

## Researcher brings new tool to stroke, heart attack recovery

### Prototype to be in human testing within two years

Within two years, Dr. Maik Hüttemann of the Center for Molecular Medicine and Genetics expects to have a device in human testing that could dramatically improve survival rates for people who have strokes and heart attacks.

Dr. Hüttemann's research is focused on the mitochondria, the cell's main energy producing compartment. He and his team have devised a method of regulating the function of the mito-



chondria using specific wavelengths of light. For stroke patients, this will mean a helmet that uses lasers to send infrared light through the skull to the affected area of the brain.

**HÜTTEMANN** The light will slow down energy production after the blockage of the stroke has been removed.

Dr. Hüttemann explained that, after a stroke or heart attack, more cell damage occurs after the event has been mitigated.

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#### New faculty spotlight

## Shengyi (Iris) Sun brings fresh perspective to protein studies

### Research focuses on endoplasmic reticulum and protein misfolding

Dr. Shengyi (Iris) Sun says that when she was growing up in Shandong Province, China, she was always fascinated by the mechanisms that make things work. That fascination led her into biochemistry and molecular medicine.

Dr. Sun joined the faculty of the Wayne State University Center for Molecular Medicine and Genetics as Assistant Professor of Molecular Medicine and Genetics and of Biochemistry, Microbiology and Immunology during the sum-



**SUN**

mer of 2019. She says she has enjoyed her time here in Detroit.

"So far, everyone has been very friendly and helpful," she said. "And it was very pretty here this fall."

The only drawback is the distance from her family. Her parents still live in China and can only visit once a year.

**Spotlight, continued on Page 2**



## Spotlight:

### 'A factory for proteins'

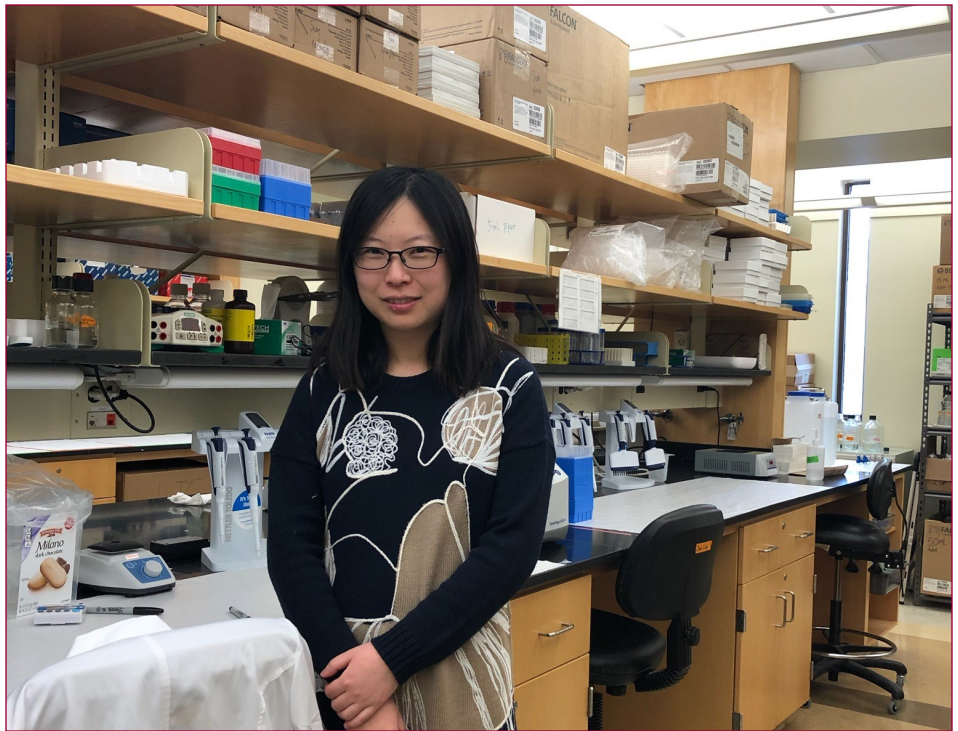
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Dr. Sun is studying the endoplasmic reticulum (ER) and degradation of proteins. She said the degradation is a quality control process.

"It's (the ER) like a factory for proteins," she explained.

The ER examines newly-synthesized proteins and only passes on those that are correctly folded. Folding is the process by which a protein chain acquires its native three-dimensional structure, which is generally biologically functional.

Dr. Sun's study is looking into the mechanism of misfolding. The process by which misfolded proteins are prevented from entering the system is referred to as endoplasmic reticulum associated degradation (ERAD). This process is central to health and, when aberrant, to some diseases. Some viruses take over



**Dr. Sun in her laboratory.**

the ERAD process and use that to establish infection. Dr. Sun said her work is particularly related to diabetes.

"We're at a starting point," she said, "basic science."

Dr. Sun is using mouse cell proteins for her study.

Dr. Sun earned her PhD at Cornell University in 2015. After Cornell, she spent four years at the University of Texas Southwestern Medical Center for post-doctoral study.

## Faculty honors

### Awards

**Angela Trepanier**, Center for Molecular Medicine and Genetics, was promoted to Professor (CE).

**Maik Hüttemann**, Center for Molecular Medicine and Genetics and Biochemistry, Microbiology and Immunology, received the Dean's Office Award for Outstanding Research Achievement.

