accomplishments and service to the university are deemed most notable. Nominees will demonstrate the ability to integrate content into relevant applications through a service learning proposal. Recipients receive the first half of the award (\$500) at the Awards Ceremony and the second half of the award (\$500) will be disbursed in October of the first year of teaching in an Oklahoma school.

### Ms. Jessica Abuelaileh

*Bachelor of Science in Elementary Education  
Magna Cum Laude, May 2020*

#### SERVICE LEARNING PROJECT PROPOSAL:

Making math meaningful to my Owasso middle school students is the motivation for designing this cross-curricular, service-learning proposal. Project W.A.R.M. Quilts immerses Owasso Ram students in a creative design application of geometric translations. Each of my five mathematics courses will collaboratively participate in exploration and discovery of motion geometry to include tessellations. Completed quilts will be gifted to senior residents at the neighboring Brookdale Senior Living during a final celebration. Not only do students have the opportunity to personally connect with elder members of our community, this project also supports Owasso Public Schools intradistrict mentorship program. My sixth-grade students will have the opportunity to partner with Owasso High School students in the FACS (Family and Consumer Sciences) to bring their design ideas to life.



#### OVERVIEW:

Ms. Abuelaileh is excited to begin her first year teaching 6th grade mathematics for Collinsville Public Schools.

*"I love middle school math so much!"*

Ms. Abuelaileh looks forward to incorporating art, games and puzzles in her mathematics class this fall. Each week she will post funny math jokes or riddles in her class. Her favorite math joke is: Why do teenagers travel in groups of three? Because they can't even (perfect for teenagers!!!!)

#### ON RECEIVING THE AWARD:

*"Receiving the DaVinci Scholar Award has motivated me to continue my professional growth in the area of mathematics. I am currently taking three graduate courses and working on a Masters in Mathematics Education."*



**NORTHEASTERN**  
**STATE UNIVERSITY**

*For more information about the DaVinci Institute and Fellows,  
visit: [www.davinciok.org](http://www.davinciok.org)*