National survey IDs gaps and opportunities for regenerative medicine workforce

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Answering a charge from the National Science Board, the RegenMed Development Organization (ReMDO), through its RegeneratOR Workforce Development Initiative, has released the results of a national

survey of regenerative medicine biomanufacturing knowledge, skills, and abilities needed for successful employment in the regenerative medicine field.

The National Science Board called for the creation of a skilled technical workforce driven by science and engineering in its 2019 report, "The Skilled Technical Workforce: Crafting America's Science and Engineering Enterprise."

"The RegeneratOR initiative has undertaken a necessary early step with its survey by articulating the knowledge, skills and abilities needed to align education and workforce development programs with employer needs," said Gary Green, EdD, Chief Workforce Development Officer for the Wake Forest Institute for Regenerative Medicine (WFIRM), which is working closely with ReMDO on this effort.

Green and colleagues published their findings recently in *Stem Cells Translational Medicine* journal. The purpose of the article is to outline the knowledge, skills, and abilities necessary for regenerative medicine biomanufacturing, quantify the skills gap that currently exists between skills required by employers and those acquired by employees and available in the labor market, and make recommendations for the application of these findings.

"Regenerative medicine biomanufacturing represents one of the emerging technology-driven growth sectors. With recent and projected future growth in regenerative medicine, the availability of a knowledgeable and skilled workforce is a critical success factor for business and academic organizations," said Josh Hunsberger, Ph.D., chief technology officer for ReMDO. "As the field progresses from research to clinical translation and from translation to biomanufacturing, the skill requirements are evolving."Three levels of preparation are articulated in the research: basic employability skills, core bioscience

skills, and regenerative medicine biomanufacturing technical skills. Fifteen skill sets addressing the specialized needs of regenerative medicine and related biotechnology sectors are identified in the survey.

Overall survey results indicate that while regenerative medicine biomanufacturing is experiencing rapid growth, there exists a pronounced lack of needed skills sets in the workforce and an inability to hire for those skills in the labor market.

Based on the survey results, the ReMDO team made five recommendations to develop the workforce development ecosystem.

1. Provide faculty development opportunities in regenerative medicine for kindergarten through 12th grade, community college, and universities (including 4-year colleges) that are aligned with industry needs that support grade/level appropriate learning.

2. Incorporate regenerative medicine principles and applications in STEM-related academic curricula, recognizing the multidisciplinary nature of the field.

3. Provide progressive levels of work-based learning in regenerative medicine, kindergarten through 12th grade to university.

4. Pursue a diverse and inclusive skilled technical workforce in regenerative medicine.5. Advocate for policy and investments in regenerative medicine and convergent technology workforce development.

"The insights provided by these survey results are an essential starting point to help us prepare for the future of regenerative medicine biomanufacturing," said co-author Anthony Atala, MD, who serves as director of WFIRM. "It is crucial to have a trained and highly skilled

work force in place to advance the important research now reaching patients."

More information: Gary M. Green et al, Recommendations for workforce development in regenerative medicine biomanufacturing, *Stem Cells Translational Medicine* (2021). DOI: 10.1002/sctm.21-0037

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