Committee on Faculty Research Lecturer Report to the Riverside Division
May 24, 2022

Nomination of Distinguished Professor Julia N. Bailey-Serres for 2022-2023 Faculty Research Lecturer

From its inception well over half a century ago, the Faculty Research Lecturer Award has been the highest honor that the Academic Senate bestows. This year we received six outstanding nominations from our campus, and we are delighted to place in nomination Distinguished Professor of Genetics, Julia N. Bailey-Serres, Department of Botany and Plant Sciences (DBPS). She has spent her entire academic career so far at UCR, with around three decades in DBPS, where she has established herself as a research pioneer and leader in the area of plant responses to flooding and low-oxygen stress. Her path-breaking research contributions have transformed understanding of gene regulatory mechanisms which are of increasing importance in the face of global climate change, and have widely impacted global agriculture.

Professor Bailey-Serres has a distinguished publication record with papers published in diverse areas of plant biology. She is a recognized leader in the field of plant hypoxia, and was involved in conducting pioneering studies directed at improving the ability of plants to survive the anaerobic stress caused by flooding. In a highly cited paper in the top journal Nature (2006), and some others in top-tier journals, she contributed to the discovery of a key regulatory protein, *Sub1A* in rice, the gene conferring this cereal with the ability to survive complete submergence, and thus the absence of oxygen, for several days. This seminal discovery opened the possibility of breeding new rice varieties that could withstand prolonged flooding, and was given the CGIAR Science Award for Outstanding Scientific Article in 2006 by the Consultative Group on International Agricultural Research. Further, she was the lead recipient of the National Research Initiatives Discovery Award from the USDA (2008).*SUB1A* has been introduced into several rice cultivars (by the International Rice Research Institute), which are now grown by more than a million farmers in South and Southeast Asia with the goal of stabilizing rice yields in flood prone areas. As one letter writer writes “These are breakthrough discoveries, now reported in text books of plant biology” and “The relevance of plant hypoxia was even mentioned by Sir Peter Ratcliffe in his speech in Stockholm, when receiving the 2019 Nobel Prize for Medicine.” And, another letter writer points out that “Dr. Bailey-Serres’ research is contributing to development of the Second Green Revolution.”

Professor Bailey-Serres is also an authority in the area of RNA biology, in which she studied transcriptional and post-transcriptional mechanisms of gene regulation with a focus on mRNA turnover (papers in PLos Biology (2014), Nature (2011), Nature Plants (2015), among others). She pioneered a methodology to determine how protein synthesis is affected in acute responses such as oxygen deprivation, and provided compelling evidence that protein synthesis changes rapidly in response to this stress, long before there is a change in RNA production. Well into her fourth decade in the profession, Professor Bailey-Serres shows no sign of slowing down. In fact, in the most recent years (2020-2022), her extensive current research is focused on developmental plasticity in plants and crops to water extremes. The goal of this fundamental research work is to provide molecular insight into genetic solutions that enhance global food security. In summary, all these are consistent with the writing of an external letter writer “Her research productivity,

scientific leadership at multiple levels, and overall leadership in the plant biology community is nearly unmatched."

Professor Bailey-Serres' research contributions have been nationally and internationally recognized by a large and growing number of impressive honorific appointments and awards. She is an elected Member of the National Academy of Sciences (2016), elected Fellow of the American Association for the Advancement of Science (2005) and Fellow of the American Society of Plant Biologists (2010). Professor Bailey-Serres joined an elite group of plant scientists who have received the Stephen Hales Prize from the American Society of Plant Biologists (2017). Utrecht University in the Netherlands has honored her twice; she was the F.C. Donder's Chair in Plant Genomics (2008) and is currently an Honorary Faculty Chair of Molecular Physiology of Rice. In 2019, she was recognized by Taiwan's Academia Sinica as the Shang-Fa Yang Memorial Lecturer, and earlier honored by the University of Michigan with the Anton Lang Research Excellence Award (2016). UCR has acknowledged her outstanding research accomplishments with her appointment as a University of California MacArthur Foundation Chair (2017). Along with these, as written by an external letter writer, another measure of the success and importance of Professor Bailey-Serres' research program is evidenced by "For instance, each year since 2014, she has been designated a Highly Cited Researcher in Plant and Animal Science by Thomson Reuters/Clarivate Analytics. This recognition indicates that Dr. Bailey-Serres is among the top 1% of most highly cited researchers in her field." And another one writes "Dr. Bailey-Serres is an outstanding scientist, and her work is highly cited in the field of Plant and Animal Biology based on the annual Highly Cited Researchers lists (top 1%) for the years 2014-2021 released by Clarivate Analytics." Further, the DBPS' nominating members summarize their support with the following "Her long-term UCR research program has transformed her field, stimulated innumerable young investigators, and promoted interdisciplinary and collaborative approaches across the sciences. Her research discoveries that have led to the deployment of SUB1A in cultivated rice and an understanding of the complex cellular and molecular mechanisms engaged in plant stress responses have had and will continue to have a global impact on agriculture." And, they feel "Her research is of very broad interest to the UCR community as she works in a field that we can all relate to – we all need to eat and food quality, security and sustainability is paramount."

Prof. Bailey-Serres' excellence extends to all facets of university and profession, including a spectacular record of mentoring and training a host of graduate (23) and undergraduate students (more than 90) as well as more than 27 post-doctoral researchers. Early in her career she was named the UCR's Outstanding Faculty Mentor for the Chancellor's Award for Excellence in Undergraduate Research. In addition, she received the Outstanding Graduate Student Mentor Award in 2012. Besides, Professor Bailey-Serres consistently gives back to the science community serving in many capacities: Plant Biology Editor for PNAS and in Editorial Board of many journals, organizing many conferences and symposiums, giving large number of invited presentations, and serving to several national and international institutes. She has also served on campus as Directors of NSF National Research Training Plants-3D Program, Center of Plant Cell Plant Biology, NSF based IGERT and Research Experiences for Undergraduates in Plant Cell Biology. It is not surprising when one reads the writing of one of the external letter writer saying "And yet, what is striking is that she continues to devote substantial time and effort to her teaching and outreach efforts. This is testimony to her deep devotion to all aspects of her career as a scientist

– she not only pushes the frontiers of her discipline but trains the next generation of scientists to take up the fight."

For these reasons and more (too numerous to mention), we, the undersigned members of the Senate Committee on Faculty Research Lecturer, unanimously and enthusiastically nominate, as Faculty Research Lecturer for 2022-2023, Distinguished Professor JULIA N. BAILEY-SERRES.

Aman Ullah, Chair (Department of Economics)
Xuemei Chen (Department of Botany and Plant Sciences)
Walter Clark (Department of Music)
Francisco Zaera (Department of Chemistry)
Howard S. Friedman (Department of Psychology)