Our Journey... building a research culture, To gain knowledge and improve lives
A celebration of nurturing

Over the past four years....

The REPID program trained 66 MSU students from minority, disadvantaged and under-represented backgrounds in biomedical and health-related research.

Currently 24 of these students are in undergraduate programs at MSU, 15 in medical schools at MSU and across the US, 11 in graduate programs across the US, and 9 are in health professions across the US.

The REPID program built a sense of community and brought over 30 faculty members from various colleges to mentor and train our students in research for tomorrow’s biomedical workforce.

Ten (10) REPID scholars won awards: Mia Cook, Vinh Dang, Michael Gomez, Maseray Kamara, Nashwa Khogali, Gerald Lily, Violeta Nieves, Holly Semma, Rosa Torres, and Neco Wilson.

Nine (9) REPID scholars presented their research work at national scientific conferences, 6 at regional conferences and all 66 at the local Mid-SURE symposium.

The REPID program built on the momentum of the University’s mission to provide opportunities in biomedical/health-related research for students from diverse backgrounds.

The REPID program earned a national honorable Award recognition for the 2015 AAMC Building Bridges and Spanning Boundaries Award: Innovations in Research and Research Education.

The REPID Team is making a positive impact on the existing problem of health disparities and lack of diversity in biomedical and clinical practice!

Special THANKS to NIH (NHLBI, National Heart, Lung and Blood Institute), the MSU Office of the provost, Provost June Pierce Youatt, and the Office of Research and Graduate Studies, VP Stephen Hsu.
Have you ever seen traditional Amish or Mennonite craftsmen build a barn? There are often older, very skillful carpenters working in fellowship with young novices teaching and learning on the job. With so many skilled hands, the biggest and heaviest walls move easily into place. Building skills and the ethics of doing the job right are learned along the way. At the end of the day the builders share a meal and the joy of being part of a fellowship of skillful and ethical people building strong, long-lasting structures.

Our REPID scholars receive their tools and learn to use them by working with very skillful scientists on real research projects. However, the analogy can only go so far. The builders can see their barn completed in as little as a day, while our work can take a lifetime. Often the lab may seem empty late at night while completing a project, but we are never alone. In labs around the world medical researchers are striving to achieve similar goals. It's early morning in Sydney and maybe someone has crunched the numbers you need. Like good carpenters cutting each board precisely so that the other builders on the team can use them with confidence, our scholars measure and report their findings with great precision so that colleagues may use their data with confidence in the course of finding a cure for disease. And at such times of discovery, we can take a moment to appreciate being part of a group of very skillful, ethical people doing research that stands the test of time.

Elahé Crockett, Ph.D., M.Sc.
REPID Program Director

“Take a moment to appreciate being part of group of very skillful, ethical people doing research that stands the test of time.”
The REPID Program, through support from The National Institutes of Health, and The National Heart, Lung and Blood Institute (NIH-NHLBI), provides a short term research training and enrichment experience for Michigan State University undergraduate/graduate/medical health professional students from underrepresented, minority, and disadvantaged (URMD) backgrounds. The goal is to inspire these students to pursue health related research careers focused on cardiovascular, pulmonary and hematologic disciplines.

The REPID Program is designed to increase the number and diversity of researchers in health-related research by providing an inspiring and supportive environment for accomplishment and advancement. Our inspiration is to challenge the existing problem of diversity and health disparities in biomedical/clinical research and clinical practice, and to foster career development for motivated individuals from URMD backgrounds at Michigan State University.

Addressing the challenges of healthcare delivery in general and health equity in particular will require full participation from a diverse group of people. It is our collective responsibility to engage the minds, skills and talents of all our students. REPID contributes in spades to this endeavor. The students have been a great addition to the laboratories of our faculty. Their energy and enthusiasm have been invigorating.

REPID is a wonderful opportunity. Use it to learn about what ignites your passions and what saps your energy. Don’t allow self-doubt or concerns about the future distract you and keep you from doing your best. Immerse yourself and be engaged. Be relentless in your curiosity and pursuit of excellence. Above all relax and enjoy the experience.

“It is our collective responsibility to engage the minds, skills and talents of all our students. REPID contributes in spades to this endeavor.”

- Francesca C. Dwamena, MD, MS, FAACH
Chair, Department of Medicine
The remarkable outcome that we have witnessed is a true team effort, and it could not have happened without strong support of the faculty and academic staff across campus.
Words of wisdom by REPID Advisory members &

Good intentions are valuable in the hands of a capable administrator. Dr. Elahé Crockett is a well published researcher who cherishes her academic career at MSU and derives great comfort in her achievements. To provide a worthy experience in biomedical research to under-served undergraduate and graduate students she submitted a proposal for funding to the National Institutes of Health and was rewarded with the REPID five year training grant. She used all available means to attract and enroll deserving individuals. She coaxed, befriended, charmed and succeeded in placing all her recruits with excellent mentors conducting cutting edge research in their laboratories. Like a hawk she pounced on mistakes, she rewarded progress, reviewed abstracts, relentlessly pushed all her trainees to achieve excellence and year after year fifteen to twenty REPID graduates matriculated to medical schools, pursued graduate studies or were hired to work in industry. This remarkable achievement is owed to Dr. Crockett good intentions and her unsurpassed managerial skills.

