

# COLUMBIA UNIVERSITY

IN THE CITY OF NEW YORK

DEPARTMENT OF BIOLOGICAL SCIENCES

February 23, 2021

Re: Written testimony in support of the New York State Stem Cell Science (NYSTEM) program.

Dear Assemblywoman Dickens, Senator Jackson, and New York State colleagues,

As a loyal constituent and supporter, I would like to let you know of my strong support for continuing the NYSTEM program. My first involvement with the program occurred in 2008 when we had an infrastructure award of \$200,000 with Prof. Gordana Vunjak-Novakovic for purchase of a scientific instrument called a mass spectrometer (mass spec.) Then in 2014, with Prof. Vunjak-Novakovic we received another NYSTEM infrastructure award that allowed us to purchase an even more powerful mass spec worth \$650,000. These machines were used for for studying proteins in stem cells and led to many research publications not only on stem cells, but also on many diseases such as cancer, lung fibrosis, diabetes/obesity, macular degeneration, regenerative medicine (tissue engineering), Huntington disease, heart disease, autoimmune diseases, and traumatic brain injury. Since my return to New York in 2006, this NYSTEM funding has led to our writing 29 publications and to the award of 17 federal and private research grants to our collaborators, roughly estimated to be \$40 million, likely returning more much more to New York State than invested by NYSTEM through tax revenue generated. **The equipment that NYSTEM funded enabled the success of all of our work.**

One example of a research publication is the “Regulation of ferroptotic cancer cell death by GPX4” published in the prestigious journal Cell in 2014. In that work, we used a NYSTEM-funded machine to understand a novel way of killing cancer cells. This paper had particularly high impact and has been cited by other scientists 1,009 times to date since its publication (source: Clarivate Analytics).

Another example of the impact of the equipment was in developing the careers of young scientists. A postdoctoral trainee, Dr. Shujuan McDonald trained with us. From our lab, she went directly to a critical career position as Senior Scientist at Pfizer Vaccine Research and Development in Pearl River, NY. Also in that category are postdoctoral scientists Dr. Emily Werth who went on to Boehringer Ingelheim and Dr. Hemanth Akkiraju who went on to Sanofi Aventis. These trainees illustrate the key role of the NYSTEM-provided equipment to train women and other scientists for critical roles in the pharmaceutical industry in New York and the tristate.

One example project being done with the NYSTEM-funded equipment is a 6-year, NIH-funded project on Alzheimer's disease (AD) in Caribbean Hispanics. We are studying the proteins in cerebrospinal fluids for clues to the diagnosis and treatment AD. **Persons of Caribbean Hispanic origin are a vulnerable population as they have a significantly increased frequency of AD.** Our study population of 1,000 patients is from the Dominican Republic (DR), **Washington Heights and northern Manhattan.** They include members of the same families in the DR and among of your constituents who will benefit if we make progress in treating this terrible disease. As you know, these families have already suffered greatly as an underserved population during the pandemic. Our now 7-year old equipment (nearing it the end of its life as state-of-the art) would benefit from another round of future NYSTEM infrastructure grants, as it will become obsolete in this fast-moving field.

We appeal to at least to keep NYSTEM on the books so that upgrading the equipment will be possible when the New York State budgetary environment improves. **This will support a research project targeted to benefit underserved citizens of northern Manhattan.** Please do not abandon them. Similarly, please do not abandon our trainees and provide updated equipment for them, so that **we can continue to support the workforce needs of companies like Pfizer Vaccine Research.**

We thank you and your colleagues for NYSTEM funding and continued support.

Best regards and stay safe,



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