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## NIH and ISS-NL Coordinated Program in Tissue Chip Systems Translational Research in Space

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Microgravity has profound effects on the human body from insights gained from astronauts experience and biomedical research conducted onboard the International Space Station National Laboratory (ISS-NL). Microgravity affects the way cells aggregate, allowing them to form into 3-dimensional structures that more closely resemble tissues in the human body-providing improved models to study cell behavior and accelerating advances in tissue engineering. Microgravity may also enhance some properties of stem cells, such as their ability to survive, proliferate, form 3D aggregates and differentiate into various cell lineages for development into stem cell-based regenerative therapies. In collaboration with ISS-NL, the NIH-led Tissue Chips program enables the deployment of these engineered microphysiological systems towards improved disease modeling and testing of potential new drugs for earth-based use. The unique environment of the ISS-NL allows researchers to study cells in ways not possible on the ground and helping to advance the field of regenerative medicine.

### Biography:

Dr. Dan A Tagle is an associate director for special initiatives at NCATS. He also recently served as acting director of the NCATS Office of Grants Management and Scientific Review and currently serves as executive secretary to the NCATS Advisory Council and Cures Acceleration Network Review Board. Prior to joining NCATS, Tagle was a program director for neurogenetics at the National Institute of Neurological Disorders and Stroke (NINDS), where he was involved in developing programs concerning genomics-based approaches for basic and translational research in inherited brain disorders.

Prior to joining NINDS in 2001, Tagle was an investigator and section head of molecular neurogenetics at the National Human Genome Research Institute and has been involved in the highly collaborative effort toward the positional cloning of genes for Huntington's disease, ataxia-telangiectasia and Niemann-Pick disease type C. He has served on numerous committees and advisory boards, including the editorial boards of the journals *Gene* and the *International Journal of Biotechnology*.

Tagle obtained his Ph.D. in molecular biology and genetics from Wayne State University School of Medicine in 1990. He was an NIH National Research Service Award postdoctoral fellow in human genetics in the laboratory of Francis S. Collins, M.D., Ph.D., at the University of Michigan. Tagle has authored more than 150 scientific publications and has garnered numerous awards and patents.