“Like a hawk she pounced on mistakes, she rewarded progress,...”

-Dr. Houria Hassouna, MD-PhD
REPID Advisory Board Member, REPID Research Mentor

“the devil is in the details”

I think that the REPID program provides an excellent introduction to academic research to students. The REPID Scholars that I have interacted with have been bright and enthusiastic.

My advice to future REPID Scholars is to remember that the devil is in the details - it is important to always focus on the task at hand and not to allow oneself to become distracted while in the lab. A critical part of laboratory research in the biomedical sciences is repetition – while this may appear boring it is essential and an important part of the scientific method and statistical interpretation of data.

-Dr. William Jackson, PhD
REPID Research Mentor

“REPID is an example of excellence in action”

REPID is a wonderful opportunity for a diverse group of aspiring young scientists to learn the practices and the culture across biomedical and health sciences. The program components, the mentored experiences in laboratories, and the dedication of the faculty are first-rate. The students’ own comments, and more importantly, the outcomes and placements of the students speak for themselves. The outcomes are truly remarkable over this relatively short period of time. Our society becomes more diverse. REPID is an example of excellence in action.

For our REPID graduates and those just entering or wishing to enter the graduate program, a personal note: congratulations and wish for success to all of you.

Your choice of a career in healthcare is important to each of the individuals who you serve and to the larger communities in which you live. A big THANK YOU to the REPID program director, Dr. Elahé Crockett! Her development and nurturing of this program and its students demonstrate excellence in leadership and commitment to providing meaningful opportunities to enhance diversity in the health care sector.

-Dr. Karen Klomparens, PhD
Associate Provost for Graduate Education and Dean of the Graduate School. REPID Advisory Board Member
Research Mentors

To achieve our national research and health goals, all sectors of the population must be engaged in biomedical research. Students with talents must be recognized, nurtured, and supported across all demographic groups. The REPID program has continued to attract and sustain the interest of aspiring young scientist from under-represented groups. The program, in collaboration with its excellent mentors, is preparing this diverse group of students for successful biomedical research careers. I congratulate Dr. Elahé Crockett for the development and sustenance of this successful program here at Michigan State University.

To REPID students: Find something along the way that fascinates you in science, immerse yourself in it, and make a career out of it.

“In learning you will teach, and in teaching you will learn.”

-Phil Collins

“REPID is a marvelous program whereby a specially-selected student is paired with experts in the field to carry out a summer research experience designed to enhance scientific diversity and excellence.

It is a great joy to assist the REPID scholar in their work and watch the scholar grow and network within one’s laboratory whether it be in the clinical or basic sciences. The REPID program is opening new doors as it trains future scholars, and is directed by an excellent mentor and leader, Dr. Elahé Crockett. We have found this program to be an outstanding experience.”

-Dr. Philip B. Gorelick, MD, MPH
REPID Research Mentor, Professor and Medical Director, Mercy Health Saint Mary’s Hospital

REPID represents an outstanding opportunity for undergraduate, graduate, and medical students to learn about the practices, culture, and research skills in the biomedical and health sciences. The program provides a strong foundation in laboratory skills and hands-on, mentored research experiences with leading MSU faculty. These kinds of well-structured research opportunities provide students a competitive advantage as they pursue further education and/or work in the health care industry. Congratulations to the new REPID alumni—youir outstanding work illustrates the success of this program—and a warm welcome to the incoming cohort of new REPID Scholars.

Finally, thank you to the REPID program director, Dr. Elahé Crockett. Her development and dedication to this program demonstrates her outstanding leadership and commitment to offering quality research experiences to diverse populations of students.

-Dr. Korine Wawrzynski, PhD
Assistant Dean, Academic Initiatives & Director, Undergraduate Research. REPID Advisory Board Member
REPID scholars come from very different backgrounds, levels of expertise and interests, but one thing they all have in common is the excitement for the opportunity to spend summer learning what it takes to do research. It is such a pleasure to see them making huge strides from not really knowing how to hold a pipette and do literature search to getting their first experimental results and presenting the data.

To succeed in research, scholars have to be ready to face frustration of unsuccessful trials and be able to persevere to get to the excitement of that one successful experiment. Quoting Thomas Edison, in research as in many things in life, “success is 10% inspiration and 90% perspiration!”

-Dr. Julia Busik
REPID Research Mentor

The REPID program is a great opportunity for any student with limited research experience to obtain a well-rounded introduction to biomedical laboratory operations and methodology. As they advance, students then have the opportunity to go beyond the intro period and actually discover new knowledge in the field they’ve chosen to pursue. Near the end, writing up their findings and presenting them at a regional scientific meeting provides the same experience that career scientists experience once established. The students should work when other lab members are present, strive to learn from and avoid the temptation to work independently, at least until they have a PhD. It would be difficult for any aspiring student to not benefit from this opportunity.

-Dr. Bruce Uhal
REPID Research Mentor

The experience of working with REPID scholars has been positive. The REPID scholars were reliable, dedicated, and very interested in the work and the project. The Scholars should use their creativity with their research work.

-Dr. Erik Shapiro
REPID Research Mentor

Congratulations to Dr. Julia Busik, the recipient of 2015- Schultz family award

The Schultz family Endowment awards innovative approaches to biomedical research. Dr. Julia Busik has been honored with the Jean P. Schultz 2015/2016 award for her diabetic retinopathy research.

