New bone marrow-on-a-chip can model radiation therapy damage and assess preventive measures

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Engineered bone marrow grown in a novel microfluidic chip device responds to damaging radiation exposure followed by treatment with compounds that aid in blood cell recovery in a way that mimics living bone marrow. This new bone marrow-on-a-chip microdevice holds promise for testing and developing improved radiation countermeasures, as described in *Tissue Engineering*, Part C, Methods.

Yu-suke Torisawa and coauthors from Harvard University (Boston and Cambridge, MA), Children's Hospital Boston and Harvard Medical School show that the microdevice provides a way to keep the engineered bone marrow alive and to monitor the formation of different blood cell populations long enough after radiation damage to be able to evaluate the effects of experimental drugs being developed as protective

agents.

In the article "Modeling Hematopoiesis and Responses to Radiation Countermeasures in a Bone Marrow-on-a-Chip," the researchers report that unlike the microdevice, conventional static bone marrow culture methods do not mimic the recovery response of bone marrow in the body to these types of drugs.

"The development of relevant high-throughput systems is a field that will have huge impact in the near future for personalized medicine," says Methods Co-Editor-in-Chief John A. Jansen, DDS, PhD, Professor and Head Dentistry, Radboud University Medical Center, The Netherlands.

More information: Yu-suke Torisawa et al, Modeling Hematopoiesis and Responses to Radiation Countermeasures in a Bone Marrow-on-a-Chip, *Tissue Engineering Part C: Methods* (2016). DOI: 10.1089/ten.tec.2015.0507

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