**Yan Yuan (Jeffrey) Tseng**, Center for Molecular Medicine and Genetics and Biochemistry, Microbiology and Immunology, was promoted to Associate Professor (RE) with tenure.



**TREPANIER**

**Leonard Lipovich**, Center for Molecular Medicine and Genetics and Neurology, was promoted to Professor (RE).

**Roger Pique-Regi**, Center for Molecular Medicine and Genetics and Obstetrics and Gynecology, received the College Teaching Award.



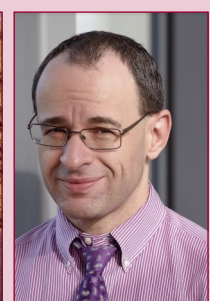
**HÜTTEMANN**



**TSENG**

**Tiffany Cook**, Center for Molecular Medicine and Genetics and Ophthalmology, Visual and Anatomical Sciences, received a Research Excellence Award — Basic Science

**Gerald Feldman**, Center for Molecular Medicine and Genetics, Pathology, and



**LIPOVICH**

**Honors, continued on Page 3**



## Light Preserving healthy tissue

### From Page 1

When an area of tissue is starved for oxygen, cells are damaged; however, worse damage occurs when oxygenated blood returns to the area and cells “burn out” with suddenly increased energy production. This is called ischemia reperfusion injury or insult.

With the new technology, light therapy can moderate the reperfusion and preserve healthy tissue. Dr. Hüttemann’s studies, using pigs and piglets, have shown dramatic results.

Dr. Hüttemann’s focus on infrared light began in 2006 when he met with Dr. Margaret Wong-Riley of the Medical College of Wisconsin at a Wilson Foundation conference.

“I looked up her research so we would have something to talk about,” Dr. Hüttemann said.

Dr. Wong-Riley had done work on Parkinson’s disease with infrared light that

hadn’t panned out. However, she had only been working with a few specific wavelengths. Dr. Hüttemann asked her why she was using only those wavelengths. It turned out that those wavelengths were easily produced because there were commercial lasers on the market with those outputs.

Dr. Hüttemann wondered if the results could be improved by trying more wavelengths. He designed an experiment that scanned through the spectrum and measured the results for each wavelength.

His results pointed to wavelengths that inhibited mitochondrial function and led to the device he is currently using to produce a prototype that could be used in human testing soon.

Dr. Hüttemann grew up in Battenburg, Germany. He received his PhD from the University of Marburg.



**Dr. Maik Hüttemann shows off his light therapy machine.**

“I initially was going to become a polymer chemist,” he said. “But that turned out to be totally boring.” He switched to biochemistry and found his calling.

He came to the United States in 2000 as a postdoctoral researcher in Center director Lawrence Grossman’s lab. He soon started making a name for himself, being promoted to full professor in 2017. He recently was awarded the Dean’s Office Award for Outstanding Research Achievement.

## Honors

### From Page 2

Pediatrics, received a Teaching Award and Research Excellence Award — Physician-Scientist.



**COOK**



**FELDMAN**



**PIQUE-REGI**

### Publications and Presentations by Students and Postdocs

Congratulations to **Justyna Resztak, MS** (Luca/Pique-Regi lab) for presenting at the American Society of Human Genetics

Annual Meeting in Houston, TX October 15-19, 2019 on “*Transcriptional signatures of psychosocial experiences reveal GxE effects in leukocyte gene expression of children with asthma.*”

Congratulations to **Hasini Kalpage** (Hüttemann lab) for presenting at the Frontiers in Metabolism conference in Madison, WI, at the Morgridge Institute for Research on “*Role of cytochrome c phosphorylation in brain ischemia/reperfusion injury.*”

Congratulations to **Anthony Findley** (Luca/Pique-Regi lab) for presenting at the American Society of Human Genetics Annual Meeting in Houston, TX October 15-19, 2019, on “*Gene-environment interactions in iPSC-derived cardiomyocytes.*”

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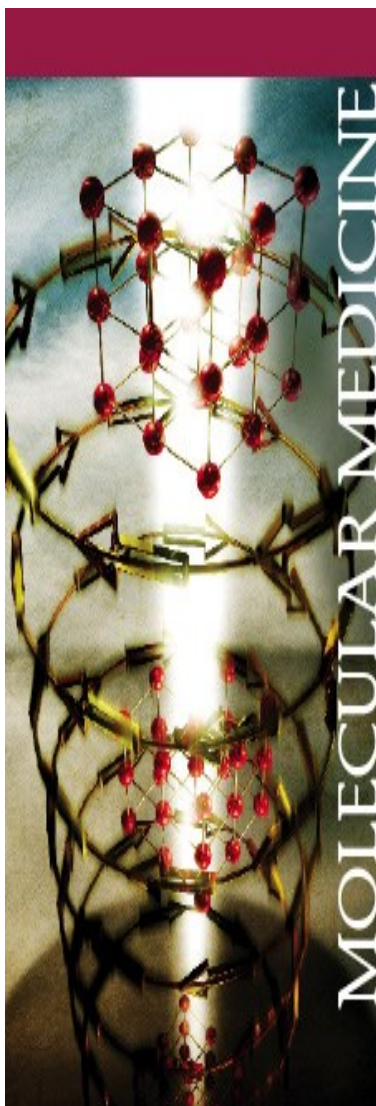
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