“I never dreamed about success. I worked for it.” —Estee Lauder
Maseray Kamara, 2015 REPID Scholar
Major: Human Medicine, M.D. Candidate, Class of 2018

Maseray’s REPID research experience opened a further research opportunity to her--the Schultz Family Award Fellowship of $2,500

The REPID Program had matched up Maseray with her research mentor, Dr. Julia Busik. Maseray has been studying mechanisms of diabetic retinopathy, which is a leading cause of blindness in adults, with Dr. Busik’s research team. Dr. Busik was awarded the Schultz Family Award, which allowed her to extend the award to Maseray. With this fellowship, Maseray will be able to continue her research studies in Dr. Busik’s laboratory after completion of her REPID research training.

In addition, Maseray’s research was accepted for presentation at the National American Medical Association (AMA) Research Symposium (Nov 12-14/2015, in Atlanta Georgia). Maseray’s research has been focused on studying the molecular steps involved in inflammation of retina and in particular the effect of hyperglycemia and dyslipidemia in animal model of diabetic retinopathy. The title of her research presentation is “Effect of Acid Sphingomyelinase Inhibition on Retinal Inflammation.” At the conference, Maseray will share her research with peers and other professionals.

Michael Gomez Awarded Spartan MARC/U*Stars Fellowship

Michael Gomez, 2015 REPID scholar, is an undergraduate student majoring in human biology. He did his hands-on REPID research experience in Dr. Bruce Uhal’s lab, studying the effect of hyperoxic/hypoxic gas on fetal lung cells. He was recently awarded the Spartan MARC/U*Stars Fellowship to continue his research. He will receive a stipend and lab support for the two-year fellowship, which is designed to prepare underrepresented minority students for admission into highly-selective biomedical science PhD programs.
“Perfection is not attainable, but if we chase perfection we can catch excellence.”

- Vince Lombardi

Cassandra LaMarche, 2014 REPID Scholar
Major: Physiology

After concluding the REPID research training, she realized that bench research was not a true passion of hers. She did research in hypertension area under Dr. Stephanie Watts’ mentorship. However, this did not make being a part of the REPID Program a lost cause for Cassandra. “REPID taught me about many different forms of research and gave me the resources I needed to seek out other research opportunities.” Soon after her research with the REPID Program ended, she was able to start working in a laboratory studying educational psychology with a focus on science, technology, engineering, and math (STEM). “My acceptance into this new lab was based largely upon the research experience that I gained through the REPID Program.” Many of the skills she learned regarding research through the REPID Program can still be applied in the laboratory where she is now working. Next summer, Cassandra will be a co-author of the written results being studied in this laboratory.

“REPID not only teaches you the skills you need in the laboratory, but also gives [you] the ability to become a better professional.”

“I am very thankful for everyone that I met through the REPID Program and for all of the opportunities REPID has since afforded me.”

REPID Reaches Out to Kenya!

Brian Harvey, 2013 REPID Scholar
Major: Physiology

After his REPID training, Brian continued his research work in Dr. Cheryl Rockwell’s lab focused on characterization of gut lymphocytes in wild-type and Nrf2-Null mice to study the immune response. He proudly says that he is now “a pro in isolating lymphocytes” and is teaching the technique to other new students entering the lab!

“The REPID program really helped me to learn about research and more importantly develop professional skills.” This summer, Brian traveled to Kenya with Dr. Kenya Sekoni, Assistant Professor of Family Medicine, helping and learning about the health care needs for the people of Kenya, mostly dealing with AIDS/HIV and malaria.
Abid Ahmed, 2014 REPID Scholar  
Major: Genometrics & Molecular Genetics

Abid Ahmed is a senior at Michigan State University. After his research training with the REPID Program, he was able to continue working in the laboratory with Dr. Julia Busik. He has continued his research beyond his REPID research training. Using this professional connection, he was able to enroll in graduate level journal club classes. He says these classes have, “really helped me to feel comfortable reading scientific literature and honed in my presentation and public speaking skills.”

In the spring of 2015, Abid was able to travel to Denver, Colorado to present his research at the Association for Research in Vision and Ophthalmology (ARVO) conference. Abid has been studying the biomolecular mechanisms of diabetic retinopathy, the leading cause of adult blindness. He presented his research work “miRNA-15a REGULATES VEGF LEVELS IN THE DIABETIC RETINA: A NOVEL THERAPEUTIC TARGET FOR DIABETIC RETINOPATHY” at the conference. Abid says, “It was an awesome experience: there were over a hundred poster presentations daily, interesting seminars and symposiums, awards, and lectures given by famous researchers. All in all, it was an eye opening experience and a chance to network with other researchers from around the world.” “For five days, I was fully immersed in the world of research, and got a taste of what it is like to be a scientist.” He sees this conference as the highlight of his junior year.

Abid’s first year in research through the REPID Program and beyond has taught him more than he ever thought possible. “I have become more independent, learned to think more critically, and am more organized and responsible than I was before. These are skills that will serve me well in the future, and I am grateful to the REPID Program for the critical role that it has played in my personal and professional development.”

“I am grateful to the REPID Program for the critical role it has played in my personal and professional development.”

