

Potential Disease-Modifying Drug Combination for Osteoarthritis

Researchers at Stanford have discovered that treatment with JNK II inhibitor and IBMX has a synergistic therapeutic effect against osteoarthritis (OA). They tested the combination on human OA chondrocytes in culture and observed a consistent 60-80% decrease in inflammatory mediators in a small cohort of patients. Ongoing work is validating the drug combination in a mouse model. Currently, there is not a single approved disease-modifying drug on the market for osteoarthritis, a debilitating condition caused by trauma or aging. The researchers profiled healthy and OA cartilage samples using mass cytometry to establish a single-cell atlas, revealing distinct subpopulations that are found consistently across all patients. These include cell populations that amplify or dampen inflammation. They devised a drug combination strategy to inhibit one population and boost the other, thus significantly reducing inflammation in OA chondrocytes.

Stage of Development

Ongoing work is validating this drug combination in a mouse model of osteoarthritis.

Applications

- Can be injected into the joint as a treatment for mild to severe osteoarthritis

Advantages

- Currently no FDA-approved disease-modifying OA drugs
- Combination of IBMX/JNK II would be a new therapeutic in the field
- Could be broadly effective for many patients

Publications

- [Single-cell mass cytometry reveals cross-talk between inflammation-dampening and inflammation-amplifying cells in osteoarthritic cartilage](#) Grandi FC, Baskar R, Smeriglio P, Murkherjee S, Indelli PF, Amanatullah DF, Goodman S, Chu C, Bendall S, Bhutani N. *Sci Adv.* 2020 Mar 13;6(11):eaay5352. doi: 10.1126/sciadv.aay5352. eCollection 2020 Mar. PMID: 32201724

Patents

- Published Application: [WO2021067749](#)

Innovators

- Nidhi Bhutani
- Fiorella Grandi

Licensing Contact

Eileen Lee

[Email](#)