

BioCY News

Department of Genetics, Development and Cell Biology

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Power duo with mission to cure disease at cellular level joins GDCB

Dr. Raquel Espin Palazon and Dr. Clyde Campbell hit the ground running in their efforts to develop cutting-edge solutions to critical health issues impacting millions of people. Espin Palazon and Campbell joined Iowa State University's Department of Genetics, Development and Cell Biology in fall 2019 as an assistant professor and adjunct assistant professor, respectively. Espin Palazon is developing a new stem technology for regenerative medicine, while Campbell is leveraging his discovery of a powerful methodology for genetically reprogramming cells in living systems.

Arsenal of cells to treat and cure disease

Espin Palazon's research is focused on creating programmable stem cells to treat blood disorders. To that end, her team is working on deciphering the cellular and molecular mechanisms that lead to blood formation. These are the same mechanisms that are disrupted in blood disorders, therefore, a better understanding of the basic biological mechanisms that operate naturally in the vertebrate organism will translate to the treating, or even curing, of blood disorders.

Of her laboratory's efforts, Espin Palazon said, "We are developing a new, virtually infinite source of stem cells for treating a host of cellular diseases and dysfunctions. Our goal is to improve human health by identifying targets and novel therapies that will advance regenerative medicine to treat blood disorders such as myelodysplasia and leukemia. Our research will empower new approaches to treating or completely mitigating these devastating diseases."

Issuing cells new marching orders

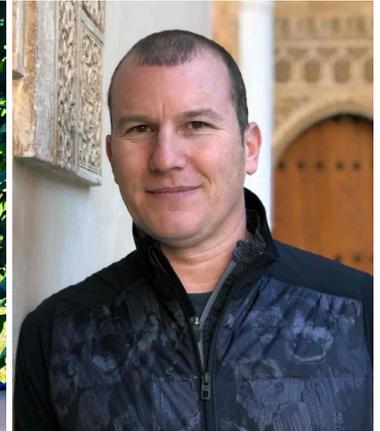
Campbell's laboratory is expounding upon his keystone discovery that expression of two genes called *sox32* with *Oct4*

could redefine a cell's genetic program. This discovery portends the possibility of unlimited lineage potential of differentiated cells in vivo and challenges the conventional

understanding of cell lineage restriction. The ability to reprogram cells may pave the way toward a vast new in



Dr. Raquel Espin Palazon



Dr. Clyde Campbell

vivo supply of replacement cells for degenerative diseases including diabetes. Campbell is translating his discoveries in the area of cellular reprogramming in vivo into a platform for producing a potentially limitless supply of patient-specific cells for the treatment of a multitude of disorders and malignancies.

When asked about the potential impact of his work, Campbell said, "The human body is comprised of over 200 specialized cell types that all share the same genetic code. My question is, can we as biologists exploit this code to generate a limitless supply of replacement cells for those lost through injury or disease."

GDCB: A congenial cutting-edge research community

With respect to joining the research faculty in GDCB, Espin Palazon said, "I am extremely excited to have joined this multifaceted and extraordinarily collegial department."

Campbell echoed Espin-Palazon's comment saying, "As a Research 1 Institution, ISU has the highest caliber of research activity and provides our teams with access to state-of-the-art technology and interdisciplinary expertise among our colleagues."

Contribute to the mission of GDCB

Please consider supporting GDCB's efforts to improve the world through translational research leading to creative solutions to key issues in agriculture and human health by [making a gift](#) to GDCB through the ISU Foundation.

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—Dr. Raquel Espin Palazon