Neco Wilson, 2012 REPID Scholar  
Major: Neuroscience post-baccalaureate program

After completing her REPID research training, Neco continued to develop a deeper passion for research. She is currently completing a research scholarship in post-baccalaureate Neuroscience program, to prepare for admission into Neuroscience PhD programs. Neco attended the Annual Biomedical Research Conference for Minority Students (ABRCMS), and presented her research work study of the role of MAPK kinase signaling on tumorigenesis and cell proliferation under mentorship of Dr. Kathy Gallo.
Gerald Lilly is now a second year medical student at the College of Human Medicine’s Grand Rapids campus. He will be completing the last semester of his Master’s in Public Health program this December.

Following his research training with the REPID program in 2014, this summer Gerald was able to participate in the Harvard Catalyst Visiting Research Internship Program. “As a result of Dr. Crockett’s mentoring and coaching last year, I pursued [Harvard’s internship program].” He was one of only six (6) medical students to be chosen out of hundreds of applicants for this paid internship in a top tier research laboratory. With this opportunity, Gerald studied molecular regulatory mechanism of sickle cells (abnormal red blood cells) in the laboratory of Dr. Daniel Bauer (hematology/oncology lab), at Boston Children’s Hospital, and the Dana-Farber Cancer Institute. “The REPID Program….has not only fostered a keen interest in strengthening my research portfolio, but also motivated and encouraged me to pursue my dream of becoming a physician scientist focusing on public health issues. Dr. Crockett’s mentorship has boosted my confidence to pursue my dreams in spite of difficult life challenges that I must face as a non-traditional student with a family.”

During his REPID research training Gerald studied respiratory function and lung injury in Dr. Jack Harkema’s research lab. His research abstract was selected for the 33rd Annual Conference and Annual Student Poster Presentation by the Council for Opportunity in Education in Washington DC. Gerald also received a travel award from NIH-NIAID in 2014— he was the only medical student who received this prestigious award and attended NIAID conference at NIH in Bethesda, MD.

“Dr. Crockett’s mentorship has boosted my confidence to pursue my dreams in spite of difficult life challenges that I must face as a non-traditional student with a family.”
Emmanuella Joseph, 2015 REPID Scholar  
Major: Human Medicine

This summer I had the honor of working with Drs. Philip Gorelick, and Muhammad Farooq, at the Hauenstein Neuroscience Center at Mercy Health Saint Mary’s Hospital in Grand Rapids, Michigan. When I first entered medical school I was pretty certain that I was not going to incorporate research into my future career as a physician. However, the REPID Program provided me with an opportunity that changed my perspective. What drew me to the program was its mission to increase researchers from diverse backgrounds and cultures to impact and advance the field of science and medicine. Additionally, the program provided the necessary support, training, and guidance to prepare us for our summer research experience. “But there’s nothing like the real thing….”

Currently I’m working on a quality improvement study regarding the efficacy and safety of intravenously administered tissue plasminogen activator (tPA) in patients with mild ischemic stroke. As I worked with Dr. Gorelick and Dr. Farooq I learned first hand that research is equally important to the overall quality of medications and treatments that physicians discuss with their patients. I learned that research is not only valued in the laboratory. Research impacts the way physicians provide treatments and also the policies and procedures for ensuring that patient safety come first.

When I think of my career in medicine I’m enthusiastic about my contributions as a physician but also as a researcher. Incorporating both skill sets will allow me to provide a global assessment to the care of my patients. I would like to thank Dr. Elahé Crockett for having the tenacity to implement a program that has changed how I pursue my medical education and perhaps a career in the field of Vascular Neurology.

“REPID Program provided me with an opportunity that changed my perspective… I now am considering a career in the field of Vascular Neurology.”

Crystal Holley, 2015 REPID Scholar  
Major: Human Medicine

I have had the amazing opportunity to work with physician/researcher, Dr. Ade Olomu, in the Office-GAP Program during my time in the REPID Program this summer. Office-GAP stands for the Office Guidelines Applied to Practice; it is an interventional program that strives to close the healthcare disparity gap among patients at Federally Qualified Healthcare Centers, which are centers that provide care for low-income, and minority populations. The Office-GAP Program is an educational program that informs patients with diabetes mellitus and/or cardiovascular diseases about how to manage their disease through lifestyle changes and medication use. I am so appreciative of the REPID Program, which has given me the opportunity to participate in this research. I have learned more about health care disparities affecting medically under-served populations and how to help improve these issues through research, which will hopefully bring about change in the way primary care is practiced in these communities.

Crystal’s research abstract was accepted for presentation at the National American Medical Association (AMA) Symposium, Nov 12-14/2015, in Atlanta Georgia.
"Intelligence plus character, that is the goal of education.”  -Martin Luther King Jr.

