Self-assembling nano-fiber gel delivers high concentrations of clinically approved drugs

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Two teams of scientists from Harvard-MIT Division of Health Science and Technology (HST) at Brigham and Women's Hospital have developed a new self-assembling hydrogel drug delivery system that is biocompatible, efficient at drug release, and easy to tailor. Importantly, these structures can deliver clinically approved drugs in high concentrations without requiring carriers for the drug or generating toxic components, a problem with hydrogel systems until now.

The findings, which are now available on Science Direct, will be published in the Nov. 25 issue of *Biomaterials*.

"This strategy could serve as the platform technology for developing drug-based delivery carriers that can release drugs such as anti-inflammatory agents on demand in response to inflammation, for example," says Jeffrey Karp, MD, instructor of medicine at the HST Center for Biomedical Engineering at the Brigham and Women's Hospital and a co-corresponding author on this manuscript.

"Converting known, clinically-practicing drugs into amphiphilic molecules which can undergo self-assembly is the key development in our present research; this may eliminate the need for an external carrier for delivering drugs" says Praveen Kumar Vemula, PhD, research fellow in medicine at Brigham and Women's Hospital.

"Enzyme triggered gel degradation has been our key strength, which played a major role in developing these delivery vehicles from drugs-

based hydrogels" says another leading investigator Dr. George John, who is associate professor at City College of New York. Gregory Cruikshank, another author of the article is at present working in Albert Einstein College of Medicine of Yeshiva University.

Source: Harvard Medical School