*Ugo Agbakwuru* proudly displays his poster

*Michael Gomez* gives a judge an overview of his summer research findings

Right: **Over 360 students from different institutions from across the country participated in the 2015 Mid-SURE conference**

*2015 REPID Cohort* displaying their joy and excitement at the 2015 Mid-SURE symposium
At the end of the summer research experience, all REPID Scholars presented their research data and findings at the 2015 Mid-Michigan Symposium for Undergraduate Research Experiences (Mid-SURE). This event provided an opportunity for the scholars to share their research with their peers, faculty, and external audiences. Mid-SURE symposium is an MSU Undergraduate Research Initiative program that functions to increase opportunities for students to engage in research scholarship and creative activity.
Mid-SURE 2015;
Research work presented by each REPID Scholar at the conference

GLUCOSE CONSUMPTION AND CASPASE-1 ACTIVATION
Laila Abdallah (Michigan State University)
Mentor(s): Elahé Crockett (Medicine), Susanne Mohr (Physiology)

THE ROLE OF RHO ASSOCIATED PROTEIN KINASE IN 5-HYDROXYTRYPTAMINE STIMULATION OF CACO-2 CELL MIGRATION
Akua Acheampong (Michigan State University)
Mentor(s): Elahe Crockett (Medicine), Mark Kadrofske (Pediatrics and Human Development), Lizbeth Lockwood (Pediatrics and Human Development)

IS RATES OF SMOKING DECLINING AMONG MINORITY AND LOW-INCOME POPULATIONS WITH DIABETES AND HEART DISEASE IN FEDERALLY QUALIFIED HEALTH CARE CENTERS?
Ugochukwu Agbakwuru (Michigan State University)
Mentor(s): Ade Olomu (Medicine), Elahé Crockett (Medicine)

ERYTHROPOIETIN AS A BIOMARKER OF EMOTIONAL STRESS
Mazyar Aryanfar (Michigan State University College of Human Medicine)
Mentor(s): Elahe Crockett (Medicine), Houria I Hassouna (Medicine)

DETERMINATES OF OVERWEIGHT AND OBESITY AMONG MIGRANT AND SEASONAL FARMWORKER CHILDREN IN MICHIGAN
Crystal Nance-Panek (Michigan State University)
Mentor(s): Elahé Crockett (Medicine), Sujin Song (Food Science and Human Nutrition), Won Song (Food Science and Human Nutrition)

DEVELOPMENT OF A DUAL ENERGY ACQUISITION AND DATA PROCESSING SCHEME FOR PERFORMING MOLECULAR IMAGING BY CT
Ali Ghorbanpour (Michigan State University)
Mentor(s): Elahé Crockett (Medicine), Erick Shapiro (Radiology)

REGULATORY EFFECTS OF HYPEROXIA ON ADAM17/TACE IN FETAL HUMAN LUNG FIBROBLASTS
Michael Gomez (Michigan State University)
Mentor(s): Elahé Crockett (Medicine), Bruce Uhal (Physiology)
EVALUATION OF CHOLESTEROL ASSESSMENT AND MANAGEMENT IN DIABETIC AND HEART DISEASE PATIENTS IN FEDERALLY QUALIFIED HEALTH CARE CENTERS: THE OFFICE GUIDELINES APPLIED TO PRACTICE (OFFICE-GAP) PROGRAM

Crystal Holley (Michigan State University College of Human Medicine)
Mentor(s): Elahe Crockett (Medicine), Ade Olomu (Medicine)

A RETROSPECTIVE STUDY OF THE EFFICACY AND SAFETY OF INTRAVENOUSLY ADMINISTERED TISSUE PLASMINOGEN ACTIVATOR (TPA) IN PATIENTS WITH MILD ISCHEMIC STROKE

Emmanuella Joseph MPH (Michigan State University College of Human Medicine)
Mentor(s): Elahe Crockett PhD (Medicine), Muhammad Farooq MD (Hauenstein Neuroscience Center), Philip Gorelick MD MPH (Hauenstein Neuroscience Center)

EFFECTS OF ACID SPHINGOMYELINASE ON VEGF-A AND RETINAL VASCULAR DAMAGE

Maseray Kamara (Michigan State University College of Human Medicine)
Mentor(s): Julia Busik (Physiology), Elahe Crockett (Medicine)

ROLE OF SCHLAFEN-12 AND PSMD-10 PROTEINS IN INTESTINAL MUCOSA DIFFERENTIATION

Amanda Laryea (Michigan State University)
Mentor(s): Marc Basson (Medicine), Elahe Crockett (Medicine)

ERYTHROPOIETIN ROLE IN EMOTIONAL STRESS

Wazhma Frotan (Michigan State University College of Human Medicine)
Mentor(s): Elahe Crockett (Medicine), Houria I Hassouna (Medicine)

STUDYING THE RELATIONSHIP BETWEEN BMI AND VAGINAL MICROBIOME AMONG PREGNANT WOMEN

Rehnuma Newaz (Michigan State University)
Mentor(s): Elahe Crockett (Medicine), Claudia Holzman (Epidemiology & Biostatistics)

DESCRIPTIVE CASE SERIES IMPLEMENTING PREVENTATIVE STRATEGIES FOR INJURIES FROM WORK-RELATED FALLS IN MICHIGAN

Roya Omari (Michigan State University)
Mentor(s): Elahe Crockett (Human Medicine), Melissa Millerick-May (Human Medicine), Kenneth Rosenman (Human Medicine)

EXPRESSION OF T-TYPE CA2+ CHANNELS IN MURINE SUPERIOR EPIGASTRIC ARTERIES

Sumira Stein (Michigan State University)
Mentor(s): Elahe Crockett (Department of Medicine), William Jackson (Pharm & Toxicology DEPt)
In June of this year, 2015 REPID Scholars were given the opportunity to speak with graduate students and faculty members. The Scholars were able to ask questions that will help them succeed in their future endeavors and get advice on topics of their choice.

“The best way to predict your future is to create it.” - Abraham Lincoln

Networking Luncheons with Graduate Students

2015 REPID Scholars are photographed taking in the advice and knowledge of Michigan State graduate students, Ashley Sanderlin and Jay Bundy
Networking Luncheons with Faculty Members

REPID Scholars were able to sit in front of a panel of Michigan State research faculty members and hear about their research and how they came to be where they are today.

It was an informal event, which allowed the REPID scholars to get advice and guidance in a relaxed environment.

2015 REPID Scholar Crystal Nance-Panek photographed here discussing research and academia with Dr. Joan Rose, a Michigan State faculty professor research laboratory director and principal investigator.

Dr. Elahé Crockett with students of the 2015 REPID Scholar Cohort.
Don’t wait for the perfect moment, take the moment and make it perfect...

**REPID Scholar goes to NIH-NHLBI**

*Vihn Dang* is currently at NIH-NHLBI (National Institutes of Health- National Heart, Lung, and Blood Institute) participating in a baccalaureate program that will take him about two years to complete. He is planning on applying for either MD/PhD or DO/PhD when he concludes his time with NIH. Not only did the REPID Program allow Vihn to build on top of pre-existing knowledge of how a biomedical research laboratory operates, but it also enabled him to communicate better with others “through oral and poster presentation sessions”. On top of it all, he says that he met many great individuals through the program as well and he is thankful for the experience. “I am grateful such a program exists now that allow undergraduates to [decide] if research is in their future pathway or not. For future REPID Scholars, I can guarantee you will benefit one way or another by doing this program.”

Below; *Dr. Stephanie Watts*, served as research mentor to Rosa Torres. Her research interest is focused on understanding the mechanisms by which the vasculature contributes to hypertension, obesity and obesity associated hypertension.

The REPID program was a wonderful experience through which I was able to view science through a different perspective. Before REPID, I had never worked in a research lab and had only basic knowledge of how research was conducted. However, as a REPID scholar I was able to work as a research assistant in the lab of my mentor, Dr. Stephanie Watts, with research interest in hypertension. This allowed me to gain a much better understanding of the importance of research while conducting research on the signaling of the ChemR23 receptor. One of my favorite memories was being able to present my research in the Experimental Biology conference in Boston in which I received the David S. Bruce Outstanding Undergrad Abstract Award! (Experimental Biology Conference)

I feel very grateful to have been able to participate in the REPID program as it was truly a very rewarding experience and I encourage others to apply. It is an amazing opportunity you will be glad to be a part of and it will even help motivate your passion for science.

*Rosa Torres*, 2012 REPID Scholar
“Education is the most powerful weapon we can use to change the world.”

-Nelson Mandela

**Veronica Tijernia** is a 2014 REPID Scholar who now works as a data abstractor with the Michigan department of Health and Human Services and with the Michigan State University Division of Occupational and Environmental Medicine. Her work through the REPID Program got her foot in the door for her Michigan State position because she had been able to work with their research team to prepare and research her 2014 summer findings. “[The] REPID Program gave me fundamental skills for being successful in my healthcare career.” The REPID Program was even able to contribute to her finishing her Master’s thesis in Public Health by matching her up “with the perfect mentor for finishing my [Veronica’s] Master’s…”

**Dr. Ken Rosenman**, served as research mentor to Veronica Tijernia and Mia Cook. His research is in occupational and environmental disease with particular interest in pulmonary disease.

**Mia Cook**, a 2013 REPID Scholar, is currently working as an ABA Therapist at a non-profit organization in Troy, Michigan. She works under the Board of Certified Behavior Analysts who creates individualized therapy programs for children with Autism. She is also applying to an Occupational Therapy PhD program at the University of Toledo. She decided to pursue a PhD instead of the traditional Master’s Program that accompanies Occupational Therapy because of her experience with the REPID Program. “The program introduced me to different components of research and taught me the importance of educating not only myself, but the people around you.”

**Laila Abdallah**, 2015 REPID Scholar, is a junior at Michigan State University. She is a Human Biology major with the goal of one day becoming a Physician specializing in Pediatrics. For her, the REPID Program was a good way to get her foot in the door by allowing her to really get a feel for laboratory work and all that goes into a research project.

This summer, Laila was able to work in Dr. Susanne Mohr’s Physiology laboratory. She focused on diabetic complications, specifically Diabetic Retinopathy, which means that high glucose levels are damaging the retina of the eye. “My research project is focused on a cysteine protease called Caspase-1, a mediator of pro-inflammatory responses in the cell. An increase in Caspase-1 results in further progression of Diabetic Retinopathy.” Laila’s research resulted in the knowledge that high glucose causes an increase in Caspase-1, and therefore further progression of Diabetic Retinopathy. She believes she has gained a multitude of positive personality traits. These include thinking creatively, being patient, and staying motivated and confident. “These are skills I can implicate in any future career I decide to pursue, and I have the REPID Program to thank for that.”

**Laila** performing an experiment in Dr. Mohr’s lab
Dr. Elahé Crockett’s innovative research training program was recently recognized through an honorable mention award by AAMC (Association of American Medical Colleges): 2015 AAMC Building Bridges and Spanning Boundaries Award: Innovations in Research and Research Education. This annual Award has been developed in collaboration with leaders in biomedical research, education, and training from AAMC-member institutions, the GREAT Group and GRAND leadership. The GREAT (Graduate Research, Education, and Training) Group is the AAMC’s professional development group for the faculty and administrative leaders of biomedical Ph.D., M.D.-Ph.D., and postdoctoral programs. The GRAND (Group on Research Advancement and Development) leadership is the AAMC’s professional development group for research deans, deans of clinical research, and other research leaders at academic medical centers. Dr. Crockett presented her research program at GREAT Group and GRAND Annual Professional Development Meeting in Baltimore, Sept. 10-12, 2015. She would like to thank the support of NIH/NHLBI, Michigan State University for the development of this research education program and the AAMC for the honor recognition of the program.

Dr. Elahé Crockett’s project was entitled “An Innovative Research Training Program to Train a Highly Trained workforce of researchers and Promote Research Collaboration.”

This presentation described her part in making the REPID Program the success it is today. “Through a combination of an online research training course, hands-on-research experience, and team-mentoring the program has been instrumental for the career and professional skills development of many students. The program recognizes the importance of high-quality mentoring and career guidance for the next generation of scientists.”

Scholar Breakdown (2012-2015)
66 REPID Scholars; 49 Undergraduates, 3 Masters Students, 2 Lifelong Education, 11 Medical candidates

Summary Table: REPID Scholars (2012-2015) Research and Current Status

<table>
<thead>
<tr>
<th>Year</th>
<th>Total # recruited</th>
<th>Scholars Level at time of matriculation to REPID UG HP students*</th>
<th>Current Status after completion of REPID Training Med UG Grd HP** R</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012</td>
<td>17</td>
<td>5 HP students*</td>
<td>5 Med 4 UG 4 Grd 2 HP** 9 R</td>
</tr>
<tr>
<td>2013</td>
<td>18</td>
<td>16 HP students*</td>
<td>1 Med 5 UG 5 Grd 4 HP** 14 R</td>
</tr>
<tr>
<td>2014</td>
<td>16</td>
<td>12 HP students*</td>
<td>2 Med 10 UG 1 Grd 2 HP** 10 R</td>
</tr>
<tr>
<td>2015</td>
<td>15</td>
<td>6 HP students*</td>
<td>7 Med 5 UG 1 Grd 1 HP** 14 R</td>
</tr>
</tbody>
</table>

Abbreviations: Grd= Graduate student; HP= Health Professional; Med= Medical student; R= Research; UG= Undergrad

HP students* represents individuals who had completed their undergraduate programs and were a medical student, or graduate student in nursing, public health, or other graduate programs, and lifelong students.

HP** denotes the individuals working at health care facilities/hospitals or public health institutions.
Rosa Torres, 2012 REPID Scholar, received the 2013 David S. Bruce Outstanding Undergraduate Research Award (Am. Physiological Society).

Neco Wilson, 2012 REPID Scholar, received a research fellowship award for a post-baccalaureate neuroscience program.

Mia Cook, 2013 REPID Scholar, received an internship award and studied at the Children's Environmental Health Network in Washington D.C.

Nashwa Khogali, 2013 REPID Scholar, won the Paul Alan Wetter Award for best multi-specialty scientific paper for the Society of Laparoendoscopic Surgeons.

Violeta Nieves, 2013 REPID Scholar, received a prestigious award to attend the graduate school at UTMB Medical Branch at Galveston, Texas.

Gerald Lily, 2014 REPID Scholar, received the NIH-NIAID travel award in 2014 and the Harvard's internship award in 2015.

Holly Semma, 2014 REPID Scholar, received 3 Awards including the Student Leadership and Services Award.

Vinh Dang, 2014 REPID Scholar, received a research fellowship award for a 2-yr post-baccalaureate research program at NIH-NHLBI (National Institutes of Health- National Heart, Lung, and Blood Institute).

Michael Gomez, 2015 REPID Scholar, received the Spartan MARC/U*Stars Fellowship to pursue doctoral degrees in the biomedical sciences.

Maseray Kamara, 2015 REPID scholar, received the Schultz Family Award Fellowship.

“REPID opened many opportunities that I never imagined. Thank you so much for your effort and continuous support.”

- Violeta Nieves
More Ways To Get Involved...

The REPID Program is grateful to be funded by the National Institutes of Health- NHLBI. Not only has the NIH given resources to Michigan State students through the REPID Program, but they also provide a plethora of different training opportunities for students as young as sixteen all the way to Post-doctoral students nation-wide. This is a great way for those who are not currently attending a university to still be able to get involved in biomedical research.

For more information about how else you or someone you know can get involved in biomedical research, please visit the website below:

https://www.training.nih.gov/programs
Achievements: Where are they now?

**Abid Ahmed**, has continued research work with Dr. Julia Busik, and presented at the national conference of the Association for Research in Vision and Ophthalmology (ARVO) in Denver, Colorado, April 2015.

**Andie Gonzalez** is pursuing a PhD degree at Our Lady of the Lake University in Texas.

**Cassandra LaMarche** is a senior at Michigan State University majoring in Physiology. She now works in a laboratory studying educational psychology with a focus on science, technology, engineering and math (STEM).

**Danuelle Calloway, Ijeoma Nnanabu, Kimberly Obey, and Miguel Joaquin**, are medical candidates at MSU- College of Human Medicine.

**Dominique Garrison** is currently interning at Wayne State University School of Medicine with the Karmanos Cancer Institute as a graduate research assistant studying cancer biology.

**Gerald Lilly** is a 2nd-yr medical student at the College of Human Medicine's Grand Rapids' campus. He will be completing his last semester of his Master's in Public Health program this December. He received an NIH-NIAID travel Award and the Harvard's internship award.

**Huei-Min Ni** is in preparation for applying to the Doctor of Physical Therapy Program at Wayne State University.

**Hahyung Kim** works as a Research Lab Manager, and in preparation to apply to a biomedical PhD graduate program.

**Kristina Savage** is attending Georgetown University Graduate School for a M.S. degree in Physiology.

**Mary Lian** is working at Sparrow Hospital in a full-time position; she is planning to search for a position in a research area soon.

**Mia Cook** is currently working as an ABA Therapist at a non-profit organization in Troy, Michigan. She is in preparation to attend the graduate school in Toledo for a PhD degree in Occupational Therapy.

**Rehnuma Newaz** completed her BS degree, and currently is working in a research project writing the manuscript for submission, and also preparing to apply to Epidemiology PhD graduate programs.

**Neco Wilson** is a post baccalaureate candidate in the bridge to PhD neuroscience program working in Dr. Atchison's lab-MSU.

**Paul Garza** is pursuing an MPH in Public Health Administration & Policy at University of Minnesota School of Public Health.

**Robert Frisk** is a Production Chemist at Neogen in Lansing, Michigan.

**Rolando Barajas** has been accepted into San Diego State University's Masters of Public Health Epidemiology.

**Shanice Akoto**, completed her BS degree at MSU, and was matriculated into Wright State University Boonshoft School of Medicine.

**Veronica Tijernia**, completed her MS degree, and currently works as a data abstractor with the Michigan department of Health and Human Services and with the Michigan State University’s Division of Occupational and Environmental Medicine.

**Violeta Nieves**, received a scholarship, and is attending the graduate school at UTMB Medical Branch at Galveston, Texas.

**Vinh Dang**, completed his BS degree at MSU, and was accepted into a post-baccalaureate program at NIH-NHLBI. After he finishes, he plans on applying for either MD/PhD or DO/PhD.
When I first entered medical school I was pretty certain that I was not going to incorporate research into my future career as a physician. However, the REPID Program provided me with an opportunity that changed my perspective. What drew me to the program was its mission to increase researchers from diverse backgrounds and cultures to impact and advance the field of science and medicine. Additionally, the program provided the necessary support, training and guidance to prepare us for our summer research experience.

As I worked with Dr. Gorelick and Dr. Farooq I learned firsthand that research is equally important to the overall quality of medications and treatments that physicians discuss with their patients. I learned that research is not only valued in the laboratory. Research impacts the way physicians provide treatments and also the policies and procedures for ensuring that patient safety come first.

When I think of my career in medicine I’m enthusiastic about my contributions as a physician but also as a researcher. Incorporating both skill sets will allow me to provide a global assessment to the care of my patients.

-Emmanuella Joseph, Aug 2015

The REPID Program has impacted me in many ways. By providing me with research opportunity in my field of interest, it has opened many doors for me. It has allowed me to really experience the lab and all that goes into research. I learned a lot by having to read scientific journal articles, and also learned useful lab techniques, and scientific presentation skills.

-Laila Abdallah, Aug 2015

The REPID Program has impacted me in many ways. By providing me with research opportunity in my field of interest, it has opened many doors for me. It has allowed me to really experience the lab and all that goes into research. I learned a lot by having to read scientific journal articles, and also learned useful lab techniques, and scientific presentation skills.

-Laila Abdallah, Aug 2015

When I entered medical school I was pretty certain that I was not going to incorporate research into my future career as a physician. However, when I first heard about the program I was immediately drawn to it. The program provided an opportunity for me to consider a role for myself that impacts and advances the field of science and medicine.

As I worked with my mentors I learned about the importance of research and how it impacts the laboratory. I also learned that research affects the way physicians provide treatments and the policies and procedures for ensuring patient safety.

When I think of my career in medicine I’m enthusiastic about my contributions as a physician but also as a researcher. Incorporating both skill sets will allow me to provide a global assessment to the care of my patients.

-Emmanuella Joseph, Aug 2015
Prior to REPID, I sincerely disliked basic science research. The thought of pipetting for hours at a lab bench made me nauseous. However, both my research and REPID mentors (Dr. Busik & Dr. Crockett) ensured that I had the skill set and personal interest in my assigned project. I studied the effects of lipidemia on VEGF-A and retinal vascular damage.

-Maseray Kamara, Aug 2015

-Maseray’s basic science research abstract was accepted for presentation at the National American Medical Association (AMA) Symposium, Nov 12-14/2015.

“You gave me your time, the most thoughtful gift of all…”

“Thank you for... believing in me and guiding me along the way- I am so grateful for this.”

-Rehnuma Newaz
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**Light, Life and Time**

Rushing through the swirling stream of life we study the nature of what we are. Our persistent study of life is more than whimsical curiosity. For countless generations we try to keep the little flame of life burning in ourselves and those around us. And for generations to come we will never stop trying to keep the flame burning because we are alive, we are a part of life.

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**TO:**